Release User Group Agenda

October 9th, 2018 *10:00 a.m.–11:00 a.m.* *(Pacific Time)*

Web Conference Information	Conference Call Information
Web Address: https://caiso.webex.com/meet/RUG Meeting Number: 960 941 245 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.	Dial-in Number: 866-528-2256 International Dial-in: 216-706-7052 Access Code: 291 426 5
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.	

Release User Group Agenda

October 9th, 2018 *10:00 a.m. – 11:00 a.m. (Pacific Time)*

Time	Topic	Facilitator
10:00 – 10:05	Agenda & ISO Roll call	Adrian Chiosea
10:05 – 10:45	Release Plan	Joanne Alai Heidi Carder Eureka Cullado Marcelo Da Costa Trang Deluca Ayman Fattah Jami Herguth Cynthia Hinman Mohan Koya Deann MacDougall Christopher McIntosh LeAnne McLaughlin Janet Morris Indu Nambiar Prince Phillip Raeann Quadro Raymond Riley LuAnn Rivera Craig Williams John Williams Justin Wong

The ISO offers innovative training programs

Date	Training
October 31	Congestion Revenue Rights (CRR) Auction Efficiency – Track 1B Webinar

New Modules (recorded webinar and slides)
Generator Contingency and Remedial Action Scheme Modeling (GCARM)
Congestion Revenue Rights (CRR) Auction Efficiency – Track 1A
Commitment Cost Enhancements Phase 3 (CCE3)
EIM Enhancements 2018
Energy Storage / Distributed Energy Resources Phase 2
Eligible Intermittent Resource Dispatch Operating Target (EIR DOT)
Greenhouse Gas (GHG) Enhancements for EIM
Welcome to the ISO (find under Markets and Operations learning track)

New computer-based training (CBT) courses	
ISO Orientation	Master File
Day-Ahead Overview	Emergency Response & Abnormal Operations
Real-Time Overview	Outages Overview

CustomerTraining@caiso.com

Visit our **Learning Center** web page to access our training calendar, register for courses and find other useful resources, including computer based training courses, recorded webinars and new release training materials at:
http://www.caiso.com/participate/Pages/LearningCenter/default.aspx

Release Plan Summary: 2018 – Independent 2019

Independent 2018

- Congestion Revenue Rights Market User Interface (MUI) Update
- Imbalance Conformance Enhancements (ICE)
- Congestion Revenue Right Auction Efficiency 1B

Fall 2018

- Energy Storage and Distributed Energy Resources (ESDER) Phase 2
- Settlements Performance Improvements
- Green House Gas (GHG) Enhancements for EIM
- Congestion Revenue Right (CRR) Auction Efficiency 1A
- EIM 2018 Enhancements

Independent 2019

- Generator Contingency and Remedial Action Scheme (RAS) Modeling
- Automated Dispatch System (ADS) User Interface (UI) Replacement
- Black Start and System Restoration Phase 2

Spring 2019

- Commitment Cost Enhancement (CCE) Phase 3
- Energy Imbalance Market (EIM) 2019 Balancing Authority of Northern California (BANC) / Sacramento Municipal Utility District (SMUD)

Release Plan Summary: Fall 2019 – Spring 2020

Fall 2019 – tentative, subject to impact assessment

- Commitment Costs and Default Energy Bid Enhancements
- Dispatch Operating Target Tariff Clarifications (July 2018 BOG briefing)
- Energy Storage and Distributed Energy Resources Phase 3 (Sept 2018 BOG)

Spring 2020

- Energy Imbalance Market (EIM) 2020 Salt River Project
- Energy Imbalance Market (EIM) 2020 Seattle City Light
- Energy Imbalance Market (EIM) 2020 Los Angeles Dept. of Water and Power

Fall 2020

- Contingency Modeling Enhancements - Transmissions
- DAME 15 Minute Granularity

TBD – tentative, subject to impact assessment

- EIM MPM (Q1 2019 BOG)
- Energy Storage and Distributed Energy Resources Phase 4 (Q3 2019 BOG)
- Excess Behind the Meter Production (Q1 2019 BOG)
- Extend Day-Ahead Market Enhancements to EIM Entities (Q3/4 2019 BOG)
- Flexible Resource Adequacy Criteria and Must-offer Obligation Phase 2 (Q2/3 2019 BOG)
- Intertie Deviation Settlement (March 2019 BOG)
- RA Enhancements Track 2 (Q2 2019 BOG)
- Review of RMR and CPM (March 2019 BOG)
- Review of Transmission Access Charge Billing Structure (Feb 2019 BOG)
- Storage as a Transmission Facility (Q2 2019 BOG)
- System MPM (Q1 2019 BOG)

Release Schedule 2018 – Spring 2019

Date of Data Refresh: 10/4/18 8:57 AM

California ISO

Legend
Market Simulation
CA ISO Holiday
Deployment Week

	10/1/18 - 10/7/18	10/8/18 - 10/14/18	10/15/18 - 10/21/18	10/22/18 - 10/28/18	10/29/18 - 11/4/18	11/5/18 - 11/11/18	11/12/18 - 11/18/18	11/19/18 - 11/25/18	11/26/18 - 12/2/18	12/3/18 - 12/9/18	12/10/18 - 12/16/18	12/17/18 - 12/23/18	12/24/18 - 12/30/18	12/31/18 - 1/6/19	1/7/19 - 1/13/19	1/14/19 - 1/20/19	1/21/19 - 1/27/19	1/28/19 - 2/3/19	3/25/19 - 3/31/19	4/1/19 - 4/7/19	8/12/19 - 8/18/19	8/19/19 - 8/25/19	8/26/19 - 9/1/19	9/2/19 - 9/8/19	9/9/19 - 9/15/19	9/16/19 - 9/22/19	9/23/19 - 9/29/19	9/30/19 - 10/5/19
MAP Stage Environment Window																												
EIM - BANC-SMUD	EIM - BANC-SMUD (08/15-01/31)																											
CCE3 September Full Market Testing	CCE3 September Full Market Testing (08/21-11/06)																											
CCE 3 Full Market Simulation Testing - Market Sim	CCE 3 Full Market Simulation Testing - Market Sim (09/05-10/12)																											
ESDER Phase 2	ESDER Phase 2 (08/06-11/01)																											
ESDER Phase 2 - Market Sim	ESDER Phase 2 - Market Sim (08/20-10/12)																											
CRR Auction Efficiency 1A	CRR Auction Efficiency 1A (09/10-10/12)																											
Generator Contingency and RAS Modeling	Generator Contingency and RAS Modeling (09/10-02/01)																											
Green House Gas Enhancements for EIM	Green House Gas Enhancements for EIM (09/11-10/12)																											
CRR Auction Efficiency 1A - Market Sim	CRR Auction Efficiency 1A - Market Sim (09/17-10/12)																											
Generator Contingency and RAS Modeling - Market Sim	Generator Contingency and RAS Modeling - Market Sim (09/17-10/12)																											
Green House Gas Enhancements for EIM - Market Sim	Green House Gas Enhancements for EIM - Market Sim (09/18-10/12)																											
EIM Enhancements 2018	EIM Enhancements 2018 (09/17-10/24)																											
EIM Enhancements 2018 - Market Sim	EIM Enhancements 2018 - Market Sim (09/17-10/12)																											
CRR Auction Efficiency 1B					CRR Auction Efficiency 1B (11/05-12/21)																								
CRR Auction Efficiency 1B - Market Sim					CRR Auction Efficiency 1B - Market Sim (11/05-11/28)																								
EIM - BANC-SMUD - Market Sim								EIM - BANC-SMUD - Market Sim (12/03-01/31)																			
FNM Promotion 2018Q4										FNM Promotion 2018Q4 (12/11-12/12)																		
EIM - Seattle City Light																								EIM - Seattle City Light (08/15-01/31)				
EIM - Los Angeles Dept of Water and Power																								EIM - Los Angeles Dept of Water and Power (08/15-01/31)				
Production Environment																												
ESDER Phase 2 - DRRS Production Deployment	ESDER Phase 2 - DRRS Production Deployment (10/08-10/08)																											
Settlements Performance Improvements				Settlements Performance Improvements (11/01-11/01)																								
EIM Enhancements 2018				EIM Enhancements 2018 (11/01-11/01)																								
ESDER Phase 2 Production Deployment				ESDER Phase 2 Production Deployment (11/01-11/01)																								
CRR Auction Efficiency 1A				CRR Auction Efficiency 1A (11/01-11/01)																								
Green House Gas Enhancements for EIM				Green House Gas Enhancements for EIM (11/01-11/01)																								
FNM Promotion 2018Q4							FNM Promotion 2018Q4 (11/27-11/29)																					
Imbalance Conformance Enhancements								Imbalance Conformance Enhancements (12/04-12/04)																				
CRR 1B: Settlement Provisions											CRR 1B: Settlement Provisions (12/28-12/28)																	
Generator Contingency and RAS Modeling																Generator Contingency and RAS Modeling (02/01-02/01)													
CCE3 Activation in Production: Full Scope																	CCE3 Activation in Production: Full Scope (04/01-04/01)											
EIM - BANC-SMUD																		EIM - BANC-SMUD (04/03-04/03)										
ESDER Phase 3																												ESDER Phase 3 (10/01-10/01)

http://www.caiso.com/Documents/ReleaseSchedule.pdf

2018 Independent Projects

2018 – Congestion Revenue Rights MUI Update

With the update to the Congestion Revenue Rights (CRR) Market User Interface (MUI) users will no longer be required to have Java installed. The CRR MUI will be updated as follows:

	AS-IS	TO-BE
UI Change	Current Market User Interface (MUI) requires IE9 and Java 1.6 update 43.	Updated MUI will not require Java Runtime Environment. All Java applets are removed
UI Change	Current MUI uses older format	New version will have a slightly different look but the same functionality plus some additional user features
No Change to XML format	Allows upload of allocation and auction portfolios via XML	There will be no changes to the existing XML format

2018 – Congestion Revenue Rights MUI Update

Project Info	Details/Date
Application Software Changes	Update to CRR MUI to remove all applets from the MUI
BPM Changes	No BPM changes are required
WebEx Overview Training	July 26, 2018 - Presentation available on CRR MUI
CRR MUI Manual	August 29, 2018 - Available on CRR MUI
MAP Stage	August 13, 2018
Production Implementation	October 2, 2018
Questions	crrdata@caiso.com

Milestone Type	Milestone Name	Dates	Status
WebEx Overview Training	Training on updates to CRR MUI	July 26, 2018	✓
CRR MUI Manual	CRR MUI Manual Available on CRR MUI	August 29, 2018	✓
MAP Stage	System Available in MAP-Stage	August 13, 2018	✓
Production Activation	Activate new CRR MUI	October 2, 2018	✓

2018 – Imbalance Conformance Enhancements

Project Info	Details/Date
Application Software Changes	Improve RTPD, RTD limiter algorithm to better adjust for factors before and after conformance (Inc. VER deviations; other patterns observed from conformance studies; and after conformance value entered - ramping across multiple intervals rather than today's one interval). In scope for delivery 2018.
BPM Changes	Definitions & Acronyms BPM. The ISO is replacing the term 'load biasing' with 'imbalance conformance'

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	May 16, 2018	✓
External BRS	Post External BRS	Jul 10, 2018	✓
Config Guides	Post Config Guides	N/A	
Tech Spec	Publish Technical Specifications	N/A	
Tariff	File Tariff	TBD	
BPMs	Post Draft BPM changes	TBD	
	Publish Final Business Practice Manuals	TBD	
External Training	External Training Complete	N/A	
Market Simulation	Market Sim Window	N/A	
Production Activation	Imbalance Conformance Enhancements	Dec 04, 2018	

2018 - CRR Auction Efficiency – 1B

Project Info	Details/Date
Application Software Changes	Targeted reduction of congestion revenue rights payouts on a constraint by constraint basis **CRRS:** Calculate offset MW for netted CRRs per portfolio per constraint/contingency case per hour: • Calculate netted CRR portfolio proportion of netted flow on constraint (alpha) • Calculate IFM constraint flow difference (CFD) • Calculate netted CRR portfolio Offset MW = alpha x CFD • Calculate netted CRR portfolio Notional, Offset, Clawback and Circular Scheduling Revenue values **Settlement:** Daily Settlement: • Daily CRR Settlement value based on results of constraint-based calculations • Daily CRR Surplus Distribution Payment from available constraint-specific funds (In CC6700) • Daily surplus and deficits per constraint managed during the month Monthly Settlement - at end of each month • Monthly CRR Surplus Distribution Payment from available constraint-specific funds (New CC6701) • Residual funds allocated to Balancing Account and measured demand. (New CC6706) **CMRI**: Report individual CRR's Notional, Offset, Clawback and Circular Scheduling Revenue values **OASIS:** Report constraint-based data affecting CRR settlements **Market Clearing/Credit Tracking:** Process new charge codes

2018 - CRR Auction Efficiency – 1B

Project Info	Details/Date
BPM Changes	• Congestion Revenue Rights • Definitions & Acronyms • Market Instruments • Market Operations • Settlements & Billing
Business Process Changes	• Manage Operations Support & Settlements (MOS) / Manage Market Billing & Settlements

Milestone Type	Milestone Name	Dates	Status
Board Approval	BOG Presentation and Approval - Track 1B	Jun 21, 2018	✓
External BRS	Post External Draft BRS	Aug 06, 2018	✓
Config Guides	Post Draft Configuration Guides	Sep 10, 2018	✓
Tech Spec	Create ISO Interface Spec (Tech spec)	Sep 10, 2018	✓
Tariff	File Tariff	Jul 17, 2018	✓
	Update Tariff and Refile with FERC	Oct 01, 2018	✓
BPMs	Post BPM (Draft)	Oct 29, 2018	
External Training	Deliver external training	Oct 31, 2018	
Market Sim	CRR Auction Efficiency 1B	Nov 05, 2018 - Nov 28, 2018	
Production Activation	CRR Auction Efficiency 1B	Dec 28, 2018	
	65% Transmission Capacity for CRR Allocation & Auction	Sep 24, 2018	✓
	Settlement Provisions	Dec 28, 2018	

2018 Fall Release

Fall 2018 Release – Overview

	Board Approval	External BRS	Config. Guide	Tech Spec	Draft Tariff**	BPMs	External Training	Market Sim	Production Activation
Fall 2018 Release - Overview	**01/01/18**	**05/22/18**	**06/22/18**	**06/22/18**	**08/01/18**	**08/10/18**	**08/13/18**	**08/20/18 - 10/12/18**	**11/01/18**
ESDER Phase 2	07/26/17	03/01/18	05/18/18	05/21/18	04/09/18	06/28/18	08/07/18	08/20/18 - 10/12/18	11/01/18
Settlements Performance Improvements	*N/A*	02/20/18	*N/A*	*N/A*	*N/A*	*N/A*	08/14/18	08/20/18 - 10/12/18	11/01/18
Green House Gas Enhancements for EIM	07/25/18	05/30/18	*N/A*	*N/A*	06/18/18	09/07/18	08/16/18	09/18/18 - 10/12/18	11/01/18
CRR Auction Efficiency 1A	03/22/18	05/11/18	*N/A*	06/26/18	04/09/18	09/07/18	09/13/18	09/17/18 - 10/12/18	11/01/18
EIM Enhancements 2018	*N/A*	04/30/18	*N/A*	06/25/18	*N/A*	08/10/18	08/16/18	09/17/18 - 10/12/18	11/01/18
Commitment Costs Phase 3	03/25/16	08/21/17	05/17/18	07/13/18	07/31/17	10/19/18	9/10/18	09/05/18 - 10/12/18	04/01/19
Generator Contingency and RAS Modeling	09/19/17	03/16/18	*N/A*	*N/A*	11/28/18	12/05/18	09/12/18	09/17/18 - 10/12/18	02/01/19

Notes:

Items in BLUE are complete

Items in RED indicate a ***new*** date which is later than the target date listed on the Overview line.

Product View - CMRI UI and API changes

Release	Project	Change Type	External Impact	MP Action	UI Change	Service Name & Major Version	Minor Version	MAP Stage	Production Activation	Artifacts Package	Tech Spec Version
Spring 2019	CCE3	New	CAISO Market	Adopt when ready	Tab: Default Bids New Report: Actual Limitation Values	retrieveActualLimitationValues_v1 retrieveActualLimitationValues_v1_DocAttach	20171001	Sep 13, 2018	Apr 1, 2019	v1.1 (Fall)	3.8.1
Spring 2019	CCE3	New	CAISO Market	Adopt when ready	Tab: Default Bids New Report: Resource Opportunity Costs	retrieveResourceOpportunityCost_v1 retrieveResourceOpportunityCost_v1_DocAttach	20171001	Sep 13, 2018	Apr 1, 2019	v1.1 (Fall)	3.8.1
Indp.	EIM WNTR 2017	New	CAISO Market	Adopt when ready	Tab: Real-Time New Report: Resource Operating Limits	TBD	TBD	Nov 10, 2018	TBD	TBD	TBD
Indp.	EIM WNTR 2017	New	CAISO Market	Adopt when ready	Tab: EIM New Report: Resource Operating Limits	TBD	TBD	Nov 10, 2018	TBD	TBD	TBD
Indp.	CRR1B	New	CAISO Market	Adopt when ready	CRR Revenue Adjustment Data	retrieveCRRRevenueAdjustmentData_v1 retrieveCRRRevenueAdjustmentData_v1_DocAttach	TBD	Nov 5, 2018	Dec 28, 2018	V1.1 (Fall)	3.8.1

Application access: **http://www.caiso.com/participate/Pages/ApplicationAccess/Default.aspx**

CAISO new developer site: **https://developer.caiso.com**

Product View - OASIS UI and API changes

Release	Project	Change Type	External Impact	MP Action	UI Change	Web Service	MAP Stage	Production Activation	Artifacts Package	Tech Spec Version
Fall 2018	EIM 2018	New	CAISO Market	Adopt when ready	Tab: Energy New Report: BAA Market Events	ENE_BAA_MKT_EVENTS	Sep 24, 2018	1 Nov 2018	v1.1 (Fall)	v5.1.5
Fall 2018	CRR Auc Eff 1A	Update	CAISO Market	Adopt when ready	Tab: Public Bids Report: CRR Public Bids	PUB_CRR_BID	Sep 24, 2018	1 Nov 2018	v1.1 (Fall)	v5.1.5
Indp.	SPI	New	CAISO Market	Adopt when ready	Tab: Transmission Report: Current Transmission Usage Transmission Outages Transmission Interface Usage Market Available Transmission Capacity	TRNS_CURR_USAGE TRNS_OUTAGE TRNS_USAGE TRNS_ATC	September 2018	1 Nov 2018	N/A (data change)	N/A (data change)

Application access: **http://www.caiso.com/participate/Pages/ApplicationAccess/Default.aspx**

CAISO new developer site: **https://developer.caiso.com**

Fall 2018 – ESDER Phase 2

Project Info	Details/Date

Application Software Changes	**Settlements:**
	• Alternative Baselines:
	  • Possible system changes to include addition of an automated monitoring tool for performance measurement data received from external participants.
	  • Changes to the DRRS registration system for the selection of the new baselines and allowing for ISO approval prior to use in the market.
	  • Settlement configuration will need to be evaluated and revised to assure PDRs that provide AS services can be calculated correctly based on the submitted SQMD.
	ECIC:
	• EIM Net Benefits Testing:
	  • Code modification to calculation to accommodate addition of all applicable gas price indices.
	MRI-S:
	• Alternative Baselines:
	  • The DRS Decommissioning project seeks to retire the current DRS system. Once this system is retired all current functionality will reside in the MRI-S (Market Results Interface – Settlements) system. It should be noted that all available customer load baseline calculations will be submitted into the MRI-S system once the DRS system is retired.

BPM Changes	**Market Instruments:**
	• EIM Net Benefits Testing:
	  • Changes will include addition of all gas price indices used in calculation.
	Metering:
	• Alternative Baselines:
	  • Need to revise the BPM to explain new baselines and changes to existing systems.
	• Station Power:
	  • Need to revise BPM to provide examples of wholesale/retail uses for generation and storage
	  • Need to revise BPM to clarify permitted/prohibited netting rules.
	Definitions & Acronyms:
	• Station Power:
	  • Revision of Station Power definition to match Tariff language.
	Settlements & Billing:
	• Alternative Baselines:
	  • Possible changes to reflect settlements configuration changes.

Fall 2018 – ESDER Phase 2

Project Info	Details/Date
Business Process Changes	• Develop Infrastructure (DI) (80001) • Manage Market & Reliability Data & Modeling (MMR) (80004) • Manage Operations Support & Settlements (MOS) (80007) • Support Business Services (SBS) (80009) • Other

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	Jul 26, 2017	✓
External BRS	Post External BRS	Oct 17, 2017	✓
	Post Revised External BRS	Mar 01, 2018	✓
Config Guides	Settlements Config Guides	May 18, 2018	✓
Tech Spec	Publish ISO Interface Spec (Tech spec)	May 21, 2018	✓
Tariff	File Tariff with FERC	Aug 17, 2018	✓
	Post Draft Tariff	Nov 17, 2017	✓
	Post Updated Draft Tariff (based on feedback)	Apr 09, 2018	✓
CPG	Next CPG Meeting	Aug 14, 2018	✓
BPMs	Post Draft BPM changes	Jun 28, 2018	✓
External Training	Deliver external training	Aug 07, 2018	✓
Market Sim	ESDER Phase 2 - Market Sim	Aug 20, 2018 - Oct 12, 2018	
Production Activation	ESDER Phase 2 - DRRS Production Deployment	Oct 08, 2018	
	ESDER Phase 2 Production Deployment	Nov 01, 2018	

DRRS – Batch Submission Recommendation

- When a DRP submits a batch to DRRS, the batch status can have 4 possible values for:
  SUCCESS, ERROR,IN_PROCESS, and NOT_PROCESSED

- Once the batch is submitted, the status is set to "NOT_PROCESSED". The processor runs periodically to pick up the submitted batch jobs and start processing them by changing the status to “IN_PROCESS”.

- Depending on the result of the batch validation process, the status will then change to “SUCCESS” or “ERROR”.

- Please refer to Page 49 of Technical Specification document:
http://www.caiso.com/Documents/EnergyStorageandDistributionEnergyResourcePhase2-DRRS-TechnicalSpecificationsv20_Clean.pdf

DRRS – Batch Submission Recommendation

- As part of the ESDER 2 project go-live, the DRPs are required to terminate all existing registrations and submit new registrations using the new baseline methods with an effective start date of 11/01/2018.

- DRPs are required to submit these new registrations in DRRS from 10/15/18 to 10/31/18 in order to avoid any gap in registrations.

- To ensure a smooth processing of these batch files and in order to avoid over loading the DRRS application, the ISO is requesting the DRPs to follow these guidelines:
  - Limit new batch submissions to 10,000 locations per batch
  - Do not submit duplicate data sets as the system will have to process through the same information multiple times.
  - Ensure there is a delay in the submission of the batches as the batches are queued for processing.

Fall 2018 – Settlement Performance Improvements

Project Info	Details/Date
Application Software Changes	The scope of the Settlements Performance Improvements include: • Performance improvements for Post Bill Determinant Mapping process - Non-production storage issue causing delays to the statement publication • Performance improvements of Statement Generation (BD File Size issue): Daily Statements generation Monthly Statements and Invoice generation Systems: Settlements
BPM Changes	Settlements and Billing
Business Process Changes	Settlements & Billing: Application Flow should be reviewed for possible changes

Milestone Type	Milestone Name	Dates	Status
Board Approval	Board Approval	N/A	
External BRS	Complete and Post External BRS	Feb 20, 2018	✓
	Updated External BRS Published (ver 1.1)	Jul 27, 2018	✓
	Updated External BRS Published (ver 1.2)	Aug 10, 2018	✓
Config Guides	Design Review - BPM and Tariff SMEs	N/A	
Tech Spec	Create ISO Interface Spec (Tech spec)	N/A	
Tariff	File Tariff	N/A	
BPMs	Post Draft BPM changes	N/A	
External Training	Post User Guides	Aug 14, 2018	✓
OTHER	Settlement Interface Specification for Scheduling Coordinators	Mar 16, 2018	✓
Market Sim	Market Sim Window	Aug 20, 2018 - Oct 12, 2018	
Production Activation	Settlements Performance Improvements	Nov 01, 2018	

Fall 2018 - Green House Gas Enhancements for EIM

Project Info	Details/Date
Application Software Changes	The CA ISO proposes to adjust its solution to address emissions associated with secondary dispatch. CAISO will limit the GHG bid quantity of EIM participating resources to the MW value between the EIM participating resource's base schedule and the resource's upper economic limit (UEL). Since the GHG bid quantity is now limited, this will change the market dispatch to identify other EIM participating resources that have available capacity above their base schedule to support EIM transfers into CAISO to serve CAISO demand. The GHG emissions of these resources will now be appropriately reflected in the market attribution. The CA ISO decided to withdraw the two-pass solution previously proposed.
BPM Changes	Energy Imbalance Market (EIM)

Milestone Type	Milestone Name	Dates	Status
Board Approval	Present report to BOG	Jul 25, 2018	✓
	Present report to EIM Governing Body	Jul 12, 2018	✓
External BRS	Post External BRS to CAISO website	May 30, 2018	✓
Config Guides	Publish Configuration Guides	N/A	
Tech Spec	Publish Technical Specifications	N/A	
Tariff	Draft Tariff	Jun 18, 2018	✓
	File Tariff	Aug 29, 2018	✓
BPMs	Publish Draft BPMs	Sep 07, 2018	✓
External Training	Deliver external training	Aug 16, 2018	✓
Market Sim	Market Sim Window	Sep 18, 2018 - Oct 12, 2018	
Production Activation	Green House Gas Enhancements for EIM	Nov 01, 2018	

Fall 2018 - CRR Auction Efficiency – 1A

Project Info	Details/Date
Application Software Changes	CRR Auction Efficiency 1A project is focused on: 1. Creating an annual outage reporting deadline to be aligned with the annual congestion revenue rights allocation and auction process to improve the congestion revenue rights model used in the annual process. 2. Limiting the congestion revenue right source and sink combinations that market participants can purchase in the auctions to better align the congestion revenue rights product with the purpose of hedging congestion charges associated with supply delivery in the CAISO's locational marginal price-based day-ahead market. 3. Introducing a mechanism to allow market participants to sell previously acquired CRRs into subsequent auctions System Impacts: CRR, OASIS, EDR. The Technical Specification will address a new Transaction Type and Hedge Type column in OASIS.
BPM Changes	• CRR • Outage Management • Settlements & Billing • Market Instruments
Business Process Changes	• Manage Market & Reliability Data & Modeling (MMR) - Manage Outage Data • Manage Markets & Grid (MMG) -Manage Congestion Revenue Rights & Prepare CRR Allocation Data

Milestone Type	Milestone Name	Dates	Status
Board Approval	BOG Presentation and Approval	Mar 22, 2018	✓
External BRS	Post External Draft BRS	May 11, 2018	✓
Config Guides	Post Draft Configuration Guides	N/A	
Tech Spec	Publish Technical Specifications Complete	Jun 26, 2018	✓
Tariff	File Tariff	Apr 09, 2018	✓
BPMs	Post BPM (Draft)	Sep 07, 2018	✓
External Training	Deliver external training	Sep 13, 2018	✓
Market Sim	Market Sim Window	Sep 17, 2018 - Oct 12, 2018	
Production Activation	CRR Auction Efficiency 1A	Nov 01, 2018	

Fall 2018 – EIM Enhancements 2018

Project Info	Details/Date
Application Software Changes	• Markets to exclude Flex Ramp provision of EIM BAAs undergoing contingency • ISO Enhancement to BAAOP EIM operator screens to review active market data and Flex Ramp Sufficiency Test inputs **Systems:** • **BAAOP** – New display screens presenting currently active market data for market data submissions, flex ramp sufficiency test inputs • **RTM Market Application** • Exclude Flex Ramp Product provision for EIM BAAs undergoing contingency (FRU/FRD awards and prices set to zero); EIM Area footprint's FRP requirements are reduced by a diversity benefit pro rata amount based on excluded EIM BAAs • **OASIS** – new report displays real-time intervals where BAAs (ISO and EIM) are in contingency • **Integration** – OASIS API will support new report
BPM Changes	Energy Imbalance Market (EIM), Market Instruments, Market Operations
Business Process Changes	• Manage Entity & Resource Maintenance Updates • Manage Real Time Interchange Scheduling • Manage Real Time Operations- Maintain Balancing Area • Perform Price Validation, Manage Price Corrections

Fall 2018 – EIM Enhancements 2018

Milestone Type	Milestone Name	Dates	Status
Board Approval	Board of Governors Approval	N/A	
External BRS	Post External BRS	Apr 30, 2018	✓
	Post Revised External BRS	Jun 01, 2018	✓
	Post Revised External BRS v1.2	Jul 31, 2018	✓
Config Guides	Post Config Guides	N/A	
Tech Spec	Create ISO Interface Spec (Tech spec)	Jun 25, 2018	✓
Tariff	File Tariff	N/A	
BPMs	Post Draft BPM changes	Aug 10, 2018	✓
External Training	Deliver external training	Aug 16, 2018	✓
Market Sim	Market Sim Window	Sep 17, 2018 - Oct 12, 2018	
Production Activation	EIM Enhancements 2018	Nov 01, 2018	

2019 Spring Release

Spring 2019 - Commitment Cost Enhancements Phase 3

Project Info	Details/Date
Application Software Changes	**Scope:** 1. Clarify use-limited registration process and documentation to determine opportunity costs 2. Determine if the ISO can calculate opportunity costs • ISO calculated; Modeled limitation Start/run hour/energy output • Market Participant calculated; Negotiated limitation 3. Clarify definition of “use-limited”; add MSG Configuration ID to ULPDT 4. Change Nature of Work attributes (Outage cards) • Modify use-limited reached for RAAIM Treatment • Allow PDR to submit use-limit outage card for fatigue break. 5. Market Characteristics (added to GRDT in Spring 2018) shall be Read-Only and set to Null • Maximum Daily Starts • Maximum MSG transitions • Ramp rates **Impacted Systems:** 1. Master File: Set use-limited resource types and limits 2. ECIC: Process use limited resource input values for and Receive opportunity cost adders from opportunity cost tool 3. CIRA: RAAIM exempt rule for “use-limited reached” 4. CMRI: Publish opportunity cost 5. SIBR: Add Opportunity cost adders on bid caps 6. OMS: “Use-Limited Reached” nature of work attribute for Generation Outage Card 7. Settlements: Publish the actual start up, run hour and energy output for the use-limited resources 8. Opportunity cost calculator (OCC): Calculate and publish opportunity costs for start-up, MLC and DEB
BPM Changes	Market Instruments, Outage Management, Reliability Requirement, Market Operations
Business Process Changes	• Manage Market & Reliability Data & Modeling • Manage Markets & Grid

Spring 2019 - Commitment Cost Enhancements Phase 3 (cont.)

Project Info	Details/Date
FERC ruling: CCE3 changes	**Updates:** 1. As a result of FERC's ruling against CAISO's proposal to allow scheduling coordinators to register market values for resource characteristics in the Master File, changes have been made to prevent the collection of this data. 2. This resulted in Technical Specification, RDT, and validation rule changes, which have been posted to the CAISO website.

Milestone Type	Milestone Name	Dates	Status
Board Approval	Board of Governors (BOG) Approval	Mar 25, 2016	✓
External BRS	Post Updated External BRS	Aug 21, 2017	✓
Config Guides	Config Guide	May 17, 2018	✓
Tech Spec	Publish Updated Master File Technical Specification, GRDT/IRDT Definitions	Jul 13, 2018	✓
	Publish updated CMRI Tech Spec, updated API for Use Limit Type Enumeration update	Aug 02, 2018	✓
Tariff	Draft Tariff	Jul 31, 2017	✓
	File Tariff	Mar 23, 2018	✓
BPMs	Publish Draft BPM: Outage Management	Oct 19, 2018	
	Publish Draft BPM: Reliability Requirements	Oct 19, 2018	
	Publish Draft BPM: Market Instruments	Oct 19, 2018	
	Publish Draft BPM: Market Operations	Oct 19, 2018	
External Training	Deliver external training	Sep 10, 2018	✓
Market Simulation	Full Market Simulation Testing	Sep 05, 2018 - Oct 12, 2018	
Production Activation	Commitment Costs Phase 3	Apr 01, 2019	
	CCE3 Deployment to Production: Master File	May 16, 2018	✓

Spring 2019 – EIM BANC/SMUD

Project Info	Details/Date
Application Software Changes	Implementation of SMUD as an EIM Entity
BPM Changes	EIM BPM will be updated if needed to reflect new modeling scenarios identified during implementation and feedback from SMUD.
Market Simulation	December 3, 2018 – January 31, 2019
Parallel Operations	February 1, 2019 – March 30, 2019

Milestone Type	Milestone Name	Dates	Status
Tariff	File Readiness Certification	Mar 01, 2019	
Market Sim	Market Sim Window	Dec 03, 2018 - Jan 31, 2019	
Parallel Operations	Parallel Operations	Feb 01, 2019 - Mar 30, 2019	
Production Activation	EIM - BANC-SMUD	Apr 03, 2019	

2019 Independent

2019 – Generator Contingency and Remedial Action Scheme Modeling

Project Info	Details/Date

Application Software Changes	• Enhance the Security Constrained Economic Dispatch
	  • Model generation/load loss in the dispatch
	  • Model transmission loss along and generation/load loss due to RAS operation dispatch
	  • Model transmission reconfiguration due to RAS operation in the dispatch
	• Update the congestion component of LMP so that it considers the cost of positioning the system to account for generator contingencies and RAS operations
	• Enhance DAM, RTM and EIM to support generator contingencies
	Impacted systems:
	• CRR, EDR, EMMS, IFM/RTM, Integration, MF.

BPM Changes	Managing Full Network Model CRR Market Operations EIM
Business Process Changes	• Manage Congestion Revenue Rights (MMR LII) • Manage Operations Planning • Manage Real Time Operations - Transmission & Electric System (MMG LII)

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	Sep 19, 2017	✓
External BRS	Complete and Post External BRS	Mar 16, 2018	✓
Config Guides	Post Draft Config Guides	N/A	
Tech Spec	Create ISO Interface Spec (Tech spec)	N/A	
Tariff	File Tariff	Nov 28, 2018	
BPMs	Post Draft BPM changes	Dec 05, 2018	
External Training	Deliver external training	Sep 12, 2018	✓
Market Sim	Market Sim Window	Sep 17, 2018 - Oct 12, 2018	
Production Activation	Generator Contingency and RAS Modeling	Feb 01, 2019	

Generator Contingency & Remedial Action Scheme Modeling (cont.)

Due to the NDA restriction of the shift factor data in Market Sim, in order for CAISO to facilitate the Market Sim verification the following will occur

- GCARM scenarios will run as documented in the Market Scenario documentation.
- Settlement of the scenario will be calculated as documented in the Market Scenario documentation.
- Post Market Sim scenario execution, upon request, CAISO will provide a version of the shift factor file without market sensitive information for participants to review GFF impact from GCARM contingencies
  - http://www.caiso.com/Pages/documentsbygroup.aspx?GroupID=35E9BD08-89AC-4D83-9921-BD024EE45596

Structured Scenarios

- For both Day Ahead and RT scenarios, the ISO will provide a spreadsheet with information on contingencies that will be used for market simulation. The spreadsheet will provide similar data to what is currently available in the CMRI report. There will be the name of the contingency (generic e.g. GCARM_TEST_1) and equipment that can be possibly overloaded by the contingency.
  - http://www.caiso.com/Documents/GCARMContingencySpreadsheet.xlsx
- On the RT scenario, the ISO will take the Day Ahead awards information from the structured scenario in DA into Real Time, just like the production process, and market participants may submit bids for any resources, or for those resources that were not awarded for the DA into the Real Time

2019 – ADS Replacement

Project Info	Details/Date
Application Software Changes	• Transition to web-based user interface to eliminate the need to install thick client • Transition ADS provisioning to the Access and Identity Management (AIM) application including Resource Level Access Controls (RACL) access • The query tool will provide 30 days of historical data • Move near-term transactions for FERC-764 15-minute awards to ADS; This will include user interface; historical transactions will stay in CMRI. • Various user interface enhancements adding content per Operation's request • ADS B2B services will not otherwise change.
BPM Changes	• Market Instruments • Market Operations
Business Process Changes	To Be Determined

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	N/A	
External BRS	Post External BRS	Aug 06, 2018	✓
ADS Update	ADS Update Meeting	Aug 15, 2018	✓
Config Guides	Design Review - BPM and Tariff SMEs	N/A	
Tech Spec	Publish Technical Specifications	TBD	
Tariff	File Tariff	N/A	
BPMs	Post Draft BPM changes	TBD	
	Publish Final Business Practice Manuals	TBD	
External Training	Conduct External Training	TBD	
Market Sim	Market Sim Window	TBD	
Production Activation	ADS Replacement	TBD	

2019 Fall Release

Fall 2019 – Commitment Cost and Default Energy Bid Enhancements

Project Info	Details/Date
Application Software Changes	**Scope:** Enhances the ability to submit market-based commitment cost bids in order to reflect unique costs and volatility: • Support integration of renewable resources through incentivizing flexible resources participation during tight fuel supply • Account for costs of flexible resources (gas and non-gas) to reduce risk of insufficient cost recovery • Encourage participation of non-RA and voluntary EIM resources; compliance with FERC Order 831 • Raises energy bid cap from $1,000/MWh to $2,000/MWh: • Requires supporting verified costs of energy bids above $1,000/MWh • Introduces market power mitigation (MPM) measures for commitment costs. **Impacted Systems:** • SIBR: Incorporate negotiated default commitment bids, allow the submittal of Ex Ante cost adjustments. Increase commitment cost caps, increase energy bid caps, incorporate soft energy bid cap. Allow for hourly submittal of minimum load bids into day-ahead market. • IFM/RTM: Add MPM tests for commitment costs. Mitigate commitment costs where tests indicate market power. Incorporate MPM (both energy and commitment) in short term unit commitment process. Recalibrate the penalty price parameters in response to raising energy bid cap to $2,000/MWh. • CMRI: Provide resource-specific reporting on mitigation results for commitment costs. Provide additional source information for default bids. • MQS/PCA: Incorporate mitigation of commitment costs for specific exceptional dispatch (ED) types. Incorporate bid locking of commitment costs for ED instructions and for certain cases where resources are uneconomic to operating. • Master File: Allow submittal of resource-specific minimum load costs for costs that are independent of the Pmin level. Add the ability to indicate preference for new negotiated cost basis type. Provide a view of resource-specific scalars used for validating Ex-Ante cost adjustments. • CIDI: Incorporate templates for submitting request for manual consultation and ex-post default bid adjustments.

Fall 2019 – Commitment Cost and Default Energy Bid Enhancements

Project Info	Details/Date
BPM Changes	• Market Instruments • Market Operations
Business Process Changes	• Maintain Major Maintenance Adders (MMG LIII) • Maintain Negotiated Default Energy Bids (MMG LIII) • Maintain Negotiated O_Ms (MMG LIII) • Manage Day Ahead Market (MMG LII) • Manage Market Billing Settlements (MOS LII) • Manage Real Time Hourly Market (RTPD) (MMG LII) • Manage Real Time Operations – Maintain Balance Area (MMG LII)

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	Mar 22, 2018	✓
External BRS	Complete and Post External BRS	Apr 27, 2018	✓
Draft Policy	Publish Draft Business Rules externally	Jan 31, 2018	✓
Config Guides	Post Draft Config Guides	TBD	
Tech Spec	Publish Technical Specifications	TBD	
Tariff	File Tariff	TBD	
BPMs	Post Draft BPM changes	TBD	
External Training	Deliver external training	TBD	
Market Sim	Market Sim Window	TBD	
Production Activation	CCDEBE	Oct 01, 2019	

2020 Fall Release

Fall 2020 – Contingency Modeling Enhancements Transmissions

Project Info	Details/Date

Application Software Changes	• Positions available resources so that the ISO has sufficient capability to respond to contingency events and return facilities to normal ratings within the emergency rating time frame
	• Enhances the LMP formulation to provide market price signal related to this reliability constraint
	• Creates a Locational Marginal Capacity Price (LMCP) which reflects:
	  • A resource's opportunity costs
	  • Marginal congestion cost savings, and/or
	  • The marginal capacity value to follow dispatch
	Systems:
	• ADS - Modified to display corrective capacity awards similar to AS
	• CMRI - New or modified reports to display LMCP prices and awards
	• IFM/RTM - Model new capacity awards and Locational Marginal Capacity Price (LMCP).
	• Integration
	• OASIS - New or modified reports to display LMCP prices and awards
	• PCA
	• Settlements

BPM Changes	Market Operations, Market Instruments, Definitions and Acronyms, Settlements and Billing
Business Process Changes	• Manage Operations Planning • Manage Day-Ahead Market • Manage Operations Engineering Support • Manage Real Time Operations - Transmission & Electric System • Manage Market Billings & Settlements

Fall 2020 - DAME 15 Minute Granularity

Project Info	Details/Date
Application Software Changes	These are preliminary impact assessments DAM Enhancements include change the day-ahead market from hourly to 15 minute granularity, combine IFM and RUC, procure imbalance reserves • Calculate Imbalance Reserve (IR) Requirements in 15 minute interval (DAM) • EIM interface to submit Base schedule in 15 minute interval (BSAP) • EIM balance test, capacity test and sufficiency test in 15 minute interval (RTM) • Report DAM market results in 15 minute Interval (CMRI) • MP can bid IRU and IRD price in SIBR • DAM co-optimize Energy, AS and IR in 15 minute intervals (DAM) • Remove RUC • Get as self-scheduled 15 minute DAM award of energy in RTM if no real time bids (RTM) • Calculate Settlement DAM Expected Energy in 15 minute interval (RTM) • Calculate Bid cost recovery (MQS) • Settle DAM based on 15 minute interval schedules (Settlement) • Settle CRR in DAM 15 minute intervals (Settlement) • Publish DAM energy and AS requirements and prices in 15 minute interval in OASIS
BPM Changes	Market Instruments, Market Operations, Settlements & Billing, Energy Imbalance markets
Business Process Changes	• Manage Day Ahead Market • Manage D+X analysis • Manage Real Time Operations- Maintain Balancing Area • Manage Market Billings & Settlements

Stay Informed

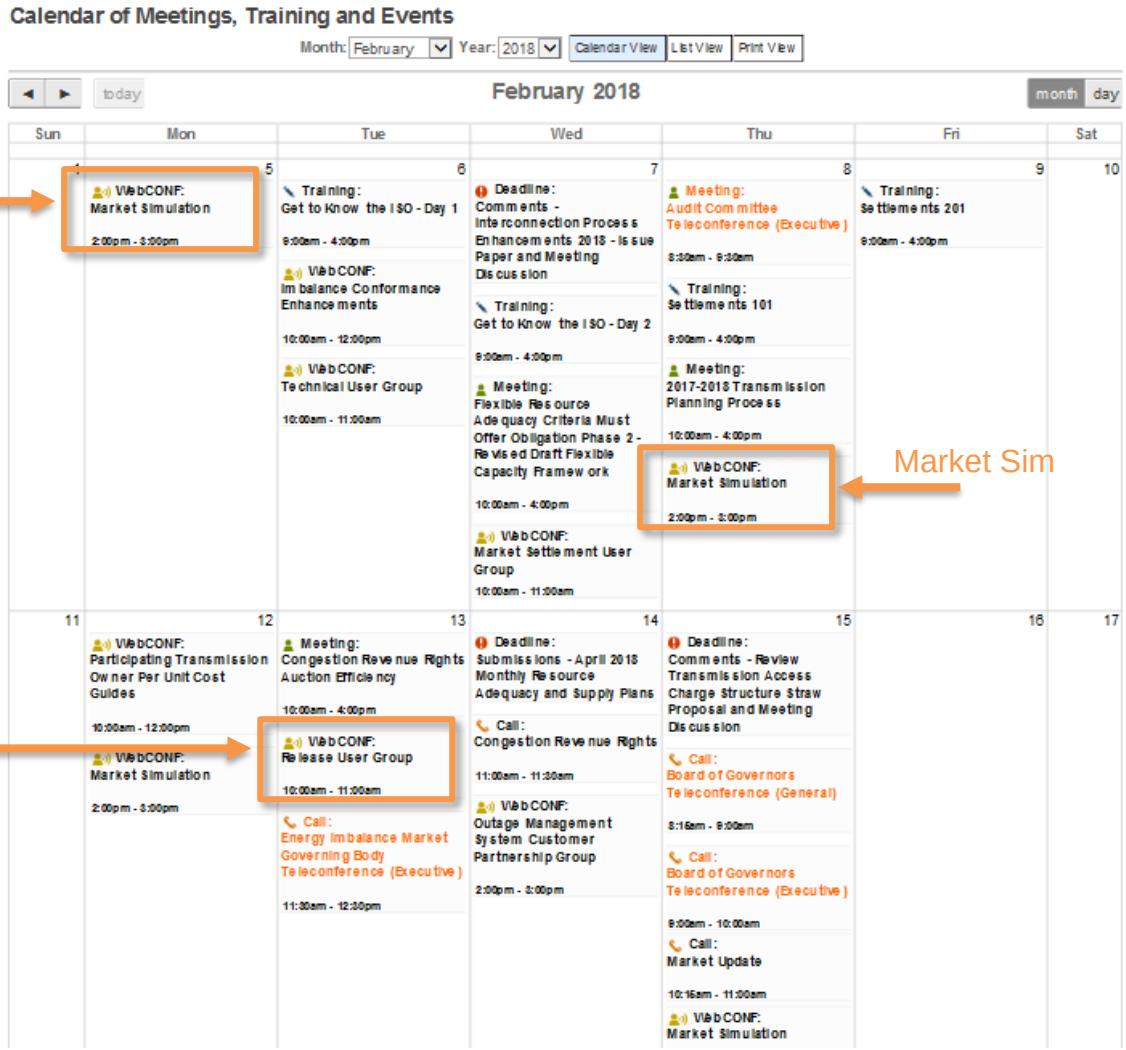
Ways to participate in releases

- 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 sim calls for major releases will be market noticed
  - Market Performance and Planning Forum
    - Bi-monthly review of market performance issues
    - High level discussion of release planning, implementation and new market enhancements

What to look for on the calendar…

Market Sim

Release Users Group (RUG)

Market Sim