



# Release User Group Agenda

January 25, 2022

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><i>1-844-517-1271 US Toll Free</i> <i>+1-682-268-6591 US Toll</i> <i>Access code: 960 941 245</i></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

January 25, 2022

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	Trang Vo
10:05 – 10:45	Release Plan	Adrian Chiosea Jami Herguth Janet Morris Bill Bonnell

# Upcoming ISO Virtual Training Sessions

Training Course	Date and time
Hybrid Resources Phase 1B Pre-Market Sim Training (Tentative)	February 23, 2022 (10am – noon)



[CustomerReadiness@caiso.com](mailto:CustomerReadiness@caiso.com)

# ISO Computer Based Training



[CustomerReadiness@caiso.com](mailto:CustomerReadiness@caiso.com)

## New Modules

Integration of Renewables Watch Data in Today's Outlook

OASIS Enhancements – Phase 1

Variable Operations and Maintenance Costs Review

Outage Modifications in OMS

RIMS WebSDK Upgrade

OSI Enhancements 2021: MRI-S Monitoring Data

Real-Time Settlements Review Phase 2

Hybrid Resources Phase 2a

ESDER Phase 4

Today's Outlook: RA Capacity Trends

CIDI Enhancements

Outage Management System (webOMS) Enhancements

Process for Submitting Ongoing Obligations in CIDI

FERC Order 831 Market Simulation Scenarios

FERC Order 831 Import Bidding and Market Parameters

Resource Adequacy Enhancements Phase 1

Summer 2021 Readiness – Parts 1, 2 and 3

Resource Adequacy Enhancements Phase 1

## SC Training Topics

Day-Ahead Overview

Real-Time Overview

Resource Adequacy

Storage Resources

Congestion Revenue Rights

Demand Response

Generator Interconnection

Market Pricing

Bids and Self-Schedules

Full Network Model

Settlements Process

Metering Overview

Forecasting



**And many more....**

# EIM Release Plan Summary: 2022

## **EIM Spring 2022 - March, April**

- Energy Imbalance Market (EIM) 2022 - Avista
- Energy Imbalance Market (EIM) 2022 – Bonneville Power Administration
- Energy Imbalance Market (EIM) 2022 – Tacoma Power
- Energy Imbalance Market (EIM) 2022 - Tucson Electric Power
- EIM Enhancements 2021 Phase 2 – ETSR UI, Shared Ramping Constraint

# Release Plan Summary: 2022

## February 2022 Settlements Release

- COTP WAPA Settlements – Retro to Apr 2021
- Day Ahead Nodal Pricing Model Phase 2 – Advisory Service for PacifiCorp – Feb 2022
- JOU Pilot – Apr 2022

## Spring 2022

- Hybrid Resources Phase 2-B
- Short-Long Start Definitions **Inform BOG Q2 2022**
- Transmission Service & Market Scheduling Priorities Ph1 (was Ext Load Forward Sched Rights Process Ph1)
- EIM Resource Sufficiency Evaluation Enhancements – Phase 1 **BOG Feb**
- RDRR Bidding Enhancements Phase 1 **BOG Mar**
- Interconnection Process Enhancements Phase 1 **BOG May**
- Adjustment to Intertie Constraint Penalty Prices (Market Parameter Changes) **BOG May**

## 2022 Independent

- Operations System Improvements Enhancements

## Fall 2022 (tentative – subject to change pending Policy and planning activities)

- FRP Improvements
- EIM Base Schedule Submission Deadline Phase 2
- FERC 2222 Implementation
- EIM Sub-Entity Scheduling Coordinator

## 2023

- Congestion Revenue Rights (CRR) Replacement

# EIM Spring 2022 Release

# Spring 2022 – EIM integrations for Avista, BPA, Tacoma Power, Tucson Electric Power

Project Info	Details/Date
Application Software Changes	System modifications as needed to accommodate any unique Avista, BPA, Tacoma Power, and Tucson Electric Power needs to support their EIM onboarding.
BPM Changes	EIM BPM will be updated if needed to reflect changes identified during the onboarding and as required to reflect the unique processes of Avista, BPA, Tacoma Power, and Tucson Electric Power.
Market Simulation	October 2021 thru January 2022
Parallel Operations	December 2021 thru March 2022

Milestone Type	Milestone Name	Dates			
		Avista	BPA	Tacoma Power	Tucson Electric Power
Market Sim	Market Sim Window		✓ Oct 2021 thru Nov 2021		Dec 2021 thru Jan 2022
Parallel Operations	Parallel Operations		Dec 2021 thru Feb 2022		Feb 2022 thru Mar 2022
Tariff	File Readiness Certification		2/1/2022		3/1/2022
Production	Activation		3/2/22		4/1/22



# 2021 – EIM Enhancements 2021 Phase 2

Project Information	Details/Date
<b>High Level Business Problem or Need</b>	To collectively address important issues identified by EIM market participants through Customer Inquiry, Dispute and Information system (CIDI) requests to improve the visibility, functions and features in Energy Imbalance Market (EIM).
<b>High Level Project Scope</b>	<ul style="list-style-type: none"> <li>BAAOP: Specify parameters for Shared ramping capability constraint.</li> <li>BAAOP: Separate ETSR Base from ETSR detail display</li> </ul>
<b>BPM Changes</b>	EIM, Market Instruments
<b>Tariff Change</b>	Section 29.4
<b>Impacted Systems</b>	RTM/BAAOP, RTM/Integration, CMRI, RTM/BAAOP

System	High Level Changes
<b>Real-Time Market (RTM) /Real-Time Base Schedule (RTBS)</b>	<ul style="list-style-type: none"> <li>Offline units with Base schedule</li> <li>centralized activation/de-activation means of this functionality</li> <li>System shall consider offline resources that are cycling as available for the balancing, bid range capacity, and flexible ramp sufficiency tests if capable for startup within the next hour. Same for shutdown</li> </ul>
<b>Real-Time Market (RTM)</b>	<ul style="list-style-type: none"> <li>Shared ramping capability constraint</li> <li>UI for EIM entity input parameters for ramp sharing</li> <li>Use in the optimization for each resource based on BAA ramp share parameters</li> </ul>
<b>Real-Time Market (RTM)/Real-Time Unit Commitment (RTUC) [(HASP, STUC, FMM)]</b>	<ul style="list-style-type: none"> <li>Cycling resource with base schedule in Market</li> <li>centralized activation/de-activation means of this functionality                             <ul style="list-style-type: none"> <li>Real-Time Markets shall have the capability to automatically start-up an offline resource that is cycling if it is economic to run.</li> <li>Similarly, Real-Time Markets shall have the capability to automatically shut down an online resource that is cycling if it is not economic to run.</li> <li>Consider EIM resources with positive base schedules above minimum load and with three-part bids as cycling during the relevant trade hour (i.e. optimize its unit commitment on the basis of its bids), with the following exceptions:                                     <ul style="list-style-type: none"> <li>Self-schedule exists</li> <li>Ancillary service base schedule exists (except when non-spin for an offline resource capable of startup within 10-minutes)</li> <li>Flexible ramp award exists (except when flex ramp up award for an offline resource capable of startup within 5-minutes)</li> <li>Inter-temporal constraint (startup time, minimum up time, minimum down time, maximum daily starts) prevents cycling</li> </ul> </li> </ul> </li> <li>Real-time market horizon has limitation, where resource startup time plus minimum up time exceeds 240 minutes</li> <li>Cycling shall include both startup and shutdown unit commitment decisions on basis of three-part bids (economic energy bid, startup, minimum load) and applicable temporal constraints.</li> <li>A positive base schedule from a resource without an energy bid shall still be treated as a self-schedule.</li> </ul>

# February 2022 Settlements Release

# February 2022 Settlements Release

	Impact	BRS	Config Guide	Tech Spec	Mkt Sim Scenarios	Tariff	Training	Market Sim	Production Deployment	Production Activation
<b>February 2022 Release</b>			11/08/21					01/04/22 - 01/14/22	02/16/21 (Settlements)	
<b>COTP WAPA Settlements (Loss Settlement Contract Change)</b>	Entities scheduling on COTP intertie	<ul style="list-style-type: none"> <li>10/29/21</li> <li>11/3/21 (v1.1)</li> </ul>	11/08/21	N/A	N/A	N/A	Knowledge Article published 12/20/21	1/4/22 – 1/14/22	2/16/22	4/1/21
<b>Day Ahead Nodal Pricing Model Phase 2</b>	Only PacifiCorp EIM	N/A	11/08/21	N/A	N/A	Accepted 2/28/20	N/A	January 2022	2/16/22	2/16/22
<b>Joint Owned Units Pilot</b>	Only Tucson EIM and Public Service Company of New Mexico EIM	N/A	11/08/21	N/A	N/A	Filed 10/22/21 Accepted 12/21/21	N/A	January 2022	2/16/22	4/1/22

# COTP WAPA Settlements

Project Information	Details/Date
High Level Business Problem or Need	The ISO has scheduling rights on the California-Oregon Transmission Project (COTP) for market transactions due to Existing Contract rights that have been turned over to the ISO by PG&E and TANC. As such, starting April 1, 2021, WAPA, PG&E and TANC amended the Existing Contract from payment in-kind of energy to bill the ISO for financial payment for COTP loss settlements related to PG&E's 33 MW and the monthly rights TANC turns over to the ISO that allow market participants to schedule on the COTP.
High Level Project Scope	The purpose of this project is to develop a mechanism to settle WAPA Contract 05-SNR-00869.
BPM Changes	Settlements & Billing
Tariff Change	N/A
Impacted Systems	Settlements
Customer Impacts	Entities scheduling on the COTP intertie; ISO will contact these market participants

System	High Level Changes
Settlements	<ul style="list-style-type: none"> <li>• System must have updated configuration modifications for one charge code and one pre-calculation.</li> <li>• System must have the capability to calculate the payback loss amount for entities scheduling on the COTP line.</li> <li>• System must have the capability to calculate the COTP loss price.</li> <li>• System shall define new bill determinants for the COTP loss payback calculation.</li> <li>• System shall identify the SCID that will receive the loss payback and receive the loss payback percentage based on Internal System data.</li> </ul>

# Day Ahead Nodal Pricing Model Phase2 – Advisory Service for PacifiCorp

Project Info	Details/Date
High Level Project Scope	<p>This service will produce separate advisory day-ahead nodal pricing results for locations within PacifiCorp’s balancing authority areas, without a financial settlement or impact to the ISO’s day-ahead market. PacifiCorp will pay the ISO’s estimated cost to provide the service. PacifiCorp plans to use the NPM solution results as the basis for its power cost allocation among the states within which it provides retail electric service, consistent with the recently filed inter-jurisdictional cost allocation agreement.</p> <p>In the second phase, CAISO will extend the service to support Ancillary Service Bids.</p>
Reference	<p>Reference – ISO market notice from Dec 18, 2019 – see: Stay Informed\Meetings and Events\Miscellaneous stakeholder meetings\Previous Meetings\2019 meetings\PacifiCorp nodal pricing model service informational call - Dec 18,2019 or <a href="http://www.aiso.com/Pages/documentsbygroup.aspx?GroupID=E8304346-54B9-4473-9E45-9C282AAD1340">http://www.aiso.com/Pages/documentsbygroup.aspx?GroupID=E8304346-54B9-4473-9E45-9C282AAD1340</a></p> <p>Reference - NPM FERC filing <a href="http://www.aiso.com/Documents/Dec20-2019_NodalPricingModelAgmt_CAISO-PacifiCorp_ER20-664.pdf">http://www.aiso.com/Documents/Dec20-2019_NodalPricingModelAgmt_CAISO-PacifiCorp_ER20-664.pdf</a></p>

Milestone Type	Milestone Name	Dates	Status
Tariff	FERC Approval	Feb 28, 2020	✓
Config Guides	Publish Config Guide	Nov 8, 2021	✓
Market Sim	Market Sim Window	N/A	
Production Activation	Day Ahead Nodal Pricing Model	Feb 16, 2022	

# Joint Owned Units Pilot

- The purpose of this project is to implement a pilot for Joint Ownership Units (JOU) in the model. This JOU pilot will be limited to a single implementation with the Public Service Company of New Mexico and the Tucson Electric Company. This implementation will require FERC acceptance of a pilot agreement(s) among the parties that sets forth the parameters of the pilot. Based on the results of this pilot, the CAISO intends to pursue a stakeholder initiative that would establish rules for other market participants to implement JOU functionality.
- The JOU Pilot is an opportunity to learn and provide feedback into a stakeholder process. There will be a follow on stakeholder process to establish policy for JOU.
- FERC filing: <http://www.aiso.com/Documents/Oct22-2021-JointOwnedUnitJOUAgrmt-CaliforniaISO-NewMexico-Tucson-ER22-190.pdf>
- FERC order: <http://www.aiso.com/Documents/Dec21-2021-OrderAccepting-JointOwnedPilot-JOU-Agreement-TucsonElectric-New-Mexico-ER22-190-000.pdf>

# Spring 2022 Release

# Spring 2022 Release Overview

	Board Approval	External BRS	Config Guide	Tech Spec	Draft Tariff**	BPMs	External Training	Market Sim / Ext Testing Start	Production Activation
<b>Spring 2022 Release</b>								02/28/22 – 04/01/22	05/01/22
<b>Hybrid Resources Phase 2-B</b>	11/18/20	8/3/21 1/12/22	01/25/22	09/10/21	09/17/21	02/14/22	02/23/22 (Tent.)	02/28/22 – 04/01/22	05/01/22
<b>Short-Long Start Definitions</b>	Q2 2022 - Inform	06/21/21	05/27/21	N/A	TBD	TBD	TBD	02/28/22 – 04/01/22	05/02/22
<b>Transmission Service and Market Scheduling Priorities Phase 1</b>	01/20/22	2/10/22		N/A					05/01/22
<b>Resource Sufficiency Evaluation Enhancements</b>	02/09/22	3/4/22	01/25/22						05/01/22
<b>RDRR Bidding Enhancements</b>	03/16/22	3/4/22	N/A						05/01/22
<b>Interconnection Process Improvements 2021 Phase 1</b>	05/11/22	3/31/22							05/01/22
<b>Adjustment to Intertie Constraint Penalty Prices</b>	02/09/22	N/A	N/A	N/A		Mkt Ops	N/A	N/A	05/01/22



# Spring 2022 – Hybrid Resources Phases 2-B - Overview

Project Information	Details/Date
<b>High Level Business Problem or Need</b>	<p>The ISO launched this stakeholder initiative to identify new or enhanced market rules and business processes needed to accommodate hybrid resources, resources that consist of two sets of market rule changes that will facilitate mixed-fuel type project participation (hybrid and co-located resources) in the ISO markets.</p>
<b>High Level Project Scope</b>	<p><b>Phase 2</b> focuses on modifications that will explore how hybrid generation resources can be registered and configured to operate within the ISO market. The initiative will further develop solutions allowing developers to maximize the benefits of their resource's configuration. Additionally, hybrid resource configurations also raise new operational and forecasting challenges that the ISO plans to address during this initiative.</p> <p>The Phase 2 project has been split into two separate implementations, phases 2-A and 2-B, to support strategic delivery timing. Phase 2-B information is available under the Spring 2022 release section.</p> <p><b>Phase 2-A</b> was implemented on December 15, 2021. This phase focuses on implementing Ancillary Services (AS) and High Sustainable Limit (HSL) functionality with a focus on the EMS and IFM/RTM systems.</p> <p><b>Phase 2-B</b> is scheduled to implement Spring 2022. This project phase focuses on implementing the Hybrid Dynamic Limit functionality, Multiple ACC, along with all remaining project scope to include changes to systems RIMS, Master File, EMS, SIBR, IFM/RTM, OASIS, ALFS, Settlements, MRI-S Metering, CMRI, MPP, Today's Outlook, ISO Today Mobile Application, Monthly Renewables Performance Report, Wind and Solar Real-Time Dispatch Curtailment Report', and the Over Supply Page.</p> <p><b>External BRS Posting:</b> An updated External BRS v1.2 has been posted.</p>
<b>BPM Changes</b>	<p>Direct Telemetry, Market Instruments, Market Operations, Metering, Settlements and Billing</p>
<b>Tariff Changes</b>	<p>Proposed sections 4.18, 34.1.6.3, 30.5.6.1            Sections 27.13, 8.4.1.1(g), 8.4.3, Appendix K, Parts A, B and C, 8.2.3, 8.4.5, 34.7, 11.6.6, 4.8.2, 40.9.2 (b) (D)</p>
<b>Impacted Systems</b>	<p>ALFS, CMRI, Reporting, IFM/RTM, Master File, OASIS, RIMS, Settlements, MRI-S Metering, SIBR, MPP, Today's Outlook, ISO Today Mobile Application, Monthly Renewables Performance Report, Wind and Solar Real-Time Dispatch Curtailment Report, Over Supply Page.</p>

# Spring 2022 – Hybrid Resources Phase 2-B (Cont'd)

System	High Level Changes
<b>Automated Load Forecast System (ALFS)</b>	<ul style="list-style-type: none"> <li>• Identification of variable energy resources (VER)</li> <li>• New forecast type for hybrid resources</li> <li>• Forecast for hybrid resources that elect for ISO forecast</li> </ul>
<b>CAISO Market Results Interface (CMRI)</b>	<ul style="list-style-type: none"> <li>• Updates to include resource specific forecast data for hybrid resources (VER components).</li> </ul>
<b>Reporting</b>	<ul style="list-style-type: none"> <li>• Update report(s) for resource tagging changes: Solar Total tag, Wind Total Tag, Battery Total Tag (Renewable watch, Curtailment Report, ISO Today), and new Hybrid Total Tag</li> </ul>
<b>Integrated Forward Market (IFM)/Real-Time Market (RTM)</b>	<ul style="list-style-type: none"> <li>• When any resource behind an ACC constraint has an AS award, all resources behind that ACC constraint must follow their DOT and receive the must follow flag</li> <li>• Create a new user interface to display the hybrid summary (dynamic limits)</li> <li>• Modify 'Must Follow DOT' flag for AS cleared or AS dispatched award               <ul style="list-style-type: none"> <li>◦ Must Follow DOT Flag must turn to 'Y' for Ancillary Service Cleared by resource ID</li> </ul> </li> <li>• Software that takes the submitted limit and haircuts the energy bid used in each interval of the market time horizon</li> <li>• Limit the economic dispatch of a hybrid resource in the real-time market based on dynamic limits submitted to SIBR</li> <li>• For resources and hybrids, add new user interfaces</li> <li>• Dynamic Limit functionality:</li> <li>• Display a hybrid resources upper limit and lower limit</li> </ul>
<b>OMS</b>	<ul style="list-style-type: none"> <li>• System shall consume the new "HYBD" fuel type value and display the value for hybrid resource outages</li> </ul>

# Spring 2022 – Hybrid Resources Phase 2-B (Cont'd)

System	High Level Changes
<b>Master File (MF)</b>	<ul style="list-style-type: none"> <li>Enhance MF to identify Hybrid resources</li> <li>Create a new categorization in MF to identify hybrid resources to handle dynamic limits</li> <li>Add the ability to store the state-or-charge minimum and maximum limit</li> <li>Identification of variable energy resources (VER)</li> <li>Enhance MF to map hybrid resource to individual VER component(s)</li> <li><b>Note:</b> Renewable registration for VER components is currently mapped to Resource ID; will need further automation to map to individual VER component</li> <li>New unit type to identify a hybrid resource under the existing NGR model</li> <li>New identification of individual renewable components that make up a hybrid resource</li> <li>Ability to elect for ISO forecast or SC submitted forecast to be at the renewable component level</li> <li>Make the new categorization of hybrid resources along with associated attributes available for downstream applications</li> <li>Add a MF rule to make sure the 'MOO Qualified Flag' is set to "N" for hybrid resources</li> <li>Modifications to support the need for a few MF resource attributes (for example, fuel type, technology type, QF Flag, VER NGR flag, etc.) that need to be associated to the VER components that make up the hybrid resources</li> <li>Map PI Tags (VER actual and meteorological tags) to each Resource ID or VER component. <b>Note:</b> System to be determined per Architecture Definition</li> </ul>
<b>Open Access Same Time Information (OASIS)</b>	<ul style="list-style-type: none"> <li>Updates to create a new category for hybrid resources to be included in the forecast data reports.</li> </ul>
<b>Settlements</b>	<ul style="list-style-type: none"> <li>Consume new VER Component ID for forecasting fee</li> <li>Updates to forecast fee calculation based on meter data submitted for the VER components that elect ISO forecast</li> </ul>
<b>Metering (MRI-S)</b>	<ul style="list-style-type: none"> <li>Ability to receive meter data at the VER Component ID level for hybrid resources</li> <li>Updates for Western Renewable Energy Generation Information System (WREGIS) reporting of meter data on the Hybrid components</li> </ul>
<b>Scheduling Infrastructure and Business Rules (SIBR)</b>	<ul style="list-style-type: none"> <li>Treat all hybrid resources as non REM NGRs</li> <li>Flagging must be configured to ensure bid insertion does not occur</li> <li>SIBR rules and new rule flow needs to be created to receive and validate the dynamic operating limits</li> <li>Allows market participant to submit their dynamic limit</li> <li>Allow submission of upper and lower economic limits for each 5-minute interval in a three hour window for hybrid resources</li> <li>Validation of upper and lower economic limits</li> <li>Validate the dynamic operating limits</li> </ul>

## Spring 2022 – Hybrid Resources Phase 2-B

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	Nov 18, 2020	✓
External BRS	Post External BRS (Includes Phase 2-A and 2-B)	Aug 3, 2021	✓
	Post External BRS revisions - Elaboration on BRQs and clarifications	Jan 12, 2022	✓
Config Guides	Post Draft Config Guides	Jan 25, 2022	
Tech Spec	Create ISO Interface Spec (Tech spec)	Sep 10, 2021	✓
Tariff	File Tariff	Sep 17, 2021	✓
Structured Scenarios	Post proposed scenarios	Feb 2, 2022	
BPMs	Publish Final Business Practice Manuals for mkt sim	Feb 14, 2022	
External Training	Deliver External Training	Feb 23, 2022 (Tentative)	
Market Sim	Market Sim Window	Feb 28, 2022 - Apr 01, 2022	
Production Activation	Hybrid Resources Phase 2-B	May 01, 2022	

# Spring 2022 – Short-Long Start Definitions

Project Information	Details
<b>High Level Business Problem or Need</b>	<ul style="list-style-type: none"> <li>- To align market applications and business processes with revised ISO Tariff definitions of Short and Long Start resources.</li> <li>- To simplify and streamline CAISO definitions regarding startup classifications.</li> <li>- To clarify operational and settlement communication and outcomes for EIM and ISO market participants.</li> </ul>
<b>High Level Project Scope</b>	<ul style="list-style-type: none"> <li>- Update current ISO Tariff definitions and business practice manuals.</li> <li>- The Medium Start definition will be removed and rolled into the Short Start definition.</li> <li>- Clarify operational and settlement communication and outcomes for EIM and ISO market participants.</li> </ul>
<b>BPM Changes</b>	<ul style="list-style-type: none"> <li>- Definitions &amp; Acronyms</li> <li>- Market Instruments</li> <li>- Market Operations</li> <li>- Reliability Requirements</li> <li>- Settlements &amp; Billing</li> </ul>
<b>Tariff Change</b>	The tariff is being changed to 1) align the market and settlement systems, and 2) align to the existing real-time optimization horizon. Sections: 34.3.1, 34.3.2, 34.6 40.6.2

Impacted systems	Details
<b>Market Quality System (MQS)</b>	Auxiliary Processes (Startup, Minimum Load, and Transition Cost BCR pre-qualification) shall consider a resource to be eligible for real-time commitment if the sum of startup time and minimum up time is 240 minutes or less (was previously startup time 270 minutes or less.)
<b>SIBR</b>	Update bid insertion rules to account for changes to Short Start and Long Start definitions under tariff revisions; account for the DA/RT unit commitment 240 minute cycle time for Short Start units (was previously 270 minutes). As previously implemented, Long Start units will not have bid-insertion performed in real-time markets if not committed in the Day-Ahead Market.
<b>Integrated Forward Market, Real Time Market (IFM, RTM)</b>	<ul style="list-style-type: none"> <li>• Update IFM and RTM market systems to have the DA binding commitment cycle time (startup time + minimum up time) changed from 270 to 240 minutes.</li> <li>• No software impacts to Operator Displays.</li> </ul>
<b>Settlements</b>	Settlement systems shall account for new tariff startup definitions when applying DA/RT Bid Cost Recovery, AS Non-Spin/Spin No Pay, and RAAIM Pre-Calc calculations.

# Spring 2022 – Short-Long Start Definitions

Milestone Type	Milestone Name	Dates	Status
Board Approval	Inform Board of Governors	Q2 2022	
External BRS	Post External BRS	Jun 21, 2021	✓
Config Guides	Post Draft Config Guides	May 27, 2021	✓
Tech Spec	Create ISO Interface Spec (Tech spec)	N/A	
Tariff	File Tariff	TBD	
BPMs	Post Draft BPM changes	TBD	
External Training	Deliver External Training	TBD	
Market Sim	Market Sim Window	Feb 28, 2022 – Apr 1, 2022	
Production Activation	Short-Long Start Definitions	May 1, 2022	

# Spring 2022 – Transmission Service and Market Scheduling Priorities – Phase 1

Project Information	Details
<b>High Level Business Problem or Need</b>	-To development of a long-term, holistic, and durable, framework for establishing scheduling priorities in the CAISO market. Phase 1 of the initiative will be evaluating near-term enhancements that the CAISO can implement by summer 2022
<b>High Level Project Scope</b>	<p>Transparency enhancements</p> <ul style="list-style-type: none"> <li>- Publication of Aggregate PT Wheel Registration Data and Aggregate RA showing Import Data Completed-data posted in CAISO website</li> <li>- Publication of RUC/RTPD/RTD adjustments - OASIS</li> <li>- Publication of curtailment (schedule reduction) data (wheels, exports, load)- OASIS</li> </ul> <p>Market Scheduling Priorities enhancements</p> <ul style="list-style-type: none"> <li>- Extension of wheeling through scheduling priorities for Summer 2022 to June 1, 2024 (status quo).</li> <li>- Provide visibility of non-RA capacity for supporting resource, and notification to PT exports and supporting resource when sum of PT export schedules exceed non-RA capacity. -SIBR</li> </ul>
<b>BPM Changes</b>	<ul style="list-style-type: none"> <li>- Market Instruments</li> <li>- Market Operations</li> </ul>
<b>Tariff Change</b>	Extension to June 1, 2024 Sections:30.5.1, 31.4, 31.5.5,31.4.1, 34.12.1, 34.12.2, 34.12.3
Impacted systems	Details
<b>SIBR</b>	<p>Allow SC of supporting resource to view the available capacity in SIBR</p> <p>Notify the SC of export when sum of the export exceed supporting resource non-RA capacity from SIBR</p>
<b>Integrated Forward Market, Real Time Market (IFM, RTM)</b>	<p>Publish RUC adjustment</p> <p>Publish RTPD, RTD load forecast adjustment</p> <p>Publish Schedule reduction once the instruction is issued in RUC</p> <p>Publish Schedule reduction once the instruction is issued in HASP that incorporate the post-HASP pro-rate process or operator adjustment</p>
<b>OASIS</b>	<p>Publish RUC adjustments on OASIS</p> <p>Publish RTPD, RTD binding interval and advisory intervals load forecast adjustments on OASIS</p> <p>Publish aggregated schedule reduction after instruction issued in RUC on OASIS</p> <p>Publish aggregated schedule reduction after instruction issued (HASP),</p>

# Spring 2022 – Transmission Service and Market Scheduling Priorities – Phase 1

Milestone Type	Milestone Name	Dates	Status
Board Approval	Board of Governors	January 20, 2022	✓
External BRS	Post External BRS	February 4, 2022	
Config Guides	Post Draft Config Guides	TBD	
Tech Spec	Create ISO Interface Spec (Tech spec)	N/A	
Tariff	File Tariff	TBD	
BPMs	Post Draft BPM changes	TBD	
External Training	Deliver External Training	TBD	
Market Sim	Market Sim Window	TBD	
Production Activation	Production	May 1, 2022	



# Spring 2022 –EIM Resource Sufficiency Evaluation Enhancements – Phase 1

Project Information	Details
<b>High Level Business Problem or Need</b>	Implement enhancements to the EIM Resource Sufficiency Evaluation (RSE) to ensure the RSE is administered accurately and applied equitably.
<b>High Level Project Scope</b>	Address the following EIM RSE Enhancements: <ul style="list-style-type: none"> <li>- Consideration of Intertemporal Constraints in the Capacity Test</li> <li>- Flexible Ramping Test Modifications – Power Balance Constraint</li> <li>- Consider a Resource’s Transition through Forbidden Operating Region in the Flexible Ramping Sufficiency Test.</li> <li>- RSE Modifications – Storage Resources Treatment</li> <li>- Balancing Test Modifications</li> <li>- Demand Response Inclusion with RSE</li> <li>- Reliability of CAISO Interchange Schedules</li> <li>- Emergency Actions that Constitute Resource Insufficiency</li> <li>- Increased RSE Data on RSE Results and Additional Data Transparency and Reporting</li> <li>- Increased EIM Entities Situational Awareness Regarding Test Performance</li> <li>- Net-Load Uncertainty Calculation Removal in Capacity Test</li> <li>- Intertie Uncertainty Calculation Removal in Capacity Test</li> </ul>
<b>BPM Changes</b>	<ul style="list-style-type: none"> <li>- Energy Imbalance Market (EIM)</li> <li>- Market Instruments</li> <li>- Market Operations</li> <li>- Settlements and Billing</li> </ul>
<b>Tariff Change</b>	29.34

# Spring 2022 – EIM Resource Sufficiency Evaluation Enhancements – Phase 1 (cont'd)

Impacted systems	Details
<b>Master File (MF)</b>	Implement the following RSE enhancements: <ul style="list-style-type: none"> <li>- Demand Response Inclusion with RSE</li> </ul>
<b>Real-Time Base Scheduler (RTBS)</b>	Implement the following RSE enhancements: <ul style="list-style-type: none"> <li>- Consideration of Intertemporal Constraints in the Capacity Test</li> <li>- Flexible Ramping Test Modifications – Power Balance Constraint</li> <li>- Consider a Resource’s Transition through Forbidden Operating Region in the Flexible Ramping Sufficiency Test.</li> <li>- RSE Modifications – Storage Resources Treatment</li> <li>- Demand Response Inclusion with RSE</li> <li>- Reliability of CAISO Interchange Schedules</li> <li>- Increased EIM Entities Situational Awareness Regarding Test Performance</li> <li>- Net-Load Uncertainty Calculation Removal</li> <li>- Intertie Uncertainty Calculation Removal</li> </ul>
<b>Balancing Authority Area Operations Portal (BAAOP)</b>	Implement the following RSE enhancements: <ul style="list-style-type: none"> <li>- Demand Response Inclusion with RSE</li> <li>- Emergency Actions that Constitute Resource Insufficiency</li> <li>- Increased EIM Entities Situational Awareness Regarding Test Performance</li> </ul>
<b>Real Time Market (RTM)</b>	Implement the following RSE enhancements: <ul style="list-style-type: none"> <li>- Demand Response Inclusion with RSE</li> <li>- Emergency Actions that Constitute Resource Insufficiency</li> </ul>
<b>Settlements</b>	Implement the following RSE enhancements: <ul style="list-style-type: none"> <li>- Balancing Test Modifications</li> <li>- Demand Response Inclusion with RSE</li> <li>- Reliability of CAISO Interchange Schedules</li> </ul>
<b>CAISO Website, Today’s Outlook</b>	Implement the following RSE enhancements: <ul style="list-style-type: none"> <li>- Increased RSE Data on RSE Results and Additional Data Transparency and Reporting</li> </ul>

# Spring 2022 – EIM Resource Sufficiency Evaluation Enhancements – Phase 1 (cont'd)

Milestone Type	Milestone Name	Dates	Status
Board Approval	Board of Governors	February 9, 2022	
External BRS	Post External BRS	March 4, 2022	
Config Guides	Post Draft Config Guides	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	Production	May 1, 2022	

# Spring 2022 – RDRR Bidding Enhancements – Phase 1

Project Information	Details
<b>High Level Business Problem or Need</b>	Aligning RDRR real-time bidding with FERC Order No. 831 by proposing that RDRRs must bid at least 95% of the hard energy bid cap (\$1,900/MWh) when the conditions are satisfied that raise the soft energy bid cap to \$2,000/MWh.
<b>High Level Project Scope</b>	Automatically adjust the submitted RDRR bids based on the change in energy bid cap by maintaining the percentage of the bid cap originally submitted by the Scheduling Coordinator. This automatic adjustment will occur after the market close and will only apply if no action is taken by the close of each hour's real-time market by the Scheduling Coordinator.
<b>BPM Changes</b>	<ul style="list-style-type: none"><li>- Market Instruments</li><li>- Market Operations</li></ul>
<b>Tariff Change</b>	Section 30

Impacted systems	Details
<b>SIBR</b>	Implement the following : <ul style="list-style-type: none"><li>- New rules to increase the bid floor for all RDRRs under certain conditions.</li><li>- Post-close rules to adjust bid prices based on the bid cap.</li></ul>

# Spring 2022 – RDRR Bidding Enhancements – Phase 1

Milestone Type	Milestone Name	Dates	Status
Board Approval	Board of Governors	Mar 16, 2022	
External BRS	Post External BRS	Mar 4, 2022	
Config Guides	Post Draft Config Guides	N/A	
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	Production	May 1, 2022	

# Spring 2022 – Interconnection Process Enhancements (IPE) 2021 – Phase 1

Project Information	Details
<b>High Level Business Problem or Need</b>	The proposal is focused on four main areas including how to manage the “currently overheated” interconnection queue and encourage resource developer discipline to submit only viable projects; removing barriers for timely development of needed resources; better alignment of resource procurement by LSEs with the ISO process and state policy direction; and addressing residual issues that have emerged since the process was last reviewed in 2018. Those residual issues include how to allocate costs for generator driven network upgrades, and reimbursement for reliability network upgrades for generators outside the ISO system.
<b>High Level Project Scope</b>	<p>The project will focus on the following:</p> <ul style="list-style-type: none"> <li>•Continuous improvement of the generator interconnection process</li> <li>•Provide greater visibility and transparency to the stakeholders</li> <li>•Eliminate manual workarounds</li> <li>•Provide single source of data</li> </ul>
<b>BPM Changes</b>	TBD – Phase 1
<b>Tariff Change</b>	TBD – Phase 1
<b>System Changes</b>	TBD

# Spring 2022 – Interconnection Process Enhancements (IPE) 2021 – Phase 1 (cont'd)

Milestone Type	Milestone Name	Dates	Status
Board Approval	Board of Governors	May 11, 2022	
External BRS	Post External BRS	Mar 31, 2022	
Config Guides	Post Draft Config Guides	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	Production	May 1, 2022	

# Spring 2022 – Adjustment to Intertie Constraint Penalty Prices

Project Information	Details
<b>High Level Business Problem or Need</b>	Change specific penalty price parameters to ensure the market is able to resolve intertie over-scheduling situations, consistent with observed conditions on the grid.
<b>High Level Project Scope</b>	<ul style="list-style-type: none"> <li>- Increase the HASP ITC penalty price from \$1,500/MWh to \$2,900/MWh for \$1,000 bid cap and \$5,800 for \$2,000 bid cap.</li> <li>- Adjust additional HASP penalty prices for priority among penalty prices</li> <li>- Increase the RUC ITC penalty price from \$1,250/MWh to \$3,200/MWh for \$1,000 and \$2,000 bid caps.</li> </ul>
<b>BPM Changes</b>	<ul style="list-style-type: none"> <li>- Market Operations</li> </ul>
<b>Tariff Change</b>	<ul style="list-style-type: none"> <li>- 27.4.3.2.1</li> <li>- 27.4.3.3.1</li> </ul>

Impacted systems	Details
<b>Day-Ahead Market (DAM)</b>	<ul style="list-style-type: none"> <li>- Increase the RUC ITC penalty price from \$1,250/MWh to \$3,200/MWh for \$1,000 and \$2,000 bid caps.</li> </ul>
<b>Real-Time Market (RTM)</b>	<ul style="list-style-type: none"> <li>- Increase the HASP ITC penalty price from \$1,500/MWh to \$2,900/MWh for \$1,000 bid cap and \$5,800 for \$2,000 bid cap.</li> <li>- Adjust additional HASP penalty prices for priority among penalty prices for:               <ul style="list-style-type: none"> <li>▪ Exceptional Dispatch for Tie Generators</li> <li>▪ EIM Base Scheduled Exports</li> <li>▪ Tagged Quantity for Exports</li> <li>▪ EIM Base Scheduled Imports</li> <li>▪ Tagged Quantity for imports</li> <li>▪ EIM Transfer Constraint</li> </ul> </li> </ul>



# Spring 2022 – Adjustment to Intertie Constraint Penalty Prices (cont'd)

Milestone Type	Milestone Name	Dates	Status
Board Approval	Board of Governors	February 9, 2022	
External BRS	Post External BRS	N/A	
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 Training	N/A	
Market Sim	Market Sim Window	N/A	
Production Activation	Production	May 1, 2022	

# 2022 Independent Release

# Operations Systems Improvements 2021/2022 Enhancements

Project Information	Description								
<b>High Level Business Problem or Need</b>	<ul style="list-style-type: none"> <li>The goal of this project is to deliver timely systems improvements that support efficient day-to-day work and operations. The project aims to improve market robustness, performance, and the technology foundation for system grid reliability by updating functionality and interfaces to reduce workarounds, automating manual processes and addressing functionality enhancements. A list of specific high priority improvements will be the scope for the project. A number of these improvements may have an impact on the way in which customers interact with CAISO systems.</li> </ul>								
<b>Affected Systems</b>	<ul style="list-style-type: none"> <li>A preliminary list of enhancements is included on the next slide.</li> </ul> <p>PLEASE NOTE: This list may change as the project progresses and priority are factored. The goal is to provide advanced notification of changes whenever possible</p>								
<b>Schedule</b>	<table border="0"> <tr> <td>• External BRS</td> <td>2022 External BRS ECD 2/25</td> </tr> <tr> <td>• MAP Stage Availability</td> <td>TBD*</td> </tr> <tr> <td>• Customer Training</td> <td>TBD*</td> </tr> <tr> <td>• PROD</td> <td>TBD*</td> </tr> </table> <p>* The plans for testing and deployment will vary between improvement items as these may be released individually or in groups. More information on specific improvements will be made available as planning and schedules are solidified.</p>	• External BRS	2022 External BRS ECD 2/25	• MAP Stage Availability	TBD*	• Customer Training	TBD*	• PROD	TBD*
• External BRS	2022 External BRS ECD 2/25								
• MAP Stage Availability	TBD*								
• Customer Training	TBD*								
• PROD	TBD*								

# Operations Systems Improvements Projects

## List of Proposed Improvements\*

\*PLEASE NOTE: This list may change as the project progresses and priorities are factored. The goal is to provide advanced notification of changes whenever possible

### 2021

System	Summary Description	Next Step
Market	Ability to block/unblock ETSRs for a specified Time interval	PROD w/ EIM 2021
ADS	Add advance filter, additional color scheme, change grid color	PROD – Mar 2022

### 2022

System	Summary Description	Next Step
MRI -Settlements	Automate PTO submission of TAC Rates	2022
Market	Modify Unit Details UI	2022
CIRA	Publish bilateral trades from CIRA to OASIS	2022
CIRA	EFC data to OASIS Phase 3	2022

# 2022 Fall Release

# Fall 2022 Release Overview

	Board Approval	BRS	Config Guide	Tech Spec	Draft Tariff*	BPMs	External Training	Market Sim	Production Activation
<b>Fall 2022 Release</b>		<b>04/01/22</b>	<b>05/20/22</b>	<b>05/20/22</b>	<b>06/21/22</b>	<b>07/15/22</b>	<b>07/18/22 – 07/22/22</b>	<b>07/25/22 – 09/02/22</b>	<b>10/1/22</b>
<a href="#"><u>FRP Improvements - Deliverability</u></a>	<a href="#"><u>09/30/20</u></a>	<a href="#"><u>V1.0: 01/28/21</u></a>		N/A				07/25/22 – 09/02/22	10/01/22
<a href="#"><u>EIM BSSD Phase 2 (T-40 T-30 Submission)</u></a>	<a href="#"><u>12/17/20</u></a>	<a href="#"><u>V1.0: 01/15/21</u></a>						07/25/22 – 09/02/22	10/01/22
<b>FERC Order 2222</b>		4/1/22						07/25/22 – 09/02/22	10/01/22
<b>EIM Sub-entity Scheduling Coordinator Role</b>		2/4/22						07/25/22 – 09/02/22	10/01/22

# Fall 2022 – Flexible Ramping Product Improvements Deliverability

Project Information	Details/Date
<b>High Level Project Scope</b>	<p>The scope of the project FRP Deliverability is:</p> <ol style="list-style-type: none"> <li>1. Procurement of FRP for BAA's that fails the flex test is separate for each BAA.</li> <li>2. Procurement of FRP for BAA's that pass the flex test for the entire group of BAA.</li> <li>3. Transmission constraints and transfer limits are enforced in FRP deployment scenarios</li> <li>4. Distributing the uncertainty requirement in each BAA load and VER locations versus just load</li> <li>5. Distributing the demand curve surplus variable as a decision variable at load aggregation points (LAP) versus Balancing Authority Areas (BAA)</li> <li>6. To establish the Locational Marginal Capacity Prices (LMCP) for FRP</li> </ol>
<b>BPM Changes</b>	Market Instruments, Market Operations
<b>Tariff Change</b>	Yes
<b>Impacted Systems</b>	RTM, Settlements, CMRI/OASIS

System	High Level Changes
<b>Real Time Markets (RTM)</b>	<ul style="list-style-type: none"> <li>• RTM to be impacted based on the change in the FRP procurement systems.</li> <li>• Input data needed for forecasted advisory in the binding interval for RTPD for approx. 40 work days or weekends.</li> <li>• New demand curve calculation is needed.</li> </ul>
<b>Settlements</b>	<ul style="list-style-type: none"> <li>• Prices are nodal therefore mechanics for cost allocation pricing to be changed</li> <li>• Nodal FRP prices</li> </ul>
<b>CAISO Market Results Interface (CMRI)/ Open Access Same time Information (OASIS)</b>	<ul style="list-style-type: none"> <li>• Publish Resource Nodal prices for the FRP awards (CMRI)</li> <li>• Publish requirements for FRP per BAA and BAA group (OASIS)</li> <li>• Publish surplus by LAP (OASIS)</li> <li>• Publish the nodal FRP prices (OASIS)</li> </ul>

## Fall 2022 – Flexible Ramping Product Improvements Deliverability

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	Sept 30, 2020	✓
External BRS	Publish External BRS	Jan 28, 2021	✓
Config Guides	Post Draft Config Guides	TBD	
Tech Spec	Publish Technical Specification	N/A	
Tariff	File Tariff	TBD	
BPMs	Publish Draft BPM updates	TBD	
External Training	Deliver External Training	TBD	
Market Sim	Market Sim Window	Jul 25, 2022 – Sep 02, 2022	
Production Activation	FRP Deliverability	Oct 01, 2022	



# Fall 2022 – EIM Base Schedule Submission Deadline Phase 2

Project Information	Details/Date
<b>High Level Business Problem or Need</b>	Provide EIM Scheduling Coordinators with additional flexibility to submit more accurate base schedules closer to the operating hour. Allow CAISO and EIM Entities to more accurately capture the startup energy of large conventional resources within their Resource Sufficiency Evaluations (RSE), thus increasing their ability to pass the RSE while lowering their exposure to uninstructed imbalance energy settlement.
<b>High Level Project Scope</b>	Updates to the base schedule submission timeline <ul style="list-style-type: none"> <li>• Move market closing for the final binding EIM base schedule submissions from T-40 to T-30, and add additional RSE at T-40</li> <li>• Note: Base Schedule Validation outlined in the Policy paper will be covered in existing Market Validation processes so no additional manual or automated business process requirements are needed for Tariff compliance.</li> </ul>
<b>BPM Changes</b>	EIM, MI, MO, Settlements
<b>Tariff Change</b>	No
<b>Impacted Systems</b>	RTM, Settlements, BSAP, RCBSAP, ITS, ADS, CMRI/OASIS

# Fall 2022 – EIM Base Schedule Submission Deadline Phase 2 (cont'd)

System	High Level Changes
<b>Real-Time Market (RTM)</b>	<p><b>Phase 2:</b></p> <ul style="list-style-type: none"> <li>• Shorten the run time of the current T-37.5 RTPD interval</li> <li>• Move start time to after T-30</li> <li>• Result publication remains at T-22.5</li> <li>• Final RSE will begin following T-30 deadline</li> <li>• Add additional RSE test</li> </ul>
<b>Base Schedule Aggregation Portal (BSAP)</b>	<p><b>Phase 2:</b></p> <ul style="list-style-type: none"> <li>• Send base schedule to market at T-30</li> </ul>
<b>Interchange Transaction Scheduler (ITS)</b>	<p><b>Phase 2:</b></p> <ul style="list-style-type: none"> <li>• ITS will need to adjust the timing of RTPD publication checks and adjustments to account for the RTPD change from T-37.5 RTPD to T-30</li> <li>• RTPD 5 run will be decreased to around five and a half minutes</li> <li>• RTPD 5 run will be considered late at T-22.5</li> <li>• RTPD 4 should start at T-21.5</li> <li>• Payload times need to be adjusted</li> </ul>
<b>CAISO Market Results Interface (CMRI)</b>	<p><b>Phase 2:</b></p> <ul style="list-style-type: none"> <li>• Additional payload consumed at T-30 for test results</li> <li>• Receive results from RTPD 5 run by T-22.5</li> </ul>

## Fall 2022 – EIM Base Schedule Submission Deadline Phase 2 (cont'd)

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	Dec 17, 2020	✓
External BRS	Milestone: Post External BRS	Jan 15, 2021	✓
Production Activation	EIM Base Schedule Submission Deadline Phase 2	Oct 01, 2022	

# 2023 – Congestion Revenue Rights (CRR) Upgrade

Project Information	Details/Date
<b>High Level Project Scope</b>	<p>The Congestion Revenue Rights (CRR) system was implemented by CAISO in 2008 as part of the Market Redesign and Technology Upgrade (MRTU) implementation. The current CRR system is at its end of life, does not have the flexibility to accommodate future policy changes and requires the ISO to calculate data and run processes manually outside the current system to produce a successful CRR Auction.</p> <p>The CAISO has decided on a significant upgrade of the existing CRR system and adopt the latest technology stack aligned with CAISO's technology standards, consolidate all CRR related functions, minimize human errors, reduce processing time, eliminate manual workarounds, and positions the system to accommodate policy changes down the road.</p>
<b>BPM Changes</b>	Yes, details TBD
<b>Tariff Change</b>	No
<b>Impacted Systems</b>	CRR, AIM, CMRI, OASIS, CTS, Market Clearing, EMMS, IFM/RTN, MQS, Master File, MPP, Settlements, WebOMS, ETCC.

# 2023 – Congestion Revenue Rights (CRR) Upgrade

System	High Level Changes
<b>CRR</b>	<p>Significant system upgrade including:</p> <ul style="list-style-type: none"> <li>• Enhancements made to the new CRR application.</li> <li>• Automatic publishing of CRR market results.</li> <li>• Automatic CRR notification.</li> <li>• New CRR schedule calendar.</li> <li>• New CRR FNM access.</li> <li>• New CRR data submission and download interface UI/API.</li> <li>• Other TBDs identified through BRS development.</li> </ul>
<b>AIM</b>	<ul style="list-style-type: none"> <li>• New users and roles to support new CRR functionality</li> </ul>
<b>CMRI</b>	<ul style="list-style-type: none"> <li>• Full and incremental Payload publishing</li> <li>• Publish CRR Awards payload on event-driven, ad-hoc or scheduled basis</li> <li>• Publish CRR Awards payload on event-driven, ad-hoc or scheduled basis</li> </ul>
<b>OASIS</b>	<ul style="list-style-type: none"> <li>• Publish CRR Calendar, and all available CRR market names, and credit margin information, 3 year historical expected value..</li> <li>• Allow authorized users to publish CRR inventory payloads</li> <li>• Broadcast the following: set aside values, the results of all CRR markets, retired pnode/anode mapping, binding constraints, initial and updated CRR source and sink list for each CRR market,</li> </ul>
<b>CTS</b>	<ul style="list-style-type: none"> <li>• Broadcast</li> </ul>
<b>EMMS</b>	<ul style="list-style-type: none"> <li>• CRR will consume data from EMMS</li> </ul>
<b>IFM/RTN</b>	<ul style="list-style-type: none"> <li>• CRR will consume data from IFM/RTN</li> </ul>
<b>MQS</b>	<ul style="list-style-type: none"> <li>• MQS will consume and process SCID in a new format</li> <li>• MQS will consume ownership payload in bulk</li> </ul>
<b>Master File</b>	<ul style="list-style-type: none"> <li>• Master File will be modified as needed to support the new CRR functionality</li> </ul>
<b>MPP</b>	<ul style="list-style-type: none"> <li>• CRR will provide pre-configured external reports</li> </ul>
<b>Settlement</b>	<ul style="list-style-type: none"> <li>• Settlements will be modified as needed to support the new CRR functionality</li> </ul>
<b>WebOMS</b>	<ul style="list-style-type: none"> <li>• CRR will consume data from WebOMS</li> </ul>
<b>ETCC</b>	<ul style="list-style-type: none"> <li>• CRR will consume data from ETCC</li> </ul>

## 2023 – Congestion Revenue Rights (CRR) Upgrade

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	N/A	
External BRS	Publish External BRS	N/A	
Config Guides	Post Draft Config Guides	N/A	
Tech Spec	Publish Technical Specification	Draft 11/5/21	✓
Tariff	File Tariff	N/A	
BPMs	Publish Draft BPM updates	TBD	
External Training	Deliver External Training	Oct 13, 2022 – Oct 25, 2022	
Market Sim	Market Sim Window	Jan 26 , 2023 – Mar 8, 2023	
Production Activation	CRR Upgrade	Mar 20, 2023	
Phase 2 Production Activation	Phase 2 Go-Live	July 31, 2023	

## 2023 CRR System Upgrade - Overview

The Congestion Revenue Rights (CRR) system was implemented by CAISO in 2008 as part of the Market Redesign and Technology Upgrade (MRTU) implementation. The current CRR system is at its end of life, does not have the flexibility to accommodate future policy changes and requires the ISO to calculate data and run processes manually outside the current system to produce a successful CRR Auction.

The CAISO has decided to replace the existing CRR system with a new system that adopts the latest technology stack aligned with CAISO's technology standards, consolidate all CRR related functions, minimize human errors, reduce processing time, eliminate manual workarounds, and positions the system to accommodate policy changes down the road.

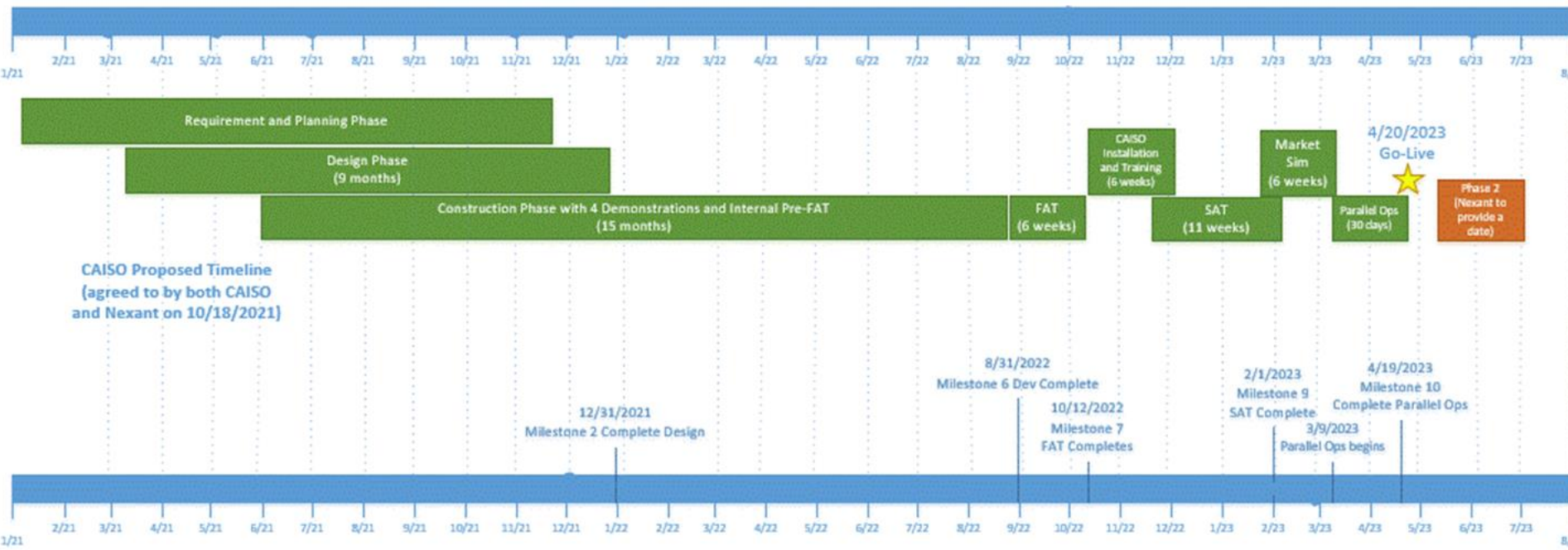
## 2023 CRR System Upgrade – Get Connected

- The two technical meetings we would like CRR technical users to attend are:
  - **Bi-weekly Technical User Group (TUG)** meetings at 10 AM on Tuesdays, alternating with RUG.
    - Meetings are available on the CAISO calendar on [www.caiso.com](http://www.caiso.com)
    - Meeting details and presentation materials are available on the CAISO Developer site at [www.developer.caiso.com](http://www.developer.caiso.com) , which requires an account to be setup for access
  - **B2B Improvements – Webinar Series**
    - This meeting is by invitation only
    - Technical representations only as the meeting covers technical details with respect to the new integration pattern
    - Team met on 11/3/2020 and next webinar is tentatively planned for **2/3/2022**
    - Interested folks should send email to [inambiar@caiso.com](mailto:inambiar@caiso.com)
    - All CRR new API specifications will be presented and discussed in this meeting



# 2023 CRR System Upgrade – Milestone Schedule

## CRR System Replacement Timeline



# 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 Performance and Planning Forum
    - Bi-monthly review of market performance issues
    - High level discussion of release planning, implementation and new market enhancements

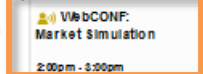
# What to look for on the calendar...

## Calendar of Meetings, Training and Events

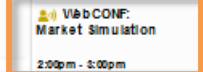
Month: February Year: 2018 Calendar View List View Print View

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	5 WebbCONF: Market Simulation 2:00pm - 3:00pm	6 Training: Get to Know the ISO - Day 1 9:00am - 4:00pm WebbCONF: Imbalance Conformance Enhancements 10:00am - 12:00pm WebbCONF: 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 WebbCONF: 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 WebbCONF: Market Simulation 2:00pm - 3:00pm	9 Training: Settlements 201 9:00am - 4:00pm	10
11 WebbCONF: Participating Transmission Owner Per Unit Cost Guides 10:30am - 12:00pm WebbCONF: Market Simulation 2:00pm - 3:00pm	12 Meeting: Congestion Revenue Rights Auction Efficiency 10:00am - 4:00pm WebbCONF: 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 WebbCONF: 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 WebbCONF: Market Simulation	15	16	17

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Release Users Group (RUG)

