



# Market Simulation – Fall 2023

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# Agenda

- Fall 2023 Market Simulation Initiatives & Timelines
- Initiatives
  - WEIM resource sufficiency evaluation redesign phase 2
  - Energy storage enhancements Track 2
  - Washington WEIM greenhouse gas enhancements
  - Hybrid Resources 2C – Metered Quantities
  - Maximum import capability enhancements
- Fall 2023 - System Interface Changes
- MAP Stage Availability
- Next Steps

# Fall 2023 Market Simulation Initiatives & Timelines

<u>Fall 2022 Initiatives</u>	<u>Start Date</u>	<u>Start Date (Trade Date)</u>	<u>End Date</u>	<u>Structured Simulation Start (Trade Date)</u>
<b><u>Fall 2022 Market Simulation</u></b>	08/14	08/14	09/29	
Maximum import capability enhancements	08/14	08/14	09/29	08/17
Energy storage enhancements Track 2	09/18	09/18	09/29	09/19, 09/20, 09/21
Washington WEIM greenhouse gas enhancements	09/07	09/07	09/29	N/A
WEIM resource sufficiency evaluation redesign phase 2	09/14	09/14	09/29	09/14
Hybrid Resources 2C – Metered Quantities	09/07	09/07	09/29	N/A

## Market Simulation Plan:

<https://www.caiso.com/Documents/MarketSimulationPlan-Fall2023Release.pdf>

# WEIM Resource Sufficiency Evaluation Redesign Phase2

- **Timeline:** 09/14 - 09/29
- **Structured:** 09/14

Structured Scenarios document -

<https://www.aiso.com/Documents/MarketSimulationStructuredScenarios-ResourceSufficiencyEvaluationEnhancements-Phase2Track2.pdf>

# Energy Storage Enhancements Track 2

- **Timeline:** 09/18- 09/29
- **Structured:** 09/19, 09/20, 09/21

Structured Scenarios document -

<https://www.caiso.com/Documents/MarketSimulationStructureScenarios-EnergyStorageEnhancementsTrack2.pdf>

# 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 hold? How would the calculation account for the increase in SoC that would have occurred (and hence additional shift in opportunity costs)?

# Hybrid Resources 2C – Metered Quantities

- **Timeline:** 09/07- 09/29
- 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.

## Washington WEIM greenhouse gas enhancements

- **Timeline:** 09/07 - 09/29



# Maximum Import Capability Enhancements

- **Timeline:** 08/14 - 09/29
- **Structured:** 8/17

Structured Scenarios Document –

<https://www.caiso.com/Documents/Market-Simulation-Structured-Scenarios-Maximum-import-capability-enhancements.pdf>

# 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	09/14
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	<i>New report for resource-specific market priority types and associated MW schedules breakdown for export resources</i>  <i>New: Day-Ahead &gt; RUC Import Export Schedules by Market Priority Types</i>	<b>New:</b> RetrieveMarketPriorityType_CMRIv1 <b>New:</b> RetrieveMarketPriorityType_CMRIv1_DocAttach	<i>Similar to the Existing Day-Ahead &gt; DA Import-Export Schedules report, but the Schedule Type column shall be replaced with "Market Priority Type" and its data enumeration shall be:</i> <ul style="list-style-type: none"> <li>• ETC/TOR</li> <li>• DAPT</li> <li>• DALPT</li> <li>• DAECON</li> </ul>	8/10/2023	09/14
CMRI*	RSEE2T2	<i>New report for resource-specific market priority types and associated MW schedules breakdown for export resources</i>  <i>New: Real-Time &gt; Real-Time Export Schedules by Market Priority Types</i>	<b>New:</b> RetrieveMarketPriorityType_CMRIv1 <b>New:</b> RetrieveMarketPriorityType_CMRIv1_DocAttach	<i>Similar to Existing Real-Time -&gt; 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:</i> <ul style="list-style-type: none"> <li>• ETC/TOR</li> <li>• DAPT</li> <li>• DALPT</li> <li>• DAECON</li> <li>• RTPT</li> <li>• DALPT</li> <li>• DAECON</li> </ul>	8/10/2023	09/14

# Fall 2023 Release Overview – System Interface Changes

System	Project	UI	API	Data/Comments	Tech Specs	Map Stage
ITS	RSEE2T2	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: <ul style="list-style-type: none"> <li>o RT economic (RTECON) exports that clear HASP</li> <li>o DA economic (DAECON) exports that clear both RUC and HASP</li> <li>o RTLPT exports that clear HASP</li> <li>o DALPT exports that clear both RUC and HASP</li> </ul> > SCs shall be required to e-tag the following as “Firm Energy (G-F)”: <ul style="list-style-type: none"> <li>o RTPT exports that clear HASP</li> <li>o DAPT exports that clear both RUC and HASP</li> </ul> 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	<i>SubmitGeneratorRDT_MFRDv5</i> <i>SubmitGeneratorRDT_MFRDv5_DocAttach</i> <i>RetrieveGeneratorRDT_MFRDv5</i> <i>RetrieveGeneratorRDT_MFRDv5_DocAttach</i> <i>Minor Version 20231001</i> Added GHG section in the Elements Table <ul style="list-style-type: none"> <li>- GHGComplianceObligFlag</li> <li>- GHGEmissionFactor</li> <li>- State</li> </ul>	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
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	09/18
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	09/18
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	09/18

# 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	<a href="#">8/14/2023</a>
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		<a href="#">7/17/2023</a>	<a href="#">8/14/2023</a>

# 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

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Page 14

# Next Steps

- The next teleconference is scheduled on September 7<sup>th</sup> 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	<ol style="list-style-type: none"> <li>1. Submit request for unassigned import capability as part of step 13 of the import allocation process for 2023 &amp; 2024 RA years.</li> <li>2. Upload trades and RA showing for 2023.</li> <li>3. Update contact information for 2023.</li> <li>4. Update the reserve versus tradeable capability for 2023.</li> <li>5. Validate two new OASIS reports for 2023                             <ul style="list-style-type: none"> <li>• OASIS &gt; Resource Adequacy &gt; Available Import Capability</li> <li>• OASIS &gt; Resource Adequacy &gt; Import Capability Used in RA Plan Data (Monthly &amp; Annually)</li> </ul> </li> </ol>
	Expected Outcome	Participants to verify: <ol style="list-style-type: none"> <li>a) Submitting Step 13 request for Unassigned Import Capability.</li> <li>b) Monthly available Import capability.</li> <li>c) Monthly / Annual import capability in RA plan.</li> <li>d) OASIS reports                             <ol style="list-style-type: none"> <li>i. OASIS &gt; Resource Adequacy &gt; Available Import Capability</li> <li>ii. OASIS &gt; Resource Adequacy &gt; Import Capability Used in RA Plan Data (Monthly &amp; Annually)</li> </ol> </li> </ol>
	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](mailto:MarketSim@caiso.com)

# Fall 2023 Communication Plan

- **Schedule**

<b><i>Monday</i></b>	<b><i>Tuesday</i></b>	<b><i>Thursday</i></b>
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

# 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

# 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](mailto: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



## 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 T+9B	Publish Initial Statement T+6B	Submit Meter Data by T+6B 18:00 for Recalc T+70B	Publish Recalc Statement T+8B T+70B	Publish Market Invoice
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						
05-Sep-23	Tuesday		31-Aug			ISO Holiday	
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			29-Aug	Daily Initial 29-Aug; Daily Initial 31-Aug; Monthly Initial 29-Aug - 31-Aug;
12-Sep-23	Tuesday			Monthly Initial 29-Aug - 31-Aug	5-Sep		
13-Sep-23	Wednesday	12-Sep				31-Aug	
14-Sep-23	Thursday		12-Sep	7-Sep	7-Sep		Daily Recalc 29-Aug; Daily Recalc 31-Aug; Monthly Recalc 29-Aug - 31-Aug;
15-Sep-23	Friday	14-Sep				Monthly Recalc 29-Aug - 31-Aug	Daily Initial 05-Sep; Daily Initial 07-Sep; Monthly Initial 05-Sep - 07-Sep;
16-Sep-23	Saturday			Monthly Initial 05-Sep - 07-Sep		5-Sep	
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					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				12-Sep	Daily Initial 12-Sep; Daily Initial 14-Sep; Monthly Initial 12-Sep - 14-Sep;
23-Sep-23	Saturday			Monthly Initial 12-Sep - 14-Sep			
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					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				19-Sep	Daily Initial 19-Sep; Daily Initial 21-Sep; Monthly Initial 19-Sep - 21-Sep;
30-Sep-23	Saturday			Monthly Initial 19-Sep - 21-Sep			
01-Oct-23	Sunday						
02-Oct-23	Monday		28-Sep				
03-Oct-23	Tuesday			26-Sep	26-Sep	21-Sep	
04-Oct-23	Wednesday						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					26-Sep	Daily Initial 26-Sep; Daily Initial 28-Sep; Monthly Initial 26-Sep - 28-Sep;
07-Oct-23	Saturday			Monthly Initial 26-Sep - 28-Sep			
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