



# Release User Group Agenda

July 17<sup>th</sup>, 2018

10:00 a.m.–11:00 a.m. (Pacific Time)

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

# Release User Group Agenda

July 17<sup>th</sup>, 2018

10:00 a.m. – 11:00 a.m. (Pacific Time)

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

# The ISO offers innovative training programs

Date	Training <small>All classes are offered at our Folsom, CA campus unless noted otherwise</small>
August 14-15	Get to Know the ISO
September 13	Settlements 101
September 14	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*

## 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

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](mailto:CustomerTraining@caiso.com)

# Release Plan Summary: 2018 – Independent 2019

## **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
- Commitment Cost Enhancement (CCE) Phase 3

## **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)

# Release Plan Summary: Fall 2019 – Spring 2020

## **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**

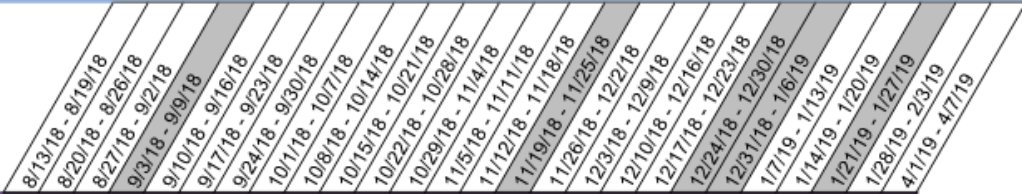
- Clarification of Tariff Rules Regarding Following DOT
- Review of RMR and CPM
- Storage as a Transmission Facility
- Intertie Deviation Settlement
- EIM Offer Rules

# Release Schedule 2018 – Spring 2019

Date of Data Refresh: 7/11/18 9:30 AM



Legend	
Market Simulation	Orange
CA ISO Holiday	Grey
Deployment Week	Blue



## Map Stage Environment Window

EIM - BANC-SMUD	EIM - BANC-SMUD (08/15-01/31)
ESDER Phase 2	ESDER Phase 2 (08/17-10/02)
CCE3	CCE3 (08/20-09/28)
CCE3 - Market Sim	CCE3 - Market Sim (08/20-09/28)
EIM Enhancements 2018	EIM Enhancements 2018 (08/20-09/28)
EIM Enhancements 2018 - Market Sim	EIM Enhancements 2018 - Market Sim (08/20-09/28)
Green House Gas Enhancements for EIM	Green House Gas Enhancements for EIM (08/20-09/28)
Green House Gas Enhancements for EIM - Market Sim	Green House Gas Enhancements for EIM - Market Sim (08/20-09/28)
Settlements Performance Improvements	Settlements Performance Improvements (08/20-09/28)
Settlements Performance Improvements - Market Sim	Settlements Performance Improvements - Market Sim (08/20-09/28)
ESDER Phase 2 - Market Sim	ESDER Phase 2 - Market Sim (08/20-09/28)
Generator Contingency and RAS Modeling	Generator Contingency and RAS Modeling (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 (08/27-08/27)
CRR Auction Efficiency 1A	CRR Auction Efficiency 1A (09/17-10/15)
CRR Auction Efficiency 1A - Market Sim	CRR Auction Efficiency 1A - Market Sim (09/17-10/12)
CRR Auction Efficiency 1B	CRR Auction Efficiency 1B (11/5-11/28)
CRR Auction Efficiency 1B - Market Sim	CRR Auction Efficiency 1A - Market Sim (11/5-11/28)
EIM - BANC-SMUD - Market Sim	EIM - BANC-SMUD - Market Sim (12/03-01/30)
FNM Promotion 2018Q4	FNM Promotion 2018Q4 (12/11-12/12)

## Production Environment Window

FNM Promotion 2018Q3	FNM Promotion 2018Q3 (08/21-08/21)
EIM Enhancements 2018	EIM Enhancements 2018 (11/01-11/01)
Settlements Performance Improvements	Settlements Performance Improvements (11/01-11/01)
CCE3 Activation in Production: Full Scope	CCE3 Activation in Production: Full Scope (11/01-11/01)
Imbalance Conformance Enhancements	Imbalance Conformance Enhancements (11/01-11/01)
ESDER Phase 2	ESDER Phase 2 (11/01-11/01)
Green House Gas Enhancements for EIM	Green House Gas Enhancements for EIM (11/01-11/01)
CRR Auction Efficiency 1A	CRR Auction Efficiency 1A (11/01-11/01)
FNM Promotion 2018Q4	FNM Promotion 2018Q4 (11/27-11/29)
CRR Auction Efficiency 1B	CRR Auction Efficiency 1B (12/28-12/28)
EIM - BANC-SMUD	EIM - BANC-SMUD (04/03-04/03)

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



ISO PUBLIC

Page 6

# 2018 Independent Projects

# 2018 – Imbalance Conformance Enhancements

Project Info	Details/Date
Application Software Changes	<p>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.</p> <p>Provide a new or enhanced UI for operators to make more accurate conformance decision making and interact more precisely in conformance scenarios. In scope for delivery in 2019.</p>
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	Post draft tariff	Jul 26, 2018	
	File Tariff	Aug 15, 2018	
BPMs	Post Draft BPM changes	TBD	
External Training	External Training Complete	TBD	
Market Sim	Market Sim Window	TBD	
Production Activation	Imbalance Conformance Enhancements	Nov 01, 2018	



# 2018 - CRR Auction Efficiency – 1B

Project Info	Details/Date
Application Software Changes	<p>Targeted reduction of congestion revenue rights payouts on a constraint by constraint basis</p> <p><b>CRR:</b> provide CRR ownership and MWs</p> <p><b>CRRS/MQS:</b> Calculate offset MW for each CRR per contingency case per monitored element per hour:</p> <ul style="list-style-type: none"> <li>• Calculate CRR q proportion of prevailing flow on constraint</li> <li>• Calculate IFM constraint flow difference (CFD)</li> <li>• Calculate CRR q Offset MW = a*b</li> <li>• Calculate offset revenue and target CRR revenue</li> </ul> <p><b>Settlement: new Charge Codes</b></p> <p>Daily Settlement:</p> <ul style="list-style-type: none"> <li>• calculate Daily offset revenue, daily target CRR revenue and Daily CRR Clawback revenue</li> <li>• calculate Daily CRR payment and Daily Remainder revenue</li> <li>• settle each CRR over all constraints</li> </ul> <p>Monthly re-settlement - at end of each month</p> <ul style="list-style-type: none"> <li>• net daily offset revenue, target revenue and Clawback revenue over the month</li> <li>• settle each CRR over all the constraint</li> <li>• remainder is paid to measured demand.</li> </ul> <p><b>CMRI:</b> potential report CRR offset MW</p> <p><b>Market Clearing/Credit Tracking:</b> potential process offset revenue in CRR accrual accounts</p>

# 2018 - CRR Auction Efficiency – 1B

Project Info	Details/Date
BPM Changes	<ul style="list-style-type: none"> <li>• Congestion Revenue Rights</li> <li>• Credit Management and Market Clearing</li> <li>• Definitions &amp; Acronyms</li> <li>• Market Instruments</li> <li>• Market Operations</li> <li>• Settlements &amp; Billing</li> </ul>
Business Process Changes	<ul style="list-style-type: none"> <li>• Manage Market &amp; Reliability Data &amp; Modeling (MMR)/Manage Credit &amp; Collateral Market Performance &amp; Reporting</li> <li>• Manage Operations Support &amp; Settlements (MOS) / Manage Market Billing &amp; Settlements</li> <li>• Manage CRR Auction</li> </ul>

Milestone Type	Milestone Name	Dates	Status
Board Approval	BOG Presentation and Approval - Track 1B	Jun 21, 2018	✓
External BRS	Post External Draft BRS	Jul 27, 2018	
Config Guides	Post Draft Configuration Guides	TBD	
Tech Spec	Create ISO Interface Spec (Tech spec)	TBD	
Tariff	File Tariff	Jul 16, 2018	
BPMs	Post BPM (Draft)	TBD	
External Training	Deliver external training	TBD	
Market Sim	Market Sim Window	Nov 05, 2018 - Nov 28, 2018	
Production Activation	CRR Auction Efficiency 1B	Dec 28, 2018	

# 2018 Fall Release

# Fall 2018 Release – Overview

	Board Approval	External BRS	Config Guide	Tech Spec	Tariff	BPMs	External Training	Market Sim	Production Activation
<b>Fall 2018 Release - Overview</b>	<b>01/01/18</b>	<b>05/22/18</b>	<b>06/22/18</b>	<b>06/22/18</b>	<b>08/01/18</b>	<b>08/10/18</b>	<b>08/13/18</b>	<b>08/20/18 - 09/28/18</b>	<b>11/01/18</b>
Commitment Costs Phase 3	03/25/16	08/21/17	05/17/18	07/13/18	03/23/18	08/10/18	08/21/18	08/20/18 - 09/28/18	11/01/18
Green House Gas Enhancements for EIM	07/25/18	05/30/18	N/A	N/A	07/12/18	08/10/18	08/16/18	08/20/18 - 09/28/18	11/01/18
Settlements Performance Improvements	N/A	02/20/18	N/A	N/A	N/A	N/A	08/10/18	08/20/18 - 09/28/18	11/01/18
ESDER Phase 2	07/26/17	03/01/18	05/18/18	05/21/18	04/09/18	08/06/18	08/07/18	08/20/18 - 09/28/18	11/01/18
Generator Contingency and RAS Modeling	09/19/17	03/16/18	N/A	N/A	TBD	TBD	08/10/18	08/20/18 - 09/28/18	TBD
CRR Auction Efficiency 1A	03/22/18	05/11/18	N/A	06/26/18	04/09/18	08/01/18	09/13/18	09/17/18 - 10/12/18	11/01/18
EIM Enhancements 2018	N/A	06/01/18	N/A	06/26/18	N/A	08/10/18	08/13/18	08/20/18 - 09/28/18	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.

# 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	Aug 20, 2018	1 Nov 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	Aug 20, 2018	1 Nov 2018	v1.0 (Fall)	3.6.3
Indp.	EIM WNTR 2017	New	CAISO Market	Adopt when ready	Tab: Real-Time New Report: Resource Operating Limits	TBD	TBD	Aug 20, 2018	1 Nov 2018	TBD	TBD
Indp.	EIM WNTR 2017	New	CAISO Market	Adopt when ready	Tab: EIM New Report: Resource Operating Limits	TBD	TBD	Aug 20, 2018	1 Nov 2018	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
Fall 2018	EIM 2018	New	CAISO Market	Adopt when ready	Tab: Energy New Report: BAA Market Events	ENE_BAA_MKT_EVENTS	Aug 20, 2018	1 Nov 2018	v1.0 (Fall)	v5.1.4
Fall 2018	CRR Auc Eff 1A	Update	CAISO Market	Adopt when ready	Tab: Public Bids Report: CRR Public Bids	PUB_CRR_BID	Aug 20, 2018	1 Nov 2018	v1.0 (Fall)	v5.1.4

Application access: <http://www.aiso.com/participate/Pages/ApplicationAccess/Default.aspx>

CAISO new developer site: <https://developer.aiso.com>

# Fall 2018 Release – Market Simulation Scenarios

Project	Scenarios Posting Date	Feedback Due
Commitment Costs Phase 3	6/21/18	7/31/18
Green House Gas Enhancements for EIM	7/2/18	
Settlements Performance Improvements	6/22/18	
ESDER Phase 2	6/29/18	
Generator Contingency and RAS Modeling	7/5/18	
CRR Auction Efficiency 1A	6/29/18	
EIM Enhancements 2018	7/3/18	

# Fall 2018 - Commitment Cost Enhancements Phase 3

Project Info	Details/Date
Application Software Changes	<p><b>Scope:</b></p> <ol style="list-style-type: none"> <li>1. Clarify use-limited registration process and documentation to determine opportunity costs</li> <li>2. Determine if the ISO can calculate opportunity costs               <ul style="list-style-type: none"> <li>• ISO calculated; Modeled limitation Start/run hour/energy output</li> <li>• Market Participant calculated; Negotiated limitation</li> </ul> </li> <li>3. Clarify definition of “use-limited”; <i>add MSG Configuration ID to ULPDT</i></li> <li>4. Change Nature of Work attributes (Outage cards)               <ul style="list-style-type: none"> <li>• Modify use-limited reached for RAAIM Treatment</li> <li>• Allow PDR to submit use-limit outage card for fatigue break.</li> </ul> </li> <li>5. <b>Market Characteristics (added to GRDT in Spring 2018) shall be Read-Only and set to Null</b> <ul style="list-style-type: none"> <li>• <b>Maximum Daily Starts</b></li> <li>• <b>Maximum MSG transitions</b></li> <li>• <b>Ramp rates</b></li> </ul> </li> </ol> <p><b>Impacted Systems:</b></p> <ol style="list-style-type: none"> <li>1. Master File: Set use-limited resource types and limits</li> <li>2. ECIC: Process use limited resource input values for and Receive opportunity cost adders from opportunity cost tool</li> <li>3. CIRA: RAAIM exempt rule for “use-limited reached”</li> <li>4. CMRI: Publish opportunity cost</li> <li>5. SIBR: Add Opportunity cost adders on bid caps</li> <li>6. OMS: “Use-Limited Reached” nature of work attribute for Generation Outage Card</li> <li>7. Settlements: Publish the actual start up, run hour and energy output for the use-limited resources</li> <li>8. Opportunity cost calculator (OCC): Calculate and publish opportunity costs for start-up, MLC and DEB</li> </ol>
BPM Changes	Market Instruments, Outage Management, Reliability Requirement, Market Operations
Business Process Changes	<ul style="list-style-type: none"> <li>• Manage Market &amp; Reliability Data &amp; Modeling</li> <li>• Manage Markets &amp; Grid</li> </ul>

# Fall 2018 - Commitment Cost Enhancements Phase 3 (cont.)

Project Info	Details/Date
FERC ruling: CCE3 changes	<p><b>Updates:</b></p> <ol style="list-style-type: none"> <li>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.</li> <li>2. This resulted in Technical Specification, RDT, and validation rule changes, which have been posted to the CAISO website.</li> </ol>

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	✓
Tariff	File Tariff	Mar 23, 2018	✓
BPMs	Post Draft BPM changes	Aug 10, 2018	
External Training	Deliver external training	Aug 21, 2018	
Market Simulation	Full Market Simulation Testing	Aug 20, 2018 - Sep 28, 2018	
Production Activation	Commitment Costs Phase 3	Nov 01, 2018	
	CCE3 Activation in Production: Full Scope	Nov 01, 2018	
	CCE3 Deployment to Production: Master File	May 16, 2018	✓



# Fall 2018 - Green House Gas Enhancements for EIM

Project Info	Details/Date
Application Software Changes	<p>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).</p> <p>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.</p> <p>The CA ISO decided to withdraw the two-pass solution previously proposed.</p>
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	Jul 12, 2018	✓
	File Tariff	Aug 31, 2018	
BPMs	Publish Draft BPMs	Aug 10, 2018	
External Training	Deliver external training	Aug 16, 2018	
Market Sim	Market Sim Window	Aug 20, 2018 - Sep 28, 2018	
Production Activation	Green House Gas Enhancements for EIM	Nov 01, 2018	

# Fall 2018 – Settlement Performance Improvements

Project Info	Details/Date
Application Software Changes	<p>The scope of the Settlements Performance Improvements include:</p> <ul style="list-style-type: none"> <li>• Performance improvements for Post Bill Determinant Mapping process - Non-production storage issue causing delays to the statement publication</li> <li>• Performance improvements of Statement Generation (BD File Size issue):                      Daily Statements generation                      Monthly Statements and Invoice generation</li> </ul> <p>Systems: Settlements</p>
BPM Changes	Settlements and Billing
Business Process Changes	Settlements & Billing: Application Flow should be reviewed for possible changes
Sample BD Files	Sample split CAISO Bill Determinant files posted externally on 6/22

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	N/A	
External BRS	Complete and Post External BRS	Feb 20, 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	Milestone: Training Complete	Aug 10, 2018	
OTHER	Settlement Interface Specification for Scheduling Coordinators	Mar 16, 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	<p><b>Settlements:</b></p> <ul style="list-style-type: none"> <li>• Alternative Baselines:           <ul style="list-style-type: none"> <li>• Possible system changes to include addition of an automated monitoring tool for performance measurement data received from external participants.</li> <li>• Changes to the DRRS registration system for the selection of the new baselines and allowing for ISO approval prior to use in the market.</li> <li>• 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.</li> </ul> </li> </ul> <p><b>ECIC:</b></p> <ul style="list-style-type: none"> <li>• EIM Net Benefits Testing:           <ul style="list-style-type: none"> <li>• Code modification to calculation to accommodate addition of all applicable gas price indices.</li> </ul> </li> </ul> <p><b>MRI-S:</b></p> <ul style="list-style-type: none"> <li>• Alternative Baselines:           <ul style="list-style-type: none"> <li>• 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.</li> </ul> </li> </ul>
BPM Changes	<p><b>Market Instruments:</b></p> <ul style="list-style-type: none"> <li>• EIM Net Benefits Testing:           <ul style="list-style-type: none"> <li>• Changes will include addition of all gas price indices used in calculation.</li> </ul> </li> </ul> <p><b>Metering:</b></p> <ul style="list-style-type: none"> <li>• Alternative Baselines:           <ul style="list-style-type: none"> <li>• Need to revise the BPM to explain new baselines and changes to existing systems.</li> </ul> </li> <li>• Station Power:           <ul style="list-style-type: none"> <li>• Need to revise BPM to provide examples of wholesale/retail uses for generation and storage</li> <li>• Need to revise BPM to clarify permitted/prohibited netting rules.</li> </ul> </li> </ul> <p><b>Definitions &amp; Acronyms:</b></p> <ul style="list-style-type: none"> <li>• Station Power:           <ul style="list-style-type: none"> <li>• Revision of Station Power definition to match Tariff language.</li> </ul> </li> </ul> <p><b>Settlements &amp; Billing:</b></p> <ul style="list-style-type: none"> <li>• Alternative Baselines:           <ul style="list-style-type: none"> <li>• Possible changes to reflect settlements configuration changes.</li> </ul> </li> </ul>

# Fall 2018 – ESDER Phase 2

Project Info	Details/Date
Business Process Changes	<ul style="list-style-type: none"> <li>• Develop Infrastructure (DI) (80001)</li> <li>• Manage Market &amp; Reliability Data &amp; Modeling (MMR) (80004)</li> <li>• Manage Operations Support &amp; Settlements (MOS) (80007)</li> <li>• Support Business Services (SBS) (80009)</li> <li>• Other</li> </ul>

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	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	Jul 24, 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	

# Fall 2018 – Generator Contingency and Remedial Action Scheme Modeling

Project Info	Details/Date
Application Software Changes	<ul style="list-style-type: none"> <li>• Enhance the Security Constrained Economic Dispatch                             <ul style="list-style-type: none"> <li>• Model generation/load loss in the dispatch</li> <li>• Model transmission loss along and generation/load loss due to RAS operation dispatch</li> <li>• Model transmission reconfiguration due to RAS operation in the dispatch</li> </ul> </li> <li>• Update the congestion component of LMP so that it considers the cost of positioning the system to account for generator contingencies and RAS operations</li> <li>• Enhance DAM, RTM and EIM to support generator contingencies</li> </ul> Impacted systems: <ul style="list-style-type: none"> <li>• CRR, EDR, EMMS, IFM/RTM, Integration, MF.</li> </ul>
BPM Changes	<ul style="list-style-type: none"> <li>• Managing Full Network Model</li> <li>• CRR</li> <li>• Market Operations</li> <li>• EIM</li> </ul>
Business Process Changes	<ul style="list-style-type: none"> <li>• Manage Congestion Revenue Rights (MMR LII)</li> <li>• Manage Operations Planning</li> <li>• Manage Real Time Operations - Transmission &amp; Electric System (MMG LII)</li> </ul>

# 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	✓
Config Guides	Post Draft Config Guides	N/A	
Tech Spec	Create ISO Interface Spec (Tech spec)	N/A	
Tariff	File Tariff	TBD	
BPMs	Post Draft BPM changes	TBD	
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	TBD	

# Fall 2018 - CRR Auction Efficiency – 1A

Project Info	Details/Date	
Application Software Changes	<p>CRR Auction Efficiency 1A project is focused on:</p> <ol style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>3. Introducing a mechanism to allow market participants to sell previously acquired CRRs into subsequent auctions</li> </ol> <p>System Impacts: CRR, OASIS, EDR.</p> <p>The Technical Specification will address a new Transaction Type column in OASIS.</p>	
BPM Changes	<ul style="list-style-type: none"> <li>• CRR</li> <li>• Credit Management and Market Clearing</li> <li>• Market Instruments</li> </ul>	<ul style="list-style-type: none"> <li>• Outage Management</li> <li>• Settlements &amp; Billing</li> </ul>
Business Process Changes	<ul style="list-style-type: none"> <li>• Manage Market &amp; Reliability Data &amp; Modeling (MMR) - Manage Outage Data</li> <li>• Manage Markets &amp; Grid (MMG) -Manage Congestion Revenue Rights &amp; Prepare CRR Allocation Data</li> </ul>	

# 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	✓
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)	Aug 01, 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	<ul style="list-style-type: none"> <li>• Markets to exclude Flex Ramp provision of EIM BAAs undergoing contingency</li> <li>• ISO Enhancement to BAAOP EIM operator screens to review active market data and Flex Ramp Sufficiency Test inputs</li> </ul> <p><b>Systems:</b></p> <ul style="list-style-type: none"> <li>• <b>BAAOP</b> – New display screens presenting currently active market data for market data submissions, flex ramp sufficiency test inputs</li> <li>• <b>RTM Market Application</b> <ul style="list-style-type: none"> <li>• 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</li> </ul> </li> <li>• <b>OASIS</b> – new report displays real-time intervals where BAAs (ISO and EIM) are in contingency</li> <li>• <b>Integration</b> – OASIS API will support new report</li> </ul>
BPM Changes	Energy Imbalance Market (EIM), Market Instruments, Market Operations
Business Process Changes	<ul style="list-style-type: none"> <li>• Manage Entity &amp; Resource Maintenance Updates</li> <li>• Manage Real Time Interchange Scheduling</li> <li>• Manage Real Time Operations- Maintain Balancing Area</li> <li>• Perform Price Validation, Manage Price Corrections</li> </ul>

# 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	✓
Config Guides	Post Config Guides	N/A	
Tech Spec	Create ISO Interface Spec (Tech spec)	Jun 26, 2018	✓
Tariff	File Tariff	N/A	
BPMs	Post Draft BPM changes	Aug 10, 2018	
External Training	Deliver external training	Aug 13, 2018	
Market Sim	Market Sim Window	Aug 20, 2018 - Sep 28, 2018	
Production Activation	EIM Enhancements 2018	Nov 01, 2018	

# CMRI Day-Ahead Variable Energy Resource Forecast

As part of an enhancement project, Day-ahead Variable Energy Resource Forecast data set will updated as follows:

	AS-IS	TO-BE
UI Change	Data is available for one trade date, which is Day Ahead  Example: If user selects 6/26/18 as a trade date, CMRI will display data for 6/26/18.	Data is available for four trade dates  Example : If user selects 6/26/18 as a trade date, CMRI will display data for 6/26/18 ,6/27/18,6/28/18 and 6/29/18
API Change	retrieveEIRForecast_v1 service returns data for DA trade dates which are in between dateTimeStart and dateTimeEnd	retrieveEIRForecast_v1 service will return data for Trade Day +1 through Trade Day +4 where Trade Day +1 trade dates are in-between dateTimeStart and dateTimeEnd

**Deployment to MAP Stage: July 9, 2018**

**Planned deployment to production: TBD**

# 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 03, 2019	

# 2019 Independent

# 2019 – ADS Replacement

Project Info	Details/Date
Application Software Changes	<ul style="list-style-type: none"> <li>• Transition to web-based user interface to eliminate the need to install thick client</li> <li>• Transition ADS provisioning to the Access and Identity Management (AIM) application including Resource Level Access Controls (RACL) access</li> <li>• The query tool will provide 30 days of historical data</li> <li>• Move near-term transactions for FERC-764 15-minute awards to ADS; This will include user interface; historical transactions will stay in CMRI.</li> <li>• Various user interface enhancements adding content per Operation's request</li> <li>• ADS B2B services will not otherwise change.</li> </ul>
BPM Changes	<ul style="list-style-type: none"> <li>• Market Instruments</li> <li>• Market Operations</li> </ul>
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	Jul 20, 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	
External Training	Conduct External Training	TBD	
Market Sim	Market Sim Window	TBD	
Production Activation	ADS Replacement	TBD	

# 2019 Fall Release



# Fall 2019 – Contingency Modeling Enhancements Transmissions

Project Info	Details/Date
Application Software Changes	<ul style="list-style-type: none"> <li>• 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</li> <li>• Enhances the LMP formulation to provide market price signal related to this reliability constraint</li> <li>• Creates a Locational Marginal Capacity Price (LMCP) which reflects:                             <ul style="list-style-type: none"> <li>• A resource’s opportunity costs</li> <li>• Marginal congestion cost savings, and/or</li> <li>• The marginal capacity value to follow dispatch</li> </ul> </li> </ul> <p><b>Systems:</b></p> <ul style="list-style-type: none"> <li>• ADS - Modified to display corrective capacity awards similar to AS</li> <li>• CMRI - New or modified reports to display LMCP prices and awards</li> <li>• IFM/RTM - Model new capacity awards and Locational Marginal Capacity Price (LMCP).</li> <li>• Integration</li> <li>• OASIS - New or modified reports to display LMCP prices and awards</li> <li>• PCA</li> <li>• Settlements</li> </ul>
BPM Changes	Market Operations, Market Instruments, Definitions and Acronyms, Settlements and Billing
Business Process Changes	<ul style="list-style-type: none"> <li>• Manage Operations Planning</li> <li>• Manage Day-Ahead Market</li> <li>• Manage Operations Engineering Support</li> <li>• Manage Real Time Operations - Transmission &amp; Electric System</li> <li>• Manage Market Billings &amp; Settlements</li> </ul>

# 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	
Config Guides	Post Configuration Guide(s) (Draft)	TBD	
Tech Spec	Create ISO Interface Spec (Tech spec)	TBD	
Tariff	File Tariff	TBD	
	Post Draft Tariff – Q3 2018	Sep 28, 2018	
BPMs	Post BPM (Draft)	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	

# Fall 2019 – Commitment Cost and Default Energy Bid Enhancements

Project Info	Details/Date
Application Software Changes	<p><b>Scope:</b>            Enhances the ability to submit market-based commitment cost bids in order to reflect unique costs and volatility:</p> <ul style="list-style-type: none"> <li>• Support integration of renewable resources through incentivizing flexible resources participation during tight fuel supply</li> <li>• Account for costs of flexible resources (gas and non-gas) to reduce risk of insufficient cost recovery</li> <li>• Encourage participation of non-RA and voluntary EIM resources; compliance with FERC Order 831</li> <li>• Raises energy bid cap from \$1,000/MWh to \$2,000/MWh:</li> <li>• Requires supporting verified costs of energy bids above \$1,000/MWh</li> <li>• Introduces market power mitigation (MPM) measures for commitment costs.</li> </ul> <p><b>Impacted Systems:</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• CMRI: Provide resource-specific reporting on mitigation results for commitment costs. Provide additional source information for default bids.</li> <li>• 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.</li> <li>• 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.</li> <li>• CIDI: Incorporate templates for submitting request for manual consultation and ex-post default bid adjustments.</li> </ul>

# Fall 2019 – Commitment Cost and Default Energy Bid Enhancements

Project Info	Details/Date
BPM Changes	<ul style="list-style-type: none"> <li>Market Instruments</li> <li>Market Operations</li> </ul>
Business Process Changes	<ul style="list-style-type: none"> <li>Maintain Major Maintenance Adders (MMG LIII)</li> <li>Maintain Negotiated Default Energy Bids (MMG LIII)</li> <li>Maintain Negotiated O_Ms (MMG LIII)</li> <li>Manage Day Ahead Market (MMG LII)</li> <li>Manage Market Billing Settlements (MOS LII)</li> <li>Manage Real Time Hourly Market (RTPD) (MMG LII)</li> <li>Manage Real Time Operations – Maintain Balance Area (MMG LII)</li> </ul>

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	

# Fall 2019 – Day Ahead Market Enhancements

Project Info	Details/Date
Application Software Changes	<p>These are preliminary impact assessments</p> <p>DAM Enhancements include change the day-ahead market from hourly to 15 minute granularity, combine IFM and RUC, procure imbalance reserves</p> <ul style="list-style-type: none"> <li>• Calculate Imbalance Reserve (IR) Requirements in 15 minute interval (DAM)</li> <li>• EIM interface to submit Base schedule in 15 minute interval (BSAP)</li> <li>• EIM balance test, capacity test and sufficiency test in 15 minute interval (RTM)</li> <li>• Report DAM market results in 15 minute Interval (CMRI)</li> <li>• MP can bid IRU and IRD price in SIBR</li> <li>• DAM co-optimize Energy, AS and IR in 15 minute intervals (DAM)</li> <li>• Remove RUC</li> <li>• Get as self-scheduled 15 minute DAM award of energy in RTM if no real time bids (RTM)</li> <li>• Calculate Settlement DAM Expected Energy in 15 minute interval (RTM)</li> <li>• Calculate Bid cost recovery (MQS)</li> <li>• Settle DAM based on 15 minute interval schedules (Settlement)</li> <li>• Settle CRR in DAM 15 minute intervals (Settlement)</li> <li>• Publish DAM energy and AS requirements and prices in 15 minute interval in OASIS</li> </ul>
BPM Changes	Market Instruments, Market Operations, Settlements & Billing, Energy Imbalance markets
Business Process Changes	<ul style="list-style-type: none"> <li>• Manage Day Ahead Market</li> <li>• Manage D+X analysis</li> <li>• Manage Real Time Operations- Maintain Balancing Area</li> <li>• Manage Market Billings &amp; Settlements</li> </ul>

# 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	
Config Guides	Design Review - BPM and Tariff SMEs	TBD	
Tech Spec	Create ISO Interface Spec (Tech spec)	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	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](http://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...

## Calendar of Meetings, Training and Events

Month: February Year: 2018 Calendar View List View Print View

February 2018						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	5 WebCONF: Market Simulation 2:00pm - 3:00pm	6 Training: Get to Know the ISO - Day 1 9:00am - 4:00pm WebCONF: Imbalance Conformance Enhancements 10:00am - 12:00pm WebCONF: Technical User Group 10:00am - 11:00am	7 Deadline: Comments - Interconnection Process Enhancements 2018 - Issue Paper and Meeting Discussion Training: Get to Know the ISO - Day 2 9:00am - 4:00pm Meeting: Flexible Resource Adequacy Criteria Must Offer Obligation Phase 2 - Revised Draft Flexible Capacity Framework 10:00am - 4:00pm WebCONF: Market Settlement User Group 10:00am - 11:00am	8 Meeting: Audit Committee Teleconference (Executive) 3:30pm - 6:30pm Training: Settlements 101 9:00am - 4:00pm Meeting: 2017-2018 Transmission Planning Process 10:00am - 4:00pm WebCONF: Market Simulation 2:00pm - 3:00pm	9 Training: Settlements 201 9:00am - 4:00pm	10
11 WebCONF: Participating Transmission Owner Per Unit Cost Guides 10:30am - 12:00pm WebCONF: Market Simulation 2:00pm - 3:00pm	12 Meeting: Congestion Revenue Rights Auction Efficiency 10:00am - 4:00pm WebCONF: Release User Group 10:00am - 11:00am Call: Energy Imbalance Market Governing Body Teleconference (Executive) 11:30am - 12:30pm	13 Deadline: Submissions - April 2018 Monthly Resource Adequacy and Supply Plans Call: Congestion Revenue Rights 11:00am - 11:30am WebCONF: Outage Management System Customer Partnership Group 2:00pm - 3:00pm	14 Deadline: Comments - Review Transmission Access Charge Structure Straw Proposal and Meeting Discussion Call: Board of Governors Teleconference (General) 3:15pm - 6:00pm Call: Board of Governors Teleconference (Executive) 9:00am - 10:00am Call: Market Update 10:15am - 11:00am WebCONF: Market Simulation	15	16	17

Market Sim



Market Sim



Release Users Group (RUG)

