

IEEE Workshop: Changes in NEC 2020 for Engineers

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Monday-Tuesday, December 2 & 3, 2019 8:00AM to 5:00PM

World Trade Conference Center

121 SW Salmon Street, Portland, Oregon 97204

Workshop:

This two-day workshop will provide educational instruction on the 2020 NEC code changes electrical engineers and electricians. Fundamentals revisions around available fault current, short-circuit current ratings, selective coordination, and incident energy grounding will be covered. Practical and theoretical instruction for electrical engineers will be presented to help increase the likelihood of proper system design for performance and compliance with the NEC grounding and bonding requirements. The Workshop is formatted for Electrical Engineers and Designers of commercial and industrial electrical systems which are governed by the NEC, and is highly recommended as a review supplement for those preparing to take the Electrical P. E. or current P.E.'s that need to fulfill ongoing requirements for continuous education. IEEE Professional Development Hour (PDH) Certificates for 16 hours will be available to all participants after completion of this course.

The workshop fee includes breakfast both days: assorted fruit platter, yogurt, granola, grilled breakfast burritos. Lunch on your own. City Center Parking vouchers for the garage beneath the WTC will be available for registered attendees who plan to drive to the 2-day event.

Attendees are advised to bring a laptop, an engineering calculator, and a copy of the 2020 NEC, either electronic or paper. A softbound copy of NEC 2020 (NFPA70) can be ordered at time of registration for a discounted rate of \$95.00. Note that order must be placed by November 22 to be available in time for the workshop.

Instructor:



Mr. Thomas A. Domitrovich is an Electrical Engineer within Eaton Corporation's electrical group with experience in engineering, sales & marketing, business development and product management. Domitrovich is actively involved with various electrical industry organizations and most recently has focused on the continued growth of electrical safety. Mr. Domitrovich is an author with a wide range of trade magazine articles including columns in two industry trade magazines focused on electrical safety. He sits on NFPA Code Making Panel 2 for the continued development of the National Electrical Code (NFPA 70). He is also on the NFPA committee for the continued development of NFPA 73 and chairs various committees for other electrical industry organizations. Mr. Domitrovich is a LEED® Accredited Professional, a licensed Professional Engineer and holds a Bachelor of Electrical Engineering from Gannon University.

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Registration & Cost:

Membership Status	Through 11-22-2019	After 11-22-2019
IEEE Members	\$190.00	\$240.00
Non-IEEE Members *	\$245.00	\$295.00
IEEE Life Members, Students	\$150.00	\$200.00

* Become an IEEE member and enjoy the IEEE member discount!

Registration and payment for this workshop must be completed at <https://events.vtools.ieee.org/m/207353>. Registration and payment for this workshop must be completed by Thursday 11/22/2019, 11:59 PM. Thursday 11/28/2019, 11:59 PM, is the final day for registering.

All cancellation and refund requests must be submitted in writing and received by Dave Durocher (davidbdurocher@ieee.org) at the address above **prior to November 28**. There will be a 20% processing fee charged for all refunds.

Schedule Monday, December 2:

07:00am – 08:00am	Registration, Breakfast, Coffee, Networking
08:00am – 08:15am	Opening remarks and speaker introductions
08:15am – 09:15am	Codeology (Article 90 and the NEC Style Manual)
09:15am – 10:00pm	Service entrance and related requirements
10:00am – 10:15pm	Break
10:15am – 11:30pm	Service entrance and related requirements (Cont'd)
11:30am – 12:30pm	Lunch break (Several venues within walking distance.)
12:30pm – 2:00pm	Available fault current / Short-circuit analysis
2:00pm – 2:15pm	Break
2:15pm – 4:45pm	Equipment evaluations (SCCR, IR, voltage, ampacity)
4:45pm – 5:00pm	Daily wrap up / Q&A

Schedule Tuesday, December 3:

07:00am – 08:00am	Breakfast, Coffee, Networking
08:00am – 08:15am	Opening remarks
08:15am – 10:00am	Topics of electrical safety (GFCI, Working space)
10:00am – 10:15am	Break
09:15am – 11:30pm	Selecting the OCPD and related equipment
11:30am – 12:30pm	Lunch
12:30pm – 2:00pm	Incident energy and incident energy reduction
2:00pm – 2:15pm	Break
2:15pm – 4:45pm	NEC 2020 Code Changes overview
4:45pm – 5:00pm	Daily wrap up / Q&A

NEC 2020 Changes Focus by Article

The following sections will be incorporated in some form or fashion into the presentation during the two-day Changes in the NEC 2020 for Engineers Workshop.

Service Entrance and outside feeders

- 210.13/215.10/240.13 Ground-Fault Protection of Equipment
- 225.30 Number of Supplies
- 225.52 Disconnecting Means
- 230.67 Surge Protection
- 230.62 Service Equipment – Enclosed or Guarded
- 230.66 Marking
- 230.71 Maximum Number of Disconnects
- 230.85 Emergency Disconnect(s)
- 408.36 Overcurrent Protection
- 590.8 Overcurrent Protective Devices
- 408.23 Power Monitoring and Energy Management Equipment
- 240.40 Disconnecting Means for Fuses
- 480.7 DC Disconnect Methods
- 445.18 Disconnecting Means and Emergency Shutdown
- 625.42 Rating.

GFCI

- 210.8 Ground-Fault Circuit-Interrupter Protection for Personnel
- 210.63 Equipment Requiring Servicing
- 215.9/422.5 Ground-Fault Circuit-Interrupter (GFCI) Protection for Personnel
- 551.71 Type Receptacles Provided

Reconditioned equipment

- 100 Labeled
- 110.21 Marking
- 210.15/240.2/240.62/240.88/240.102 Reconditioned Equipment
- 406.7 Attachment Plugs, Cord Connectors, and Flanged Surface Devices
- 408.8/410.7 Reconditioned Equipment
- 411.4 Listing Requirement
- 517.5 Reconditioned Equipment
- 695.10 Listed Equipment
- 700.5/701.5/702.5/708.24 Transfer Equipment

Arc energy reduction

- 240.67/240.87 Arc Energy Reduction

Load calculations

- 220.11 Floor Area
- 220.12 Lighting Load for Non-Dwelling Occupancies
- 220.87 Determining Existing Loads
- 517.24 Demand Factors
- 220.14 Other Loads – All Occupancies
- 220.16 Loads for Additions to Existing Installations
- 220.42 General Lighting
- 220.53 Appliance Load – Dwelling Unit(s)
- 700.4 Capacity and Rating

Selective coordination

- 620.62 Selective Coordination

- 620.65 Signage
- 645.27/700.32/701.32/708.54 Selective Coordination
- 695.3 Power Source(s) for Electric Motor-Driven Fire Pumps

Ampacity

- 110.14 Electrical Connections
- 210.19 Conductors – Minimum Ampacity and Size
- 215.2 Minimum Rating and Size
- 215.3 Overcurrent Protection
- 230.42 Minimum Size and Ampacity
- 230.11 Splices and Taps
- 230.46 Spliced and Tapped Conductors.
- 240.6 Standard Ampere Ratings
- 430.122 Conductors – Minimum Size and Ampacity

Fault currents

- 100 Fault Current, Available (Available Fault Current)
- 100 Ground-Fault Current Path
- 100 Overload
- 110.24/430.99 Available Fault Current
- 240.86 Series Ratings
- 408.6/409.22/670.5 Short-Circuit Current Rating
- 430.130 Branch-Circuit Short-Circuit and Ground-Fault Protection for Single Motor Circuits Containing Power Conversion Equipment.
- 440.10 Short-Circuit Current Rating
- 620.51 Disconnecting Means

Marking requirements

- 110.22 Identification of Disconnecting Means

Other Surge Requirements

- 645.18 Surge Protection for Critical Operation Data Systems
- 670.6 Surge Protection

Other changes

- 408.3 Support and Arrangement of Busbars and Conductors
- 408.18 Clearances
- 430.32 Continuous-Duty Motors
- 517.31 Requirements for the Essential Electrical System
- 695.4 Continuity of Power
- 705.12 Load-Side Source Connections.
- 705.13 Power Control System