

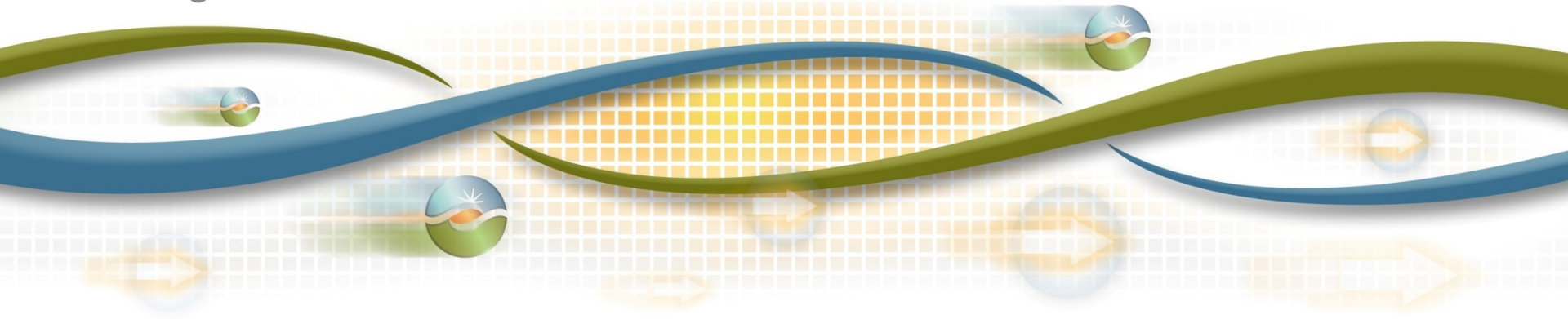


California ISO
Shaping a Renewed Future

Briefing on EIM Implementation

- Mark Rothleder, VP, Market Quality and Renewable Integration
- John Anders, Lead Counsel, Assistant General Counsel Tariff and Compliance

EIM Transitional Committee meeting
General Session
August 26, 2014



EIM implementation is on schedule

- ISO and PAC coordination and training
- Market simulation of fall 2014 release
- Operational readiness
- Status of regulatory filings
- Quantifying the EIM benefits

ISO and PacifiCorp coordination

- Secure access to system interfaces and displays
- Achieved end to end integration of ISO and PAC systems
- Validating results of market simulation scenarios
- Functional testing and defect repair on track for production deployment
- Cutover plan under review
- Defining corrective actions for system disruptions

Update on

MARKET SIMULATION AND OPERATIONAL READINESS

What is market simulation?

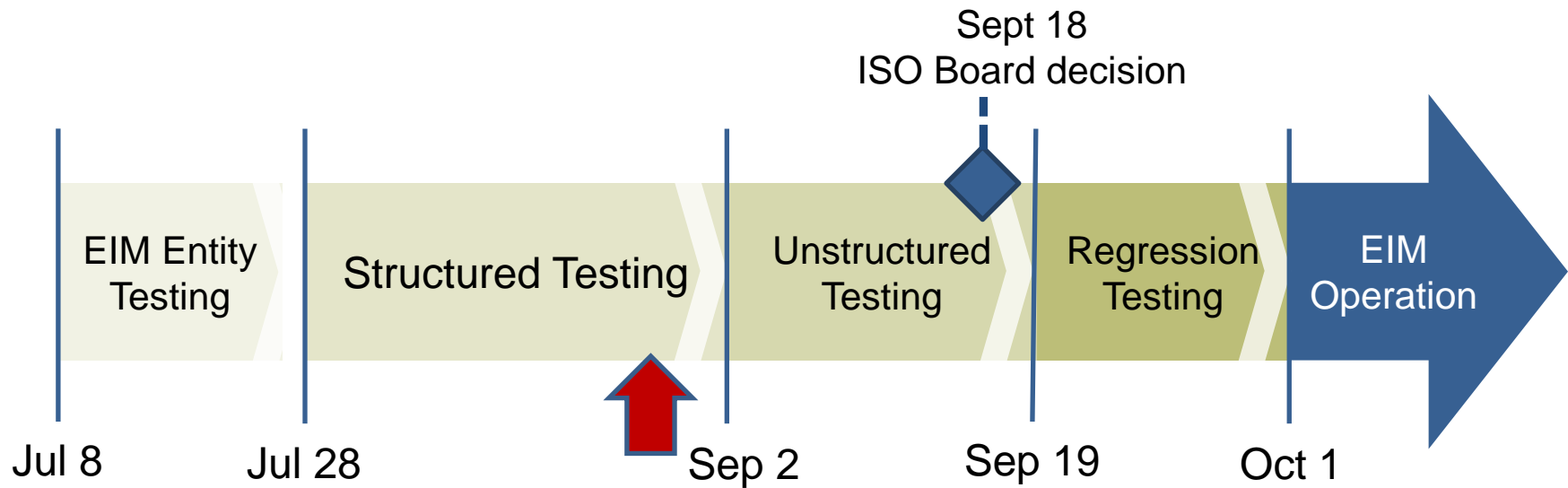
- Provides participants an opportunity to test their systems and procedures in advance of the market implementation
- Facilitates an effective market operations dress rehearsal and helps expedite a smooth production launch
- Enables market participants to observe the behavior of ISO systems and markets in a simulated environment
- Establishes confidence in the operational processes and systems associated with the new market functionality
- Provides a hands-on environment to allow participants to interact with new and unique features and functionalities

Market simulation process for market participants

- Conducted in MAP Stage environment which has all production systems and interfaces in a test mode
- Participants able to observe market results
- Participants input data into the ISO bid-to-bill
- Results provided to the Board at their September meeting
- Report will include ISO's ability to accurately forecast loop flows through modeling of base schedules
- Regular calls to discuss market simulation performance

Fall 2014 Release includes more than EIM

- Full Network Model Expansion
 - July 28 – Sept 12 (Structured and Unstructured)
- Outage Management System Replacement
 - July 28 – Sept 30 (Unstructured)
- Other market refinements



Initial testing indicates successful communication between balancing authorities

- Regular participant conference calls
- Simulation will also test benefit metric models
- ISO/PacifiCorp systems and data are aligned and talking
- Market participants have actively engaged in scenarios
- Market Simulation plan posted on ISO website:
 - <http://www.caiso.com/Documents/Fall2014ReleaseMarketSimulationPlan.pdf>

Operations readiness is progressing

Testing	Approx. 35 operational scenarios
EIM Entity readiness	ISO operations personnel on-site at PacifiCorp to assist
Vendors	Completing application displays for PacifiCorp
ISO control center	New EIM desk installed and operational by Sept 1
Procedures	5 new operating procedures completed
Displays	Approx. 40 new or modified displays under development
Visual maps	Improving ISO price maps and other tools to include EIM data
Training	Comprehensive training for EIM Entity, stakeholders and ISO/PAC real-time operations staff

Preparations are ongoing for internal go-live activities

- The ISO is organizing a 7x24 go-live support plan and staffing to insure communication coordination and prompt attention to any issue during the Fall Release including EIM
- PacifiCorp is organizing a similar support structure to focus on EIM implementation
- PacifiCorp and the ISO are conducting joint tabletop drills to test the structure and train staff relating to EIM implementation

There are challenges to a successful launch

- ISO is identifying and managing risks, also identifying mitigation measures
- All issues will be considered before the go/no-go decision.
- Importantly, reliability will remain top priority
- If necessary, there may be some mitigation measures employed, like limiting pool of resources, freeze transfers, OMS, etc.

Update on

REGULATORY FILINGS

Compliance with FERC's June 19 Orders underway.

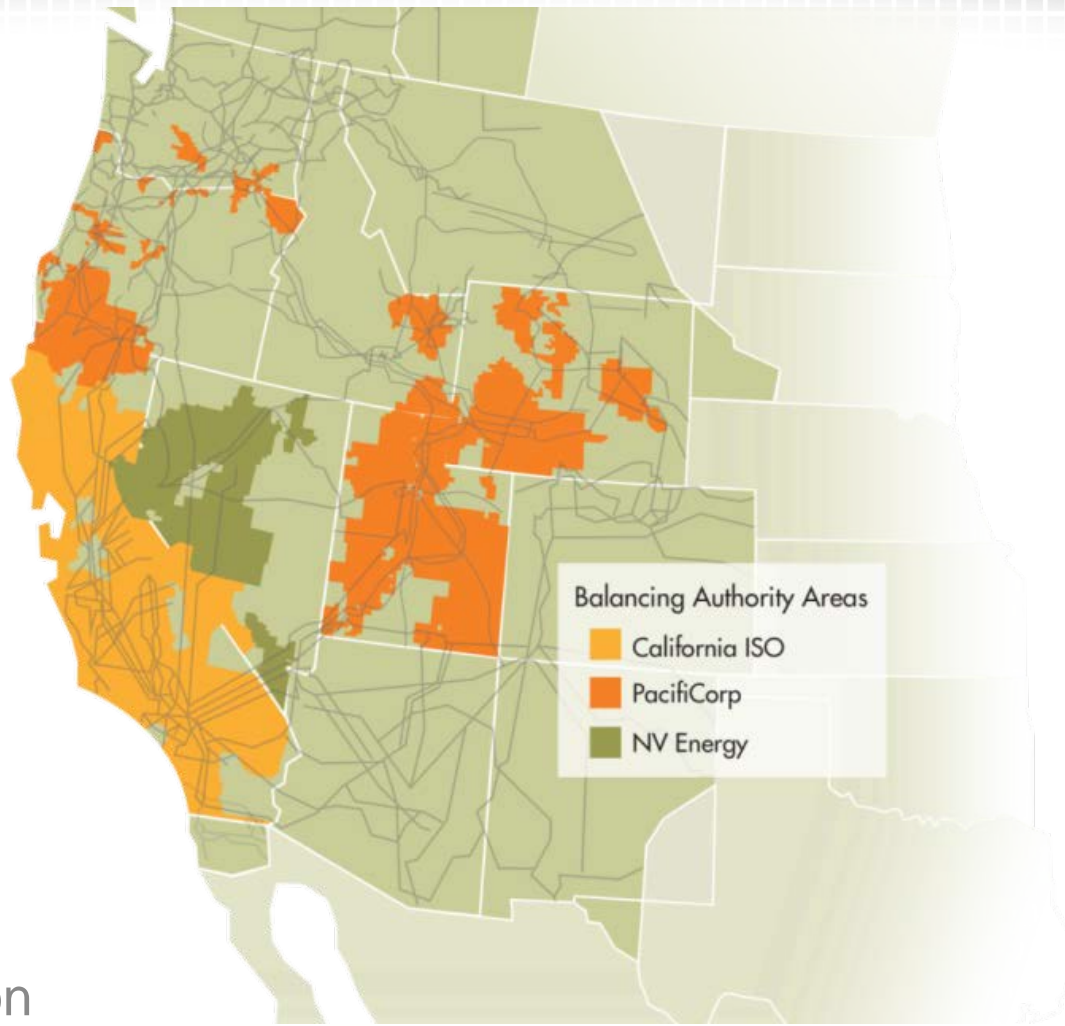
- Compliance filing submitted on July 21
 - Clarification of matters presented to Committee at its July 1 meeting
 - Answer to comments filed August 18
- Request for rehearing filed with FERC July 21
 - Title to energy associated with EIM transfers
 - No impact on EIM implementation
- PacifiCorp compliance filing submitted on July 18
 - EIM transfers and transmission service
 - Answer to comments filed on August 15

Go-live enhancements approved by the Board were filed with FERC.

- Go-live enhancements submitted to FERC July 23
 - Inclusion of PAC's EIM transfer constraints in our market power mitigation procedures
 - PG&E and SCE filed comments in support
 - Account for transitions costs of multi-stage resources that have fuel sources other than natural gas
 - Clarify general settlement provisions apply to EIM market participants
- FERC order expected prior to go-live

PacifiCorp and NV Energy agreements in support of 2014 and 2015 implementations are on track.

- PacifiCorp First Amended EIM Entity Agreement submitted to FERC August 6
 - Enables submission of a 5-minute dynamic and 15-minute static e-tag to account for EIM Transfers
 - Comments are due August 27
- NV Energy Implementation Agreement
 - FERC and PUCN approval required to be effective
 - FERC order issued June 13
 - PUCN hearing on July 28
 - PUCN draft order issued August 25
 - PUCN decision expected at August 27 meeting



Proposal on

TRACKING OF EIM BENEFITS

ISO will track EIM regional benefits and provide quarterly reports to stakeholders

- Compare dispatch cost to a case without EIM
- Quantify imbalance energy dispatch benefits that enable:
 - real-time economic transfers
 - new balancing resources
 - efficient and secure dispatch
- Quantify flexibility benefits that enable:
 - diversity to reducing flexibility reserves
 - sharing and compensation of flexibility reserves

Quantifying the benefits

- EIM benefit is the difference between EIM dispatch cost and counterfactual without EIM dispatch
 - Cost shifted from the supply region to the demand region
 - Calculated using 15-minute market solution due to practical computational considerations
- Benefits calculated by balancing authority
- In the future, we will explore tracking other metrics including associated with:
 - Over-generation
 - Negative prices
 - Renewable production

Quantifying the benefits – areas for cost savings

- Base schedules may be re-dispatched more efficiently meet intra-hour imbalances and transmission constraints
- Access to economic transfers between EIM regions
- New resources opportunity to displace more expensive generation
- Real-time load and supply variability will be met economically
- EIM may result in less flexible ramping needs and allow flexible ramping between regions, reducing overall flexibility procurement costs

Questions