

Agenda

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
Indianapolis, IN - Friday, December 20, 2019

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Learning Objectives

You'll be able to:

Discuss major changes in the 2017 National Electrical Code (NEC), including those for fixed industrial process heating, large-scale photovoltaic electric power production, energy storage systems, stand-alone systems and direct-current microgrids.

Explain key provisions in Chapters 1-3 of the NEC, including new requirements for reconditioned equipment, limited access working space, short-circuit current documentation, and GFCI protection for non-dwelling units.

Identify key provisions in NEC Chapters 4-6 on equipment for general use, special occupancies and special equipment.

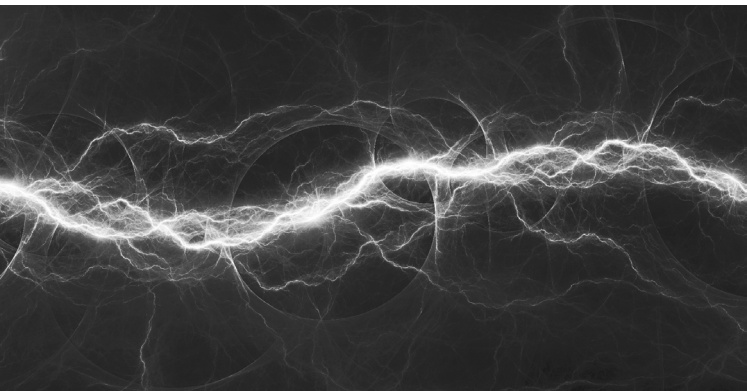
Discuss key provisions in NEC Chapters 7-8 on emergency systems, fire alarm circuits, and broadband communication systems.



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Identify the major changes to the 2017 NEC

Examine requirements for wiring and protection

Learn about grounding and bonding

Explore special equipment and special occupancies

Discuss communications circuits, emergency systems and fire alarm circuits

Continuing Education Credits

Professional Engineers
7.0 Continuing Ed. Hours

International Code Council
.7 CEUs (Electrical)

Architects
7.0 HSW Contact Hours
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Faculty

JD White *Consultant at Freelance Electrical System Design and Drafting*

Mr. White has spent ten years with Columbia State Community College as its skilled trades program coordinator. He has provided oversight of 144 apprenticeship courses and 28 open enrollment courses covering construction, carpentry, electrical, plumbing, and welding. Mr. White helped craft 15 plans of study for various certificates, AAS majors, and ATS majors. He has played an active part in articulation agreements with various vocational career programs and apprenticeship programs. He started a new open enrollment program in June of 2007, which had over 200 active students filling 28 course sections per term, prior to handing it over to a new faculty member. Mr. White is presently working with 10 apprenticeship partnerships with annual enrollment of 1,500 students. He has oversight of five labs, equipment, materials and lab personnel.

Here’s what past attendees had to say about the program and presenter JD White:

- “JD was great.”— General Contractor
- “Great presenter. Kept full group engaged.”— Consulting Engineerv
- “Probably the best HEI course I have attended!”— Civil Engineer
- “Instructor is an expert on this topic.”— Electrical Engineer

Seminar Information

Indianapolis Marriott East	Registration	Lunch (On your own)
7202 East 21st	8:00 - 8:30 am	12:30 - 1:30 pm
Indianapolis, IN 46219	Morning Session	Afternoon Session
(317) 352-1231	8:30 am - 12:30 pm	1:30 - 5:00 pm

Tuition

\$289 for individual registration
\$269 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.

Receive a reduced tuition rate of \$101 by registering to be our on-site coordinator for the day. For availability and job description, please visit www.halfmoonseminars.org.

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

Structural Forensic Engineering

- **Introduction to the Forensic Engineering Process**
Tues., Nov. 12, 2019, 11:00 AM - 1:00 PM CST
- **Causes of Failures and the Forensic Engineering Report**
Tues., Nov. 12, 2019, 1:30 - 3:30 PM CST
- **Forensic Examination of Structures and Use in Litigation**
Wed., Nov. 13, 2019, 11:00 AM - 1:00 PM CST

Stormwater Management Systems

- **Basics of Stormwater Regulations and Requirements, Including EPA Regulations**
Wed., Nov. 20, 2019, 11:00 AM - 12:00 PM CST
- **Site Planning and Choosing Best Stormwater Management Practices**
Wed., Nov. 20, 2019, 12:30 - 2:00 PM CST
- **Working with the MS4 Regulator**
Thurs., Nov. 21, 2019, 11:00 AM - 12:00 PM CST
- **Long-Term Stormwater Management Practices**
Thurs., Nov. 21, 2019, 12:30 - 2:00 PM CST

Cogeneration System Principles and Practice

- **Understanding the Benefits of Cogeneration**
Thurs., Nov. 21, 2019, 11:00 AM - 12:30 PM CST
- **Laws, Regulations and Building Codes Impacting Cogeneration**
Thurs., Nov. 21, 2019, 1:00 - 2:30 PM CST
- **Examining Cogeneration Technologies**
Fri., Nov. 22, 2019, 11:00 AM - 12:30 PM CST
- **Moving to Cogeneration: Analysis, Modeling and Case Studies**
Fri., Nov. 22, 2019, 1:00 - 2:30 PM CST

For more information and other online learning opportunities visit:
www.halfmoonseminars.org/webinars/

Continuing Education Credit Information

This seminar is open to the public and offers 7.0 continuing education hours/PDHs to professional engineers and 7.0 HSW contact hours to architects in many states, including Indiana. HalfMoon Education is an approved continuing education provider for Indiana engineers (License No. CE21700059). Architect continuing education providers and courses are not subject to preapproval in Indiana.

The American Institute of Architects Continuing Education System has approved this course for 7.0 LU|HSW (Sponsor No. J885). Only full attendance can be reported to the AIA/CES. Visit www.halfmoonseminars.org for complete AIA information under this course listing.

The International Code Council has approved this course for .7 CEUs in the specialty area of Electrical (Preferred Provider No. 1232).

This seminar offers a non-credit continuing education opportunity to construction contracts. It has not been approved by any contractor licensing board for continuing education credit.

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!

Audio recordings of this seminar are available for purchase starting at \$269. See registration panel for more information and please refer to specific state licensing rules or certification requirements to determine if this learning method is eligible for continuing education credit.

Registration

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How to Register		Registrant Information	
Online: www.halfmoonseminars.org		Name: _____	
Phone: 715-835-5900		Company/Firm: _____	
Fax: 715-835-6066	Code:	Address: _____	
Mail: HalfMoon Education Inc., PO Box 278, Altoona, WI 54720-0278		City: _____ State: _____ Zip _____	
Complete the entire form. Attach duplicates if necessary.		Occupation: _____	
		Email: _____	
		Phone: _____	
		Additional Registrants:	
		Name: _____	
		Occupation: _____	
		Email: _____	
		Phone: _____	
		Name: _____	
		Occupation: _____	
		Email: _____	
		Phone: _____	
		Email address is required for credit card receipt, program changes, and notification of upcoming seminars and products. Your email will not be sold or transferred.	
		() I need special accommodations. Please contact me.	

Tuition

() **I will be attending the live seminar.** Single Registrant - **\$289.00**. Three or more registrants from the same company registering at the same time - **\$269.00** each.

() **I am not attending.** Please send me the self-study package:

☐ Downloadable MP3 Audio/PDF Manual for **\$269.00**.

☐ CD/Manual Package for **\$289.00**. ☐ USB/Manual Package **\$289.00**.
(Please allow four weeks from seminar date for delivery)

Checks: Make payable to HalfMoon Education Inc.

Credit Card: *Mastercard, Visa, American Express, or Discover*

Credit Card Number: _____

Expiration Date: _____ CVV2 Code: _____

Cardholder Name: _____

Billing Address: _____

City: _____ State: _____ Zip: _____

Signature: _____

Email: _____