SCHEDULE

All *School* sessions are held on the fourth floor of the Illini Center 200 S. Wacker Drive Chicago, IL

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8:00 – 8:30 a.m.	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast
8:30 – 9:30 a.m.	**Welcome and Introductions**	**Transmission Simulation**	**Smart Grid Developments**	**Market Design**	**Integration of Renewable Resources into the Grid**
9:30 – 9:45 a.m.	Break	Break	Break	Break	Break
9:45 – 10:45 a.m.	**The *New* Electricity Business**	**Transmission Simulation**	**Transmission Only Companies**	**Market Design**	**Moving Solar Forward**
10:45 – 11:00 a.m.	Break	Break	Break	Break	Break
11:00 a.m. – Noon	**The *New* Electricity Business**	**Policy and Regulatory Issues**	**Everything About Transmission Business Panel**	**Financial Tools for Congestion Management**	**Competitive Solutions for Transmission**
Noon – 2:00 p.m.	Lunch & Presentation	Lunch & Presentation	Lunch & Presentation	Lunch & Presentation	*School* Adjournment
2:00 – 3:00 p.m.	**Transmission System Basics**	**Policy and Regulatory Issues**	**PJM Wholesale Markets**	**Business Models for Transmission Investment**	
3:00 – 3:15 p.m.	Break	Break	Break	Break	
3:15 – 4:15 p.m.	**Transmission System Operations**	**Transmission Planning and Reliability**	**Electricity Markets and Risk Management**	**Status of US Electricity Markets**	
4:15 – 4:45 p.m.	**Transmission System Operations**	Adjournment	Adjournment	Adjournment	
4:45 – 5:00 p.m.	Adjournment				

Note: Schedule is subject to change due to events beyond the control of the *Transmission Business School.*

REGISTRATION AND LOGISTICS

VENUE AND TIMES

The *School* classes begin at 8:30 a.m. on each day of the week. There is a continental breakfast on each day and the School serves a hot lunch from Monday to Thursday. The *School* ends Friday at noon. All classes are held on the fourth floor of the Illini Center, 200 S. Wacker Drive, Chicago, IL 60606. For updates, please consult the *School* website at www.illinoiseminars.com/tbs

LODGING

A block of rooms at the Union League Club of Chicago (65 W. Jackson Blvd., www.ulcc.org) has been reserved for the period of June 6-12, 2020 for the School participants at the discounted rate of $ 219 (plus applicable taxes) with an excellent breakfast included. Chicago has numerous conventions in June and hotel rooms are, typically, all heavily booked. Make your reservations by **May 8, 2020** to be guaranteed a room at the discounted rate. Call 800-443-0578 or 312-427-7800 to make your reservations.

ENROLLMENT

The *School* fees are $3,449 per person. The class size is limited to provide an appropriate learning environment. Enrollment is confirmed upon the receipt of the payment in full.

The School provides a limited number of scholarships for regulatory agency employees at both the federal and the state government levels. Contact Lynnea Johnson at 217-649-6543 or lsjohnson@illinoiseminars.com for additional details. Each registered participant receives an informational package with the confirmation. Cancellations received up to 15 days prior to the start of the *School* are refunded in full, less an administrative fee of $600. Thereafter, no refunds can be made; however, substitutions may be made at any time.

CONTINUING EDUCATION UNITS

The *School* attendees earn 3.2 continuing education units (CEUs), 32 general continuing legal (CLE) hours or 32 continuing professional education (CPE) hours; however, units vary from one state to another.

ADDITIONAL INFORMATION

Please contact Lynnea Johnson at lsjohnson@illinoiseminars.com or 217-649-6543. You will find updates of the presentation schedule and details on the special presentations at http://www.illinoiseminars.com/tbs

THE TRANSMISSION BUSINESS SCHOOL

JUNE 8-12, 2020

Online registration is available at: www.illinoiseminars.com/tbs or you may use the space below to register. Please provide the following information:

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Return the completed form with payment to
Lynnea Johnson, IllinoiSeminars,
P.O. Box 2666, Champaign, IL 61825.

THE TRANSMISSION BUSINESS SCHOOL

Taught by leading industry practitioners and academic experts, who present key aspects of the most important challenges faced by the industry, the Transmission Business School introduces participants to all the major issues under discussion today, as well as the industry basics, to prepare them for the exciting opportunities and the complex challenges. The intensive four-and-a-half-day School gives an excellent understanding of electric operations and of the key issues in regional transmission organization (RTO) development, the criticality of interconnected transmission network reliability, emerging transmission business structures, the impacts and implications of legislative and regulatory initiatives, how electricity markets work, and the increasingly important role of distributed energy resources including storage. Each participant gains exposure to the broad trends in the electric power industry, from decarbonization to decentralization and to grid democratization, the nature and roles of the key players, as well as the principal drivers and policy questions in this rapidly changing industry. The presentations are made accessible though the use of examples and simulations, without requiring a technical background from the participants.

BENEFITS AND KNOWLEDGE

Each ***School*** participant will:

GAIN

- A thorough grounding in the basics of power systems, including power flow concepts on a nontechnical level;
- A sound grasp of the fundamentals of electricity and power system planning, operations, control and economics;
- A good understanding of the fundamentals of transmission services;
- A comprehensive picture of where the industry is headed and how it will get there;
- A thorough appreciation of the need for incentives for transmission investments;
- An essential comprehension of the role of transmission in a CO_2 – free environment; and,
- Insights into successful experiences in transmission business around the world.

LEARN

- About the unbundling of transmission services;
- The critical role of transmission and ancillary services;
- The effective use of risk management mechanisms;
- The interrelationships between reliability and markets;
- The nature of a cascading blackout;
- About recent developments in integration of renewable resources; and
- The realization of the *smart grid*.

UNDERSTAND

- The industry language and acronyms;
- The centrality of the role transmission in competitive electricity markets;
- The fundamental interaction of physics and markets;
- The critical challenges faced by today's electricity business players;
- The role of incentives in the expansion of the power system;
- The overriding need for reliability;
- Interactions between bulk and distribution grids' operators; and
- Models of transmission business structures in use in difference countries.

INTERACT

- With some of the leading practitioners and authorities in the industry;
- With the participants and learn how they solve problems in their organizations and jurisdictions; and
- With the new professionals in the electric power industry.

FEATURED TOPICS

POWER SYSTEM BASICS

- Working of the interconnected grid
- Basic power flow concepts
- Role of loads and their curtailments
- System planning and operations
- Reactive support
- Ancillary services
- Transmission control and security coordination
- Reliability concepts and reliability economics
- The *smart grid*
- Transmission expansion and investment

EVOLVING ELECTRICITY MARKETS

- Fundamental market concepts
- Electricity market design and the role of auctions
- Forward markets
- Balancing and ancillary service markets
- Congestion management
- Price spikes and risk management
- Transmission access pricing and services
- Effective asset utilization
- Impacts of carbon legislation/regulation and trade mechanisms
- Meeting of future regional transmission needs
- Market monitoring and compliance enforcement
- Seams issues
- Energy Reliability Organization
- PUHCA repeal aftermath
- Implementation on recent FERC Orders
- Role of renewable energy projects

TRANSMISSION BUSINESS MODELS

- Who does what?
- Transmission business structures
- Regional transmission organizations (RTOs)
- Independent system operators (ISOs)
- Transmission system operators (TSOs)
- Who controls the tariffs?
- What is the changing role of regulators?
- Who is responsible for reliability and for supply demand balancing?
- Who manages markets?
- Who does grid planning and expansion?
- Who monitors markets?
- Merchant transmission projects
- Regulatory initiatives
- Integration of renewable demand and energy storage resources
- Roles of distributed energy resources, including storage

School Topics

TRANSMISSION BASICS
An overview on transmission hardware; system design; facility siting; the physics of the interconnected transmission grid; existing and new generation sources; the basics of power systems; and, deployment of new technology for transmission.

TRANSMISSION OPERATIONS
Review of the requirments for the interconnected grid coordination to meet various reliability/security and economy considerations; the functions of the control center; the impacts of mandatory reliability standards; and, the ERO functions.

TRANSMISSION SYSTEM COMPUTER SIMULATION
A hands-on demonstration of the innate complexities of the interconnected grids; examples of constrained systems; inter-relationships between market forces and the movement of energy; the 2003 Megablackout simulation.

ELECTRICITY RESTRUCTURING DEVELOPMENTS AND POLICY
A review of how the industry got to where it is today, the unbundling of the electric power industry, its new structures, and the emergence of transmission as a critically important new business; the new structures created by FERC Order Nos. 888, 889, 890 and 2000; the key RTO issues; FERC directions for electricity market and RTO development; market design issues; Order No. 888 reform; impacts of net metering activities mandated by the EPACT 2005, EISA 2007 and ARRA 2009; FERC Orders 1000, 745, 755, and 841 impacts.

TRANSMISSION PLANNING AND RELIABILITY
Coverage of the planning, siting, asset modernization, utilization and investment aspects and their interrelationships with cost allocation; reliability management under mandatory reliability requirements; environmental impacts; national-interest electric transmission corridors; regional planning challenges; NERC's ERO role; and, environmental matters/policies.

MARKET DESIGN AND CONGESTION MANAGEMENT
The key aspects of efficient market design and structures, the interrelationships between markets; the role of ancillary service markets; and effective congestion management and the role of financial transmission rights.

THE *NEW* TRANSMISSION BUSINESS ENVIRONMENT
Evaluation and assessment of the principal thrusts of the EPACT 2005 on transmission; PUHCA repeal aftermath; impacts of Sarbanes-Oxley Act requirements; impacts of new mergers and acquisitions provisions; transmission bottlenecks and national-interest electric transmission corridors; adequacy of financial incentives to stimulate transmission investment and modernization.

TRANSMISSION SERVICES AND PRICING
Explanation of how transmission service is provided; the key aspects of transmission service pricing – access and congestion; incentives for grid expansion and coverage of evolving regulatory requirements; long-term financial transmission rights; and the role of investment in improving the provision of transmission services in electricity markets.

GRID INTEGRATION OF RENEWABLE AND DEMAND RESOURCES
The key obstacles to overcome for the effective integration of renewable generation and demand response resources; current opportunities; major challenges and the way markets and regulation are shaping the various decisions; recent legislation; role of aggregated distributed energy resources,including storage; and actual system experiences in today's large systems.

ELECTRICITY MARKETS AND RISK MANAGEMENT
The evolution of electricity markets to sophisticated pools; public and private markets; the role of forward markets in risk mitigation; role of financial iinstitutioins and hedge funds; power purchase agreements; credit worthiness standards.

MARKET MONITORING
The role and nature of market monitoring; market behavior metrics and monitoring data requirements; modes of market power, mitigation approaches and FERC priorities; market performance in RTO and bilateral markets; inter-RTO seams issues; nature of investigations, audits and compliance enforcement.

TRANSMISSION INVESTMENT AND OPERATIONS BUSINESS MODELS
Overview of the RTO structures; review of international experiences; the role and the nature of incentives in new transmission asset investments; key issues.

REALIZATION OF THE SMART GRID POTENTIAL
The key drivers to make grids smarter; basic definition and nature of the smart grids; principal building blocks – architectural design, communication infrastructure and standards; policy and cost recovery issues and the roles of the US DoE, FERC and state regulatory agencies; advanced metering infrastructure beyond smart grids.

SPECIAL PRESENTATIONS
The lectures in the *School* curriculum are augmented by additional topics to present issues, such as the continuing critical role of reliability and resilience in the competitive environment, the views of transmission-only ownership entities, the RTO market design and implementation developments, grid modernization efforts, decarbonization impacts and overview of recent FERC developments.

FACULTY

- **George Gross**, Professor, University of Illinois at Urbana-Champaign; Director of the *Transmission Business School*
- **Lynnea Johnson**, *School* Coordinator, IllinoisSeminars
- **Stu Bresler**, Senior VP, PJM
- **Richard Doying**, Executive VP, MISO
- **Sandra Ellis**, Senior Manager, Electric System Operations, PG&E
- **Jeff Fleeman**, COO, Grid Assurance LLC
- **Jignasa Gadani**, Director of Energy Policy and Innovation, FERC
- **Anthony Giacomoni**, Senior Market Strategist, PJM
- **Teoman Guler**, CIO, Head of Trading, Roscommon Analytics LLC
- **Julia Hamm**, President & CEO, Smart Electric Power Alliance (SEPA)
- **Leonard Hyman**, Managing Director, Energy Resource Capital
- **Martin Lin**, Principal, The Lin Group LLC
- **Elliot Mainzer**, Administrator and CEO, BPA
- **John McDonald**, Director, GE Digital Energy
- **Carl Monroe**, Executive VP and COO, SPP
- **Mahesh Morjaria**, VP Systems Development, First Solar, Inc.
- **Rana Mukerji**, Senior VP Systems Development, NYISO
- **Thomas Overbye**, Professor, Electrical and Computer Engineering, Texas A&M University
- **Alex Papalexopoulos**, President, ECCO International
- **David Perlman**, Partner, Bracewell
- **Mark Rothleder**, VP, CAISO
- **Mike Rowe**, President, American Transmission Company LLC
- **Harry Singh**, VP, Goldman Sachs
- **Becky Webb**, Principal NERC Compliance Specialist, Exelon

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TRANSMISSION BUSINESS SCHOOL

JUNE 8-12, 2020
CHICAGO, ILLINOIS

The dynamic forces of competitive energy supply unleashed by FERC Orders No. 888, 889, and 2000 and the many recent initiatives and decisions have led to dramatic changes in the electricity industry. The mega-blackout of August 14, 2003 reenforced the criticality of transmission in ensuring the reliability of the nation's electricity supply. The numerous sweeping changes of the EPACT 2005 and of the 2007 Energy Independence and Security Act are extensively impacting the energy infrastructure, in general, and the transmission grid, in particular. The American Recovery and Reinvestment Act of 2009 has brought new focus on the implementation of the smart grid and the integration of renewable resources. There is starting to develop a consensus in the industry on the critical need to stimulate transmission investment to modernize the aging grid and to integrate the increasing penetration of renewable resources. FERC's Order 1000 is a key development in that direction and additional developments are expected to follow to spur on the big transmission build-out to become reality. The deepening penetrations of renewable resources has unleashed the wider deployment of energy storage resources. FERC Order 841 removes the barriers to the energy storage resource participation in electricity markets. To ground interested industry participants in the essential aspects of this rapidly evolving industry, the updated 2020 version of the top-rated Transmission Business School, the leading training offering in the electricity industry, will be given in Chicago from June 8-12, 2020. The School provides an unparalleled training opportunity to the power industry professionals in your organization to gain the skills and knowledge to manage the many challenges and opportunities of the changing business.

WHO SHOULD ATTEND?

- Energy business managers/executives
- Attorneys
- Rate analysts
- Financial Analysts
- Investment bankers for the energy industry
- Economists
- Policy Analysts and Lobbyists
- Energy company professionals with public communications and local affairs responsibilities
- Energy business corporate communications staff
- Environmental interest and community group representatives
- Regulatory and legislative professionals
- Energy industry consultants
- Energy issues legislative analysts
- Public affairs specialists
- Power marketers, aggregators and brokers
- Gas industry professionals interested in the electricity business
- Venture capitalists in the energy sector
- Energy buyers
- Municipal load aggregators