

# National Electric Code (NEC) Update

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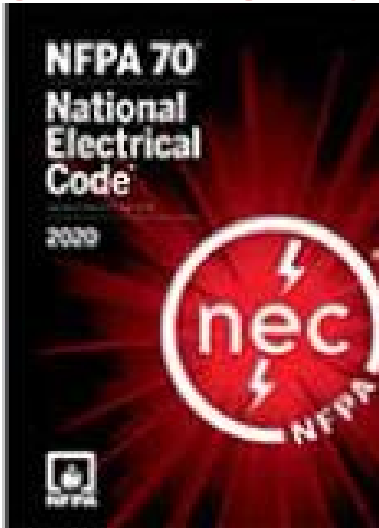
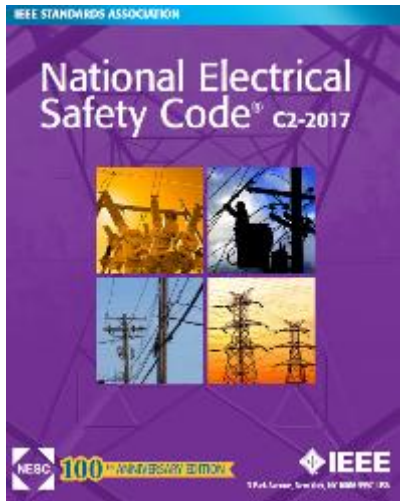
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Session 3: *How Changing Standards and Codes  
Impact You / Distinguished Lecturer*  
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# Codes in Context



- Industry Safety Codes and Standards
- Regulatory Rules..... Legal Mandates
- Internal Practices.....Engineering Design

- **NFPA – NEC & NFPA 70E**
- **IEEE NESC**
- GO-95....GO128....GO165
- OSHA 1910.268/269
- Internal M&Ps
  - **GRs and UL Listings**
- Joint Use Agreements (JUA)
- UL
- GRs/SRs
- ATIS
- etc.....

## Purposes and Scope

### Inside and On Buildings → NEC

**Purpose** = The practical safeguarding of persons and property from hazards arising from the use of electricity

- NFPA = Fire Protection

**Scope** – covers installation of electrical and communications (electrical and fiber optic) conductors, equipment and raceways, for

- Public & private premises (homes, residences, buildings, similar properties) ... inside
- Focus is on load side of the demarcation point
- Out of Scope (Exemption) = Exclusive control of Utility (Communications, Power....)

**Not a Design Manual**

### OSP → NESC

**Purpose** = The practical safeguarding of persons, utility facilities, and affected property during the installation, operation, and maintenance of electric supply and communication facilities.

- IEEE = Electrical Safety of Public and Workers

**Scope** - covers supply and communication facilities and associated work practices employed by a electric supply, communications, or railway in the exercise of its functions as a utility.

- Facilities = lines, equipment, and specified infrastructure (e.g., poles, distribution plant sub-stations, vaults...)
- The NESC covers similar systems under the exclusive control of the utility and being worked by qualified persons, such as those associated with an industrial complex or utility interactive system.

**Not a Design Guide or Instruction Manual**

# NEC Adoption as of 1/1/2021

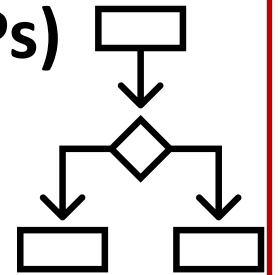


2020 NEC® - 9  
2017 NEC® - 27  
2014 NEC® - 8  
2008 NEC® - 2  
County/Municipality NEC® regulation only - 4

## NEC (NFPA 70) Representation

### Correlating Committee (CC) and 3 NEC Technical Committees (CMPs)

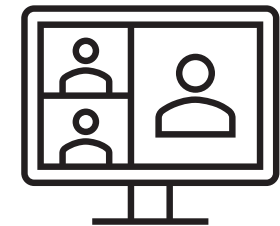
- **CMP 1** – Purpose and Scope (Arts. 90, 100 and 110)
- **CMP 5** – Grounding (Arts. 200, 250, 280 and 285)
- **CMP 16** – Communications Systems (Arts. 770, 800-through-840)
- **NEC CC** - Oversight responsibility for the entire Code-making process, i.e., ensuring due process and correlating the technical committee (CMP) actions



[Monitor and track other CMPs and Articles as needed – e.g., CMP13 (Article 480 - battery systems), CMP3 (Article 725 - Class 2/3 circuits, Chapter 9 tables), CMP4.....]

## NEC Schedule with Pandemic Modifications

- Code Making Panels (CMPs) First Draft Meetings - Virtual
  - More frequent and extensive Task Group Meetings used
- Formal Ballots from CMP Meetings – Feb-March 2021
- Virtual CC Meeting April 2021
- Public Comment Closing Date: August 19, 2021
- Second Draft Meetings - October-November 2021
  - Face-to-Face Meeting Vs Virtual = uncertain at this time
- Second Draft Report Posting Date: March 21, 2022
- Targeted publishing date remains August 2022 for the 2023 NEC



## Highlights from First Draft Meetings - 1

### CMP1 and CMP16 (January 2021)

- **Independence of Chapter 8, Communications Systems** has been retained – Proposals to remove the independence in 90.3 were rejected because of our presentations to CMP1 and to the reorganization of Chapter 8 to address any perceived clarity and use-ability concerns
  - Article 800 with general requirements applicable to Articles 805, 820, 830 and 840
  - New Article 805 created for specific requirements for communications circuits
  - Chapter 8 reorganized to simplify, eliminate redundancies
- **Utility Exemption in 90.2B4** has been retained – Proposals to remove were rejected
  - Exclusion from coverage of communications equipment under the exclusive control of communications utilities remains intact
- **Consolidation within Article 800** and clarification of relationships with articles in Chap. 7 validated
  - Common definitions, OSP cabling, installation and Listing added to Article 800



## Highlights from First Draft Meetings - 2



### CMP16 and CMP3 (January 2021)

- **Harmonization between NEC and NESC** has been maintained for the service drop cables and outside (OSP) plant equipment that provide communications services to customer premises.
- **New definitions** for *communications circuit* and *communication utility* along with new/revised Sections 800.3, 800.48, 800.47 taken together clarify when an installation belongs in Chapter 8 and when it belongs in Chapter 7.
- **New Article 726** – *Class 4 (CL4) Power Systems* was accepted for First Draft to cover the installation of wiring and equipment of Fault Managed Power (FMP) system
- Nominal Voltage - competing definitions all contain “...*The operating voltage of the cell or battery may vary above or below this value*” which covers communications industry needs.
- **Energy Storage Systems** - Batteries – Updates to Art. 480 deals with stationary standby batteries used to support dc loads and UPS systems serving communications equipment and services.



## Highlights from First Draft Meetings - 3



### Grounding Highlights - CMP5/CMP16 (Dec 2020 - Jan 2021)

- Intersystem Bonding Terminations (IBT) 250.94 rules modified slightly for clarity
- Copper-Clad Steel Grounding Conductors - Chapter 8 in 800.100A2 and 810.21A has permitted uses under “*other corrosion-resistant conductive material*” language for communications applications
  - Article 250 does not currently permit these conductors for grounding of ac power circuits (as yet)
- Use of Water Piping as Grounding Means for communications applications relegated to least preferred in list for communications purposes.

## Highlights from First Draft Meetings - 4

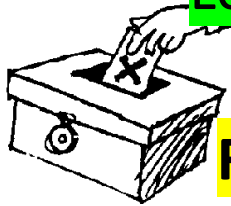
### General Observations (Jan 2021)

- **Editorial** - There were extensive editorial, grammatical, format and style changes made to the NEC to meet the new “*NEC Style Manual*”. If all these changes pass ballot and Public comment periods, Code users will see many word, format and sentence structure changes that do not change the technical intent of the rules.
  - “where” vs “if” ... “in accordance with” instead of “per”
- **Cybersecurity** – Concerns on cybersecurity were acknowledged but the NEC was not considered the appropriate vehicle to address security issues.

## Ongoing Interactions

State Adoptions-----AHJ discussions

Local Variations in Regulations.....Harmonization with NESC/Other Codes



**March 2021**  
**First Draft Ballots**

**Oct-Nov 2021**  
**Public Comment  
Review Meetings**

**2021 - 2022**  
**NEC 2023 settled**

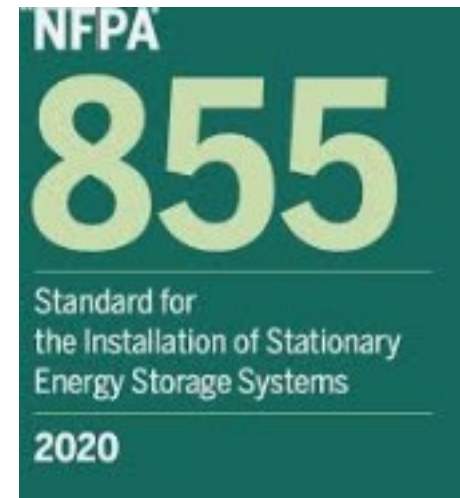
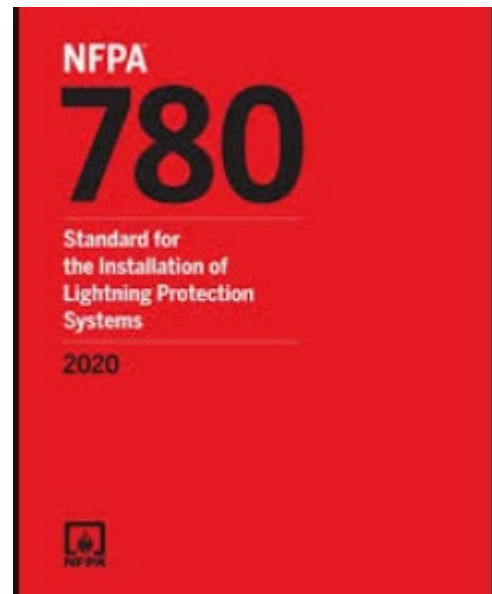
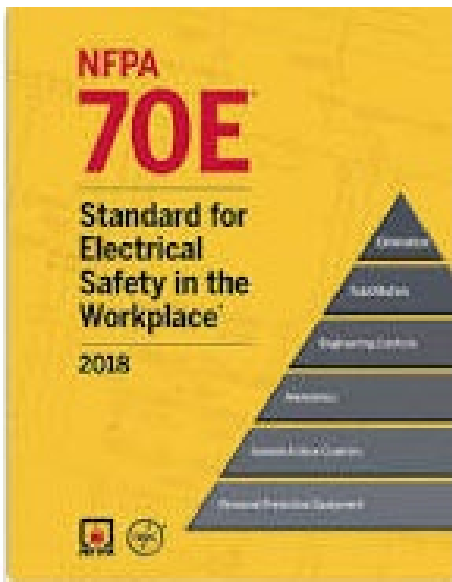


**Design – Engineering  
Operational M&Ps**

**Product Listings**

**Industry Standards --  
Functional Performance  
Specifications  
GRs, ATIS,...**

## RELATED INDUSTRY EFFORTS



## RELATED INDUSTRY EFFORTS - EXAMPLES

- GR-1089 – EMC .....GR-63/GR-3108/GR-3171/GR-3178 – Inside Equipment
- UL Listing of Telecommunications Equipment and Devices
- GR-513 – Powering
- 0600013 - Electromagnetic Compatibility (EMC) and Electrical Protection
- 0600315 - Voltage Levels for DC-Powered Equipment Used in the Telecom Environment
- 0600318 - Electrical Protection Applied to Telecom Network Plant at Customer Entrances
- 0600337 - Maximum Voltage, Current, and Power Levels Used in Communications Circuits
- 0600338 - Electrical Coordination of Primary and Secondary Surge Protection