INTRODUCTION TO RISK MANAGEMENT FOR WHOLESALE ELECTRICITY MARKETS

July 15-16, 2019
EUCI Office Building
Conference Center
Denver CO

“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

“RISK”

EUCI is authorized by IACET to offer 1.0 CEUs for the course
EUCI is authorized by CPE to offer 12.5 credits 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 pickers, 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, 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 market platforms 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 companies, financial and energy companies.

LEARNING OUTCOMES

• Basics of electric power system, types of electricity and their characteristics, terminology and measurement units
• Regional transmission organizations (RTOs) / Independent transmission operators (ISOs)
• Types of markets offered by RTOs/ISOs
• Types of resources and their role in energy markets
• Key players in energy markets
• Locational marginal pricing (LMP) and its characteristics
• Transmission congestion and hedging
• Regulatory oversight of RTOs/ISOs and anti-manipulation authority of FERC
• Basics of power marketing, trading, and hedging
• Introduction to developing commodity price risk hedging strategies
• Fundamentals of risk oversight
• Overview of common financial instruments
• Real time vs. forward markets
• Typical energy market participants and their risk profiles, implications on risk oversight
• Lifecycle of energy transactions from inception through accounting and settlement
• Basics of energy commodity regulatory requirements

WHO SHOULD ATTEND

• Energy traders new to their jobs or new to nodal markets
• Power marketers new to their jobs or 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, JULY 15, 2019

8:30 – 9:00 am  Registration & Continental Breakfast

9.00 – 9:15 am  Introduction

9:15 – 10:15 am  Regional Transmission Organizations (RTOs) and Independent System Operators (ISOs)
• RTOs/ISOs in U.S. and Canada
• RTO functions and characteristics
• RTO drivers
• RTO stakeholders

10:15 – 10:45 am  Regulatory Oversight
• Role of FERC, State regulatory agencies, and market monitor
• FERC’s anti-market manipulation authority

10:45 – 11:00 am  Morning Break

11:00 – 11:30 am  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

11:30 – 12:30 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

12:30 – 1:30 pm  Group Luncheon

“Extremely useful and insightful!”

Director, National Grid
AGENDA

MONDAY, JULY 15, 2019 (CONTINUED)

1:45 – 2:30 pm  Front Office: Basics of Energy Trading and Hedging
• Overview of the energy transacting lifecycle, focus on front office roles and responsibilities
• Introduction to physical vs. financial markets and transactions
• Overview of energy market participants and risk profiles; implications on risk governance and oversight requirements
  o Price taker
  o Asset optimizer
  o Proprietary trader
• Hedging vs. trading
• Market participants
• Price volatility, counterparties and contracts
• Real time vs. forward markets, forward price curves
• Overview of common financial hedging instruments:
  o Futures contracts
  o Swaps contracts
  o Options (calls and puts)
  o Case study: executing different instruments under different market conditions
  o Exchange, over-the-counter, and bilateral transactions

2:30 – 3:00 pm  Networking Break

3:00 – 4:45 pm  Middle Office: Basics of Risk Oversight, Measurement and Monitoring
• Revisit the energy commodity transacting lifecycle
• 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
  o Price
  o Volatility
  o Correlation
• Credit risk
  o Current exposure
  o Collateral and collateral-at-risk
  o Liquidity planning
  o Margin: initial, maintenance, and variation
  o Case Study: potential future exposure
• Limits: position limits, transaction limits, risk limits
• Measuring and reporting risk exposures
  o Different risk simulation techniques (historical, parametric, Monte Carlo)
  o Advanced “at-risk” metrics
  o Pros and cons of different risk metrics
  o Case Study: applying different risk quantification techniques
  o Key inputs in determining the most appropriate risk metric for your organization

4:45 pm  End of Day One
AGENDA

TUESDAY, JULY 16, 2019

8:00 – 8:30 am  Continental Breakfast

8:30 – 8:45 am  Review of Previous Day Topics; Opportunities for Questions and Discussion on Previous Day’s Material

8:45 – 10:45 am  Hedge Program Design
• Hedging tactics vs. hedging strategy
• A roadmap to implementing an effective hedging strategy
• Understanding and quantifying your risk profile and risk appetite
• Case Study: understanding the revenue-at-risk of different wind projects
• Defining hedge strategy objectives, linkage to performance objectives
• Building hedge strategy alternatives – different types of hedge decisions
  o Programmatic (dollar cost averaging) hedges
  o Defensive (risk limits) hedges
  o Contingent hedges (managing foregone opportunities)
• Hedge strategy design and scenario analysis
• Case study: an iterative approach to evaluating the effectiveness of a hedge strategy
• Implementing a hedge strategy
  o Tactical planning
  o Ongoing monitoring and reporting
  o Case study: the execution of a hedge strategy under different market conditions

10:45 – 11:00 am  Morning Break

11:00 am – 12:15 pm  Overview of Enabling Technology
• Elements of a risk management program
• Pitfalls many organizations face
• Information and communication
• Benefits of seeing around the corner
• Key takeaways
• Demonstration: how to bring it all together

12:15 – 1:30 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.

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

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Upon successful completion of this event, program participants interested in receiving CPE credits will receive a certificate of completion. EUCI is authorized by CPE to offer 12.5 credits.

There is no prerequisite for this course. Program Level 1: Beginner and Intermediate, Delivery Method: Group-Live, Advanced Preparation: None
INSTRUCTIONAL METHODS

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

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Participants must sign in/out each day and be in attendance for a minimum of four hours to be eligible for any continuing education credit.

EVENT LOCATION

EUCI Conference Center
4601 DTC Blvd., B-100
Denver, CO 80237

NEARBY HOTELS

Preferred Hotel
Hyatt Place Denver Tech Center
8300 E. Crescent Parkway, Greenwood Village, CO 80111 (0.9 miles away)
Call Central Reservations at 1-888-492-8847 and ask for the corporate rate of $168 under the Group Code: EUCI.
or visit https://denvertechcenter.place.hyatt.com/en/hotel/home.html?corp_id=102338 for the corporate rate using the Group Code: EUCI. (Hot Breakfast included and Free Shuttle to and from EUCI)

Other Nearby Hotels
Hyatt Regency Denver Tech Center
7800 E. Tufts Ave
Denver, CO 80237
Phone: 303-779-1234
0.3 miles away

Hilton Garden Inn Denver Tech Center
7675 E. Union Ave
Denver, CO 80237
Phone: 303-770-4200
0.6 miles away

Denver Marriott Tech Center
4900 S. Syracuse St
Denver, CO 80237
Phone: 303-779-1100
0.7 miles away

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.
**REGISTRATION INFORMATION**

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4601 DTC Blvd., Ste. 800, Denver, CO 80237
OR, scan and email to: conferences@euci.com

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See nearby hotels on page 8

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JULY 15-16, 2019: US $1395
Early bird on or before June 28, 2019: US $1195

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

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What name do you prefer on your name badge?

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List any dietary or accessibility needs here

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OR Enclosed is a check for $ ____________________________ to cover ____________________________ registrations.

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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 June 14, 2019 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.

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