



California ISO

Market Simulation Forum

January 23, 2025

Martin Kraynov

Market Simulation Coordinator

ISO PUBLIC

COPYRIGHT ©2024 BY CALIFORNIA INDEPENDENT SYSTEM OPERATOR. ALL RIGHTS RESERVED.

Overview

- Presentation Summary of Changes
- Market Simulation Overview
- Market Simulation MAP Stage Availability
- Market Simulation MAP Stage Code
- Market Simulation Activities
- Market Simulation Settlements (if needed)
- Market Simulation Initiatives - Current
 - Congestion Revenue Rights (CRR) System Upgrade
 - FERC881 Track 2
- Market Simulation Initiatives - Upcoming
 - Highest Emergency Rating (HER)
 - Enable Non-Generating Resources to Participate in Inter-SC Trade
 - Hybrid Resources Phase 2C (HR2C) RIMS
 - Transmission Exchange Agreement (TEA)
 - Day Ahead Market Enhancements (DAME)
 - Extended Day Ahead Market (EDAM)
 - Western Energy Imbalance Market (WEIM) Enhancements
- Next Steps

Summary Of Changes: 01/23/25

- Slide 9 & 10: Updated environment availability
- Slide 11: Updated Market Sim project overview slide
- Slide 16: Updated FERC881 Market Sim and Activation dates
- Slide 18: Updated TEA Market Sim and Activation dates
- Slide 20: Added additional DAME/EDAM related initiative timelines

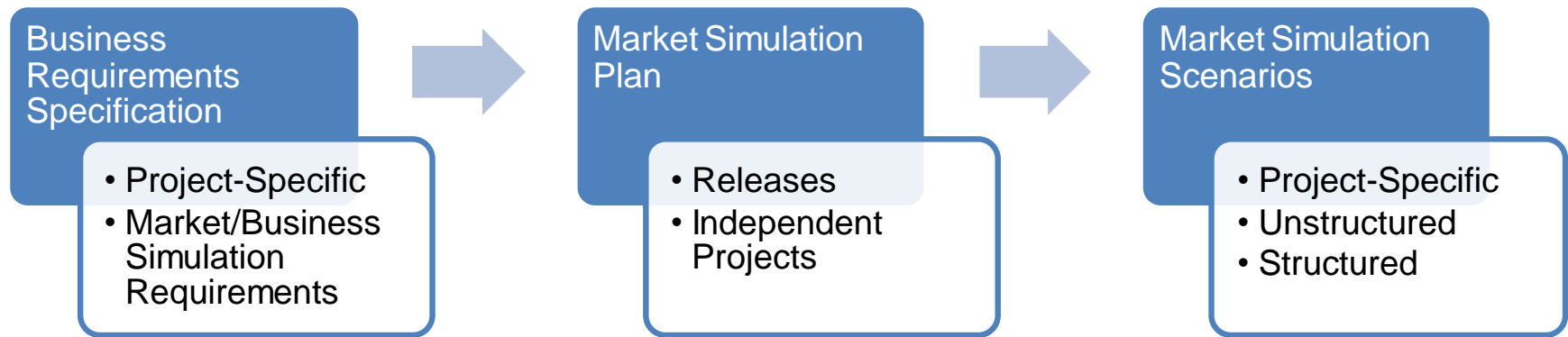
Market Simulation Overview

- Covers activities in the MAP Stage environment
- MAP Stage is an integrated Production-like environment that is available to customers with provisioned access
- Allows customers to experience ISO release/project implementations prior to Production implementation
- Market Simulation will allow customers and the CAISO to conduct specific market scenarios in a test environment prior to the Production activation to ensure that all system interfaces are functioning as expected and to produce simulated market results
- Customers may also use MAP Stage to validate the interaction of customer-driven changes with the ISO systems

Reasons for Market Simulation

- **Rule impacts:** Generalized changes in market rules, bidding rules, settlements rules, market design changes, or other business rules.
- **Interface changes:** Changes that impact templates (RA Supply Plan, Master File RDT, etc.), User Interfaces (UI), Application Programming Interface (API) / Web Service.
- **New/modified application/report:** Changes that cause addition/modification of ISO systems or reports, especially when data input is required by the customer
- **New/modified system process:** Modification of data flow in systems, especially if the new/modified process requires the customer to demonstrate proficiency prior to Production
- **New/modified model data:** Addition or substantial modification of model data as a market solution or export provided by the ISO
- **New/modified user role:** The addition or modification of access permissions for a user role

Market Simulation for ISO Implementation of Releases & Projects - Deliverables



Market Simulation Forums

Scheduled for 2-3PM PT

| | Monday | Tuesday | Wednesday | Thursday | Friday |
|----------|--------|---------|-----------|----------|--------|
| December | 2 | 3 | 4 | 5 | 6 |
| | 9 | 10 | 11 | 12 | 13 |
| | 16 | 17 | 18 | 19 | 20 |
| | 23 | 24 | 25 | 26 | 27 |
| | 30 | 31 | | | |
| January | | | 1 | 2 | 3 |
| | 6 | 7 | 8 | 9 | 10 |
| | 13 | 14 | 15 | 16 | 17 |
| | 20 | 21 | 22 | 23 | 24 |
| | 27 | 28 | 29 | 30 | 31 |

**Market
Simulation
Forum**

ISO Closure

CRR System Upgrade – Market Simulation Meetings

Scheduled for 1-2PM PT

| | Monday | Tuesday | Wednesday | Thursday | Friday |
|----------|--------|---------|-----------|----------|--------|
| February | 3 | 4 | 5 | 6 | 7 |
| | 10 | 11 | 12 | 13 | 14 |
| | 17 | 18 | 19 | 20 | 21 |
| | 24 | 25 | 26 | 27 | 28 |
| March | 3 | 4 | 5 | 6 | 7 |
| | 10 | 11 | 12 | 13 | 14 |
| | 17 | 18 | 19 | 20 | 21 |
| | 24 | 25 | 26 | 27 | 28 |
| | 31 | | | | |

**CRR MSIM
Meetings**

ISO Closure

Market Simulation MAP Stage Availability

- *MAP Stage weekly maintenance window is Friday**

| System | UI | API | Comments |
|-------------|--|--|--|
| ADS | | | |
| ALFS | Not Available | | |
| BAAOP | | | |
| BSAP | | | |
| CIRA | | | |
| CMRI | Infrastructure Maintenance 1/17/25-1/31/25 | Infrastructure Maintenance 1/17/25-1/31/25 | |
| CRR (old) | | Not Available | Read-only available after cut-over to new CRR |
| CRR (new) | ETA 01/28/25 | API Subset 01/28/25 | |
| DRRS | | | |
| ECIC | Not Available | | |
| FDR | Not Available | | |
| MF | | | |
| OASIS | Infrastructure Maintenance 1/17/25-1/31/25 | Infrastructure Maintenance 1/17/25-1/31/25 | |
| OMS | | | |
| PLC | | Not Available | |
| RCBSAP | | | |
| RIMS | | Not Available | |
| SIBR | | | |
| MRIS | | | |
| TR | | Not Available | |
| webWheel | | Not Available | |
| webLineR | 12/31/24 | API available starting 03/14/25 | API shall be updated to green on 3/14/25 to reflect availability |
| AVAILABLE | | | |
| MAINTENANCE | | | |

*Maintenance may also occur after 1600 PT on other days and may deviate from the weekly maintenance window as necessary

Market Simulation MAP Stage Code

| System | MAP-STAGE | PRODUCTION | Comments |
|--------|---------------------------------|--------------------------|----------|
| Market | 12/2/24 – Release 20.01 | 12/10/24 – Release 20.01 | |
| FNM | DB130.5 to MS Oct 2024 TD 10/18 | DB132 | |
| ADS | | | |
| ALFS | | | |
| BAAOP | | | |
| BSAP | | | |
| CIRA | | | |
| CMRI | Infrastructure Framework | | |
| DRRS | | | |
| ECIC | | | |
| FDR | | | |
| MF | | | |
| OASIS | Infrastructure Framework | | |
| RCBSAP | 20.2 | 18 | |
| SIBR | | | |
| TR | | | |

| |
|------------------------|
| AHEAD OF PRODUCTION |
| SYNCED WITH PRODUCTION |
| BEHIND PRODUCTION |

Market Simulation Activities

| Initiative | Market Simulation | Comments | Activation |
|--|---|------------------------|---------------------|
| Congestion Revenue Rights (CRR) System Upgrade | Connectivity Testing: <ul style="list-style-type: none"> MUI: 01/21/25 – 02/06/25 B2B API (First): 01/28/25 – 02/06/25 B2B API (Second): 02/07/25 – 02/14/25 Market Simulation: <ul style="list-style-type: none"> Structured: 02/18/25 – 03/05/25 Unstructured: 03/10/25 – 03/19/25 | N/A | 04/28/25 – 04/30/25 |
| Highest Emergency Rating (HER) | Unstructured MSIM: 01/21/25 – 01/31/25 | No settlements impacts | 02/06/25 |
| FERC881 Track 2 | Connectivity Testing: <ul style="list-style-type: none"> UI: 12/31/24 – 03/14/25 API: 03/14/25 – 06/30/25 Market Simulation: <ul style="list-style-type: none"> Unstructured: 03/14/25 – 06/30/25 | N/A | Track 2: June 2025 |
| Hybrid Resources Phase 2C (HR2C) - RIMS | Unstructured MSIM: Shapefiles only, 3/13/25 – 3/19/25 | No settlements impacts | 4/9/25 |
| Transmission Exchange Agreement (TEA) | Unstructured MSIM: 2/24/25 – 3/14/25 (WAPA Only) | N/A | Week of 3/24/25 |
| Enable Non-Generating Resources to Participate in Inter-SC Trade | TBD | N/A | TBD |
| DAME / EDAM / WEIM | See slide 20. | N/A | See slide 20. |

Map-Stage Environment Issues

| Initiative | Defects |
|--|--|
| Congestion Revenue Rights (CRR) System Upgrade | N/A |
| Highest Emergency Rating (HER) | N/A |
| FERC881 Track 2 | N/A |
| Hybrid Resources Phase 2C (HR2C) - RIMS | N/A |
| Transmission Exchange Agreement (TEA) | N/A |
| Enable Non-Generating Resources to Participate in Inter-SC Trade | N/A |
| DAME / EDAM / WEIM | N/A |
| Other projects and issues | <ul style="list-style-type: none">• Updated 1/21: Issue for applications on WEBSDK version 3.5 or older is resolved for Production and Stage. Internal teams are testing remaining environments to ensure functioning as expected. MAPSTAGE availability for OASIS and CMRI expected by 01/31/25. |

CRR System Upgrade

- ✓ **Registration:** by 9/30/24
- **CRR Customer Partnership Group (CPG):** Next CPG Thursday, January 23, 2025
- **Multiple Training Sessions:** From 10/28
- **Access Provisioning:** Ready for **MAPSTAGE** provisioning
 - CRR: EXTERNAL CRR HOLDER READ-ONLY ACCESS
 - CRR: EXTERNAL CRR HOLDER READ/WRITE ACCESS
 - CRR: EXTERNAL CRR NDA REPORTS READ-ACCESS
 - CRR: EXTERNAL UTILITY DISTRIBUTION COMPANY (UDC) READ/WRITE ACCESS
 - CRR: EXTERNAL TRANSMISSION OWNERSHIP RIGHT (TOR) OWNER READ/WRITE ACCESS
 - CRR: EXTERNAL CALIFORNIA ENERGY COMMISSION (CEC) READ/WRITE ACCESS
- **Reminder:** OASIS Tech Specs include the new & modified reports (<https://developer.caiso.com>)

CRR System Upgrade – Market Simulation Timeline

Connectivity Testing:

- CRR Market Interface UI (MUI): 01/28/24 – 02/06/25
- B2B API (First): 01/28/25 – 02/06/25
- B2B API (Second): 02/07/25 – 02/14/25

Structured Market Simulation:

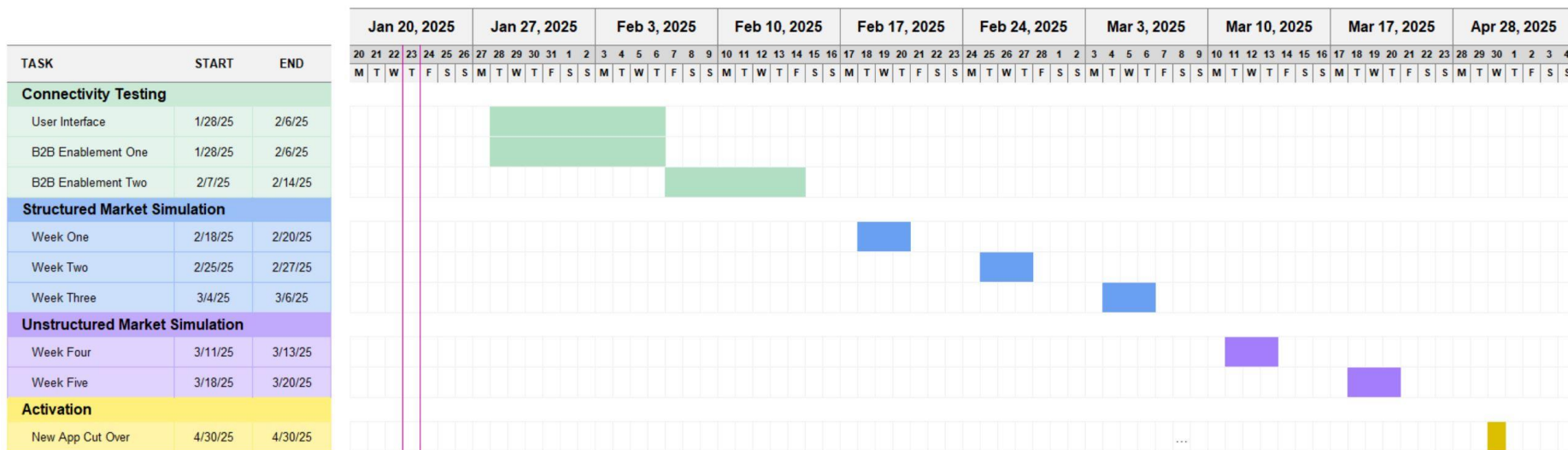
- Week 1: 02/18/25 – 02/20/25
- Week 2: 02/25/25 – 02/27/25
- Week 3: 03/04/25 – 03/06/25

Unstructured Market Simulation:

- Week 4: 03/11/25 – 03/13/25
- Week 5: 03/18/25 – 03/20/25

Activation & New Application Cutover: 04/28/25 – 04/30/25

Note: Refer to CRR [Market Simulation Plan](#) for Market Simulation Scenarios and detailed Market Simulation Calendar.



Highest Emergency Rating (HER)

- ✓ **Register by September 30, 2024**
- ✓ OMS maintenance 10/21-10/25
- ✓ OMS Connectivity starts 10/28
- ✓ Training 10/28
- Unstructured Market Simulation 01/21/25 – 01/31/25
- Activation: 02/06/25

| Guidance on Market Participant Impacts | Source System | Sink System | Reason for Potential Scenario |
|---|---------------|--------------|-------------------------------|
| End-to-End Testing: RC Customers to adjust the ER, HER and limit durations. Note: Reference BRQ403 for more information. | webOMS | webOMS, HANA | New Data Fields |

| ID# | Business Feature | Req. Type | Potential Application Impacted |
|--------------|--|-----------|--------------------------------|
| HER – BRQ403 | <p>System (webOMS) must have the capability for all current user who have read/write access to adjust the following new transmission MVA rating data elements/fields:</p> <ul style="list-style-type: none">• Emergency Rating Duration (set in minutes)• Highest Emergency Rating Limit (set in MVA)• Highest Emergency Rating Duration (set in minutes)• Start/End time of override (existing field, set for above fields) <p>Implementation note: Operators shall be able to adjust to a higher rating, in addition to how they currently adjust to a lower rating; ; ISO users and RC customers shall use existing “Nature of Work” type of “EQUIPMENT_DERATE” in order to adjust rating higher or lower.</p> <p>Implementation and note: ISO users and RC customers shall utilize existing “Nature of Work” type of “EQUIPMENT_DERATE” in order to adjust to a higher or lower rating.</p> | Core | webOMS |

FERC Order 881 Track 2 – Market Simulation Timeline

Connectivity Testing (webLineR Only):

- Provisioning & UI: 12/31/24 – 03/14/25
- API: 03/14/25 – 06/30/25

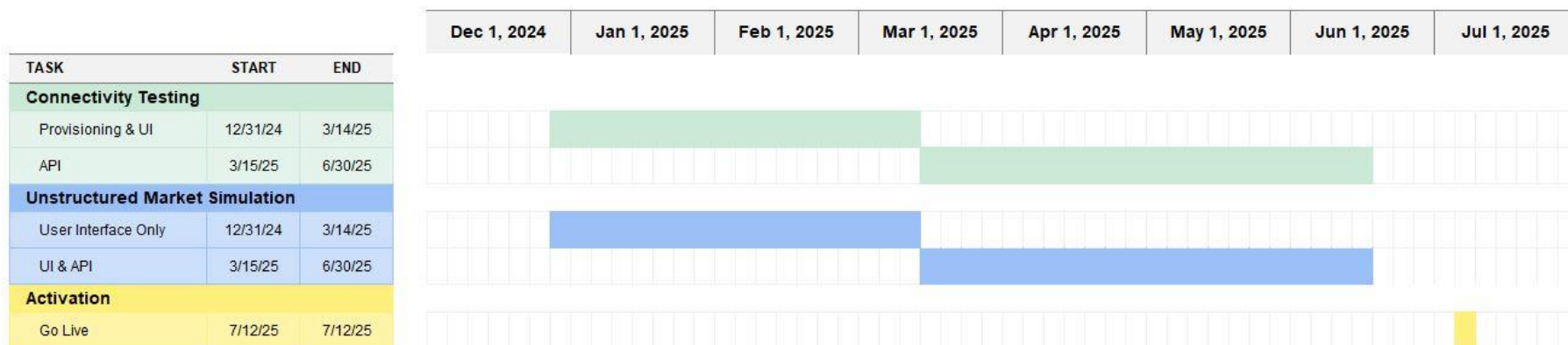
Market Simulation (webLineR Only):

- Unstructured (UI Only): 12/31/24 - 03/14/25
- Unstructured (UI & API): 03/14/25 – 06/30/25

Activation (webLineR Only):

- Go-live: 7/12/25

Note: refer to [webLineR MAPSTAGE](#) to test connectivity.



HR2C RIMS

- **Register by December 31, 2024**
- Unstructured MSIM (Shapefiles): 3/13/25 – 3/19/25
- Activation: 4/9/25

| ID# | Guidance on Market Participant Impacts | Source System | Sink System | Reason for Potential Scenario |
|-----------|---|---------------|-------------|---|
| MKT-004 | Unstructured Market Simulation Market Participants must have the capability to input Site information data into web form submission. Note: BU requested that Market Participants have the opportunity to practice filling out and submitting the form prior to production. | N/A | RIMS | <i>Unstructured Market Sim, New Data type</i> |
| MKT – 005 | Unstructured Market Simulation <i>Market Participant must have the capability to upload Topo Map, Sharing Agreement, Shapefile, and provide Site Info via web form.</i> | N/A | RIMS | <i>Unstructured Market Sim, New Data type</i> |
| MKT – 006 | Unstructured Market Simulation <i>Market Participant must have the capability to see on UI uploaded Topo Map, Sharing Agreement, Shapefile, and provide Site Info via web form.</i> | N/A | RIMS | <i>Unstructured Market Sim, New Data type</i> |
| MKT – 007 | Unstructured Market Simulation <i>Market Participants must have the capability to add Topo Map, Site Info, Shapefile, and Sharing Agreement (applicable only to Fuel Type of Solar) to Bucket 1 for any hybrid resource project created with a fuel type of Solar or Wind.</i> | N/A | RIMS | <i>Unstructured Market Sim, New Data type</i> |
| MKT – 008 | Unstructured Market Simulation <i>In the event Market Participant's upload fails validation, Market Participant must receive notification of the error.</i> | N/A | RIMS | <i>Unstructured Market Sim, New Data type</i> |

TEA

- **Register by December 31, 2024**
- MF, SIBR, ETCC, ITS, Settlements, CMRI, OASIS
- Unstructured Market Sim (WAPA Only): 2/24-3/14
- Activation: Week of 3/24

| ID# | Guidance on Market Participant Impacts | Source System | Sink System | Reason for Potential Scenario |
|---------|---|---------------|---------------------|---|
| MKT-001 | Owner of Transmission Owner Rights must have the capability to send sale information to CAISO. Note: See BRQ003 for more information. | OASIS OATI | Internal ISO System | Interface changes, New system process |
| MKT-002 | Entities with pre-registered CRNs must have the capability to purchase Transmission Owner Rights. Note: See BRQ002 for more information. | N/A | MF | Interface changes, New system process, Rule Impacts |
| MKT-003 | Entities with Parent CRN and have active transacted purchases with Sub CRNs will have access to both Parent and Sub CRN Report data in CMRI. | CMRI | User Client, System | Interface changes, Report Changes, New system process, Rule Impacts |

Enable Non-Generating Resources to Participate in Inter-SC Trade

| Information | Details |
|------------------------------|--|
| Source | 2024 Annual Policy Initiatives Roadmap Process |
| Category | Storage |
| Submission | Enable non-generating resources to participate in inter-SC trade |
| Summary | Allow non-generating resources to participate in inter-SC trade and offer physical energy product in order to continue effective integration of higher capacities of energy storage and meet RA and GHG compliance goals. |
| Description | In the current market design, standalone battery storage projects are not available to be selected in the "location" dropdown list for transactive physicals in IST. To continue effective integration of higher capacities of energy storage and meet RA and GHG compliance goals, the ISO should allow NGRs to participate in inter-SC trade and offer physical energy product. Enabling battery storage to participate in physical IST would increase market efficiency and reduce uncertainty in the preschedule window, and would allow battery storage to offer supplemental capacity or replacement energy through IST. |
| Presentation | May 15, 2024 |
| System Impacts | Scheduling Infrastructure & Business Rules (SIBR) |

| Milestone Type | Milestone Name | Dates | Status |
|-------------------------------------|---|-------|--------|
| BPM | Publish PRR: Market Instruments | | |
| SIBR Release Notes | Publish SIBR Release Notes | | |
| SIBR Rules | Publish Inter-SC Trades Rules | | |
| SIBR SC User Guide | Update to allow NGR for Physical Trades | | |
| SIBR Inter-SC Trades (IST) Tutorial | Update to allow NGR for Physical Trades | | |
| Market Simulation | Market Simulation | | |
| Production | Activation | | |

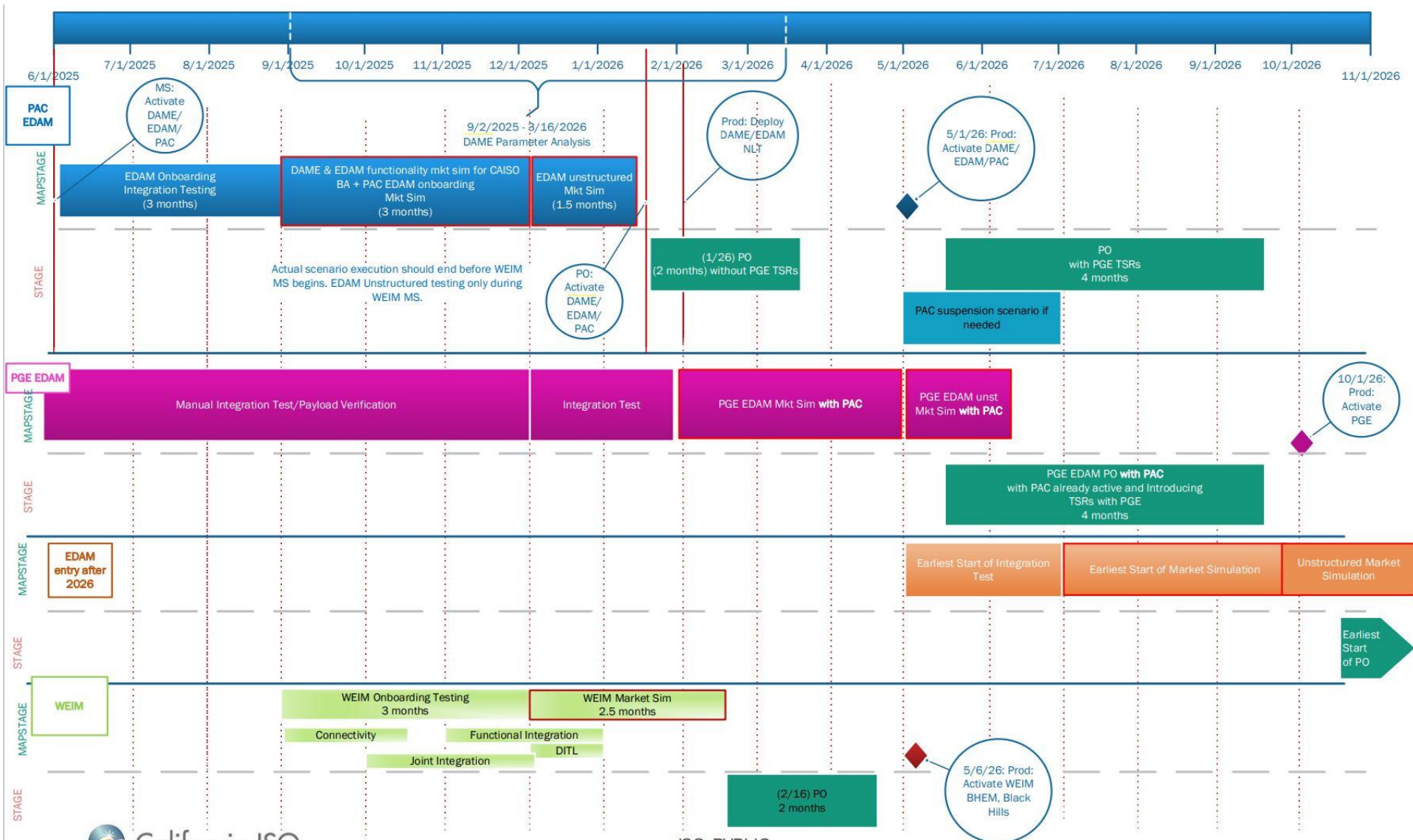
**This effort is separate from the "Inter-SC Trades in Regional Markets" policy initiative*

DAME / EDAM / WEIM – Market Simulation Timeline

| Initiative | Connectivity Testing | Integration Testing | Structured Market Sim | Unstructured Market Sim | Parallel Operations | Activation |
|---|----------------------|---------------------|-----------------------|-------------------------|-------------------------------|------------|
| <u>Day-Ahead Market Enhancements</u> | 06/01/25 – 09/01/25 | NA | 09/01/25 – 12/01/25 | 12/01/25 – 01/15/26 | 01/26/25 – 03/26/25 (EDAM OB) | 05/01/26 |
| <u>Extended Day-Ahead Market</u> | 06/01/25 – 09/01/25 | NA | 09/01/25 – 12/01/25 | 12/01/25 – 01/15/26 | 01/26/25 – 03/26/25 (EDAM OB) | 05/01/26 |
| <u>EDAM ISO BAA Participation Rules Track A</u> | 06/01/25 – 09/01/25 | NA | 09/01/25 – 12/01/25 | 12/01/25 – 01/15/26 | 01/26/25 – 03/26/25 (EDAM OB) | 05/01/26 |
| <u>Extended Day-Ahead Market On-Boarding - Pacificorp</u> | 05/01/25 – 05/31/25 | 06/01/25 – 09/01/25 | 09/01/25 – 12/01/25 | 12/01/25 – 01/15/26 | 01/26/25 – 03/26/25 | 05/01/26 |
| <u>Extended Day-Ahead Market - PGE</u> | 11/01/25 – 11/30/25 | 12/01/25 – 01/31/26 | 02/01/26 – 04/30/26 | 05/01/26 – 06/12/26 | 05/18/25 – 09/04/25 | 10/01/26 |
| <u>WEIM - Berkshire Hathaway Energy Montana</u> | 09/01/25 – 10/17/25 | 10/01/26 – 11/30/26 | 12/01/25 – 02/13/26 | NA | 02/16/26 – 04/17/26 | 05/06/26 |
| <u>WEIM – Black Hills</u> | 09/01/25 – 10/17/25 | 10/01/26 – 11/30/26 | 12/01/25 – 02/13/26 | NA | 02/16/26 – 04/17/26 | 05/06/26 |

Note: [Spring 2026 Release Market Sim Plan](#) posted on Release Planning page.

DAME / EDAM / WEIM – Market Simulation Timeline



Next Steps

- Work with your UAA to provision your organization's access to MAP Stage for access to the systems to execute Market Simulation
- Review BRS Market Simulation requirements, Market Simulation Plans, Market Simulation Scenarios and provide any feedback
- Register for participation in Market Simulation
- Attend the Release User Group Forums, every other week, for implementation updates, including active and upcoming Market Simulation activities
- During active Market Simulations, attend the weekly Market Simulation Forums

Market Simulation Registration

- **Please register for your participation in Market Simulation activities for each Market Simulation initiative as appropriate**
 - If you have intent to actively engage in MAP Stage testing of access, systems, functionality, processes, and/or review of results/data
- **This informs CAISO Market Simulation to provide more specific support for your efforts, including**
 - Data setup for your testing
 - More immediate communication and coordination impacting your testing/review
 - More detailed information for the applicable initiatives
- **How to register**
 - Submit CIDI with ‘Functional Environment’ = “Market Simulation”
 - Identify the Market Simulation initiative(s) you will participate in
 - Identify any specific resources as applicable
 - List the contacts and e-mail addresses that you would like to include
 - CIDI is preferred and if you don’t have CIDI, you can e-mail marketsim@caiso.com with the same information

Upcoming Meetings

- [Market Simulation Forum:](#)
 - Thursday, January 30, 2025 @ 2:00 PM PT
- [Release User Group:](#)
 - Tuesday, February 04, 2025 @ 10:00 AM PT
- [Customer Partnership Group:](#)
 - Thursday, February 27, 2025 @ 1:00 PM PT
- CRR Market Simulation Meeting:
 - Tuesday, February 18, 2025 @ 1:00PM PT

Market Simulation Support

- Email general questions to marketsim@caiso.com
- Submit market simulation specific issues and questions in CIDI with subject: **“Project Name: System Name – Issue Title” with Functional Environment set to Market Simulation.**
 - If not related to a Project submit subject as “NA: System Name – Issue Title”
- Service Desk: (916) 351-2309