



**NECA**  
PHILADELPHIA  
SEPT 29-OCT 2, 2023

## Technology's Impact on Codes and Standard




Kyle Krueger, CESC

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## 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?

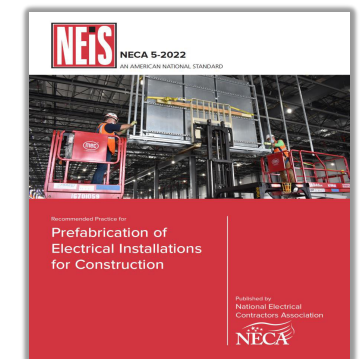
Images Courtesy of Forest Electric, New Jersey



## Prefab in Electrical Construction

### Introducing NECA 5:

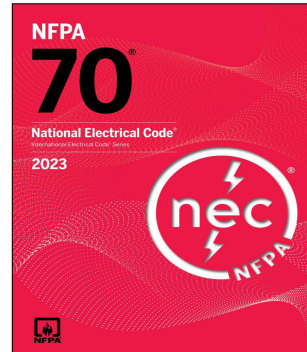
- **NECA 5-2022**, *Recommended Practices for Prefabrication of Electrical Installations for Construction.*
- First ANSI Approved Standard for Electrical Prefabrication





## Prefab in Electrical Construction

Prefab related gaps in the NEC®



## Prefab in Electrical Construction

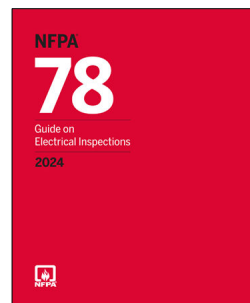
NECA Public Inputs - 2026 NEC®

- **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

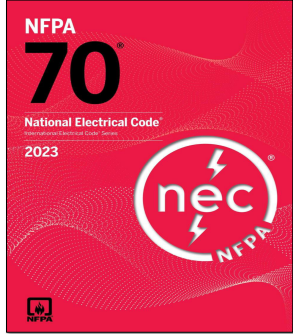

- Challenges With Integrated Systems and Regulation.
- NASCLA Power-Limited Contractor Licensing

## Integrated Systems and The *NEC*<sup>®</sup>

How has the *NEC*<sup>®</sup> 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*<sup>®</sup>
- 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*”

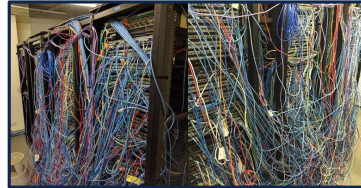




## Integrated Systems – Qualified Persons

### • 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

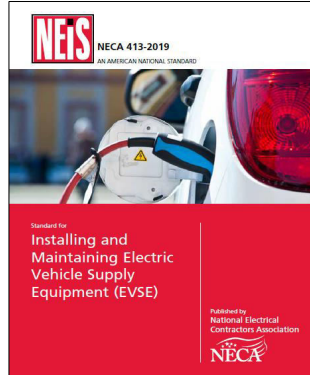
- NECA submitted a couple PIs pertaining to EVSE:
  - NEW 625.9(A) & (B) Requiring Qualified Persons to install and maintain EVSE
  - Three (3) NEW Informational Notes:
    - Referencing the definition of Qualified Person in Article 100.
    - Referencing NECA 413, *Standard for Installing and Maintaining 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.

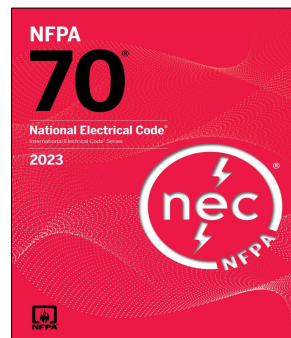


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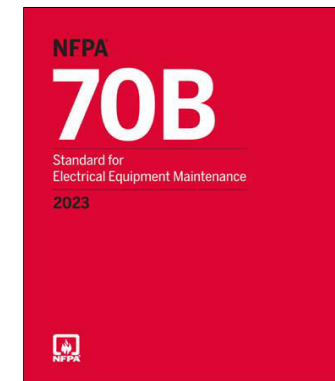
## Service, Maintenance and The NEC®

- 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

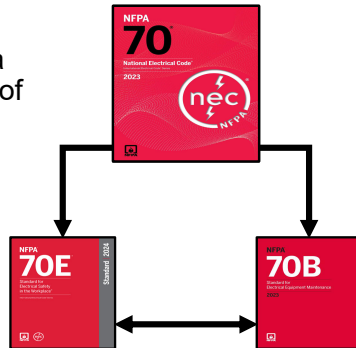






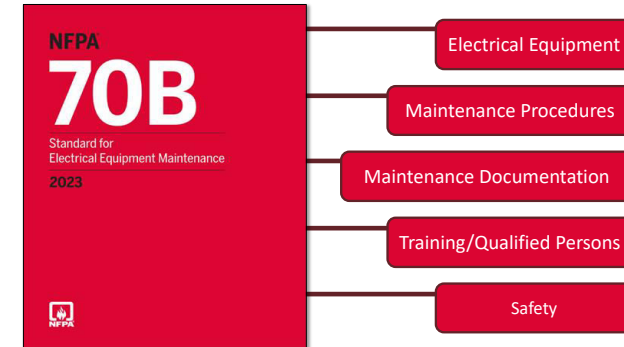
## Service and Maintenance

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



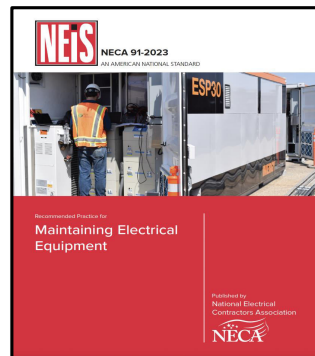
## Service and Maintenance

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





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## Service and Maintenance

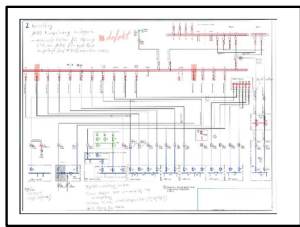
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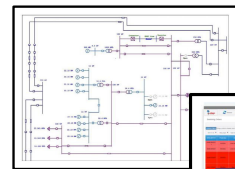
## Service and Maintenance

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

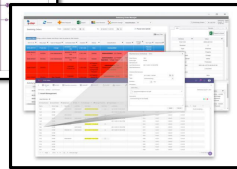
AutoCAD Paper/PDF formats



Electronic Digital Twin Model



Asset Management



Images Courtesy of Schneider Electric



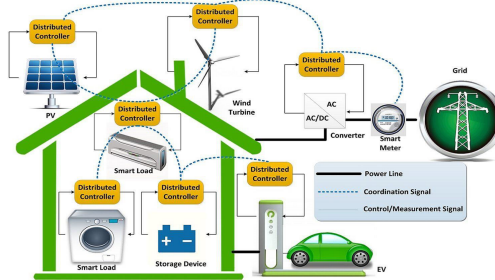
Topic 5  
Energy Management  
Systems (EMS)

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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

