Market Simulation – Fall 2023

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Oct 09, 2023

Recordings

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Agenda

- Fall 2023 Market Simulation Initiatives & Timelines
- Initiatives
  - Energy storage enhancements Track 2
  - Energy storage enhancements SOC constraint
  - WEIM resource sufficiency evaluation redesign phase 2
  - Hybrid Resources 2C – Metered Quantities
  - Maximum import capability enhancements
  - Energy storage enhancements SOC Constraint
- Known Issues
- MAP Stage Availability
- Next Steps

Fall 2023 Market Simulation Initiatives & Timelines

Fall 2022 Initiatives	Start Date	Start Date (Trade Date)	End Date	Structured Simulation Start (Trade Date)
Fall 2022 Market Simulation	08/14	08/14	10/13	
Maximum import capability enhancements	08/14	08/14	10/13	08/17
Energy storage enhancements Track 2	09/18	09/18	10/13	09/19, 09/20, 09/21, 09/26, 09/27, 09/28
Energy storage enhancements SOC constraint	10/03	10/03	10/13	N/A
WEIM resource sufficiency evaluation redesign phase 2	09/25	09/25	10/13	**Independent Project**
Hybrid Resources 2C – Metered Quantities	09/07	09/07	10/13	N/A

Market Simulation Plan:
https://www.caiso.com/Documents/MarketSimulationPlan-Fall2023Release.pdf

Energy Storage Enhancements Track 2

- **Timeline:** 09/18- 10/13
- **Structured:** 09/19, 09/20, 09/21, 09/26, 09/27, 09/28

Issue: When the calculated SOC approaches the maximum limit, the dispatches for the resource to charge approach zero but not as quickly as they should. The total MWs dispatched is the same, but the timing is off, which can impact the revenue amount, depending on the RT prices.

Fix deployed in MapStage and available on 10/09

Structured Scenarios document - https://www.caiso.com/Documents/MarketSimulationStructuredScenarios-EnergyStorageEnhancementsTrack2.pdf

Energy Storage Enhancements SOC Constraint

- **Timeline:** 10/03 - 10/13

- **Input Setup:**
  - Submit energy and very cheap RU/RD bids.
  - Verify energy and RU/RD awards using the attenuation factors is within the min/max SOC as per the attenuation SOC equation.

- **ESE SOC Implementation Update call with Stakeholders :**
  - **Time : Oct 9th – 1 PM**
  - Explanation of revised implementation
  - Clarifying any questions from market participants

WEIM Resource Sufficiency Evaluation Redesign Phase2

- **Timeline:** 09/25 - 10/13(Limited Functionality)
- **Structured:** *Independent Project*

Functionality available to test on 09/25:

- MF resource identification Capacity Test Failed-to-Start Rule Exemption flag
- CMRI DA & RT display of Market Priority Type
- ADS processing of energy and showing Priority Type and Cleared MW
- ITS standalone functionality

Functionality unavailable to test on 09/25:

- CAISO priority type data from market to ITS

Structured Scenarios document :
https://www.caiso.com/Documents/MarketSimulationStructuredScenarios-ResourceSufficiencyEvaluationEnhancements-Phase2Track2.pdf

Hybrid Resources 2C – Metered Quantities

- **Timeline:** 09/07- 10/13

- For the unstructured Market Simulation:
  - SC's of Hybrid resources must have the ability to submit Metered Quantities on a component ID only, which would override the current Metered Quantities.
  - Existing Hybrid resources with component ID's can be utilized for this effort.

Maximum Import Capability Enhancements

- **Timeline:** 08/14 - 10/13
- **Structured:** 8/17

Structured Scenarios Document – *https://www.caiso.com/Documents/Market-Simulation-Structured-Scenarios-Maximum-import-capability-enhancements.pdf*

Known Issues

Issue	Fix ETA
Tradable Capacity MW incorrectly populates as Total in AvailableImportCapability Payload when it is zero - MICE	09/18 - Fixed
The MapStage OASIS Url going to Production OASIS	09/15 - Fixed
Unable to submit Meter data to MRIS	09/18 – Fixed
MIC - Enhancements - Incorrect Unassigned Import Capability Value in CIRA	09/28 - Fixed
Market Sim - MAP Stage OASIS Available Import Capability Report Mismatches Aug 2023 & Sep 2023	Fixed with Data refresh Alert added for Prod
Map Stage ADS query tool not working	09/26 - Fixed
ESE Track 2 - Operator Initiated Commitment Report downloading in XML instead of CSV	No Issue: Data available for August
CMRI retrieveMarketPriorityType_v3_DocAttach.wsdl missing metadata	Need more info

Market Simulation MAP Stage Availability

MAP Stage weekly maintenance window is Friday*

System	UI	API	Comments
ADS			
ALFS	NA		
BAAOP			
BSAP			
CIRA			
CMRI			
CRR		NA	
DRRS			
MF			
OASIS			
OMS			
RCBSAP			
RIMS		NA	
SIBR			
MRIS			

AVAILABLE

MAINTENANCE

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

Next Steps

- The next teleconference is scheduled on October 12th at 2 PM

References

Maximum Import Capability Enhancements – Market Sim Scenario

Scenario Number	Unstructured scenario (MIC)	
1	Description	Facilitate submission and retrieval of import capability reports.
	ISO Actions	Facilitate preparation of customer data for setup (NQC/Supply Plan/RA Plan) data from Production to MapStage. Inform the month and year for which the data would be made available.
	WEIM Market Participant Actions	N/A
	ISO Market Participant Actions	1. Submit request for unassigned import capability as part of step 13 of the import allocation process for 2023 & 2024 RA years. 2. Upload trades and RA showing for 2023. 3. Update contact information for 2023. 4. Update the reserve versus tradeable capability for 2023. 5. Validate two new OASIS reports for 2023 • OASIS > Resource Adequacy > Available Import Capability • OASIS > Resource Adequacy > Import Capability Used in RA Plan Data (Monthly & Annually)
	Expected Outcome	Participants to verify: a) Submitting Step 13 request for Unassigned Import Capability. b) Monthly available Import capability. c) Monthly / Annual import capability in RA plan. d) OASIS reports i. OASIS > Resource Adequacy > Available Import Capability ii. OASIS > Resource Adequacy > Import Capability Used in RA Plan Data (Monthly & Annually)
	Anticipated Settlement Outcome	N/A
	Expected Settlement Outcome	N/A

Fall 2023 MAP Stage Connectivity Testing

- **Timeline:**
  - Start 8/11

ISO Market Simulation Support

- **Hours:** Monday thru Friday 0900-1800 PDT
- **ISO's 24x7 Service Desk:** (916) 351-2309 (Connectivity – UI or API)
- **Email:** MarketSim@caiso.com

Fall 2023 Communication Plan

- Schedule

Monday	*Tuesday*	*Thursday*
Aug 14, 21, 28 Sep 11, 18, 25	Sep 5	Aug 10, 17, 24, 31 Sep 07, 14, 21, 28

- Connection Information
  - **Web Conference Information**
    - Web Address: https://caiso.webex.com/meet/MarketSim
    - Meeting Number: 962 067 710
    - Audio connection instructions will be available after connecting to the web conference. When prompted, select "Call me" and enter the phone number you will use during the call. You will be called by the conference shortly.
  - **Conference Call Information**
    - Dial-in Number:
      - 1-844-517-1271 (Toll Free)
      - 1-682-268-6591
    - Access Code: 962 067 710

Structured Scenario Registration Details

Market Participants will need to register their request with the ISO to participate in this simulation via the MarketSim@caiso.com mailbox.

Date of registration for MIC enhancements was July 31, 2023.

Date of registration for rest of the projects is extended till Aug 15, 2023.

We will do our best to accommodate late registration

Fall 2023 Market Simulation Settlements Calendar

California ISO

Market Simulation Fall 2023 Calendar (MAP STAGE)
Aug 29, 2023 through Sep 28, 2023

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	
28-Aug-23	Monday						
29-Aug-23	Tuesday						
30-Aug-23	Wednesday	29-Aug					
31-Aug-23	Thursday		29-Aug				
01-Sep-23	Friday	31-Aug					
02-Sep-23	Saturday						
03-Sep-23	Sunday						
04-Sep-23	Monday	ISO Holiday					
05-Sep-23	Tuesday		31-Aug				
06-Sep-23	Wednesday	5-Sep		29-Aug	29-Aug		
07-Sep-23	Thursday		5-Sep				
08-Sep-23	Friday	7-Sep		31-Aug	31-Aug		
09-Sep-23	Saturday						
10-Sep-23	Sunday						
11-Sep-23	Monday		7-Sep	Monthly Initial 29-Aug - 31-Aug		29-Aug	Daily Initial 29-Aug; Daily Initial 31-Aug; Monthly Initial 29-Aug - 31-Aug;
12-Sep-23	Tuesday			5-Sep	5-Sep		
13-Sep-23	Wednesday	12-Sep				31-Aug	
14-Sep-23	Thursday		12-Sep	7-Sep	7-Sep	Monthly Recalc 29-Aug - 31-Aug	Daily Recalc 29-Aug; Daily Recalc 31-Aug; Monthly Recalc 29-Aug - 31-Aug;
15-Sep-23	Friday	14-Sep		Monthly Initial 05-Sep - 07-Sep		5-Sep	Daily Initial 05-Sep; Daily Initial 07-Sep; Monthly Initial 05-Sep - 07-Sep;
16-Sep-23	Saturday						
17-Sep-23	Sunday						
18-Sep-23	Monday		14-Sep				
19-Sep-23	Tuesday			12-Sep	12-Sep	7-Sep	
20-Sep-23	Wednesday	19-Sep				Monthly Recalc 05-Sep - 07-Sep	Daily Recalc 05-Sep; Daily Recalc 07-Sep; Monthly Recalc 05-Sep - 07-Sep;
21-Sep-23	Thursday		19-Sep	14-Sep	14-Sep		
22-Sep-23	Friday	21-Sep		Monthly Initial 12-Sep - 14-Sep		12-Sep	Daily Initial 12-Sep; Daily Initial 14-Sep; Monthly Initial 12-Sep - 14-Sep;
23-Sep-23	Saturday						
24-Sep-23	Sunday						
25-Sep-23	Monday		21-Sep				
26-Sep-23	Tuesday			19-Sep	19-Sep	14-Sep	
27-Sep-23	Wednesday	26-Sep				Monthly Recalc 12-Sep - 14-Sep	Daily Recalc 12-Sep; Daily Recalc 14-Sep; Monthly Recalc 12-Sep - 14-Sep;
28-Sep-23	Thursday		26-Sep	21-Sep	21-Sep		
29-Sep-23	Friday	28-Sep		Monthly Initial 19-Sep - 21-Sep		19-Sep	Daily Initial 19-Sep; Daily Initial 21-Sep; Monthly Initial 19-Sep - 21-Sep;
30-Sep-23	Saturday						
01-Oct-23	Sunday						
02-Oct-23	Monday		28-Sep				
03-Oct-23	Tuesday			26-Sep	26-Sep	21-Sep	
04-Oct-23	Wednesday					Monthly Recalc 19-Sep - 21-Sep	Daily Recalc 19-Sep; Daily Recalc 21-Sep; Monthly Recalc 19-Sep - 21-Sep;
05-Oct-23	Thursday			28-Sep	28-Sep		
06-Oct-23	Friday			Monthly Initial 26-Sep - 28-Sep		26-Sep	Daily Initial 26-Sep; Daily Initial 28-Sep; Monthly Initial 26-Sep - 28-Sep;
07-Oct-23	Saturday						
08-Oct-23	Sunday						

Market Simulation Settlements Calendar Fall 2023 :
https://www.caiso.com/Documents/MarketSimulationSettlementsCalendar-Fall2023.pdf

Energy storage enhancements Track 2 - Market Sim Scenario

Scenario Number	Structured scenario	
1	Description	Demonstrate proper settlement for energy storage resources for different ED types.
	ISO Actions	1) Operators will issue ED's for 2 storage resources to hold SOC. 2) Operators will then issue another ED for 1 storage resource with a "hold" ED to move SOC
	WEIM Market Participant Actions	N/A
	ISO Market Participant Actions	N/A
	Expected Outcome	Different ED types for storage resource are being settled properly.
	Anticipated Settlement Outcome	When an energy resource receives a Hold SOC ED, it is anticipated to have Real Time Excess Cost for Instructed Energy Settlement and Exceptional Dispatch Hold SOC Uplift Settlement.
	Expected Settlement Outcome	6482, 6485

Energy Storage Enhancements Track 2 - Market Sim Scenario

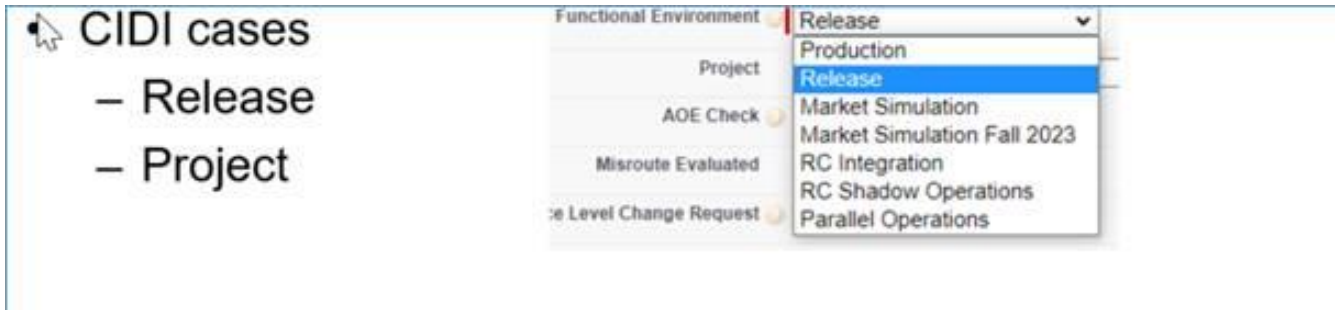
Scenario Number	Unstructured Guided scenario	
2	Description	Verify hourly do not charge from the grid bidding functionality for Standalone or Sub ACC constraints.
	ISO Actions	N/A
	WEIM Market Participant Actions	Submit hourly bid attribute type to not charge from the grid in RTM Submit economic bids for all the resources behind the standalone or sub ACC constraint; for LES resources, submit economic bids to charge/discharge.
	ISO Market Participant Actions	Submit hourly bid attribute to not charge from the grid in RTM and IFM Submit economic bids for all the resources behind the standalone or sub ACC constraint; for LES resources, submit economic bids to charge/discharge.
	Expected Outcome	Market shall enforce a withdrawal limit of 0 MW for the Standalone or Sub ACC constraint.
	Anticipated Settlement Outcome	N/A
	Expected Settlement Outcome	N/A

Energy Storage Enhancements Track 2 – Inputs to Lost Opportunity Cost

BRS Item	Location	Notes
SOC Hold ED, Start Time	ADS and CMRI	ADS: ED instructions, ED Type will be SYSEMR Constraint will be 'Fixed", GOTO MW will be 0 CMRI New Report Name: "Exceptional Dispatch Hold State of Charge" Report will contain: Trade Date, SCID, Resource, ED Start Time, ED End Time, SOC Hold Instruction (Y/N), Counterfactual Dispatch with Hold (MW) and Counterfactual Dispatch without Hold (MW)
RTD Resource Bids	SiBR and CMRI	SIBR (SC Submitted bid) or Clean Bid CMRI will have Mitigated Bids: "Real-Time Dispatch (RTD) Market Power Mitigation (MPM) Results"
RT SOC	Request via CIDI	Actual 5-minute RT SOC. New item with this project.
Upper and lower market energy capacity limits	Existing Calculation	These are the MEC limits calculated during the Expected Energy and Allocation process, as detailed in Market Operations BPM Appendix C, Item C.3. (Operating range once Operating Limits, Economic Limits, and AS capacities are applied.)
Minimum and maximum SOC levels	Master File	Submitted by market participant
PMin/PMax	Master File	Submitted by market participant
OMS Cards, RT Operating Limits	OMS	Submitted by market participant
RT Min and Max SOC	OMS	Submitted by market participant
Other EDs	ADS and Operations Procedure	2330C
AS Awards	CMRI	"Fifteen-Minute Market (FMM) Schedules"
RTD Resource Specific LMP	CMRI	"Real-Time Dispatch (RTD) Schedule Prices"
RT Economic Dispatch (RTL/UED)	Existing Calculation	These are the economic dispatch levels during the Expected Energy and Allocation process, as detailed in Market Operations BPM Appendix C, Item C.2.1. Essentially it's the intersection of the RTD Final Bid Curve and the RTD Resource Specific Price.
DEB for discharge	CMRI	"Default Energy Bid Curves " Select 'Storage' Default Bid Type
Efficiency Factor - Discharging	Master File	Submitted by market participant

Market Simulation Issue Management

- Submit all issues to the CIDI case management system
- CIDI tickets must have "**Functional Environment**" = "**Market Simulation Fall 2023**" to be reviewed by ISO SMEs
- Any feedback not related to market simulation "**Functional Environment**" = "**Release**".



Settlements update

The 2nd draft configuration output file for the Fall 2023 settlements release has been posted to caiso.com under ***Release Planning > 2023 releases > Fall 2023 > Fall 2023 settlements release > Draft settlements technical documents*.**

This configuration has been deployed to mapstage and will be used to calculate market simulation settlement statements beginning with trade date 9/5/23.

Please note :

- The calculation logic associated with Energy Storage Enhancement Track 2 is included but inactive.
- The Intertie Deviation Settlement configuration scope is active in mapstage for market simulation statements beginning with TD 9/5/23.

Fall 2023 Release Overview – System Interface Changes

System	Project	UI	API	Data/Comments	Tech Specs	MapStage
CIRA	MIC Enhancements	New: Plans > Manage Import Allocation > 1)SC Request Unassigned Import Capability 2)Reserved Import Capability 3)Contact Information New: Reports > Import Capability RA Report	NA		NA	8/14/2023
OASIS*	**MIC Enhancements**	New: Available Import Capability Data New: Import Capability used in RA Plan Data	New: AVAIL_IMP_CAP_GRP New: ANNUAL_IMP_CAP_USED_RA_PLAN_GRP MONTHLY_IMP_CAP_USED_RA_PLAN_GR		7/17/2023	8/14/2023

Fall 2023 Release Overview – System Interface Changes

System	Project	UI	API	Data/Comments	Tech Specs	MapStage
CMRI*	**ESET2**	**New** report to display Exceptional Dispatch Hold State of Charge New: Post-Market > Exceptional Dispatch Hold State of Charge	**New**: RetrieveStorageUpliftData_CMRIv1 RetrieveStorageUpliftData_CMRIv1_DocAttach		7/17/2023	09/19
SIBR*	**ESE2**	New Hourly feature on Hourly tab to elect Y/N for Off Grid Charge.	New optional element in xsd for 'offGridCharge' used by designated resource to manage Sub/Stand Alone ACC. RawBidSet, BidResults, CleanBidSet v5 xsd. Version 20231101.	New HourlyParameter for offGridCharge this is a Yes/No type that is optional.	8/10/2023	8/28
RIMS	**ESET2**	Existing: Existing > App & Study > Equipment Configuration tab > Generation as Modeled and Implemented grid	NA	> Pull storage resource MWh from MF > Add new field for calculated MWh > Add new field for storage resource duration in hours	NA	TBD
OASIS*	**ESET2**	Existing: Energy > System > Operator-Initiated Commitment report	Existing: System > Operator-Initiated Commitment report	New ED type Reason Code: “SOC Hold” and “SOC Charge”	7/17/2023	09/19

Fall 2023 Release Overview – System Interface Changes

System	Project	UI	API	Data/Comments	Tech Specs	Map Stage
ITS	**RSEE2T2**	Existing	NA	Exports e-Tagging SubmissiExports 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 on Requirement	NA	08/23
CMRI	**WA WEIM GHGE**	NA	NA	New Attributes/Records to indicate state/include GHG index price for each state	NA	09/07
OASIS*	**WA WEIM GHGE**	Existing: Prices > Index Prices > Greenhouse Gas Allowance Index Prices	Existing – Prices > Index Prices > Greenhouse Gas Allowance Index Prices	Add WA GHG index prices, display average of daily WA GHG price indices	7/17/2023	09/07
MF RDT*	**WA WEIM GHGE**	Add a new BAA level attribute to identify BAAs associated with Washington State	*SubmitGeneratorRDT_MFRDv5* *SubmitGeneratorRDT_MFRDv5_DocAttach* *RetrieveGeneratorRDT_MFRDv5* *RetrieveGeneratorRDT_MFRDv5_DocAttach* *Minor Version 20231001* *Added GHG section in the Elements Table* *- GHGComplianceObligFlag* *- GHGEmissionFactor* *- State*	*1. Convert the GHG details in 0..N nested element to record GHG details for each State applicable to the Generator.* *2. Add an additional element "State" to indicate CA, WA etc.*	8/10/2023	09/07
SIBR	**WA WEIM GHGE**	Existing	Existing	Consume WA GHG adders	NA	08/21

Fall 2023 Release Overview – System Interface Changes

System	Project	UI	API	Data/Comments	Tech Specs	MapStage
ADS*	**RSEE2T2**	Existing – bottom right grid for Instructions ADS will start showing under 'Instruction Type' column, values that include "EN", "DAPT", and "DALPT", with corresponding value in the 'Cleared MW' column. For multiple priority types, there will be multiple rows with the different Instruction Type/Priority and associated Cleared MW value.	Changes to getDispatchBatch v8 API to populate EN instructions and Breakdown of Cleared MW by priority types for Batch Type 5.	Currently, ADS only processes advisory, and with this RSEE2T2 change, it will start processing energy and showing Priority Type and Cleared MW.	8/10/2023	09/25
MF RDT*	**RSEE2T2**	Add a new Resource-Specific Capacity Test Failed-to-Start Rule Exemption flag	Add a new Resource-Specific Capacity Test Failed-to-Start Rule Exemption flag: capacityTestFTSExemptFlag under Resource Attributes		8/10/2023	09/07
CMRI*	**RSEE2T2**	*New report for resource-specific market priority types and associated MW schedules breakdown for export resources* *New: Day-Ahead > RUC Import Export Schedules by Market Priority Types*	***New**:* *RetrieveMarketPriorityType_CMRIv1* *RetrieveMarketPriorityType_CMRIv1_DocAttach*	*Similar to the Existing Day-Ahead > DA Import-Export Schedules report, but the Schedule Type column shall be replaced with "Market Priority Type" and its data enumeration shall be:* • *ETC/TOR* • *DAPT* • *DALPT* • *DAECON*	8/10/2023	09/25
CMRI*	**RSEE2T2**	*New report for resource-specific market priority types and associated MW schedules breakdown for export resources* *New: Real-Time > Real-Time Export Schedules by Market Priority Types*	***New**:* *RetrieveMarketPriorityType_CMRIv1* ***New:*** *RetrieveMarketPriorityType_CMRIv1_DocAttach*	*Similar to Existing Real-Time -> Real-Time Unit Commitment (RTUC) Advisory Schedules report, but only report binding intervals for export resources and the Schedule Type column shall be replaced with "Market Priority Type" and its data enumeration shall be:* • *ETC/TOR* • *DAPT* • *DALPT* • *DAECON* • *RTPT* • *DALPT* • *DAECON*	8/10/2023	09/25

Energy Storage Enhancements Track 2

- Use of Regulation Capacity/Energy during SOC ED intervals: If a unit is taken off of Regulation during SoC ED intervals, what does that mean for the unit's Regulation Capacity award? Does this become a No Pay/Buy Back process, or does the CAISO just go and procure additional Regulation Capacity to replace the unit for the held intervals without penalty to the unit in question?
  - This falls under existing methods for when a unit with AS is issued a SYSEMR ED instruction. Prior to issuing any hold/charge SOC ED, Operator confirms if the resource is already providing reg. In most cases, Operator would consider doing a hold/charge SOC ED if the resource is not a good candidate if battery is providing reg. If absolutely necessary, the Operator would buy back reg. If ISO takes a resource off reg, it is not a no-pay situation since the taking the action and the resource is providing. The ISO would buy back. If the ISO buys back and it's still not enough, then we would procure more. The ISO would coordinate and take it off AGC (reg award bought back); this is rare.

- What happens if a unit is put on an SoC hold but does not comply? Example: A storage unit is on an SoC ED with an instructed output of 0 MW/h. The RTD LMP at their location is consistently $1,000 and for some reason (possibly Regulation Energy dispatch, system error, human error, etc.) the unit discharges when it shouldn't have. Under the current proposal the unit would then receive $1000/MWh for their Uninstructed Imbalance Energy (UIE) as well as a $1000/MWh opportunity cost valuation for recovery under the counterfactual process.
  - There shall be compliance for any ED per the signed PGA and there are consequences/fees for non-compliance. The ISO recognizes that while there are high prices, hold SOC batter resources would be missing out, and the intention of the counterfactual payment is to make battery compensation whole for Settlements. UIE is not following market dispatch or manual dispatch. When ISO puts you at 0 then it is instructed.

- BRS references proposed "buy back" of residual SoC at the end of the day
  - This BRQ 094 and references to it will be removed from the BRS as this scope is not consistent with the policy or Tariff language

ESE2-BRQ094	For the final SOC difference between counterfactuals with and without ED: system shall calculate (SOC difference)*(DEB for discharge)	Core *Compliance: §11.5.6.1.2* *BPM: Market Operations*	Internal System

Energy Storage Enhancements Track 2

- To test this CAISO published scenarios "Demonstrate proper settlement for energy storage resources for different ED types." MPs will need the inputs/data of the counterfactual calculations (demonstrated by Monique in 08/17 Market Simulation call) that is used for the calculating the SOC ED opportunity cost. This data can help the MPs validate/verify the settlement results (CC6482, 6485). Can CAISO explain in detail how will the MPs have access to the RT SOC data for shadowing the opportunity cost calculations both in Market simulation and in Production?
  - Market Participants can submit a CIDI case requesting the SOC for the binding interval corresponding to the SOC HOLD reason type ED and the ISO will provide the values.

- The co-located "no charge from grid" flag can be changed between day ahead and real time.
  - The off-grid charging is a hourly biddable parameter in IFM and RTM. However, a mismatch in bids between RTM and IFM will trigger conditions as described in requirements 250, 251, and 254.

- Will the counter-factual calculation use the real time clean bids? If not (for example, if it uses bids in place at the time of the ED) how would the bid data be collected since it is not in SIBR in a stable form? If yes, isn't there a potential for strategic bidding that needs to be addressed? In other words, can't a battery change its real time bids after receiving an ED, for the hours in which charge is held, to inflate the opportunity costs compensated in the calculation?
  - The Final Bids – which include the mitigated and unmitigated bids used by the market - will help determine the economic dispatches for the counterfactual calculations. It is possible to increase the opportunity cost uplift if the RT bids are lowered within the accepted timelines. Any opportunity cost uplift will be accounted in RT BCR calculations across the day.

- If a co-located battery receives an ED to charge and then hold charge, will the charging be done from the co-located VER if possible (based on the flag), or will it immediately be considered to charge from the grid?
  - As per requirement 253, in the presence of any ED the off-grid charging is not observed.

- What if the counterfactual for a unit indicates that it would have been economic to charge the unit when it was on the SoC fold? How would the calculation account for the increase in SoC that would have occurred (and hence additional shift in opportunity costs)?
  - Counterfactual will account for this. Example presented 8/17 was updated and published.

WEIM Resource Sufficiency Evaluation Redesign Phase2

Limited functionality Impact to market simulation scenario :

- Scenario 1:
  - Auto Approvals for export G-FP tags with CAISO_PRIORITY_TYPE.
  - No verification against the market CAISO_PRIORITY_TYPE.
- Scenario 2:
  - Auto denial for export G-FP tags without CAISO_PRIORITY_TYPE.
  - Functionality providing auto denial for the tags not matching with market will not be available.
- Scenario 3:
  - Pro rata curtailment functionality - Not available for 09/25 market simulation.
- Scenario 4:
  - Available to test on 09/25

Scenario 1

- Auto Approvals for export G-FP tags with CAISO_PRIORITY_TYPE.
- No verification against the market CAISO_PRIORITY_TYPE.

Scenario Number	Unstructured scenario (RSEE2 Track -2)	
1	Description	Facilitate submission for **Auto Approval** of Export e-Tags with Product Code and CAISO_PRIORITY_TYPE.
	ISO Actions	N/A
	WEIM Market Participant Actions	a) Market Participants should e-tag several export resources as "Firm Provisional Energy (G-FP)" (via the Market Path product field) and mark "CAISO_PRIORITY_TYPE" in "Misc Info" as RTECON, RTLPT or DALPT b) Market Participants should e-tag several export resources as product type other than G-FP (via Market Path product field) and mark "CAISO_PRIORITY_TYPE" in "Misc Info" as DAPT or RTPT
	ISO Market Participant Actions	a) Market Participants should e-tag several export resources as "Firm Provisional Energy (G-FP)" (via the Market Path product field) and mark "CAISO_PRIORITY_TYPE" in "Misc Info" as RTECON, RTLPT or DALPT b) Market Participants should e-tag several export resources as product type other than G-FP (via Market Path product field) and mark "CAISO_PRIORITY_TYPE" in "Misc Info" as DAPT or RTPT
	Expected Outcome	Market Participants verify CISO approval of G-FP and other export resources e-tags in their own Web Smart Tag system. CAISO Operators will verify ITS for G-FP e-tags.
	Anticipated Settlement Outcome	N/A
	Expected Settlement Outcome	N/A

Scenario 2

- Auto denial for export G-FP tags without CAISO_PRIORITY_TYPE.
- Functionality providing auto denial for the tags not matching with market will not be available.

Scenario Number	Unstructured scenario (RSEE2 Track -2)	
2	Description	Facilitate submission for **Auto Denial** of Export E-Tags with incorrect Product Code and CAISO_PRIORITY_TYPE.
	ISO Actions	N/A
	WEIM Market Participant Actions	a) Market Participants should e-tag several export resources as "Firm Provisional Energy (G-FP)" (via the Market Path product field) and mark "CAISO_PRIORITY_TYPE" in "Misc Info" as DAPT, RTPT b) Market Participants should e-tag several export resources as product type other than G-FP (via Market Path product field) and mark "CAISO_PRIORITY_TYPE" in "Misc Info" as DALPT, RTLPT or RTECON
	ISO Market Participant Actions	N/A
	Expected Outcome	Market Participants verify e-Tags in their own Web Smart Tag system for denial. CAISO Operators will verify denial in ITS.
	Anticipated Settlement Outcome	N/A
	Expected Settlement Outcome	N/A

Scenario 3 – Pro rata curtailment functionality - Not available for 09/25 market simulation.

Scenario Number	Structured scenario (RSEE2 Track -2)	
3	Description	Verify Pro-Rata curtailment of low priority exports
	ISO Actions	a) CAISO initiates EEA3 level alert. b) CAISO initiates pro-rata curtailments of low priority exports of G-FP eTags with the following CAISO Priority types: • RTECON • RTLPT • DALPT (non-high priority DA export)
	WEIM Market Participant Actions	Market Participants should do the following before EEA3 alert is issued a) e-Tag several export resources as "Firm Provisional Energy (G-FP)" (via Market Path product field). b) Mark "CAISO_PRIORITY_TYPE" in "Misc Info" as RTECON, RTLPT, or DALPT c) e-Tag several export resources as product other than "Firm Provisional Energy (G-FP)" (via Market Path product field). d) Mark "CAISO_PRIORITY_TYPE" in "Misc Info" as DAPT, RTPT
	ISO Market Participant Actions	N/A
	Expected Outcome	Market Participants verify curtailed G-FP e-tags in their own Web Smart Tag system. CAISO Operators will verify ITS for the curtailed G-FP e-tags.
	Anticipated Settlement Outcome	N/A
	Expected Settlement Outcome	N/A

Scenario 4 – Available to test on 09/25

Scenario Number	Unstructured scenario (RSEE2 Track -2)	
4	Description	Verify ADS instructions include Market Priority when HASP results broadcast to ADS: CRN_ID, DAPT, DALPT, RTPT, RTLPT, RTECON
	ISO Actions	N/A
	WEIM Market Participant Actions	Market Participants should submit bids for different priority types on the same Resource or Transaction ID in order for ADS to dispatch one resource with more than one priority type. (i.e. submit a DA SS LPT on a specific resource or transaction ID, then also submit a RT SS LPT and a RTECON bid on that same resource or transaction ID)
	ISO Market Participant Actions	N/A
	Expected Outcome	Market Participants verify in ADS Market Priority CAISO Operators verify in ADS Market Priority
	Anticipated Settlement Outcome	N/A
	Expected Settlement Outcome	N/A

Energy Storage Enhancements SOC Constraint

- **Timeline:** 10/03 - 10/13

New approach for the ESE DA/RTM market SOC Constraint implementation:

- No changes to the formula from the ESE final proposal (10/27/22) and tariff filing (3/31/23)
- Instead of replacing the current Production SOC formula with the updated formula from the final proposal, a new formula will be added so both formulas will be active
- There are modifications to differentiate these two different SOC terms concurrently active in the market

Next steps:

- Market Notice was published on 10/04
- Additional information and results will also be published as an addendum to the workshop paper published 7/31/23
- Production Activation TD 11/1/23
- MAPSTAGE: Formulas & Attenuation Factors are active from TD 9/30 (See next slides for formulas & AS multipliers)

Energy Storage Enhancements SOC Constraint - Formulas

Both formulas will be concurrently active:

- $SOC_{i,t}^{AT} = SOC_{i,t-1}^{AT} - (EN_{i,t}^{(+)} + \eta_i EN_{i,t}^{(-)} + ATRU_t RU_{i,t} - ATRD_t \eta_i RD_{i,t}) \frac{\Delta T}{T_{60}}$
- $SOC_{i,t}^{EN} = SOC_{i,t-1}^{EN} - (EN_{i,t}^{(+)} + \eta_i EN_{i,t}^{(-)}) \frac{\Delta T}{T_{60}}$

Energy Storage Enhancements SOC Constraint – Attenuation Factors

COMMODITY_TYPE	HOUR_END	VALUE
TRU	1	0.11
TRD	1	0.32
TRU	2	0.04
TRD	2	0.39
TRU	3	0.04
TRD	3	0.36
TRU	4	0.02
TRD	4	0.38
TRU	5	0.03
TRD	5	0.35
TRU	6	0.04
TRD	6	0.33
TRU	7	0.07
TRD	7	0.3
TRU	8	0.04
TRD	8	0.47
TRU	9	0.04
TRD	9	0.51
TRU	10	0.05
TRD	10	0.54
TRU	11	0.05
TRD	11	0.5
TRU	12	0.06
TRD	12	0.44

COMMODITY_TYPE	HOUR_END	VALUE
TRU	13	0.05
TRD	13	0.44
TRU	14	0.06
TRD	14	0.39
TRU	15	0.06
TRD	15	0.4
TRU	16	0.06
TRD	16	0.43
TRU	17	0.06
TRD	17	0.51
TRU	18	0.08
TRD	18	0.5
TRU	19	0.11
TRD	19	0.43
TRU	20	0.08
TRD	20	0.58
TRU	21	0.05
TRD	21	0.63
TRU	22	0.08
TRD	22	0.41
TRU	23	0.08
TRD	23	0.4
TRU	24	0.03
TRD	24	0.43