



Plain Talk about the Electric Power System

for the **Non-Engineering** Power Professional

Three important courses offered by the IEEE Power & Energy Society:

- **Power System Basics—Understanding the Electric Utility Operation Inside and Out**
- **Distribution Systems—Delivering Power to the Customer**
- **The Grid—The Interconnected Electric Bulk Power System**

Bring This Informative Series of Courses About the Electric Power System to Your Location!

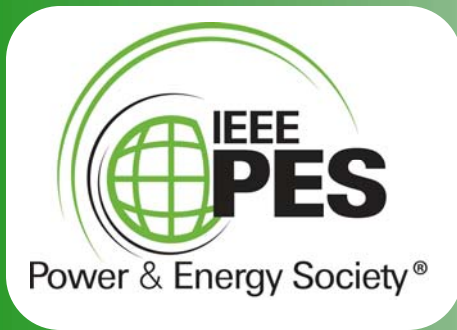
THE ELECTRIC POWER SYSTEM enables our economy and society to function. In some way everything that impacts our lives, from our homes, our businesses, our government, and our critical infrastructure requires a dependable and economic supply of electricity.

Although the electric power system was initially developed in the late 1800s and is considered the most significant engineering accomplishment of the 20th Century, it still is undergoing change; partly driven by technology, partly driven by economic forces and partly driven by governmental action. Yet many individuals, even those involved with the industry, do not fully understand how a power system operates and what technical changes might impact the system as it continues to evolve in the 21st Century.



WHO SHOULD ATTEND:

Plan to attend if you are a utility board member or manager, a business executive, a power broker, power marketer, government official, a regulatory or legislative staff member, public affairs administrator, legal counsel, member of a consumer group, member of the media, economist, accountant, and an engineer not in the power field and anyone else interested in learning about electric power systems.



WHETHER YOU WORK IN THE ELECTRIC POWER INDUSTRY OR NOT, if you're interested in learning more about how the electric power system works, you now have the opportunity to gain the knowledge you need in a manner that you can understand.

As an attendee you will gain insight into the concerns of engineers, the demands of regulators and consumer groups and a perspective of how these factors play a major role in the operation of today's electric power systems.

These three courses will provide you with the knowledge you need to help you work better and smarter.

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ABOUT PES:

The Power & Energy Society is the society of electric power and energy professionals throughout the world. It provides the world's largest forum for sharing the latest in technological developments in the electric power industry, for developing standards that guide the development and construction of equipment and systems, and for educating members of the industry and the general public.



ENROLLMENT

Attendees can enroll in one or more of the courses offered. The course selection and choice are yours. Limited seating is available. Make plans NOW to reserve your seat!

DAILY SCHEDULE

7:30 AM
Registration Begins

7:30—8:00 AM
Continental Breakfast

8:00 AM—5:00 PM
Class Time

COURSE DESCRIPTIONS

Power System Basics—Understanding the Electric Utility Operation Inside and Out **Steven W. Blume**

The focus of this course will be on providing a thorough foundation in electric power systems, planning, operations, economics and various regulatory frameworks. Basic electrical terminology will be explained in simple to understand language with regard to design, construction, operation and maintenance of power plants, substations and transmission and distribution lines. Anyone who is not a professional engineer and involved in the decision making process within the electric utility environment can benefit from attendance at this course.

TOPICS INCLUDED:

- Introduction and Brief History
- Fundamentals of Electric Power
- Generation and Transmission
- Distribution and Utilization
- Power Systems Protection
- Power Systems Operation and Interconnection
- Regulation.

COURSE DESCRIPTIONS (CON'T)

Distribution System—Delivering Power to the Customer

Joseph Koepfinger and Maurice Ney

Attendees will receive a thorough briefing and understanding of the issues associated with the planning, engineering, design, operation, and automation of electrical distribution systems. This course is intended for those who are not familiar with the delivery of electricity to the end user.

The Function of the Distribution System and Its Place in the Electric Delivery System

An Examination of the Planning Issues: Demographics, economics, optimization of asset usage, safety, aesthetics, customer relationships, government regulator relationships, reliability-including availability, dependability, and quality.

Engineering Design and Operation Issues: Operational designs, equipment performance, overhead and underground construction.

Historical Development: Evolution of the distribution system—past to present.

The Distribution System in North America and in Other Countries

Overhead vs. Underground: Construction advantages and limitations. Examining reliability, aesthetic, restoration, outages and lessons learned.

Distribution Planning Considerations: The Long Range and the Short Range Issues

Distribution Engineering Considerations

Engineers-Technicians & Others: Electrical, Civil/Surveyors and Technicians.

Engineering Tasks: Includes the planning process and technology issues, budgetary issues, loss mitigation, circuit routing, circuit load ratings, voltage regulation, equipment performance, type of equipment, equipment limitations and standards.

Operating Engineering Tasks: Operating challenges to the engineer covering practical problems including crew schedules, union rules, safety rules and accounting procedures.

Distribution Automation: Concepts and differences in distribution automation.

Defining the Project: Including service reliability, outage management, disaster recovery.

Distribution and Distributed Generation

Radial Circuits: National and international issues and the role of standards.

Secondary Network Circuits: Addressing the interconnection challenge.



The Grid—The Interconnected Electric Bulk Power System

Robert W. Waldele

This course is intended for anyone interested in gaining a deeper understanding of how the interconnected electric bulk power systems in the United States or “grids,” work. This would include economists, attorneys and other non-technical professionals, as well as engineers and technically educated personnel. It should be particularly relevant for market participants, since a better understanding of the grid and how it functions will lead to more efficient use of resources and avoidance of unnecessary costs.

TOPICS INCLUDED:

- The concept of interconnection.
- Power flow, “loop flow,” transient stability, and VAR.
- Control Areas, Reliability Councils, NERC/ERO, ISOs and RTOs.
- Reliability standards and contingency analysis.
- Transmission Transfer Capabilities and how they are determined.
- Economic constraints vs. reliability risks.
- The Great Blackouts.
- The “Brave New World” of deregulation, and myths about the grid.
- What will the grid of the 21st century look like:
 1. The Energy Policy Act of 2005: A peek into the future.
 2. The advantages of HVDC and smaller interconnections.
 3. Other technologies being discussed.

The Grid course is based on seminars and workshops previously conducted for a variety of organizations, including: BC Hydro, Cegelec ESCA (Bellevue, WA), the U.S. Department of Defense, FERC Staff, the Florida PSC Staff, Florida Reliability Coordinating Council, the ISO-New England Board, Kansas City Power & Light, Oglethorpe Power Corp., Mappcor (St. Paul, MN), Mirant Corporation (Atlanta), the Nebraska Society of Professional Engineers, the New York State Reliability Council, the New York State Public Service Commission, and ITC Transmission.

COURSE INSTRUCTORS

Plain Talk instructors are highly qualified individuals with many years of experience in the industry.

Steven W. Blume is president and CEO of Applied Professional Training, Inc. He has led APT into a world-class technical training company servicing the electric power and telecommunications industries. He is a registered professional engineer with a Master's degree specializing in electric power systems and a Bachelor's degree specializing in telecommunications. Mr. Blume has extensive experience in power systems planning, design and construction of major lines and substations plus dispatch, protective relaying, and safety. His telecom experience includes fiber optics, microwave, radio, power line carrier and copper systems in high voltage environments. He holds many professional certificates, memberships, and is highly recognized in both the electric power and telecommunications industries. This unique combination of knowledge and experience makes him an excellent instructor for this course.

Joseph Koepfinger is a consultant with 51 years of utility experiences. He recently retired from Duquesne Light Co. In his last position he was Director of System Studies and Research for Duquesne Light Company, where he was responsible for managing the research programs. While employed at Duquesne Light Company he was responsible for the conduct of special investigations of technical problems, insulation coordination, surge protection and, in particular, the studies of electrical transient conditions in power systems. Recent investigations under his leadership involve the study of the characterization and management of electromagnetic fields, cable failure, manhole explosions, transformer fire control interconnection of distributed resources and advanced outage management systems. He has worked in the field of protection, communications and control and surge protection. He holds a Bachelor of Science and Master of Science in Electrical Engineering from the University of Pittsburgh. He is a licensed professional engineer in the State of Pennsylvania and a Certified Cogeneration Professional.

Maurice Ney has extensive experience in operations, engineering, planning, and customer care. He has a proven record of achieving continuous improvements in process, costs, system improvements, and customer satisfaction. In addition he has significant experience in managing transmission and distribution operations in the utility industry. As an independent consultant on utility operations, he has worked as a team member on projects for utilities in the Northwest and on the East Coast performing evaluations of current state transmission and distribution operations and the design of future state processes for improved performance and reliability. He has worked with the Electric Power Research Institute as a technical consultant on outage management, recovery and disaster planning, strategic planning and development of technical specifications for the design of an Advanced Outage Management System, and the development of key initiatives targeted at the prevention of, preparedness for, and recovery from man made and natural disasters and the major electric power outages that can accompany them. He has held various engineering and management positions at a major electric utility. During this time, he has actively participated in the development of a \$150 million capital and operating budget, developed an incentive compensation model based on profitability and customer satisfaction, developed strategies for complying with state and federal regulatory agencies, and assisted in the development of a process-focused organization and strategies to attain top quartile performance as defined by customer satisfaction cost/customer, and reliability. He received a Bachelor of Science degree in Electrical Engineering from Pennsylvania State University and he is a Licensed Professional Engineer in Pennsylvania.

Robert W. Waldele is a power system consultant with over 35 years of experience in EHV transmission system reliability studies, power system operation, and system operator training. He holds a BSEE from Northwestern University Technological Institute (McCormick School of Engineering). Bob joined the New York Power Pool in 1972 in the energy management system support group. As a Senior Engineer in Transmission Planning he coordinated system planning and reliability studies for the coordination of the bulk transmission system in New York State. While there he also served as Manager of System Operator Training and developed the transition program to open access and market operation under the New York Independent System Operator, Inc. (NYISO). Following NYISO start-up, he was named Manager of the NYISO Operations Engineering group and the Electric System Planning department. He has served on a number of working groups under the Northeast Power Coordinating Council, including Special Protection Systems, Interconnected System Dynamics, Dynamic Controls and System Operator Training. He was a member of the New York State Reliability Council's Reliability Rules Subcommittee. He has been an active participant in IEEE working groups including Transmission Subcommittee, Power System Dynamics, and the Operator Training Working Group. He served on the US-Canada Joint Task Force August 14, 2003 Blackout Investigation "Operator Tools, Training & EMS Performance Evaluation" Team, and supported the Sequence of Events and Root Cause Analysis teams.

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