

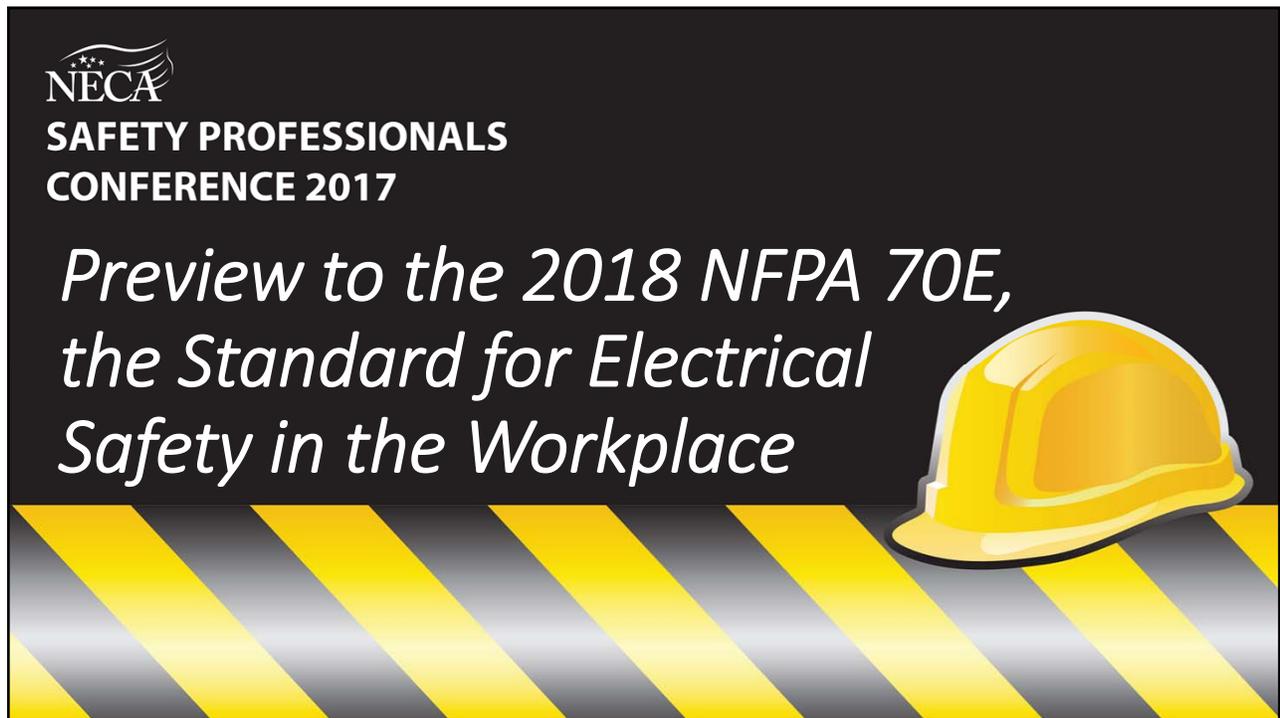


NECA
**SAFETY PROFESSIONALS
CONFERENCE 2017**

presented by  **WESTEX**
by Miliken



A banner for the NECA Safety Professionals Conference 2017. The background is black with a yellow and black diagonal hazard stripe pattern at the bottom. The NECA logo is in the top left. The main title is in large white bold letters. Below the title, it says 'presented by' followed by the Westex logo (a red and white symbol) and the word 'WESTEX' in bold, with 'by Miliken' in smaller text below it. A yellow hard hat is positioned on the right side of the banner.



NECA
**SAFETY PROFESSIONALS
CONFERENCE 2017**

*Preview to the 2018 NFPA 70E,
the Standard for Electrical
Safety in the Workplace*



A banner for the NECA Safety Professionals Conference 2017, similar to the one above but with different text. It features the NECA logo, the conference title, and a preview of the 2018 NFPA 70E standard. The background is black with a yellow and black diagonal hazard stripe pattern at the bottom. A yellow hard hat is positioned on the right side of the banner.

Preview to the 2018 NFPA 70E, the Standard for Electrical Safety in the Workplace

- Technical Committee Members
 - James Dollard, Safety Coordinator, *IBEW Local 98*
 - Palmer Hickman, Executive Director of Safety and Code, *electrical training ALLIANCE*
 - Rod West, Senior Staff Engineer, *Square D by Schneider Electric*
 - Wesley L. Wheeler, Director of Safety, *NECA*

- Guests
 - Derek Vigstol, NFPA



NFPA 70E Change Process

3-year Revision Cycle with 3 Major Public Steps:

1. Public Input
 - 430 Public Inputs (aka Proposals) received for 2018 Edition
 - Panel met to take action and created 170 First Revisions
 - First revisions are published for public comment

2. Public Comment
 - 170 Public Comments received
 - Panel met to take action and created 70 second revisions

3. Annual NFPA Meeting – June 4-7, 2017



Safety is a Shared Responsibility

NFPA 70E requires:

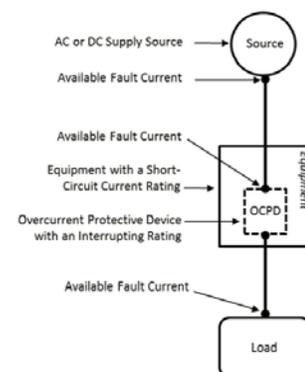
- Employer provide safety-related work practices and train the employee
- Employee implement safety-related work practices
- Employer documents each employee has received training
- Employer document employee proficiency and maintain the records for duration of employment – including employees name, training content and training dates
- Employer responsibility to provide appropriate PPE and ensure employees follow all policies related to energized vs. de-energized work.



Global Terminology

Replaced terms with NEW Global Terminology:

- “accident” with “incident”
- “accidental” with “unintentional”
- “accidentally” with “unintentionally”
- “short circuit current” with “available fault current”



Global Changes

DC 100 volt threshold changed to 50 volts

- Aligns NFPA 70E with OSHA 29 CFR 1910.303, 50 vdc



- Table 130.4(D)(b) for approach Boundaries for Electrical Conductors or circuit parts for shock protection. Table has been updated from 100 vdc to 50 vdc.



Emphasis on Following Manufacturers' Instructions

Equipment Condition and Maintenance

The focus on manufacturers' instructions, recommendations, industry codes and standards and recommended practices.

"Normal Operation" updated to "Normal **Operating** Condition"

Article 130.2

1. The equipment is properly installed.
2. The equipment is properly maintained
3. ***The equipment is used in accordance with the instructions included in the listing and labeling and in accordance with manufacturer's instruction***
4. The equipment doors are closed and secured
5. All equipment covers are in place and secured
6. There is no evidence of impending failure



Other Changes in NFPA 70E

Changes provide added clarity in the understanding and application of the standard:

- Scope of Standard – Added removal of equipment in the safe work practice scope
- Arc Flash Hazard – Change from dangerous condition to source of possible injury
- Electrical Safety – Added focus to Identifying hazards and reducing the risk
- Shock Hazard – Change from dangerous condition to source of possible injury
- Application of Safety Related Work Practices - Hierarchy of Risk Controls - First priority is to eliminate
- **Risk Assessment** – Added emphasis on the estimate of **likelihood and severity**
- **Job Safety Planning** – Brand new sub-section in 110.1 outlining job safety planning requirements
- **PPE** – New 130.7(C)(14) addresses conformity assessment and marking requirements



Definitions (New)

- Electrical Safety Program
- Fault Current
- Fault Current, Available
- Maintenance, Condition of
- Working Distance



Article 105 Application of Safety-Related Work Practices and Procedures

- 105.3 Responsibility
 - (A) Employer Responsibility
 - (B) Employee Responsibility
- 105.4 Priority



Testing for the Absence of Voltage

Establishes Electrical Safety Work Condition -- Absence of Voltage Testers

Changes to “Article 120.5 (7): Test and Verify” offers an alternative to hand-held test devices:

- It is permanently mounted and installed in accordance with the manufacturers’ instructions and tests the conductors and circuit parts at the point of work
- It is listed and labeled for the purpose of verifying the absence of voltage



Risk Assessment

“**Risk**” a combination of:

- the **likelihood** of occurrence of injury or damage to health
- and the **severity** of injury or damage to health that results from a hazard.

A “**hazard**” is a source of possible injury or damage to health and “**hazardous**” means exposure to at least one hazard.

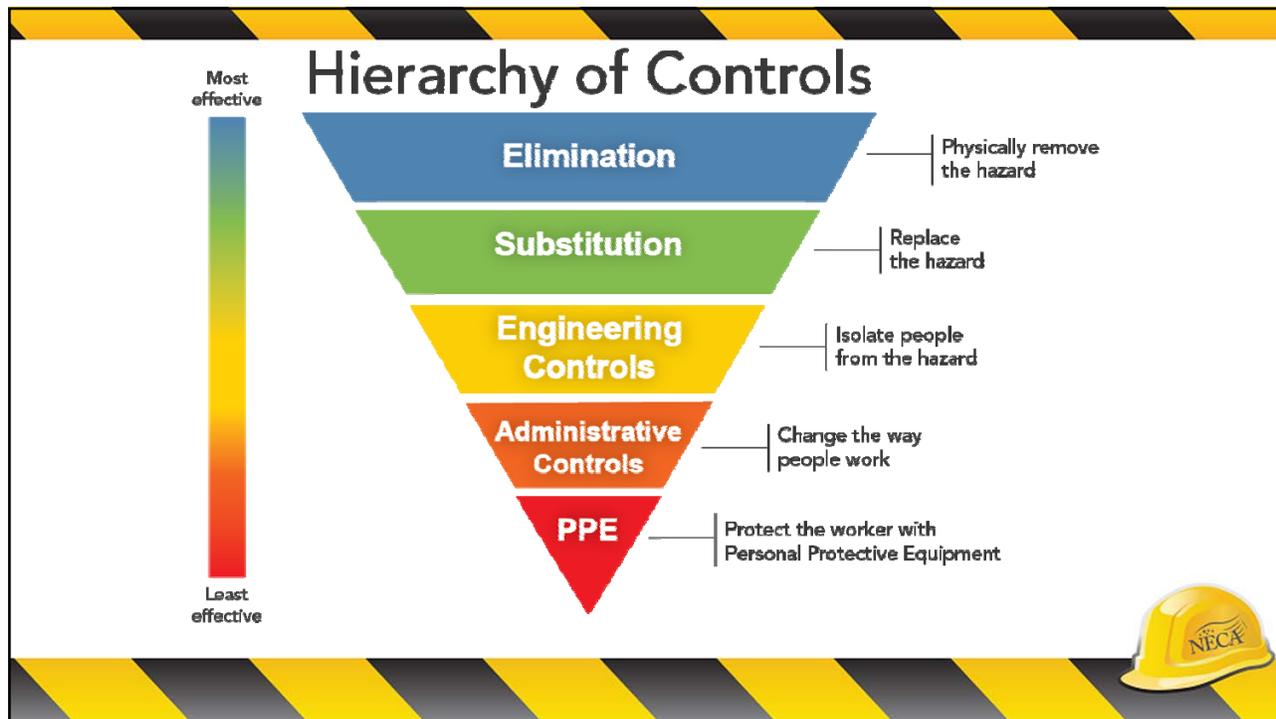


Risk Assessment

Overall process:

1. Identifies hazards ...
2. Estimates the potential severity of injury or damage to health ...
3. Estimates the likelihood of occurrence of injury or damage to health ...
4. Determines if protective measures are required





Safety Program Elements

- 110.1 Electrical Safety Program
- 110.1(B) Inspection
 1. The electrical safety program shall include elements to verify that newly installed or modified electrical equipment or systems have been inspected to comply with applicable installation codes and standards prior to being placed into service.



Job Safety Plan

- 110.1(I) (2) Job Briefing
 2. The Job briefing shall cover the job safety plan or the information on the energized electrical work permit if a permit is required.



Job Safety Plan

110.1(J) Incident Investigations

The electrical safety program shall include a requirement elements to investigate electrical incidents.

Informational Note: Electrical incidents include events or occurrences that result in, or could have resulted in, a fatality, an injury, or damage to health. Incidents that do not result in fatality, injury, or damage to health are commonly referred to as a "close call" or "near miss."



Emergency Response Training

110.2 Training Requirements (C) Emergency Response Training

1. Contact Release. Employees exposed to shock hazards shall be trained in methods of safe release of victims from contact with exposed energized electrical conductors or circuit parts. *Refresher training shall occur annually.*



Emergency Response Training

110.2 Training Requirements (C) Emergency Response Training

2. **First Aid, Emergency Response and Resuscitation.**
 - a) Employees responsible for responding to medical emergencies shall be trained in first aid and emergency procedures.
 - b) Employees responsible for responding to medical emergencies shall be trained in cardiopulmonary resuscitation (CPR). Refresher training shall occur annually.
 - c) Employees responsible for responding to medical emergencies shall be trained in the use of an automated external defibrillator (AED) if an employer's emergency response plan includes the use of this device.
 - d) **Training shall occur at a frequency that satisfies the requirements of the certifying body.**

Informational Note: Employees responsible for responding to medical emergencies might not be first responders or medical professionals. Such employees could be a second person, a safety watch, or a craftsman.



Article 120 - Establishing an Electrically Safe Work Condition was Reorganized

- 120.1 Lockout/Tagout Program
- 120.2 Lockout/Tagout Principles
- 120.3 Lockout/Tagout Equipment
- 120.4 Lockout/Tagout Procedures
- 120.5 Process for Establishing and Verifying an Electrically Safe Work Condition



Article 130 Work Involving Electrical Hazards

- Electrical Hazard. A dangerous condition such that contact or equipment failure can result in electric shock, arc flash burn, thermal burn, or blast.
- 130.4 Shock Risk Assessment
- 130.5 Arc Flash Risk Assessment
- Arc Rating
 - ATPV
 - E_{BT}



130.7(C)(15)(a) New Informational Note

- Informational Note to Table 130.7(C)(15)(a): The following are typical fault clearing times of overcurrent protective devices:
 1. 0.5 cycle fault clearing time is typical for current limiting fuses when the fault current is within the current limiting range.
 2. 1.5 cycle fault clearing time is typical for molded case circuit breakers rated less than 1000 volts with an instantaneous integral trip.
 3. 3.0 cycle fault clearing time is typical for insulated case circuit breakers rated less than 1000 volts with an instantaneous integral trip or relay operated trip.



130.7(C)(15)(a) New Informational Note

- Informational Note to Table 130.7(C)(15)(a): The following are typical fault clearing times of overcurrent protective devices:
 4. 5.0 cycle fault clearing time is typical for relay operated circuit breakers rated 1 kV to 35 kV when the relay operates in the instantaneous range (i.e., “no intentional delay”)
 5. 20 cycle fault clearing time is typical for low-voltage power and insulated case circuit breakers with a short time fault clearing delay for motor inrush
 6. 30 cycle fault clearing time is typical for low-voltage power and insulated case circuit breakers with a short time fault clearing delay without instantaneous trip.

