INTRODUCTION TO RISK MANAGEMENT FOR WHOLESALE ELECTRICITY MARKETS

December 10-11, 2018
Hyatt Regency Orange County
Anaheim, CA

“EUCI training is a great place to bring your managers, auditors, business process approvers & even board members so they have a basic knowledge to be able to make an educated decision or approval on their employees daily operations objectives”

Energy Market Analyst,
City Utilities of Springfield

EUCI is authorized by IACET to offer 1.0 CEUs for the course
OVERVIEW

Electricity markets differ from other commodity markets because electricity in the AC (alternating current) form cannot be stored and must be produced and used instantaneously. Price volatility in wholesale electricity markets tend to remain high due to interaction of supply and demand of electricity, weather patterns as well as correlation trends with natural gas-fired peakers, which tend to set real-time spot market prices under peak load conditions. Also, the fast-changing landscape in the arena of fuel-mix due to ever increasing penetration of renewables, such as wind and solar, in the wholesale electricity markets is putting a lot of pressure on conventional based-load fossil-fired and nuclear plants. As a result, trading and hedging becomes more important as part of risk management. As such, this market structure is much more complex than traditional trading markets, requiring good background knowledge of uniqueness of electricity, how RTOs/ISOs offer energy markets platform for real-time and day-ahead markets, elements of trading and tools for risk management for beginners. This course will provide comprehensive set of introductory information about basics of power systems, RTOs/ISOs, and electricity trading and hedging for professionals working at power, financial and energy companies.

LEARNING OUTCOMES

- Identify regional transmission organizations (RTOs) / Independent transmission operators (ISOs)
- Review types of markets offered by RTOs/ISOs
- Discuss regulatory oversight of RTOs/ISOs and anti-manipulation authority of FERC
- Review the basics of electric power system, types of electricity and their characteristics, terminology and measurement units
- Discuss types of resources and their role in energy markets
- Identify key players in energy markets
- Discuss locational marginal pricing (LMP) and its characteristics
- Review transmission congestion and hedging
- Discuss real time vs. forward markets
- Review the basics of power marketing, trading, and hedging
- Review common financial instruments
- Review an introduction to developing commodity price risk hedging strategies
- Discuss the fundamentals of risk oversight
- Identify typical energy market participants and their risk profiles, implications on risk oversight
- Review the lifecycle of energy transactions from inception through accounting and settlement
- Discuss the basics of energy commodity regulatory requirements

WHO SHOULD ATTEND

This course will provide comprehensive set of introductory information about basics of power systems, RTOs/ISOs, and electricity trading and hedging for professionals working at power companies, financial and energy companies including:

- Energy traders new to their jobs or new to nodal markets
- Power marketers new to their jobs of new to nodal markets
- Risk managers
- Accounting professionals
- Utility administrative and support staff working in energy trading or power marketing
- Policy and communication professionals
- Energy traders new to their job or new to nodal markets
- Generation/power marketers new to nodal markets
- ISO/RTO administrative and support staff
AGENDA

MONDAY DECEMBER 10, 2018

12:30 – 1:00 pm  Registration

1.00 – 1:15 pm  Introduction

1:15 – 2:15 pm  Regional Transmission Organizations (RTOs) and Independent System Operators (ISOs)
• RTOs/ISOs in U.S. and Canada
• RTO functions and characteristics
• RTO drivers
• RTO stakeholders

2:15 – 2:45 pm  Regulatory Oversight
• Role of FERC, State regulatory agencies, and market monitor
• FERC’s anti-market manipulation authority

2:45 – 3:00 pm  Afternoon Break

3:00 – 4:00 pm  Overview of Power Systems
• Fundamentals of electricity, terms/definitions, and units
• Characteristics of electricity as it applies to energy markets
• Overview of source to socket power system components - Generation, transmission, distribution, and loads
• Types of generation resource
• Demand response and energy efficiency participation in energy markets
• High level explanation of power system losses as it applies to energy markets

4:00 – 5:00 pm  Wholesale Energy Markets
• Wholesale electricity price volatility
• Types of energy markets
  o Physical vs. financial
  o Forward vs. real time
• Locational marginal prices as market price
• Components of LMP - cost of energy, losses and transmission congestion and examples
• Nodal, Hub, and Zonal LMPs in RTOs
• Cost of transmission congestion, example
• FTRs for transmission congestion hedging, example
• FTR market offered by RTOs
### AGENDA

**TUESDAY, DECEMBER 11, 2018**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>8:00 – 8:30 am</td>
<td>Continental Breakfast</td>
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<tr>
<td>8:30 – 8:45 am</td>
<td>Review of Previous Day Topics; Opportunities for Questions and Discussion on Previous Day’s Material</td>
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<td>8:45 – 10:30 am</td>
<td><strong>Front Office: Basics of Energy Trading and Hedging</strong></td>
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<td></td>
<td>• Overview of the energy transacting lifecycle, focus on front office roles and responsibilities</td>
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<td>• Introduction to physical vs. financial markets and transactions</td>
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<td>• Overview of energy market participants and risk profiles; implications on risk governance and oversight requirements</td>
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<td>o Price taker</td>
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<td>o Proprietary trader</td>
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<td>• Hedging vs. trading</td>
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<td>• Price volatility, counterparties and contracts</td>
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<td>• Real time vs. forward markets, forward price curves</td>
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<td>• Overview of common financial hedging instruments:</td>
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<td>o Futures contracts,</td>
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<td>o Spread trading (swaps)</td>
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<td>o Options (calls and puts)</td>
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<td>o Exchange, over-the-counter, and bilateral transactions</td>
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<td>• Logistics and scheduling</td>
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<td>• Overview of enabling technology</td>
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<td>10:30 – 10:45 am</td>
<td>Morning Break</td>
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<td>10:45 am – 12:00 pm</td>
<td><strong>Front Office: Building, Testing and Implementing a Commodity Hedge Strategy</strong></td>
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<td>• Hedging tactics vs. Hedging strategy</td>
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<td>• A roadmap to implementing an effective hedging strategy</td>
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<td>• Understanding and quantifying your risk profile and risk appetite</td>
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<td>• Defining hedge strategy objectives, linkage to performance objectives</td>
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<td>• Hedge strategy design and scenario analysis</td>
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<td>• Tactical planning</td>
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<td>• Implementing a hedge strategy</td>
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<td>• Ongoing monitoring and reporting</td>
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<td>12:00 – 1:00 pm</td>
<td>Group Luncheon</td>
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1:00 – 3:30 pm  Middle Office: Basics of Risk Oversight, Measurement and Monitoring
   • Revisit the energy commodity transacting lifecycle – focus on Middle Office roles and responsibilities
   • Fundamentals of energy commodity risk oversight
      o Governance,
      o Organization and segregation of duties
      o Policies and controls,
      o Risk reporting and monitoring
   • Market risk
   • Credit risk
   • Other common risk categories
      o Integrating with enterprise risk management
   • Risk limits
   • Overview of common energy commodity transacting risk measurements
      o Position
      o Volume and tenor
      o Advanced “at-Risk” metrics
      o Identifying appropriate risk metrics

3:30 – 3:45 pm  Afternoon Break

3:45 – 5:00 pm  Back Office: Settlement, Accounting and Reporting, Regulatory Compliance
   • Revisit the energy commodity transacting lifecycle – focus on back office roles and responsibilities
   • Counterparty management and enabling agreements
   • Accounting treatment alternatives
   • Understanding the difference between economic performance and accounting results
   • Energy market settlements and accounting
   • Financial reporting and disclosures
   • Overview of regulatory reporting requirements

5:00 – 5:30 pm  Wrap-up and Adjourn
COURSE INSTRUCTORS

Raj Rana, PE, MBA, CEM, PMP
Consultant

At present, Mr. Rana provides consulting services in the electric utility industry in the areas of NERC compliance, energy markets, power system planning and operation, resources integrations, and project management.

Previously, while serving as Director - RTO Policy and NERC Compliance at American Electrical Power, Mr. Rana was responsible for coordination of energy, transmission, market structure, finance, and governance related RTO policy issues among the AEP business units, development of corporate positions/policies, and advocacy of such positions at regulatory agencies as well as at stakeholder forums in PJM, SPP, and ERCOT RTOs. He was also responsible for the development and coordination of strategic direction of AEP’s power system reliability compliance program among all business units as well as coordination and facilitation of compliance plans, policies and procedures within the company to ensure timely and successful compliance of NERC and regional reliability standards.

Mr. Rana also worked in AEP’s System Planning department in various positions. His experience at AEP includes planning and operation of the bulk transmission network, generation interconnections, tariff and regulatory/legislative issues, system integration, asset management, mergers and acquisitions, as well as planning and engineering studies for international transmission and generation projects.

Mr. Rana holds a BSEE degree from M. S. University (India), an MSEE degree from West Virginia University, and an MBA degree from University of Dayton. Mr. Rana also completed the AEP Management Development Program at the Fisher Business College of the Ohio State University. He is a life-senior member of IEEE and holds Ohio State PE license. Mr. Rana is also a certified energy manager and a project management professional.

Stephen Engler
Managing Director, Deloitte Advisory

Steve is a Managing Director in Deloitte’s Energy & Resources practice with over 25 years of experience in the energy industry in various engineering, operations and consultative roles. With Deloitte, Mr. Engler works primarily with clients who are active in trading, procuring, and delivering energy commodities. Steve leads the Commodity Risk Analytics practice which specializes in performing both qualitative and quantitative assessments of clients’ commodity risk management and hedging programs. In this capacity, Steve provides risk advisory services focusing on risk governance and oversight, transacting processing, risk monitoring and supporting technology. He has worked with a number of clients to help them quantify their energy commodity risk exposure, evaluate risk appetite and risk management objectives, and develop strategies to mitigate commodity risk through the design, testing and implementation of hedging programs and supporting infrastructure.

Steve has worked with clients across the energy and resources industry, including oil and gas exploration companies, refineries, power and gas transmission and distribution companies, refined product wholesalers and retailers, and power generation utilities and independent power producers.
COURSE INSTRUCTORS

Timothy Metts
Senior Manager, Deloitte Advisory

Tim is a Senior Manager in the Deloitte & Touche LLP’s Commodity Risk Analytics practice specializing in risk assessment, risk advisory services, hedge program design, risk oversight and governance, credit risk management and compliance. He has more than 11 years of experience in the energy risk management industry. He advises numerous utility, IOUs and publics, oil and gas, energy companies, IPPs, electricity retailers and industrial clients in developing and implementing hedge programs aligned with the clients’ business objectives. He is experienced in profiling commodity exposure, quantifying risk pertaining to energy markets (cash flow-at-risk, gross margin-at-risk, cost-at-risk, revenue-at-risk, etc.), and developing structured hedging programs to contain exposure within defined tolerances. He has commodity risk management experience across natural gas, crude oil, refined products, electricity, liquids, specialty products, metals and agriculture commodities.

In support of Deloitte’s Market Risk services, Tim has led the development of a suite of risk simulation tools designed to support the delivery of Deloitte’s Commodity Risk Analytics service offering. This includes stochastic price simulation tools, hedge strategy simulation tools, and a cloud-based Commodity and Trading Risk Management system, called Decipher.
REQUIREMENTS FOR SUCCESSFUL COMPLETION OF PROGRAM

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

INSTRUCTIONAL METHODS

Case studies and PowerPoint presentations will be used in the instruction of this course.

IACET CREDITS

EUCI has been accredited as an Authorized Provider by the International Association for Continuing Education and Training (IACET). In obtaining this accreditation, EUCI has demonstrated that it complies with the ANSI/IACET Standard which is recognized internationally as a standard of good practice. As a result of their Authorized Provider status, EUCI is authorized to offer IACET CEUs for its programs that qualify under the ANSI/IACET Standard.

EUCI is authorized by IACET to offer 1.0 CEUs for the course.

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 December 9-10, 2018. Room rates are US $129 plus applicable tax. Call 1-714-750-1234 or click here for reservations and mention the EUCI event to get the group rate. The cutoff date to receive the group rate is November 19, 2018 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 conference may send 1 FREE for every 3 delegates registered. Please note that all registrations must be made at the same time to qualify.
Please select:

- **Introduction to Risk Management for Wholesale Electricity Markets Course**
  - December 10-11, 2018: US $1395
  - Early Bird on or before November 23, 2018: US $1195

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

Print Name

Job Title

Company

What name do you prefer on your name badge?

Address

City

State/Province

Zip/Postal Code

Country

Phone

Email

List any dietary or accessibility needs here

Credit Card Information

Name on Card

Billing Address

Account Number

Billing City

Exp. Date

Billing State

Security Code (last 3 digits on the back of Visa and MC or 4 digits on front of AmEx)

Billing Zip Code/Postal Code

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 November 9, 2018 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 course 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.