OVERVIEW AND LEARNING OBJECTIVES

The purpose for this workshop is to discuss the potential benefits for participating in the new CAISO Energy-Imbalance Market (EIM), review the bid-to-bill workflow for EIM market participants, and derive lessons learned for operating genco assets in the EIM Market. The workshop will help you connect the dots between front-office bidding strategies and settlement results, and will provide case studies to illustrate how you can lower your costs for serving loads in the CAISO EIM Market. The seminar covers the following “hot” issues:

- What are the main objectives for the new CAISO EIM Market?
- What are the potential costs and benefits for the EIM Market?
- What are the lessons learned for operating genco assets in the EIM Market?
- Can the EIM market be avoided while increasing solar or wind resources?
- Can the EIM market cause financial “pains” for selected market participants?
- If your company decides to stay out of the EIM market, but those around you join, how could it impact your operations?
- What are the lessons learned from other EIM market participants?
- How does the SCED engine work?
- How do you derive your base schedule?
- How do you create unit offers for combined-cycle plants, wind farms, solar plants, and cascaded hydro units?
- Can the EIM market work effectively for market participants that operate large cascaded hydro plants?
- What are the pros and cons for modeling your EIM resources as multi-state generators?
- How do you model Ancillary-Service Requirements (RegUp, RegDown, Spin, Non-Spin Reserve) in the EIM Market?
- How do you model GHG Costs for your EIM resources?
- What are the penalties for over/under scheduling?
- What are the key settlement charges for your participating assets (Resources, Loads, Imports/Exports) in the EIM Market?
- Do you receive any settlement charges for your non-participating resources?
- What data are needed to validate the CAISO EIM settlement statements and invoices?
- Why perform shadow settlement? Do you need to have your own shadow settlement software to check the ISO invoices?
- What are the main data sources to support shadow settlement?
- What are the main causes for settlement disputes? What is the best way for managing settlement disputes?
- How can you use settlement results to compute profit & loss metrics and provide feedback to traders on bidding strategies?
- What are the potential impacts of Market Power Mitigation on settlement results?
- Should you build a data warehouse to store settlement data?
- What IT infrastructure should you build to automate the bid-to-bill process?
- How can you best prepare your team (Front office, Back office, IT, Plant Personnel) for the new EIM market?

WHO SHOULD ATTEND

- Front-Office personnel who would like to understand the RT bidding workflow for their resources in the EIM market
- Back-office employees who need to gain a good understanding of the EIM settlement rules
- Power-plant managers who would like to understand the impact of EIM on their plant profitability
- IT personnel who need to build the IT infrastructure to support the bid-to-bill workflow
- Genco executives who need a good understanding of the impacts of the new EIM Market on their genco profits and losses
- Employees of ISO/RTOs, attorneys, and regulators who need to understand EIM market rules and mitigation guidelines
AGENDA

Wednesday, August 24, 2016

7:30 – 8:00 a.m.  Registration and Continental Breakfast
8:00 a.m. – 5:00 p.m.  Workshop Timing
12:00 – 1:00 p.m.  Group Luncheon

Lessons Learned for Operating Genco Assets in CAISO EIM Market
- Objectives of CAISO Energy Imbalance Market
- Design Principles Behind CAISO EIM Market
- Key Market Players
- Understanding Full-Network Model and Commercial Model
- Market Terminology
- Key Responsibilities for EIM Participating Resources and EIM Entities
- Reviewing RT Bidding Workflow for EIM Market Participants
- How does Security-Constrained Economic Dispatch (SCED) Work?
- Bid-to-Bill Timeline & Challenges
- Reviewing First 12 Months of EIM Dispatch and Prices for PacifiCorp
- Lessons Learned from First 18 Months of EIM Market Operations
- Bid-to-Bill Timeline & Challenges
- Potential Impacts of EIM Market on Market Participants
- Frequently-Asked Questions about EIM Market

Understanding Bid-to-Bill Workflow for EIM Market Participants
- Reviewing Daily & Hourly Bidding Workflow in EIM
- Detailed Walk-Through of an Hour on the EIM Clock (Bids, Awards, Dispatches, Imbalance Management, Updating Forecasts, Updating Outages)
- What-If Scenarios (What if a Plant Outage Occurs After T-40, What if Wind Forecast Changes After T-55, What if a Transmission Schedule Changes After the Start of the Hour, Etc.)
- Need to Forecast Hourly Loads
- Run Unit Commitment to Derive Hourly Balanced Resource Plan and Capacity Plan
- How do you model Ancillary-Service Requirements in EIM Market?
- Modeling GHG Costs in Bidding Process
- Submitting Resource and Capacity Plans to ISO
- Use Bid Formulation to Automatically Create Unit Offers
- Key Factors Influencing Unit Costs
- Modeling Combined-Cycle and Other Resources as Multi-State Generators in EIM
- Operating Wind Farms in EIM
- Use ISO Communications to Automate Data Exchange with ISO
- Deadline to Submit Meter Data
- Timeline for Settlement Statements & Invoices
- Lessons Learned from Operating Participating and Non-Participating Resources in EIM Market

This was one of the best presentations I’ve attended on EIM Markets. The PCI instructors were able to take complex subject matters and simplify the material so that the average person can understand it and gain a desire to learn more about the subject.”
– EIM Market Participant who attended seminar in Anaheim

“Seminar was extremely informative and it was a lot of fun as well.”
– EIM Market Participant who attended workshop in Portland
AGENDA

Wednesday, August 24, 2016 (Continued)

Validating EIM Settlement Statements and Invoices
- Settlement Workflow for CAISO EIM Market
- Understanding Key Charge Codes for CAISO EIM Market
- Computing Energy Imbalances for Resources, Imports, Exports, and Loads
- Validating GHG Payments for EIM Resources
- Validating Bid-Cost Recovery (BCR) Payments
- Computing Over/Under Scheduling Penalties
- Understanding EIM Admin Charges
- Downloading Settlement Statements and Invoices
- Why Perform Shadow Settlement?
- Key Functions of Shadow Settlement Software
- What lessons Can You Learn from Settlement Disputes?
- Managing Settlement Disputes

Using Settlement & P&L Metrics to Provide Feedback to Traders
- Using Pre-Settlement and Production-Costing Results to Compute RT Profits & Losses (P&L) for Your EIM Genco Portfolio
- Key Factors Influencing Profits & Losses
- Using P&L Metrics to Provide Feedback to Traders on Effectiveness of EIM Bidding Strategies
- Using P&L Metrics to Provide Feedback to Plant Managers on Plant Performance
- Using P&L Metrics to Build Key Performance Indices
- Settlement Forensics – Where Front and Back Offices Meet
- Benefits for Using Business-Intelligence Tools to Analyze Settlement Results and Validate Market Operations

Thursday, August 25, 2016

7:30 – 8:00 a.m. Continental Breakfast
8:00 a.m. – 4:00 p.m. Workshop Timing
12:00 – 1:00 p.m. Group Luncheon

Modeling Transmission Limits in EIM Market
- Overview on CAISO Full Network Model
- Transmission Limits and Rates used in EIM Market
- Modeling Transmission Limits in SCED engine
- Examples Illustrating how CAISO Checks to Make Sure that Base Schedule is Balanced, Meets Flexible-Ramp Constraints, and Free of Congestion
- Submitting Dynamic Etags to Reserve Transmission for EIM Transfers
- Interfacing with CAISO IT Platform to Support EIM Bid-To-Bill Workflow
Thursday, August 25, 2016

**Uses of Locational Marginal Prices in Bidding & Settlement**
- Using Full Network Model to Compute Nodal Locational Marginal Prices
- How are LMPs Computed?
- Understanding 4 Components of LMPs: Energy, Loss, Congestion, and GHG
- Understanding Impacts of Flowgates on Congestion
- Can LMPs be Negative?
- Real-Time Settlement Calculations

**Roles for EIM Entities**
- Understanding Role of EIM Entity in CAISO EIM Market
- BA Responsibilities Before and After EIM Market
- Reviewing Day-Ahead & Hourly Bidding Workflow for EIM Entity
- BA Requirement to submit Balanced Schedules
- BA Penalties for Over and Under Scheduling
- Settlement Workflow for EIM Entity in CAISO EIM Market

**Understanding Market Mitigation**
- CAISO Objectives for Market Monitoring
- Rules for Local Market Power Mitigation
- Market Mitigation Scenarios

**Preparing for New CAISO EIM Market**
- Preparing for CAISO EIM Market
- What Software Tools and IT Infrastructure do you Need to Automate your Bid-to-Bill Workflow in the CAISO EIM Market?
- Training Key Personnel (Traders, Power-Plant Managers, Fuel Procurement, Risk Managers, Load Forecasters, etc…) for Market-Based Operations
- Reviewing Lessons Learned from other EIM Market Participants
- What are the Key Risks in the New EIM Market?

Course Review & Round-Table Discussion
LESSONS LEARNED FOR OPTIMIZING GENCO ASSETS IN CAISO EIM MARKET
August 24-25, 2016
Anaheim, CA

INSTRUCTORS

Khai Le / Sr. Vice President / PCI

Over the past 40 years, Khai Le has conducted over 700 seminars on market-based operations, bidding strategies, portfolio optimization, and shadow settlement for utilities and ISOs worldwide. He is currently working with market participants in MISO, SPP, PJM, ISO-NE, CAISO, and ERCOT to deploy the PCI Generation Supply Management System (PCI GenManager, PCI GenTrader and PCI GenPortal) to automate their bid-to-bill workflow. Khai authored over 100 technical papers on unit commitment, hydro-thermal coordination, emission dispatch, optimization of ancillary services, post analysis, and short-term planning. Five of his papers received prize awards. Khai received his BS from Harvey Mudd College and his MS from Carnegie Mellon University. He is a Fellow of the IEEE and a Registered Professional Engineer in Pennsylvania.

Tony Delacluyse / Director / PCI

Tony Delacluyse is a well-recognized authority on EIM markets. He has over 29 years of experience that includes power plant operations, origination, pricing, deregulated retail, settlements, RTO operations. After joining PCI in 2005, he managed the PCI team to develop back-office software for MISO, SPP, ERCOT, CAISO and PJM markets. Tony participates in RTO market meetings, monitors the industry and FERC for market impacts and works with markets participants on planning, software, and strategy. He received both his BA and MBA from St Ambrose University.

Justin Shearer / Manager / PCI

Justin Shearer actively manages all phases of CAISO product development including analysis, design, development, testing, support and training. Justin received both his BA and MBA from the University of Oklahoma.

Ken Lukowski / Project Manager / PCI

Ken manages the deployment of the PCI GSMS suite for market participants in MISO, SPP, and PJM. Ken has over 9 years of settlements experience. He chaired the MISO Market Settlements Working group. Ken received his BS in Accountancy & Finance from Southern Illinois University and his MBA from Lindenwood University.

Li Zhou / Guest Speaker / California ISO

Li Zhou is a well-recognized authority on electric market implementation. He has 25 years of experience in power plant operations, energy scheduling, RTO market operation and pricing, and RTO market settlements. After joining CAISO in 2008, he managed the CAISO team to work with vendors to develop the day-ahead, real-time market applications, and post market settlement applications. Li also serves an expert in advising market participants on their end-to-end market solutions. Li Zhou received a MS in Computer Science from State University of New York.
INSTRUCTIONAL METHODS

PowerPoint presentations and classroom exercises.

REQUIREMENTS FOR SUCCESSFUL COMPLETION OF PROGRAM

Participants must sign in/out each day, be in attendance for the entirety of the course to be eligible for continuing education credit.

CREDITS

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EUCI is authorized by IACET to offer 1.6 CEUs for this program.

EVENT LOCATION

A room block has been reserved at the Hyatt Regency Orange County, 11999 Harbor Blvd, Garden Grove, CA 92840, for the nights of August 23-24, 2016. Room rates are $179, plus applicable tax. Call 1-714-750-1234 for reservations and mention the EUCI event to get the group rate. The cutoff date to receive the group rate is July 23, 2016, but as there are a limited number of rooms available at this rate, the room block may close sooner. Please make your reservations early.

REGISTER 3 SEND THE 4TH FREE

Any organization wishing to send multiple attendees to this course may send 1 FREE for every 3 delegates registered. Please note that all registrations must be made at the same time to qualify.

PROCEEDINGS

The proceedings of the course will be published, and one copy will be distributed to each registrant at the course.
REGISTRATION INFORMATION

Mail Directly To:
Electric Utility Consultants, Inc. (EUCI)
4601 DTC Blvd., Suite 800
Denver, CO 80237
OR, scan and email to: conferences@euci.com

WWW.EUCI.COM
P: 303-770-8800
F: 303-741-0849

PLEASE REGISTER THE FOLLOWING

| LESSONS LEARNED FOR OPTIMIZING GENCO ASSETS IN CAISO EIM MARKET |
| AUGUST 24-25, 2016: US $1595 |
| EARLY BIRD ON OR BEFORE AUGUST 5, 2016: US $1395 |

How did you hear about this event? (direct e-mail, colleague, speaker(s), etc.)

Print Name | Job Title
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Company

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OR Enclosed is a check for $__________ to cover _________ registrations.

Substitutions & Cancellations

Your registration may be transferred to a member of your organization up to 24 hours in advance of the event. Cancellations must be received on or before July 22, 2016 in order to be refunded and will be subject to a US $195.00 processing fee per registrant. No refunds will be made after this date. Cancellations received after this date will create a credit of the tuition (less processing fee) good toward any other EUCI event. This credit will be good for six months from the cancellation date. In the event of non-attendance, all registration fees will be forfeited. In case of conference cancellation, EUCI’s liability is limited to refund of the event registration fee only. For more information regarding administrative policies, such as complaints and refunds, please contact our offices at 303-770-8800. EUCI reserves the right to alter this program without prior notice.