



NECA
PHILADELPHIA
SEPT 29-OCT 2, 2023

Technology's Impact on Codes and Standard




Kyle Krueger, CESC

CONVENTION EDUCATION

This session is eligible for 2 Continuing Education Hours.

For these hours to appear on your certificate, you must:

- Have your badge scanned at the door
- Attend 90% of this presentation
- Fill out the online evaluation for this session




KYLE KRUEGER

NECA – Director, Codes and Standards
Asst. Secretary – NECA Codes and Standards Committee
Principal – NEC® Code Making Panel 3
Alternate – NEC® Correlating Committee
Principal – NFPA 72 Correlating Committee
Executive Board – NFPA Electrical Section
UL Electrical Council Member




NECA Codes and Standards

- Part of the Government Affairs Team – Marco Giamberardino
- Manage and support NECA's Codes and Standards Committee.
- Works with various organizations supporting NECA's mission and membership.
- Develop ANSI-Accredited Installation Standards (*NEIS*™).
- Develop industry resources.
- Provide industry training related to Codes and Standards.

Panelist Introductions



MICHAEL JOHNSTON

NECA – Executive Director, Codes and Standards
Secretary – NECA Codes and Standards Committee
NEC® - Past Correlating Committee Chair
Immediate Past President - NFPA Electrical Section
Membership Committee Chair – NFPA Standards Council
MJ@NECAnet.org



JAMES THEILE

President – BW Systems
Past Chair/Member - NECA Technology Integration Task Force
Governor – Southern Colorado Chapter, NECA
Committee Member – Colorado Springs JATC



TIMOTHY MIKLOICHE

Owner – Electrical Training Services LLC
Chief Building Official – Town of West Hartford, CT
NEC® - Code Making Panel 3
Member - State of CT Codes and Standards Committee
1st Vice Chairman – NFPA Elec. Inspector Section Executive Board
Board of Directors – Eastern Section IAEI, Connecticut Chapter





Outline/Agenda

- Review recent changes in Codes and Standards related to technology in the electrical industry.
- Provide insight on Codes and Standards trends impacting the electrical industry

Topics:

1. Prefabrication
2. Integrated Systems
3. Elec. Vehicle Supply Equip.(EVSE)
4. Service and Maintenance
5. Energy Management Systems (EMS)



Topic 1

Prefab in Electrical Construction

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Prefab in Electrical Construction

What gaps currently exist in the Codes and Standards that regulate the electrical industry?

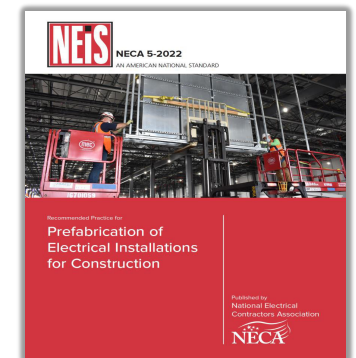
Images Courtesy of Forest Electric, New Jersey



Prefab in Electrical Construction

Introducing NECA 5:

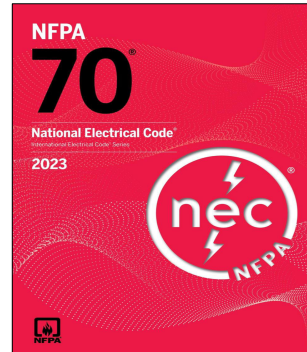
- **NECA 5-2022**, *Recommended Practices for Prefabrication of Electrical Installations for Construction.*
- First ANSI Approved Standard for Electrical Prefabrication





Prefab in Electrical Construction

Prefab related gaps in the NEC®



Prefab in Electrical Construction

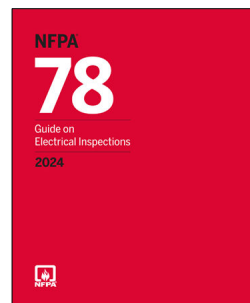
NECA Public Inputs - 2026 NEC®

- **Revise 90.4(A) Application** – To include prefabrication to the list of intended applications of the rules in the NEC® and add info note referencing NECA 5.
- **Revise 90.7 Examination of Equipment for Safety** – Include prefabrication language on how to handle the examination/inspection of prefabricated equipment and components once onsite, and add two informational notes:
 1. Referencing new proposed definition for prefabrication
 2. Referencing NECA 5.
- **NEW Article 100 Definition Prefabrication** - *A manufacturing or construction process that generally takes place, either onsite or remote, at a specialized facility, where materials are assembled to form a component part or final installation onsite. Prefabrication often involves the work of a single craft but could involve multiple trades.*



Prefab in Electrical Construction

- Prefab related gaps in NFPA 78, *Guide on Electrical Inspections*
- Challenges and experiences with prefab and inspections.





Topic 2
Integrated Systems

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Integrated Systems - Regulation

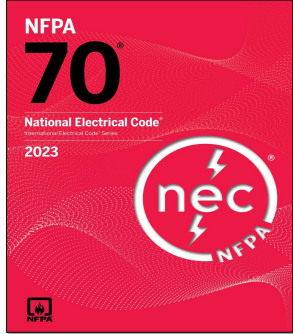

- Challenges With Integrated Systems and Regulation.
- NASCLA Power-Limited Contractor Licensing

Integrated Systems and The *NEC*[®]

How has the *NEC*[®] evolved over the last decade regarding integrated systems:

- PoE
- Class 4-Digital Electricity

Integrated Systems – Qualified Persons

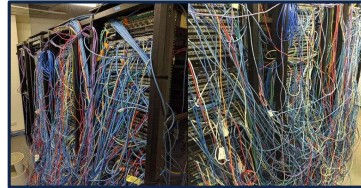
- NECA Submitted thirteen (13) Public Inputs related to *Qualified Persons* for the 2026 *NEC*[®]
- Eight (8) of these pertained to Power-Limited/Low-Voltage Systems.
- Revised Section 90.2(A) to include the wording “*Qualified persons shall be trained in the arrangement and application of this Code as provided in Section 90.3*”



Integrated Systems – Qualified Persons

• NECA PIs:

- 393 Low-Voltage Suspended
- 722 Cable for Power-Limited and Fault-Managed Power Circuits
- 724 Class 1 Power-Limited Circuits
- 725 Class 2 & 3 Power-Limited Circuits
- 726 Class 4 Fault-Managed Power Systems
- 760 Fire Alarm Systems
- 770 Fiber Optic Cabling
- 800 Communications Systems



Cybersecurity



Integrated Systems - Cybersecurity

- NEW #8 to Section 110.3(A) on Cybersecurity.
- Requires AHJs to consider the Cybersecurity when examining and judging the acceptability of life-safety equipment



Integrated Systems - Cybersecurity

- Contractor challenges and solutions with new 110.3 (A)(8) cybersecurity requirement.
- AHJ - What challenges and solutions with new 110.3(A)(8) cybersecurity requirement.





Integrated Systems - Cybersecurity

- NECA submitted a PI to revise newly added 110.3(A)(8).
- Adding language to include to provide documentation proving compliance.



Topic 3 Electric Vehicle Supply Equipment (EVSE)

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Electric Vehicle Supply Equipment

- How have the codes and standards pertaining to EVSE evolved?
- What are some of the enforcement/inspection challenges related to EVSE installations?



Electric Vehicle Supply Equipment

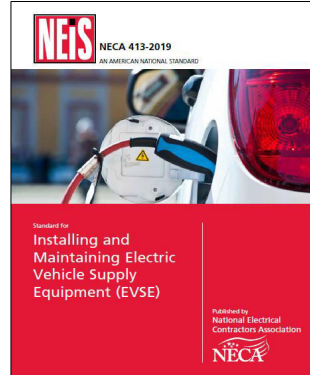
- NECA submitted a couple PIs pertaining to EVSE:
 - NEW 625.9(A) & (B) Requiring Qualified Persons to install and maintain EVSE
 - Three (3) NEW Informational Notes:
 - Referencing the definition of Qualified Person in Article 100.
 - Referencing NECA 413, *Standard for Installing and Maintaining Electric Vehicle Supply Equipment (EVSE)*.
 - Referencing the EVITP as one example of training program to ensure qualified persons perform EVSE work.





Electric Vehicle Supply Equipment

- NECA Resources:
 - NECA 413, *Standard for Installing and Maintaining Electric Vehicle Supply Equipment (EVSE)*.
 - *Electric Vehicle Charging Essentials* and other training available thru NECA Education.




Topic 4

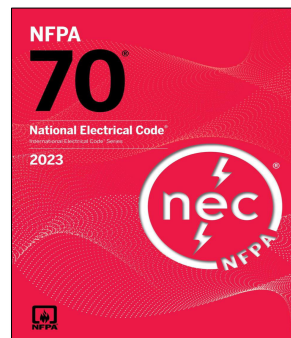
Service and Maintenance

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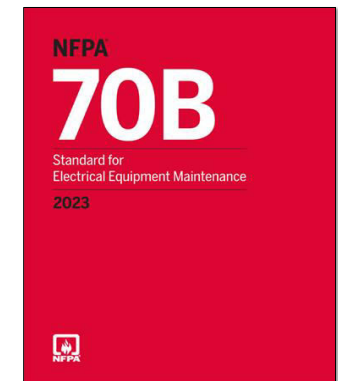
Service, Maintenance and The NEC®

- NEW Section 110.17 establishes Service and Maintenance requirements in the NEC®
- What are the challenges for AHJs?



Service and Maintenance

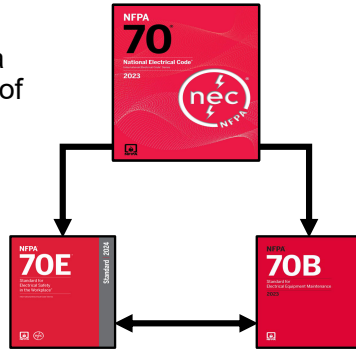
- What changes occurred to NFPA 70B during the last revision?
- What is the difference between:
 - A Recommended Practice
 - A Standard
 - A Code





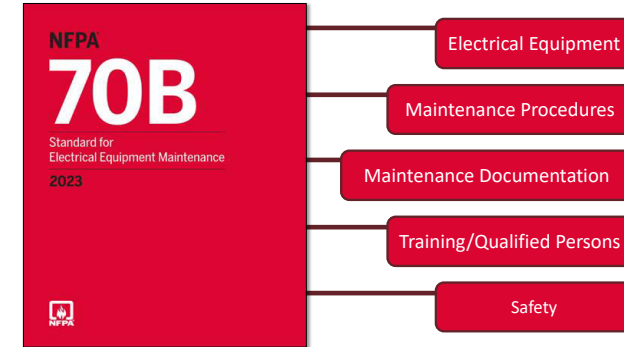
Service and Maintenance

- The elevation of NFPA 70B to a Standard completes the family of NFPA Electrical Standards



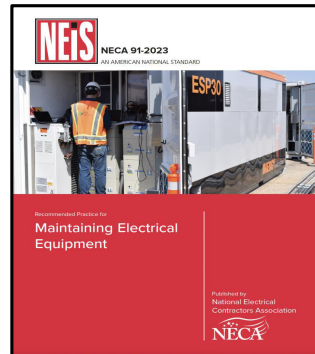
Service and Maintenance

What are the areas of emphasis in the new 70B Standard?



Service and Maintenance

- NECA Developed NECA 91, Recommended Practice for Maintaining Electrical Equipment to compliment the NFPA Electrical Standard Trilogy.



Service and Maintenance

- What business opportunities are available in service and maintenance for contractors?
- Why a qualified trained field staff important in service and maintenance?
 - Code Compliance
 - Manufacturers/Warranty
 - Insurance





Service and Maintenance

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Service and Maintenance

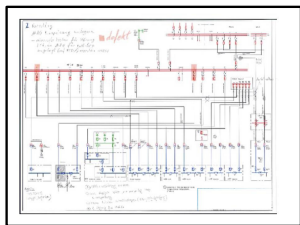
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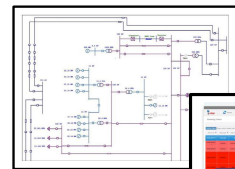
Service and Maintenance

- What is an Electronic Digital Twin (EDT)? – *A digital model of your entire electrical system with equipment and asset data.*

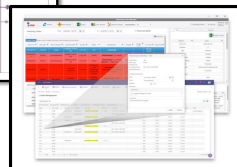
AutoCAD Paper/PDF formats



Electronic Digital Twin Model



Asset Management



Images Courtesy of Schneider Electric



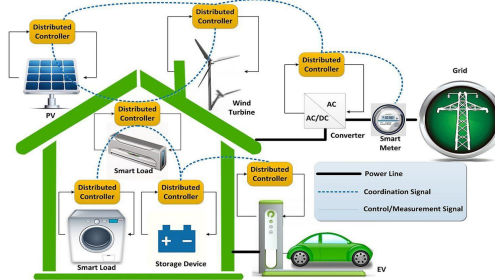
Topic 5
Energy Management
Systems (EMS)

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Energy Management System

- How have Codes related to EMS evolved?
- Energy management and EVSE..
- Enforcement/Inspection Challenges.



QUESTIONS



Complete the Online Evaluation

