



# NFPA 70E-2024 Edition Changes and Updates

May 31, 2023





## Overview

A new edition of the NFPA 70E Standard is now available for purchase. The NFPA 70E is updated on a three-year revision cycle and provides guidance on how to manage electrical hazards in the workplace.

In addition to OSHA, employers are expected to follow NFPA 70E for the highest level of due diligence. Each new edition of NFPA 70E signals a series of employer requirements for electrical safety audits (including an assessment of all arc flash and shock PPE), changes and updates to their electrical safety program, and training for all workers.

## Procedural Highlights



Available to purchase from NFPA on May 23rd, 2023.



Updated every 3 years – previous edition was 2021.



Becomes enforceable within one month of the publication.



While not legally required, NFPA 70E works complimentary to OSHA regulations and has been cited in court when non-compliance has resulted in worker fatalities.

# NFPA 70E-2024 Summary of Changes



- Several editorial changes throughout the standard that will result in updates to an employer's electrical safety program.
- A new electrical safety program requirement was added for employers to establish, document, and implement an electrically safe work condition policy.
- When performing lockout/tagout a new requirement was added to locate and identify where a neutral conductor continues to carry current after phase conductors have been de-energized.
- A new process has been added for establishing and verifying an electrically safe work condition requiring each phase conductor or circuit part be tested for absence of voltage at each point of work (i.e., not upstream).
- As part of an employer's electrical safety program a new requirement for an emergency response plan was added to Job Safety Planning.
- Leather Protectors have changed to Protectors (worn over rubber insulating gloves) since new materials are permitted that provide enhanced protection and a new standard ASTM F3258 added for non-leather protectors for rubber insulating gloves.
- Recent lab testing confirmed that DC arc flash hazards are improbable at 100 VDC so the Arc Flash PPE Categories for DC Systems table was revised to raise the threshold from 100 VDC up to 150 VDC.

# How Does NFPA 70E **Affect Employers?**

*Staying updated on NFPA 70E requirements and consulting with experts can help employers ensure a safe workplace and regulatory compliance.*

*By embracing changes to NFPA 70E, employers prioritize safety, comply with regulations, adopt best practices, reduce risks, adapt to new technologies, and drive continuous improvement in workplace safety.*

- ☑ **Risk Assessment:** Employers must identify electrical hazards, estimate the likelihood and severity, and determine if additional protective measures are required, including the use of PPE.
- ☑ **Electrical Safety Program:** Employers must develop and implement a program to address electrical hazards, worker roles, safety-related work practices, PPE, and employee training.
- ☑ **Training and Qualification:** Employers are responsible for providing training to employees exposed to electrical hazards and designating qualified workers for specific electrical tasks.
- ☑ **Arc Flash and Shock PPE Selection:** Employers must analyze arc flash and shock hazards to determine appropriate shock and arc flash boundaries and personal protective equipment (PPE).
- ☑ **Electrical Equipment Maintenance:** Employers must develop and implement an electrical maintenance program based on the NFPA 70B standard to ensure regular maintenance and inspections of electrical equipment to prevent accidents.
- ☑ **Incident Investigation:** Employers must investigate all electrical incidents including near misses, determine the cause, and take corrective actions to prevent future incidents.
- ☑ **Compliance with Regulatory Authorities:** NFPA 70E and OSHA require employers to protect workers from electrical hazards.

## Why is This **Important?**

- ☑ **Improved Safety:** Updates to the standard enhance workplace electrical safety by incorporating new knowledge, technologies, and best practices.
- ☑ **Legal Compliance:** Compliance with NFPA 70E helps employers meet regulatory requirements and avoid penalties.
- ☑ **Industry Best Practices:** Changes reflect advancements in the electrical industry, ensuring employers stay aligned with current safety protocols.
- ☑ **Risk Reduction:** Updated guidelines and procedures help minimize the risk of electrical accidents and injuries.
- ☑ **Technological Advancements:** Changes address new technologies and equipment, providing guidance on their safe use and maintenance.
- ☑ **Continuous Improvement:** Regular revisions ensure the standard remains relevant and effective, reflecting ongoing efforts to improve electrical safety practices.

# NFPA 70E

## Employer Requirements

### ☑ Audit all electrical safety documentation and work practices.

- Internal or external (3rd party) audit or the written electrical safety program required at intervals not to exceed 3 years.
  - Aligns with the release of a new edition of NFPA 70E.
- Update written electrical safety program.
  - Review new 2024 edition of NFPA 70E.
  - Complete a gap analysis of existing documentation.
  - Bridge gaps by updating documentation accordingly.
- Update related electrical safety work practices.
- Assess all arc flash and shock PPE, tools, and equipment.
  - Document the condition of each item.
  - Repair or replace as needed.

### ☑ Audit electrical specific field work.

- Internal or external (3rd party) audit of the application of the electrical safety program required annually.

### ☑ Train and retrain all affected workers.

- New NFPA 70E-2024 training for all persons who have not been trained.
- Retraining based on new NFPA 70E-2024 for anyone previously trained.
- All training shall be classroom, on-the-job, or a combination of the two.
  - Classroom training can include interactive electronic or web-based training components.
- Follow up on generic training with company specific Electrical Safety Program updates (i.e., forms, work practices, PPE, tools, and equipment).
- Follow up on all training with on-the-job application training including company specific electrical safety work practices.
- Document successful application of knowledge (qualification) using competency validation process.



*The Electrical Safety Program is the foundation, which in combination with effective training and the right PPE, will form a comprehensive package for best practice in electrical hazards management.*

# NFPA 70E-2024 Changes & Updates

*Not all changes are covered. Consult with NFPA 70E-2024 before making changes to your electrical safety program or electrical safety-related work practices.*

## Global Changes

- Add the word “electric” before shock throughout the document, except for “hearing protection boundary” and “lung protection boundary.”
- Change “leather protectors” to “protectors,” except for titles of referenced standards.

## Article 90 – Introduction

- Minor changes.
- Reorganization of article titles.
- Explanatory material now applies to the latest edition of referenced standards if no date is provided.

## Article 100 – Definitions

- Scope updated.
- Definitions from other sections included in article 100. An article number in parentheses means that definition only applies to that article.
  - E.g., Arc Blast Hazard (as applied to capacitors).
- Some definitions also have the term in parentheses to assist with electronic searching.
  - E.g., Boundary, Arc Flash (Arc Flash Boundary).
- Electrically Safe Work Condition definition.
  - The word “to verify” was replaced with “for” and now reads, “tested for the absence of voltage.” Changed for consistency.
  - Informational note was deleted by the correlating committee for style manual reasons.
- Protector.
  - New definition added: glove or mitten to be worn over rubber insulating gloves.

# NFPA 70E-2024 Changes & Updates

- Radiation.
  - New definitions added for Ionizing and Non-ionizing.

## Article 110 – General Requirements for Electrical Safety-Related Work Practices

- 110.1 New Scope section added.
  - Covers general requirements for electrical safety related work practices.
- 110.2 Electrically Safe Work Condition.
  - Combined 110.2, 110.3, and 110.4.
  - New requirement for (A) Policy Employer required to establish, document, and implement an electrically safe work condition policy.
  - Informational note added to clarify the ESWC policy can be in the employer’s electrical safety program or management system.
  - Five exemptions for ESWC:
    - (1) normal operation
      - equipment rated for available fault current added
      - now 7 conditions
      - informational note added “water damage” and NEMA Standard reference
    - (2) eq operation for ESWC or return to service
    - (3) infeasible
    - (4) additional hazards or increased risk
    - (5) less than 50 volts and no burn or explosion hazard
- 110.2(C) Requirements until ESWC established.
  - Safe work practices to be used until in an electrically safe work condition.
- 110.3 Electrical Safety Program.
  - New requirement for an emergency response plan was added to Job Safety Planning.
- 110.4 Training Requirements.
  - Updates to Qualified Worker requirements.
    - Qualified Person “...shall also be familiar with the proper use of the special applicable precautionary techniques, ~~applicable~~ electrical policies, procedures, PPE, ...”
    - “A person ~~can~~ shall be ~~considered~~ qualified... for certain equipment and tasks ~~but still be unqualified for others to be performed.~~”
- 110.8 Ground Fault Circuit Interrupter (GFCI) Protection.
  - Minor changes added “listed” and changed “protection” to “protective” devices.

## Article 120 – Establishing an Electrically Safe Work Condition

- 120.5 Lockout Tagout Procedures.
  - New content added to Planning, Locating Sources: “...could include identifying...where a neutral conductor continues to carry current after phase conductors...de-energized.”
  - New content added to Elements of Control, Stored Energy: “...other sources...blocked or otherwise relieved to the extent that the circuit cannot be unintentionally energized.”

# NFPA 70E-2024 Changes & Updates

- 120.6 Process for Establishing & Verifying an ESWC.
  - New content added (7): "...portable test instrument...test each phase conductor or circuit part at each point of work...for the absence of voltage."

## Article 130 – Work Involving Electrical Hazards

- 130.4(E) Electric Shock Protection Boundaries.
  - Notes added to clarify Restricted Approach Boundary, and boundary dimensions.
- 130.5 Arc Flash Risk Assessment.
  - Informational note moved here that states: "...most cases, closed doors...do not provide enough protection to eliminate PPE."
  - New content added to (H) Equipment Labeling: "...sufficient durability...the environment."
- 130.5(C) Estimate of the Likelihood of Occurrence of an Arc Flash Incident for ac or dc Systems.
  - Column header changed from "Equipment Conditions" to "Operating Conditions."
  - Some horizontal lines in table deleted.
- 130.7 Personal and Other Protective Equipment.
  - (C) Personal Protective Equipment (PPE).
    - (1) General, informational note revised to address when incident energy higher than commercially available PPE.
      - (1) "...noncontact proximity capacitive test instrument(s) ~~or measurement...on the secondary...of a low voltage transformer...or a permanently installed metering device(s)...~~ for indication, before using a contact type test instrument to test for the absence of voltage below 1000 volts."
- (5) Hearing Protection revised.
  - "...inside the arc flash boundary...wear hearing protection whenever working within the arc flash boundary."
- Table 130.7(C)(7)(a) Maximum Use Voltage for Rubber Insulating Gloves.
  - The word "gauntlet" was deleted.
    - Now provides minimum distances between protector cuff and rubber insulating glove cuff.
- (14) Standards for PPE.
  - Table Informational Note Table Standards for PPE 130.7(C)(14).
  - New standard ASTM F3258 added for non-leather protectors for rubber insulating gloves.
- Table 130.7(C)(15)(b) Arc Flash PPE Categories for dc Systems.
  - Upper portion of the table is deleted (100 to 250 volts).
  - Parameters: Greater than 250 150 volts and ≤ 600 volts.
  - Informational note 3 added with references for dc voltages less than 150.
  - Recent test data from Hydro Quebec indicates that the probability of sustaining an arc for 125 volt dc nominal systems is minimal for available fault currents less than 17,000 amps.



# NFPA 70E-2024 Changes & Updates

- 130.8 Other Precautions for Personnel Activities.
  - (M) Reclosing Circuits After Protective Device Operation.
  - “After...automatic operation of a circuit protective device,...not be manually re-energized until it has been determined that a qualified person or (s) determines...can be safely energized...”
  - “~~repetitive manual~~ Manually reclosing of CBs or re-energizing...through replaced fuses...prohibited until the fault has been cleared.”
  - Overload condition concept converted to an exception.
- 130.8(O) Alerting Techniques.
  - (1) Safety Signs and Tags
  - (2) Barricades
  - (3) Attendants

## Article 320 – Safety Requirements Related to Batteries and Battery Rooms

- 320.1 Scope
- 320.3 Safety Procedures

## Article 330 – Safety-Related Work Practices: Lasers

- 330.3 Hazardous—Energy Electrical Hazard Thresholds
- 330.4 Electrical Safety Training
- 330.5 Safeguarding of Persons from Electrical Hazards Associated with Lasers and Laser Systems



## Article 340 Safety Related Work Practices: Power Electronic Equipment

- 340.1 Scope
- 340.4 Electrical Hazard Thresholds

## Article 360 Safety Related Requirements for Capacitors

- 360.5 Establishing an Electrically Safe Work Condition for a Capacitor(s)
- 360.6 Grounding Ground Sticks

## Minor revisions to Informative Annex A

## Minor revisions to Informative Annex O

## All New Informative Annex S – Assessing the Condition of Maintenance

**Industry leading Arc Flash & Shock products and services to provide full-scope workplace electrical safety solutions.**



**Your Trusted Experts In Electrical Safety**

### Who We Are

Our team of electrical safety specialists includes Certified Electrical Safety Compliance Professionals (CESCP), electrical engineers, electricians and technicians, all with decades of industry and field experience.

### What We Do

We've been providing workplace electrical safety solutions since the inception of the NFPA 70E standard.

We're heavily involved in numerous electrical safety technical committees in the USA and Canada including NFPA 70E, CSA Z462, CSA Z463, IEEE 1584, ASTM F18, CAN/ULC-S801, CSC/IEC/ TC78 and ULC Live Working.

### What We Offer

- ☑ Templated Programs
- ☑ Development and Consulting Support
- ☑ Training
- ☑ PPE, Tools and Equipment
- ☑ Hazard Risk Assessments
- ☑ Site Audits
- ☑ Custom Solutions



### How We Can Help You

Unlimited PPE represents industry leading electrical safety products and services providers. We're helping to save lives by promoting compliance with Workplace Electrical Safety Standards.

Since 2008, we've demonstrated our ability to successfully combine innovative offerings from multiple vendors to form an unparalleled combination of fit for purpose solutions for our clients.



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