Release User Group Agenda

May 22nd, 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
The ISO is now recording the RUG and TUG calls and will be posting the recordings on the Release Planning webpage for stakeholders to listen to at their convenience.	

Release User Group Agenda

May 22nd, 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 Sandhya Balasubramanian Brett Bruderer Eureka Cullado Marcelo Da Costa Ayman Fattah Jami Herguth Cynthia Hinman Elli Johnston Mohan Koya Deann MacDougall Christopher McIntosh LeAnne McLaughlin Indu Nambiar Prince Phillip Raymond Riley LuAnn Rivera Marci Stuckey Craig Williams John Williams Justin Wong

The ISO offers innovative training programs

Date	Training **All classes are offered at our Folsom, CA campus unless noted otherwise**
July 18	Welcome to the ISO webinar
August 14-15	Get to Know the ISO
September 13	Settlements 101
September 14	Settlements 201

New Release Training materials currently posted
Welcome to the ISO recorded webinar
Resource Interconnection Management System (RIMS) Generation Module
Scheduling Infrastructure Business Rules (SIBR) User Interface (UI) Update
RSI: Outage Substitution and RAAIM Pre-Calc
Energy Imbalance Market Winter Release 2017
Reliability Services Initiative (RSI) Training Phase 1B & 2

The ISO's External Training & Readiness team provides quality training and readiness programs that successfully prepare Stakeholders to effectively engage with the ISO

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

Contact us: CustomerTraining@caiso.com

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Release Plan Summary: 2018

Spring 2018
- Resource Adequacy Availability Incentive Mechanism (RAAIM) Calculation Modifications
- ~~Scheduling Infrastructure and Business Rules (SIBR) User Interface (UI) Upgrade~~

Independent 2018
- Imbalance Conformance Enhancements (ICE)
- Congestion Revenue Right Auction Efficiency 1B

Fall 2018
- Green House Gas (GHG) Enhancements for EIM
- Settlements Performance Improvements
- Energy Storage and Distributed Energy Resources (ESDER) Phase 2
- Generator Contingency and Remedial Action Scheme (RAS) Modeling
- Congestion Revenue Right (CRR) Auction Efficiency 1A
- EIM 2018 Enhancements
- Extended STUC
- Commitment Cost Enhancement (CCE) Phase 3
- FERC Order 831 (subset from CCDEBE)

Release Plan Summary: 2019 – Spring 2020

Independent 2019
- Automated Dispatch System (ADS) User Interface (UI) Replacement
- Black Start and System Restoration Phase 2

Spring 2019
- Energy Imbalance Market (EIM) 2019 Balancing Authority of Northern California (BANC) / Sacramento Municipal Utility District (SMUD)

Fall 2019 – tentative, subject to impact assessment
- Contingency Modeling Enhancements - Transmissions
- Commitment Costs and Default Energy Bid Enhancements (CCDEBE)
- Flexible Resource Adequacy Criteria and Must-offer Obligation (FRACMOO) Phase 2
- Energy Storage and Distributed Energy Resources (ESDER) Phase 3
- Review of Transmission Access Charge (TAC) Billing Structure
- Day-Ahead Market Enhancements

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

TBD – tentative, subject to impact assessment
- Clarification of Tariff Rules Regarding Following DOT
- Review of RMR and CPM
- Storage as a Transmission Facility
- Intertie Deviation Settlement
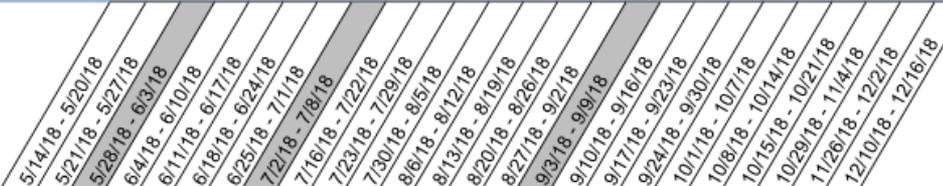- EIM Offer Rules

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Date of Data Refresh: 5/18/18 1:52 PM

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Legend
- Market Simulation
- CA ISO Holiday
- Deployment Week

Map Stage Environment Window

Task	Schedule
SIBR WebSDK Upgrade - Market Sim	SIBR WebSDK Upgrade - Market Sim (02/27-05/18)
FNM Promotion 2018Q2	FNM Promotion 2018Q2 (06/20-06/21)
CRR Auction Efficiency 1A	CRR Auction Efficiency 1A (08/17-09/28)
Generator Contingency and RAS Modeling	Generator Contingency and RAS Modeling (08/17-09/28)
Extended STUC	Extended STUC (08/17-10/01)
ESDER Phase 2	ESDER Phase 2 (08/17-10/02)
CCE3 September Full Market Testing	CCE3 September Full Market Testing (08/20-09/28)
CEE3: September Full Market Simulation - Market Sim	CEE3: September Full Market Simulation - Market Sim (08/20-09/28)
Settlements Performance Improvements	Settlements Performance Improvements (08/20-09/30)
Settlements Performance Improvements - Market Sim	Settlements Performance Improvements - Market Sim (08/20-09/30)
EIM Enhancements 2018	EIM Enhancements 2018 (08/20-09/28)
EIM Enhancements 2018 - Market Sim	EIM Enhancements 2018 - Market Sim (08/20-09/28)
CRR Auction Efficiency 1A - Market Sim	CRR Auction Efficiency 1A - Market Sim (08/20-09/28)
ESDER Phase 2 - Market Sim	ESDER Phase 2 - Market Sim (08/20-09/28)
Extended STUC - Market Sim	Extended STUC - Market Sim (08/20-09/28)
Generator Contingency and RAS Modeling - Market Sim	Generator Contingency and RAS Modeling - Market Sim (08/20-09/28)
FNM Promotion 2018Q3	FNM Promotion 2018Q3 (09/19-09/20)
FNM Promotion 2018Q4	FNM Promotion 2018Q4 (12/11-12/12)

PROD Environment Window

Task	Schedule
FNM Promotion 2018Q2	FNM Promotion 2018Q2 (05/22-05/24)
RAAIM Implementation Update	RAAIM Implementation Update (07/01-07/01)
Back-end and ECIC UI drop	Back-end and ECIC UI drop (07/30-07/30)
FNM Promotion 2018Q3	FNM Promotion 2018Q3 (08/21-08/23)
Generator Contingency and RAS Modeling	Generator Contingency and RAS Modeling (11/01-11/01)
Green House Gas Enhancements for EIM	Green House Gas Enhancements for EIM (11/01-11/01)
Settlements Performance Improvements	Settlements Performance Improvements (11/01-11/01)
Master File GRDT Clarifications	Master File GRDT Clarifications (11/01-11/01)
Discontinue Min/Worst Ramp Rate	Discontinue Min/Worst Ramp Rate (11/01-11/01)
EIM Enhancements 2018	EIM Enhancements 2018 (11/01-11/01)
CCE3 Activation in Production: Full Scope	CCE3 Activation in Production: Full Scope (11/01-11/01)
CRR Auction Efficiency 1A	CRR Auction Efficiency 1A (11/01-11/01)
Extended STUC	Extended STUC (11/01-11/01)
ESDER Phase 2	ESDER Phase 2 (11/01-11/01)
FNM Promotion 2018Q4	FNM Promotion 2018Q4 (11/27-11/29)

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

UI and API Changes

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
Fall 2018	CCE3	New	CAISO Market	Adopt when ready	Tab: Default Bids New Report: Actual Limitation Values	retrieveActualLimitationValues_v1 retrieveActualLimitationValues_v1_DocAttach	20171001	September 2018	11/1/2018	v1.0 (Fall)	3.6.3
Fall 2018	CCE3	New	CAISO Market	Adopt when ready	Tab: Default Bids New Report: Resource Opportunity Costs	retrieveResourceOpportunityCost_v1 retrieveResourceOpportunityCost_v1_DocAttach	20171001	September 2018	11/1/2018	v1.0 (Fall)	3.6.3
	EIM WNTR	New	CAISO Market	Adopt when ready	Tab: Real-Time New Report: Resource Operating Limits	TBD		TBD	TBD	TBD	TBD
	EIM WNTR	New	CAISO Market	Adopt when ready	Tab: EIM New Report: Resource Operating Limits	TBD		TBD	TBD	TBD	TBD

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
Winter 2017	RSI	New	CAISO Market	Adopt when ready	Tab: Public Bids New Report: CSP Offer	PUB_CSP_OFFER_SET	12/5/2017	5/1/2018	V1.2	5.1.1

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

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

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Product View - Master File changes

Release	Project	Change Type	External Impact	MP Action	UI Change	Web Service	Major Version	Minor Version	MAP Stage	Production Activation	Artifacts Package	Tech Spec Version
Spring 2018	BRE-B CCE3 RSI	Modify	CAISO & EIM Market	Required to provide CCE3 values		retrieveGeneratorRDT	4	20180501	March 2018	5/16/2018	v4.1.2	V4.1.1
Spring 2018	BRE-B CCE3 RSI	Modify	CAISO & EIM Market	Required to provide CCE3 values		submitGeneratorRDT	4	20180501	March 2018	5/16/2018	V4.1.2	V4.1.1
Spring 2018	CCE3	Modify	CAISO Market	Required for ULPDT at Config Level	Upload Tab: ULPDT similar to RDT	N/A	N/A	N/A	March 2018	5/16/2018	N/A	N/A
Spring 2018	CCE3	Modify	CAISO Market	Required for ULPDT at Config Level	Reports Tab: ULPDT similar to RDT	N/A	N/A	N/A	March 2018	5/16/2018	N/A	N/A

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

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

California ISO

2018 Spring Release

Spring 2018 – RAAIM Calculation Modifications

Project Info	Details/Date
Application Software Changes	**RAAIM (Resource Adequacy Availability Incentive Mechanism)** – California ISO intends to release a new RAAIM Calculation Modifications within the Settlements system. The fix properly weights flexible capacity for both relative (in percent) and absolute (in MW) availability, as compared to generic capacity in a resource's total availability. For Configuration Guides, please refer to CG PC RA Availability Incentive Mechanism v5.4, CC 8830 v5.2, and CC 8831 v5.1.

Milestone Type	Milestone Name	Dates	Status
Configuration Guide	Draft Technical Documents (Draft Settlements BPM)	Nov 8, 2017	✔
Configuration Output File	Draft Configuration Output File (updated version will be provided prior to Market Sim)	Nov 22, 2017	✔
BPMs	Post BPM Changes - Settlements & Billing	Feb 7, 2018	✔
External Validation	New calculation will be deployed into Production as advisory beginning 5/1/2018	May 1, 2018	✔
Market Sim	Market Simulation (Additional trade date 3/7 and 3/8 Includes mini-monthly)	Jan 16 – Mar 8, 2018	✔
Production Deployment	Implement and deploy into Production revised charge codes per Winter release deployment plan.	May 1 – Jun 30, 2018	
Production Activation	Revised RAAIM penalties and incentives become financially binding on 7/1/2018 going forward.	July 1, 2018	

2018 Independent Projects

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).
	Provide a new or enhanced UI for operators to make more accurate conformance decision making and interact more precisely in conformance scenarios
BPM Changes	Definitions & Acronyms BPM will be impacted if Policy directs that. The ISO is replacing the term 'load biasing' with 'imbalance conformance'

Milestone Type	Milestone Name	Dates	Status
Board Approval	Board of Governors (BOG) Approval	May 16, 2018	✓
External BRS	Post Updated External BRS	TBD	
Tech Spec	Publish Updated Technical Specifications	N/A	
Tariff	File Tariff	June 28, 2018	
Config Guides	Configuration Guide	N/A	
BPMs	Post Draft BPM changes	TBD	
External Training	Deliver External Training	N/A	
Market Simulation	Market Simulation Testing	TBD	
Production Activation	2018 scope activation	TBD	

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2018 - CRR Auction Efficiency – 1B

Project Info	Details/Date
Application Software Changes	TBD – Impact Assessment in development
BPM Changes	TBD
Business Process Changes	TBD

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2018 Fall Release

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Fall 2018 Release – Overview

	Board Approval	External BRS	Config. Guides	Tech Specs	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**	**Aug 20, 2018 – Sep 28, 2018**	**11/01/18**
Commitment Costs Enhancements Ph. 3	03/25/2016	08/21/2017	5/17/2018	11/30/2017	03/23/2018	08/10/2018	08/13/2018	Aug 20, 2018 – Sept 28, 2018	11/01/18
Green House Gas Enhancements for EIM	07/25/2018	5/25/2018	TBD	TBD	TBD	TBD	TBD	TBD	11/01/18
Settlements Performance Improvements	N/A	02/20/18	N/A	N/A	N/A	N/A	08/10/18	Aug 20, 2018 – Sept 28, 2018	11/01/18
ESDER Phase 2	07/26/17	03/01/18	05/18/18	05/21/18	08/01/18	08/06/18	08/07/18	Aug 20, 2018 – Sept 28, 2018	11/01/18
Generator Contingency and RAS Modeling	09/19/17	03/16/18	N/A	N/A	06/20/18	08/10/18	08/10/18	Aug 20, 2018 – Sept 28, 2018	11/01/18
CRR Auction Efficiency – 1A	03/22/18	05/11/18	N/A	N/A	04/09/18	08/10/18	08/10/18	Aug 20, 2018 – Sept 28, 2018	11/01/18
EIM Enhancements 2018	N/A	04/30/18	N/A	06/11/18	N/A	07/09/18	TBD	Aug 20, 2018 – Sept 28, 2018	11/01/18
Extended STUC	07/25/2018	06/06/18	06/22/18	06/22/18	08/01/18	08/10/18	08/13/18	Aug 20, 2018 – Sept 28, 2018	11/01/18

Notes:
*TBD items may be inapplicable, or they may have undetermined dates
Items in BLUE are complete
Items in RED indicate a *new* date which is later than the target date listed on the Overview line.

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Fall 2018 - 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 *(to be added to GRDT)*
	   • Maximum Daily Starts
	   • Maximum MSG transitions
	   • Ramp rates
	Impacted Systems:
	   1. Master File: Set use-limited resource types and limits; Set market-based values
	   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. IFM/RTN: Use market-based values MDS, MDMT and RR
	   6. SIBR: Add Opportunity cost adders on bid caps, remove daily bid RR
	   7. OMS: "Use-Limited Reached" nature of work attribute for Generation Outage Card
	   8. Settlements: Publish the actual start up, run hour and energy output for the use-limited resources
	   9. 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

California ISO

Fall 2018 - Commitment Cost Enhancements Phase 3 (cont)

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	✓
Tech Spec	Publish Updated Technical Specifications	Nov 30, 2017	✓
Tariff	File Tariff	Mar 23, 2018	✓
Config Guides	Config Guide	May 17, 2018	✓
BPMs	Post Draft BPM changes	Aug 10, 2018	
External Training	Deliver External Training	Aug 13, 2018	
Market Simulation	March Master File Market Simulation Testing	Mar 26, 2018 - May 04, 2018	✓
	Full Market Simulation	Aug 20, 2018 – Sep 28, 2018	
Production Activation	CCE3 Deployment to Production: Master File	May 16, 2018	✓
	CCE3 Activation in Production: Full Scope	Nov 01, 2018	

Fall 2018 - Green House Gas Enhancements for EIM

Project Info	Details/Date
Application Software Changes	We are seeking additional stakeholder input given the concerns with the two pass solution that have been identified. At this time, application software changes are not yet known.
BPM Changes	Market Instruments Energy Imbalance Market (EIM)

Milestone Type	Milestone Name	Dates	Status
Board Approval	Present report to BOG	July 25, 2018	
External BRS	Complete External BRS & Post for MPs	May 25, 2018	
Tech Spec	Publish Technical Specifications	TBD	
Tariff	Receive FERC Order	TBD	
Config Guides	Post Configuration Guides	TBD	
BPMs	Post Draft BPM changes	TBD	
External Training	Deliver External Training	TBD	
Market Sim	Market Sim Window	TBD	
Production Activation	Green House Gas Enhancements for EIM	Nov 01, 2018	

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
External BRS	Complete and Post External BRS	Feb 20, 2018	✓
OTHER	Settlement Interface Specification for Scheduling Coordinators	Mar 16, 2018	✓
Tariff	File Tariff	N/A	
Config Guides	Design review - BPM and Tariff SMEs	N/A	
BPMs	Post Draft BPM changes	N/A	
Tech Spec	Create ISO Interface Spec (Tech spec)	N/A	
External Training	Milestone: Training Complete	Aug 10, 2018	
Market Sim	Market Sim Window	Aug 20, 2018 - Sep 28, 2018	
Production Activation	Settlements Performance Improvements	Nov 01, 2018	

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.

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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	✓
Tariff	Post Draft Tariff	Nov 17, 2017	✓
	Post Updated Draft Tariff (based on feedback)	Apr 09, 2018	✓
	File Tariff with FERC	Aug 01, 2018	
CPG	Next CPG Meeting	Jun 01, 2018	
Tech Spec	Publish ISO Interface Spec (Tech spec)	May 21, 2018	✓
Config Guides	Settlements Config Guides	May 18, 2018	✓
BPMs	Post Draft BPM changes	Aug 06, 2018	
External Training	Deliver External Training	Aug 07, 2018	
Market Sim	Market Sim Window	Aug 20, 2018 - Sep 28, 2018	
Production Activation	ESDER Phase 2	Nov 01, 2018	

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Fall 2018 – 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)

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Fall 2018 – Generator Contingency and Remedial Action Scheme Modeling

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	✓
Tariff	File Tariff	Jun 20, 2018	
Config Guides	Post Draft Config Guides	N/A	
BPMs	Post Draft BPM changes	Aug 10, 2018	
Tech Spec	Create ISO Interface Spec (Tech spec)	N/A	
External Training	Deliver external business training	Aug 10, 2018	
Market Sim	Market Sim Window	Aug 20, 2018 - Sep 28, 2018	
Production Activation	Generator Contingency and RAS Modeling	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.	
BPM Changes	• CRR • Credit Management and Market Clearing • Market Instruments	• Outage Management • Settlements & Billing
Business Process Changes	• Manage Market & Reliability Data & Modeling (MMR) - Manage Outage Data • Manage Markets & Grid (MMG) -Manage Congestion Revenue Rights & Prepare CRR Allocation Data	

Fall 2018 - CRR Auction Efficiency – 1A

Milestone Type	Milestone Name	Dates	Status
Board Approval	BOG Presentation and Approval	Mar 22, 2018	✓
External BRS	Post External Draft BRS	May 11, 2018	✓
Tariff	File Tariff	Apr 09, 2018	✓
Config Guides	Post Draft Configuration Guides	N/A	
BPMs	Post BPM (Draft)	Aug 10, 2018	
Tech Spec	Create ISO Interface Spec (Tech spec)	N/A	
External Training	Deliver external training	Aug 10, 2018	
Market Sim	Market Sim Window	Aug 20, 2018 - Sep 28, 2018	
Production Activation	CRR Auction Efficiency 1A	Nov 01, 2018	

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Fall 2018 – EIM Enhancements 2018

Project Info	Details/Date

Application Software Changes	• Markets to enforce new ETSR Ramp Rate constraints (both single and aggregate)
	• Markets to exclude Flex Ramp provision of EIM BAAs undergoing contingency
	• ISO Enhancement to BAAOP EIM operator screens to review active market data; all BAA operators receive notifications when ETSR limits enforced in real-time
	
	Systems:
	
	• BAAOP – New display screens presenting active market data for market data submissions; ETSR enforcements notification for all BAAs (includes constraint information)
	• Market Applications
	  • Include ETSR ramping constraints at both Individual and Aggregate levels
	  • 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
	• Master File – Registration supported of single and aggregate ETSR ramping constraints by associated EIM BAAs
	• OASIS – new report displays real-time intervals where BAAs (ISO and EIM) are in contingency
	• Integration – No CMRI B2B API impacts; 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 • Manage Market Billings & Settlements

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	✓
Tariff	File Tariff	N/A	
Config Guides	Post Config Guides	N/A	
BPMs	Post Draft BPM changes	Jul 09, 2018	
Tech Spec	Create ISO Interface Spec (Tech spec)	Jun 11, 2018	
External Training	Deliver External Training	TBD	
Market Sim	Market Sim Window	Aug 20, 2018 - Sep 28, 2018	
Production Activation	EIM Enhancements 2018	Nov 01, 2018	

Fall 2018 – Extended STUC

Project Info	Details/Date
Application Software Changes	**BSAP/SIBR:** Will facilitate provision of additional base schedules/bids for the extended horizon hours (if exist). **STUC:** • Commitment horizon will extend from 4.5-hours to 12-hours, allowing for additional opportunity of startup instruction for resources which have Start-Up Time + Minimum Up Time < 720 minutes • STUC will not de-commit resources with RUC binding startups • If Day-Ahead results have not published, the STUC horizon will truncate to prevent it from extending beyond Day-Ahead results
BPM Changes	- Market Operations - Market Instruments - Energy Imbalance Market
Business Process Changes	Manage Markets & Grid

Fall 2018 – Extended STUC

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	Jul 25, 2018	
External BRS	External BRS Posted	Jun 06, 2018	
Tariff	File Tariff	Aug 01, 2018	
Config Guides	Post Draft Config Guides	Jun 22, 2018	
BPMs	Post Draft BPM changes	Aug 10, 2018	
Tech Spec	Create ISO Interface Spec (Tech spec)	Jun 22, 2018	
External Training	External Training	Aug 13, 2018	
Market Sim	Market Sim Window	Aug 20, 2018 - Sep 28, 2018	
Production Activation	Extended STUC	Nov 01, 2018	

2019 Spring Release

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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 30, 2019	
Parallel Operations	Parallel Operations	Mar 30, 2019	
Production Activation	EIM - BANC-SMUD	Apr 03, 2019	

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2019 Independent

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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 • Move historical ADS data to CMRI adding query tool functionality to CMRI also • 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	To Be Determined
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	TBD	
Tariff	File Tariff	N/A	
Config Guides	Design review - BPM and Tariff SMEs	N/A	
BPMs	Post Draft BPM changes	TBD	
Tech Spec	Publish Technical Specifications	TBD	
Market Sim	Market Sim Window	TBD	
Production Activation	ADS Replacement	TBD	
External Training	Conduct External Training	TBD	

2019 Fall Release

Fall 2019 – 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

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Fall 2019 – Contingency Modeling Enhancements - Transmissions

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval (BOG - 12/04/17)	Dec 14, 2017	✓
External BRS	Complete and Post External BRS	TBD	
Tariff	File Tariff	TBD	
Config Guides	Post Configuration Guide(s) (Draft)	TBD	
BPMs	Post BPM (Draft)	TBD	
Tech Spec	Create ISO Interface Spec (Tech spec)	TBD	
External Training	Deliver External Training	TBD	
Market Sim	Market Sim Window	Jul 17, 2019 - Aug 30, 2019	
Production Activation	Contingency Modeling Enhancements -Transmission	Oct 01, 2019	

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Fall 2018 – 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.

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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
Draft Policy	Publish Draft Business Rules externally	Jan 31, 2018	✔
Board Approval	Obtain Board of Governors Approval	Mar 22, 2018	✔
External BRS	Complete and Post External BRS	Apr 27, 2018	✔
Tech Spec	Publish Technical Specifications	TBD	
Tariff	File Tariff	TBD	
Config Guides	Post Draft Config Guides	TBD	
BPMs	Post Draft BPM changes	TBD	
External Training	Deliver External Training	TBD	
Market Sim	Market Sim Window	TBD	
Production Activation	Deployment to Production	10/1/2019	

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Fall 2019 – Day Ahead Market Enhancements

Project Info	Details/Date
Application Software Changes	This 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 sufficient 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 5 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

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Fall 2019 – Day Ahead Market Enhancements

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	Sep 06, 2018	
External BRS	External BRS	TBD	
Tariff	File Tariff	TBD	
Config Guides	Design review - BPM and Tariff SMEs	TBD	
BPMs	Post Draft BPM changes	TBD	
Tech Spec	Create ISO Interface Spec (Tech spec)	TBD	
Market Sim	Market Sim Window	TBD	
Production Activation	DAM Enhancements	Oct 01, 2019	

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…

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