Release User Group Agenda

September 24th, 2019   *10:00 a.m.–11:00 a.m.* (Pacific Time)

Web Conference Information	Conference Call Information
Web Address: https://caiso.webex.com/meet/RUG Meeting Number: 960 941 245 Audio connection instructions will be available after connecting to the web conference. When prompted, select "Call me" and enter the phone number you will use during the call. You will be called by the conference shortly.	Dial-in Number: 866-528-2256 International Dial-in: 216-706-7052 Access Code: 291 426 5
Calls and webinars are recorded for stakeholder convenience, allowing those who are unable to attend to listen to the recordings after the meetings. The recordings will be publicly available on the ISO web page for a limited time following the meetings. The recordings, and any related transcriptions, should not be reprinted without the ISO's permission.	

Release User Group Agenda

September 24th, 2019   *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	Trang Deluca Cynthia Hinman Christopher McIntosh Jeremy Malekos Janet Morris

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The ISO offers innovative training programs

Date	Training courses and workshops
September 26	Welcome to the ISO (Webinar)
October 8	Pre Market Sim Training - CCDEBE Phase 1 (Webinar)
October 22	Introduction to ISO Markets – Training Workshop (Folsom)
October 23	Market Transactions – Training Workshop (Folsom)
October 24	ISO Settlements – Training Workshop (Folsom)

CustomerTraining@caiso.com

New Modules (recorded webinar and slides)

You can find new initiatives training courses on the learning center web page below.
More resources will be added throughout 2019 in accordance with project schedules.

Computer Based Training

There are more than 20 computer based training modules on the ISO website covering:

- Markets and Operations
- Reference Materials
- Settlements and Metering
- Western Energy Imbalance Market

Visit our **Learning Center** web page to access our training calendar, register for courses and find other informational resources:
http://www.caiso.com/participate/Pages/LearningCenter/default.aspx

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Release Plan Summary: 2019

Fall 2019
- Commitment Costs and Default Energy Bid Enhancements Phase 1
- Energy Storage and Distributed Energy Resources Phase 3A
- RMR and CPM Enhancements
- Local Market Power Mitigation Enhancements
- EIM 2019 Enhancements
- FERC Order 841 – Energy Storage Resources
- Real-Time Market Neutrality Settlement

Spring 2020
- Energy Imbalance Market (EIM) - 2020 Salt River Project
- Energy Imbalance Market (EIM) - 2020 Seattle City Light

Independent 2020
- Automated Dispatch System (ADS) User Interface (UI) Replacement

Fall 2020
- Commitment Costs and Default Energy Bid Enhancements Phase 2
- Contingency Modeling Enhancements - Transmission
- Energy Storage and Distributed Energy Resources Phase 3B
- Dispatch Operating Target Tariff Clarifications
- Intertie Deviation Settlement
- Excess Behind the Meter Production
- Capacity Procurement Mechanism Soft Offer Cap (BOG Q1 2020)
- Import Bid Cost Verification (BOG June 2020)

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Release Plan Summary: 2020 - 2022

Spring 2021
- Energy Imbalance Market (EIM) 2021 - Public Service Company of New Mexico
- Energy Imbalance Market (EIM) 2021 - North-Western Energy
- Energy Imbalance Market (EIM) 2021 - Los Angeles Dept. of Water and Power
- Energy Imbalance Market (EIM) 2021 - Turlock Irrigation District

Fall 2021 – tentative, subject to impact assessment
- Day Ahead Market Enhancements (BOG Q4 2020)
- RA Enhancements (BOG May/Jun 2020)
- Energy Storage and Distributed Energy Resources Phase 4 (BOG Q1 2020)
- Storage as a Transmission Facility (BOG TBD)
- TAC Structure Enhancements (BOG TBD)
- Market Settlement Timeline Transformation (BOG Nov 2019)

Spring 2022
- Energy Imbalance Market (EIM) 2022 - Avista
- Energy Imbalance Market (EIM) 2022 - Tucson Electric Power

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Release Schedule 2019

Date of Data Refresh: 9/20/2019

California ISO

Legend	
Market Simulation	CA ISO Holiday
External Testing	Deployment Week

Column headers (week ranges):
9/2/19 - 9/8/19, 9/9/19 - 9/15/19, 9/16/19 - 9/22/19, 9/23/19 - 9/29/19, 9/30/19 - 10/6/19, 10/7/19 - 10/13/19, 10/14/19 - 10/20/19, 10/21/19 - 10/27/19, 10/28/19 - 11/3/19, 11/4/19 - 11/10/19, 11/11/19 - 11/17/19, 11/18/19 - 11/24/19, 11/25/19 - 12/1/19, 12/2/19 - 12/8/19, 12/9/19 - 12/15/19, 12/16/19 - 12/22/19, 12/23/19 - 12/29/19, 12/30/19 - 1/5/20

MAP Stage Environment Window

Task	Schedule
ESDER3A	ESDER3A (09/03-10/11)
ESDER3A - Market Sim	ESDER3A - Market Sim (09/03-10/11)
RMRCPME	RMRCPME (09/03-10/11)
RMRCPME - Market Sim	RMRCPME - Market Sim (09/03-10/11)
LMPME	LMPME (09/03-10/11)
LMPME - Market Sim	LMPME - Market Sim (09/03-10/11)
FERC841	FERC841 (09/03-10/11)
FERC841 - Market Sim	FERC841 - Market Sim (09/03-10/11)
RTM Neutrality Settlement	RTM Neutrality Settlement (09/03-10/11)
RTM Neutrality Settlement - Market Sim	RTM Neutrality Settlement - Market Sim (09/03-10/11)
EIM2019	EIM2019 (09/03-11/04)
EIM2019 - Market Sim	EIM2019 - Market Sim (09/03-11/04)
CCDEBE1	CCDEBE1 (10/14-11/04)
CCDEBE1 - Market Sim	CCDEBE1 - Market Sim (10/14-11/04)
EIM 2020 SRP & SCL	EIM 2020 SRP & SCL (09/03-01/31)
EIM 2020 SRP & SCL - Market Sim	EIM 2020 SRP & SCL - Market Sim (12/03-01/31)

Production Environment Window

Task	Schedule
FNM DB 2019Q3	FNM DB 2019Q3 (09/17-09/19)
ESDER3A - DRRS	ESDER3A - DRRS (11/06-11/06)
ESDER3A	ESDER3A (11/13)
RMRCPME Implementation	RMRCPME Implementation (11/13)
LMPME	LMPME (11/13)
EIM2019	EIM2019 (11/13)
FERC841	FERC841 (11/13)
RTM Neutrality Settlement Implementation (Effective Date 08/01/19)	RTM Neutrality Settlement Implementation (11/13)
FNM DB 2019M11	FNM DB 2019M11 (11/19-11/21)
CCDEBE1	CCDEBE1 (12/04)
RMRCPME Effective Date	RMRCPM Effective Date (01/01)

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

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2019 Fall Release

ISO PUBLIC

Fall 2019 Release – Overview

	Board Approval	External BRS	Config. Guide	Technical Specifications	Mkt Sim Scenarios	Draft Tariff*	BPMs	External Training	Market Sim	Production Activation
Fall 2019 Release - Overview	**04/01/19**	**05/17/19**	**05/17/19**	**05/17/19**	**05/17/19**	**07/14/19**	**08/26/19**	**08/26/19**	*09/03/19 – 10/11/19*	*11/13/19*
CCDEBE1	03/22/18	09/03/19	N/A	05/17/19 CMRI 07/10/19 SIBR	N/A	05/10/19	10/04/19	10/08/19	09/03/19 – 11/04/19	12/04/19
ESDER3A	09/05/18	07/18/19	05/17/19 07/08/19	05/16/19 MF, DRRS, MRI-S	06/19/19 v1.1	05/28/19	07/30/19	08/26/19	09/03/19 – 10/11/19	11/06/19 - DRRS 11/13/19
RMR-CPME	03/28/19	07/25/19	06/03/19 07/08/19	N/A	06/27/19 v1.0	04/03/19	08/26/19	08/30/19	09/03/19 – 10/11/19	11/13/19 Effective 01/01/19
LMPME	03/28/19	04/01/19	N/A	05/16/19 CMRI 06/28/19 MF	06/17/19 v1.1	04/16/19	09/05/19	08/29/19	09/03/19 – 10/11/19	11/13/19
EIM2019	N/A	08/12/19	05/17/19	05/17/19 CMRI 07/03/19 BSAP 07/19/19 OASIS	N/A	N/A	07/30/19	08/26/19 09/18/19	09/03/19 – 11/04/19	11/13/19
FERC841	N/A	06/20/19	06/03/19	N/A	N/A	N/A	8/30/09 9/27/19	N/A	09/03/19 – 10/11/19	11/13/19
RTM Neutrality Settlement	07/25/19	08/07/19	07/31/19	N/A	N/A	07/30/19	08/26/19	08/27/19	09/03/19 – 10/11/19	11/13/19 Effective 08/01/19

Notes:

Items in **BLUE** are complete

Items in **PURPLE** indicate a new date.

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

*Draft Tariff dates have been updated to show only the draft tariff posting. FERC Filing dates can be seen on individual project slides.

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Fall 2019 Release – System Interface Changes

MF

Project	Change Type	API Service Name & Major Version, Artifacts	Minor Version	RDT	MAP Stage	Production Activation	Technical Specifications
ESDER3A LMPME CCDEBE1	Modify	RetrieveGeneratorRDT_MFRDv4 RetrieveGeneratorRDT_MFRDv4_DocAttach	20191001		Sep 5, 2019	Nov 13, 2019	5.1
ESDER3A LMPME	Modify	SubmitGeneratorRDT_MFRDv4 SubmitGeneratorRDT_MFRDv4_DocAttach	20191001	GRDT v13.0	Sep 5, 2019	Nov 13, 2019	5.1

SIBR/BSAP

System	Project	Change Type	API Service Name & Major Version, Artifacts	MAP Stage	Production Activation	Technical Specifications
SIBR	CCDEBE1	Modify	RetrieveCleanBidSet_SIBRv5 RetrieveCleanBidSet_SIBRv5_DocAttach	Oct 14, 2019	Dec 4, 2019	13.1
SIBR	CCDEBE1	Modify	RetrieveCurrentBidResults_SIBRv5 RetrieveCurrentBidResults_SIBRv5_DocAttach	Oct 14, 2019	Dec 4, 2019	13.1
SIBR	CCDEBE1	Modify	SubmitRawBidSet_SIBRv5 SubmitRawBidSet_SIBRv5_DocAttach	Oct 14, 2019	Dec 4, 2019	13.1
BSAP	EIM 2019	Modify	RetrieveBalancingTestResults_BSAPv2 RetrieveBalancingTestResults_BSAPv2_DocAttach	Sep 30, 2019	Nov 13, 2019	1.7.1

California ISO

Fall 2019 Release – System Interface Changes

CMRI

Project	Change Type	UI Change	API Service Name & Major Version, Artifacts	MAP Stage	Production Activation	Technical Specifications
LMPME CCDEBE1	Modify	Tab: Default Bids Existing Report: Default Energy Bid Curves	RetrieveDefaultBidCurves_CMRIv2 RetrieveDefaultBidCurves_CMRIv2_DocAttach	Sep 12, 2019	Nov 13, 2019	3.9.1
CCDEBE1	Modify	Tab: Default Bids Existing Report: Default Commitment Costs	RetrieveExternalDefaultCommitmentCost_CMRIv1 RetrieveExternalDefaultCommitmentCost_CMRIv1_DocAttach	Oct 14, 2019	Dec 4, 2019	3.9.1
EIM 2019	New	Tab: Energy Imbalance Market New Report: Resource Operating Limits	RetrieveEIMResourceOperatingLimit_CMRIv1 RetrieveEIMResourceOperatingLimit_CMRIv1_DocAttach	Oct 14, 2019	Nov 13, 2019	3.9.1
EIM 2019	New	Tab: Real-Time New Report: Resource Operating Limits	RetrieveResourceOperatingLimit_CMRIv1 RetrieveResourceOperatingLimit_CMRIv1_DocAttach	Oct 14, 2019	Nov 13, 2019	3.9.1

OASIS

Project	Change Type	UI Change	API Service Name & Major Version, Artifacts	MAP Stage	Production Activation	Technical Specifications
EIM 2019	New	Tab: ENERGY New Report: Transmission Loss	ENE_TRANS_LOSS	Oct 14, 2019	Nov 13, 2019	5.1.9

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CMRI Improvements

Project Info	Details/Date

CMRI UI Upgrade & Performance Improvements	CAISO is planning CMRI UI Upgrade & Performance Improvements
	
	• Performance Improvements
	
	    • Technology/Infrastructure Upgrade
	
	    • Data Model Normalization
	
	        • Due to data model normalization there will be data migration effort from old model to new model.
	
	        • Data migration process is being tested in Non-Production environment. Current Plan:
	
	            • Complete the data migration and cut over to new UI and performance improvements.
	
	            • After cutover, users will have access to all the data.
	
	            • ISO will communicate CMRI performance improvements patch deployment time line.
	
	• Market Participant Testing prior to Production deployment.
	
	• NO API interface changes and NO functionality changes.
	
	• CAISO requests to use the latest supported version as mentioned in the Tech Specs for application programming interfaces (API)

Milestone Type	Milestone Name	Dates	Status
Map Stage	CMRI Improvements available in MAP Stage	Jun 10, 2019	✓
Production Activation	CMRI Performance Improvements	Oct, 2019	

CMRI Improvements

Project Info	Details/Date

CMRI UI Upgrade & Performance Improvements	CAISO is planning CMRI UI Upgrade & Performance Improvements
	
	• Performance Improvements
	    • Technology/Infrastructure Upgrade
	    • Data Model Normalization
	        • Due to data model normalization there will be data migration effort from old model to new model.
	        • Data migration process is being tested in Non-Production environment. Current Plan:
	            • Complete the data migration and cut over to new UI and performance improvements.
	            • After cutover, users will have access to all the data.
	            • ISO will communicate CMRI performance improvements patch deployment time line.
	• Market Participant Testing prior to Production deployment.
	• NO API interface changes and NO functionality changes.
	• CAISO requests to use the latest supported version as mentioned in the Tech Specs for application programming interfaces (API)

Milestone Type	Milestone Name	Dates	Status
Map Stage	CMRI Improvements available in MAP Stage	Jun 10, 2019	✓
Production Activation	CMRI Performance Improvements	Oct 1, 2019	✓

California ISO

Fall 2019 – Commitment Cost and Default Energy Bid Enhancements Ph1

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: • Ex-ante cost adjustment requests • Reference Level Adjustments to default commitment cost bids (start-up and minimum load costs) and default energy bids • Make Day Ahead Market process permanent • Make D+2 Process permanent • Use of indices clarification, and Monday Only in DAM and RTM, per LMPME • Conditionally Available Resources (CAR) **Impacted Systems:** • SIBR: Allow the submittal of Ex Ante cost adjustments. • CMRI: Provide additional source information for default bids. Submit requests through CIDI for manual consultation and ex-post default bid adjustments.
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)

Commitment Cost and Default Energy Bid Enhancements - Tariff filing approach (from draft tariff review on June 12 call)

Fall 2019 Implementation - CCDEBE Phase1 - filed with FERC August 30 2019
- ✓ Commitment Cost Caps
- ✓ Reference Level Adjustments with changes adopted in LMPME
- ✓ Make Day Ahead Market process permanent
- ✓ Make D+2 Process permanent
- ✓ Use of indices clarification per LMPME
- ✓ Use of Monday Only in DAM and RTM per LMPME

Fall 2020 Implementation
- CCDEBE Phase 2 - tariff filing TBD
  - ✓ Increase commitment cost caps/decrease adder to commitment cost calculations
  - ✓ Adopt market power mitigation of commitment costs

- FERC Order No 831 - filed with FERC September 5, 2019
  - ✓ Increase of energy bid cap to $2000/MWh
  - ✓ Cost verification of bids above $1000/MWh (internal and resource specific system resources)
  - ✓ After the cost recovery

- Import Bid Cost Verification - tariff filing TBD
  - ✓ Delay stakeholder process to develop screens for import bids from non-resource specific system resources
  - ✓ Implement concurrent with Order No. 831 compliance
  - ✓ Consider changes to power balance constraint penalty prices and other scarcity prices due to increase in bid cap

California ISO

Fall 2019 – Commitment Cost and Default Energy Bid Enhancements Ph1

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	Publish revised external BRS v1.1	Jan 22, 2019	✔
	Publish External BRS v1.2: Phase 1/Phase 2, clarifications	Mar 29, 2019	✔
	Publish External BRS v1.3: Reference Level Adjustments	Apr 05, 2019	✔
	Publish External BRS v1.4 for CCDEBE tariff traceability	Jul 19, 2019	✔
	Publish External BRS v1.5: implementation notes & clarifications (BRQ046, BRQ035/335), Generic Hub GPI update	Sep 04, 2019	✔
Config Guides	Config Guide	N/A	
Tech Spec	Publish Technical Specifications	May 17, 2019	✔
	Publish Technical Specification updates for CARs and Electric Pricing Hub weighting	Jun 28, 2019	✔
Tariff	File Tariff - CCDEBE Phase 1	Aug 30, 2019	✔
	Draft Tariff published	May 13, 2019	✔
	Tariff stakeholder walkthrough conference call	Jun 11, 2019	✔
BPMs	Post Draft BPM changes	Oct 04, 2019	
External Training	Deliver External Training	Oct 08, 2019	
Market Sim	Market Sim Window	Oct 14, 2019 - Nov 04, 2019	
Production Activation	CCDEBE Phase 1	Dec 04, 2019	

* Project schedule shows risk in meeting current targets. Project team attempting to mitigate risk. Tariff filing requested a "no-later-than" Dec 11 effective date.

Fall 2019 – ESDER Phase 3a – Bid Dispatchable Option

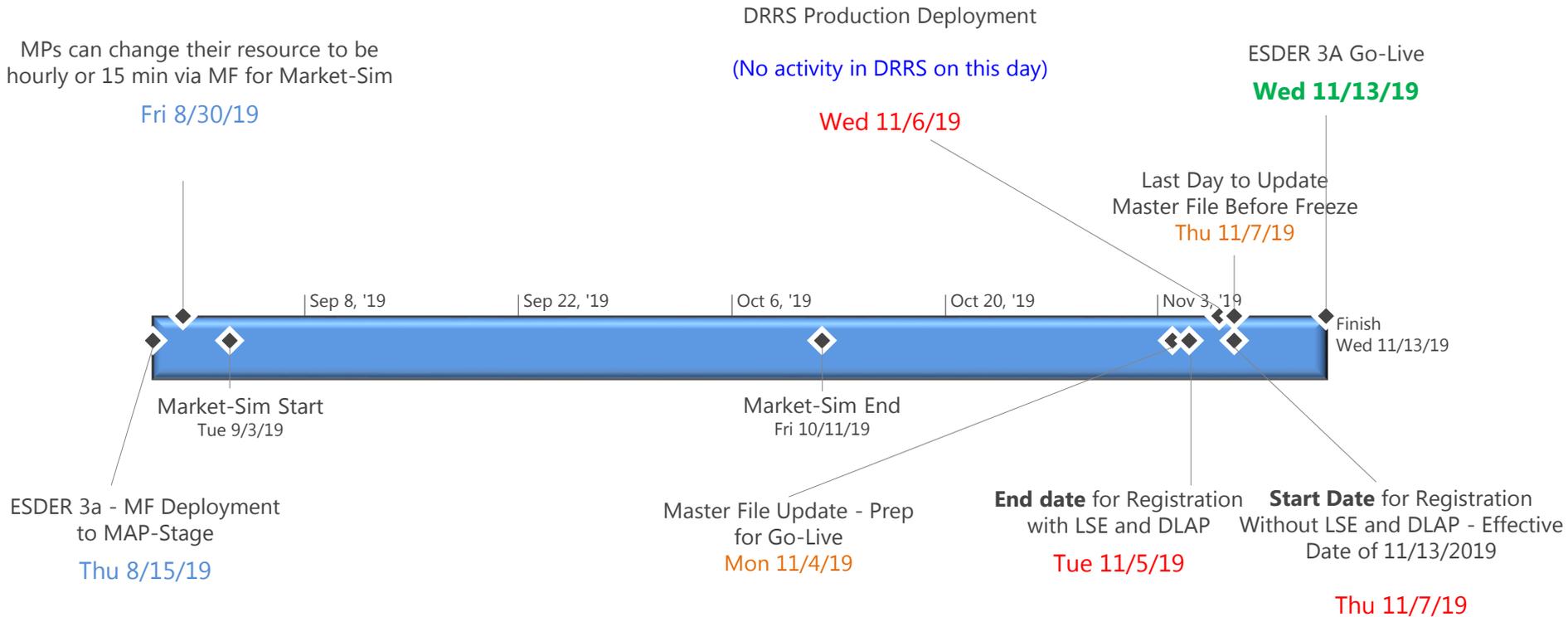| Project Info	Details/Date
Application Software Changes	**Scope:** The ESDER 3a scope of the larger ESDER3 initiative will include two (2) demand response enhancements: • New bid dispatchable options for demand response resources • Removal of single LSE requirement for PDR registrations & removal of default load adjustment (DLA) Additionally, for ESDER2 Tariff Compliance, following is being implemented as part of this project • Customer Load Baseline Submittal **Impacted Systems (Overview):** **Master File:** • RDTs for PDR registrations in MF will require selection of an effective Bid Dispatchable Option to be used for market optimization and dispatch **DRRS:** • PDR registrations will not require all service accounts to have the same LSE **SIBR:** • Will apply Net Benefit Test price criteria for PDR bids and reject those not meeting the applicable criteria • Will not allow Bid Dispatchable Options to be changed in SIBR **HASP/RTM:** • Will use effective Bid Dispatchable Option registered in MF (e.g., 5-min, 15-min or Hourly) for market optimization and dispatch instructions • Will broadcast new PDR energy schedules/awards and instructions to downstream applications **Settlements**: • Will remove the default load adjustment (DLA) application • Will provide Bid Cost Recovery for PDRs with 15-Minute Bids but not Hourly Bids **CMRI:** • Will include energy schedules and awards for PDRs with new Bid Dispatchable Options (Existing) **MRI-Settlements (ESDER2 Tariff Compliance)**: • New BASE measurement type for monitoring calculated baseline data

Fall 2019 – ESDER Phase 3a – Bid Dispatchable Option (cont.)

Project Info	Details/Date
BPM Changes	• Market Instruments, Metering, and Demand Response (new BPM) • Market Operations
Tariff Change	4.13 and 11.6

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	Sep 05, 2018	✔
External BRS	Post Revised External BRS v1.3	Jun 20, 2019	✔
	Post Revised External BRS v1.2	Mar 20, 2019	✔
	Post Revised External BRS v1.1	Feb 25, 2019	✔
	Post External BRS v1.0	Feb 11, 2019	✔
	Post Revised External BRS v1.4	Jul 18, 2019	✔
Config Guides	Post Draft Config Guides	May 17, 2019	✔
Tech Spec	Publish Technical Specifications	May 17, 2019	✔
Tariff	File Tariff	Sep 03, 2019	✔
BPMs	Post Draft BPM (DR, MI & Metering) changes	Jul 30, 2019	✔
	Post draft BPM changes - Market Operations	Aug 20, 2019	✔
External Training	External training	Aug 26, 2019	✔
Market Sim	ESDER 3a	Sep 03, 2019 - Oct 11, 2019	
Production Activation	ESDER 3a - DRRS	Nov 06, 2019	
	ESDER 3a - IFM/RTN, Settlements, SIBR	Nov 13, 2019	

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Fall 2019 – ESDER Phase 3a – Bid Dispatchable Option (cont.)

Proposed DRRS & MF Transition Timeline

DRRS Production Deployment

(No activity in DRRS on this day)

Wed 11/6/19

ESDER 3A Go-Live
Wed 11/13/19

MPs can change their resource to be hourly or 15 min via MF for Market-Sim

Fri 8/30/19

Last Day to Update Master File Before Freeze
Thu 11/7/19

Sep 8, '19   Sep 22, '19   Oct 6, '19   Oct 20, '19   Nov 3, '19

Finish
Wed 11/13/19

Market-Sim Start
Tue 9/3/19

Market-Sim End
Fri 10/11/19

ESDER 3a - MF Deployment to MAP-Stage

Thu 8/15/19

Master File Update - Prep for Go-Live
Mon 11/4/19

End date for Registration with LSE and DLAP
Tue 11/5/19

Start Date for Registration Without LSE and DLAP - Effective Date of 11/13/2019

Thu 11/7/19

Fall 2019 – RMR and CPM Enhancements

Project Info	Details/Date

Application Software Changes	**Scope:**
	RMR and CPM Enhancements will address the following policy and tariff amendment scope:
	• Risk-of-Retirement tariff provisions will transition from CPM to RMR section
	• RMR units under the new tariff provisions shall:
	    Have reliability capacity allocated by TAC Area (for PTOs, not LSEs), Flex RA credit shall be applied
	    Receive Must-Offer Obligation (MOO)
	    Subject to RAAIM
	    Streamline RMR invoicing, settlement process through inclusion in ISO Settlement process
	
	Impacted Systems (Overview):
	Master File:
	• No impact. ISO will internally manage RMR resource status and vintage (e.g. RMR vs. RMRL).
	CIRA:
	• New features to both qualify (e.g. confirm EFC is defined) and allocate System/Local/Flex reliability capacity by TAC Area (for PTOs) for RMR units with new contract type:
	    • Apply Flex RA credit by TAC Area (for PTOs)
	    • Perform RMR Substitution
	    • Support RMR Risk-of-Retirement
	• Like RA resources, RMR units under the new tariff will receive RAAIM status determination
	SIBR
	• Like RA resources, automatically generates cost-based energy bids for new contract type RMR units for un-submitted bid range below RMR contract capacity
	    • Bids will reflect applicable GHG Compliance costs, SC charges, Major Maintenance Adder (MMA), and (if applicable) Opportunity Costs (OC); Note: MMA and OC are recovered through fixed cost payments (not market rents) and will be clawed-back during the ISO settlement process.
	• Removes self-schedule requirement for new contract type RMR units scheduled/dispatched in Day-Ahead Market
	IFM/RTM:
	• Unit Commitment, Economic Dispatch decisions will include applicable MMA and OC (no change from today)
	• Like RA resources, new contract type RMR units will have automatic RA Obligation ($0/MWh bids in RUC)

Project Info	Details/Date

Application Software Changes	**Impacted Systems (Continued):**
	
	IFM/RTM:
	• Unit Commitment, Economic Dispatch decisions will include applicable MMA and OC (no change from today)
	• Like RA resources, new contract type RMR units will have automatic RA Obligation ($0/MWh bids in RUC)
	Settlements:
	• RMR units under new contract type will receive:
	    • RMR under new tariff provisions will settle through the ISO Settlements calendar;
	    • Legacy RMR (RMRL) will continue to receive payment through the RMR invoicing process
	    • Monthly RMR capacity payment (by resource) and cost allocation (by PTO)
	    • RAAIM settlement/allocation
	    • Bid Cost Recovery (does not include MMA or OC)
	    • Clawback of fixed MMA and OC costs (if applicable)
	
	CPM tariff revisions will be addressed during the CPM Soft Offer Cap policy initiative.

BPM Changes	Reliability Requirements, Generator Management, Market Operations, Market Instruments, Settlements and Billing
Tariff Change	11.13, 31.2.2, 34.1, 40.9, 41, 43, 43A, Appendix G

Fall 2019 – RMR and CPM Enhancements (cont.)

Milestone Type	Milestone Name	Dates	Status
Board Approval	Board of Govenors Approval	Mar 28, 2019	✓
External BRS	Post External BRS	Apr 01, 2019	✓
	Post Updated External BRS v1.1	Jul 26, 2019	✓
Config Guides	Publish Config Guide	Jun 03, 2019	✓
Tech Spec	Publish Technical Specifications	N/A	
Tariff	File Tariff w/ FERC	Apr 23, 2019	✓
	Receive FERC order (Deficiency Letter)	Jul 19, 2019	✓
	Refiled with FERC	Jul 26, 2019	✓
BPMs	Post Draft BPM changes • Settlements and Billing – PRR1184 • Generator Management - PRR1189 • Market Instruments – PRR1193 • Market Operations - PRR1194 • Reliability Requirements – PRR1195 • Credit Mgmt. & Market Clearing – PRR TBD	Oct 31, 2019	
External Training	Deliver External Training	Aug 30, 2019	✓
Market Sim	RMR/CPM	Sep 03, 2019 - Oct 11, 2019	
Production Activation	RMR/CPM Deployment	Nov 13, 2019	
	RMR/CPM Effective Date	Jan 01, 2020	

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Fall 2019 – Local Market Power Mitigation Enhancements

Project Info	Details/Date

Application Software Changes	**Scope:** Prevent Flow reversal, Limits transfer, DEB for Hydro, Reference level adjustment process, Gas price Indices
	
	Impacted Systems:
	RTM: Prevent flow reversal
	     Eliminate rule mitigate in FMM carry to RTD
	     Eliminate rule mitigate for balance of hour for FMM, balance 15 minute for RTD
	     Use current market competitive LMP for mitigation
	     Add a nominal parameter to mitigated bids
	     Mitigated bid = MAX (DEB, Competitive LMP + $0.xx parameter)
	RTM: Limit transfers to limit Economic Displacement
	     Optional rule for EIM BAA
	     Limit transfers to the greater of exports in MPM and flexible ramping requirements
	     Export Limit = MAX [ExportsBase, ExportsMPM, $\Sigma FRUMPMAward$]
	     The exporting BAA will receive congestion rents created by this proposed rule
	OASIS: Publish EIM transfer limit
	CMRI: Display new Hydro DEB type
	Master File: Option to limit transfer per a defined rule
	     Manage Hydro DEB eligibility at resource level
	     New field to select and rank hydro DEB option
	     Store resource's maximum storage horizon
	     Identify default trading hubs for hydro resources, requests changes to additional hubs
	     Ability to view parameters and ranking of approved hydro DEBs

BPM Changes	Market Operations, Market Instruments
Tariff Change	Section 29.39, 31.2.1, 39.7

California ISO

Fall 2019 – Local Market Power Mitigation Enhancements (cont.)

Milestone Type	Milestone Name	Dates	Status
Board Approval	Board of Governors Approval	Mar 28, 2019	✔
External BRS	Post External BRS	Apr 01, 2019	✔
Config Guides	Post Draft Config Guides	N/A	
Tech Spec	Publish Technical Specification update: CARs, Electric Pricing Hub weighting, MF v5.1	Jun 28, 2019	✔
	Publish Technical Specifications: MF v5.0, CMRI v3.9.0	May 17, 2019	✔
Tariff	File Tariff	Jul 02, 2019	✔
BPMs	Post Draft BPM changes: PRRs 1190 (MI), 1191 (MO), 1192 (EIM)	Sep 05, 2019	✔
External Training	Deliver External Training	Aug 29, 2019	✔
Market Simulation	Market Sim Window	Sep 03, 2019 - Oct 11, 2019	
Production Activation	LMPM - Enhancements	Nov 13, 2019	

* Project schedule shows risk in meeting current targets. Tariff filing requested a "no-later-than" Dec 4 effective date.

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Fall 2019 – Energy Imbalance Market Enhancements 2019

Project Info	Details/Date
Application Software Changes	**Scope:** Implement 21 EIM enhancements requested by EIM entities through CIDI System **Impacted Systems:** **BAAOP:** Add displays for BAA overview, Unit deviations, Load Bias, transfer limits, contingency flag, timestamps, and other identified items. Enhance sorting and layouts ability. Enhance alarm ability for market thresholds. **BSAP**: Enhance capability for Base schedule modification, Add aggregated BS deviation in API. **OASIS or CMRI**: ~~Display ROC limits~~ Display 5-min market transmission Loss **RTM:** prevent ETSR swing using explicit triggers. **ADS**: Publish current DOP in the MSG transition period. **Settlement**: Publish data for UFE shadow calculation; Settle EIM Resource Deviation within Regulation/ABC range as instructed regulation energy. **CMRI**: Publish resource limit values
BPM Changes	Market Instruments, Energy Imbalance Market

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	N/A	
External BRS	Milestone: Post External BRS	Feb 05, 2019	✓
	Milestone: Post External BRS Revisions 1.1	Mar 25, 2019	✓
	Milestone: Post External BRS Revisions 1.4	Aug 12, 2019	✓
Config Guides	Publish Config Guides	May 17, 2019	✓
Tech Spec	ISO Interface Spec (Tech spec) – BSAP v1.6, CMRI v3.9.0	May 17, 2019	✓
	Create ISO Interface Spec (Tech spec) – OASIS v5.1.9	Jul 19, 2019	✓
	Revised ISO Interface Spec (Tech spec) – BSAP v1.7	Jul 03, 2019	✓
Tariff	File Tariff	N/A	
BPMs	Post Draft BPM changes	Jul 30, 2019	✓
External Training	External Training Webinar	Aug 26, 2019	✓
	External Training Webinar/Refresh (During Bi-Weekly Ops Call)	Sep 18, 2019	✓
Market Sim	Market Sim Window	Sep 03, 2019 – Nov 4, 2019	
Production Activation	EIM Enhancements 2019	Nov 13, 2019	

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Fall 2019 – Energy Imbalance Market Enhancements 2019

Area	Features/Scope	Timing Status
BAAOP and BSAP Interface Changes	▪ Transformer Flow – In MAP Stage ▪ Resource Flex Ramping ▪ Flexible Ramping Sufficiency Results ▪ EIM Area Summary - In MAP Stage ▪ ETSR Detail ▪ EIM Threshold Display and Calculations ▪ RTD Dispatch Control – In MAP Stage ▪ RTPD Dispatch Control – In MAP Stage ▪ Copy and Modify Base schedule **(BSAP)** EIM19-BRQ1270 ▪ Add retrieve aggregate service for BS Deviation **(BSAP)** EIM19-BRQ1560	Target availability in MAP Stage September 30
Reporting Features	▪ Loss Transmission OASIS Report ▪ CMRI Resource Operating Limits Report ▪ CMRI EIM Operating Limits Report	Target availability in MAP Stage Oct 14

Fall 2019 – FERC 841 Energy Storage Resources

Project Info	Details/Date
Application Software Changes	**Scope:** FERC issued Order 841 to remove the barriers to the participation of electric storage resources in the capacity, energy and ancillary service markets operated by RTOs and ISOs. CAISO will achieve compliance with Order 841 through implementation of two (2) specific scope items: • Reduce the minimum capacity for participating Generators to 100kW for storage resources • Remove Transmission Access Charge (TAC) for Pumped-Storage Hydro Units
BPM Changes	Market Operations, Settlements and Billing
Tariff Change	4.6.3.2 – Exemption for Generating Units of Less Than One (1) MW 26.1 – Transmission Rates and Charges Appendix A – Definition Change for Participating Generator

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	N/A	
External BRS	Milestone: Post External BRS	Jun 20, 2019	✓
Config Guides	Milestone: Post Config Guide	Jun 03, 2019	✓
Tech Spec	N/A: Publish Technical Specifications	Aug 13, 2019	✓
Tariff	CAISO's Compliance Filing	Dec 8, 2018	✓
BPMs	Settlements & Billing – PRR #1177 released 8/26/19 Market Operations – PRR #1180 released on 8/30/19 Generator Management – PRR scheduled 9/27	Aug 26, 2019 Aug 30, 2019 Sep 27, 2019	✓ ✓
External Training	External training	N/A	
Market Sim	Market Sim Window	Sep 03, 2019 - Oct 11, 2019	
Production Activation	FERC 841 - NGR Model	Nov 13, 2019	

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Fall 2019 – Real-Time Market Neutrality Settlement

Project Info	Details/Date
Application Software Changes	Settlement: modify CC6477, CC64770 • Remove EIM transfer adjustment amount • Credit the GHG cost for non-CA transfers in EIM transfer financial value calculation • Use 5-minute ETSR After-The-Fact tags submitted by EIM BAA
BPM Changes	Settlements & Billing
Tariff Change	11.5.4.1 Real Time Imbalance Energy Offset

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	Jul 25, 2019	✔
External BRS	Post External BRS	Jul 08, 2019	✔
	Post External BRS (Updated)	Aug 07, 2019	✔
Config Guides	Publish Config Guide	Jul 31, 2019	✔
Tech Spec	Publish Technical Specifications	N/A	
Tariff	File Tariff w/FERC	Jul 30, 2019	✔
BPMs	Post Draft BPM changes (PRR 1185)	Aug 26, 2019	✔
External Training	Deliver External Training	Aug 27, 2019	✔
Market Sim	Market Sim Window	Sep 03, 2019 - Oct 11, 2019	
Production Activation	RT Market Neutrality Settlement	Nov 13, 2019	

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2020 Spring Release

Spring 2020 – EIM integrations for SCL and SRP

Project Info	Details/Date
Application Software Changes	Implementation of SCL and SRP as EIM Entities
BPM Changes	EIM BPM will be updated if needed to reflect new modeling scenarios identified during implementation and feedback from SCL and SRP.
Market Simulation	December 2019 – January 2020
Parallel Operations	February 2020 – March 2020

Milestone Type	Milestone Name	Dates	Status
Market Sim	Market Sim Window	December 2019 – January 2020	
Parallel Operations	Parallel Operations	February 2020 – March 2020	
Tariff	File Readiness Certification	March 2020	
Production Activation	EIM – SCL and SRP	April 2020	

2020 Independent

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2020 – ADS Replacement

Project Info	Details/Date
Application Software Changes	• Transition to web-based user interface to eliminate the need to install thick client • Transition ADS provisioning to the Access and Identity Management (AIM) application including Resource Level Access Controls (RACL) access • The query tool will provide 30 days of historical data • Various user interface enhancements adding content per Operation's request • ADS B2B services changes - TBD.
BPM Changes	• Market Instruments • Market Operations

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	N/A	
External BRS	Post External BRS	Aug 06, 2018	✔
ADS Update	ADS Update Meeting	Aug 15, 2018	✔
Config Guides	Design review - BPM and Tariff SMEs	TBD	
Tech Spec	Publish Technical Specifications	TBD	
Tariff	File Tariff	TBD	
BPMs	Post Draft BPM changes	TBD	
Market Sim	Market Sim Window	Q3 2020	
Production Activation	ADS Replacement	Q3 2020	
Production	ADS Parallel Operations	Q3 2020	
Decommission	Old ADS Decommission	TBD	

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2020 Fall Release

Fall 2020 – Commitment Cost and Default Energy Bid Enhancements Ph2

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: • Introduces market power mitigation (MPM) measures for commitment costs. • 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 **Impacted Systems:** • SIBR: Incorporate negotiated default commitment bids. Increase commitment cost caps. Allow for hourly submittal of minimum load bids into day-ahead market. Increase energy bid caps, incorporate soft energy bid cap. • 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. • 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 requests for manual consultation and ex-post default bid adjustments.
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 2020 – Import Bid Cost Verification

Project Info	Details/Date
Market notice May 16, 2019	The objective of the Import Bid Cost Verification initiative is to ensure energy prices continue to reflect the marginal cost of supply when those prices exceed $1,000/MWh, and to ensure intertie offer rules are consistent with ISO's internal bidding rules by developing reasonable cost-verification measures for intertie offers above $1,000/MWh.

In 2016, the Federal Energy Regulatory Commission (FERC) required Independent System Operators (ISO)/ Regional Transmission Organizations (RTOs) to raise energy bid-caps from $1,000/MWh to $2,000/MWh, and ensure internal supply offers above $1,000/MWh are cost-justified. FERC did not require the same treatment for suppliers that submit intertie offers, but it was open to individual ISO/RTOs developing and justifying their own requirements for intertie offers above $1,000/MWh. This initiative is therefore intended to develop reasonable cost-verification measures for intertie offers above $1,000/MWh |

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Project Info	Details/Date
Application Software Changes	**Scope:** The ESDER 3b initiative will include two (2) demand response enhancements: • Addition of a Load Shift Product wherein demand response resources with behind the meter (BTM) storage devices can participate in both load consumption and load curtailment. • Enable sub-metered electric vehicles supply equipment (EVSE) to participate in load curtailment **Impacted Systems (Overview):** **Master File:** • Registration of new PDR Resource Types and business rules for PDRs with BTM storage devices and wanting to participate in both Load Curtailment and Consumption • Two (2) Resource IDs will be assigned to the same Resource to allow Consumption versus Curtailment participation (PDR-LSR) **DRRS:** • Allow two resource IDs to be selected for registrations with LSR baseline methods • New baseline methods for PDR-LSRs and EVSEs • New attribute for locations to indicate BTM device **CIRA:** • Will prevent the request of NQC for PDR-LSR Consumption resources

Fall 2020 – ESDER Phase 3b – Load Shift Product (cont.)

Project Info	Details/Date
BPM Changes	• Market Instruments, Market Operations, Outage Management, Reliability Requirement and Metering
Tariff Change	Sections 4.13, 6.4, 6.5, 11.6, 11.8, 31.3, 34.1,34.4, 34.5, 30.7 and 34.8

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	Sep 05, 2018	✓
External BRS	Post External BRS v1.4	Jul 18, 2019	✓
Config Guides	Post Draft Config Guides	Feb 05, 2020	
Tech Spec	Publish Technical Specifications	Feb 04, 2020	
Tariff	Post Draft Tariff	Mar 16, 2020	
	File Tariff	May 28, 2020	
BPMs	Post Draft BPM changes	May 12, 2020	
External Training	External training	Jun 18, 2020	
Market Sim	Market Sim Window	Jun 30, 2020 - Aug 14, 2020	
Production Activation	ESDER Phase 3b - Load Shift Product	Oct 01, 2020	

Fall 2020 – Dispatch Operating Target Tariff Clarification

Project Info	Details/Date
Application Software Changes	**Scope:** Allow Energy Intermittent Resources (EIRs) to automate their response to operational instructions that require the resource not to exceed their ` **Impacted Systems:** **RTM:** Operator can select EIR resources, system to send Operating instruction Flag to ADS **ADS:** Receive Operating instruction flag for EIRs. Broadcast message to EIRs operator.
BPM Changes	Market Instruments Market Operations
Tariff Change	Changes tariff language from "Operating Order" to "Operating Instruction" in multiple sections.

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Fall 2020 – Intertie Deviation Settlement

Project Info	Details/Date
Application Software Changes	**Scope:** Implement a new Under/Over Delivery Charge for intertie deviations from Market Schedule and After-The-Fact (ATF) E-Tag, to replace Decline charge **Impacted Systems:** **Settlements** • Calculate FMM binding intertie award, exclude Curtailment, calculate under/over delivery quantity as deviation of schedule and ATF E-Tag, Charge under/over delivery Charge at 50% of RTD LMP. • Remove the decline charge calculation and Decline Threshold • Allocate Over/Under delivery charge to measured demand
BPM Changes	Settlements and Billing
Tariff Change	Section 11.31

2021 Spring Release

California ISO

Spring 2021 – EIM integrations for PNM, LADWP, TID and NWE

Project Info	Details/Date
Application Software Changes	Implementation of PNM, LADWP, TID, and NWE as EIM Entities
BPM Changes	EIM BPM will be updated if needed to reflect new modeling scenarios identified during implementation and feedback from PNM, LADWP, TID, and NWE.
Market Simulation	December 2020 – January 2021
Parallel Operations	February 2021 – March 2021

Milestone Type	Milestone Name	Dates	Status
Market Sim	Market Sim Window	December 2020 – January 2021	
Parallel Operations	Parallel Operations	February 2021 – March 2021	
Tariff	File Readiness Certification	March 2021	
Production Activation	EIM – PNM, LADWP, TID, and NWE	April 2021	

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Stay Informed

Ways to participate in releases

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

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

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What to look for on the calendar…