Save $100 when you attend more than one course!

Courses:
- Accounting
- Electric Utility 101
- Cost of Service & Rate Design
- Applied Electrical Distribution Theory
- Electrical Distribution Principles, Applications and Improvements

Certificate Programs:
- Energy Efficiency Management
- Public Power Manager

MAY 14 – 18, 2018
DENVER, COLORADO
LEARN TOGETHER, GROW TOGETHER

The American Public Power Association’s seasonal education institutes offer in-depth training courses for all skill levels. Institutes allow attendees to focus on a single topic or spend the week in multiple classes for more comprehensive training.

Classes are designed by instructors who have decades of industry experience and understand the specific needs of public power utilities. The Institute format also provides an excellent opportunity to network with industry peers and earn continuing education credits.

Accreditation

Earn While You Learn!

Participate in the Spring Education Institute to earn Continuing Education Units (CEUs), Professional Development Hours (PDHs) and Continuing Professional Education credits (CPEs).

Continuing Education Units

The American Public Power Association is accredited by the International Association for Continuing Education and Training (IACET) and is authorized to issue the IACET CEU. For information regarding certification status, attendance requirements and obtaining attendees transcripts, visit www.PublicPower.org or contact EducationInfo@PublicPower.org or 202/467-2919.

Professional Development Hours

The American Public Power Association’s educational practices are consistent with the criteria for awarding Professional Development Hours (PDHs) as established by the National Council of Examiners for Engineering and Surveying (NCEES). Course eligibility and number of PDHs may vary by state.

Continuing Professional Education Credits

The American Public Power Association is registered with the National Association of State Boards of Accountancy (NASBA) as a sponsor of continuing professional education on the National Registry of CPE Sponsors. State boards of accountancy have final authority on the acceptance of individual courses for CPE credit. Complaints regarding registered sponsors may be submitted to the National Registry of CPE Sponsors through its website: www.learningmarket.org. There are no prerequisites for the courses offered; no advance preparation is required for any courses. All courses are group-live offerings. Credit hours and areas of study for the courses are listed in this brochure. For more information regarding administrative policies, such as clarification of requirements, complaints, and refunds, please contact EducationInfo@PublicPower.org.
# SPRING EDUCATION INSTITUTE

**May 14 - 18, 2018 ▪ Denver, Colorado**

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For detailed course and instructor information, visit [www.PublicPower.org](http://www.PublicPower.org) under Education & Events.
Public Utility Accounting

Monday, May 14–Tuesday, May 15
Monday: 8:30 a.m. – 5 p.m.
Tuesday: 8 a.m. – 4 p.m.

Recommended CEUs 1.3/PDHs 13/CPEs 15
Field of Study: Accounting

Course Overview
This course highlights the development of a utility accounting system that is compatible with Federal Energy Regulatory Commission (FERC) guidelines. It examines accounting theory, the role of accounting in public utilities, FERC accounting procedures, the uniform systems of accounts, and utility accounting subsystems.

Course Topics
- Accounting for operating revenues and expenses
- Introduction to utility property and plant accounting
- Introduction to FERC uniform system of accounts
- Applicability of generally accepted accounting principles to public utilities
- Financial statement structure and presentation
- Capital vs. expense determination
- Allocation of indirect or common costs
- Accounting for unbundled services

Course Level
Basic: No prerequisites; no advance preparation.

Who Should Attend
Designed for those who are new to public utility accounting practices or unfamiliar with the FERC accounting structure.

Instructor
Jerry McKenzie, Senior Associate, MGT Consulting Group

Registration Fees
Prices increase by $50 after April 23

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Work Order and Asset Management Accounting

**Wednesday, May 16**
8:30 a.m. – 4:30 p.m.

*Recommended CEUs*.7/PDHs 6.5/CPEs 7.8

Field of Study: Accounting

**Course Overview**
Utility construction is one of the major activities at your utility and has a significant impact on developing equitable rates for your customers. This interactive course covers basic and intermediate utility work asset management accounting concepts and applications. Learn how to coordinate operations and finance processes to accurately account for projects. Work through the necessary steps to report utility construction costs and differentiate between capital construction and maintenance costs. Learn about practical industry processes, through real-world utility examples of the day-to-day realities of accounting for utility construction costs.

**Course Topics**
- Work order and asset management processes and the importance of accurate plant accounting and reporting
- Accounting for utility construction and impacts on customer rates
- Accounting standards that apply to work order accounting
- Using construction standards and compatible units
- Evaluating construction accounting business processes
- Methods of allocating overhead costs
- Unitizing construction costs and closing work orders
- Developing capital budgets and capital retirement accounting
- Software selection and implementation considerations
- Process improvement and personnel training
- Developing informative reporting to help implement strategy
- Overcoming organizational barriers

**Course Level**
*Basic/Intermediate:*
No prerequisites; no advance preparation.

**Who Should Attend**
Designed for utility accounting, finance and operations personnel who are part of the work order process.

**Instructor**
Russ Hissom, CPA, CIA, CISA, Partner, Energy and Utilities Group, Baker Tilly Virchow Krause

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Advanced Public Utility Accounting

**Thursday, May 17** – **Friday, May 18**
Thursday: 8:30 a.m. – 4 p.m.
Friday: 8 a.m. – 3:30 p.m.

*Recommended CEUs* 1.2/PDHs 11.75/CPEs 14

Field of Study: Accounting

**Course Overview**
Most of the crucial decisions that electric utilities make require financial information. Utility accounting staff must understand how accounting principles and practices impact financial reporting to internal and external stakeholders. This course examines complicated aspects of accounting theory and practice to inform planning and decision-making by management.

**Course Topics**
- Presentation of financial statements
- Introduction to sustainability accounting standards
- Using regulatory accounting to mitigate ratepayer and financial reporting impacts
- Financial statement analysis and its role in strategic planning
- Capital structure and financing utility infrastructure projects
- Establishing strong internal controls to efficiently allocate resources and deter fraud
- Governmental accounting pronouncements update
- Accounting for contingencies, capitalized interest, asset impairments and asset retirement obligations
- Update on implementing the new GASB Pension Standard

**Course Level**
Intermediate/Advanced: Recommended as a follow up to the Public Utility Accounting course.

**Who Should Attend**
Designed for utility accounting and finance personnel with a basic knowledge of utility accounting theory and practice.

**Instructors**
Russ Hissom, CPA, CIA, CISA, Partner, Energy and Utilities Group, Baker Tilly Virchow Krause
Bethany Ryers, CPA, Senior Manager, Energy and Utilities Group, Baker Tilly Virchow Krause

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**What to Bring**
Bring a copy of your annual financial statement. Instructors will answer your questions on presentation and application of accounting policies and practices.
Basic Cost of Service: Concepts and Rate Planning

Monday, May 14
8:30 a.m. – 4:30 p.m.

Recommended CEUs .7/PDHs 6.5/CPEs 7.8
Field of Study: Specialized Knowledge

Course Overview
Explore the ins and outs of cost of service — from basic concepts to leveraging data for decision making. Learn how to determine revenue requirements and key financial targets and relate them to cost of service. Find out how to develop a long-term rate plan and use financial targets to determine customer rates, borrowing needs, and capital improvements.

Course Topics
- Basic cost of service concepts, terminology, and processes
- Collect and use of cost of service data
- Determine revenue requirements using cash and utility-based approaches
- Set key financial targets related to cost of service
- Develop a cash reserve policy
- Determine rate policies and long-term rate plans
- Communicate rate changes to policymakers and customers
- Use customer rates to fund infrastructure replacements

Course Level
Basic Level: No prerequisites; no advance preparation.

Who Should Attend
General managers, finance and accounting personnel, rate analysts, financial planners, as well as policymakers.

Instructor
Dawn Lund, Vice President, Utility Financial Solutions

What to Bring
Participants are encouraged to bring a laptop to work through in-class exercises.

Registration Fees
Prices increase by $50 after April 23

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Intermediate Cost of Service: Implementation and Best Practices
Tuesday, May 15 – Wednesday, May 16
8:30 a.m. – 5 p.m. both days
Recommended CEUs 1.3/PDHs 13/CPEs 15
Field of Study: Specialized Knowledge

Course Overview
Understand how to apply cost of service and rate design principles and processes to electric, water, sewer, gas, and other municipal services. Develop a fully functional and unbundled cost of service study. Do a cost analysis deep dive and learn from real-world examples and best practices.

Course Topics
- Identify, collect, and organize costs
- Allocate municipal facilities and expenses
- Classify generation, transmission, and distribution expenses
- Categorize generation types and primary cost components
- Collect and apply load research data
- Develop cost allocation factors
- Gauge customer voltage levels and allocating costs
- Apply cost allocation factors in a cost of service model
- Determine monthly customer charges and billing costs
- Identify bundled and unbundled primary cost components
- Apply cost of service components to rate designs
- Understand the limitations of a traditional cost-of-service model

Course Level
Basic/Intermediate: Recommended as a follow-up to the Basic Cost of Service course and as a prerequisite to Advanced Cost of Service.

Who Should Attend
This course is designed for utility staff who want to learn how the cost of service process is completed and applied.

Instructors
Phil Euler, P.E., Manager of Engineering Services, NMPP Energy
Dan Kasbohm, Rates Manager, Utility Financial Solutions

Advanced Cost of Service: Rate Trends and Distributed Generation Impacts
Thursday, May 17 – Friday, May 18
Thursday: 8:30 a.m. – 4:30 p.m.
Friday: 8:30 a.m. – Noon
Recommended CEUs 1/PDHs 10.25/CPEs 12.2
Field of Study: Specialized Knowledge

Course Overview
Review the latest industry rate trends, evaluate new rate structures, and learn how to recover fixed costs and fund infrastructure investments. Hear how other utilities are integrating distributed energy resources and restructuring rates. Gain hands-on experience by designing rates for a sample utility.

Course Topics
- Analyze industry rate trends and future rate structures
- Determine the role of a monthly customer charge in rate design
- Develop rates that reflect utility costs, maintain financial stability, and promote energy conservation
- Develop time-of-use rate structures and real-time pricing rates
- Develop marginal cost-based price signals
- Design economic development rates
- Understand power cost adjustment mechanisms
- Determine the value of renewable generation
- Design rates that recover utility costs for rooftop solar installations
- Develop standby rates for customers installing combined heat and power generators
- Get buy-in from governing bodies and the public on rate designs

Course Level
Intermediate/Advanced: Follow up to the Basic and Intermediate Cost of Service courses.

Who Should Attend
Utility staff and policymakers looking for advanced knowledge of cost of service and ratemaking processes.

Instructor
Mark Beauchamp, CPA, CMA, MBA, President, Utility Financial Solutions

What to Bring
Participants are required to bring a laptop with Excel and PowerPoint, to work through in-class exercises.
Program Description

Who manages energy efficiency programs at your utility? Are they up to speed with the latest trends, technologies, policies, and requirements? Successful programs do not happen by accident—they require an understanding of the industry, marketplace, customers and many other elements. When done well, energy efficiency can play an important role in achieving utility goals and improving customer service.

The Association’s Energy Efficiency Management Certificate Program covers all aspects of energy efficiency portfolio and program planning, implementation, and evaluation, preparing you to help residential, commercial, and industrial customers save energy, while enjoying high reliability and quality service.

Who Should Attend

Staff from small, medium, and large public power utilities that:
- Want to start an energy efficiency program
- Already manage energy efficiency programs but want to scale them up
- Are interested in various aspects of energy efficiency
- Want to earn a professional credential

Program Requirements

To earn this certificate, participants must complete the following requirements within one year:

1. Complete the five required courses
   - Electric Utility Industry Overview: Strategic Challenges and Trends*
   - Energy Efficiency: Concepts and Strategies
   - Designing Efficiency Programs to Serve Your Customers
   - Energy Efficiency Program Implementation, Reporting and Evaluation
   - Emerging Trends and Opportunities in Energy Efficiency and Distributed Energy Resources

2. Pass an online exam

3. Submit an energy efficiency program plan

*Participants who can demonstrate knowledge of the utility industry, through work experience or coursework, may opt-out of this course. Contact EducationInfo@PublicPower.org for more information.
## Electric Utility Industry Overview: Strategic Challenges & Trends

**Monday, May 14**  
8:30 a.m. – 4:30 p.m.  

*Recommended CEUs .7/PDHs 6.5/CPEs 7.8*  

**Field of Study: Specialized Knowledge**

### Course Overview

This course provides a largely non-technical overview of the public power system in its broader operating and business management context. Learn about the electric utility system infrastructure from power grid to meter, its operation, performance, and development. Strategic issues and industry trends that are impacting utilities and challenging the traditional public power business model will also be discussed. Each attendee will receive a copy of the Association’s Electric Utility Basics handbook.

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| - Electric utility industry regulation and market restructuring  
- Developments in generation and regional transmission  
- Developments in local transmission and distribution infrastructure  
- Strategic issues and trends for electric utilities  
- The public power business model  
- How changes in the industry are affecting local public power systems |

### Course Level

**Basic:** No prerequisites; no advance preparation.

### Instructor

R. John Miner

*Participants who can demonstrate knowledge of the utility industry, through work experience or coursework, may opt-out of this course. Alternatively, participants can take a four-webinar series in place of the in-person course. Contact EducationInfo@PublicPower.org for more information.*
Energy Efficiency: Concepts and Strategies

Tuesday, May 15
8:30 a.m. – 4:30 p.m.

Recommended CEUs .7/PDHs 6.5/CPEs 7.8
Field of Study: Specialized Knowledge

Course Overview
This course provides an introduction to energy efficiency, load management, and energy conservation concepts, from lighting and weatherization to heating and cooling options. Learn about federal, state and municipal utility energy efficiency policies and programs. Hear about measures that help residential, commercial, and industrial customers save energy and position your utility to provide a high level of customer service and reliability. Review strategic planning tools and best practices to align your energy efficiency program goals and strategies with your utility’s goals.

Course Topics
- Defining energy efficiency, load management, conservation and associated concepts
- Common and emerging efficiency measures — lighting, heating, ventilation, air conditioning, smart thermostats, and controls
- Federal, state, and local landscape and policies driving energy efficiency
- Ways to assess energy efficiency potential
- Strategic planning approaches to use energy efficiency programs to support utility goals, such as reducing peak load, improving customer service, and promoting economic development

Course Level
Basic: No prerequisites; no advance preparation.

Instructor
Rebecca Foster

Designing Efficiency Programs to Serve Your Customers

Wednesday, May 16
8:30 a.m. – 4:30 p.m.

Recommended CEUs .7/PDHs 6.5/CPEs 7.8
Field of Study: Specialized Knowledge

Course Overview
Learn how to design an energy program that achieves your utility’s strategic goals while serving your customer base. Integrate Design Thinking exercises and other program planning tools to generate ideas and insights to inform program design. Effectively engage your customers with behavioral and marketing strategies.

Course Topics
- Market assessment — identifying customer barriers and motivations and using market research techniques to inform program design
- Program design — selecting a program approach to match utility and customer goals and resources to overcome customer barriers
- Cost-effective programs for different customer classes — prescriptive and custom rebates, upstream programs, financing, etc.
- Design Thinking exercises to generate ideas and insights to inform program design
- Behavioral science insights and marketing techniques to effectively engage customers

Course Level
Basic: No prerequisites; no advance preparation.

Instructor
Elizabeth Palchak
Energy Efficiency Program
Implementation, Reporting and Evaluation

Thursday, May 17
8:30 a.m. – 4:30 p.m.

Recommended CEUs .7/PDHs 6.5/CPEs 7.8
Field of Study: Specialized Knowledge

Course Overview
Create an implementation plan for successful program execution. Gain tools and techniques to track and evaluate energy savings and cost-effectiveness. Create a right-size data tracking plan that fits your utility’s needs, based on goals, reporting requirements, budget, and staff availability.

Course Topics
- Program implementation — developing a plan that includes all aspects of program delivery, including goal-setting, incentives, marketing, and outreach
- Tools, resources, and templates to support program planning, reporting, and budgeting
- Techniques to measure energy and demand savings, participation and cost-effectiveness
- Evaluation, measurement and verification (EM&V) approaches to evaluate program results, including process evaluation, impact evaluation, and savings verification
- Right-sizing your data tracking and reporting system based on utility goals and resources

Course Level
Basic: No prerequisites; no advance preparation.

Instructor
Carol Weston

Emerging Trends and Opportunities in
Energy Efficiency and Distributed Energy Resources

Friday, May 18
8:30 a.m. – 4:30 p.m.

Recommended CEUs .7/PDHs 6.5/CPEs 7.8
Field of Study: Specialized Knowledge

Course Overview
Learn about industry trends in energy efficiency, including the rapid transformation of the lighting market and the rise of connected devices. Learn the benefits of distributed energy resources (DER) and key opportunities for municipal utilities to improve customer service, increase reliability and reduce costs through a range of DER activities.

Course Topics
- Impact of rapid market transformation on energy efficiency programs and savings opportunities
- Capturing behavioral and operational savings through connected devices
- Latest trends in real-time EM&V and measuring savings at the meter
- Demand reduction and load management opportunities through energy efficiency, demand response, battery storage, and electric vehicles
- Integrating DERs into utility and power system planning

Course Level
Basic: No prerequisites; no advance preparation.

Instructor
Damon Lane
Courses can be taken individually or as part of the certificate program.

Program Description

With ever-increasing pressures and challenges on utilities from heightened customer expectations, changing regulations, technology advances, and a changing workforce, those who lead and manage public power utilities must be equipped with the knowledge and skills to create an effective and sustainable organization with engaged, skilled and committed employees. The Public Power Manager Certificate Program is designed for a new generation of leaders as well as existing supervisors and managers. It will help these leaders provide organizational direction as they navigate a changing and complex industry environment.

Who Should Attend

This program is designed for mid-level public power managers and supervisors interested in improving their management, communications, leadership knowledge and skills. New senior managers, and those with experience, who wish to refresh or enhance their knowledge and skills by participating in a highly interactive program that has been developed specifically for public power, will also benefit from this program.

Program Requirements

To earn this certificate, participants must complete the following requirements within one year:

1. Complete the three required courses
   - Electric Utility Industry Overview: Strategic Challenges and Trends*
   - Financial Planning, Budgeting and Performance: What Managers Need to Know
   - Strategic Leadership for Public Power

2. Complete a post-course project that applies principles from the six key leadership dimensions learned in class. Participants may choose to complete one of three project types.

*Participants who can demonstrate advanced knowledge of the utility industry, through work experience or coursework, may opt-out of this course. Contact EducationInfo@PublicPower.org for more information.
Registration Fees
After April 23: Individual course prices increase by $50; certificate program prices increase by $250.

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*Covers the cost of study material, exam and post-course project grading.
**Includes the three courses and the enrollment fee.

Instructors
Betsy Aylin, Ph.D., Consultant, Collaborative Learning, Inc.
Betsy has broad expertise in leadership development, organization effectiveness and workforce planning. She has worked in an array of industries, including nearly 20 years with public utilities. She has served as adjunct faculty for graduate level programs at the University of Texas-Austin and at the masters level at St. Edwards University in Austin.

Mark Beauchamp, CPA, CMA, MBA, President, Utility Financial Solutions
Mark specializes in financial planning, cost of service, and rate setting for public power utilities. He has more than 33 years of experience and has assisted utilities with financial planning, cost of service, developing financial targets for utilities and competitive rate designs.

R. John Miner, P.E., President, Collaborative Learning, Inc.
John is a consultant with more than 45 years of experience in the electric utility industry. He has been an APPA instructor for more than three decades and an instructor for the University of Wisconsin for 20 years. He has worked for the Austin Electric Utility Department in Texas and Rochester Public Utilities in Minnesota.

Mike Renquist, D.Min., Organizational Development Consultant, Collaborative Learning, Inc.
Mike has designed and implemented programs on process re-engineering, managerial and leadership development, performance assessment, project management, and transitional management. He is the author of more than 30 training curricula and published a book on personal and professional identity and ethics.

Electric Utility Industry Overview: Strategic Challenges & Trends*
Monday, May 14
8:30 a.m.–4:30 p.m.
Recommended CEUs .7/PDHs 6.5/CPEs 7.8
Field of Study: Specialized Knowledge

Course Overview
This course provides a largely non-technical overview of the local public power system in its broader operating and business management context. Learn about the electric utility system infrastructure from power grid to meter, its operation, performance, and development. Discuss strategic issues and industry trends that are impacting public power utilities and challenging the traditional public power business model. Each participant will receive a copy of the Association’s Electric Utility Basics handbook.

Course Topics
- Electric utility industry regulation and market restructuring
- Developments in generation and regional transmission
- Developments in local transmission and distribution infrastructure
- Strategic issues and trends for electric utilities
- The public power business model
- How changes in the industry are affecting local public power systems

Course Level
Basic. This course does not have prerequisites and does not require advance preparation.

Instructor
R. John Miner, P.E.

*Participants who can demonstrate advanced knowledge of the utility industry, through work experience or coursework, may opt-out of this course. Contact EducationInfo@PublicPower.org for more information.
Financial Planning, Management and Budgeting: What Managers Need to Know

Tuesday, May 15
8:30 a.m.–4:30 p.m.

Recommended CEUs .7/PDHs 6.5/CPEs 7.8
Field of Study: Specialized Knowledge

Course Overview
A critical aspect allowing managers to complete projects and programs is the ability to fund system improvements with a limited impact on customers and elected officials. This program gives managers insight and understanding on financial management, budgeting techniques, long-term financial planning methods and an understanding of the various forms of electric rates. The course also addresses how to convey these methods to utility policymakers.

Course Topics
- Bond rating agencies
- Determining revenue requirements
- Contributions to city governments
- Financial targets
- Developing a long-term financial plan
- Cost of service studies and information
- Electric rate designs and significant factors affecting rates

Course Level
Basic. This course does not have prerequisites and does not require advance preparation.

Instructor
Mark Beauchamp

Strategic Leadership for Public Power

Wednesday, May 16 – Friday, May 18

Wednesday – Thursday: 8:30 a.m.–4:30 p.m.
Friday: 8 a.m.–3:30 p.m.

Recommended CEUs 2/PDHs 20/CPEs 22.5
Field of Study: Specialized Knowledge

Course Overview
This course will provide participants with an in-depth perspective on public power leadership by focusing on the development of the individual leader and the leader’s role in guiding and developing their organization and its workforce. Participants will use the DISC Work of Leaders profile as a source of personal information that will be used during the course to increase awareness of their predominant leadership style and its impact on others. Each of the following dimensions of leadership will be presented in separate course modules of approximately three hours duration:

- Awareness
- Character
- Community
- Empowerment
- Service
- Sustainability

Course Level
Basic. This course does not have prerequisites and does not require advance preparation.

Instructors
Betsy Aylin, Ph.D.
R. John Miner, P.E.
Mike Renquist, D.Min.

Module One
Awareness: Understanding and being present to the organization, its context and the many people it touches.

Topics include:
- Setting purpose and engaging others in the organization’s purpose
- Assessing the utility organization in its changing context
- Addressing organizational realities and needed change
- Recognizing and managing larger system influences
- Applying principles and processes of systems thinking
- Identifying intervention points to manage system influences
Module Two
Character: Modeling those abiding values that define a leader, shape the organization’s beliefs and guide ethical action.

Topics include:
- Setting, driving and communicating values and behaviors
- Increasing alignment of personal and organizational values and behaviors
- Ethical practices and the public’s expectations
- Exploring the role of ethics statements and policy
- Gaining insight on personal strengths and areas for development
- Strategies for self-development through self-reflection, on-going feedback and adoption of new practices

Module Three
Community: Fostering connections and a sense of community among the people served by the organization and those who serve them.

Topics include:
- Building and maintaining collaborative relationships
- Understanding the benefits of difference and the risks of conformity
- Managing differences and dealing with conflict
- Communication challenges and solutions
- Strengthening the link between communication and relationship building

Module Four
Empowerment: Enabling employees to continuously develop and fully engage with the organization and each other.

Topics include:
- Power sharing as a way to build future leaders and strengthen organizational sustainability
- Making a work team cohesive and effective while building teamwork skills
- Effective team management, problem solving and decision-making
- The leader’s role as workforce assessor and developer
- Creating a learning environment to develop people and build knowledge
- Strategies for creating the workforce of the future

Module Five
Service: Instilling a service culture and acting in the best interests of the customers, stakeholders and communities that the organization serves.

Topics include:
- Building a customer service culture
- Assessing and managing customer interests and satisfaction
- Strategies for communicating with and influencing stakeholders while balancing interests and needs
- Defining and driving accountability
- Measuring performance and setting performance targets
- Building acceptance of a self-accountability culture

Module Six
Sustainability: Ensuring that the organization is viable and vital for the future.

Topics include:
- Creating a clear and compelling picture of the future and engaging employees in a shared vision
- Linking vision to goals, roles and performance
- Innovation for utility sustainability
- Strategies for building an innovative work environment
- Driving change for organizational sustainability
- Applying change principles to real issues and challenges
Applied Electrical Distribution Theory

Monday, May 14
8:30 a.m. – 4:30 p.m.

Recommended CEUs .7/PDHs 6.5/CPEs 7.8

Course Overview
Learn the fundamentals of electric circuit theory and the application of theory to electric utility distribution systems. Review the relationships between voltage, current, resistance and reactance, real and reactive power in single-phase and three-phase alternating current (AC) circuits. Perform some commonly encountered AC circuit calculations that are used to determine conductor and equipment ampacity ratings, circuit voltage drop, power factor, energy losses, and customer load estimation.

Course Topics
- Direct and alternating current circuit elements (energy sources, conductors, loads, voltage, current, opposition to current flow)
- Alternating current principles in single and three-phase circuits (Kirchoff’s voltage and current laws, Ohm’s law, impedance, phase angle, voltage/current relationship, reactance and phase angle, real and reactive power)
- Circuit component ratings (voltage, current, power, thermal limits)
- Common circuit calculations (current flow, voltage drop, power, power factor, energy losses)
- Customer load estimation

Course Level
Basic: no prerequisites; no advance preparation.

Instructor
Mark Swan, P.E., Principal, MDS Engineering Consulting, LLC

Registration Fees
Prices increase by $50 after April 23

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<tr>
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<th>Members</th>
<th>Nonmembers</th>
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</thead>
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<tr>
<td>1 day class</td>
<td>$545</td>
<td>$1,090</td>
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<tr>
<td>3.5 day class</td>
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<td>$2,490</td>
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What to Bring
Participants are required to bring a scientific/business calculator or mobile calculator app.
Electrical Distribution Principles, Applications and Improvements

**Tuesday, May 15 – Friday, May 18**
Tuesday – Thursday: 8:30 a.m. – 4:30 p.m.
Friday: 8:30 a.m. – Noon

*Recommended CEUs 2.2/PDHs 22/CPEs 26.4*

**Course Overview**
Receive a comprehensive and practical overview of electric utility distribution. Learn about electrical distribution system planning, design and operating criteria, as well as principles and practices related to customer loads and services, grounding, voltage regulation, insulation coordination, overvoltage protection, and overcurrent protection. Review overhead, underground, and network distribution characteristics, advantages and disadvantages, components, and equipment. Because the distribution system is the heart of a public power utility, you’ll also hear about business imperatives for distribution system performance and performance improvement.

**Course Topics**
- Overhead, underground, and network distribution systems
- Distribution system components and equipment
- Distribution system planning, design, and operating criteria
- Distribution standards and regulatory requirements
- Customer loads and services
- Grounding
- Voltage regulation
- Insulation coordination and overvoltage protection
- System faults, overloads, and overcurrent protection
- Business imperatives for distribution system performance
- Distribution performance measurement
- Distribution economics and system improvements

**Course Level**
*Basic/Intermediate:* no prerequisites; no advance preparation.

**Instructor**
M. Thomas Black, P.E., Management Consultant, Collaborative Learning, Inc.

**What to Bring**
Participants are required to bring their own scientific calculator and are encouraged to bring copies of distribution planning criteria and design guides from their respective utilities for class reference and discussion.
Registration and Hotel Information

Register online at www.PublicPower.org under Education & Events.

Hotel Information
All courses will be held at the:
Grand Hyatt Denver
1750 Welton Street
Denver, Colorado 80202

APPA Room Rate
$209 Single/Double (plus tax)

Room Rate Cut-off Date
April 20, 2018

Reservations
Contact the hotel directly at 303-295-1234 or visit www.PublicPower.org under Education & Events to make reservations online.

Please note: APPA’s block of rooms to sell out prior to April 20, so make your hotel reservations early.

Location
All courses will be held in the Grand Hyatt Denver. The hotel is located 25 miles from the Denver International Airport. Please contact the hotel for transportation options.

Cancellations/No-Show/Refunds/Substitutions
Registrants who cancel in writing on or before May 7, 2018, are entitled to a refund of their registration fee, minus a $50 cancellation fee. Registrants who cancel after May 7, will not receive a refund, but attendee substitutions will be allowed for this event only. Registrants and no-shows who do not cancel by May 7 are responsible for the full registration fee and are not entitled to a refund.

Cancellations must be made in writing and emailed to Registration@PublicPower.org.

Travel Arrangements
Travel arrangements and costs are the responsibility of the participants (including hotel parking, WiFi, incidentals, etc.). The Association will not reimburse for changes in travel expenditures regardless of the cause.

Confirmations
Confirmations will be sent via e-mail.

Name Badges
Name badges can be picked up at the APPA registration desk at the hotel starting at 7:30 a.m. on the first day of each course.

Meals
Beverage breaks are included in the registration fee. All meals are on your own.

Internet Access
WiFi may only be available in hotel common areas (sleeping rooms and hotel lobby), and will not be available in APPA meeting rooms. Please make arrangements to use cellular data on your device, or bring a MiFi or Internet hotspot for personal use. APPA will not provide a password for WiFi.

Questions?
Email EducationInfo@PublicPower.org or call 202/467-2919.

The American Public Power Association is the voice of not-for-profit community-owned utilities that power 2,000 towns and cities nationwide. We represent public power before the federal government to protect the interests of the more than 49 million people that public power utilities serve, and the 93,000 people they employ. Our association advocates and advises on electricity policy, technology, trends, training and operations. Our members strengthen their communities by providing superior service, engaging citizens, and instilling pride in community-owned power.

The American Public Power Association’s Academy is public power’s complete resource for professional education and certification, helping electric industry employees stay abreast of rapidly evolving technologies, regulations, and customer needs. Learn more about our conferences, webinars, special events, continuing education and custom in-house trainings at: www.PublicPower.org/Academy.
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