



IEEE Power Engineering Society

# Plain Talk about the Electric Power System

for the **Non-Power Engineering** Professional

Three important courses offered  
by the IEEE Power Engineering Society



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**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.

**OCTOBER 17-19, 2007**  
**St. Louis, Missouri**

## ABOUT PES:

*The Power Engineering Society is the professional society of electric power engineers 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.*



## 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.**

- Power System Basics — Understanding the Electric Utility Operation Inside and Out
- Delivering Power to Customer — Planning and Operating Today's Distribution System
- The Grid — The Interconnected Electric Bulk Power System

**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.

## WHO SHOULD ATTEND:

*Plan to attend if you are a utility board member or manager, a business executive, a power broker, power marketer, government officials, 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.*

## CONTINUING EDUCATION CREDITS

0.6 CEUs are available for attendance at each of the courses.

## DAILY SCHEDULE

7:30-8:00 AM Registration

8:00-8:30 AM Continental Breakfast

12:00-1:00 PM Luncheon

Morning and afternoon breaks to be determined.

Classes will run until approximately 5:00 PM



# COURSE SCHEDULE

## **DAY 1: 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 and economics and various regulatory frameworks.

Basic electrical terminology will be explained in simple to understand language with regard to design, construction, operations 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.

**SUBJECTS INCLUDED:** An Introduction and Brief History, Fundamentals of Electric Power, Generation and Transmission, Distribution and Utilization, Power Systems Protection, Power Systems Operation and Interconnection and regulation.



## **DAY 2: Delivering Power to the Customer — Understanding the Planning and Operation of Today's Distribution System; Substations and Radial Lines**

**Joseph L. 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

## DAY 3: The Grid — The Interconnected Electric Bulk Power System

George C. Loehr

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

This 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

The instructors for all three courses are highly qualified individuals with many years of experience in the industry.

### Instructors:

**Steven W. Blume** is president and CEO of Applied Professional Training, Inc. He has lead 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.



## COURSE INSTRUCTORS *continued*

**Joseph L. Koefinger** 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.

**George C. Loehr** is a management consultant, appears as an expert witness, writes, and teaches a variety of courses on power systems. He is Vice Chair of the Executive Committee of the New York State Reliability Council, and chairs its Reliability Compliance Monitoring Subcommittee. He also serves as an Outside Director on the Board of the Georgia System Operations Corporation (GSOC). He is a recognized national expert on electric power system reliability.

Loehr began his career with Con Edison in 1962, and eventually headed up its transmission planning group. Following the 1965 Northeast Blackout, he chaired the committee which completed the first successful computer simulation of such an event. He joined the New York Power Authority as Chief Planning Engineer in 1969, and the Northeast Power Coordinating Council (NPCC) in 1972. He was named Executive Director of NPCC in 1989, and remained in that position until his retirement in 1997.

Mr. Loehr has given expert testimony in the states of New York, Vermont, Kentucky, New Mexico, Mississippi, and in Washington, DC. He has done TV interviews with BBC, CNN, WPIX and CBC, and is a frequent lecturer at professional conferences. His articles have appeared widely in the trade press, and he co-edited the IEEE book, *The Evolution of Electric Power Transmission Under Deregulation*. His hobbies include art photography, and he recently completed his first novel, *Blackout*.

Loehr received a Bachelor of Electrical Engineering degree from Manhattan College in 1962, and a Master of Arts in English Literature from New York University in 1964.



## Attendee Registration Form

Name \_\_\_\_\_ Company \_\_\_\_\_

Street \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone \_\_\_\_\_ Fax \_\_\_\_\_ Email \_\_\_\_\_ Job Title \_\_\_\_\_

**COURSE FEES:** An early bird 10% discount is offered to attendees who register and pay prior to September 3, 2007.

**Group Discounts:** 10% Discount offered to two or more conference registrants from the same company or organization.

### Full Enrollment (all three courses) (please check the appropriate box)

**Advance Registration Fee** (paid registration on or before September 3, 2007 - 10% discount) — \$1935

**Regular Fee** (paid registration after September 3, 2007 and on site) — \$2150

**Group Rates** (two or more registrants from the same organization -10% discount)

On or before September 3: \$1740 each • After September 3: \$1935 each • Group name \_\_\_\_\_

### Two-Course Enrollment (please check the appropriate box)

**Advance Registration Fee** (paid registration on or before September 3, 2007 - 10% discount) — \$1360

**Regular Fee** (paid registration after September 3, 2007 and on site) — \$1510

**Group Rates** (two or more registrants from the same organization -10% discount)

On or before September 3: \$1225 each • After September 3: \$1360 each • Group name \_\_\_\_\_

### Course selection: (please check the appropriate boxes)

Power System Basics

Distribution System

The Grid

### One-Course Enrollment (please check the appropriate box)

**Advance Registration Fee** (paid registration on or before September 3, 2007 - 10% discount) — \$715

**Regular Fee** (paid registration after September 3, 2007 and on site) — \$795

**Group Rates** (two or more registrants from the same organization -10% discount)

On or before September 3: \$645 each • After September 3: \$715 each • Group name \_\_\_\_\_

### Course selection: (please check the appropriate box)

Power System Basics

Distribution System

The Grid

*Fee includes continental breakfasts, lunches, refreshment breaks and all course materials.*

**TOTAL ENCLOSED \$** \_\_\_\_\_ (Payment is due prior to the start of the course by either major credit card or corporate check.)

### REGISTER ONLINE:

<https://event-wizard.com/secured/eww3.01/forms/welcome.asp?Ecode=PT1007&ClientCode=aei%2D07&Lang=English>

OR  **CHECK** (Payable to IEEE-PES Plain Talk)

**Purchase Order** – Please attach a copy of the Purchase Order along with your registration form.

**VISA**

**MasterCard**

**American Express**

**Diners Club**

Card # \_\_\_\_\_ Exp. \_\_\_\_\_ Name on Card \_\_\_\_\_

Authorized Signature \_\_\_\_\_

**Mail or Fax Form/Fees:**  
IEEE-PES  
2007 IEEE Plain Talk  
445 Hoes Lane  
Piscataway, NJ 08855  
Fax: (732) 465-3881

**Location:** The courses will be given at: St. Louis Airport Hilton  
10330 Natural Bridge Road  
St. Louis, MO 63134

There is ample parking at the hotel for a fee of \$5.00 per day.  
The hotel is conveniently accessible from Lambert–St. Louis International Airport.

**Hotel:** We have reserved a block of rooms at the hotel at a discounted rate of \$109 per night.  
To reserve your room please call the hotel at 800-314-2117 and use the group code PES to ensure you receive the discounted rate.

**Questions or Concerns?**  
Contact Lynda Bernstein  
732-465-5834  
l.m.bernstein@ieee.org

Cancellations made in writing before September 3, 2007 will be fully refunded. Cancellations made in writing after September 3, and on or before September 14, 2007 will be refunded less a \$50 service charge. After September 14 there will be no refunds. If an enrollee is unable to attend, the fee may be used by a substitute. In the unlikely event of the cancellation of a seminar, registrants will receive a full refund for only the cost of the seminar registration fee.