

# Assessment of Progress Towards Fall 2008 MRTU Go Live



Deborah Le Vine  
Director of Market Services and MRTU Program Manager



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## CAISO has made substantial progress toward a Fall 2008 MRTU Go Live.

- CAISO Grid Operators have tested the systems, run simulations and are confident they can operate the grid with the systems
- Real-Time Market *consistently* running
- Day-Ahead Market *consistently* publishing by 1300
- Market solves *high percentage of time* with AC solution
- Market results are *consistently* published for participants
- Quality of solution is *close to production* given market participant bids and use of a simulator
- SAIC has *certified* the software is consistent with the CAISO Tariff absent minor issues that are being resolved

## Nonetheless, market participants need to be given an ample opportunity to test their internal systems and processes.

- 🌐 The current simulation has been open since February 19
- 🌐 Most of the functionality can be tested by participants
- 🌐 Many of the charge codes still need release from CAISO and validation by market participants
- 🌐 Data traceability issues are contributing to perception of issues
- 🌐 Questions remain around pricing
- 🌐 Nonetheless, absent patching/other maintenance CAISO systems are stable and consistent

## Much work remains and exit criteria for the market simulation still needs to be met.

The Update 2 Market Simulation Exit Criteria that have not been met consist of:

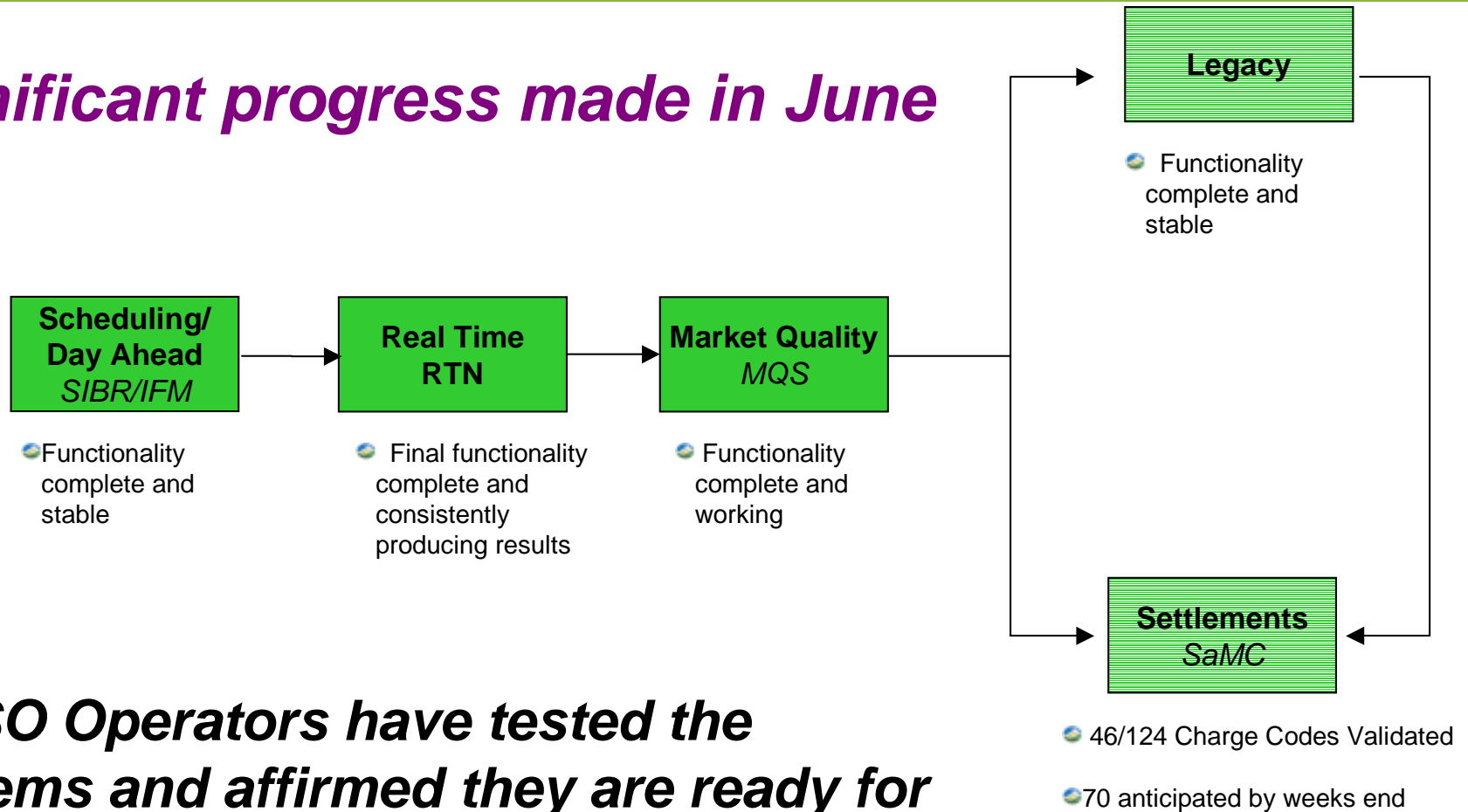
- 🌐 Scenario testing needs to be completed
- 🌐 Charge code Bid-to-Bill validation needs to be confirmed
- 🌐 Critical and Very High variances need to be resolved
- 🌐 High variances need to be resolved or mitigated
- 🌐 Market results need to be traceable to bids & schedules

## Proposed process between now and September ISO Governing Board Meeting:

- 🌐 **July 9:** ISO Governing Board Meeting
  - CAISO readiness
- 🌐 **July 22:** MRTU Implementation Workshop
- 🌐 **August 14:** ISO Governing Board Meeting
  - Status of CAISO and Participant readiness
  - Discuss Fall Go Live Date
- 🌐 **August 26:** MRTU Implementation Workshop
- 🌐 **September 8 - 9:** ISO Governing Board Meeting
  - Status of CAISO and Participant readiness

# Remaining MRTU functionality is completed.

## Significant progress made in June



**CAISO Operators have tested the systems and affirmed they are ready for a Fall Go Live.**

# Day-Ahead Market in market simulation is stable.

## Between June 2<sup>nd</sup> and July 3<sup>rd</sup>:

- 🌐 Day Ahead Market publish results every day = 100%
- 🌐 Results publish by production timeline (1300) = 82%
- 🌐 SIBR
  - Graphical User Interface available = 100%
  - Automated Programmatic Interface availability = 98.96%
- 🌐 Market Participants submitted bids only are used to run the market.
  - Typically, 800 – 1000 bids processed daily
  - July 1<sup>st</sup> Participants submitted 10,000 real-time bids and 800 Day-Ahead bids simultaneously

## Real-Time Market is consistently solving and publishing on time.

Average Market Simulation Performance over last 3 weeks:

- 🌐 HASP hourly intervals solving = 87.5%
- 🌐 RTPD 15-minute intervals solving = 91.7%
- 🌐 RTD 5-minute intervals solving = 97.4%
- 🌐 ADS Dispatches broadcast = 99.8%



# Market Simulation quality of solution is good.

## LECG Report:

- Planned scope of analysis track testing is completed
- Prices and dispatches are consistent with economic objectives
- No fundamental issues with pricing were observed

## Extend the LECG engagement to address:

- Forbidden Region, Wheeling and Nomograms

# Market solution is predominately AC.

- 🌐 Alternating Current (AC) vs. Direct Current (DC) solution
  - AC solution better depicts the power flow and has more accurate pricing
  - DC solution simplifies the topology of the grid and therefore provides an approximation for pricing
- 🌐 Day-Ahead Market solves with AC solution
- 🌐 Real-Time Market solves with AC solution

## Results are published timely and participant interfaces are available.

- 🌐 Publish HASP, RTPD, RTD = 88% of the time
- 🌐 CAISO Market Results Interface (CMRI) available:
  - Graphical User Interface = 99.25%
  - Automated Programmatic Interface = 99.38%
- 🌐 Open Access Same-time Information System (OASIS)
  - Graphical User Interface = 100%
  - Automated Programmatic Interface = 99.75%
- 🌐 MRTU Portal, Scheduling and Logging Information of CAISO (SLIC), and Operational Metering & Reporting (OMAR) are similarly available
- 🌐 While applications are available, still have data issues

# Settlements is the last major hurdle to overcome.

- 🌐 Total of 124 Charge Codes
  - All charge codes have been unit tested
  - All charge codes are available for participant testing
- 🌐 CAISO Bid-to-Bill Validation of all components:
  - Valid Daily/Monthly Charge Codes = 29 of 49
  - Valid Special Charge Codes = 17 of 75
  - Total of 46 of 124 Bid-to-Bill validated
- 🌐 Additional 20 charge codes have been validated in integrated test environment
- 🌐 New monthly settlement should produce at least 6 more validated charge codes
- 🌐 Scenario testing still required for validation of ~ 55 codes

# Settlement statements and invoices are being published.

- 🌐 Daily Statements have published every day of market simulation
- 🌐 Monthly settlement statements
  - March, April & May completed
  - June on track for July 25<sup>th</sup>
- 🌐 Invoices
  - April published
  - May invoice targeted for end of this week
- 🌐 Billing and Processing Interface (BAPI) availability
  - Graphical User Interface = 100%
  - Automated Programmatic Interface = 100%

# Internal Key Readiness Accomplishments

- As of June 1st, each Business Unit has completed the Plan, Analysis, Design, Build, and Implement Phase Assessments.
- As a result of the May 1<sup>st</sup> effort, both Core and Non-Core personnel and processes are on track for a Fall Go-Live.
- Essential knowledge transfer and training activities completed.
- Tier 1 Business Processes were tested end-to-end in April.
- Grid Operators are in the process of receiving final hands-on refresher training.
- Business Unit scenario execution is ongoing.
- Business process and transition document sign off is in the final stages

## Key accomplishments and activities for External Readiness are on-going.

- Core MRTU Level 100, 200, and 300 courses delivered to over 1000 representatives of Market Participants
  - Computer-Based Training and DVDs made available
- “Refresher courses” are ongoing
  - 4 classes to date given to over 250 people
- “Go-Live” training plan developed and targeted at Market Participant operators
  - “train the trainer” opportunity for Market Participant
  - Scheduled for July – September
  - Other locations – Houston, Baltimore, Portland, etc
- MRTU assessments and touch points will continue through the summer

# MRTU Readiness Criteria is on-track for a Fall Go Live.

- 🌐 MRTU Readiness Criteria established with participants
- 🌐 Criteria established in accordance with FERC Order
- 🌐 Total Number of MRTU Readiness Criteria: 33
- 🌐 Criteria status as of June 30<sup>th</sup>:
  - # of Completed Readiness Criteria: **7**
  - # of “On Track” Readiness Criteria: **24**
    - On Track means criteria is achievable but not completed
  - # of “Not On Track” Readiness Criteria: **2**
    - Both criteria waiting for Bid-to-Bill settlement validation and invoices



# There are 19 exit criteria in 5 categories to be completed prior to beginning Pre-Production.

## **Variance Count**

- No critical or very-high variances
- High variances will be resolved or mitigated

## **Market Simulation Participation**

- Applications are available and RA Units participating

## **Settlements**

- Publish Daily and Monthly Statements and Invoices
- Validate Charge Codes

## **Markets Run / Solve**

- Specific time criteria for successfully solving markets
- Pass 40 market participant scenarios

## **CAISO IT Requirements – target for July**

- Exercise backup and restoration plans
- Archive and retrieve data

## Market Participant issue status need for Update 2 Exit Criteria is as follows:

Current Simulation	Open	Market Test	Postponed	Closed
Critical	1	1	0	7
Very High	10	11	0	49
High	321	213	11	492

- CAISO receives ~ 16 issues per day
- Does not include issues prior to February 2008:
  - 29 open issues that are prior to Update 2 simulation
  - 93 market test issues that CAISO has fixed but participants have not affirmatively validated
  - 19 postponed issues are enhancements for after Go Live
  - 706 closed issues have been resolved

# Market Participation Statistics

- 🌐 Average # of SCs participating = 52 of 91
- 🌐 Average % Generating Capacity participating = 83%
- 🌐 Average % Load participating = 73%
- 🌐 Average % Resource Adequacy Units participating = 82.2%
- 🌐 Inter-Scheduling Coordinator Trade volume varies from 200-500 trades / day

## Participant scenarios still need to be completed.

Total of 40 scenarios consisting of:

- 🌐 Impact to supply, demand and Existing Contracts when there is a transmission derate
- 🌐 Insufficient energy, RUC or Ancillary Service bids or self-schedules and relaxation of limits
- 🌐 Insufficient bids to relieve congestion and the impact on LMP and ASMP
- 🌐 Evaluate pump impacts, pseudo ties, tie scheduling priority, over generation conditions, and load flow
- 🌐 Test Exceptional Dispatch, Extremely Long Start, Daylight Savings transition and nomogram implementation

# If Update 2 Exit Criteria were assessed today, where would we be?

## Variance Count – on track

- 1 Critical
- 10 Very-high variances that must be resolved
- 321 High variances open that must be resolved or mitigated

## Market Simulation Participation - *completed*

## Settlements - on track

- All Charge Codes unit tested and validated with stub data
- Not All Charge Codes are Bid-to-Bill validated
- Publish Daily and Monthly Statements
- Publish Invoices

## Markets Run / Solve – on track

- Specific time criteria for successfully solving markets
  - Day-Ahead – 6 consecutive days met timeline need 7
  - Hour-Ahead – still need consistent consecutive day publishing
  - Quality of Solution – AC solution 100% for Real-Time
- Initially passed 4 Market Participant Scenarios, 40 required

## CAISO IT Requirements – target for July

## Cutover/Reversion plan is progressing.

- 🌐 Draft of detailed version of plan schedule to post on 7/21
- 🌐 Continuing review with participants
- 🌐 Table top exercise this summer in preparation for the Fall
  - Walk-through activities leading to Go Live date
  - Simulate various steps including bids, trades and schedule timing; operator communication; and operating requirements over the midnight hour
- 🌐 Reversion decision called when
  - Issues prevent reliable and accurate dispatching and settlement of markets; and
  - No viable work-around can be implemented; and
  - Underlying condition can not be timely resolved