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Release User Group Agenda

September 5, 2023   *10:00 a.m.–11:00 a.m.* (Pacific Time)

Web Conference Information	Conference Call Information
Web Address: https://caiso.webex.com/caiso/j.php?MTID=m8f4dee2c7059898b3609c46be3cd2c20 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.	*1-844-621-3956 United States Toll Free* *+1-650-479-3208 United States Toll* *Meeting number (access code): 2491 042 7352*

Calls and webinars are recorded for stakeholder convenience, allowing those who are unable to attend to listen to the recordings after the meetings. The recordings will be publicly available on the ISO web page for a limited time following the meetings. The recordings, and any related transcriptions, should not be reprinted without the ISO's permission.
https://www.caiso.com/informed/Pages/MeetingsEvents/UserGroupsRecurringMeetings/Default.aspx#RUG
http://www.caiso.com/informed/Pages/ReleasePlanning/Default.aspx

ISO Training Schedule

Training Course	Date and time
RSEE Phase 2, Track 2 Pre-Market Sim Training	September 7 8:30am – 10:00am PPT
Energy Storage Enhancements Track 2 Pre-Market Sim Training	September 13 10:30am – 12:30am PPT
Transmission Registry Upgrade Training	September 26 9:00am – 10:00am PPT

New! Use our Fall 2023 Pre-Training Release Survey to submit topics that you would like to see covered in the upcoming training.

Are you looking for more training?

The ISO Learning Center has computer based training available for lots of topics. Check out the Learning Center: http://www.caiso.com/participate/Pages/LearningCenter/default.aspx

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CustomerReadiness@caiso.com

Release Plan Summary

Release Communication

Fall 2023 Release

    Maximum Import Capability Enhancements

    Washington WEIM Greenhouse Gas Enhancements & Interim Solution Effective May 1, 2023

    WEIM Resource Sufficiency Evaluation Enhancements Phase 2 Track 2 – Post HASP Curtailments

    Energy Storage Enhancements Track 2

    Hybrid Resources 2C – Metered Quantities

Independent 2023 Releases

    Variable Operations & Maintenance Cost Review

    Flexible Ramping Product Refinements – Nomogram Constraints

    URL & IP Changes – Application Delivery Resiliency

    Operations Notification System

    Transmission Registry System Upgrade

2024 Releases

    Transmission Service & Market Scheduling Priorities Phase 2

    Transmission Exchange Agreement

    Hybrid Resources Phase 2C – RIMS

    WEIM Resource Sufficiency Evaluation Enhancements Phase 2 Track 3 – DR Inclusion

    Congestion Revenue Rights System Upgrade

Fall 2024 Release

    Day-Ahead Market Enhancements

    Extended Day-Ahead Market

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Release Communication

- CIDI cases
  - Release
  - Project

- release@caiso.com

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Fall 2023 Release

Fall 2023 Release Overview

Project	BOG	Tariff	BRS	Settlements CG	Settlements Effective Date	Technical Specifications	Market Simulation	Production Activation
MIC Enhancements	Nov 2022 – Approved	Accepted 5/28/21 Accepted 3/18/22	04/11/22 08/21/23 1.1	NA	NA	OASIS 7.4.0 7/17/23	8/14/23 – 9/29/23	11/1/23
Washington WEIM Greenhouse Gas Enhancements	Oct 2022 - Approved	Filed 11/21/22 Accepted 02/10/23 Filed Amendment 03/13/23 Amendment Accepted 04/20/23 **Waiver Accepted 08/24/23**	02/06/23	NA	NA	• MFRDT • MFRDT file • RDT Definitions • OASIS 7.4.0 7/17/23	9/7/23 – 9/29/23	11/1/23
WEIM Resource Sufficiency Evaluation Enhancements Phase 2 Track 2	Approved 12/14/22	NA	• 02/10/23 • 03/31/23 1.1 • 06/27/23 1.2 • **09/05/23 1.3**	NA	NA	• MFRDT • MFRDT file • RDT Definitions • CMRI 6.4.1 8/10/23 • ADS 8/10/23	**9/14/23 – 9/29/23**	11/1/23
Energy Storage Enhancements Track 2	Approved 12/14/22	• Draft 02/10/23 • Revised DTL 03/15/23 • Filed 03/31/23 • Track 2 Filed 08/01/23	• 05/25/23 • 06/29/23 1.1 • 08/08/23 1.2 • 08/18/23 1.3 • **Sep 2023 1.4**	• 02/17/23: Tech Doc • 1st DCF 07/26/23 • **2nd DCF 9/6/23** • Pre-prod DCF 10/18 • Prod deploy 10/25	1st of the month; new CCs	• CMRI 6.4.0 7/17/23 • OASIS 7.4.0 7/17/23 • SIBR 17 8/14/23	Start 9/18/23	11/1/23
Hybrid Resources 2C – Metered Quantities			08/17/23	NA	NA	NA	9/7/23 – 9/29/23	11/1/23

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Fall 2023 Release Overview – System Impacts

Project	ADS	CIRA	CMRI	ITS	Master File	MF RDT	OASIS	OMS	RIMS	MRI-S Metering	Settlements	Market	SIBR
MIC Enhancements		X					X*						
WA WEIM GHG Enhancements			X		X	X*	X*				X	X	X
WEIM Resource Sufficiency Evaluation Enhancements Phase 2 Track 2	X		X*	X	X	X*						X	
Energy Storage Enhancements Track 2			X*	X	X		X*	X	X		X	X	X*
Hybrid Resources 2C – Metered Quantities										X			

X* = Technical Specifications

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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.	8/10/23	9/14/23
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		7/17/23	9/18/23

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Fall 2023 Release Overview – System Interface Changes

System	Project	UI	API	Data/Comments	Tech Specs	MAPSTAGE
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* ***New**: 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*	8/10/23	9/14/23
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*	8/10/23	9/14/23
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"	7/17/23	9/18/23
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		8/10/23	9/7/23

Fall 2023 Release Overview – System Interface Changes

System	Project	UI	API	Data	Tech Spec	MAPSTAGE
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	9/18/23
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: 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	8/23/23
CMRI	WA WEIM GHGE	NA	NA	New Attributes/Records to indicate state/include GHG index price for each state	NA	9/7/23
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	7/17/23	9/7/23
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.*	8/10/23	9/7/23
SIBR	WA WEIM GHGE	Existing	Existing	Consume WA GHG adders	NA	8/21/23
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.	8/10/23	8/21/23

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Fall 2023 Release Overview – System Interface Changes

System	Project	UI	API	Data	Technical Specifications	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	8/14/23
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		7/17/23	8/14/23

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Fall 2023 – MIC Enhancements

Project Information	Details
High Level Project Scope	The purpose of this initiative is to address potential improvements to either the calculation of Maximum Import Capability or the process used to allocate and track it during Resource Adequacy validation process. This initiative will focus on the following scope items: 1. Additional transparency with making data publicly available 2. Inclusion of contractual data from non-CPUC jurisdictional LSEs into the main portfolio 3. Request for MIC expansion 4. Give "same day priority" to the step 13 unallocated Remaining Import Capability for LSEs with existing RA Contracts 5. Update Tariff and BPM language to be consistent with current approved practice
BPM Changes	Reliability Requirements, Transmission Planning Process, Market Instruments
Tariff Changes	Yes
Impacted Systems	CIRA, OASIS

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Fall 2023 – MIC Enhancements

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board Approval	Nov 03, 2021	✓
External BRS	Post External BRS BRS 1.1	Apr 11, 2022 Aug 21, 2023	✓ ✓
Tariff	ER21-1469 Accepted ER22-844 Accepted	May 28, 2021 Mar 18, 2021	✓ ✓
BPMs	Draft BPM changes – Reliability Requirements Draft BPM changes – Market Instruments BPM changes approved – Transmission Planning Process	Jul 27, 2023 Jul 28, 2023 May 18, 2022	✓ ✓ ✓
Tech Spec	CIRA OASIS	NA Jul 17, 2023	✓ ✓
Training	Training	Aug 7, 2023	✓
Market Sim Scenarios	Market Sim Scenarios	Jul 28, 2023	✓
Market Sim	Market Sim Window	Aug 14, 2023 – Sep 29, 2023	
Production Activation	Maximum Import Capability (MIC) Enhancements	Nov 1, 2023	

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Fall 2023 – WA WEIM GHG Enhancements - Overview

Project Information	Details/Date
High Level Business Problem or Need	Pursuant to State of Washington's recently revised Clean Air Act and beginning in 2023, Washington (WA) will require reporting of emissions associated with Western Energy Imbalance Market (WEIM) transactions. Emissions reporting is a key element of Washington's new cap-and-invest program that sets a limit on overall carbon emissions in Washington and requires emitters to obtain allowances equal to their covered GHG emissions. This initiative comprises the first phase of enhancements to support reporting WEIM transactions for emissions year 2022. As reporting rules continue to develop, additional enhancements outside of the scope of this initiative will likely be necessary.
High Level Project Scope	• Identify resources within WA State boundary • Update WA State associated resources' greenhouse gas (GHG) reference levels with dynamic pricing using vendor-provided indices • Note: while Tariff stipulates use of static pricing as an interim measure prior to the first Washington allowance auction, due to implementation timing, this is not anticipated to be necessary. This first auction is scheduled for February 28, 2023. • Calculate and publish monthly projected GHG prices for Washington State • Develop reports to support WEIM Entity annual reporting to Washington State
BPM Changes	Energy Imbalance Market (EIM), Market Instruments
Tariff Changes	Sections 30.4.4.5, 30.4.5.2, 39.6.1.6.2, 39.7.1.1.1.1, 39.7.1.1.1.2, 39.7.1.1.1.4
Impacted Systems	MF, Internal System, SIBR, OASIS

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Fall 2023 – WA WEIM GHG Enhancements - Overview

System	High Level Changes
MF	• New rule to verify that relevant resources within WA State must provide resource specified GHG emission rate • New attribute at the BAA level to identify BAAs associated with Washington State • New attribute to associate resources within WA State with the State of WA to identify resources with GHG obligation • Exception: BPA—not subject to WA reporting rule

Internal System	• Reference level (commitment costs/DEBs) changes to reflect GHG costs
	    • DEBs to include GHG components for generators inside WA State
	    • Update GHG startup cost curve for resources inside WA State
	    • Update Greenhouse Gas Minimum Load Cost Allowance
	• Differentiate between CA and WA resources
	• Capture WA GHG price in the resource-specific minimum load and startup GHG adders for the purposes of commitment cost calculations

SIBR	• Receive startup GHG adders for the purposes of commitment cost calculations for WA State resources • Confirm GHG curves generated for WEIM resources within WA State are successfully received and processed
OASIS	• Add WA GHG index prices to existing GHG Index Price OASIS report • Only applicable for dynamic GHG pricing

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Fall 2023 – WA WEIM GHG Enhancements

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	Oct 26, 2022	✓
	WEIM Governing Board Approval	Oct 26, 2022	✓
External BRS	Publish External BRS	Feb 06, 2023	✓
Settlements Config Guides	Settlements Config Guides	NA	
Tech Spec	MFRDT Tech Spec MF RDT File Draft RDT Definitions Draft OASIS	Aug 10, 2023 Aug 16, 2023 Aug 18, 2023 Jul 17, 2023	✓ ✓ ✓ ✓
Tariff	File Tariff ER23-474 Tariff Accepted Filed Amendment Amendment Accepted Waiver Accepted	Nov 21, 2022 Feb 10, 2023 Mar 13, 2023 Apr 20, 2023 Aug 24, 2023	✓ ✓ ✓ ✓
BPMs	Publish Draft BPM for Interim Solution – WEIM PRR 1506 Publish Draft BPM for Interim Solution – Market Instruments PRR 1507 **Publish Draft BPM for full functionality – Market Instruments PRR 1534** **Publish Draft BPM for full functionality – WEIM PRR 1535**	Apr 26, 2023 Apr 26, 2023 **Aug 24, 2023** **Aug 24, 2023**	✓ ✓ ✓ ✓
Training	**Training**	**Aug 28, 2023**	✓
Market Sim	Unstructured Testing	Sep 7, 2023 – Sep 29, 2023	
Production Activation	Interim Solution WA WEIM GHG Enhancements	May 01, 2023 Nov 01, 2023	✓

2023 – WA WEIM GHG Enhancements – Interim Solution

✓ Effective May 1, 2023, the CAISO has implemented an alternative interim solution to activate functionality in the Washington WEIM GHG Enhancements initiative.

• The alternative interim solution would allow SCs for resources in Washington to reflect their GHG costs in the default energy bids and commitment costs.

• This effectively activates the tariff language for this initiative and the alternative interim solution will remain in effect until it is replaced with the full initiative implementation later this year. We don't expect the interim solution to delay the implementation of the full functionality.

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Fall 2023 – WEIM Resource Sufficiency Evaluation Enhancements Phase 2 Track 2

Project Information	Details
High Level Project Scope	• **Track-2** 　• Item2A – Clarification of Post-HASP Block Hour Low-Priority Export 　　• Operator-Driven Low-Priority Export Curtailment 　　　• CAISO operator's ability to initiate pro-rata curtailment based on identified MW, given the following priority order: 　　　　• RTECON (RT economic hourly block export schedules that clear HASP). 　　　　• RTLPT (RT Self-Schedule hourly block export schedules not backed by Generation from non-RA Capacity and cleared HASP). 　　　　• Non-high-priority DA export [i.e. DAECON (DA economic hourly block export schedules that clear both RUC and HASP), or DALPT (DA hourly block export schedules not backed by Generation from non-RA Capacity that also cleared both RUC and HASP and are protected Self-Schedules)] 　　　• CAISO operator's ability to identify/filter exports by market priority types as well as "Firm Provisional Energy (G-FP)" eTag identifier. 　　　• Publish resource-specific market priority types and their associated MW data to ADS. • Item2B – Develop MF resource identification Capacity Test Failed-to-Start Rule Exemption flag to allow SCs of WEIM and CISO short start units that start with non-positive telemetry to identify specific resources that will be exempted from this functionality in RSE Capacity test. (Implemented in Phase 1 – enhancements needed)
BPM Changes	WEIM, Market Instruments, Market Operations
Tariff Changes	Yes
Impacted Systems	MF, Market, ITS, ADS

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Fall 2023 – WEIM Resource Sufficiency Evaluation Enhancements Phase 2 Track 2

System	High Level Changes
MF	• Definition and Submission of Resource-Specific Capacity Test Failed-to-Start Rule Exemption Flag via GRDT • Make Resource-Specific Capacity Test Failed-to-Start Rule Exemption flag accessible to downstream systems.
ITS	• Clarification of Post-HASP Block Hour Low-Priority Export • Consume DAM Resource-Specific Market Priority Types and Resource-specific RUC Energy Awards from RUC. • Consume All Resource-Specific Market Priority Types from RTM. • SCs shall be required to submit Misc Info field Prior Type attribute for "Firm Provisional Energy (G-FP)" e-tags to identify RTECON, DAECON, RTLPT, DALPT. • SCs shall be required to submit Misc Info field Prior Type attribute for "Firm Energy (G-F)" e-tags to identify RTPT, DAPT. • Validate submitted export e-Tags against data received from RUC and RTM to approve/deny and adjust (if warranted) the submitted e-Tags.
Market	• Access Resource-Specific Capacity Test Failed-to-Start Rule Exemption flag from MF. • Exempt Specific Resources from Capacity Test Failed-to-Start Rule/Functionality. • Clarification of Post-HASP Block Hour Low-Priority Export • Broadcast All Resource-specific market priority types to ITS (from RTM).
ADS	• Clarification of Post-HASP Block Hour Low-Priority Export • Consume Resource-Specific Market Priority Types and their Associated MW Data from RTM. • Publish Resource-Specific Market Priority Types and their Associated MW Data. • Include Resource-Specific Market Priority Types in ADS Query Functionality.

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Fall 2023 – WEIM Resource Sufficiency Evaluation Enhancements Phase 2 Track 2

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval WEIM Governing Board Approval	Dec 14, 2022	✔
External BRS	Post External BRS Post External BRS v1.1 Post External BRS v1.2 **Post External BRS v1.3**	Mar 10, 2023 Mar 31, 2023 Jun 27, 2023 **Sep 05, 2023**	✔ ✔ ✔ ✔
Settlements Config Guides	NA	NA	
Tech Spec	MFRDT Tech Spec MF RDT File Draft RDT Definitions Draft CMRI ADS	Aug 10, 2023 Aug 10, 2023 Aug 16, 2023 Aug 18, 2023 Aug 10, 2023	✔ ✔ ✔ ✔ ✔
Tariff	Tariff	NA	
BPMs	**Draft BPM changes – WEIM PRR 1532** **Draft BPM changes – Market Instruments PRR 1537** **Draft BPM changes – Market Operations PRR 1536**	**Aug 24, 2023** **Aug 25, 2023** **Aug 24, 2023**	✔ ✔ ✔
Training	Training	Sep 07, 2023	
Market Sim Scenarios	Market Sim Scenarios	Jul 28, 2023	✔
Market Sim	Market Sim Window	Sep 14, 2023 – Sep 29, 2023	
Production Activation	Resource Sufficiency Evaluation Enhancements Phase 2 Track 2	Nov 01, 2023	

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Fall 2023 – WEIM Resource Sufficiency Evaluation Enhancements Phase 2 Track 2 BRS 1.3 – 9/6/23

Updated for the following:

- Section 1.3 (Scope), Section 4 (Details of Business Need/Problem), RSEE2-BRQ-03060 (Track-2) – Item2A
  - Updated to remove DAECON enumeration and clarify that DAECON is rolled over to DALPT.
- RSEE2-BRQ-02160 (Track-3) – item3A
  - Revised the DR Performance Adjustment process.
- RSEE2-BRQ-02170 (Track-3) – Item3A
  - Updated calculation to show application of DR Performance Adjustment percentage of 75%
- RSEE2-BRQ-03060 (Track-2) – Item2A
  - Updated to clarify use of CAISO Priority Type Misc field.
  - Updated ETC/TOR market priority types tags to enter CRN in CAISO Contract field.
  - Updated to revise CRN market priority type to ETC/TOR.
- RSEE2-BRQ-03080 (Track-2) – Item2A
  - Updated to remove DAECON enumeration and clarify that DAECON is rolled over to DALPT.
  - Updated to revise validation rules regarding CRN.
  - Updated to revise CRN market priority type to ETC/TOR.
  - Updated to add clarification bullet that validations will apply to newly created eTags as well as modifications to existing eTags.
- RSEE2-BRQ-03160
  - Updated to remove DAECON enumeration.
- RSEE2-BRQ-04010, RSEE2-BRQ-05480 (Track-2) – item2A
  - Added to roll over DAECON to DALPT.
- RSEE2-BRQ-08040 (Track-2) – item2A
  - Updated to remove DAECON enumeration and clarify that DAECON is rolled over to DALPT.
  - Updated to clarify inclusion of CRN ID and Type
- RSEE2-BRQ-08560, RSEE2-BRQ-08580 (Track-2) – item2A
  - Updated to remove DAECON enumeration and clarify that DAECON is rolled over to DALPT.
  - Updated to clarify inclusion of CRN ID and Type
  - Add a note to publish CRN and CRN Type for CMRI reports.
- RSEE2-MSIM-10060, RSEE2-MSIM-10080 (Track-2) – item2A
  - Updated to remove DAECON enumeration and clarify that DAECON is rolled over to DALPT.
- RSEE2-MSIM-10100 (Track-2) – item2A
  - Updated to remove DAECON enumeration.
- Appendix-D: Reports
  - Added for new CMRI report data samples for the two CMRI reports.

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Fall 2023 – Energy Storage Enhancements Track 2

Project Information	Details
High Level Business Problem or Need	This initiative evolves processes and systems to help storage resource scheduling coordinators better manage resource state of charge and continue to ensure efficient market outcomes. The purpose of this initiative is to enhance reliability tools and the co-located model with regards to storage resources. The reliability enhancements include updates to bidding rules, exceptional dispatch of storage resources, storage resource opportunity costs, and local area minimum online constraints. The co-located model enhancements include preventing co-located resources from charging when beyond generation levels for on-site resources and allowing pseudo-tied resources to use the co-located model. The scope of Track 1 covered the enhancements for Summer 2023 Release. The remaining scope in the Energy Storage Enhancements Policy is covered in Track 2 for Fall 2023 Release.

High Level Project Scope	**Reliability Enhancements**
	• Include lost opportunity from not generating in storage compensation due to hold Exceptional Dispatch (ED) to hold SOC (i.e. 0 MW ED)
	
	    • Calculate counterfactual energy revenues with and without the SOC hold ED
	
	    • If prices are below bids counterfactuals will not include discharges
	
	    • Use actual LMPs (the ISO will not generate counterfactual LMPs)
	
	    • Include SOC hold ED period through the end of the day in time horizon
	
	• Allow for Exceptional Dispatches (EDs) to be issued for storage resources to hold SOC
	    • Develop functionality within ED User Interface; automate existing excel tool functionality
	    • Storage may receive a traditional ED or an SOC ED, but not both
	Co-Located Model Enhancements
	• Develop an electable co-located model available to all storage resources
	    • Storage schedules to never exceed renewable schedules (i.e. no grid charging)
	    • Storage may deviate down to match solar, when solar is producing less than schedules in real-time
	    • Deviations to be subject to imbalance energy charges
	    • Require storage resources to submit outages when depleted and unable to charge
	    • Require all resources to respond to operator and ED instructions within physical bounds of operation
	• Allow for co-located pseudo-tie resources to apply Aggregate Capability Constraint (ACC)
	    • Resources under an ACC must be pseudo-tied from the same BAA

BPM Changes	Market Operations, Settlements & Billing
Impacted Systems	Settlements, Market, CMRI, RIMS, MF, OASIS, ADS, OMS, ITS

Fall 2023 – Energy Storage Enhancements Track 2

System	High Level Changes
Market	• Allow operator to enter exceptional dispatch (ED) in the market to allow for EDs of storage resources by SOC in addition to capacity • Update the definition of EDs to allow the operator to enter EDs for storage resources identified with two new Reason Codes under Instruction Type: System Emergency ("SYSEMR")
ADS	ADS consumes new ED Reason Codes ("SOC Hold" and "SOC Charge") applicable to storage resources
Settlements	• New rules to align with Tariff settlement language for SOC formula • New inputs for the storage resource ED opportunity cost values • Design and configure new charge code for the allocation of ED SOC uplift • Modify real-time bid cost recovery (BCR) charge code to account for revenue from storage resources ED SOC uplift • Configure No Pay rules and assessment for ED SOC
CMRI	Receive and shall publish the ED SOC information using new UI and API on a new report entitled "Exceptional Dispatch Hold State of Charge"
OASIS	Receive and publish new ED reason Codes ("SOC Hold" and "SOC Charge") under System Emergency Instruction Type as "Reason" on the Operator Initiated Commitment OASIS Report
RIMS	• Add field for storage resource duration (hours) • Add field for calculated MWh • Calculate energy (MWh) using duration*MW • Allow pseudo tied resources to be modeled as co-located
MF	• Apply co-located flag to pseudo tied resources • Set minimum ACC constraint to zero for co-located resources that cannot or choose not to not grid charge • New MF attribute to denote resources that select to not grid charge
OMS	Storage resources must submit outage cards if: • The co-located VER cannot provide the charging energy as forecasted per Tariff requirements • System shall require storage resources to submit outage cards if the resource has depleted its SOC and there is no ability to charge the resource per Tariff requirements
ITS	System shall model pseudo-tied and dynamic co-located storage resources following the standard NRI pseudo-tie and dynamic rules and practices Note: pseudo-tied and dynamic storage resources must be registered as TNGR resources

Fall 2023 – Energy Storage Enhancements Track 2

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval WEIM Governing Board Approval	Dec 14, 2022	✔
External BRS	Post External BRS V1.1 V1.2 V1.3 **V1.4 Remove BRQ094**	May 26, 2023 Jun 29, 2023 Aug 08, 2023 Aug 18, 2023 **Sep 2023**	✔ ✔ ✔ ✔
Settlements Config Guides	First Draft Technical Documents 1st Draft Config Output File 2nd Draft Config Output File Pre-production Draft Config Output File Production deploy	Feb 17, 2023 Jul 26, 2023 Sep 06, 2023 Oct 18, 2023 Oct 25, 2023	✔ ✔
Tech Spec	Publish Interface Specification – CMRI Publish Interface Specification – OASIS	Jul 17, 2023 Jul 17, 2023	✔ ✔
Tariff	File Tariff FERC Response File Extension of MSOC FERC Approval of Extension of MSOC File Tariff Track 2	Mar 31, 2023 Jun 01, 2023 Mar 28, 2023 May, 25, 2023 Aug 01, 2023	✔ ✔ ✔ ✔ ✔
BPMs	Draft BPM changes – Market Operations Draft BPM changes – Market Settlements & Billing	Yes Yes	
Training	Training	Sep 13, 2023	
Market Sim Scenarios	Market Sim Scenarios 1.1	Aug 03, 2023 Aug 22, 2023	✔ ✔
Market Sim	Market Sim Window	Start Sep 18, 2023	
Production Activation	Energy Storage Enhancements Track 2	Nov 01, 2023	

Energy Storage Enhancements Stakeholder Workshop

The California ISO held a public hybrid stakeholder workshop for Energy Storage Enhancements on August 3, to discuss functionality for modeling regulation awards for storage resources.

During this meeting, the ISO and stakeholders discussed the planned implementation for state of charge equation in the Summer 2023 Release, unintended consequences from that implementation and possible alternative modeling implementations. The ISO discussed the proposed changes to include regulation awards in the state of charge equation that had the observed outcomes from the Market Simulation testing environment when this change was introduced there. The ISO also discussed potential alternative methods that could be used to model storage resources that receive awards for ancillary services.

The video is available here: https://youtu.be/3CjBhBNdezw

Comments were due August 17, 2023

California ISO

Fall 2023 – Hybrid Resources 2C Metered Quantities for Hybrids

Project Information	Details/Date
High Level Project Scope	System (MRI-S) shall allow the SC of a Hybrid resource the ability to submit Metered Quantities on a component ID only, which would override the current Metered Quantities. This ability shall be made available regardless if the resource is ISO Polled or SCME. Implementation note: ISO Polled or SCME based on the MasterFile flag. New data type: ISOME
Impacted Systems	MRI-S

ISO PUBLIC

Fall 2023 – Hybrid Resources 2C – Metered Quantities for Hybrids

Milestone Type	Milestone Name	Dates	Status
BRS	BRS	Aug 17, 2023	✓
Tech Spec	Create and Publish ISO Interface Spec (Tech Specs)	NA	
Market Sim	Market Sim Window	Sep 09 2023 – Sep 29, 2023	
Production Activation	Hybrid Resources 2C – Metered Quantities for Hybrids	Nov 01, 2023	

California ISO

Independent 2023 Releases

ISO PUBLIC

2023 - Variable Operations and Maintenance Cost Review

Project Information	Details/Date
High Level Project Scope	Through this triennially recurring stakeholder process, the ISO will review the default variable operations and maintenance (VOM) adders and, if necessary, update these default values. After reviewing the currently effective default VOM adders, the ISO is proposing to update the default values by applying a 18.73% inflation increase. For any resources currently using default values, the ISO will automatically update their VOM adder values in Master File. Any negotiated VOM adder values will not be affected by this initiative.
BPM Changes	Market Instruments
Tariff Changes	Section 30.4.5.4
Impacted Systems	NA (Master File data update only)

Milestone Type	Milestone Name	Dates	Status
Board Approval	Board briefing/approval	Sep 20, 2023	
Tariff	Draft Tariff Language	Aug 23, 2023	✔
	FERC Filing	Late Sep 2023	
	FERC Response	Nov 30, 2023	
BPMs	Post Draft BPM changes	Late Sep 2023	
Market Sim	Market Sim Window	NA	
Production Effective Date	Effective Date	Dec 1, 2023 (expected)	

California ISO

2023 – Flexible Ramping Product Refinements

- Nomogram constraints are now active in MAPSTAGE and available for unstructured testing

- Production activation for the FRP nomogram constraints is targeted for September 5, 2023

UI & API URL & IP Changes (Application Delivery Resiliency)

- Areas
  - Access Policy Manager - Application Authentication
  - Local Traffic Manager - Load Balancing
  - Application Security Manager - Web Application Firewall

- User Impacts & Actions
  - New IP ranges requiring firewall changes
    - Please open the entire 45.42.16.0/21 network on ports 80 & 443 for our new IP space
  - New URLs for UIs and APIs requiring cutover
  - No application functionality changes expected
  - No provisioning changes expected

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UI & API URL & IP Changes (Application Delivery Resiliency)

- ## Scope

Interface	In Scope	In Progress	Finished
UI	All remaining	• SIBR • BSAP • RCBSAP • BAAOP	• Developer • RCPortal • GMS • CIDI • PIVision • DRRS - Fall 2020 Release • ADS - Fall 2020 Release • AIM • CIRA • MRI-S • Public Website – May 26, 2021 • www.caiso.com • ISO Today Mobile Application • Stakeholder Comments Tool • content.caiso.com – July 29, 2022 • BPM - July 14, 2021 • WesternEIM - July 14, 2021 • Dev Site - July 2021 • RIMSPUB – September 14, 2021 • RIMS – September 14, 2021 • OASIS – Dec 2021 (No URL change) • OMS – June 14, 2022
API	All		• ADS - Fall 2020 Release • OASIS – Dec 2021 (No URL change)

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UI & API URL & IP Changes (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
- MAP-Stage old API URLs no longer available as of Sep 01, 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

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UI & API URL & IP Changes (Application Delivery Resiliency)

Plan

- MAP-Stage new API URLs **available as of May 18, 2023** to transition
- MAP-Stage old API URLs **no longer available as of Sep 01, 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 (& 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

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UI & API URL & IP Changes (Application Delivery Resiliency) - New Certificate Authority

- There is a new certificate authority for the new URLs: it was Verizon and is now Entrust
- Please add the two certificates to access the new URLs
- The new MAPSTAGE WS have a different Root and Intermediate certificate:
  - Entrust Root Certification Authority – G2
  - Entrust Certification Authority – L1M
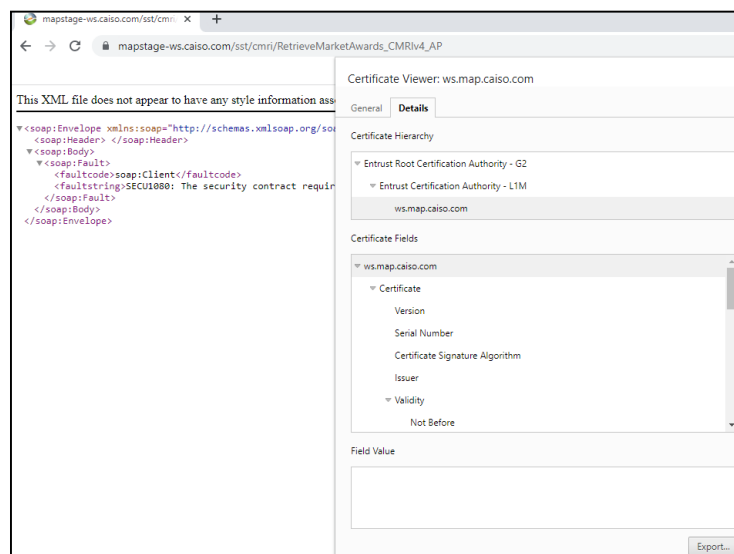
UI & API URL & IP Changes (Application Delivery Resiliency) - New Certificate Authority

References

- Entrust L1M Certificate Authority: http://web.entrust.com/subca-certificates/L1M-G2-Xcert_20141215.cer?_gl=1*1pabf82*_ga*MTk2NDQzNTE0LjE2ODc0NjQ1NjA.*_ga_6QRW66BW5T*MTY4NzQ2NDU1OS4xLjEuMTY4NzQ2NDU4MS4zOC4wLjA.&_ga=2.121940939.1908197984.1687464560-196443514.1687464560

- Entrust Root Certificate Authority: https://web.entrust.com/root-certificates/entrust_g2_ca.cer?_gl=1*1t3efhy*_ga*MTk2NDQzNTE0LjE2ODc0NjQ1NjA.*_ga_6QRW66BW5T*MTY4NzQ2NDU1OS4xLjEuMTY4NzQ2NDgxMy41NS4wLjA.&_ga=2.127397581.1908197984.1687464560-196443514.1687464560

- Parent pages these came from:
- https://www.entrust.com/knowledgebase/ssl/entrust-certificate-services-subordinate-cas
- https://www.entrust.com/resources/certificate-solutions/tools/root-certificate-downloads

California ISO

UI & API URL & IP Changes

Phase 1: Deployment for new API URLs

- CAISO previously sent communications on the soft cutover for the new API URLs in the MAP Stage environment. Market Participants are required to validate access and transition to the new API URLs before August 15, 2023. **The old API URLs in MAP Stage are no longer available as of September 1, 2023**. For Production, there are no changes to the API URLs; however, the IP addresses will be changed. Please stay tuned for more information.

Phase 2: Deployment for new UI URLs

- Starting on July, 27, 2023, some of the ISO applications will be available for testing starting in the MAP Stage environment, Stage, and then Production. Application access is based on the user's provisioning. No application down time is expected. We will send additional communication for the remaining UI URLs once they are ready for validation.

Action requested:

- Market Participants can begin accessing the new UI URLs in parallel with the current UI URLs for a window of time.
- The timeline to validate access and transition to the new UI URLs for each environment is shorter than the API timeline; therefore, action is needed sooner.
- Once the new UI URLs are deployed into Production, Market Participants have 30 business days to validate and transition to the new UI URLs.

Applications & Environments	Deployment Start Dates	New User Interface (UI) URLs
Balancing Area Authority Operations Portal (BAAOP)		
MAP Stage	Fri 7/28/23	https://mapstage-baaop.caiso.com
STAGE	Fri 8/4/23	https://stage-baaop.caiso.com
Production	TBD	https://baaop.caiso.com
Base Schedule Aggregation Portal (BSAP)		
MAP Stage	Fri 7/28/23	https://mapstage-bsap.caiso.com
STAGE	Thu 8/3/23	https://stage-bsap.caiso.com
Production	TBD	https://bsap.caiso.com
Reliability Coordinator Base Schedule Aggregation Portal (RCBSAP)		
MAP Stage	Fri 7/28/23	https://mapstage-rcbsap.caiso.com
STAGE	Thu 8/3/23	https://stage-rcbsap.caiso.com
Production	TBD	https://rcbsap.caiso.com
Schedule Infrastructure & Business Rules (SIBR)		
MAP Stage	Fri 7/28/23	https://mapstage-sibr.caiso.com
STAGE	Done	https://stage-sibr.caiso.com
Production	TBD	https://sibr.caiso.com
Reporting (Includes SIBR Reports, Transmission Registry, RIMS, Master File, and FSP folder)		
MAP Stage	Mon 7/31/23	https://mapstage-reporting.caiso.com
STAGE	Mon 8/7/23	https://stage-reporting.caiso.com
Production	TBD	https://reporting.caiso.com
Market Participant Portal (MPP)		
MAP Stage	TBD	https://mapstage-mpp.caiso.com
STAGE	TBD	https://stage-mpp.caiso.com
Production	TBD	https://mpp.caiso.com
Customer Market Results Interface (CMRI)		
MAP Stage	Thu 8/3/23	https://mapstage-cmri.caiso.com
STAGE	Wed 8/9/23	https://stage-cmri.caiso.com
Production	TBD	https://cmri.caiso.com
Congestion Revenue Rights (CRR)		
MAP Stage	Mon 8/7/23	https://mapstage-crr.caiso.com
STAGE	Thu 8/10/23	https://stage-crr.caiso.com
Production	TBD	https://crr.caiso.com
WEIM Portal		
MAP Stage	Done	https://mapstage-weim.caiso.com
STAGE	Done	https://stage-weim.caiso.com
Production	Done	https://weim.caiso.com
Master File (MF)		
MAP Stage	Wed 8/9/23	https://mapstage-mf.caiso.com
STAGE	Mon 8/21/23	https://stage-mf.caiso.com
Production	TBD	https://mf.caiso.com

California ISO

Acceptable Use Policy Implementation Update

We have global rate limit of 30/sec across the ws endpoint in mapstage which is 1800 connections per minute. The rate limit is 30/sec across all the apps combined supported on the endpoint. This allows for connections multiple apps concurrently. There are additional protections within the apps.

Applications CMRIAPI, DRRSEWS and STLMTEWS(MRI-S) send soap fault when acceptable use policy fails.

Soap Fault snippet,
…
<SOAP-ENV:Fault>
*   <faultcode>SOAP-ENV:Server</faultcode>*
*   <faultstring xml:lang="en">429: CAISO Acceptable Use Policy Violation. Please retry your request after <n> seconds.</faultstring>*
*   <detail>*
…

This change is applicable to new URLs only.

California ISO

Future Releases

California ISO

Future Releases Overview

Project	BOG	Tariff	Production Activation
WEIM Resource Sufficiency Evaluation Enhancements Phase 2 Track 3	Dec 14, 2022 – Approved	• NA	Summer 2024
Transmission Service & Market Scheduling Priorities Phase 2	Feb 2023 – Approved	• 03/27/23: Draft Tariff Language • 06/14/23: Revised DTL • 07/14/23: Track 2 DTL • File Track 1 July 28, 2023 • File Track 2 Jan 2024	Summer 2024
Day-Ahead Market Enhancements	Feb 2023 – Briefing May 17, 2023 – Approved	• 06/02/23: Draft Tariff Language, Draft Tariff Matrix • 06/16/23: Comments due on DTL • 06/23/23: Meeting • 07/11/23: Revised DTL • **File 08/22/23**	Fall 2024
Extended Day-Ahead Market On-Boarding	Feb 2023 – Approved	• 03/30/23: Draft Tariff Language • 05/24/23: Working DTL • 06/08/23: Revised DTL • 07/06/23: Comments due on DTL • 07/25/23: Revised DTL • 07/26/23: Meeting • **File 08/22/23**	Fall 2024 Spring 2025

California ISO

2024 – Transmission Service & Market Scheduling Priorities Phase 2

Project Information	Details
High Level Business Need	Presents a long-term, durable framework to establish wheeling through scheduling priorities in the ISO markets that can further evolve with operational experience. It does not focus on, nor does it change, the processes for wheeling out or exporting from the ISO BAA.
High Level Project Scope	The following are the key design elements of the proposed framework for establishing wheeling through scheduling priority across the ISO system: • Calculating Available Transfer Capability (ATC) in Monthly & Daily Increments • Accessing and Reserving ATC • Transmission study and expansion process • Application of priorities in post-HASP process • Compensation framework for wheeling through scheduling priority
BPM Changes	• Market Instruments • Market Operations • Reliability Requirements • Settlements and Billing • Transmission Planning Process • Generator Interconnection and Deliverability Allocation Procedures
Tariff Changes	Sections: • §23.1, §23.2, §23.3, §23.4, §23.5, §23.6, §23.7 • §26.1.4.5 • §30.5.1 • §34.12.3 • §Appendix A • §Appendix L
Impacted Systems	• AIM • System for ATC calculation, access, and reservation • SIBR • RTM • Settlements • OASIS • ITS

California ISO

2024 – Transmission Service & Market Scheduling Priorities Phase 2

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	Feb 01, 2023	✓
External BRS	Post External BRS	Q4 2023	
Settlements Config Guides	Post Draft Config Guides	Yes	
Tech Spec	Create ISO Interface Specifications	Yes	
Tariff	**Filed ER23-2510 for Wheeling Through File Track 2**	**Jul 28, 2023 Jan 2024**	✓
BPMs	Draft BPM changes – Market Instruments Draft BPM changes – Market Operations Draft BPM changes – Reliability Requirements Draft BPM changes – Settlements and Billing Draft BPM changes – Transmission Planning Process Draft BPM changes – Generator Interconnection and Deliverability Allocation Procedures	Yes	
Production Activation	Transmission Service & Market Scheduling Priorities Phase 2 – Activate daily and long-term increment calculations	Pre-Summer 2024	

California ISO

2024 – Transmission Exchange Agreement

Project Information	Details/Date
High Level Business Problem or Need	The TEA is expiring in 2024 and absent WAPA's ability to resell their capacity on the Pacific AC Intertie ("PACI") #1 line which is owned and operated by WAPA-SNR and within the CAISO BAA they will move the line to the BANC BAA and the ISO will lose 1200 MW transfer capability at Malin.
High Level Project Scope	• WAPA needs functionality to sell their TOR (using ETC/TOR terminology instead of CRN) to other parties on their OASIS. • If the TOR rights are sold then WAPA will notify the CAISO to provide the purchaser the hedging and scheduling priority opportunity provided all ETCs/TORs. • The market and settlement systems need to be able to "move" the CRN from the WAPA CRN to the purchaser SCIDs so that the settlement to the purchaser SCID reverse the costs of transmission access charge and congestion (aka the perfect hedge) and the IFM and RTM provide a high scheduling priority. • WAPA will not take on the obligation to settle with their purchaser. • WAPA can sell any increments of MWs up to their 400 MW ownership rights. Therefore, the solution needs to be flexible enough to allow the "existing" TORs to vary the MWs capabilities. [Note: We can require restrictions, if required – e.g. no less than 5 MW increments] • WAPA's functionality allows them to schedule between Malin and Round Mountain, and Malin and Tracy. This would be the source and sink that that functionality needs to provide. • If there are outages on the line, the curtailment should be consistent with current practice.
BPM Changes	Settlements Configuration Guides
Tariff Changes	N/A
Impacted Systems	SIBR, DAM/RTM, Settlements, ITS, MF

California ISO

2024 – Transmission Exchange Agreement

Milestone Type	Milestone Name	Dates	Status
External BRS	Post External BRS	Q4 2023	
Settlements Config Guides	Post Draft Config Guides	Yes	
Tech Spec	Create ISO Interface Specifications	Yes	
Tariff	NA	NA	
BPMs	Draft BPM changes – Settlements & Billing	Yes	
Production Activation	Transmission Exchange Agreement Renegotiation	Pre-Summer 2024	

California ISO

2024 – Hybrid Resources 2C RIMS

Project Information	Details/Date
High Level Business Problem or Need	The ISO launched this stakeholder initiative to identify new or enhanced market rules and business processes needed to accommodate hybrid resources, resources that consist of two sets of market rule changes that will facilitate mixed-fuel type (hybrid and co-located resources) project participation in the ISO markets. Prior to this initiative, Phase 1 identified a first set of modifications generally concerned with setting up and operating co-located resources. Building on phase 1, Phase 2 focuses on modifications that will explore how hybrid generation resources can be registered and configured to operate within the ISO market. The initiative will further develop solutions allowing developers to maximize the benefits of their resource's configuration. Additionally, hybrid resource configurations also raise new operational and forecasting challenges that the ISO plans to address during this initiative.
High Level Project Scope	With this initiative, there's an opportunity to increase storage and the number of hybrid resources that can connect to the ISO grid. Currently the interconnection queue includes more than 24,000 MW of mixed fuel projects and nearly 20,000 MW of storage which represents roughly half of all generation in the current interconnection queue.
BPM Changes	Settlements & Billing
Impacted Systems	Summer 2023: Settlements Fall 2023: Metered Quantities for Hybrids **Independent 2024: RIMS** Completed: Today's Outlook, ISO Today Mobile Application, Reports
Requirements	http://www.caiso.com/Documents/BusinessRequirementsSpecifications-HybridResourcesPhase2.pdf

2024 – Hybrid Resources 2C RIMS

Milestone Type	Milestone Name	Dates	Status
External BRS	Publish External BRS	Jan 31, 2023	✔
Settlements Config Guides	NA for RIMS	NA	
Tech Spec	Create and Publish ISO Interface Spec (Tech Specs)	NA	
Market Sim	Market Sim Window – RIMS	NA	
Production Activation	Hybrid Resources 2C – RIMS	2024	

California ISO

2024 – WEIM Resource Sufficiency Evaluation Enhancements Phase 2 Track 3

Project Information	Details
High Level Project Scope	**Track-3** • Item3A – DR Inclusion with RSE via ALFS (RSEE-1060) (Implemented in Phase 1 – enhancements needed) • Furnish ALFS-SOA API integration to DR SCs to automatically submit their DR LF Adjustment (that reflect Non-Participating DR Schedules) to account for DRs that are not explicitly modeled in real-time markets.
BPM Changes	Demand Response, WEIM
Tariff Changes	NA
Impacted Systems	MF, ALFS, Market, BAAOP

California ISO

2024 – WEIM Resource Sufficiency Evaluation Enhancements Phase 2 Track 3

System	High Level Changes
MF	• RSEE-1060 – Business Process: Ensure DR Inclusion Flag Submission by WEIM Entity Only via CIDI. • RSEE-1060 – Business Process: STF Notification of Changes to DR Inclusion Flag on WEIM Entity / WEIM Sub-Entity Level.
ALFS	• Access DR Inclusion Flag on WEIM Entity/Sub-Entity Levels from MF. • Translate the WEIM Entity/Sub-Entity DR Inclusion Flag to their associated LF zones (During MF transfer, the sub-area LF zone will adopt the WEIM Entity attestation flag). • Receive Non-Participating DR Schedules from WEIM Entity or WEIM Sub-Entity • Broadcast Non-Participating DR Schedules for WEIM Entity BAA or WEIM Sub-Entity. • Broadcast DR LF Adjustment Data (that have been adjusted in ALFS) to downstream systems.

Market	• Consume the following from ALFS:
	   • ALFS-DF-Submitted DR LF Adjustment (hourly aggregate)
	   • STF-DF-Excluded DR LF Adjustment (hourly aggregate)
	• Accounting for DR LF Adjustments in RSE.

BAAOP	Display DR LF Adjustments received from ALFS in BAAOP. Disable manual entry via BAAOP UI on a sunset date, after all participants transition to ALFS API submission.

California ISO

2024 – WEIM Resource Sufficiency Evaluation Enhancements Phase 2 Track 3

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval WEIM Governing Board Approval	Dec 14, 2022	✓
External BRS	Post External BRS Post External BRS v1.1 Post External BRS v1.2 **Post External BRS v1.3**	Mar 10, 2023 Mar 31, 2023 Jun 27, 2023 **Sep 05, 2023**	✓ ✓ ✓ ✓
Settlements Config Guides	NA	NA	
Tech Spec	Create ISO Interface Spec (Tech spec) – ALFS	Yes	
Tariff	Tariff	NA	
BPMs	Draft BPM changes – Demand Response Draft BPM changes – WEIM	Yes	
Market Sim Scenarios	Market Sim Scenarios	Yes	
Market Sim	Market Sim Window	Yes	
Production Activation	Resource Sufficiency Evaluation Enhancements Phase 2 Track 3	Summer 2024	

California ISO

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Congestion Revenue Rights (CRR) Upgrade

Project Information	Details/Date
High Level Project Scope	The Congestion Revenue Rights (CRR) system was implemented by CAISO in 2008 as part of the Market Redesign and Technology Upgrade (MRTU) implementation. The current CRR system is at its end of life, does not have the flexibility to accommodate future policy changes and requires the ISO to calculate data and run processes manually outside the current system to produce a successful CRR Auction. The CAISO has decided on a significant upgrade of the existing CRR system and adopt the latest technology stack aligned with CAISO's technology standards, consolidate all CRR related functions, minimize human errors, reduce processing time, eliminate manual workarounds, and positions the system to accommodate policy changes down the road. **Congestion Revenue Rights (CRR) system replacement project scope is the roll-out of a:** • Brand new user-interface (UI) system with an updated new look-and-feel, to replace the existing legacy system implemented during the MRTU 2008 go-live and brought up to current ISO technology standards • Set of application-programming interfaces (APIs) to enable integration between ISO and market participant systems **Overall, to support the following in one consolidated CRR external-facing system:** • Annual/Monthly Auction and Allocation market participant bid submission and results retrieval • Load data submission by CRR LSEs, CEC • Load migration data submission by CRR UDCs • Secured "Congestion Revenue Rights Full Network Model" information access • Private and public access of CRR market input and output information
BPM Changes	Congestion Revenue Rights • Enhancements made to the new CRR product. • Automatic publishing of CRR market results. • Automatic CRR notification. • New CRR schedule calendar. • New CRR FNM access. • New CRR data submission and download interface UI/API. • New CRR market results interface. • Load Migration
Tariff Change	No
Impacted Systems	CRR, AIM, CMRI, OASIS, CTS, Market Clearing, EMMS, IFM/RTN, MQS, Master File, MPP, Settlements, WebOMS, ETCC.

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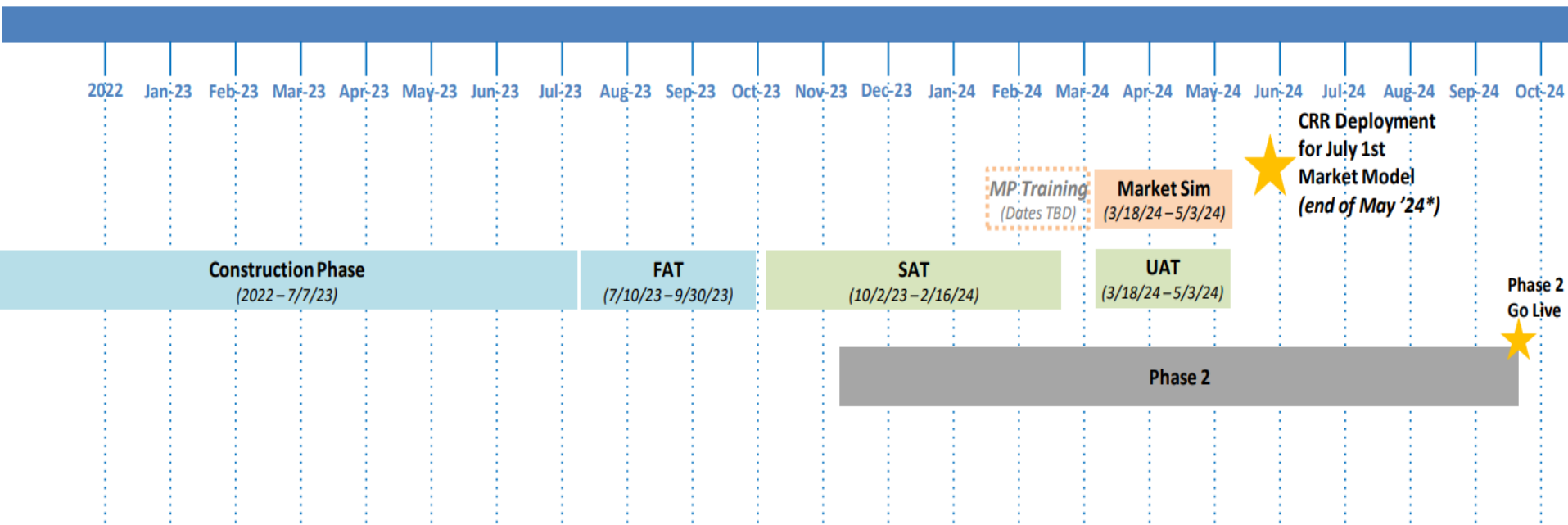# Congestion Revenue Rights (CRR) Upgrade

System	High Level Changes
CRR	Significant system upgrade including: • Enhancements made to the new CRR application. • Automatic publishing of CRR market results. • Automatic CRR notification. • New CRR schedule calendar. • New CRR FNM access. • New CRR data submission and download interface UI/API. • Other TBDs identified through BRS development.
AIM	• New users and roles to support new CRR functionality
CMRI	• Full and incremental Payload publishing • Publish CRR Awards payload on event-driven, ad-hoc or scheduled basis • Publish CRR Awards payload on event-driven, ad-hoc or scheduled basis
OASIS	• Publish CRR Calendar, and all available CRR market names, and credit margin information, 3 year historical expected value.. • Allow authorized users to publish CRR inventory payloads • Broadcast the following: set aside values, the results of all CRR markets, retired pnode/anode mapping, binding constraints, initial and updated CRR source and sink list for each CRR market,
CTS	• Broadcast
EMMS	• CRR will consume data from EMMS
IFM/RTN	• CRR will consume data from IFM/RTN
MQS	• MQS will consume and process SCID in a new format • MQS will consume ownership payload in bulk
Master File	• Master File will be modified as needed to support the new CRR functionality
MPP	• CRR will provide pre-configured external reports
Settlement	• Settlements will be modified as needed to support the new CRR functionality
WebOMS	• CRR will consume data from WebOMS
ETCC	• CRR will consume data from ETCC

California ISO

Congestion Revenue Rights (CRR) Upgrade

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	NA	
External BRS	Publish External BRS BRS Revision v1.3	Nov 16, 2022 Mar 29, 2023	✓ ✓
Config Guides	Post Draft Config Guides	Yes	
Tech Spec	Publish Technical Specification	Feb 24, 2023	✓
Deployment Plan	Draft Deployment Plan	Yes	
Training	Training	Yes	
Market Sim	Market Sim	Mar 18, 2024 – May 03, 2024	
Customer Partnership Group	**Next CPG**	**Sep 20, 2023 (Tentative)**	

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Congestion Revenue Rights (CRR) Upgrade

Updated May 25, 2023

2022 | Jan-23 | Feb-23 | Mar-23 | Apr-23 | May-23 | Jun-23 | Jul-23 | Aug-23 | Sep-23 | Oct-23 | Nov-23 | Dec-23 | Jan-24 | Feb-24 | Mar-24 | Apr-24 | May-24 | Jun-24 | Jul-24 | Aug-24 | Sep-24 | Oct-24

CRR Deployment for July 1st Market Model *(end of May '24*)*

MP Training *(Dates TBD)*

Market Sim *(3/18/24 – 5/3/24)*

Construction Phase *(2022 – 7/7/23)*

FAT *(7/10/23 – 9/30/23)*

SAT *(10/2/23 – 2/16/24)*

UAT *(3/18/24 – 5/3/24)*

Phase 2 Go Live

Phase 2

Exact cutover date TBD

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CRR System Upgrade – Get Connected

- CRR meetings:

  - **Bi-weekly Technical User Group (TUG)** Tue 10 AM, alternates with RUG.
    - Meetings available on the CAISO calendar on www.caiso.com
    - Meeting details and presentation materials are available on the CAISO Developer site at www.developer.caiso.com , which requires an account to be setup for access

  - **CRR Customer Partnership Group**
    - **Next CPG meeting is Wed, 9/20 @ 10 AM (Tentative)**
    - Monthly
    - Meetings available on the CAISO calendar on www.caiso.com
    - Meeting details and presentation materials are available on www.caiso.com > Stay Informed > Meetings & Events > Customer Partnership Groups

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Fall 2024 – Day Ahead Market Enhancements

Project Information	Details/Date
High Level Business Problem or Need	In recent years, Variable Energy Resource (VER) have gained significant traction in the energy grid, playing a crucial role in achieving renewable energy targets and reducing greenhouse gas emissions. However, their increasing presence has introduced a new challenge energy imbalances between the Day Ahead and Real Time markets. Another reason for the energy imbalance is the day-ahead market operates on hourly time increments, whereas real-time market schedules energy in 15 and 5-minute intervals. This discrepancy in granularity results imbalances since the rea-l-time market schedules fluctuate within the hour while day-ahead market schedules remain fixed for the entire hour. These imbalances necessitates out-of-market interventions by operators, such as forecast biasing and dispatches, to uphold grid reliability. However, this situation presents an opportunity to improve our market software, enabling us to achieve a more efficient and economical solution while addressing the variability and reliability concerns within the market.
High Level Project Scope	Enhance the California ISO's (CAISO's) day-ahead market by: • Introducing an imbalance reserve (IRU/IRD) product to provide flexible capacity to account for real-time ramping needs • Enhancing the residual unit commitment process to also ensure there is sufficient downward dispatch capability (RCU/RCD) • Enhancing the day-ahead market to maximize benefits of greater West-wide diversity in the day-ahead optimization for Western Energy Imbalance Market participants
BPM Changes	Settlements and Billing, Market Instruments & Market Operations
Tariff Changes	Sections 27, 31, 34, 39
Impacted Systems	MF, SIBR, DAM, OASIS, CMRI, Settlements & Internal Systems

Fall 2024 – Day Ahead Market Enhancements

System	High Level Changes
MF	• Define IRU, IRD, RCU, RCD eligibility for the resource ID in MF.
SIBR	• IRU,IRD,RCU,RCD bid rules
DAM	• Calculate IRU/IRD requirements • MPM: Market Power Mitigation for IRU/IRD • IFM: procure IRU/IRD • IRU/IRD deployment scenarios • IRU/IRD requirement distribution • IRU/IRD in NA-AC power flow • Include IRU/IRD in constraints • RCU/RCD procurement • RUC-MPM pass • Impact on RUC performance with additional MPM pass • LMP for EN, IRU/IRD, RCU/RCD
OASIS	• IRU, IRC, RCU,RCD related public reports
CMRI	• IRU, IRC, RCU,RCD related private reports
Settlements	• IRU, IRC, RCU,RCD Settlements

California ISO

Fall 2024 – Day Ahead Market Enhancements

Milestone Type	Milestone Name	Dates	Status
Board Approval	Board briefing/approval	May 17, 2023	✓
External BRS	DAME External BRS Published	Jul 25, 2023	✓
Tariff	First Draft Tariff Posting	Jun 02, 2023	✓
	Second Draft Tariff Posting	Jul 11, 2023	✓
	FERC Filing	Aug 22, 2023	✓
Config Guides	Post Draft Config Guides - First set of charge codes	Jan 16, 2024	
	Post Draft Config Guides - Second set of charge codes	Feb 26, 2024	
	Post Draft Config Guides - Third set of charge codes	Apr 08, 2024	
Tech Spec	Publish Technical Specifications	Oct 31, 2023	
BPMs	Post Draft BPM changes	Apr 04, 2024	
Market Sim	**Market Sim Scenarios**	**Aug 04, 2023**	✓
Market Sim	Market Sim Window	Jun 03, 2024 - Aug 23, 2024	
Production Deployment - Inactive	Day Ahead Market Enhancements	Oct 01, 2024	

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Fall 2024 - Extended Day Ahead Market (EDAM) Implementation

Project Information	Details/Date
High Level Business Problem or Need	The purpose of this initiative is to create a comprehensive extended day-ahead market that extends over multiple balancing authority areas (BAAs) participating in the WEIM. EDAM is a voluntary day-ahead electricity market with the potential to deliver significant economic, environmental, and reliability benefits for participants across the West. EDAM will more efficiently and effectively integrate renewable resources and address the significant operational challenges presented by a rapidly changing resource mix, emerging technologies, and the impacts of climate change. EDAM will enable procurement of robust supply and flexible capacity that will position EDAM participants to effectively address changes in conditions from day-ahead to real-time, improving their response to potential reliability challenges. EDAM builds upon the proven ability of the Western Energy Imbalance Market (WEIM) to increase regional coordination, support state policy goals, and cost effectively meet demand..
High Level Project Scope	The EDAM design leverages existing features of the ISO day-ahead market that are common in other day-ahead markets across the country. The design also considers enhancements proposed in contemporaneous stakeholder initiatives, that will harness flexibility across the larger footprint by incorporating an imbalance reserve product, and that will enhance price formation. EDAM introduce new products, imbalance reserve and reliability capacity, as well as new penalties, RSE surcharge.
BPM Changes	Definitions and Acronyms Energy Imbalance Market (EIM) Market Instruments Market Operations Settlements and Billing EDAM
Impacted Systems	MF, ALFS, ALFS-SOA, SIBR, RTSI, RTBS, BSAP, DAM (IFM and RUC), DA-RSE (new), RTM (RTPD and RTD), STUC, MPM, SMDM, ITS, BARC, GHG Pass (new), Settlements, CMRI, OASIS, ADS, WebOMS
Requirements	Target publish external BRS by Jul 31, 2024

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Fall 2024 - Extended Day Ahead Market (EDAM) Implementation

Milestone Type	Milestone Name	Dates	Status
External BRS	**Publish External BRS**	**Aug 02, 2023**	✔
Settlements Config Guides	Draft Technical Documents – Tier 1 Draft Technical Documents – Tier 2 Draft Technical Documents – Tier 3	Jan 16, 2024 Feb 26, 2024 Apr 08, 2024	
Tech Spec	Create and Publish ISO Interface Spec (Tech Specs)	Oct 2023	
BPMs	Definitions and Acronyms Energy Imbalance Market (EIM) Market Instruments Market Operations Settlements and Billing EDAM	TBD	
Training	Training	TBD	
Market Sim	Market Sim for DAME Market Sim Window for onboarding EDAM entities	Jun 3, 2024 – Aug 25, 2024 Dec 2, 2024 – Feb 28,2025	
Production	**EDAM Implementation** **EDAM Onboarding**	**Oct 1, 2024** **May 1, 2025**	

- To provide feedback, please submit CIDI case
  - Set 'Functional Environment' = "*Release*"
  - Set 'Project' = "Day-Ahead Market Enhancements & Extended Day-Ahead Market"
  - Set 'Subject' = "*BRS Comments for <Project (DAME, EDAM, etc.)>*"
  - Customers do not need to submit a CIDI case for each comment; one CIDI case with all the comments and/or an attachment is acceptable
  - The ISO will collect the CIDI cases and respond in a controlled manner
  - **Please submit comments by Sep 15, 2023**

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Stay Informed

Ways to participate in releases

- Visit the Release Planning page
  - http://www.caiso.com/informed/Pages/ReleasePlanning/Default.aspx

- Attend meetings
  - Release Users Group (RUG) bi-weekly meetings
    - Initiative status updates
    - System change updates on independent releases
  - Market Simulation calls
    - Visit the ISO calendar at www.caiso.com for meeting dates and times and add events to your calendar
    - Typically held on Mondays and Thursdays
  - Market Performance and Planning Forum
    - Bi-monthly review of market performance issues
    - High level discussion of release planning, implementation and new market enhancements

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What to look for on the calendar…

Next RUG: September 19, 2023

Contact for Questions & Agenda Requests: Trang Vo, tvo@caiso.com

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RUG Calendar 2023

California ISO

2023

Release User Group Meetings

Note: dates subject to change; for the latest information please visit the Calendar on www.caiso.com

January

Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

February

Su	Mo	Tu	We	Th	Fr	Sa
			1	2	3	4
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19	20	21	22	23	24	25
26	27	28				

March

Su	Mo	Tu	We	Th	Fr	Sa
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April

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30						

May

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28	29	30	31			

June

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25	26	27	28	29	30	

July

Su	Mo	Tu	We	Th	Fr	Sa
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30	31					

August

Su	Mo	Tu	We	Th	Fr	Sa
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20	21	22	23	24	25	26
27	28	29	30	31		

September

Su	Mo	Tu	We	Th	Fr	Sa
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24	25	26	27	28	29	30

October

Su	Mo	Tu	We	Th	Fr	Sa
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15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

November

Su	Mo	Tu	We	Th	Fr	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

December

Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

■ Meeting **■ Holiday**

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