

AFX 2025.ai



Educational Session

Larry Ayer, P.E.
Bizcom Electric, LLC
Cincinnati, Ohio



1

Founded to sell watches;
evolved to sell everything

Founded to sell books;
evolved to sell everything

1972

2017

sears

amazon

2 of every 3
Americans shopped
in last 3 months

2 of every 3
Americans shopped
in last 3 months

987 Sales = 1% of GDP

2017 Sales = 1% of GDP

Merriam
Associates

Source: Chicago Tribu



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The 2020 Code Changes are here!

EC&M CodeChange CONFERENCES

NFPA Unveils New Virtual Reference Tool

Association to launch digital NFPA LINK in September

AUG 05, 2020

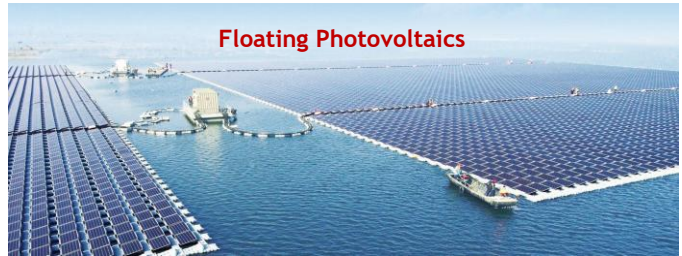
On August 4, NFPA announced the launch of a new virtual product coming soon. NFPA LINK, a new digital subscription-based reference tool for codes and standards, will be available on Sept. 21, 2020.

Elevate your customer service. Get field service management.

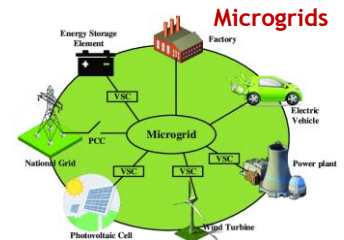
2

What Else is Coming Down the Pike?

Sources are evolving quickly.
Traditional Power Generation
Facilities are being augmented by
more “alternative” sources, many not
owned by the utility, and many more
bi-directional sources/loads.



Floating Photovoltaics



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3

Evolution is Necessary for Survival

- “Digital Revolution” is changing how we get our information
- “Gen Z” is the first generation to grow up with access to the internet, digital technology, social media
- Product Standards continue to harmonize across the world
- DC is emerging as the new AC
- The paradigm of utilities being the predominate source of energy is shifting

...



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4

**March
2020**



**Chapter 1
General**



**Chapter 2
Wiring & Protection**



**Chapter 3
Wiring Methods &
Materials**



**Chapter 4
Equipment for
General Use**



**Chapter 5
Special
Occupancies**



**Chapter 6
Special
Equipment**



**Chapter 7
Special Conditions**



**Chapter 8
Communications
Systems**

5

CURRENT STRUCTURE

Is a Control System for Permanent Amusement Attraction an occupancy?

Are **Electrified Truck Parking Spaces** a piece of electrical equipment?

Is a **Modular Data Center** a piece of electrical equipment?

Is **Electroplating** a piece of electrical equipment?

Are **Swimming Pools** a piece of electrical equipment?

Is a **Natural and Artificial Body of Water** a piece of electrical equipment?

Are **Large Scale Solar Photovoltaic (PV) Electric Power Production Facilities** a piece of electrical equipment?

Is **Instrumentation Tray Cable** a condition? **(Since moved to Chapter 3)**

Is **Fire-Resistive Cable Systems** a condition?



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6

1897 to 1920 (13 editions):

“General Plan – Governing the Arrangement of the Code”

Class A. – Control Stations, Dynamo, Motor and Storage Battery Rooms, Transformer Sub-stations, etc.

- Rules 1-11

Class B. – Outside Work

- Rules 12 and 13

Class C. – Inside Work

- General Rules 14-18
- Constant-Current Rules 19-23
- Constant-Potential Rules 24-40

Class D. – Specifications

- Rules 41-43

Class E. – Miscellaneous

- Rules 44-47

Class F. – Marine Wiring

- Rules 48-60

7

1923-1935 (8 editions):

Article 1. Definitions	Article 17. Resistance Devices
Article 2. General	Article 18. Storage Batteries
Article 3. Outside Work	Article 19. Lightning Arresters
Article 4. Services	Article 30. Cranes and Hoists
Article 5. Wiring Methods	Article 31. Elevators
Article 6. Conductors	Article 32. Extra Hazardous Locations
Article 7. Outlet Boxes and Cabinets	Article 33. Garages
Article 8. Automatic Protection of Circuits, Appliances and Apparatus	Article 34. Motion Picture Studios
Article 9. Grounding	Article 35. Motion Picture Projectors
Article 10. Rotating Machinery and its Control Apparatus	Article 36. Organs
Article 11. Transformers, under 600 volts	Article 37. Radio Equipment
Article 12. Switches	Article 38. Signs and Outline Wiring
Article 13. Switchboards and Panelboards	Article 39. Theaters and Motion Picture Houses
Article 14. Fixtures, Lamp Sockets, and Receptacles, Plug Receptacles and other Outlet Devices	Article 40. Small Isolated Plants
Article 15. Lamps	Article 50. Systems and Voltages of Over 600 Volts
Article 16. Heating Appliances	Article 60. Signal Systems

8

1937-2023 (35 editions):

Introduction (Identified as Article 90 starting in the 1959 edition)

Chapter 1 – General

Chapter 2 – Wiring Design and Protection

Chapter 4 has grown from 10 articles in the 1937 edition to 22 articles in the 2023 edition

Chapter 5 has grown from 5 articles in the 1937 edition to 27 articles in the 2023 edition

Chapter 6 has grown from 7 articles in the 1937 edition to 27 articles in the 2023 edition

Chapter 7 has grown from 4 articles in the 1937 edition to 15 articles in the 2023 edition

Chapter 8 has grown from 2 articles in the 1937 edition to 6 articles in the 2023 edition

9

Where do we want to go?

Remain relevant with the quickly evolving electrical industry

- Eliminate redundancy
- Improve usability
- Place content where it makes sense
- Logical/parallel structure
- Improve Limited Energy content
- Improve MV Content
- Eliminate “Special Equipment” – Equipment is Equipment
- Leverage the past to make the future even better



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10

More difficult for AHJ's when inspecting

Less likely to have listed equipment since traditionally geared toward utility.

More likely to have requirements that are antiquated

Depth of knowledge of Technical Committees can be a challenge.

Wiring methods in Chapter 3 for >1000 volt systems are difficult to determine

With renewable energy and microgrids lines of distinction between NESC and NEC are blurred.



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Medium Voltage

A Starting Point for Considering a New Approach

11

WIRING AND PROTECTION	WIRING METHODS	GENERAL EQUIPMENT	OCCUPANCIES	SPECIAL EQUIPMENT	SPECIAL CONDITIONS	COMMUNICATION
200 Use and Identification of Grounded Conductors 210 Branch Circuits Not Over 1000 Volts ac, 1500 Volts dc, Nominal 215 Feeders 220 Branch-Circuit, Feeder, and Service Load Calculations 225 Outside Branch Circuits and Feeders 230 Services 235 Branch Circuits, Feeders, and Services Over 1000 Volts ac, 1500 Volts dc, Nominal 240 Overcurrent Protection 242 Overvoltage Protection 245 Overcurrent Protection for Systems Rated Over 1000 Volts ac, 1500 Volts dc 250 Grounding and Bonding	300 Gen. Req for Wiring Methods and Materials 305 Gen. Req for Wiring Methods and Materials for Systems Rated Over 1000 Volts ac, 1500 Volts dc, Nominal 310 Conductors for General Wiring 312 Cabinets, Cutout Boxes, and Meter Socket Enclosures 314 Outlet, Device, Pull, Boxes... 315 Medium Voltage Conductors, Cable 320 Armored Cable: Type AC 322 Flat Cable Assemblies: Type FC 324 Flat Conductor Cable: Type FCC 326 Type IGS 330 Metal-Clad Cable: Type MC 332 Type MI 334 Types NM and NMC 335 Type JTC 336 Type TC 337 Type P Cable 338 Types SE and USE 340 Type UF 342 Intermediate Metal Conduit (IMC) 344 Rigid Metal Conduit (RMC) 348 Flexible Metal Conduit (FMC) 350 Liquidtight (LFMC) 352 (PVC) 353 (HDPE Conduit) 354 (NUCC) 355 (RTRC) 356 (LFNC) 358 (EMT) 360 (FMT) 362 (ENT).... 393 Low-Voltage Suspended Ceiling Power Distribution Systems 394 Concealed Knob-and-Tube Wiring 395 Outdoor Overhead Conductors over 1000 Volts 396 Messenger-Supported Wiring 398 Open Wiring on Insulators	400 Flexible Cords and Flexible Cables 402 Fixture Wires 404 Switches 406 Receptacles, Cord Connectors, and Attachment Plugs (Caps) 408 Switchboards, Switchgear, and Panelboards 409 Industrial Control Panels 410 Luminaires, Lampholders, and Lamps 411 Low-Voltage Lighting 422 Appliances 424 Fixed Electric Space-Heating Equipment 425 Fixed Resistance and Electrode Industrial Process Heating Equipment 426 Fixed Outdoor Electric Deicing and Snow-Melting Equipment 427 Fixed Electric Heating Equipment for Pipelines and Vessels 430 Motors, Motor Circuits, and Controllers 440 Air-Conditioning and Refrigerating Equipment 445 Generators..... 495 Equipment over 1000 volts			701 Legally Required Standby Systems 702 Optional Standby Systems 705 Interconnected Electric Power Production Sources 706 Energy Storage Systems 708 Critical Operations Power Systems (COPS) 710 Stand-Alone Systems 712 DC Microgrids 720 Systems below 50 volts 722 Cables for Power-Limited Circuits and Fault-Managed Power Circuits 724 Class 1 Power-Limited Circuits and Class 1 Power-Limited Remote-Control and Signaling Circuits 725 Class 2 and Class 3 Power-Limited Circuits 726 Class 4 Fault-Managed Power Systems 728 Fire-Resistive Cable Systems 750 Energy Management Systems 760 Fire Alarm Systems 770 Optical Fiber Cables	800 General Requirements for Communications Systems 805 Communications Circuits 810 Antenna Systems. 820 Community Antenna Television and Radio Distribution Systems 830 Network-Powered Broadband Communications Systems 840 Premises-Powered Broadband Communications Systems

12

Long-Term Goals (2026)

2026

- Continue work on Road-map of future
- Move from Medium voltage structure to Medium Voltage Technical changes

Create parallel structure for Limited Energy

- Make it look like the front of the book.
- (Protection scheme, wire and a load)

Determine basic direction by November 2023

- Review and suggest changes to 90.3
- Determine long term proposed structure as baseline.

13



NATIONAL FIRE PROTECTION ASSOCIATION

The leading information and knowledge resource on fire, electrical and related hazards

National Electrical Code® Correlating Committee White Paper

Keeping the NEC® Relevant - Is Now the Time to Modernize?

The National Electrical Code® (NEC®) is the foundation of the electrical installation regulatory infrastructure for the United States, Mexico, and numerous other jurisdictions around the world. Growing demand for safe, reliable, resilient, and efficient use of electrical power to support society and the economy is aligning with technological advancement of power generation sources, electrical distribution, and new electrical power loads. It is critical the NEC be revised and implemented by the electrical community every three years to support the accelerating pace of change and technological advancement.

The structure of the NEC plays a critical role for personnel in learning, understanding, applying, and enforcing the requirements established within this regulatory code. While the current structure, first introduced in 1937, has provided tremendous success and stability and continues to be used by engineers, contractors, electricians and training programs, the ability to efficiently learn and quickly apply and inspect advancing technologies and uniquely configured electrical systems is a challenge for all electrical professionals. The existing NEC structure needs modernization to continue to support the advancing electrical infrastructure configurations and technological advancements. Therefore, it is imperative that the electrical industry actively pursue a revised NEC organizational structure to support ease of learning, understanding, and applying the NEC safety provisions in a rapidly advancing new energy landscape.



14

Keeping the NEC Relevant Now is the Time to Modernize

Industry Trends

Medium Voltage

Limited Energy

Multi-Directional Power Flow

Digital Delivery of Content

Future Vision

Path Forward

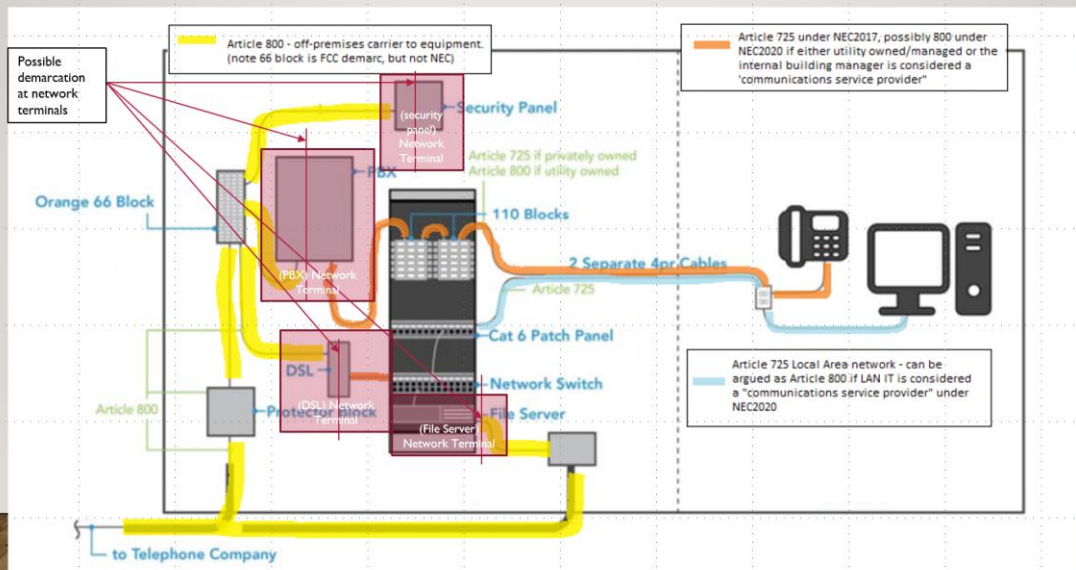
Feedback



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15

DEMARCATATION POINT



16

Limited Energy

Future

- Confusing
- No more Ma Bell
- Everything communicates
- Independence Chapter 8 vs Dependence Chapter 1-7
- Cat 5/6 Cable Article 725 and 805
- How do we maintain relevance?

Past

- Improve usability.
- Create structure that is technology agnostic.
- Eliminate redundancy.
- Parallel Structure



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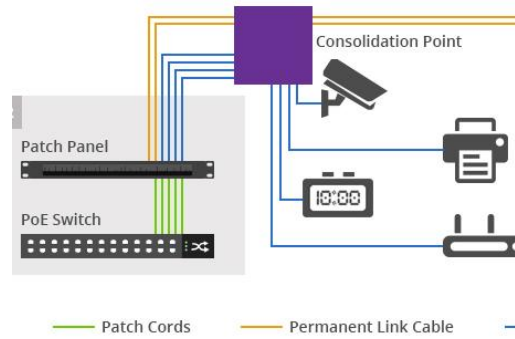
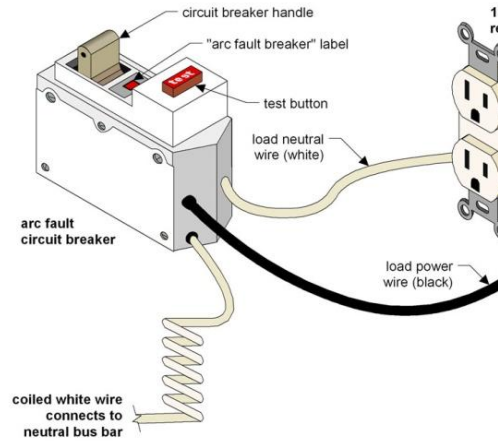
17

WIRING AND PROTECTION	WIRING METHODS	GENERAL EQUIPMENT	OCCUPANCIES	SPECIAL EQUIPMENT	SPECIAL CONDITIONS	COMMUNICATION
200 Use and Identification of Grounded Conductors 210 Branch Circuits Not Over 1000 Volts ac, 1500 Volts dc, Nominal 215 Feeders 220 Branch-Circuit, Feeder, and Service Load Calculations 225 Outside Branch Circuits and Feeders 230 Services 235 Branch Circuits, Feeders, and Services Over 1000 Volts ac, 1500 Volts dc, Nominal 240 Overcurrent Protection 242 Overvoltage Protection 245 Overcurrent Protection for Systems Rated Over 1000 Volts ac, 1500 Volts dc 250 Grounding and Bonding	300 Gen. Req for Wiring Methods and Materials 305 Gen. Req for Wiring Methods and Materials for Systems Rated Over 1000 Volts ac, 1500 Volts dc, Nominal 310 Conductors for General Wiring 312 Cabinets, Cutout Boxes, and Meter Socket Enclosures 314 Outlet, Device, Pull, ... Boxes... 315 Medium Voltage Conductors, Cable 320 Armored Cable: Type AC 322 Flat Cable Assemblies: Type FC 324 Flat Conductor Cable: Type FCC 326 Type IGS 330 Metal-Clad Cable: Type MC 332 Type MI 334 Types NM and NMC 335 Type ITC 336 Type TC 337 Type P Cable 338 Types SE and USE 340 Type UF 342 Intermediate Metal Conduit (IMC) 344 Rigid Metal Conduit (RMC) 348 Flexible Metal Conduit (FMC) 350 Liquidtight (LFMC) 352 (PVC) 353 (HDPE Conduit) 354 (NUCC) 355 (RTRC) 356 (LFNC) 358 (EMT) 360 (FMT) 362 (ENT) 393 Low-Voltage Suspended Ceiling Power Distribution Systems 394 Concealed Knob-and-Tube Wiring 395 Outdoor Overhead Conductors over 1000 Volts 396 Metallic Fire Alarm Association 398 Open Wiring on Insulators	400 Flexible Cords and Flexible Cables 402 Fixture Wires 404 Switches 406 Receptacles, Cord Connectors, and Attachment Plugs (Caps) 408 Switchboards, Switchgear, and Panelboards 409 Industrial Control Panels 410 Luminaires, Lampholders, and Lamps 411 Low-Voltage Lighting 422 Appliances 424 Fixed Electric Space-Heating Equipment 425 Fixed Resistance and Electrode Industrial Process Heating Equipment 426 Fixed Outdoor Electric Deicing and Snow-Melting Equipment 427 Fixed Electric Heating Equipment for Pipelines and Vessels 430 Motors, Motor Circuits, and Controllers 440 Air-Conditioning and Refrigerating Equipment 445 Generators.....			701 Legally Required Standby Systems 702 Optional Standby Systems 705 Interconnected Electric Power Production Sources 706 Energy Storage Systems 708 Critical Operations Power Systems (COPS) 710 Stand-Alone Systems 722 Cables for Power-Limited Circuits and Fault-Managed Power Circuits 724 Class 1 Power-Limited Circuits and Class 1 Power-Limited Remote-Control and Signaling Circuits 725 Class 2 and Class 3 Power-Limited Circuits 726 Class 4 Fault-Managed Power Systems 728 Fire-Resistive Cable Systems 750 Energy Management Systems 760 Fire Alarm Systems 770 Optical Fiber Cables	800 General Requirements for Communications Systems 805 Communications Circuits 810 Antenna Systems. 820 Community Antenna Television and Radio Distribution Systems 830 Network-Powered Broadband Communications Systems 840 Premises-Powered Broadband Communications Systems

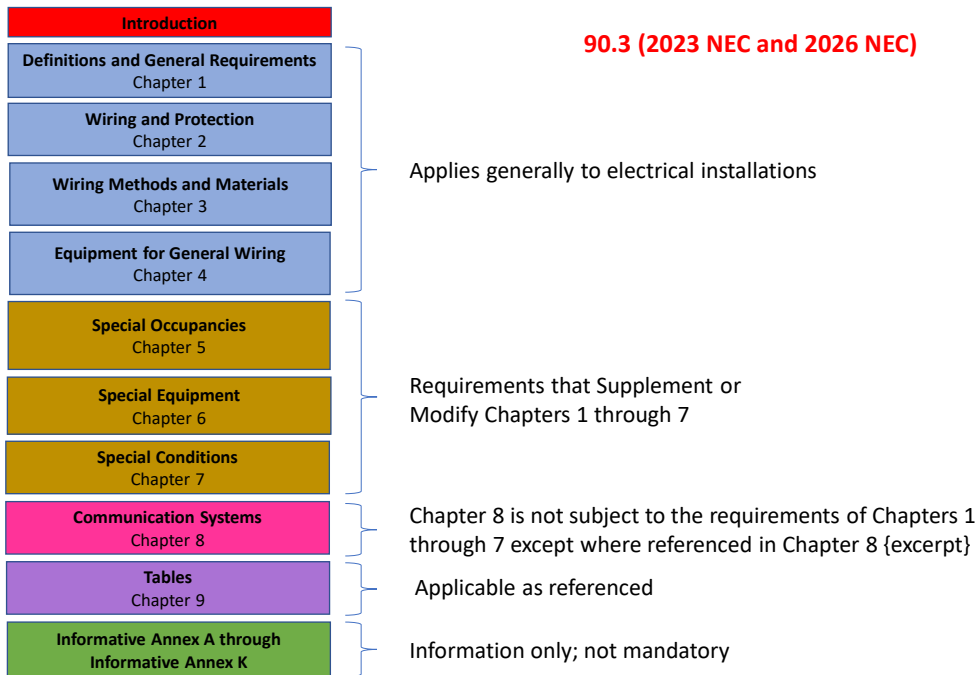


18

Arc fault circuit interrupter



19



20

Parallel Structure (2023)

Wiring and Protection

- 210 Branch Circuits
- 215, 225 Feeders
- 230 Services
- 235 Branch, Feeders and Services
- 240 Overcurrent Protection
- 242 Overvoltage Protection
- 245 Overcurrent Protection
- 250 Grounding

Wiring Methods

- 300 General Req
- 305 General Requirements
- 310 Conductors and Cables
- 315 MV Conductors and Cables

Special Conditions

- 722 Ltd Energy Cables
- 724 Class 1 ...
- 725 Class 2 and 3
- 726 Class 4

Communication Systems

- 800 General Requirements
- 805 Communication Circuits
- 810 Antenna Systems
- 820 Community Antenna Television and Radio Distribution
- 830 Network-Powered Broadband Communication Systems
- 840 Premises-Powered Broadband Communications Systems

21

Parallel Structure (2026)

Wiring and Protection

- 210 Branch Circuits
- 215, 225 Feeders
- 230 Services
- 235 Branch, Feeders and Services
- 240 Overcurrent Protection
- 242 Overvoltage Protection
- 245 Overcurrent Protection
- 250 Grounding

Wiring Methods

- 300 General Req
- 305 General Requirements
- 310 Conductors and Cables
- 315 MV Conductors and Cables

Special Conditions

- XXX General Requirements
- 722 Ltd Energy Cables (Move Cables from Ch.8)
- Xxx Overcurrent Protection
 - (Class 2,3,4)
- Xxx Overvoltage Protection
- XXX Grounding

Communication Systems

- 800 General Req
- 805 POTS
- 810 Antenna Systems
- 820 Community Antenna Television and Radio Distribution
- 830 Network-Powered Broadband Communication Systems
- 840 Premises-Powered Broadband Communications Systems

22

Parallel Structure (2029)

Wiring and Protection	Wiring and Protection >1000V	Wiring and Protection Limited Energy	Communication Systems
<ul style="list-style-type: none"> • 200 General Req • 205 Conductors and Cables • 210 Branch Circuits • 215, 225 Feeders • 230 Services • 240 Overcurrent Protection • 242 Overvoltage Protection • 250 Grounding 	<ul style="list-style-type: none"> • 300 General Req • 305 MV Conductors and Cables • 330 Branch, Feeders and Services • 340 Overcurrent Protection • 342 Overvoltage Protection • 350 Grounding 	<ul style="list-style-type: none"> • 400 General Requirements • 405 Ltd Energy Cables • 430 Outside Plant • 440 Overcurrent Protection <ul style="list-style-type: none"> • (Class 2,3,4) • 442 Overvoltage Protection • 450 Grounding 	<ul style="list-style-type: none"> • 805 Communication Circuits • 810 Antenna Systems • 820 Community Antenna Television and Radio Distribution • 830 Network-Powered Broadband Communication Systems • 840 Premises-Powered Broadband Communications Systems

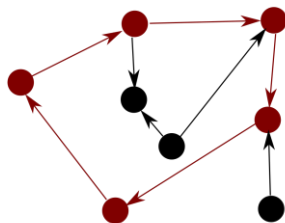
23

Parallel Structure

Three stand-alone Chapters that do not modify each other.

All requirements will be contained within one Chapter.

Reduce the need to search in multiple locations.



Example

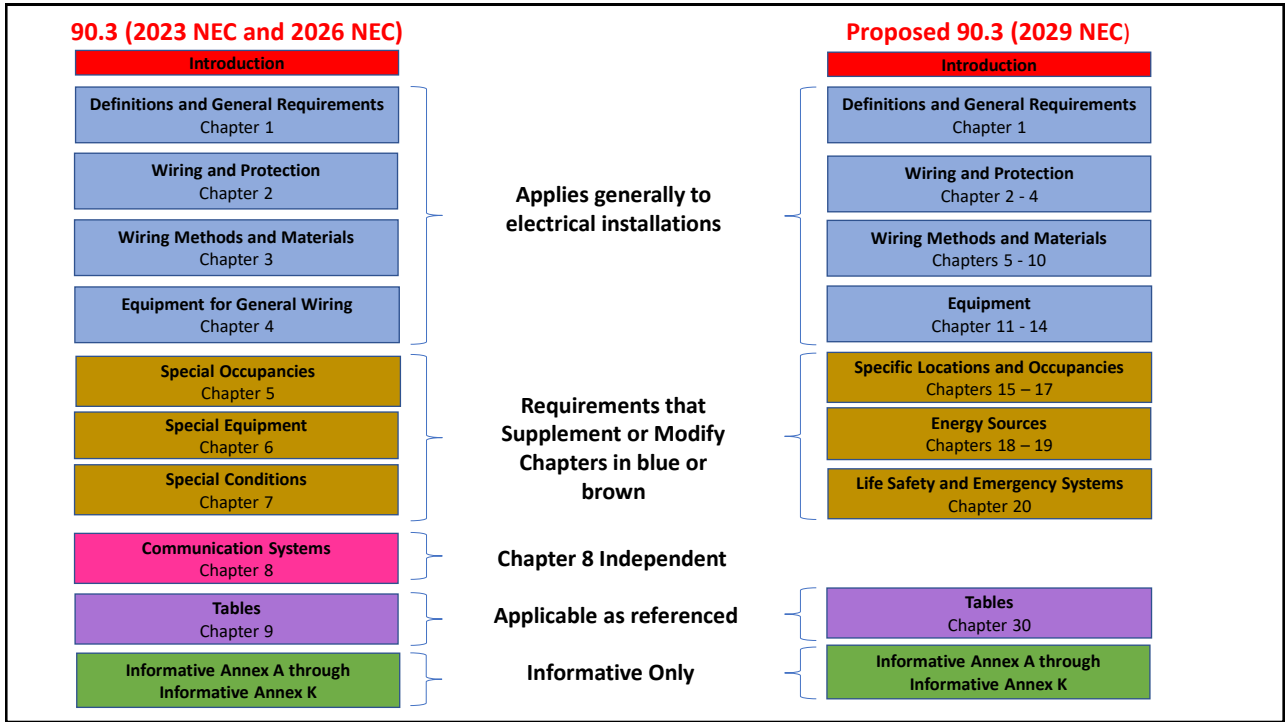
725.3 Other Articles.

In addition to the requirements of this article, circuits and equipment shall comply with the articles or sections listed in [725.3\(A\)](#) through (E). Only those sections of Article [300](#) referenced in this article shall apply to Class 2 and Class 3 circuits.



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24



25

2029 Article Number	Chapters and Articles (3/19/2025)	2026 Article Number	2023 Article Number
90	Introduction	90	90
2029	Chapter 1 Definitions and General Requirements	2026	2023
100	Definitions	100	100
110	General Requirements for Electrical Installations	110	110
120	Load Calculations	120	220
130	Energy Management and Power Control	130	750

Chapter 1



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26

2029	Chapter 2 Wiring and Protection for Systems 1000 VAC, 1500 VDC and Below (Excluding Chapter 4 Systems)	2026	2023
200	General Requirements	300	300
205	Conductors	310	310
206	Use and Identification of Grounded Conductors	200	200
208	Remote Control, Signaling, Class 1 Circuits	206	206
210	Branch Circuits	210	210
215	Feeders	215	215
225	Outside Branch Circuits and Feeders	225	225
230	Services	230	230
240	Overcurrent Protection	240	240
242	Overvoltage Protection	242	242
250	Grounding and Bonding	250	250

Chapter 2



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2029	Chapter 3 Wiring and Protection for Systems Over 1000 VAC, 1500 VDC	2026	2023
300	General Requirements	305	305
305	Conductors and Cables	315	315
306	Use and Identification of Grounded Conductors		
310	Branch Circuits	265	235
315	Feeders	266	235
325	Outside Branch Circuits and Feeders	267	235
330	Services	268	235
340	Overcurrent Protection	245	245
342	Overvoltage Protection	242 (Part III)	242 (Part III)
350	Grounding and Bonding	270	250 (Part X)

Chapter 3



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2029	Chapter 4 Wiring and Protection for Limited Energy Systems	2026	2023
400	General Requirements for Limited-Energy System Wiring Methods and Materials	720	300
405	Limited-Energy Cables	722	722
406	Raceways, Cable Routing Assemblies and Cable Trays of Limited-Energy Systems	723	800, 805, 810, 820, 830, 840
410	Class 2 and Class 3 Limited-Energy Systems	725	725
411	Class 4 Fault-Managed Power Systems	726	726
430	Communication Systems - Outside Entering Buildings Part I- Communication Systems Part II- Antenna Systems Part III- CATV Part IV- Networked-Powered Broadband Communication Systems Part V- Premises-Powered Broadband Communication Systems	800, 810, 820, 830	800, 805, 810, 820, 830, 840
440	Power Sources of Limited-Energy Systems	721	725, 726, 820, 830, 840
442	Overvoltage Protection of Limited-Energy Systems	742	
450	Grounding and Bonding of Limited-Energy Systems	750	805, 810, 820, 830, 840

Chapter 4



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2029	Chapter 5 Power Production and Energy Storage Systems	2026	2023
500	Interconnected Systems	705	705
502	Generators	445	445
504	Stationary Standby Batteries	480	480
506	Solar Photovoltaic (PV) Systems	690	690
508	Large-Scale Photovoltaic (PV) Electric Supply Stations	691	691
510	Fuel Cell Systems	692	692
512	Wind Electric Systems	694	694
514	Energy Storage Systems	706	706
516	Stand Alone Systems	710	710
518	Optional Standby Systems	702	702

Chapter 5



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2029	Chapter 6 Enclosures and Wiring Support Structures	2026	2023
600	Cabinets, Cutout Boxes, and Meter Socket Enclosures	312	312
602	Outlet, Device, Pull, and Junction Boxes; Conduit Bodies; Fittings; and Handhole Enclosures	314	314
604	Cable Trays	392	392
606	Auxiliary Gutters	366	366
608	Metal Wireways	376	376
610	Nonmetallic Wireways	378	378
612	Nonmetallic Extensions	382	382

Chapter 6



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2029	Chapter 7 Wire and Cable	2026	2023
700	Armored Cable: Type AC	320	320
702	Flat Cable Assemblies: Type FC	322	322
704	Flat Conductor Cable: Type FCC	324	324
706	Integrated Gas Spacer Cable: Type IGS	326	326
708	Metal-Clad Cable: Type MC	330	330
710	Mineral-Insulated, Metal-Sheathed Cable: Type MI	332	332
712	Nonmetallic-Sheathed Cable: Types NM and NMC	334	334
714	Optical Fiber Cables	722 (Part VII)	770
716	Instrumentation Tray Cable: Type ITC	335	335
718	Power and Control Tray Cable: Type TC	336	336
720	Type P Cable	337	337
722	Service-Entrance Cable: Types SE and USE	338	338
724	Underground Feeder and Branch-Circuit Cable: Type UF	340	340
726	Flexible Cords and Flexible Cables	400	400
728	Fixture Wires	402	402

Chapter 7



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Chapter 8, 9

2029	Chapter 8 Circular Raceways (Conduit and Tubing)	2026	2023
800	Intermediate Metal Conduit: Type IMC	342	342
802	Rigid Metal Conduit: Type RMC	344	344
804	Flexible Metal Conduit: Type FMC	348	348
806	Liquidtight Flexible Metal Conduit: Type LFMC	350	350
808	Rigid Polyvinyl Chloride Conduit: Type PVC	352	352
810	High Density Polyethylene Conduit: Type HDPE Conduit	353	353
812	Nonmetallic Underground Conduit with Conductors: Type NUCC	354	354
814	Reinforced Thermosetting Resin Conduit: Type RTRC	355	355
816	Liquidtight Flexible Nonmetallic Conduit: Type LFNC	356	356
818	Electrical Metallic Tubing: Type EMT	358	358
820	Flexible Metallic Tubing: Type FMT	360	360
822	Electrical Nonmetallic Tubing: Type ENT	362	362

2029	Chapter 9 Non-Circular Raceways	2026	2023
900	Cellular Concrete Floor Raceways	372	372
902	Cellular Metal Floor Raceways	374	374
904	Strut-Type Channel Raceway	384	384
906	Surface Metal Raceways	386	386
908	Surface Nonmetallic Raceways	388	388
910	Underfloor Raceways	390	390



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2029	Chapter 10 Power Systems	2026	2023
1000	Busways	368	368
1002	Cablebus	370	370
1004	Insulated Bus Pipe (IBP) and Tubular Covered Conductors (TCC)	369	369
1006	Flexible Bus System	371	371
1008	Multioutlet Assembly	380	380
1010	Low-Voltage Suspended Ceiling Power Distribution Systems	393	393
1012	Manufactured Wiring Systems	604	604
1014	Office Furnishings	605	605
2029	Chapter 11 Temporary and Open Wiring	2026	2023
1100	Temporary Installations	590	590
1102	Messenger-Supported Wiring	396	396
1104	Open Wiring on Insulators	398	398
1106	Concealed Knob and Tube Wiring	394	394

Chapter 10, 11



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2029	Chapter 12 Devices and Distribution Equipment	2026	2023
1200	Switches	404	404
1202	Wiring Devices	406	406
1204	Switchboards, Switchgear and Panelboards	408	408
1206	Industrial Control Panels	409	409
1208	Transformers and Transformer Vaults	450	450
1210	Capacitors	460	460
1212	Resistors and Reactors	470	470
2029	Chapter 13 Lighting Equipment	2026	2023
1300	Luminaires, Lampholders and Lamps	410	410
1302	Low-Voltage Lighting	411	411
1304	Electric Signs and Outline Lighting	600	600

Chapter 12, 13



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2029	Chapter 14 Motors and Motor Driven Machinery	2026	2023
1400	Motors, Motor Circuits, and Controller	430	430
1402	Cranes and Hoists	610	610
1404	Elevators, Dumbwaiters, Escalators, Moving Walks, Platform Lifts, and Stairway Chairlifts	620	620
1406	Electrically Driven or Controlled Irrigation Machines	675	675
1408	Air-Conditioning and Refrigeration Equipment	440	440
1410	Industrial Machinery	670	670
1412	Phase Converters	455	455
2029	Chapter 15 Electric Heating and Heating Equipment	2026	2023
1500	Fixed Electric Space Heating Equipment	424	424
1502	Fixed Resistance and Electrode Industrial Process Heating Equipment	425	425
1504	Fixed Outdoor Electric Deicing and Snow-Melting Equipment	426	426
1506	Fixed Electric Heating Equipment for Pipelines and Vessels	427	427
1508	Induction and Dielectric Heating Equipment	665	665

Chapter 14, 15



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2029	Chapter 16 Other Equipment	2026	2023
1600	Appliances	422	422
1602	Electric Welders	630	630
1604	Pipe Organs	650	650
1606	Information Technology Equipment	645	645
1608	Modular Data Centers	646	646
1610	Electrolytic Cells	668	668
1612	Electroplating	669	669
1614	Integrated Electrical Systems	685	685
1616	Sensitive Electronic Equipment	647	647
1618	Audio Signal Processing, Amplification, and Reproduction Equipment	640	640
1620	X-Ray Equipment	660	660

Chapter 16



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2029	Chapter 17 Equipment Over 1000 VAC, 1500 VDC	2026	2023
1700	General	495 (Part I, II)	495 (Part I, II)
1702	Switchgear and Industrial Control Assemblies	495 (Part III)	495 (Part III)
1704	Mobile and Portable Equipment	495 (Part IV)	495 (Part IV)
1706	Boilers	495 (Part V)	495 (Part V)
1708	Equipment with Insulating Liquids	495 (Part VI)	
1710	Equipment Vault	495 (Part VII)	
1712	Motors, Motor Circuits, and Controllers	430 (Part XI)	430 (Part XI)
1714	Capacitors	460 (Part III)	460 (Part III)
1716	Resistors and Reactors	470 (Part III)	470 (Part III)

Chapter 17



Automatic Fire Alarm Association

2029	Chapter 18 Hazardous Locations	2026	2023
1800	Hazardous (Classified) Locations, Classes I, II, and III, Divisions 1 and 2	500	500
1801	Class I Locations	501	501
1802	Class II Locations	502	502
1803	Class III Locations	503	503
1804	Intrinsically Safe Systems	504	504
1805	Zone 0, 1, and 2 Locations	505	505
1806	Zone 20, 21, and 22 Locations for Combustible Dusts or Ignitable Fibers/Flyings	506	506
1811	Commercial Garages, Repair and Storage	511	511
1812	Cannabis Oil Equipment and Cannabis Oil Systems Using Flammable or Combustible Materials	512	512
1813	Aircraft Hangars	513	513
1814	Motor Fuel Dispensing Facilities	514	514
1815	Bulk Storage Plants	515	515
1816	Spray Application, Dipping, Coating, and Printing Processes Using Flammable or Combustible Materials	516	516

Chapter 18



Automatic Fire Alarm Association

2029	Chapter 19 Occupancies	2026	2023
1900	Health Care Facilities	517	517
1902	Assembly Occupancies	518	518
1904	Theaters, Audience Areas of Motion Picture and Television Studios, Performance Areas, and Similar Locations	520	520
1906	Control Systems for Permanent Amusement Attractions	522	522
1908	Carnivals, Circuses, Fairs, and Similar Events	525	525
1910	Motion Picture and Television Studios and Similar Locations	530	530
1912	Motion Picture Projection Rooms	540	540
1914	Manufactured Buildings and Relocatable Structures	545	545
1916	Agricultural Buildings	547	547
1918	Mobile Homes, Manufactured Homes, and Mobile Home Parks	550	550
1920	Recreational Vehicles and Recreational Vehicle Parks	551	551
1922	Park Trailers	552	552

Chapter 19



Automatic Fire Alarm Association

2029	Chapter 20 Installations Associated with Bodies of Water	2026	2023
2000	Swimming Pools, Fountains, and Similar Installations	680	680
2002	Natural and Artificially Made Bodies of Water	682	682
2004	Marinas, Boatyards, Floating Buildings, and Docking Facilities	555	555
2029	Chapter 21 Life Safety and Emergency Systems	2026	2023
2100	Emergency Systems	700	700
2102	Legally Required Standby Systems	701	701
2104	Fire Pumps	695	695
2106	Fire Alarm Systems	760	760
2108	Circuit Integrity Cables and Electrical Protective Systems (Fire-Resistive Cable Systems)	722 (Part IX), 772	728
2110	Critical Operations Power Systems (COPS)	708	708
2029	Chapter 22 Electrified Transportation Equipment	2026	2023
2200	Electric Vehicle Power Transfer System	625	625
2202	Electric Self-Propelled Vehicle Power Transfer System (ESVSEs)	624	
2204	Electrified Truck Parking Spaces	626	626

Chapter 20, 21, 22



Automatic Fire Alarm Association

Chapter 30	Chapter 30 Tables	Chapter 9	Chapter 9
Informative Annexes	Informative Annexes	Informative Annexes	Informative Annexes

Chapter 30



Automatic Fire Alarm Association

Questions

Larry Ayer

larryayer@bizcomelec.com

Post meeting thoughts can be sent to Jeff
Sargent (jsargent@nfpa.org)

