APPA ACADEMY
AMERICAN PUBLIC POWER ASSOCIATION

Electric Utility Industry 101

March 19, 2024
8:30 a.m. – 3:30 p.m.

Description

New to the industry and need to get familiar with the terminology, key topics, and trends utilities face? This course offers a non-technical overview of how a typical public power utility operates. Explore the electric utility system infrastructure from energy source to meter, including what is involved in its operation, performance, and development. Discuss what electric utilities can expect to see with regards to distributed energy resources, energy storage, physical and cybersecurity threats to the grid, new technologies, and changing customer expectations. Learn how the regulatory structure and industry trends are challenging the traditional public power business model, and what utilities are doing to successfully operate in the 21st century.

Attendees will also receive a copy of APPA's *Electric Utility Basics* manual, as a take-home resource.

Topics include:

- Electric Utility Regulations & Business Models
- The Regional Generation & Transmission Grid
- Your Local Public Power System
- Electric Utility Trends & Challenges

Who Should Participate

This course is designed for public power utility personnel that are looking for a basic understanding of how the industry works, the key components of a local public power system, and a high-level overview of the latest industry issues and trends.

Instructors

R. John Miner, P.E., is an accomplished executive manager and educator with over 45 years of experience in the electric utility industry. He is president of Collaborative Learning, Inc., of Austin, Texas, and has been an APPA instructor for more than 30 years and an instructor for the University of Wisconsin for 20 years. Before forming his own company, he worked for the Austin, Texas, Electric Utility Department, Rochester Public Utilities in Minnesota, and as an assistant professor for the University of Houston. John earned a Bachelor of Science degree in electrical engineering (with honors), and a Master of Science degree in engineering science, both from the University of Toledo. John is a Senior Life Member of the IEEE and is a registered Professional Engineer in the states of Texas and Minnesota. He is also the author of the first three editions of APPA's *Electric Utility Basics* manual.

Tom Black, P.E., is an accomplished engineer and executive manager who works with Collaborative Learning as a technical consultant and continuing education program developer and instructor. Tom has more than 35 years of experience in the electric and gas utility industries including employment with both municipal and Investor-owned utilities. Tom teaches courses on such topics as electrical distribution principles, overhead and underground distribution systems, the NESC, electric system planning, construction, operations, and maintenance. Tom earned his bachelor's degree from Washington University in St. Louis (with honors) and is a registered professional engineer in the states of Colorado and Arizona. He is a member of the Institute of Electrical and Electronics Engineers (IEEE).

Agenda

8:30 a.m. **Course Introduction, Agenda, and Objectives**

8:45 a.m. **Electric Utility Regulations & Business Models**

- The utility regulatory structure
- Why and how utility regulation has changed
- Utility ownership types and business structures
- Wholesale and retail electric market operations

10 a.m. **Break**

10:15 a.m. **The Regional Generation & Transmission Grid**

- Electric system overview
- Electric generation types and operating characteristics (fossil fuels, nuclear, renewables)
- Electric grid operation, reliability, and security

11:30 a.m. **Lunch**

Noon **Your Local Public Power System**

- Substations
- Overhead and underground lines (transmission and distribution)
- Connecting Customers
- Connecting DERs
- Conductors & Cables
- Overhead Line Structures Underground Line Structures
- Distribution Transformers
- Voltage Regulating Equipment
- Protective Equipment

1:30 p.m. **Break**

1:45 p.m. **Electric Utility Trends & Challenges**

- Changing customer needs and expectations (services, reliability, pricing, information, communication)
- Opportunities for electrification load growth
- Impacts of AMI and smart grid technologies
- Critical infrastructure and challenges in physical security and cybersecurity

- New technologies for system automation, information management, and workforce development

- Changing workforce requirements, employee needs and expectations

3:15 p.m. **Wrap Up, Q&A, Course Evaluation**

3:30 p.m. **Course Adjourns**