Release User Group Agenda

February 27th , 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

February 27th, 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	Brett Bruderer Joanne Alai Marcelo Da Costa Raymond Riley Marci Stuckey LeAnne McLaughlin Deann MacDougall John Williams Christopher McIntosh Jami Herguth Prince Phillip Sandhya Balasubramanian Eureka Cullado Indu Nambiar Justin Wong LuAnn Rivera Craig Williams Elli Johnston

The ISO offers innovative training programs

Date	Training All classes are offered at our Folsom, CA campus unless noted otherwise
Mar 15	Resource Interconnection Management System 5 (RIMS 5) (w[illegible])
April 19	Welcome to the ISO (webinar)
May 8-9	Get to Know the ISO
May 10	Settlements 101
May 11	Settlements 201

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

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http://www.caiso.com/participate/Pages/LearningCenter/default.aspx

Contact us: CustomerTraining@caiso.com

Release Plan Summary: 2017 – Spring 2018

Winter 2017

- Energy Imbalance Market (EIM) 2017 Enhancements
- Energy Imbalance Market (EIM) Winter 2017 Enhancements
- Energy Storage and Distributed Energy Resources (ESDER) Phase 1C
- Energy Imbalance Market (EIM) 2018 Idaho Power Company (new participant)
- Energy Imbalance Market (EIM) 2018 Powerex (new participant)

Independent 2018

- Black Start and System Restoration Phase 2
- Resource Interconnection Management System (RIMS) Functional Enhancements
- Deactivation of Transport Layer Security (TLS) 1.0 & 1.1

Spring 2018

- Resource Adequacy Availability Incentive Mechanism (RAAIM) Calculation Modifications
- Reliability Services Initiative (RSI) 2017
- Commitment Cost Enhancement (CCE) Phase 3
- Scheduling Infrastructure and Business Rules (SIBR) User Interface (UI) Upgrade

Release Plan Summary: Fall 2018 – Spring 2020

Fall 2018

- Green House Gas (GHG) Enhancements for EIM
- Contingency Modeling Enhancements
- Commitment Costs and Default Energy Bid (CCDEB) Enhancements
- Settlements Performance Improvements
- Energy Storage and Distributed Energy Resources (ESDER) Phase 2
- Generator Contingency and Remedial Action Scheme (RAS) Modeling
- Automated Dispatch System (ADS) User Interface (UI) Replacement
- Capacity Procurement Mechanism (CPM) – Risk-of-Retirement

Spring 2019

- Energy Imbalance Market (EIM) 2019 Balancing Authority of Northern California (BANC) / Sacramento Municipal Utility District (SMUD) (new participant)
- Energy Imbalance Market (EIM) 2019 Los Angeles Dept. of Water and Power

Fall 2019 – tentative, subject to impact assessment

- Congestion Revenue Right (CRR) Auction Efficiency (July 2019)
- Flexible Resource Adequacy Criteria and Must-offer Obligation (FRACMOO) Phase 2
- Energy Storage and Distributed Energy Resources (ESDER) Phase 3
- Transmission Access Charge (TAC) Billing Structure
- Day-Ahead Market Enhancements

Spring 2020

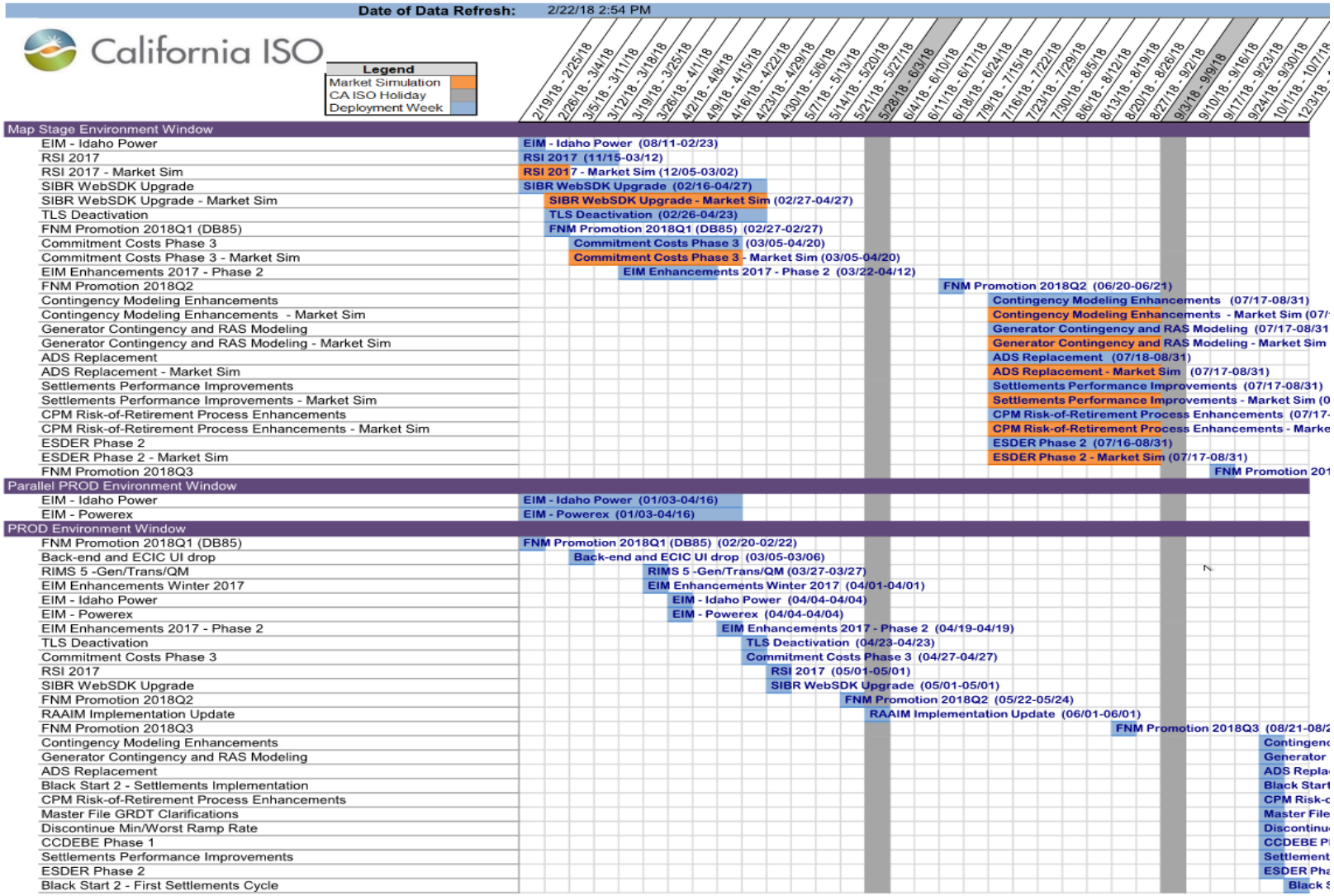
- Energy Imbalance Market (EIM) 2020 Salt River Project (new participant)
- Energy Imbalance Market (EIM) 2019 Seattle City Light (new participant)

Release Plan Summary: Subject to Further Planning

TBD – tentative, subject to impact assessment

- Imbalance Conformance Enhancements (ICE)
- Intertie Deviation Settlement
- Variable Energy Resource Dispatch Operating Point (VER DOT)
- Reliability Must Run and Capacity Procurement Mechanism

Release Schedule - 2018



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
2017	Enhancement	New	CAISO Market	Adopt when ready	Tab: Post-Market New Report: Regulation Pay for Performance	N/A	N/A	2/23/2018	4/1/2018	N/A	N/A
Winter 2017	EIM 2017	New	CAISO & EIM Market	Adopt when ready	Tab: EIM New Report: Resource Ramp Capacity	retrieveResourceRampCapacity_v1 retrieveResourceRampCapacity_v1_DocAttach	20180201	2/23/2018	4/1/2018	v1.0 (Winter) (released 11/6)	3.7.0 (released 11/6)
Spring 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
Spring 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

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

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	EIM 2017	New	CAISO & EIM Market	Adopt when ready	Tab: Prices New Report: Hourly RTM LAP Prices	PRC_RTM_LAP	1/19/2018	4/1/2018	V1.2	5.1.1
Winter 2017	RSI	New	CAISO Market	Adopt when ready	Tab: Public Bids New Report: CSP Offer	PUB_CSP_OFFER_SET	12/5/2017	4/1/2018	V1.2	5.1.1

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

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
Winter 2017	EIM 2017	Modify	EIM Market	Required for Generic NGR	N/A	retrieveGeneratorRDT	4	20180201	12/1/2017	4/1/2018	v4.0.1	V3.6
Winter 2017	EIM 2017	Modify	EIM Market	Required for Generic NGR	N/A	submitGeneratorRDT	4	20180201	12/1/2017	4/1/2018	v4.0.1	V3.6
Spring 2018	BRE-B CCE3 RSI	Modify	CAISO & EIM Market	Required to provide CCE3 values		retrieveGeneratorRDT	4	20180501	March 2018	5/1/2018	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	5/1/2018	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	5/1/2018	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	5/1/2018	N/A	N/A

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

Master File Updates & Clarifications

Winter Release includes a new Fuel Type enumeration (GNRC) to identify generic NGRs

- There will be no structural changes to the RDT
  - GRDT spreadsheet version 11 will continue to be the production version
- An updated Tech Spec will be posted by 10/10
  - The Tech Spec will only be updated to include the new Fuel Type enumeration.

Spring Release of MF GRDT includes CCE3, BREB, and RSI attributes

  - GRDT version 12 and Tech Spec 4.1.1 have been posted since June
  - The Spring RDT and Tech Spec was updated in December to include recent changes (e.g. ICE Hub)
- GRDT Highlights (Following slide has the time lines)
  - RESOURCE tab – Add Electric Region (R/O), Market Max Daily Starts (R/W), COM MW (R/O), Power Price Hub (R/O)
  - Ramp Tabs (Resource & Configuration : Operational, Regulation, and Op Reserve) – Add Market Ramp Rate (R/W~~); discontinue supporting Min/Worst Ramp Rate (submitted values will be ignored)~~
  - CONFIGURATION tab – Add Implied Starts (previously documented as CT Starts) (R/W)
  - TRANSITION tab – Add Market Max Daily Transitions (R/W), Implied Starts (R/O)
- ULPDT Highlights
  - Add Configuration ID
  - ULPDT will be loaded via Batch Process with automated Batch Status notification
  - Compare Report available
  - Validation Rules will continue to appear on UI, not in a separate Validation Report

Master File GRDT Clarifications

	Active in Master File	Active in Market
Electric Region	Fall 2017 (BREB)	Fall 2017
COM MW	Fall 2017 (RSI)	Fall 2017
Market Max Daily Starts	Spring 2018 SC may update value via the GRDT/Master File UI, but no market impact until Fall 2018	Fall 2018
Power Price Hub	Spring 2018 CAISO will populate	Fall 2018
Market Ramp Rate (Operational, Operating Reserve, Regulation)	Spring 2018 SC may update value via the GRDT/Master File UI, but no market impact until Fall 2018	Fall 2018
Min/Worst Ramp Rate to be discontinued	Values remain active in market until Fall 2018	Discontinued Fall 2018
Configuration: Implied Starts	Spring 2018 SC may update value via the GRDT/Master File UI, but no market impact until Fall 2018	Fall 2018
Transition: Market Max Transitions	Spring 2018 SC may update value via the GRDT/Master File UI, but no market impact until Fall 2018	Fall 2018
Transition: Implied Starts	Spring 2018 Value is derived from Configuration Implied Starts. No market impact until Fall 2018	Fall 2018

Winter 2017 Release

Winter 2017 - EIM Enhancements 2017– Phase 2

Project Info	Details/Date
Application Software Changes	Address enhancements identified by policy, operations, technology, business and market participants. **Scope:** 1. Access & Integration Enhancements: EIM Entity Access in ALFS, MF, OASIS, WebOMS, and CMRI. 2. EIM data report enhancements to support market participant and EIM entity settlements 3. Change to ETSR formulation to separate base energy transfer to distinct non-optimizable ETSRs.
BPM Changes	Energy Imbalance Market: Access & Integration, Data Report Outage Management: Access & Integration Market Instruments: Access & Integration, Data Reports Market Operations: Data Report Settlements & Billing: Data Report
Business Process Changes	N/A

Winter 2017 - EIM Enhancements 2017– Phase 2

Milestone Type	Milestone Name	Dates	Status
Board Approval	BOG Approval	Sep 06, 2016	✓
BPMs	Publish Final Business Practice Manuals	Mar 30, 2018	
External BRS	Post External BRS	Jan 23, 2017	✓
	Post Updated External BRS to public site	Apr 10, 2017	✓
Tariff	File Tariff	N/A	
Config Guides	Post Configuration Guides	Jun 27, 2017	✓
Tech Spec	Publish Updated Technical Specifications: CMRI v3.6.3	Oct 27, 2017	✓
	Publish Updated Technical Specifications: OASIS v5.1.2	Oct 27, 2017	✓
	Publish Updated Technical Specifications: Master File v4.1.1	Jun 30, 2017	✓
Market Sim	Market Sim Window	N/A	
Production Activation	EIM Enhancements 2017 - Phase 2	Apr 1, 2018	

Winter 2017 – EIM Enhancements Winter 2017

Project Info	Details/Date
Application Software Changes	**Scope and System Impact:** • Auto-matching for post T–40 Intertie and other EIM Non-Participating Resource (EIMNPR) schedule changes from a single dedicated EIMNPR with the ability to generate or consume energy **(MF, RTM)** • Auto-mirroring for ISO import/export schedules at ISO Scheduling Points **(MF, RTM)** • BASE ETSR imbalance energy settlement: LMP at specified financial location **(MF, RTM, Settlement)** • No-EIM Fee: Exclude EIM administrative fee for non-US transactions after T–40 **(MF, RTM, Settlement)** • Suppress LMP publication in OASIS for non-US Pnodes **(MF, OASIS)** • Allow submission of Base Generation Distribution Factors (GDFs) for aggregate EIMNPR **(BSAP, RTM)** • Allow EIM Entity control to enforce/not enforce EIM BAA internal transmission constraints **(MF,RTM**) • Report resource ramp capability in CMRI for SCs **(BSAP, CMRI)** • Allow EIM and other resources modeled as an aggregation using the Generic NGR model that has the ability to generate or consume energy **(MF, RTM, Settlement)**
BPM Changes	Energy Imbalance Market and Settlements & Billing
Business Process Changes	Manage Real Time Operations - Maintain Balancing Area

Winter 2017 – EIM Enhancements Winter 2017

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	Nov 29, 2017	✓
BPMs	Post Draft BPM changes	Jan 10, 2018	✓
	Publish Final Business Practice Manuals	Mar 30, 2018	
External BRS	Post External BRS	Aug 04, 2017	✓
	Post External BRS v2	Nov 13, 2017	✓
Tariff	Draft Tariff	Nov 03, 2017	✓
	File Tariff	Dec 15, 2017	✓
Config Guides	Post Configuration Guides	Oct 25, 2017	✓
Tech Spec	Post ISO Interface Tech spec	Nov 15, 2017	✓
	Post CMRI Tech Spec	Nov 06, 2017	✓
	Post MF Tech Spec	Oct 13, 2017	✓
Market Sim	Market Sim Window	Dec 01, 2017 - Jan 31, 2018	✓
	CMRI Resource Ramp Capacity Report	Feb 23, 2018	✓
Production Activation	EIM Enhancements Winter 2017	Apr 01, 2018	

ESDER 1C – Incorporated in the EIM Enhancements Winter 2017

Project Info	Details/Date
Business Requirements Specification	ESDER 1C requirements incorporated in version 1.1 of the BRS for EIM Enhancements Winter 2017. The nine BRQs identified as ESDER 1C requirements related to the Generic NGR model are: BRQ161, BRQ162, BRQ163, BRQ321, BRQ322, BRQ324, BRQ465, BRQ466, BRQ516
Application Software Changes	Allow market participant to registry NGR Generic Resource (Generic, new subtype of NGR, in addition to LESR and DDR) of NGR with load and generation modes without SOC **MF**: Define NGR resource with subtype Generic **SIBR/BSAP/IFM-RTM** • SC to submit bids for NGR Generic resource • SC to submit EIM Base Schedule for NGR Generic resource • Combine the distributed schedules from multiple aggregated resources that have overlapping aggregation in NA **Settlement**: Settlement calculation to NGR Generic resources level **WebOMS** - Include NGR Generic resource outage/de-rate in the market
BPM Changes	Market Operations Energy Imbalance Market Settlements and Billing

Milestone Type	Milestone Name	Dates	Status
ESDER 1C milestones	Same as EIM Winter Enhancements 2017		

Winter 2017 – EIM Idaho Power Company

Project Info	Details/Date
Application Software Changes	Implementation of Idaho Power Company as an EIM Entity.
BPM Changes	EIM BPM was updated to more clearly define the requirement for Independent VER forecast submission.
Market Simulation	Idaho Power completed executing all Market Simulation structured scenarios. Settlement validation is in progress and expected to be complete by February 23, 2018 after receiving the final settlement statement.
Parallel Operations	Idaho was activated as an EIM Entity in Parallel Operations effective 2/1/18. Idaho Power cutover full network model will move to production on 2/22/18

Milestone Type	Milestone Name	Dates	Status
Tariff	File Readiness Certification	March 01, 2018	
Market Sim	Market Sim Window	Dec 01, 2017 – Feb 23, 2018	
Parallel Operations	Parallel Operations Window	Feb 01, 2018 - Mar 30, 2018	
Production Activation	EIM - Idaho Power	Apr 04, 2018	

Winter 2017 – EIM Powerex

Project Info	Details/Date
Application Software Changes	Implementation of Powerex in the EIM Market.
BPM Changes	No BPM changes identified.
Market Simulation	Powerex completed executing all Market Simulation structured scenarios. Settlement validation is in progress and expected to be complete in February after final validation of settlement statements.
Parallel Operations	Powerex was activated in the EIM Market in Parallel Operations effective 2/1/18. Powerex cutover full network model moved to production on 2/22/18

Milestone Type	Milestone Name	Dates	Status
Tariff	File Readiness Certification	March 01, 2018	
Market Sim	Market Sim Window	Dec 01, 2017 – Feb 23, 2018	
Parallel Operations	Parallel Operations Window	Feb 01, 2018 - Mar 30, 2018	
Production Activation	EIM - Powerex	Apr 04, 2018	

2018 Independent Projects

2018 – Black Start and System Restoration Phase 2

Project Info	Details/Date
Application Software Changes	**Settlements:** • Modifications to existing charge codes for Black Start capacity and Black Start allocations will need to occur. **MPP (Market Participant Portal):** • Possibility to use current functionality for receiving RMR invoices for Black Start units.
BPM Changes	**Definitions & Acronyms:** • Revision of the following definitions to match the Tariff language: Ancillary Services (AS), Black Start Generator, Black Start Generating Unit, Interim Black Start Agreement, Reliability Services Costs **Settlements & Billing:** • Pending Settlements review. Revisions will be directly based on Tariff changes.

2018 – Black Start and System Restoration Phase 2

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	May 01, 2017	✓
BPMs	BPM Changes Required	Mar 27, 2018	
RFP	Closure of Request For Proposal	Jul 31, 2017	✓
	Awards and final report	Dec 01, 2017	✓
	Posted request for proposal documents	Jun 15, 2017	✓
External BRS	Complete and Post External BRS	Nov 10, 2017	✓
Tariff	File Tariff	May 15, 2017	✓
	Tariff approval	Nov 01, 2017	✓
	Filed tariff amendment related to cost allocation	Aug 03, 2017	✓
Config Guides	Publish draft Settlements Configuration Guides	Aug 01, 2018	
Tech Spec	Create ISO Interface Spec (Tech spec)	N/A	
Market Sim	Market Simulation	N/A	
Production Activation	Black Start and System Restoration Phase 2	Dec 03, 2018	
	Settlements changes effective date	Dec 01, 2017	✓
	Settlements implementation	Oct 01, 2018	
	First Settlements cycle	Dec 03, 2018	

2018 – RIMS 5 Functional Enhancements

Project Info	Details/Date	Status
Application Software Changes	Functional enhancements resulting from the Customer Partnership Group CPG. More details to be provided in the future.	
BPM Changes	Generator Interconnection and Deliverability Allocation Procedures Generator Interconnection Procedures Managing Full Network Model Metering Generator Management Transmission Planning Process	
Customer Partnership Group	10/16/15	✓
Application and Study Webinar	3/31/16	✓

Milestone Type	Milestone Name	Dates	Status
Board Approval	Board approval not required	N/A	
BPMs	Generator Interconnection and Delivery Allocation	Apr 29, 2016	✓
External BRS	External BRS not Required	N/A	
Tariff	No Tariff Required	N/A	
Config Guides	Configuration Guides not required	N/A	
Tech Spec	No Tech Specifications Required	N/A	
Training	Train the PTOs	Feb 13, 2018	✓
	WebEx Training on Generation Module	Mar 15, 2018	
Production Activation	RIMS5	Mar 27, 2018	
	RIMS5 App & Study	Mar 21, 2016	✓

2018 – Deactivation of TLS 1.0 & 1.1

Info	Details/Date
Summary	The California ISO will deactivate Transport Layer Security (TLS) 1.0 and 1.1 in the market and performance (MAP) stage environment on **February 20, 2018**, in the production environment on **April 23, 2018**, and only TLS 1.2 will remain active. It is necessary for market participants to enable TLS 1.2 as soon as possible in browsers and APIs.
Details	It is necessary for market participants to enable TLS 1.2 in browsers and application programming interfaces (APIs) as soon as possible in order to continue to access the MAP stage environment from **February 20, 2018** onwards, and to continue to access the production environment from **April 23 onwards**, as only TLS 1.2 will remain active. Market participants can enable TLS 1.2 immediately; the MAP stage and production environments currently allow TLS 1.2. Note: There is no need to *disable* TLS 1.0 and 1.1 in browsers and APIs because the versions are backward compatible. Once TLS 1.0 and 1.1 are deactivated in the MAP stage environment, the ISO encourages market participants to confirm successful connectivity to the MAP stage portal, portal application's user interfaces (UIs) and APIs prior to the production environment deactivation, which will be the same on April 23, 2018. The deactivation of TLS 1.0 and 1.1 is in order to align with industry best practices for security and data integrity. The *Systems Access Information for Market Participants* document contains the information to access the MAP stage and production environments. This document is available on the ISO website at **http://www.caiso.com/Documents/SystemAccessInformation_MarketParticipants.pdf**. **Note: Automated Dispatch System (ADS) users on versions older than 6.1.0.0 will need to upgrade to the current version, as older versions are not compatible with TLS 1.2.** Update the ADS client through the production Market Participant Portal (MPP) installation package download at **https://mpp.caiso.com/ads_install**. Find more information and the mandatory ADS upgrade market notice announcement **here**. This market notice reflects the updated deactivation dates from the previous **market notice** announcement.
Market Notice	http://www.caiso.com/Documents/UpdateDeactivation-TransportLayerSecurityTLS10_11.html

Milestone Type	Milestone Name	Dates	Status
MAP-Stage	Deactivate TLS 1.0 & 1.1 in MAP-Stage	Feb 26, 2018	
Production	Deactivate TLS 1.0 & 1.1 in Production	Apr 23, 2018	

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	

Spring 2018 - Reliability Services Initiative 2017

Project Info	Details/Date
Application Software Changes	**Scope:** Redesign of Replacement Rule for System RA and Monthly RA Process. • RA Process and Outage Rules for implementation for 2017 RA year. • CSP Offer Publication (RSI 1A scope) • Local and system RA capacity designation • RA showing requirements for small load serving entities (LSEs) • RA showing tracking and notification **Impacted Systems:** • OASIS • Settlements • CIRA **CIRA:** • Modifications to the RA and Supply Plan to show breakdown of local and system. Validation rules need to be updated. • Update planned/forced outage substitution rules • Allow market participants to select how much system/local MWs to substitute. • Modification of UI screens to accommodate system/local MW split. • Enhance system to allow exemption from submission of RA Plans for LSE that have a RA obligation < 1 MW for a given capacity product. **Settlements:** • Splitting local from system in upstream RA system impacts the RAAIM Pre calculation.
BPM Changes	• Reliability Requirements: Changes to the monthly RA process • Settlements and Billing
Business Process Changes	**Manage Market & Reliability Data & Modeling** • Manage Monthly & Intra-Monthly Reliability Requirements • Manage Yearly Reliability Requirements

Spring 2018 - Reliability Services Initiative 2017

Milestone Type	Milestone Name	Dates	Status
Board Approval	Board Approval	May 12, 2015	✓
BPMs	Post Draft BPM Changes - Reliability Requirements	Dec 05, 2017	✓
	Post Draft BPM Changes - Settlements & Billing	Aug 30, 2017	✓
	Post Final BPM - Settlements & Billing	Feb 07, 2018	✓
	Post Final BPM - Reliability Requirements	Mar 28, 2018	
External BRS	Post Updated External BRS v1.1 (RSI 2)	Apr 07, 2017	✓
	Post RSI 2017 External BRS v2.0	Apr 19, 2017	✓
	Post Updated External BRS v1.3 (RSI 1B)	Mar 03, 2017	✓
Tariff	File Tariff	Sep 29, 2017	✓
	Receive FERC order	Jan 18, 2018	✓
	Waiver Filing to Delay Implementation	Feb 14, 2018	✓
Config Guides	Config Guide	Jun 23, 2017	✓
Tech Spec	Publish Technical Specifications	Apr 03, 2017	✓
Training	External Training - Session 1	Jan 10, 2018	✓
	External Training - Session 2	Jan 17, 2018	✓
Market Sim	Market Simulation	Dec 05, 2017 - Jan 31, 2018	✓
Production Deployment	Production Deployment	Mar 05, 2018	
Production Activation	Production Activation	May 01, 2018	

Spring 2018 - Commitment Cost Enhancements Phase 3

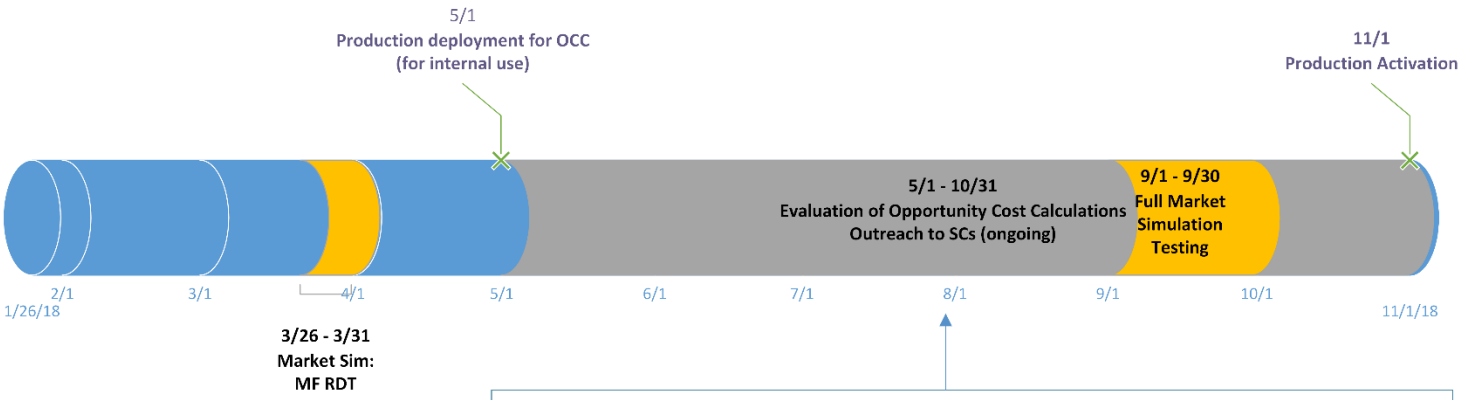
Project Info	Details/Date
Application Software Changes	**Scope:** 1. Clarify use-limited registration process and documentation to determine opportunity costs 2. Determine if the ISO can calculate opportunity costs • ISO calculated; Modeled limitation Start/run hour/energy output • Market Participant 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

Spring 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 External BRS Post Updated External BRS	Jan 06, 2017 Aug 21, 2017	✓ ✓
Tech Spec	Publish ISO Interface Spec (Tech spec) – MF Publish Updated ISO Interface Spec (Tech spec) – MF Publish ISO Interface Spec (Tech spec) – CMRI Publish Updated ISO Interface Spec (Tech spec) – CMRI	Apr 03, 2017 Nov 30, 2017 Apr 17, 2017 Oct 27, 2017	✓ ✓ ✓ ✓
Config Guides	Config Guide	Jun 27, 2017	✓
Tariff	Post Draft Tariff Post Updated Draft Tariff File with FERC	Jul 31, 2017 Dec 5, 2017 Feb 28, 2018	✓ ✓
BPMs	Post Draft BPM changes: Market Instruments, Settlements & Billing, Market Operations, Outage Management, Reliability Requirement	Aug 17, 2018	
Market Sim	Market Sim: Master File RDT testing (only) Market Sim: End-to-end testing	March 26, 2018 September 2018	
Production Deployment	Commitment Costs Phase 3 Production Deployment	May 1, 2018	
Tariff Effective Date, Production activation	Implement process in the market to automate validation of Flexible RA Capacity per proposed tariff section 4.6.4 Opportunity cost and resource characteristic changes proposed tariff effective date	August 2018 Nov 1, 2018	

Spring 2018 - Commitment Cost Enhancements Phase 3 (cont.)

CCE3: Project Timeline, Deployment Dates, Major Milestones



Discovery/Evaluation Timeframe: Expectations

- New process to be defined; primarily an internal CAISO effort
- CAISO will identify resources impacted, type of constraints they have, and what time of eligibility period they will declare (monthly, annual, rolling)
- CAISO will then identify the formulation for calculation of opportunity costs (i.e. types of constraints that fit into model)
- CAISO can then validate the type of constraint declared and how constraints are translated into any of the three defined model constraints in the system
- CAISO will also be able to separate the resources that go into formula-based calculation versus resources that fall into negotiated opportunity costs.
  - For the negotiated option, CAISO will identify how to determine negotiated opportunity costs, which will be tailored to each resource.
- Planning for simulation of OCC in September, including integration of the OCC so that MPs can see adders flowing into SIBR and available in CMRI.
- Prior to November 1st, data will not be flowing downstream (publication explicitly blocked). During this period CAISO will interact with each MP depending on the specifics of their resources. This will be tracked via CIDI tickets.

Spring 2018 – SIBR UI Upgrade

Project Info	Details/Date
Application Software Changes	**SIBR** – The CASIO will be upgrading the underlying SDK platform utilized for displaying the user interface. This latest SDK version will strengthen the security of the SIBR application and will improve compatibility with the latest version of Internet Explorer. It is anticipated no functional changes or API will be impacted by this upgrade.

Milestone Type	Milestone Name	Dates	Status
Board Approval	Board Approval	N/A	
BPMs	Publish Final Business Practice Manuals	N/A	
External BRS	Post Draft BRS	N/A	
Configuration Guides	Configuration Guide	N/A	
Tech Spec	Publish Tech Specs	N/A	
User Guide	SIBR User Guide “Draft”	Dec 14, 2017	✓
Training	Conduct External Training	Feb 21, 2018	✓
Market Sim	Market Sim Window	Feb 26, 2018 - Apr 27, 2018	
Production Activation	SIBR WebSDK Upgrade	May 01, 2018	

2018 Fall Release

Fall 2018 Release – Overview

	Board Approval	External BRS	Config Guide	Tech Spec	Tariff	BPMs	Market Sim	Production Activation
Fall 2018	**01/01/18**	**04/06/18**	**05/18/18**	**05/18/18**	**06/15/18**	**07/02/18**	**Jul 17, 2018 - Aug 31, 2018**	**10/01/18**
Green House Gas Enhancements for EIM	12/14/17	TBD	TBD	TBD	TBD	TBD	TBD	10/01/18
Contingency Modeling Enhancements	12/14/17	03/02/18	TBD	TBD	TBD	TBD	Jul 17, 2018 - Aug 31, 2018	10/01/18
CCDEBE Phase 1	03/22/18	03/28/18	TBD	TBD	TBD	TBD	TBD	10/01/18
Settlements Performance Improvements	*N/A*	02/20/18	TBD	TBD	TBD	*N/A*	Jul 17, 2018 - Aug 31, 2018	10/01/18
ESDER Phase 2	07/26/17	03/01/18	05/18/18	03/27/18	06/01/18	07/02/18	Jul 17, 2018 - Aug 31, 2018	10/01/18
Generator Contingency and RAS Modeling	09/19/17	03/16/18	TBD	TBD	TBD	TBD	Jul 17, 2018 - Aug 31, 2018	10/01/18
ADS Replacement	*N/A*	04/06/18	TBD	TBD	*N/A*	TBD	Jul 17, 2018 - Aug 31, 2018	10/01/18
CPM Risk-of-Retirement Process Enhancements	11/02/17	03/30/18	TBD	TBD	01/12/18	TBD	Jul 17, 2018 - Aug 31, 2018	10/01/18

TBD items may be inapplicable, **or they may have undetermined dates*

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
BPMs	Publish Final Business Practice Manuals	TBD	
External BRS	Complete External BRS & Post for MPs	TBD	
Board Approval	Present report to BOG	Dec 14, 2017	✓
Config Guides	Post Configuration Guides	TBD	
Tech Spec	Publish Technical Specifications	TBD	
Market Sim	Market Sim Window	TBD	
Production Activation	Green House Gas Enhancements for EIM	Oct 01, 2018	

Fall 2018 – Contingency Modeling Enhancements

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
	• Settlements

BPM Changes	Market Operations, Market Instruments, Definitions and Acronyms, Settlements and Billing
Business Process Changes	TBD

Fall 2018 – Contingency Modeling Enhancements

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	Dec 14, 2017	✓
BPMs	Publish Final Business Practice Manuals	TBD	
External BRS	Complete and Post External BRS	Mar 02, 2018	
Tariff	File Tariff	TBD	
Config Guides	Design review - BPM and Tariff SMEs	TBD	
Tech Spec	Create ISO Interface Spec (Tech spec)	TBD	
Market Sim	Market Sim Window	Jul 17, 2018 – Aug 31, 2018	
Production Activation	Contingency Modeling Enhancements -Transmission	Oct 01, 2018	

Fall 2018 – Commitment Cost and Default Energy Bid Enhancements

Project Info	Details/Date
Application Software Changes	**Scope:** Suppliers are requesting the flexibility 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 • Requires supporting verified costs of energy bids above $1,000/MWh **Impacted Systems:** 1. MQS/PCA: insert cost based generated commitment cost (CC) when resource committed but CC supplied by market, locking rule, static list of critical non-competitive constraints 2. SIBR, ECIC: negotiated reference level prices, automate Ex Ante adjustments, commitment cost caps as configurable percentages, ability to calculate energy cost reference, minimum cost, start-up cost, and transition cost reference levels using reasonable thresholds 3. IFM/RTM: recalibrate the penalty price parameters, adjust pricing run to reflect merit order, $2,000/MWh cap for calculating LMP 4. IFM/RTM, CMRI, EDR, Integration: use new DCPA to designate path competitiveness for critical constraints, identify commitment costs that need to be mitigated 5. IFM/RTM, Portal, EDR: identify MOC for reactive power and voltage support
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)

Fall 2018 – Commitment Cost and Default Energy Bid Enhancements

Milestone Type	Milestone Name	Dates	Status
Draft Policy	Publish Draft Business Rules externally	Jan 31, 2018	✓
BPMs	Draft BPM changes	TBD	
	Publish Final Business Practice Manuals	TBD	
External BRS	Complete and Post External BRS	Mar 28, 2018	
Board Approval	Obtain Board of Governors Approval	Mar 22, 2018	
Tariff	File Tariff	TBD	
Config Guides	Design review - BPM and Tariff SMEs	TBD	
Tech Spec	Create ISO Interface Spec (Tech spec)	TBD	
Market Sim	Market Sim Window	TBD	
Production Activation	CCDEBE Phase 1	October 1, 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
Board Approval	Obtain Board of Governors Approval	N/A	
BPMs	Post Draft BPM changes	TBD	
	Publish Final Business Practice Manuals	N/A	
External BRS	Complete and Post External BRS	Feb 20, 2018	✓
Tariff	File Tariff	TBD	
Config Guides	Design review - BPM and Tariff SMEs	TBD	
Tech Spec	Create ISO Interface Spec (Tech spec)	TBD	
Market Sim	Market Sim Window	Jul 17, 2018 - Aug 31, 2018	
Production Activation	Settlements Performance Improvements	Oct 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.

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	✓
BPMs	Post Draft BPM changes	Jun 04, 2018	
	Publish Final Business Practice Manuals	Jul 02, 2018	
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 20, 2018	
	File Tariff with FERC	Jun 01, 2018	
CPG	Next CPG Meeting	Feb 27, 2018	
Config Guides	Settlements Config Guides	May 18, 2018	
Tech Spec	Publish ISO Interface Spec (Tech spec)	Mar 27, 2018	
Market Sim	Market Sim Window	Jul 17, 2018 - Aug 31, 2018	
Production Activation	ESDER Phase 2	Oct 01, 2018	

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:
	• IFM/RTM, CRR, MF

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

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	✓
BPMs	Publish Final Business Practice Manuals	TBD	
External BRS	Complete and Post External BRS	Mar 16, 2018	
Tariff	File Tariff	TBD	
Config Guides	Design review - BPM and Tariff SMEs	TBD	
Tech Spec	Create ISO Interface Spec (Tech spec)	TBD	
Market Sim	Market Sim Window	Jul 17, 2018 - Aug 31, 2018	
Production Activation	Generator Contingency and RAS Modeling	Oct 01, 2018	

Fall 2018 Release – ADS Replacement

Project Info	Details/Date
Application Software Changes	• Transition our web-based user interface standard to eliminate the need to install at the customer site.
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	
BPMs	Publish Final Business Practice Manuals	TBD	
External BRS	Post External BRS	Apr 06, 2018	
Tariff	File Tariff	N/A	
Config Guides	Design review - BPM and Tariff SMEs	TBD	
Tech Spec	Publish Technical Specifications	TBD	
Market Sim	Market Sim Window	Jul 18, 2018 - Aug 31, 2018	
Production Activation	ADS UI Replacement	Oct 01, 2018	

Fall 2018 – CPM Risk-of-Retirement Process Enhancements

Project Info	Details/Date
Application Software Changes	Impacted systems: RA System Access Provisioning (AIM)
BPM Changes	Reliability Requirements
Business Process Changes	Manage CPM Risk of Retirement Resources

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	Nov 02, 2017	✓
BPMs	Post Draft BPM changes	TBD	
	Publish Final Business Practice Manuals	TBD	
External BRS	External BRS Completed & Posted	Mar 30, 2018	
Tariff	File Tariff	Jan 12, 2018	✓
	Receive FERC order	TBD	
Config Guides	Post Draft Config Guides	TBD	
Tech Spec	Create ISO Interface Spec (Tech spec)	TBD	
Market Sim	Market Sim Window	Jul 17, 2018 - Aug 31, 2018	
Production Activation	CPM Risk-of-Retirement Process Enhancements	Oct 01, 2018	

2019 Spring Release

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 01, 2019	

Spring 2019 – EIM LADWP

Project Info	Details/Date
Application Software Changes	Implementation of LADWP as an EIM Entity.
BPM Changes	EIM BPM will be updated if needed to reflect new modeling scenarios identified during implementation and feedback from LADWP.
Market Simulation	December 3, 201 8 – January 31, 2019
Parallel Operations	February 1, 2019 – March 30, 2019

Milestone Type	Milestone Name	Dates	Status
Tariff	File Readiness Certificate	Mar 01, 2019	
Market Sim	Market Sim Window	Dec 03, 2018 - Jan 30, 2019	
Parallel Operations	Parallel Operations	Mar 30, 2019	
Production Activation	EIM - Los Angeles Dept of Water and Power	Apr 01, 2019	

Stay Informed

Ways to participate in releases

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

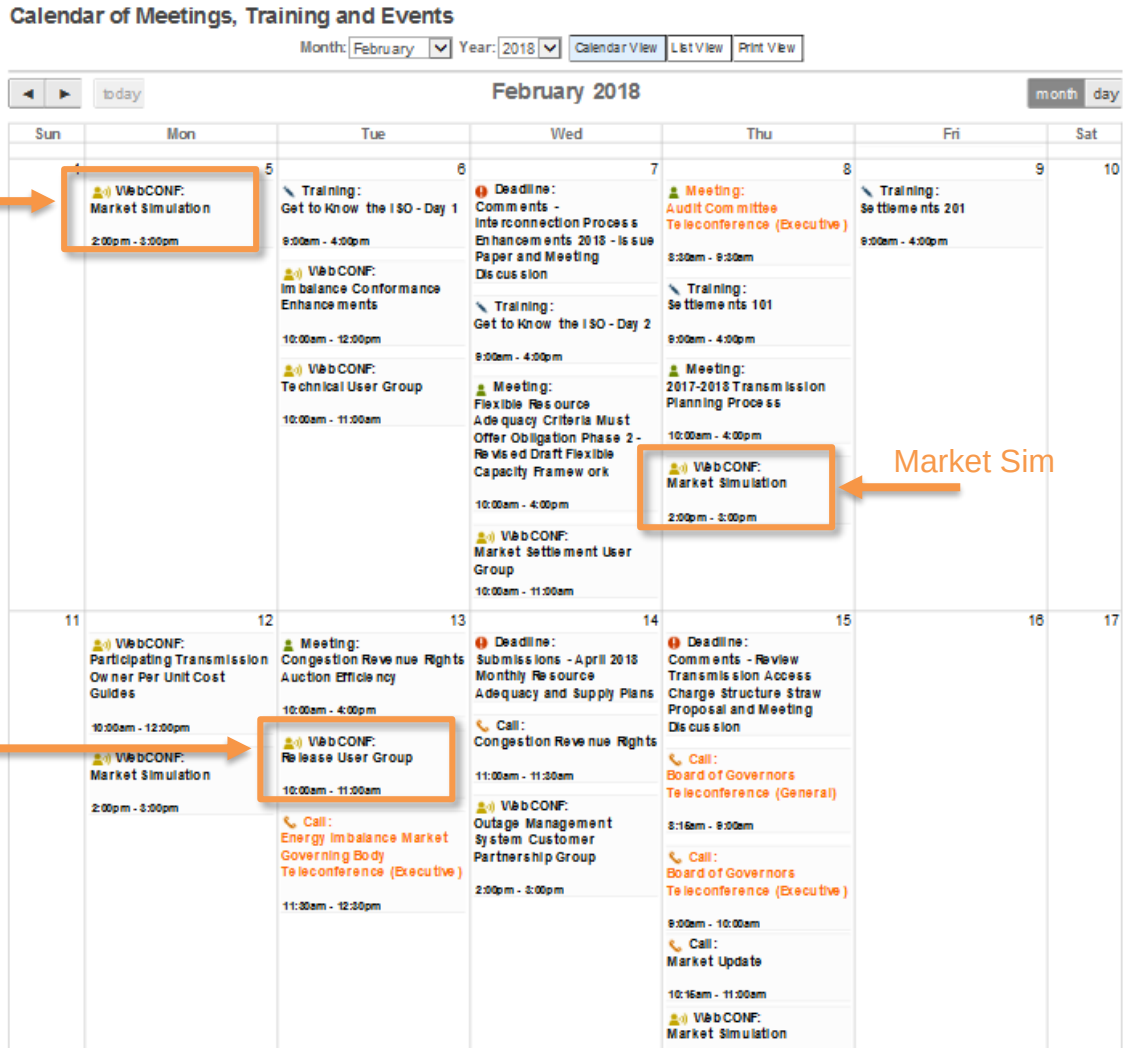
- Attend meetings
  - Release Users Group (RUG) bi-weekly meetings
    - Initiative status updates
    - System change updates on independent releases
  - Market Simulation calls
    - Visit the ISO calendar at www.caiso.com for meeting dates and times and add events to your calendar
    - Typically 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…

Market Sim

Release Users Group (RUG)

Market Sim



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