

TVPPA COURSE CATALOG

SMART COMMUNITY.
POWERFUL FUTURE.



tvppa



ABOUT TVPPA

The Tennessee Valley Public Power Association (TVPPA) is the non-profit, regional service organization that represents the interests of the 153 consumer-owned electric utilities operating within the Tennessee Valley Authority (TVA) service area. TVPPA members include both municipals and electric cooperatives and they serve more than 10 million people in Alabama, Georgia, Kentucky, Mississippi, North Carolina, Tennessee and Virginia.

TVPPA MISSION

TVPPA strives to serve as an effective advocate of its membership's interests with the public, in the political process and with TVA; and to be a successful independent provider of competitive utility business services. We provide learning opportunities including both professional and technical training that support the growth of individual participants and their organizations while also providing a deeper understanding of the role public power plays in communities across the Tennessee Valley.

As a voluntary service organization, we provide our members with the advantages of larger utility operations without relinquishing the local ownership and control that is essential to our independent distribution systems.

WELCOME TO TVPPA TRAINING

TVPPA's Education & Training Department proudly offers dozens of classes, technical trainings and certificate programs that focus on the many critical aspects of operating a public power company. Classes are offered in person in 11 states and can also be taught on-site at your facility. For those who face challenges attending in person, TVPPA offers four technical distance learning programs.

// EDUCATION & TRAINING OFFERINGS

Whether you want to start your career as a lineworker, advance your career to foreman or supervisor or improve your business management skills, we offer 20 certificate programs to support you.

Browse the programs in this catalog then visit tvppa.com/training to register.

TECHNICAL TRAINING OFFERINGS

Lineworker Apprenticeship Program (LAP)*+	6
Advanced Lineworker Training (ALT)	11
Line Design & Staking (LDS).....	14
Fiber Optic Technician Program.....	17
Comprehensive Substation Maintenance Program	19
Substation Maintenance (SM)*+.....	21
Electrical Metering (EM)*+	22
Protective Relaying (PR)*+.....	23
Distribution System Operator (DSO)	24
Certified Power Technology (CPT).....	26
Power Distribution Engineer (PDE).....	28

BUSINESS MANAGEMENT TRAINING

Certified Utility Accountant (CUA)	31
Certificate of Customer Service (CCS).....	33
Certified Power Supervisor (CPSv)	34
Certified Power Executive (CPE).....	36
Advanced Certified Power Executive (AdvCPE).....	38
Foreman Academy (FA)	40
Utility Human Resources Certification (UHR).....	41
Utility Purchasing & Materials Management (UPMM)	43
Utility Security Professional (USP).....	44
Certified Safety Coordinator (CSC).....	46

*Available as Distance Learning +Includes labs

MEET THE EDUCATION & TRAINING TEAM

TVPPA's Education & Training Department proudly offers a comprehensive selection of utility-specific professional and technical training programs in 11 states. To learn about bringing TVPPA's E&T offerings to your state, contact us at training@tvppa.com.



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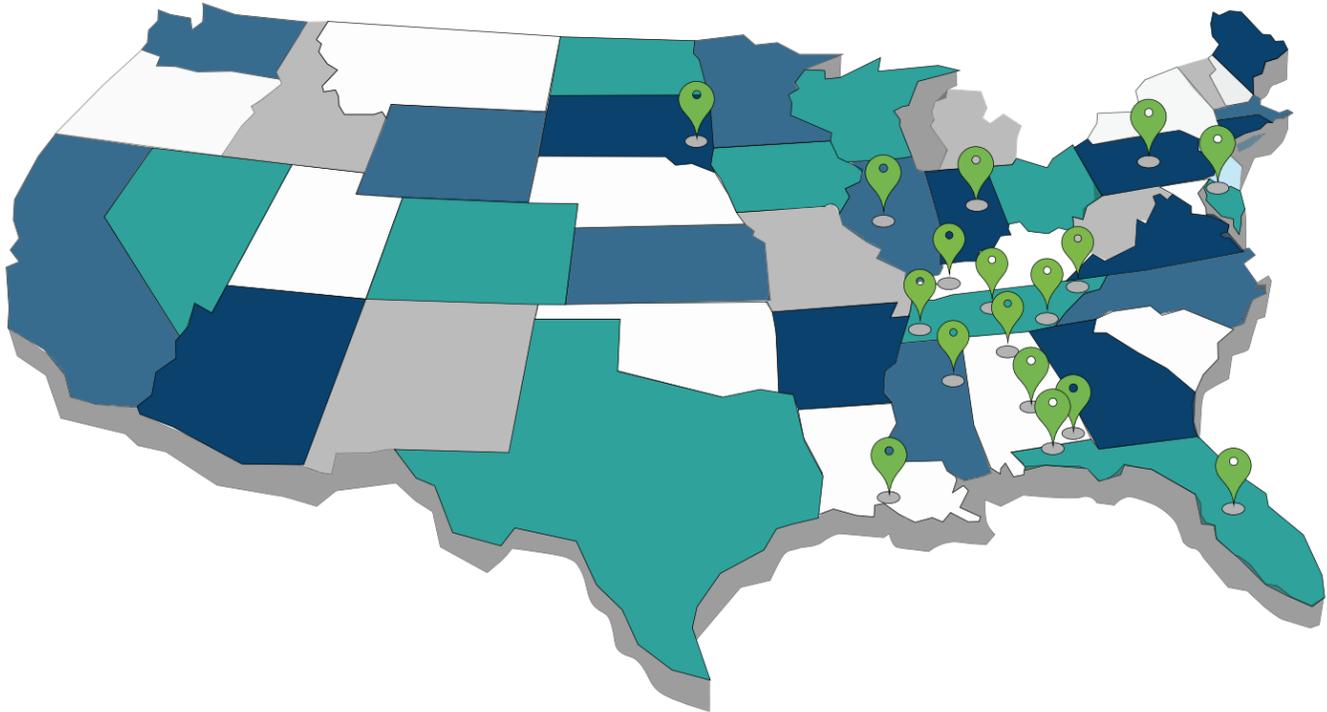
Kaitlin Plaster

Education & Training
Specialist

TECHNICAL TRAINING

- Lineworker Apprenticeship Program (LAP) 6
- Advanced Lineworker Training (ALT) 11
- Line Design & Staking (LDS) 14
- Fiber Optic Technician (FOT) 17
- Comprehensive Substation Maintenance (SM) 19
- Distribution System Operator (DSO) 24
- Certified Power Technology (CPT) 26
- Power Distribution Engineer (PDE) 28

// TECHNICAL TRAINING LOCATIONS



350+
Training Classes
Offered Annually



70+
Safety Meetings
Held Monthly



70
Subject Expert Instructors

LINEWORKER APPRENTICESHIP PROGRAM (LAP)

The Lineworker Apprenticeship Program (LAP) provides the education and training necessary to pursue a career in linework. This training introduces the beginning apprentice to the basic math, electricity and alternating current fundamental principles that are the groundwork for understanding the “hows and whys” of this profession.

You will be exposed to the everyday demands of the jobs and learn the fundamentals required to be a lineworker. You will begin with a pre-apprentice workshop that teaches basic knots and climbing equipment, stringing and sagging wire, underground distribution systems, line maintenance, meter applications, climbing on 40' and 90' poles and more.

After successful completion of the workshop, you will complete four self study units followed by five labs and a final exam. The program is 37 days plus self study time.

// PRE-APPRENTICE ASSESSMENT WORKSHOP

6 DAYS

Experience the everyday demands you will be expected to handle on the job in this six-day intense workshop. You will learn various aspects of linework with an emphasis on climbing. All climbing tasks and exercises are demonstrated by the instructor. In addition to classroom discussion and hands-on exercises, students are assigned homework and tested extensively.

- Worksite safety inspection
- Fitting, care and inspection of climbing tools
- Climbing on 40' & 90' poles
- Gaff sharpening
- Inspection and testing of poles and worksite hazards
- Knots: bowline, clove hitch, half hitch, timber hitch, square and bowline on a bight
- Pole-top rescue at 10' & 40' levels
- Safe and proper climbing techniques
- Proper handline use and make-up for storage
- Introduction to rigging
- Hanging cross arms at the 10' level.

At the end of the workshop, your potential ability to perform work under stress and your capacity to learn and follow instructions will be evaluated before moving on to the four self study units.



THINGS YOU WILL LEARN

- Climbing utility poles
- How to tie knots
- How to use climbing equipment
- How to string and sag wire
- Bucket truck rescue
- How to operate digger derrick trucks
- Hazards of electricity
- Grounding
- Overhead and underground systems

COURSE LIST

- Pre-Apprentice Assessment Workshop
- LAP Units 1-4
- Digger Derrick Training
- Lab 1: Fundamentals
- Lab 2: Construction
- Lab 3: Operations
- Lab 4: Underground
- Lab 5: Troubleshooting
- Final Exam



// SELF STUDY UNITS

SELF STUDY UNIT 1

THIS SELF STUDY UNIT COVERS:

- Basic tools for linework
- Communication basics
- Working safely
- Rope techniques and knot tying
- Electricity fundamentals
- Math skills used to understand and work with electricity
- Intro to direct current (DC) fundamentals

SELF STUDY UNIT 2

THIS SELF STUDY UNIT COVERS:

- How electricity is generated and transmitted
- Math skills
- Introduction to alternating current (AC) fundamentals
- Resistance, induction and capacitance in an alternating current circuit
- Protective grounding
- Hot-line tools

SELF STUDY UNIT 3

THIS SELF STUDY UNIT COVERS:

- Mathematical and safety reviews
- Distribution system and its components
- Series and parallel circuits
- Three-phase power
- Instruments and meters used to measure electricity
- Distribution and transmission poles
- Techniques used to string and sag conductors and the basic construction and operation of a transformer

SELF STUDY UNIT 4

THIS SELF STUDY UNIT COVERS:

- Safety review
- Line conductors and connections
- Underground distribution system
- Transmission and distribution system maintenance
- Banking techniques
- System operations
- System protection
- Work procedures
- Insulators
- Electric substation equipment and operations

// LINEWORKER APPRENTICESHIP PROGRAM LABS

The TVPPA Lineworker Apprenticeship Program training includes six labs that cover skills needed for the job. Each lab includes a field performance evaluation and comprehensive written exam, which must be completed before moving to the next lab. After all labs are completed you will take the final exam.

DIGGER DERRICK TRAINING

3 DAYS

Learn how to safely and responsibly operate digger derrick and bucket trucks. Each participant learns and performs the following exercises:

- Pre-operational inspection & pre-flight operation
- Hand signals
- Load spotting and landing
- Load control obstacle course
- Digger operation
- Pole setting

LAB 1: FUNDAMENTALS

5 DAYS

You must be a qualified climber and complete the Pre-Apprentice Assessment Workshop to enroll in this lab. Lab 1 covers a variety of skills including:

- Safety
- PPE inspection
- Grounding
- Rigging
- Pole-top rescue
- Aluminum and copper ties
- Minimum approach distances

LAB 2: CONSTRUCTION

5 DAYS

You must complete Fundamentals Lab 1 to enroll in this lab. Lab 2 covers a variety of skills including:

- Safety
- Job briefings
- Guys and anchors
- Minimum approach distances
- Overhead construction
- Sagging
- Aluminum ties
- Cover-up

LAB 3: OPERATIONS

5 DAYS

You must complete Construction Lab 2 to enroll in this lab. Lab 3 covers a variety of skills including:

- Safety
- Aerial lift inspection
- Arc flash hazards
- PPE inspections
- Bucket truck rescue
- Systems operations
- Three-phase transformer theory
- Insulation/isolation techniques



// LABS, CONT.

LAB 4: UNDERGROUND

5 DAYS

You must complete Operations Lab 3 to enroll in this lab which covers a variety of skills including:

- URD safety
- Grounding
- Cable design and preparation
- Locating cable
- Fault finding
- URD systems and equipment
- Troubleshooting
- Tagging
- Installation
- Fusing

LAB 5: TROUBLESHOOTING

5 DAYS

You must complete Underground Lab 4 to enroll in this lab which covers a variety of skills including:

- Troubleshooting techniques
- Substation
- Breakers
- Fuses
- Regulators
- Capacitors
- Instrumentation and metering
- Safety
- Hot-line tools
- Protective devices
- Regulators
- Capacitors
- Single-line drawing

FINAL EXAM

This comprehensive exam is the final step in completing the TVPPA Lineworker Apprenticeship Program. It includes a written and field skills elements exam. In order to pass you must satisfactorily complete all critical elements and objectives. It is a three-day exam, the first two days consisting of field exams. The field exams include troubleshooting, proper grounding techniques, isolating and grounding. Safety is a major grading point; any safety violations will result in failure of the exam.



Upon successful program completion, enrollees will earn a TVPPA Certificate of Completion. If the participating utility or construction company's program is registered with the U.S. Department of Labor Office of Apprenticeship, the participant may also earn a DOL Certificate of Completion of Registered Apprenticeship Program.

ADVANCED LINEWORKER TRAINING (ALT)

The Advanced Lineworker Training (ALT) program is designed for midlevel lineworkers who want to further their knowledge, skills and abilities.

You will progress through five phases, building on your current knowledge as a lineworker. Each phase lasts three days, for a total of 15 days. All classes are conducted in-person.

ALT combines fundamental training with hands-on practices, problem-solving exercises, comprehensive reviews into systems, substations, switchyards and more.

THINGS YOU WILL LEARN

- Protective grounding
- Transformer fundamentals
- Substation operating equipment
- Schematic & one-line diagrams
- Distribution system overcurrent protection
- Voltage regulators & settings
- Underground components

COURSE LIST

- ALT Phase 1
- ALT Phase 2
- ALT Phase 3
- ALT Phase 4
- ALT Phase 5

// ALT PHASE 1

3 DAYS

PROTECTIVE GROUNDING

Installing protective grounds and short-circuiting leads at the work site protects against the hazards of accidental energizing, static charges and induced voltages. This module teaches participants the principles of grounding, along with the reasons for grounding. It outlines the proper procedures and approved grounding equipment for installing temporary safe working grounds on de-energized circuits.

TRANSFORMER FUNDAMENTALS

A lineworker must be able to interpret information on transformer nomenclatures to assure proper and safe application of equipment and the most reliable service for the customer. This module provides a review of electrical measurements, Ohm's Law, series and parallel circuits and how these apply to the operation of a transformer. Participants also discuss the theory of distribution transformer operations.

TRANSFORMER CONNECTIONS

Each problem in the field communicates a possible source of trouble. A lineworker should stop to think out the problem, consider the circumstances and measure and analyze the voltage readings to determine the trouble source. Participants in this module gain hands-on experience using miniature training transformers in troubleshooting exercises by measuring actual voltages and using a phase rotation meter.

// ALT PHASE 2

3 DAYS

SUBSTATIONS & SWITCHYARDS

Substations and switchyards may seem complex and confusing to untrained personnel, but once they are reduced to the basic components — which this module does — they are much easier to understand.

Participants learn the functions and safety requirements for working with each type of substation operating equipment, enabling the lineworker to identify problems that could occur within a substation on a trouble call. This session reviews transformers and circuit breaker drawings.

// ALT PHASE 3

3 DAYS

TRANSFORMERS & VOLTAGE PHASERS

When servicing transformer banks in both day-to-day and emergency situations, understanding transformer bank sequence is essential. This module teaches three-phase connections, current flow and troubleshooting within these connections.

Voltage phasers are key to transformer bank construction, operation, troubleshooting and emergency transformer bank problem solving and lineworkers with an understanding of voltage phasers can more effectively analyze transformer bank problems. Participants will practice hands-on problem-solving techniques through study and analysis of miniature transformers.

// ALT PHASE 4

3 DAYS

RECLOSERS

Lineworkers need to know how system protective devices operate in emergency situations, to protect equipment from damage, reduce customer outages and limit hazards to life and property. This module provides training on reclosers as well as fuses and sectionalizers.

VOLTAGE REGULATORS

Proper voltage regulation is important to both customer satisfaction and economic operation of a utility system. This module will teach lineworkers how to properly isolate a voltage regulator and familiarize them with the operating principles and settings of voltage regulators.

// ALT PHASE 5

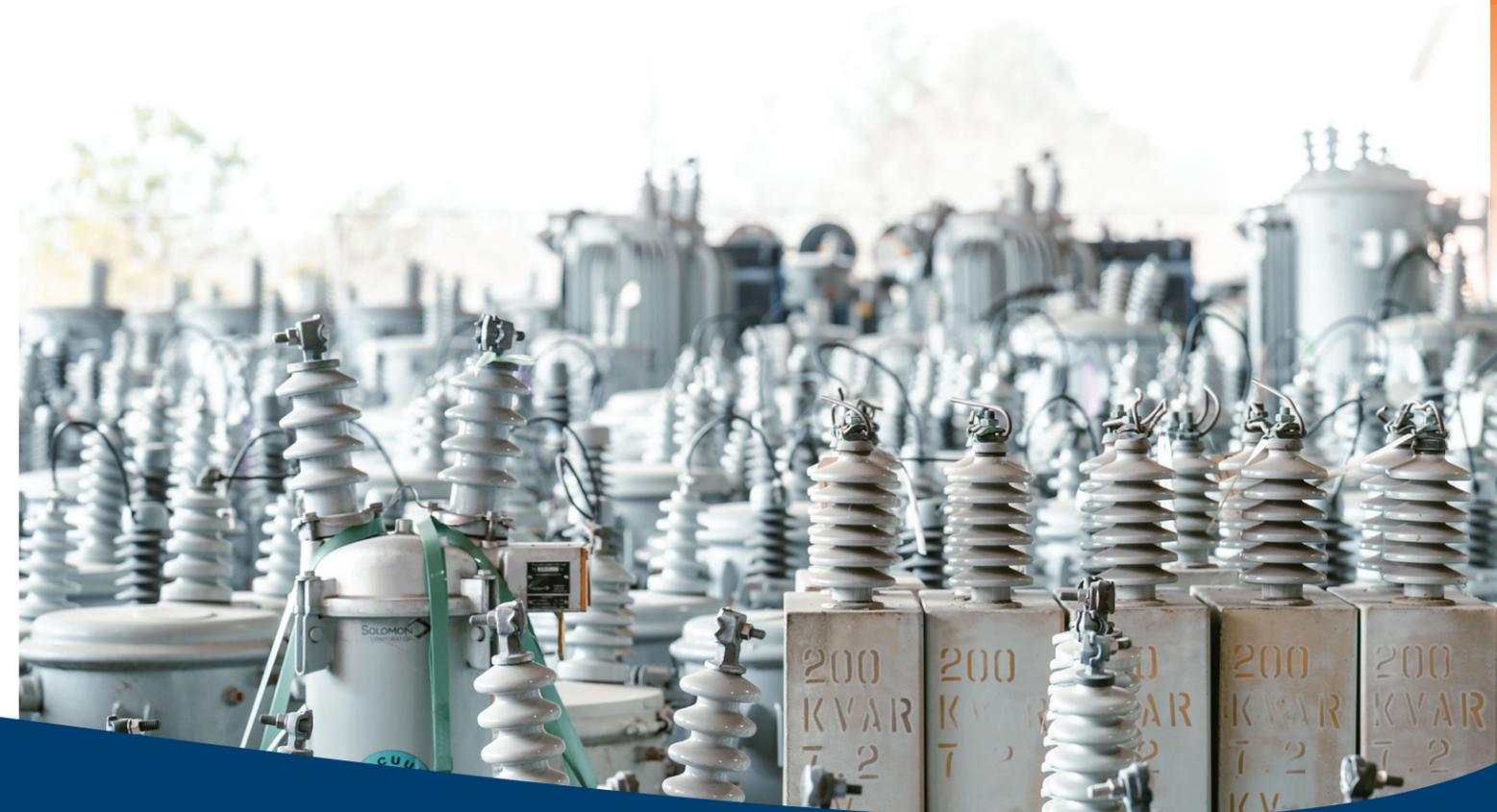
3 DAYS

UNDERGROUND COMPONENTS

Proper installation of underground (UD) systems is critical to keeping them operating as designed. With the many different types of components and accessories — and with manufacturers developing new products each day — it can be difficult for utilities to know the correct procedures for each component.

When working with medium voltage insulated cable and UD systems, not following proper procedures can have serious consequences. This module provides a comprehensive review of UD systems in general, with an emphasis on the following:

- Verify, isolate, test and ground
- Medium voltage cable construction & theory
- Proper medium voltage cable preparation & handling
- Fundamentals of grounding
- Proper procedures for system UD switching
- System fusion
- Proper UD cover-up procedures



LINE DESIGN AND STAKING (LDS)

The Line Design & Staking Certification Program provides the essential tools necessary for engineering and line design personnel to become experts in their field and advance in the utility industry. Four levels of study guide participants through the understanding and application of engineering design for electric distribution systems.

New line designers will achieve the strong foundation necessary to move forward in a career in line design, while experienced designers will gain the ability to prove their decisions on paper. You will learn engineering concepts and formulas specific to power line design and relevant to the field technician's responsibilities, providing immediate on-the-job benefits.

Many courses in the program are appropriate and relevant for engineering, operations and management personnel.

THINGS YOU WILL LEARN

- Basic engineering of overhead services
- Distribution system components
- NESC requirements
- Line design concepts
- Single-phase line design
- Advanced mechanical line design

CURRICULUM

- Level 1
- Level 2
- Level 3
- Level 4

// LEVEL 1

3 DAYS

Participants in Level 1 will gain foundational instruction such as basic engineering of overhead services typically expected of beginning line design personnel. The program is taught at a line design technician level where all engineering calculations are streamlined with easy-to-read charts for gathering data. The certification test for this course will be given online the week following in-class instruction.

Level 1 includes a comprehensive overview of:

- Defining common distribution utility electrical terms such as voltage, current and power
- Outlining utility safety responsibilities and procedures
- Introducing use of field and drafting engineering tools
- Identifying distribution system components
- Introducing NESC – overview and code organization
- Providing students with power line design and staking basics
- Introducing mechanical design of secondary/service and single-phase poles in order to determine the proper pole heights, hardware and guying
- Engaging students in the design of residential single-phase overhead transformer, service conductors and calculation of voltage drop

// LEVEL 2

3 DAYS

Level 2 includes a more comprehensive look at design criteria and concepts related to overhead design. The certification test for this course will be given online the week following in-class instruction.

Participants will build on knowledge learned in Level 1 and explore:

- Navigating the NESC
- Power line design – process and considerations
- Introduction to commonly used system and protective devices
- Overview and understanding of required highway, railroad, gas and oil pipelines and US Corps of Engineers permits and potential issues with each agency/organization
- Joint use attachments, permitting process, pole ownership responsibilities, clearance audits and NESC compliance
- Field make-ready for new attachments – clearance calculations
- Design of assembly hardware, guys and anchors required for multi-phase pole installations – angle and dead end
- Introduction to spacer cable and tree wire – uses, installation and advantages
- Single-phase line design



// LEVEL 3

3 DAYS

Level 3 goes in-depth on joint-use remedy and make-ready as well as underground design. The certification test for this course will be given online the week following in-class instruction.

Participants will learn:

- Strength rating of insulators, SRI and crossarms, SRC
- Calculation of maximum line angle, MLA
- Calculation of crossarm bending moment, CBM
- Maximum allowable bending moment, MH and MV
- About sag chart vs. stringing chart
- About linear interpolation
- How to adjust sag values for changes in span length
- About DOT plans and profiles
- How to design and relocate distribution facilities along a DOT road project
- The differences between underground and overhead distribution
- About radial vs loop underground distribution
- About underground subdivision design, transformer and service sizing

// LEVEL 4

3 DAYS

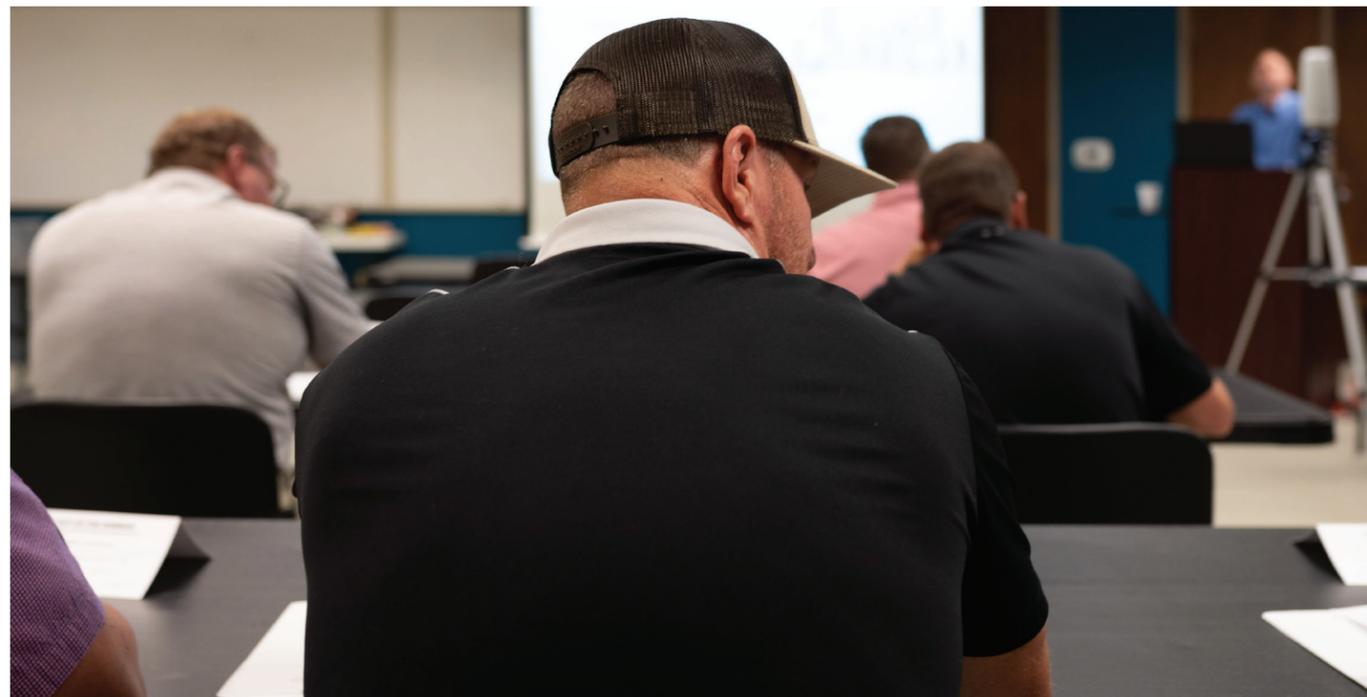
Level 4 includes a comprehensive overview of designing a line from beginning to end, including system protection and commercial load sizing. The certification test for this course will be given online the week following in-class instruction.

Participants will examine:

- Protecting the aging power infrastructure
- Multi-circuit three-phase mechanical loading
- Joint use inspection: purpose & procedures
- Commercial load sizing
- Distribution system circuit protection basics
- Storm preparation & recovery
- Advanced technology & automation
- Overhead & underground subdivision layout
- Overhead three-phase line extension

FIBER OPTIC TECHNICIAN PROGRAM (FOP)

TVPPA's Fiber Optic Technician Program is designed to provide employees with a fundamental understanding of construction, operation and maintenance techniques used in providing broadband service through fiber optic cable by local power companies. Skills and topics learned in this program should equip employees to operate in the modern area of fiber optics as utilized by power companies across the nation.



THINGS YOU WILL LEARN

- Knot tying
- Safe and proper climbing techniques
- Hazard recognition
- Overhead construction of main-line and drop
- Fiber theory, types, geometry
- Splicing
- Closures and terminals
- Outside plant installation
- Optical network terminals
- Troubleshooting and testing

CURRICULUM

- Fiber Fundamental Climbing Lab
- Fiber Construction Lab
- Basic Fiber Lab
- Fiber Splicing Lab
- Fiber Troubleshooting Lab
- Fiber Installation Lab

// FIBER FUNDAMENTAL CLIMBING LAB

5 DAYS

Learn the essentials of climbing as a Fiber Technician. Each participant learns and performs the following exercises:

- Work site safety inspection
- Fitting, care and inspection of climbing tools
- Gaff sharpening
- Knot tying
- Climbing techniques

// FIBER CONSTRUCTION LAB

5 DAYS

Understand the basics of fiber construction for main-line overhead and drop and overhead conductor sagging methods. Participants will learn:

- Job briefing
- Proper hand-line use
- Supply space training
- Guy and anchor installation
- Work area protection
- Bucket truck rescue

// BASIC FIBER LAB

4 DAYS

Students will be introduced to types of fiber and how it can be used. Students will leave this lab with a base understanding of what fiber can be used for and the foundation to begin splicing in the next lab. Participants will learn:

- Introduction and applications
- Fiber theory, types, geometry, manufacturing
- Safety
- Cable structures
- Architectures/topologies and splitters
- Connectors

// FIBER SPLICING LAB

5 DAYS

Students will leave this lab knowing how to prepare a cable and splice it in multiple settings from mainline to service drops. Participants will learn:

- Splicing
- Central office and fiber distribution hub - terminations and splicing
- Closures and terminals, success in the field

// FIBER TROUBLESHOOTING LAB

3 DAYS

This lab is designed to ready students for troubleshooting fiber after splicing is completed. Topics include using an OTDR to test and troubleshoot fiber and how to read an OTDR to find faults along the fiber path and determine the distance of an issue when a cut occurs. Participants will learn:

- Test equipment and testing
- Outside plant installation

// FIBER INSTALLATION LAB

3 DAYS

This 3-day lab teaches students the process of running fiber into a home or business. Students will learn about different ONTs and systems to assist with fiber installation and troubleshooting. This lab will transition to the final exam after all concepts are covered. Participants will learn:

- Premise installation
- Optical Network Terminals (ONT)
- Systems
- Troubleshooting, testing, certification

COMPREHENSIVE SUBSTATION MAINTENANCE PROGRAM

TVPPA's Substation Maintenance program is a two-tiered program consisting of three specialist certificate options:

- Substation Maintenance (SM)
- Electrical Metering (EM)
- Protective Relaying (PR)

This self-paced course is structured like a college curriculum and includes video and textbook lessons along with classroom labs.

The first tier is a core curriculum with two units. The units are the same for any of the three certificate options. You must take these two units before proceeding to the specialist certificate curriculum.

The second tier curriculum will vary depending on the certificate option you choose.

CORE CURRICULUM

- Self Study Unit 1
- Self Study Unit 2

SUBSTATION MAINTENANCE (SM) CURRICULUM

- Substation Maintenance Self Study Unit 3
- Substation Maintenance Lab A
- Substation Maintenance Lab B

ELECTRICAL METERING (EM) CURRICULUM

- Electrical Metering Self Study Unit 3
- Electrical Metering Lab A
- Electrical Metering Lab B

PROTECTIVE RELAYING (PR) CURRICULUM

- Protective Relaying Self Study Unit 3
- Protective Relaying Lab

// CORE CURRICULUM

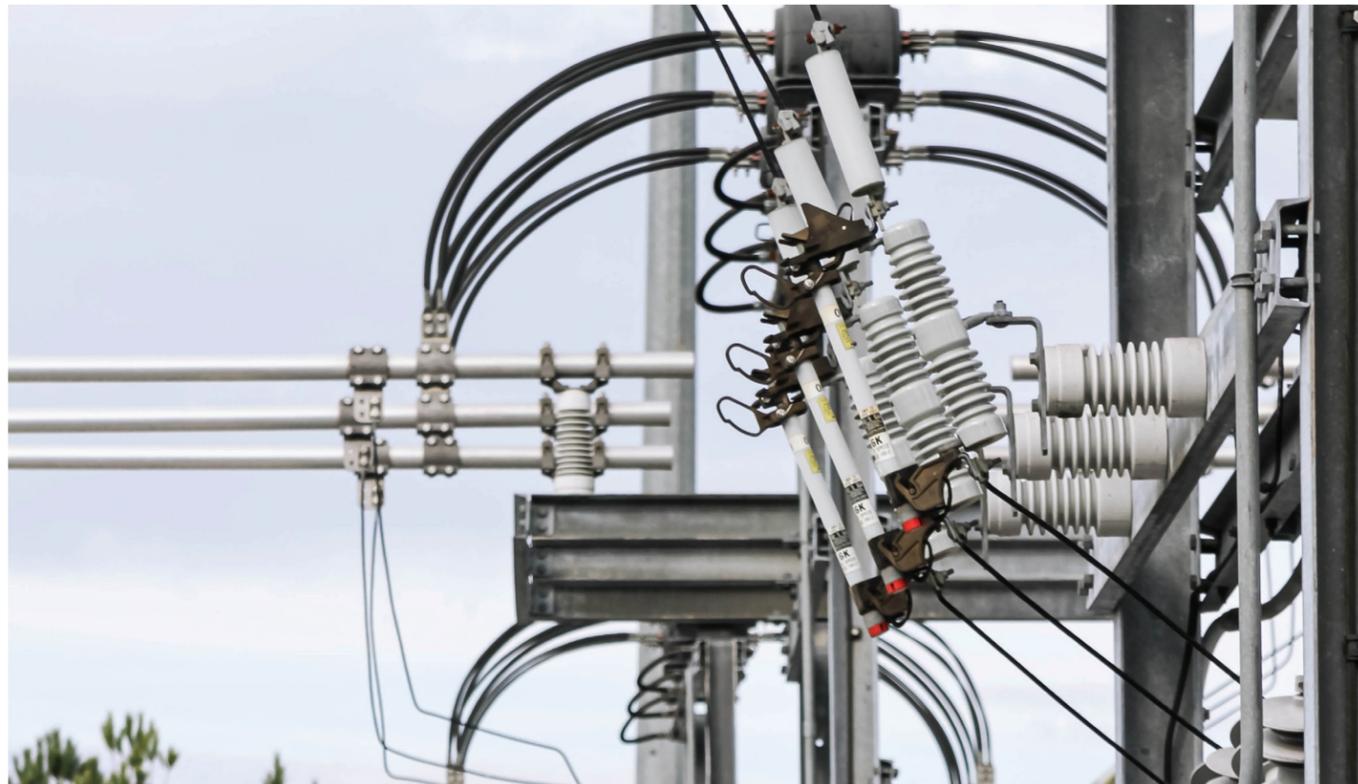
SELF STUDY UNIT 1

This course explores the components of an electric power system from production to consumption. It covers the fundamental principles of electricity (voltage, current, power, resistance, impedance) and introduces trigonometry and basic vectors that are used in calculating AC voltages and currents. Participants learn the basic math skills needed to perform calculations used in the industry. This course uses a TI-30 calculator and the text shows actual calculator strokes to work example problems. There are five chapter tests to complete for this unit. Students will be required to pass each chapter test with a 70 or above in order to continue to the next chapter.

SELF STUDY UNIT 2

Building on Unit 1, the student is taken through the principals of circuit calculations that include inductors and capacitors. It starts with single-phase circuits and then moves into three-phase circuit analysis. The material also covers items such as the relationships of voltages in currents across different transformer configurations, AC power calculations and metering fundamentals. Each section of this course has an exam that is graded by TVPPA.

This unit is made up of 10 lessons covering the fundamentals of alternating currents. Students will be required to pass each chapter test with a 70 or above in order to continue to the next chapter. Completion of Substation Maintenance Unit 1 – Basic Math and Electricity is required for enrollment.



// SUBSTATION MAINTENANCE (SM) CURRICULUM

CORE CURRICULUM

- Self Study Unit 1 (see page 20)
- Self Study Unit 2 (see page 20)

SM CURRICULUM

- SM Self Study Unit 3
- Substation Maintenance Lab A
- Substation Maintenance Lab B



SUBSTATION MAINTENANCE (SM) SELF STUDY UNIT 3

This specialist certificate course will cover typical maintenance tasks needed to keep substation equipment healthy, maximize lifespan and minimize failures. Students will receive a hard-copy workbook, access to online video segments and tests to be administered at their own pace.

This course includes examination of typical preventative maintenance programs including transformer oil testing, temperature maintenance of transformers, circuit breaker mechanisms, characteristics of gas insulated switchgear and electrical busses.

A data application section of the course will illustrate how utilities can utilize substation data to predict failures, avoid extra costs and increase grid reliability.

Students will be required to pass each chapter test with a 70 or above in order to continue to the next chapter. Completion of Substation Maintenance Unit 2 is required for enrollment. Note: Substation Maintenance Lab A and Substation Maintenance Lab B are required for this certificate.

SUBSTATION MAINTENANCE (SM) LAB A - INTRODUCTORY

This lab gives insight into DC and AC circuits, electrical measurements and equipment, polyphase vectors, power, phase sequence, three-phase connections and other exercises in which you will gain training and experience.

SUBSTATION MAINTENANCE (SM) LAB B - ADVANCED

This lab introduces students to a variety of testing and equipment including insulation resistance, power factor, dielectric strength, as well as transformers and circuit breakers. Additional topics covered include batteries, lightning arrestors, substation maintenance safety and substation drawings among other topics.

// ELECTRICAL METERING (EM) CURRICULUM

CORE CURRICULUM

- Self Study Unit 1 (see page 20)
- Self Study Unit 2 (see page 20)

EM CURRICULUM

- Electrical Metering Self Study Unit 3
- Electrical Metering Lab A
- Electrical Metering Lab B

of focus due to their complexity and maintenance/inspection needs. Lab A includes vector diagrams found on test equipment and in meter software, as well as meter site inspections and testing. Commonly used meter forms are included in the discussion of vector diagrams. Meter software and test equipment are valuable tools in diagnosing metering issues in the field. At the conclusion, groups will pull from the skills they have learned to troubleshoot and diagnose metering issues. Various hands-on activities, worksheets and group activities reinforce the lecture presentation topics.

ELECTRICAL METERING LAB B

Lab B starts with a review of the basic concepts of electricity. Those concepts are essential in understanding our electrical system and how to meter it. A quick refresher of common math used in metering is included. Some of the math focuses on CT sizing and an introduction to vector addition. The math is covered with handouts and worksheets to aid in understanding and retention. High-bill investigations and techniques are covered as needed. Topics include load estimation, common electrical equipment, usage costs, etc. Lab B is designed to quickly cover many concepts introduced in Lab A and transition into more complex metering situations. Ample time is spent exploring meter forms and uses. Lab B typically uses a testing bench with single-phase and three-phase meters and sockets and advanced meter test sets. Instructors simulate problems such as wiring errors between the instrument transformers and the meter base, meter ratio errors and meter hardware problems. Advanced meter testing and troubleshooting is a large part of the Lab, including some of the more confusing vector diagrams. Meter site inspections and procedures are also included, as well as demonstrations and discussions of meter installation safety and voltage checks to promote safe work practices. Hands-on activities, worksheets and group activities break up the lectures and reinforce presentation topics. It is recommended to attend Lab A before Lab B.

ELECTRICAL METERING SELF STUDY UNIT 3

This is a detailed study of all aspects of metering AC circuits at the transmission, distribution and customer levels. Students use the EEI Metering Reference manual as the text.

Topics such as the different types of meters, metering that is provided by protective relays, Automated Metering Infrastructure (AMI), Smart Grid access to meters and communication fundamentals of network and wireless systems are included. Testing equipment and procedures will also be included in this module.

ELECTRICAL METERING LAB A

Lab A starts with the basic concepts of electricity, which are essential in understanding our electrical system and how to meter it, including the loads we can expect and what characteristics we can expect those loads to exhibit. Lab A is heavily weighted in meter math and understanding formulas. Safety in metering is a focal point and discussed at length. Equipment used to meter loads is studied when small teams work through various metering situations. Lab A includes investigations into the equipment that provides measurements, including current transformers, potential transformers and the meters themselves. Students examine how they work, compare measuring methods, troubleshooting and common mistakes. Test switches are also an item

// PROTECTIVE RELAYING (PR) CURRICULUM

CORE CURRICULUM

- Self Study Unit 1 (see page 20)
- Self Study Unit 2 (see page 20)

PR CURRICULUM

- Protective Relaying Self study Unit 3
- Protective Relaying Lab

PROTECTIVE RELAYING SELF STUDY UNIT 3

This course contains detailed study of the different types of protective relays, the application of those relays to specific configurations and a deep-dive into the criticality of the timing relationships between various types of devices. The student will be looking at the tools used to set microprocessor relays, as well as the aspects of the cybersecurity of the communication wide area and local area networks. An overview of test equipment and testing procedures is integrated into this specialist certification

PROTECTIVE RELAYING LAB

This lab covers the following: basic relay coordination, zones of protection, relay testing and programming of Schweitzer 351, standard electromechanical relay, dispatcher training, operations training for how to read one lines, primary maps, coordination of fuses, OCRs, sectionalizers and S&C change over devices.



DISTRIBUTION SYSTEM OPERATOR (DSO)

This program provides you with a proficient working knowledge of modern electric power distribution systems. These four classes are designed to walk students through the information they need to perform their job and ensure system reliability. This program introduces you to the power industry, providing an overview of the power system, with special emphasis on distribution and safety.

// ELECTRIC POWER SYSTEM OPERATIONS

4 DAYS

Electric Power System Operations provides an overview of the Bulk Electric System (BES) including industry history and the components used in generation, transmission and distribution of electricity. This course is designed to help non-engineer power professionals understand technical aspects of the electric grid such as:

- Electrical generation and power plants
- Substations and substation equipment
- Transmission and distribution
- System protection
- Personal protection

// DISTRIBUTION SYSTEMS

4 DAYS

Distribution Systems gives students working knowledge of technical and engineering concepts in modern distribution facilities equipment, construction practices and design applications. It starts with an overview of the electric power system as it applies to distribution, customer services and consumption, then examines overhead and underground equipment applications and configurations, service reliability and power quality. It provides an in-depth examination of electrical safety, including arc flash, in high voltage environments.

// ADVANCED DISTRIBUTION CONCEPTS

5 DAYS

Advanced Distribution gives students an in-depth look into the relevant ancillary aspects of distribution planning, design and operations. Students discuss methods to improve circuit reliability performance, techniques to manage voltage flicker/transients and techniques to troubleshoot stray voltages and currents. Additionally, this class covers modern digital electronic devices and other smart means to improve distribution automation.

// ELECTRICAL SAFETY

3 DAYS

Electrical Safety provides a comprehensive understanding of theory and industry best practices to ensure personnel safety when working with electric power lines and substations. Students review safety equipment testing requirements and procedures for readiness, while learning common sense aspects of safe electrical grounding and how to evaluate the expected performance of jumpers. Students learn to appreciate the rationale behind single-point grounding, proper vehicle safety and equipment testing while discussing the OSHA safety accountability for proper personnel training and equipment selection.

THINGS YOU WILL LEARN

- Bulk Electric System (BES) overview
- Electrical generation
- Transmissions & distribution
- Construction practices
- Design applications

CURRICULUM

- Electric Power System Operations
- Distribution Systems
- Advanced Distribution Concepts
- Electrical Safety



CERTIFIED POWER TECHNOLOGY (CPT)

TVPPA's Certified Power Technology (CPT) program supplements the formal education of engineers not trained in power theory and methodology and examines technological changes within the electric utility industry.

This program is designed for engineering technicians and associate engineers who have limited electrical power education as well as distributors who have acquired substations and transmission lines.

Students will learn through a variety of methods including hands-on exercises, practical problem-solving activities, group discussions and electrical drawings.

CURRICULUM

- Power System Theory
- Power System Equipment: Functions & Maintenance
- System Configuration, Switching & Troubleshooting
- Instrumentation & Metering
- Relaying & System Protection

// POWER SYSTEM THEORY

5 DAYS

This workshop-style class provides participants with the theory of generating an alternating current and the application and effects of resistors, inductors and capacitors.

Participants learn about:

- Theory, construction and use of vector diagrams
- Series, parallel and series-parallel circuits
- Power factor calculation and correction
- Three-phase system theory and application
- Theory and use of transformers in single-phase and three-phase systems

You will be assigned practical problems to solve in a small group during class. Following a review of the basic formulae and equations of power electrical engineering, group activities and problem-solving sessions provide overviews for per-unit system representation, symmetrical component and fault current calculations, equipment interruption theory and calculations and transformer capacity calculations.



// POWER SYSTEM EQUIPMENT: FUNCTIONS & MAINTENANCE

3 DAYS

This workshop explores features of power system equipment, methods of construction, insulation systems and equipment applications.

Participants study:

- Circuit breakers and switches
- Reclosers and sectionalizers
- Fuses, transformers, voltage regulators
- Capacitor banks, surge arrestors, stand-by batteries and grounding

// SYSTEM CONFIGURATION, SWITCHING & TROUBLESHOOTING

3 DAYS

This workshop uses a variety of instructional methods to examine aspects of electric system configuration.

Participants gain an understanding of:

- Electric system components
- Substation drawings
- Switching procedures
- Substation troubleshooting techniques
- The latest grounding procedures for safety

// INSTRUMENTATION & METERING

3 DAYS

This workshop uses hands-on exercises to explore the theory and methodology of making electrical measurements on a power system as well as new technology in metering reactive loads. Required: a current copy of the NESC.

Students study:

- Instrument transformers
- Meter construction
- Calibration techniques for instruments
- Safety considerations
- Current National Electrical Safety Code (NESC)

// RELAYING & SYSTEM PROTECTION

3 DAYS

This course covers the philosophy and practical guidelines for electrical protection of distribution systems.

Participants gain an understanding of:

- Distribution protection methods
- Basic fault current calculations and analysis
- Fuses and applications
- Relay types and applications
- Lightning protection
- Methods used to calculate the settings of various protection relays
- Coordination of protection equipment

POWER DISTRIBUTION ENGINEER (PDE)

The PDE is designed to significantly enhance the skills and abilities of engineers working in a distribution utility. The program is intended to provide participants with formal power engineering courses they may not have had in their undergraduate studies and will also serve as a refresher for their day-to-day engineering skills.

The PDE curriculum is divided into four courses; the first three developed by Dr. Jack Lawler (retired) of the University of Tennessee's Min H. Kao Department of Electrical Engineering and Computer Science, and the fourth developed in conjunction with the Electric Power Research Institute (EPRI.)

Special Note: Due to the unique nature of this program, a significant level of commitment is required from participants and their utilities.

CURRICULUM

- Fundamentals of Distribution Circuit Analysis
- Modeling & Analysis of Distribution Systems
- Distribution System Components
- Relay Protection & Coordination

// FUNDAMENTALS OF DISTRIBUTION CIRCUIT ANALYSIS

5 DAYS

This class addresses the principles and methods for analyzing distribution circuits operating under sinusoidal steady state conditions. Complex numbers and their use as phasors representing sinusoidal time signals is thoroughly explained. The terminal characteristics of resistors, inductors, capacitors and independent sources are explained in the phasor domain.

AC circuits power concepts include real power, reactive power, complex power, apparent power,

power factor angle and power factor. All of the concepts are defined and demonstrated.

The course includes basic principles of circuit analysis including mesh current and node voltage methods. Additional topics include Thevenin and Norton's theorems for circuit simplification, power factor correction, per unit notation and calculations, single-phase and three-phase systems, wye-delta conversions, voltage drop calculations and short circuit calculations under balanced conditions.

Approximately two-thirds of the course time is spent on theoretical concepts and one-third on solving illustrative problems. This course will allow distribution engineers from all backgrounds to pursue the more advanced topics in the remaining courses.

// DISTRIBUTION SYSTEM COMPONENTS

5 DAYS

The objective of the second course in the PDE program is to develop the equivalent circuit models of the various components of the electric system including synchronous generators, power delivery equipment such as transformers and lines and motor type loads.

A working knowledge of the structure and parameters of the equivalent circuits of the various system components is essential in many distribution engineering studies. Distribution System Components aims to provide familiarity with these models as well as in-depth understanding of the physical significance of each element in the equivalent circuit. This understanding is provided through consideration of the basic laws governing component behavior, including the laws of Gauss, Ampere and Faraday.

Course participants will gain appreciation of the fundamental principles of operation underlying each component, construction details, key parasitic phenomena and how they degrade performance, loss mechanisms and how these factors are incorporated into the final equivalent circuit model. Students must have completed Fundamentals of Distribution Circuit Analysis to enroll.

// MODELING & ANALYSIS OF DISTRIBUTION SYSTEMS

5 DAYS

Combining the topics from the first two courses of the program, basics of distribution circuit analysis methods and the modeling of the various individual components of the distribution system, this class addresses system level studies. The main distribution system analysis problems of power flow and short circuits will be specifically addressed. The theoretical basis for power flow and short circuit calculations will be combined and applied to small problems suitable for hand calculations and numerical solutions of large systems using a popular commercial grade distribution analysis software package. Students must have completed Distribution System Components to enroll.

// RELAY PROTECTION & COORDINATION

3 DAYS

The purpose of this course is to teach the fundamentals of distribution over current protection and coordination. The course is suitable for beginning technicians and engineers. Fundamentals are stressed and students will do many hands-on examples. Students must have completed Modeling & Analysis of Distribution Systems to enroll.

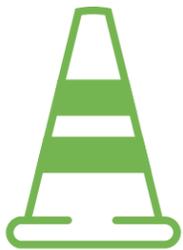


BUSINESS MANAGEMENT

- Certified Utility Accountant (CUA) 31
- Certificate of Customer Service (CCS) 33
- Certified Power Supervisor (CPSv) 34
- Certified Power Executive (CPE) 36
- Advanced Certified Power Executive (AdvCPE) 38
- Foreman Academy (FA) 40
- Utility Human Resources Certification (UHR) 41
- Utility Purchasing & Materials Management (UPMM) 43
- Utility Security Professional (USP) 44
- Certified Safety Coordinator (CSC) 46



10
Certificate Programs



3
Power Management Levels



2
Safety & Security Programs

CERTIFIED UTILITY ACCOUNTANT (CUA)

The Certified Utility Accountant (CUA) program is designed to provide public utility accounting staff who are new to accounting or who have a non-accounting background with the knowledge and resources necessary to effectively and efficiently perform their jobs in the unique utility industry. The CUA program consists of a core curriculum of accounting classes which range from basic to advanced level and non-accounting classes.

CORE CURRICULUM

- The ABC's of Electrical Systems
- Introduction to Pricing & Rate Design
- Utility Accountants Classification & Principles
- Time Management
- Internal Controls & Fraud Protection
- Work Order, Inventory & Plant
- Legal Review for the Accounting Professional
- Budgeting, Finance & Accounting for Accountants

// INTRODUCTION TO PRICING & RATE DESIGN

2 DAYS

Energy technology continues to change metering, efficiency and customer expectations for innovation. Understanding pricing and rate design at the distributor level and how it must flex to keep up with new technology is more critical than ever.

This course covers:

- Fundamental principles of rate design and pricing
- Types of generation and costs
- How to determine costs and revenue requirements
- Designing rates to recover costs or meet goals
- Price challenges created by DER and other alternatives
- Wholesale and retail rates

// THE ABC'S OF ELECTRICAL SYSTEMS

1 DAY

This course provides a basic survey of electric utility operations, from generation at the power plant to distribution to the end-use customer. Participants learn how to improve business transactions for customers. This is a basic overview course targeted only for the non-technical employee or board member.

Topics covered include:

- Methods of generation
- High voltage transmission
- Distribution methods
- Electrical terminology
- Usage measurement through metering and billing

// UTILITY ACCOUNTS CLASSIFICATION & PRINCIPLES

1 DAY

This course will train you on classifying transactions/activities within the TVA/Federal Energy Regulatory Commission account system and give insight into the big picture of the business. You will learn how each small job is related and benefits the end result. You will practice recording journal entries and preparing basic financial statements. After completion of this course, you will gain a better understanding of the FERC and their Uniform System of Accounts.

// TIME MANAGEMENT

1 DAY

Everyone's relationship with time is different; therefore, strategies vary from person to person. In this class, you will assess your own challenges with time management and discover multiple methods for conquering time issues, ultimately choosing the right ones for you.

// INTERNAL CONTROLS & FRAUD PROTECTION

1 DAY

This course covers the accounting and financial functions of a utility system. Participants study why employees commit fraud, reporting requirements and the importance of good internal controls. The second half of the day will cover applications related to internal controls. "The Big Three" will be discussed extensively. Other topics include inventory loss prevention, financial statement fraud and ethics. Participants will work with others to review and solve fraud specific case studies from local power companies.

// WORK ORDER, INVENTORY & PLANT

1 DAY

This class will introduce you to the work order system and how it operates in a utility. Participants will see how the work order system processes impact each department of the utility and gain a better understanding of each other's responsibilities. It is designed to give the participants a high-level overview of manual work order closing from the time a work order is approved until it is completed and its plant units and costs are closed.

// LEGAL REVIEW FOR THE ACCOUNTING PROFESSIONAL

1 DAY

This class provides a detailed look at legal issues that electric utility accounting professionals face.

The class covers:

- The latest changes in the law
- Updates on wage and hour litigation
- The preservation of documents and other evidence in liability lawsuits
- Employment law
- The essential elements contained in good contracts
- How to read a contract

// BUDGETING, FINANCE & ACCOUNTING FOR ACCOUNTANTS

1 DAY

This course covers the accounting and financial functions of a utility system. Participants study basic accounting practices and procedures including:

- Balance sheet
- Income and operating statements
- Plant accounting
- Performance ratios
- Federal Energy Regulatory Commission (FERC)

CERTIFICATE OF CUSTOMER SERVICE (CCS)

In today's changing business environment, customers demand the best from their electric utility. TVPPA developed the Certificate of Customer Service curriculum to provide the professional skills and expertise necessary to exceed expectations of modern customers.

CURRICULUM

- Nonverbal Communication
- Communicating Effectively with Utility Customers
- Selling Utility Services
- The ABC's of Electrical Systems

// NONVERBAL COMMUNICATION

1 DAY

Studies show that 55% of communication is nonverbal and two people will signal over 800 nonverbal cues over the course of a thirty-minute conversation. This workshop teaches the principles and applications of body language and techniques that can be used immediately to enhance communication and influence.

// COMMUNICATING EFFECTIVELY WITH UTILITY CUSTOMERS

2 DAYS

This course uses group activities to help you learn and grow as a communicator in various situations. Participants learn how to create a memorable experience for utility customers. This course is designed to be available for all levels of utility employees.

// SELLING UTILITY SERVICES

1 DAY

In our increasingly complex world, local utilities must support complicated customer relationships and offer specialized products or services to meet specific needs. Knowing how to add value to a customer's life is a hallmark of great customer service. This class will focus on understanding how to price a primary product, work with customers and add value.

// THE ABC'S OF ELECTRICAL SYSTEMS

1 DAY

This course provides a basic survey of electric utility operations, from generation at the power plant to distribution to the end-use customer. Participants learn how to improve business transactions for customers. This is a basic overview course targeted only for the non-technical employee or board member.

Topics covered include:

- Methods of generation
- High voltage transmission
- Distribution methods
- Electrical terminology
- Usage measurement through metering and billing

CERTIFIED POWER SUPERVISOR (CPSV)

TVPPA's Certified Power Supervisor curriculum is designed for public power distribution system supervisory personnel. This course of study focuses on how to reduce employee grievances, customer complaints, absenteeism, job-related accidents and turnover. There are nine classes and participants have four years to complete them.

CURRICULUM

- Fundamental Supervisory Skills
- Communicating Effectively with Utility Customers
- Interpersonal Supervisory Skills I
- Interpersonal Supervisory Skills II
- Interpersonal Supervisory Skills III
- Goal Setting & Planning
- Buddy-to-Boss
- Bridging the Generation Gap
- Making Performance Appraisals Matter

// FUNDAMENTAL SUPERVISORY SKILLS

2 DAYS

This interactive workshop consists of two modules:

- **Managing People** focuses on the importance of individual self-esteem in the workplace. Participants learn how to give clear instructions, achieve consensus and encourage others to commit to common goals.
- **Communicating with People** demonstrates active listening techniques, effective communication and ways to recognize another person's comprehension of issues. Participants are required to complete a DISC profile before class.

// COMMUNICATING EFFECTIVELY WITH UTILITY CUSTOMERS

2 DAYS

This course uses group activities to help you learn and grow as a communicator. Participants learn how to create a memorable experience for utility customers. This course is designed to be available for all levels of utility employees.

// INTERPERSONAL SUPERVISORY SKILLS I

2 DAYS

This course includes three modules:

- **Getting Employee Commitment** shows how to establish specific and measurable objectives which will gain employee acceptance.
- **Giving Orders & Instructions** teaches how to issue orders and instructions effectively.
- **Delegating Effectively** explores the when, whom and what of delegating and how to use delegation as a motivational tool.

// INTERPERSONAL SUPERVISORY SKILLS II

2 DAYS

This course includes three modules:

- **Positive Reinforcement for Improved Performance** shows how to make employees more productive through positive supervision.
- **Assessing Employee Performance** demonstrates the most effective techniques for measuring results against actual performance.
- **Using Positive Discipline** gives specific guidelines and standards for changing unacceptable behavior without adverse consequences.

// INTERPERSONAL SUPERVISORY SKILLS III

2 DAYS

This class builds on the principles and techniques learned in Interpersonal Supervisory Skills I and II and consists of three modules.

- **Improving Employee Work Habits** covers difficult employee situations and offers techniques for enforcing company policies and regulations in a non-threatening or confrontational way.
- **Dealing with Employee Conflicts** shows how to identify employee conflicts and teaches methods of conflict resolution, resolving misunderstandings and avoiding negative interactions.
- **Communicating with Your Boss** teaches specific techniques for framing communications with superiors.

// GOAL SETTING & PLANNING

1 DAY

Many leaders understand the importance of setting goals but not how to effectively plan and reach them. Many people who set goals never reach them or abandon them altogether. This class teaches participants how to effectively set goals and plan in order to improve, grow and meet the oncoming challenges in the utility industry.

// MAKING PERFORMANCE APPRAISALS MATTER

1 DAY

One of the most dreaded responsibilities for many managers is performance reviews. Often, reviews are done out of routine rather than for growth and improvement. If not done correctly, they can even do more harm than good. This course explores how to prepare, schedule and conduct reviews to make the process more simple and far more powerful, useful and enjoyable for the manager and the employee.

// BUDDY-TO-BOSS

1 DAY

This class examines the skills supervisors need to take over an established team or department.

Participants learn how to:

- Increase credibility as leaders
- Create an environment where people/ideas thrive
- Motivate employees
- Create a powerful environment of trust
- Enforce rules fairly for everyone
- Lead by example
- Master the challenges placed by the employees/friends you lead

// BRIDGING THE GENERATION GAP

1 DAY

With multiple generations of employees comes multiple sets of attitudes and expectations. This class explores:

- Values and characteristics of Traditionals, Baby Boomers, Generation X and Millennials (plus a preview of Generation Z)
- How to meet employee expectations in recruiting and retention
- How to manage the generations effectively
- How to foster a workplace culture where all generations can contribute to their full potential by building on shared values and capitalizing on generational strengths

CERTIFIED POWER EXECUTIVE (CPE)

TVPPA's Certified Power Executive (CPE) is a unique program designed give mid- to upper-level managers a better understanding of their duties and role in the utility industry. Participants examine fundamental principles and practice effective leadership and management tactics.

CURRICULUM

- Leadership Bridge
- Introduction to Pricing & Rate Design
- Understanding Human Resources
- Utility Law
- Meeting Management
- Conflict Mediation
- Dynamics of Change
- Business & Strategic Issues
- Components of Strategic Planning

// LEADERSHIP BRIDGE

2 DAYS

This course provides a basic survey of electric utility operations, from generation at the power plant to distribution to the end-use customer. Participants learn how to improve business transactions for customers. This is a basic overview course targeted only for the non-technical employee or board member.

Topics covered include:

- Methods of generation
- High voltage transmission
- Distribution methods
- Electrical terminology
- Usage measurement through metering and billing

// INTRODUCTION TO PRICING & RATE DESIGN

2 DAYS

Energy technology continues to change metering, efficiency and customer expectations for innovation. Understanding pricing and rate design at the distributor level and how it must flex to keep up with new technology is more critical than ever.

This course covers:

- Fundamental principles of rate design and pricing
- Types of generation and costs
- How to determine costs and revenue requirements
- Designing rates to recover costs or meet goals
- Price challenges created by DER and other alternatives
- Wholesale and retail rates

// UNDERSTANDING HUMAN RESOURCES

2 DAYS

During this course, participants will explore utility-specific management/supervision and resource management.

This course examines:

- Personnel practices
- Management/Supervision and behavior
- Employee selection
- Job analysis
- Effective staffing
- Training and development
- Compensation management
- Employee appraisals

- Employment law
- Case studies
- Federal regulations
- Trends in utility personnel management

// UTILITY LAW

2 DAYS

This course reviews the legal problems that can occur in electric utility system management. Participants study issues related to:

- Public Utility Regulatory Policies Act (PURPA)
- TVA and government regulations
- System design
- Contract use and negotiation
- Equal Employment Opportunity Commission (EEOC)
- Employee benefits
- Billing, collections and energy diversion
- Purchasing practices and procedures
- Vehicle operation
- Easement and property acquisitions
- Operations and liabilities of a utility's governing board

// MEETING MANAGEMENT

1 DAY

Meetings tend to consume a large amount of a manager's time, however, most people do not properly prepare to either lead or participate in such meetings. This workshop teaches participants how to analyze meeting types, determine appropriate meeting design and apply targeted facilitation skills to improve meeting efficiency (time) and effectiveness (outcomes).

// CONFLICT MEDIATION

1 DAY

Supervisors/managers spend a portion of their time addressing conflict issues in the workplace. Conflict can be both positive and negative, however, unaddressed conflict frequently escalates, resulting in additional loss of productivity. Proper mediation of conflict can result in a 25% reduction in time required

to reach resolution. Participants learn and practice skills to proactively address conflict and use the appropriate mediation style to achieve resolution.

// DYNAMICS OF CHANGE

2 DAYS

The utility industry is one of constant change further challenged by significant pending regulatory change. Utility managers are challenged by responding to those changes and implementing strategies for the future. This highly interactive workshop describes types of change, roles in the change process and methods for planning/implementing strategic changes. Participants will create an on-the-job change strategy application.

// BUSINESS & STRATEGIC ISSUES

2 DAYS

This two-day course provides participants with a general manager's perspective and understanding of the business issues associated with running an electric distribution utility.

Participants explore:

- Industry background
- Fundamentals of ratemaking
- How to develop a managerial accounting system
- How to determine the financial health of the utility
- How to better interact with governing bodies, employees and the community on the financial issues and standing of the utility

// COMPONENTS OF STRATEGIC PLANNING

2 DAYS

Strategic planning is a planned change process designed for creating desired future results, typically within three to five years. This workshop-style course teaches participants how to initiate a strategic planning process and assess their readiness for strategic change in their department or organization.

ADVANCED CERTIFIED POWER EXECUTIVE (ADVCPPE)

This course is designed to build on the skills and knowledge gained in the Certified Power Executive curriculum. Included in this advanced program are formalized professional development, management concepts and business principles. All course requirements must be satisfactorily completed within four years of starting the program.

CURRICULUM

- Executive Leadership
- Case Studies in Leadership
- Designing & Implementing Organizational Change
- Long-Range Strategic Planning
- Business Statistics & Analysis
- Business Strategy

// EXECUTIVE LEADERSHIP

2 DAYS

What makes leaders effective? What are their roles and responsibilities? What are the attributes of being an executive? This interactive course explores these questions and examines effective leadership principles.

Using leadership books, participants study DISC profiles of leaders, effective communication, problem identification and resolution and ways to lead change.

// CASE STUDIES IN LEADERSHIP

2 DAYS

This course offers a unique approach to improving leadership skills through the analysis and debate of real-life case studies from the utility industry. Participants review proven leadership principles and apply these to the cases introduced in class as well as scenarios from personal experiences. Topics include communications, dealing with unproductive attitudes or behavior, training and development and motivation.

// DESIGNING & IMPLEMENTING ORGANIZATIONAL CHANGE

2 DAYS

One of the key roles of executives is planning organizational change, while a key challenge of management is designing and implementing those changes in a way that achieves desired outcomes. The most common barrier that must be overcome is the emotional reactions of those affected by change. In this interactive course, participants will identify a real pending organizational change, define their role(s), identify specific activities and design a comprehensive implementation plan.

// LONG-RANGE STRATEGIC PLANNING

1 DAY

In order to effectively position ourselves, our employees and our organization for the future, a formal long-range strategic plan is a must for every organization. Participants in this workshop learn the process and climate needed to effectively develop an organizational long-range strategic plan, how to set the organization on the planning course and how to develop a mission statement, goals, objectives and action plans.

// BUSINESS STATISTICS & ANALYSIS

2 DAYS

This course shows participants how to define the individual utility by analyzing available statistical information then translating those statistics into an analysis that provides financial predictors of system performance.

Class exercises cover:

- Cost of ownership
- Rate components
- Revenue requirements
- Cost assignment
- Goals of rate design

A final exercise uses a sample utility financial model to evaluate several major expenditures and determine rate impacts. The material allows a participant with any level of experience or expertise to understand and benefit from the class exercises.

// BUSINESS STRATEGY

2 DAYS

This course explores utility business models and organizational change. Participants develop a philosophy of management for either a cooperative or municipal business model. You will gain insight into the strategic planning process, interaction with business partners, wholesale providers and preparation of budgets. We examine and compare key business indicators to gauge efficiency of the participant's utility system.

Developing industry trends lead to organizational change. Using real examples, we discuss managing change among both employees and member/consumers. This course complements another AdvCPE required course entitled "Business Statistics and Analysis".



FOREMAN ACADEMY (FA)

Supervisor roles are crucial to the success of utility teams. The role of a foreman requires technical knowledge, safety skills and the ability to manage people, problems and personalities.

TVPPA has designed the Foreman Academy to equip both up-and-coming and experienced foremen with essential knowledge and skills outside the scope of fundamental linework. Subjects include leadership, management, safety and technical skills to effectively lead your crew.

Individuals attending the Foreman Academy will receive a certificate for each track completed and overall completion certification once all three tracks are completed.

CURRICULUM

- Track 1
- Track 2
- Track 3

// TRACK 1

4 DAYS

An effective leader sets the tone for a safe and productive work environment. Track 1 explores leading by example. You will discuss subjects like:

Leadership Skills

- The responsibilities of crew management
- Attitude and setting an example for your crew
- Using fairness in dealing with people

Safety & Technical Skills

- OSHA 1910.269
- Safety audits
- Accident investigations

Management Skills

- Employment law



// TRACK 2

4 DAYS

Track 2 explores how to build a stronger team and how to keep them safe. You will learn ways to build a team with people from multiple generations and what you as a leader can do to reduce accidents and reduce premiums.

You will examine topics including:

Leadership & Management Skills

- Team building
- Generations at work

Safety & Technical Skills

- OSHA 10 Hour

// TRACK 3

4 DAYS

Track 3 addresses critical interpersonal and communication skills necessary for effective leadership in addition to engineering concepts and emergency response.

Safety & Technical Skills

- Engineering staking
- Accident investigation and emergency response

Leadership & Management Skills

- Career transitions & challenges
- Communication
- Conflict mediation
- Time management

UTILITY HUMAN RESOURCES CERTIFICATION (UHR)

The Certified Utility Human Resources (UHR) program is designed to provide education and training for public utility HR personnel. The program consists of nine courses, all of which are specific to and focused on current human resources issues. The program is made up of nine core classes. Participants are given four years to complete all the requirements for their certificate program.

CURRICULUM

- Introduction to Human Resource Management
- Personnel Law
- Organizational Liability: Risk Management
- Compensation & Benefits
- Building and Maintaining a High-Performance Workforce
- Human Resource Development
- Strategic Planning & Organizational Development
- Personnel Issues Update
- Employee Relations & Communication

// INTRODUCTION TO HUMAN RESOURCE MANAGEMENT

2 DAYS

This course provides an overview of the definition and roles of strategic partner, administrative expert, employee champion and change agent in the utility industry. Participants explore how to prepare for and perform the functions of the day-to-day operations that you might encounter in human resources. Each participant will complete an assessment and gap analysis to develop a curriculum plan based on their current needs.

// PERSONNEL LAW

2 DAYS

This course addresses significant employment law issues including such vital areas as policies, procedures, principles and management practices. You will learn a step-by-step approach on how to

prevent costly work disruptions, employee unrest and government inquiries.

Topics include:

- Record-keeping requirements
- Discrimination law
- Understanding lawful practices under state and federal requirements
- Information regarding age, race, gender and pregnancy
- Equal pay
- Drugs in the workplace
- Workers' compensation
- Employee privacy
- Performance appraisals
- Discipline
- Equity in employee recognition systems
- Diversity and overtime rule

// ORGANIZATIONAL LIABILITY: RISK MANAGEMENT

2 DAYS

One of the areas in which human resources staff must be prepared is risk management. During this course, you will examine real-world examples and strategies for risk management to gain insight on how others have handled various situations. You will also discuss how responsibilities of a human resources professional cross into many very important areas of the organization.

Topics covered include:

- Safety
- OSHA compliance requirements and record keeping

- Liabilities
- Security
- Drug testing
- Workplace violence and terrorism
- Workers' compensation

// COMPENSATION & BENEFITS

2 DAYS

This class provides participants opportunity to examine key strategies for negotiating cost-effective benefit packages for employees, best practices in controlling health care costs and administration of benefits program. You will explore strategies for keeping employees informed about their benefits as well as techniques for enhancing participation and compliance.

// BUILDING & MAINTAINING A HIGH-PERFORMANCE WORKFORCE

2 DAYS

This workshop helps build your skills in the areas of employee recruitment, hiring, staffing and retention — including entrance and exit interview techniques. Participants will learn strategies for developing job descriptions and analyzing candidate skills against job requirements as well as developing a work environment conducive to retaining top performers.

// HUMAN RESOURCE DEVELOPMENT

2 DAYS

Participants learn to assess current employee skills against those needed in the future in order to identify training needs. Knowledge gained will then be applied to the development of a one-year training calendar.

In addition, instructors demonstrate techniques for measuring the results of workforce training and strategies used for evaluating performance in relation to specific workforce skills.

// STRATEGIC PLANNING & ORGANIZATIONAL DEVELOPMENT

2 DAYS

This class examines how to deal with changing management, implementing leadership development and how to ensure that you are aligning the HR department with the overall goals of the organization. Participants learn how to examine and apply strategies for measuring the outcomes of the organization at four levels. The HR professional will determine an individualized approach for their organization for tracking results and the ROI (Return on Investment).

// PERSONNEL ISSUES UPDATE

1 DAY

This workshop is designed to familiarize you with the changes in employment law which will impact HR operations and will include strategies to address current issues including new rulings and implementation of changes to existing policies and procedures.

// EMPLOYEE RELATIONS & COMMUNICATION

1 DAY

Employee relations and communication are two important factors for team development. Participants explore best practices for involving employees in the decisions that affect their jobs, strategies for managing diversity and techniques for building high performance teams.

In addition, successful communication with union representatives and their members will be reviewed through a series of real life case studies.

- Liabilities
- Security
- Drug testing
- Workplace violence and terrorism
- Workers' compensation

UTILITY PURCHASING & MATERIALS MANAGEMENT (UPMM)

TVPPA's Utility Purchasing & Materials Management curriculum is designed for public power purchasing personnel. This course of study focuses on contracts, quality metrics, work order systems, negotiations, business strategies and utility case studies.

CURRICULUM

- Quantities, Quality, Pricing & Supplier Selection
- Workorder, Inventory & Plant
- Negotiations & Contracts
- Case Studies in Utility Purchasing

// QUANTITIES, QUALITY, PRICING & SUPPLIER SELECTION

2 DAYS

This class will examine the important aspects of the purchasing world and how it relates to local power companies here in the valley. Topics discussed will include, EOQ, OPM, the 5 Ws, MRO, centralization and decentralization, policies and procedures, ROP, SOE, contracts, negotiation, quality metrics, supplier selection and SPC.

// WORK ORDER, INVENTORY & PLANT

1 DAY

This class will introduce you to the work order system and how it operates in a utility. Participants will see how the work order system processes impact each department of the utility and gain a better understanding of each other's responsibilities.

It is designed to give the participants a high-level overview of manual work order closing from the time a work order is approved until it is completed and its plant units and costs are closed.

// NEGOTIATIONS & CONTRACTS

2 DAYS

When dealing in the purchasing realm, interpersonal skills and relationships are key to a diverse business strategy. In this class we will focus on how to use different personality traits to gain better strategies of communication within and outside our companies.

With learning different traits and communication, we have a better understanding of how to control negotiations and contracts. Knowing that these two go hand-in-hand, we will learn new tactics, how to handle old tricks and what the law references in both of these scenarios.

// CASE STUDIES IN UTILITY PURCHASING

2 DAYS

Each participant will be asked to present their purchasing case study to the group during this class. Through the analysis and debate of real-life case studies participants will have the opportunity to review all cases and apply the principles introduced in class as well as their own experiences.

UTILITY SECURITY PROFESSIONAL (USP)

TVPPA, in collaboration with InDev Tactical, offers utility professionals certificate-level training that meets the needs of today's utility security professionals. TVPPA members can now access InDev Tactical's proprietary utility-focused security training through our Utility Security Professional certificate program.

TVPPA developed the Utility Security Professional (USP) to address the growing need from our members to provide the training and knowledge to those individuals who are tasked with protecting their utility. This course is instructed by subject matter experts in law enforcement, physical security, emergency management and utility security.

CURRICULUM

- Workplace Violence & Active Shooter Preparedness
- Physical Security Measures (Securing Your Facility)
- De-Escalation Tactics & Negotiation Skills
- Critical Decision Making
- Cyber Security Defense
- Situational/Threat Awareness
- Infrastructure Security
- Special Event Security
- Critical Event Tabletop Exercise Session

// WORKPLACE VIOLENCE & ACTIVE SHOOTER PREPAREDNESS

2 DAYS

Based on InDev Tactical's ASSIST (Active Shooter & Security Incident Safety Training), this course examines the reality of workplace violence and introduces the skills needed to prevail in a hostile encounter, including the skills needed to identify threats, assess situations and respond effectively.

// PHYSICAL SECURITY MEASURES (SECURING YOUR FACILITY)

2 DAYS

This two-day course introduces practical methods of enhancing facility security. It establishes a clear understanding of utility security and develops the skills to identify vulnerabilities, recognize potential threats, improve security practices and establish threat countermeasures.

// DE-ESCALATION TACTICS & NEGOTIATION SKILLS

1 DAY

This training focuses on de-escalating high stress situations where the outcome will be beneficial for the operations and safety of the utility workers. The course includes interpreting body language, looking for signs of aggression and how to speak to someone without escalating an already tense situation into a violent encounter. We will also talk about the benefits of having a working relationship with local law enforcement agencies to help out in certain conditions.

// CRITICAL DECISION-MAKING

2 DAYS

In a crisis, the ability to function under stress and duress is essential. Critical decision-making provides an effective means of information processing to make timely, informed decisions and choose logical courses of action. This program develops the skills to maintain cognitive and emotional control under stress and overcome crises.

// CYBER SECURITY DEFENSE

1 DAY

The goal of Cyber Security Defense is to provide technical and non-technical personnel with the hands-on expertise necessary to defend communication and SCADA networks from cyberterrorism events. After an introduction to cyberterrorism, participants will learn how to protect network systems by survey of the following: planning and preparation of defenses, installation and administration of defenses, hardening network defenses, administration of defenses, monitoring defenses and testing and modifying defenses – followed by a review of cyberterrorism defenses and emerging trends.

// SITUATIONAL/THREAT AWARENESS

1 DAY

The potential for work-related violence is a reality. Today your office and field staff face the potential of being harmed by another person. Employees face threats from angry customers, zealous protesters, thieves and terrorists. This training prepares employees to recognize potential threats and signs of pending violence.

// INFRASTRUCTURE SECURITY

1 DAY

This training provides practical approaches to infrastructure security. Attacks on infrastructure assets are happening at an alarming rate. Previous attacks focused on the bulk transmission system. Today, the threat targets every utility, specifically focusing on vulnerable lower-tier electric transmission and distribution systems and gas, water and telecommunication systems. This session examines the new security environment and methods of enhancing security.

// SPECIAL EVENT SECURITY

1 DAY

Recent events have exposed the vulnerabilities of large and small meetings and special events and demonstrated the alarming speed at which disturbances morph into chaos and panic. This session provides the skills to evaluate risks, identify potential threats and develop an effective emergency response plan.

// CRITICAL EVENT TABLETOP EXERCISE SESSION

2 DAYS

Tabletop exercises are essential elements of security enhancement. By allowing a utility to test its crisis response procedures and identify flaws and gaps, tabletop exercises provide ample opportunities to identify areas that need improvement. In this course, participants will be provided with an overview of tabletop exercises and the tools to organize and execute in-house tabletop exercises.

CERTIFIED SAFETY COORDINATOR (CSC)

Achieving and maintaining a safe work environment is a huge undertaking for utilities. Individuals responsible for safety management must have current, professional knowledge and expertise to achieve and maintain a safe work environment and work practices for utility employees. TVPPA developed the Certified Safety Coordinator (CSC) courses to address modern health and safety issues.

CURRICULUM

- OSHA Utility Work Practices and Compliance
- Rigging, Hoisting, Hand & Power Tool Safety
- Transportation Safety
- Accident Investigation
- National Electrical Safety Code Review
- OSHA 30 hr. Card (Part 1)
- OSHA 30 hr. Card (Part 2)



// OSHA UTILITY WORK PRACTICES RULE COMPLIANCE

1 DAY

The Occupational Safety & Health Administration (OSHA) was created to ensure safe and healthful working conditions for workers. This workshop covers the background, overall scope, application and specific regulatory requirements of Safety Rule 1910.269 which pertains to electric power generation, transmission and distribution.

// RIGGING, HOISTING, HAND & POWER TOOL SAFETY

1 DAY

Powerline construction and utility work involves specialized equipment, specific expertise and safety knowledge.

Participants gain an overview of:

- Rigging equipment and practices
- Inspections and records on chokers and slings
- Lifting equipment inspections and regulations
- Maintenance and inspection of hand and power tools
- Safe work practices
- Machine guarding requirements
- Employee training and records
- Personal protective equipment

// TRANSPORTATION SAFETY

1 DAY

Getting large trucks and equipment to and from worksites presents special safety concerns. This course dives into:

- Transportation maintenance and mechanical inspection programs
- Commercial Drivers License requirements and applicability
- Substance abuse screening
- Motor carrier regulations
- Safety measures to reduce the occurrence of accidents
- Accident investigations
- Available resources to assist safety efforts

// ACCIDENT INVESTIGATION

1 DAY

This workshop provides a hands-on opportunity to learn and practice accident investigation skills and examine supervisor responsibilities. Participants review electric utility fatality cases and conduct fact finding investigation based on the information provided. Participants learn how to:

- Form an accident investigation committee
- Conduct investigations
- Determine the facts
- Recommend corrective actions to prevent a reoccurrence

// NATIONAL ELECTRICAL SAFETY CODE (NESC) REVIEW

2 DAYS

The NESC is an important compliance document for the electric utility because it frames the safety boundaries for maintenance, construction and design and provides a practical set of rules that are updated every five years. This course reviews the

NESC and gives insights that will help participants better understand it and implement it in the field. Participants in this program will need the latest edition of the NESC.

// OSHA 30 HR. CARD (PART 1)

2 DAYS

The 30-Hour OSHA Outreach Training Program for General Industry is divided into two sessions. Part 1 covers:

- Introduction to OSHA
- Managing safety and health
- Walking and working surfaces
- Emergency exits
- Emergency action plans
- Fire prevention and protection
- Electrical personal protective equipment
- Hazard communication
- Material handling

These topics require at least 13 hours of student training time. The remaining topics will be covered in Part 2.

// OSHA 30 HR. CARD (PART 2)

3 DAYS

Part 2 of the 30-Hour OSHA Outreach Training Program for General Industry covers the following topics:

- Permit-required confined spaces
- Control of hazardous energy/lockout-tagout
- Machine guarding
- Welding, cutting and brazing
- Bloodborne pathogens
- Recordkeeping
- Occupational noise exposure
- Vehicle-mounted elevating and rotating aerial devices

Part 2 must be taken within six months of Part 1.



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