



Market Simulation Plan Fall 2021 Release

Initiatives –

Real-time settlement review phase 2


**Energy storage and distributed energy resources phase 4 –
implementation**

Hybrid resources phase 2A

Intertie shadow pricing resolution

Western EIM base schedule submission deadline phase 1

Short-long start definitions

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Location of Document – [\(link\)](#)

Revision History

Date	Version	Description	Author
08/10/2021	1.0	Initial draft	Anshuman Vaidya
09/20/2021	1.1	Market Simulation dates updated	Anshuman Vaidya



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1. Introduction

The objective of this document is to provide the information needed by market participants in order to engage in the Fall 2021 Release initiatives, thereby enabling them to smoothly transition and utilize the new features and functionality that will be available when they go into production.

1.1 Scope of Initiatives


ISO release planning sites for the Fall 2021 Release initiatives – ([link](#))

1. Real-time settlement review phase 2 ([link](#))
2. Energy storage and distributed energy resources phase 4 - implementation ([link](#))
3. Hybrid resources phase 2A ([link](#))
4. Intertie shadow pricing resolution ([link](#))
5. Western EIM base schedule submission deadline phase 1 ([link](#))
6. Short-long start definitions ([link](#))

1.2 Market Simulation

The ISO conducts market simulations on a regular basis as part of its process of bringing new capabilities to its markets. This provides participants an opportunity to test their systems and procedures in advance of the market implementation. The market simulation process serves a number of purposes for both the ISO and market participants. It also facilitates an effective market operations dress rehearsal and helps expedite a smooth production launch. The benefits of market simulation may include but are not limited to:

- Allowing for system or procedural problem identification and mitigation before the market is operationally or financially binding.
- Enabling market participants to observe the behavior of ISO systems and markets in a simulated production environment, particularly in regards to new functions and features introduced through the addition of the modifications included in the Fall 2021 Release initiatives.
- Establishing confidence in the operational processes and systems associated with the new market functionality implementation.
- Providing a hands-on environment to allow participants to interact with new and unique features and functionality.

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- Providing an environment where market participants can scrutinize and tailor their own tools, applications, and business practices to participate in new market functionality.
- Providing a means of capturing additional market participant input and feedback regarding the implementation of the new market features and functionality, beyond what might have been received in the stakeholder process.
- Providing market participants the tools to help determine:
 - Proper exchange of market related data and validation of new timelines.
 - Common understanding of data submittal requirements and timelines.
 - Familiarity with market rules and timelines.
- An opportunity to verify the ISO Bid-to-bill process in a pre-production environment that includes simulated market and operational data inputs. Allowing the market participants to verify systems, process and procedures which may need modifying due to the functional changes tied to the release.

1.3 Schedule Summary

Fall Release 2021 Market Simulation High Level Time line is the following.

Phase 1 Market Simulation Type	Start	End
Connectivity Testing	08/30/2021	09/06/2021
Structured Simulation	09/07/2021	10/15/2021
Unstructured Simulation	09/08/2021	10/15/2021
Supported Regression Testing	09/27/2021	10/15/2021

ISO will continue to have MAP Stage available for market participants to support regression testing if necessary beyond go live.

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2. Market Simulation Approach


2.1 High Level Overview

The timeline for the Fall 2021 Release initiatives market simulations is identified below. Critical pre-simulation activities are identified in section 2.2 of this document.

Fall 2021 Release Initiatives	Start Date	Start Date (Trade Date)	End Date	Structured Simulation Start (Trade Date)
Fall 2021 Release Market Simulation	09/07/21	09/07/21	10/15/21	09/07/21
Real-time settlement review phase 2		09/07	10/01	09/16 & 09/28
Energy storage and distributed energy resources phase 4 – implementation		09/21	10/15	09/23
Hybrid resources phase 2A		09/23	10/01	N/A
Intertie shadow pricing resolution		09/27	10/15	N/A
Western EIM base schedule submission deadline phase 1				Complete (4/15-4/23)
Short-long start definitions				N/A

2.2 Pre-Simulation Activities

The Fall 2021 Release initiatives market simulations will be conducted in the MAP Stage environment. Participants will need to obtain access to this environment if they do not already have access. The ISO envisions participants may wish to access Master File (MF), Market Participant Portal (MPP), Outage Management System (WebOMS), Demand Response Registration System (DRRS), Customer Interface for Resource Adequacy (CIRA), Scheduling Infrastructure and Business Rules (SIBR), Base Schedule Aggregation Portal (BSAP), Balancing Authority Area Operations Portal (BAAOP), CAISO Market Results Interface (CMRI), Automated Dispatch System (ADS), and Market Results Interface Settlements (MRIS). For those who do not already have access to the MAP Stage systems, access can be requested by completing an Application Access Request Form (AARF) or modifying existing certificates through the Access Identity Management (AIM) application. Information regarding the completion of AIM and AARF forms can be

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found on the ISO portal under application access request forms and application installation instructions heading.

Information pertaining to accessing the externally facing ISO environments is detailed on the Developer site ([link](#)).

ISO Developer site – ([link](#))

2.3 Pre-Simulation and Simulation Activities Calendar

Activity	Description	Timeframe
MAP Stage Maintenance	MAP Stage maintenance for market simulation preparation for the Fall 2021 Release	08/23-08/27
Fall 2021 Releases Market Simulation Kick-Off Teleconference	ISO to conduct a teleconference to provide MPs with a Fall 2021 Releases market simulation briefing	08/26/2021
Structured Simulation Resource Registration	As identified in the structured simulation documents for each initiative; registration for the resources to be validated during the structured simulation phase of the market simulation	08/23/2021
Fall 2021 Release Simulation Begins	Fall 2021 Releases market simulation in the MAP Stage environment	08/30/2021
Fall 2021 Connectivity Testing	MAP Stage open for interface access validation	08/30 - 09/06
Fall 2021 Structured Scenarios	Fall 2021 Structured Scenarios to be executed.	09/07 - 10/15

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3. General Information

3.1 Participant Observation and Inputs

During the Fall 2021 Release initiatives market simulations, participants will be able to observe market results in the same applications that are available in Production: OASIS, CMRI, ADS, etc.

ISO will seed bids and base schedules on your behalf in MAP Stage, participants are encouraged to input data into the ISO Bid-to-bill using all systems available in Production: MRI-S, SIBR/BSAP, ADS and OMS etc., for a more realistic simulation.

Day Ahead Market (DAM) bids are submitted for T+4 >> (**NOTE:** CB bids are submitted for T+2, if participant submits for T+4 they will be over-written)

- Example: on 9/10 bids are submitted for 9/14

Participants wishing to check and or submit DA bids for T+1 – T+4) can do so after 7am on T.

- Example T=9/10 - DA bids can be submitted for 9/11, 9/12, 9/13 and if after 8am for 9/14
- In the example no seeded bids will over-write submitted bids for T+1, T+2, T+3. For T+4 if the submitted bids come in after 7am they will not be over-written by seeded bids.

Real Time Market (RTM) bids are submitted for T+1 at 11:00am

- Example: on 9/10 static bids are submitted at 11:00am for 9/11
- Participants wishing to check and or submit RT bids for T+1 can do so after 12:00pm (noon), no seeded data will over-write submitted bids.


Day Ahead Base Schedules BSAP (DAM) base schedules are submitted for T+4

Real Time Base Schedules BSAP (RTM) base schedules are submitted for T+ 4

- Example: on 9/10 base Schedules (DAM/RTM) are submitted for 9/14

Participants wishing to check and or submit base schedules for T+1 – T+4) can do so after 8am on T.

- Example T=9/10 - DA/RT base schedules can be submitted for 9/11, 9/12, 9/13 and if after 7am for 9/14
- In the example no seeded base schedules will over-write submitted base schedules for T+1, T+2, T+3. For T+4 if the submitted base schedules come in after 8am they will not be over-written by seeded base schedules.

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SIBR RTM functionality for validating submitted bids or generating submitted bid based on DA market results will still apply, typically MAP Stage market results are not published until after 12pm.

All RTM bids are revalidated between 22:10 and 23:00 for the next day based on latest commitment cost data received.
 All DAM bids are revalidated beginning at 03:10 and again at 09:10 for future dates based on latest Master File and commitment cost data received.

All base schedules are revalidated beginning at 08:25 for the next day only based on latest Master File data received.

Bids and Base Schedules must be submitted or verified by participants wanting to validate functionality in SIBR and BSAP or downstream applications with regard to project expectations.

3.2 Release Web Service Changes


ISO has provided all the necessary technical specifications for the Web Service changes in scope for Fall 2021 Release -

- MF Tech Specs ver 8.2 – ([link](#))
- MF Documents ver 16.0 – ([link](#))
- SIBR Tech Specs ver 14.1 – ([link](#))
- CMRI Tech Specs ver 5.0.0 – ([link](#))
- OASIS Tech Specs ver 7.0.0 – ([link](#))

Resource Data Template (RDT) submission and or modifications for the Fall 2021 Release initiatives will take 10 business days to process. Prior to the start of simulation all modified RDT's for the Fall 2021 Release should be emailed to RDT@caiso.com please also Cc MarketSim@caiso.com. Once simulation begins RDT's should be submitted to the MAP Stage Master File with an expected turnaround time of 10 business day, similar to Production.

ISO will be settling unstructured scenario trade dates for the Fall 2021 Release simulations.

ISO will be offering Settlements statements during the Fall 2021 Release market simulation. Similar to Production the ISO will be using estimated Meter data with our initial statements and MP submitted meter data where applicable, for the Re-calc statements.

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3.3 Known Issue List

ISO will create and publish a known issues list and post in on the release planning site – [\(link\)](#)

3.4 Structured Scenarios

MP's will need to register their request with the ISO to participate in this simulation via the MarketSim@caiso.com mailbox.

Please submit the information requested by 08/24/21.

For initiatives not listed, there will be no structured scenarios executed –

1. Real-time settlement review phase 2 [\(link\)](#)
2. Energy storage and distributed energy resources phase 4 - implementation [\(link\)](#)

3.5 ISO's Approach

Unstructured Simulation –

If a MP would like to see specific market conditions for their resource please contact ISO at MarketSim@caiso.com preferably TD-1 prior to the unstructured TD's DAM or RT market run.


Regression Simulation –

If a MP would like to see specific market conditions for their resource please contact ISO at MarketSim@caiso.com preferably TD-1 prior to the regression TD's DAM or RT market run.


3.6 Configuration Guides and Payment Calendars

ISO Settlements Calendar and Configuration guides Fall 2021 Release -


- Draft Settlements Configuration Guides – [\(link\)](#)
- Settlements Calendars –

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Calendar Day	Day	CMRI T+1B	Submit Meter Data by T+2B 10:00 (am) for Initial T+9B	Publish Initial Statement T+5B	Submit Meter Data by T+5B 18:00 (6:00pm) for Recalc T+70B	Publish Recalc Statement T+8B	Publish Market Invoice T+70B
30-Aug-21	Monday						
31-Aug-21	Tuesday						
01-Sep-21	Wednesday	31-Aug					
02-Sep-21	Thursday		31-Aug				
03-Sep-21	Friday	2-Sep					
04-Sep-21	Saturday						
05-Sep-21	Sunday						
06-Sep-21	Monday	CAISO Holiday					
07-Sep-21	Tuesday		2-Sep				
08-Sep-21	Wednesday	7-Sep		31-Aug	31-Aug		
09-Sep-21	Thursday			Monthly Initial 31-Aug			Daily Initial 31-Aug Monthly Initial 31-Aug
10-Sep-21	Friday	9-Sep	7-Sep	2-Sep	2-Sep		
11-Sep-21	Saturday						
12-Sep-21	Sunday						
13-Sep-21	Monday		9-Sep			31-Aug	
14-Sep-21	Tuesday			7-Sep	7-Sep	Monthly Recalc 31-Aug	Daily Recalc 31-Aug

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							Monthly Recalc 31-Aug
15-Sep-21	Wednesday	14-Sep				2-Sep	
16-Sep-21	Thursday		14-Sep	9-Sep	9-Sep		
17-Sep-21	Friday			Monthly Initial 2-Sep - 9-Sep			Daily Initial 2-Sep; 7-Sep; 9-Sep Monthly Initial 2-Sep - 9-Sep
		16-Sep				7-Sep	
18-Sep-21	Saturday						
19-Sep-21	Sunday						
20-Sep-21	Monday		16-Sep				
21-Sep-21	Tuesday			14-Sep	14-Sep	9-Sep	
22-Sep-21	Wednesday					Monthly Recalc 2-Sep - 9-Sep	Daily Recalc 2-Sep; 7-Sep; 9-Sep Monthly Recalc 2-Sep - 9-Sep
		21-Sep					
23-Sep-21	Thursday		21-Sep	16-Sep	16-Sep		
24-Sep-21	Friday			Monthly Initial 14-		14-Sep	Daily Initial 14-
		23-Sep					

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				Sep - 16- Sep			Sep; 16- Sep Monthly Initial 14- Sep - 16- Sep
25- Sep-21	Satur day						
26- Sep-21	Sund ay						
27- Sep-21	Mond ay		23-Sep				
28- Sep-21	Tuesd ay			21-Sep	21-Sep	16-Sep	
29- Sep-21	Wedn esday					Monthly Recalc 14- Sep - 16- Sep	Daily Recalc 14-Sep; 16-Sep Monthly Recalc 14-Sep - 16-Sep
30- Sep-21	Thurs day	28-Sep	28-Sep	23-Sep	23-Sep		
01-Oct- 21	Friday			Monthly Initial 21- Sep - 23- Sep			Daily Initial 21- Sep; 23- Sep Monthly Initial 21- Sep - 23- Sep
02-Oct- 21	Satur day						
03-Oct- 21	Sund ay						
04-Oct- 21	Mond ay		30-Sep				

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05-Oct-21	Tuesday			28-Sep	28-Sep	23-Sep	
06-Oct-21	Wednesday					Monthly Recalc 21-Sep - 23-Sep	Daily Recalc 21-Sep; 23-Sep Monthly Recalc 21-Sep - 23-Sep
		5-Oct					
07-Oct-21	Thursday	6-Oct	5-Oct	30-Sep	30-Sep		
08-Oct-21	Friday			Monthly Initial 28-Sep - 30-Sep			Daily Initial 28-Sep; 30-Sep Monthly Initial 28-Sep - 30-Sep
		7-Oct	6-Oct			28-Sep	
09-Oct-21	Saturday						
10-Oct-21	Sunday						
11-Oct-21	Monday		7-Oct				
12-Oct-21	Tuesday			5-Oct	5-Oct	30-Sep	
13-Oct-21	Wednesday					Monthly Recalc 28-Sep - 30-Sep	Daily Recalc 28-Sep; 30-Sep Monthly Recalc 28-Sep - 30-Sep
		12-Oct		6-Oct	6-Oct		

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14-Oct-21	Thursday	13-Oct	12-Oct	7-Oct	7-Oct		
15-Oct-21	Friday						Daily Initial 5-Oct; 7-Oct Monthly Initial 5-Oct - 7-Oct
		14-Oct		Monthly Initial 5-Oct - 7-Oct		5-Oct	
16-Oct-21	Saturday						
17-Oct-21	Sunday						
18-Oct-21	Monday		14-Oct			6-Oct	
19-Oct-21	Tuesday			12-Oct	12-Oct	7-Oct	
20-Oct-21	Wednesday						Daily Recalc 5-Oct; 7-Oct Monthly Recalc 5-Oct - 7-Oct
				13-Oct	13-Oct	Monthly Recalc 5-Oct - 7-Oct	
21-Oct-21	Thursday		19-Oct	14-Oct	14-Oct		
22-Oct-21	Friday						Daily Initial 12-Oct; 14-Oct Monthly Initial 12-Oct - 14-Oct
				Monthly Initial 12-Oct - 14-Oct		12-Oct	

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23-Oct-21	Saturday						
24-Oct-21	Sunday						
25-Oct-21	Monday					13-Oct	
26-Oct-21	Tuesday				19-Oct	14-Oct	
27-Oct-21	Wednesday					Daily Recalc 12-Oct; 14-Oct Monthly Recalc 12-Oct - 14-Oct	

4. Market Simulation Support


4.1 Routine Functions

All normal support processes should be followed for support functions that are not specific to the market simulation. These include system connectivity issues, system availability issues, user account and permissions issues, etc. The ISO Help Desk can be reached 24x7, 365 days a year @ (916) 351-2309.

4.2 Market Simulation-Specific Support

The ISO will operate a Market Simulation Support Center throughout the market simulation. This support center is focused on providing support for market simulation specific issues. Hours of operation of the Market Simulation Support Center are 09:00 – 18:00 PPT, Monday through Friday.

Issues will be tracked through the ISO’s Case Management System, CIDI. Simple questions that can be answered in a single call can be asked without opening a CIDI case, but if the issue cannot be resolved on the call, then participants will need to open a CIDI

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case. Using the “Functional Environment” field please identify the CIDI case as a “Market Simulation Fall 2021” simulation related question and not a “Production” question.

4.3 Market Simulation Communication

Dial in numbers and call schedules to be posted on the ISO Calendar – ([link](#))

4.4 Market Simulation Environment Maintenance


Fall 2021 Release market simulation maintenance will take place Friday morning through Monday morning as the weekly maintenance window.

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5. Market Simulation Trainings

Please find information regarding Fall 2021 Release market simulation training offerings at the following locations -

- Training calendar – [\(link\)](#)
- ISO training contact – CustomerTraining@caiso.com

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6. Market Simulation Execution and Exceptions

MAP Stage has been setup with specific application characteristics and data flows to foster successful simulation, please note these changes are made to facilitate a simulation and will not be implemented in Production –

The ISO will upload a previous day’s production based bid set for the Day Ahead Markets (DAM) run by 10:00 PPT daily.

Market participants can overwrite these bids between 10:00 PPT and 11:00 PPT when the DAM closes.

DAM will close @ 11:00 PPT and the results will be published by 14:00 PPT daily unless it is a Structured Scenario day, it may take ISO longer to publish DAM due to Scenario setup and verification.

Real Time (RT) template bids will be built from DAM awards as the standard process, ISO will seed RT bids and base schedules for EIM entities.

RT bid markets for a specific Trade Date (TD) open automatically @ 11:00 PPT TD-1.


Market participants are encouraged to bid and base schedule in the Real Time Markets (RTM) to foster a more realistic simulation, the only exceptions are during structured scenario executions were identified.

Market participants will need to register for a tagging test bed user identification if they would like to simulate E-Tagging, if no E-Tag is submitted ISO will “auto tag” on your behalf, limit one registration per SCID.

ISO has activated auto approval for all OMS submissions and changes in MAP Stage.


Please note the timeframes for each Settlements statement publication period are different.

Settlements timelines are covered in section 3.5 above.

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7. Documentation Links

Fall 2021 Release Initiatives Release Planning Site – [\(link\)](#)

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8. ISO Market Simulation Contact

Please contact MarketSim@caiso.com if you have any questions or concerns regarding this plan and its content.