

Agenda

Presented by **Larren K. Elliott, Ph.D.**

Overview of Major Changes in 2017 National Electrical Code

- Article 425: Fixed Industrial Process Heating
- Article 691: Large-Scale PV Electric Power Production
- Article 706: Energy Storage Systems
- Article 710: Stand-Alone Systems
- Article 712: Direct-Current Microgrids

Chapter 1: National Electrical Code

- Requirements for electrical installations, including clearances and free space requirements about equipment
- New** reconditioned equipment, identification and traceability
- New** limited access working space requirement
- New** short-circuit current documentation

Chapter 2: Wiring and Protection

- Grounded conductors
- Voltage drop calculations
- Branch circuit, feeder and services calculations
- GFCI receptacle outlet requirements
- Service requirements
- Transformer protection
- New** GFCI protection for non-dwelling units

Grounding and Bonding

- Grounding of service entrances
- Grounding of separately-derived systems
- Grounding electrodes
- Sizing of grounding electrode and grounding conductor
- Bonding of services

Chapter 3: Wiring Methods and Materials

- Wiring methods—underground installation requirements
- Conductors for general wiring
- Conductor ampacity correction and adjustments
- Number of conductors in a raceway
- Pull and junction box fill calculation
- New** single-phase dwelling services and feeders

Chapter 4: Equipment for General Use

- Flexible cords and cables
- Receptacle requirements
- Switchboards and panel boards
- Short circuit rating
- Luminaires, appliances, transformers and motors

Chapter 5: Special Occupancies

- Hazardous locations
- Commercial garages
- Health care facility requirements
- Recreational vehicle parks

Chapter 6: Special Equipment

- Signs, outline lighting, elevators
- Hybrid vehicle plug in requirements
- Data center requirements
- Pools and spas
- Solar photovoltaic systems
- Small wind turbine systems

Chapter 7: Special Conditions

- Emergency systems
- Class 1, 2, and 3 power-limited circuits
- Fire alarm circuits

Chapter 8: Communications Circuits

- Premises-powered broadband communication systems
- Network-powered broadband communication systems

Chapter 9: Tables

- Conductor fill and raceway calculation example

National Electrical Code 2017
Arlington, TX - Tuesday, February 12, 2019



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Learning Objectives

You'll be able to:

Learn about the changes in the 2017 Electrical Code that apply to large scale PV electric production and direct-current microgrids.

Understand new regulations regarding reconditioned equipment, GFCI protection for non-dwelling units, and single-phase dwelling services and feeders.

Comply with rules on grounding and bonding.

Discuss wiring methods and materials.

Understand premises and network-powered broadband communication systems.

Learn about hybrid vehicle plug in requirements and data center requirements, as well as small wind turbine system requirements.



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Review the major changes in the 2017 National Electrical Code

Learn about the requirements for electrical installations

Review wiring methods and materials including underground installation requirements

Discuss code requirements for equipment for general use

Understand emergency systems and fire alarm circuits

Continuing Education Credits

Professional Engineers
7.0 PDHs

Architects
7.0 HSW CEPHs/CE Hours
7.0 AIA HSW Learning Units

International Code Council
.7 CEUs (Electrical)

Contractors
Non-Credit Continuing Ed.



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Faculty

Larren K. Elliott, PhD *President, Training Technology, Austin*

Mr. Elliott started his career in the late 1960s as an electrician. From that he moved to designing electrical control circuits on material handling systems for the Webb Stiles Company. He later became the supervisor of curriculum and instruction for all industrial control products at the Allen-Bradley Company. Mr. Elliott has also been an assistant professor at Texas A&M University teaching Industrial Electricity and Factory Automation within the School of Engineering. Over the years he has received a B.S. degree in Education from West Virginia University and M.B.A. and Ph.D. degrees from Texas A&M University. He has also passed his Electrical Inspector’s Exam certified by the International Association of Electrical Inspectors (IAEI). Mr. Elliott’s 45 years of practical hands-on industrial and training experience has given him the ability to teach diverse technical subjects to plant and machine operators, technicians, and engineers.

Here’s what past attendees had to say about the program and presenter Larren Elliott:

“Good course with an excellent teacher.” – *Facility Engineer*

“Presentation was fantastic. Instructor kept my attention and was engaging. Very knowledgeable!” – *Electrical Engineer*

“Great instructor. He is knowledgeable and very good at teaching.” – *Designer*

“Outstanding presentation.” – *Building Official*

Seminar Information

The Bob Duncan Center 2800 South Center Street Arlington, TX 76014 (817) 465-6661	Registration 8:00 - 8:30 am Morning Session 8:30 am - 12:30 pm	Lunch (On your own) 12:30 - 1:30 pm Afternoon Session 1:30 - 5:00 pm
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Tuition

\$279 for individual registration

\$259 for three or more simultaneous registrations.

Included with your registration:

Complimentary continental breakfast and printed seminar manual. Registration does not include a copy of the Code itself.

How to Register

- Visit us online at www.halfmoonseminars.org
- Mail-in or fax the attached form to 715-835-6066
- Call customer service at 715-835-5900

Cancellations: Cancel at least 48 hours before the start of the seminar, and receive a full tuition refund, minus a \$39 service charge for each registrant. Cancellations within 48 hours will receive a credit toward another seminar or the self-study package. You may also send another person to take your place.

Additional Learning

Webinar Series

Commercial Solar Peaker Batteries

- **Commercial Solar Peaker Batteries, Part I**
Wed., Jan. 9, 2019, 11:00 AM - 3:15 PM CST
- **Commercial Solar Peaker Batteries, Part II**
Thurs., Jan. 10, 2019, 11:00 AM - 2:15 PM CST

Proposal Writing

Fri., Jan. 11, 2019, 11:00 AM - 3:30 PM CDT

Technical Writing

- **Technical Writing Basics**
Mon., Jan. 14, 2019, 11:00 AM - 1:00 PM CST
- **Planning Documents**
Mon., Jan. 14, 2019, 1:30 - 3:30 PM CST
- **Writing Documents**
Tues., Jan. 15, 2019, 11:00 AM - 1:00 PM CST
- **Revising and Editing Documents**
Tues., Jan. 15, 2019, 1:30 - 3:30 PM CST

For more information
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Continuing Education Credit Information

This seminar is open to the public and offers 7.0 PDHs to professional engineers and 7.0 HSW CEPHs/continuing education hours to architects in most states, including Texas. Educators and courses are not subject to preapproval in Texas.

The American Institute of Architects has approved this event for 7.0 HSW Learning Units (Sponsor No. J885). Only full attendance can be reported to the AIA/CES.

HalfMoon Education is an approved continuing education sponsor for engineers in Florida, Indiana (License No. CE21700059), Maryland, New Jersey (Approval No. 24GP00000700), New York (NYSED Sponsor No. 35), North Carolina, and North Dakota. HalfMoon Education is deemed an approved continuing education sponsor for New York architects.

The International Code Council has approved this event for .7 CEUs in the specialty area of Electrical.

This seminar offers contractors a non-credit continuing education opportunity. It has not been submitted to any state contractor licensing entity for continuing education approval.

Attendance will be monitored, and attendance certificates will be available after the seminar for most individuals who complete the entire event. Attendance certificates not available at the seminar will be mailed to participants within fifteen business days.

Can’t Attend? Order the Manual and Audio from the Live Seminar as a Self-Study Package!

An audio recording of this seminar is available for \$289. Allow four weeks from the seminar date for delivery. Please refer to specific state licensing rules or certification requirements to determine if this learning method is eligible for continuing education credit.

Fiber-Reinforced Composites

- **Portland Cement and Masonry**
Thurs., Jan. 17, 2019, 11:00 AM - 1:00 PM CST
- **Fiber-Reinforced Composites**
Thurs., Jan. 17, 2019, 1:30 - 3:30 PM CST
- **Fiber-Reinforced Polymer (FRP) Composites Reinforcement**
Fri., Jan. 18, 2019, 11:00 AM - 1:00 PM CST
- **Overview of Sandwich Materials and Structures**
Fri., Jan. 18, 2019, 1:30 - 3:30 PM CST

Pumping and Piping Systems

- **Introduction to Pumps: Operation, Principles and Calculations**
Thurs., Jan. 24, 2019, 12:00 - 2:00 PM CST
- **Design Standards and Codes**
Thurs., Jan. 24, 2019, 2:30 - 3:30 PM CST
- **Piping System Components, Materials and Calculations**
Fri., Jan. 25, 2019, 12:00 - 2:00 PM CST
- **Handling Pump and Piping System Problems**
Fri., Jan. 25, 2019, 2:30 - 3:30 PM CST

Registration

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Complete the entire form. Attach duplicates if necessary.		

Tuition
() I will be attending the live seminar. Single Registrant - \$279.00 . Three or more registrants from the same company registering at the same time - \$259.00 each.
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