Market Simulation Summer 2023 Release

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June 01, 2023

Overview

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

Production Activation

- Customer feedback on timeline received and heard by ISO

- Entire Summer Release moves to 7/1/23 – RSEE2T1, ESET1, ASSOCC, HR2C Settlements

- Deployments to Production by 6/1/23

- [Notices](#) sent 5/19/23

Summer 2023 Release activation rescheduled from 6/1/23 to 7/1/23

MESSAGE
The California ISO has moved the Summer 2023 activations for Resource Sufficiency Enhancements Phase 2 Track 1, Energy Storage Enhancements Track 1, Hybrid Resources Phase 2C - Settlements, and Ancillary Services State of Charge Constraint projects to July 1, 2023.

Due to the short development cycle for this Summer Release compared to the typical Fall Release where customers have more buffer time to make final adjustments to their systems based on final findings from market simulation, many ISO customers indicated the need for this buffer time towards the end of market simulation and the activation date of the Summer Release. The ISO understands the importance of giving our market participants this buffer time and decided to reschedule the activation date of Summer Release to July 1, 2023 due to the constraint that this release needs to be activated at the beginning of a month. The new activation date will allow market participants to finish validation of software changes, market rules, settlements statements, and make any final adjustments accordingly.

The release and project information is available in the Release User Group presentation [here](#) and on the Release Planning page [here](#).

- Resource Sufficiency Enhancements Phase 2 Track 1 Impacted Systems: Master File, SIBR, Market, CMRI, OASIS, and Settlements
- Energy Storage Enhancements Track 1 Impacted Systems: SIBR and Market
- Hybrid Resources Phase 2C - Settlements Impacted Systems: Settlements
- Ancillary Services State of Charge Constraint Impacted Systems: Market, CMRI, and Settlements

The Summer 2023 Release functionality for Resource Sufficiency Enhancements Phase 2 Track 1, Energy Storage Enhancements Track 1, Hybrid Resources Phase 2C - Settlements, and Ancillary Services State of Charge Constraint will remain active in the current market simulation MAP Stage environment so that customers can continue to test and prepare for a July 1, 2023 activation. Customers are encouraged to contact **release@caiso.com** for any questions or necessary support regarding impacts of this schedule change.

CONTACT INFORMATION
Please contact **release@caiso.com** for any questions.

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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 – Market Active Resource Constraint data available 5/9/23 for TD 5/2 forward	✓ RSEE2T1 TD 4/17/23 ✓ ASSOCC Deployed 4/26/23 – Market Active Resource Constraint data available 5/9/23 for TD 5/2 forward	ASSOCC New Market Active Resource Constraint started showing data 5/9/23 for TDs 5/2 forward
CRR		NA	
DRRS			
MF			✓ Deployed RSEE2T1 4/17/23
OASIS	✓ RSEE2T1 TD 4/17/23	✓ RSEE2T1 TD 4/17/23	
OMS	Performance Issues	Performance Issues	• Following 5/19 maintenance, slowness reported and under review • No direct impact to Summer Release
RCBSAP			
RIMS		NA	
SIBR			✓ Deployed RSEE2T1 & ESET1 4/17/23
MRIS			✓ Deployed Settlements 4/28/23 effective 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

Market Simulation Activities

June	Monday	Tuesday *Settlements	Wednesday	Thursday *Settlements	Friday
				1	2
	5	6	7	8	9
	12	13	14	15	16
	19	20	21	22	23

Market Simulation
Forum @1400 PT

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Market Simulation Settlements Calendar

Calendar Day	Day	CMRI T+1B	Submit Meter Data by T+2B 10:00 for Initial T+9B	Publish Initial Statement T+5B T+9B	Submit Meter Data by T+5B 18:00 for Recalc T+70B	Publish Recalc Statement T+8B T+70B	Publish Market Invoice
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;

WEIM Resource Sufficiency Evaluation Enhancements Phase 2 Track 1

- Structured & Unstructured Market Simulation
  - **Structured scenario TD 5/2: executed, settlements published**
  - **Structured scenario TD 5/4: environment issues in AM, executed for PM, settlements published**
  - **Structured scenario TD 5/9: executed, settlements published**
  - **ISO BAA Opt In for AET TDs 5/2 & 5/4, ISO BAA Opt-Out for AET TD 5/9**
  - **ISO continues to support testing; please contact us for any requests**
- All code changes in MAPSTAGE as of 4/17 & 4/18
- Settlements changes in MAPSTAGE as of 4/28, effective 5/1
- BRS
- Market Simulation Scenarios
- Training course held 4/26
  - Presentation **Updated 5/17, please review for any Market Simulation testing impacts**
  - Video available on the Learning Center

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Energy Storage Enhancements Track 1

- Unstructured Market Simulation
- SIBR changes in MAPSTAGE as of 4/17
- Market changes in MAPSTAGE as of 4/27
- No Settlements impacts
- [BRS](#)
- Training course held on 5/2
  - [Presentation](#)
  - Video available on the [Learning Center](#)
- 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.
- **SIBR/Market Known Issues fixed 5/22**

Energy Storage Enhancements Track 1

- **Attenuation Factors**
  - For Market Simulation, we will use the factors in the policy:
    - http://www.caiso.com/InitiativeDocuments/Presentation-Energy Storage Enhancements-10-31-2022.pdf
  - These will be further tuned upon ISO study

Market Simulation values set:

Reg Up	Reg Down
6%	12%
2%	10%
2%	13%
7%	18%
6%	11%
8%	13%
12%	24%
6%	22%
3%	13%
8%	13%
4%	13%
6%	18%
7%	20%
11%	21%
8%	21%
9%	21%
16%	25%
16%	35%
12%	21%
7%	35%
6%	37%
8%	23%
3%	26%
5%	25%

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Energy Storage Enhancements Track 1

Known Issues (also impacts ASSOCC)

Area	Summary	Details	Status
Market	Regulation Not Clearing DAM	IFM not considering the negative portion of the operational range when awarding Reg Dn	**Under Review** MapStage fix expected to be available on **6/6** Customer disagrees with the formula as implemented
SIBR	Rules Modifications Rules: 32527 32528 32530 32531 New: 32543 32544 32545 32546	For Production if there is a Regulation award there should be a GSS or LSS self-schedule based on existing rules. We have a software variance for ESE implementation because there will be no way to submit a GSS/LSS if you have a DA Award.	**COMPLETE** Fixes in MAPSTAGE 5/22
Market	Some LESRs not being awarded Reg Up in DA despite economical Reg Up bids		**Under Review** MapStage fix expected to be available on 6/6

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Ancillary Service State of Charge Constraint

- Unstructured Market Simulation

- CMRI deployed to MAPSTAGE 4/26, **data available 5/9 for TDs 5/2 forward**

- Market code in MAPSTAGE as of 4/27

- Settlements changes in MAPSTAGE as of 4/28 effective 5/1

- BRS

- Training course held on 5/1
  - Presentation
  - Video available on the Learning Center

- **See ESE known issues slide as those may impact ASSOCC as well – SIBR/Market Known Issues fixed 5/22**

Ancillary Service State of Charge Constraint

Known Issue

Summary	Details	Status
Use of ASSOCC during non-AS Intervals	Clarify validity of the flag in unwarded intervals with no direct charging or discharging necessary in order for unit to meet its AS obligations later in the day, and the presence of the flag and potential unintended impacts on BCR in what should have been economic intervals.	**Settlements fix will be available for TD 5/30 in MapStage.** **Recalc for TD 5/23 and 5/25 would also be made available on the new config file.**

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Hybrid Resources Phase 2C – Settlements

- Unstructured Market Simulation

- Settlements code in MAPSTAGE as of 4/28 (effective TD 5/1) for this to be available for Settlements TDs 5/2 and onward for Tuesday/Thursdays thru May

- [BRS](#)

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

URL Changes (Application Delivery Resiliency)

Plan

- MAP-Stage new API URLs **available as of May 18, 2023** for 60 days to transition
- 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 (& FDR)	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
ECIC	https://wsmap.caiso.com/sst/ecic	https://mapstage-ws.caiso.com/sst/ecic

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 of 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 available as of May 18, 2023
- Production target later in 2023, schedule to be provided after MAP-Stage activities
- 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 2023

Next Steps

- Next Market Simulation Forum on Monday, June 05, 2023 at 1400 PT

California ISO

References

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

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Summer 2023 Release Overview – System Impacts

Project	CMRI	Master File	OASIS	Settlements	Market	SIBR
Energy Storage Enhancements Track 1					**X** ✓ MS 4/27/23	**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 4/28/23	**X** ✓ MS 4/17/23	**X** ✓ MS 4/17/23
Hybrid Resources2C – Settlements				**X** ✓ MS 4/28/23		
Ancillary Service State of Charge Constraint	**X*** ✓ MS 4/26/23 Deployed ✓ *Data Available 5/9/23 for TD 5/2 forward*			**X** ✓ MS 4/28/23	**X** ✓ MS 4/27/23	

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 Data available 5/9 for TD 5/2 forward**
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

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

Scenario Number	Structured Scenario	
1	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. **CIDIs submitted less than 5BD before TD aren't guaranteed, but ISO will try to accommodate.** 2) Facilitate conditions to fail upward capacity test and/or flexible ramping test. 3) Submit ETSR Limits
	ISO Market Participant Actions	N/A
	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

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

- The environment is available for entities to try to cause failures of the tests and increase their own BAA load forecast to create the import situation.
- Reminder: Submit ETSR limits.
- **Please submit CIDIs to disable auto-balancing and/or bid insertion/canned bids for desired TDs**
- Review OASIS flex and bid test results for hours with failures
- ISO BAA Opt In for AET TDs 5/2 & 5/4, ISO BAA Opt-Out for AET TD 5/9 onwards

- **BPM CG CC 6476 Real Time Assistance Energy Transfer Surcharge_5.0 (Fee)**
    - Must be opted in to AET to receive assistance
    - If desired to facilitate failures, open CIDI for CAISO to disable your auto-balancing and or bid insertion/canned bids
    - Must fail RSE up test
    - Must be net importing in RT
    - BAA's net imports must be higher than their Reg up

- **BPM CG CC 6479 Real Time Assistance Energy Transfer Allocation_5.0 (Revenue)**
    - Does not need to be opted in to AET, can be opted in or opted out
    - Must pass RSE up test
    - Must be net exporting in RT
    - The allocation/revenue will be spread across all other BAAs that passed RSE and are net exporters in RT

- Because the conditions in surcharge and revenue are direct opposites, a BAA can only either receive revenue or get charged a penalty in each interval.
- When validating a few intervals and only seeing one charge code, remember that if you are in one charge code for one interval, it is impossible for you to be on the other charge code for that same interval.
- If you are opted out of AET, you can still receive revenue as long as you pass RSE Up and you are net exporting in RT; opt in election is only for the energy assistance.

California ISO

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

- Visibility of AET designation
  - BAAOP UI will show that flag for BAA operators; WEIM BAAs able to view "Assistance" column in BAAOP
  - In Settlements, the flag is reportable in the Settlements statement file

- **PRR 1500 updated 5/16/23 in Ver 3: The Assistance Energy Transfer report described as an OASIS report in this PRR has been removed. Assistance Energy Transfer status will be available and visible to all WEIM's if they opt-in or not via BAAOP, not OASIS. Opt-in Status is also visible on ones Settlement statement file. CAISO will send out a notice when CAISO opts-in for AET.**

California ISO

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

Scenario Number	Unstructured Scenario	
2	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	Market Participants should e-tag several export resources as "Firm Provisional Energy (G-FP)".
	Expected Outcome	Market Participants verify G-FP e-tags in their own Web Smart Tag system. CAISO will verify ITS for G-FP e-tags. **Please provide list of tag codes or market awards for CAISO verification.**
	Anticipated Settlement Outcome	N/A
	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

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

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 simulate 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.

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

- HE01 to HE08

  – Submit energy (EN) bids covering the positive EN range (0 to Pmax) at a bid price of –$150/MWh (No bid on EN negative range)

  – No Ancillary Service (AS) bid

  – Reason: Depletes the SOC

- HE09 to HE24

  – Submit EN bids from Pmin/2 to 0 with a bid price of +$1000/MWh (No bid on EN positive range)

  – Bid Reg Up for –Pmin MW at $0/MW.

  – Reason: Help the resource get awarded Reg Up in DA

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

- **HE01 to HE08**

  - Submit energy (EN) bids covering the positive EN range (0 to Pmax) at a bid price of –$150/MWh (No bid on EN negative range)

  - No Ancillary Service (AS) bid

  - Reason: Depletes the SOC

- **HE09 to HE24**

  - Submit EN bids from Pmin/2 to Pmax with a bid price of –$150/MWh

  - Bid Reg Up for maximum possible amount at $0/MW.

  - Reason: Enables the lower AS SOC constraint to bind

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

- HE01 to HE08
  - Submit EN bids covering the negative EN range (Pmin to 0) at a bid price of +$1,000/MWh. (No bid on EN positive range)
  - No AS bid
  - Reason: Charges the SOC
- HE09 to HE24
  - Submit EN bids from 0 to Pmax/2 with a bid price of – $150/MWh (No bid on EN negative range)
  - Bid Reg Down for Pmax MW at $0/MW
  - Reason: Helps the resource get awarded Reg Down in DA

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

- HE01 to HE08
  - Submit EN bids covering the negative EN range (Pmin to 0) at a bid price of +$1,000/MWh. (No bid on EN positive range)
  - No AS bid
  - Reason: Charges the SOC
- HE09 to HE24
  - Submit EN bids from Pmin to Pmax/2 with a bid price of +$300/MWh
  - Bid Reg Down for maximum possible amount at $0/MW
  - Reason: Enables the upper AS SOC constraint to bind

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