

NFPA[®] 70B: Step-by-step compliance

A framework for helping office, industrial, and commercial buildings meet the latest requirements

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Compliance challenges

From our recent series of codes and standards webinars targeting office, commercial, and industrial buildings, our attendees stated that when it comes to compliance:

 84%

had operations not ready to comply with 2023 National Fire Protection Association (NFPA®) 70B

 70%

didn't have enough time or dedicated resources

Source: Schneider Electric's internal data

What's changed?

The 2023 edition of the NFPA 70B represents a significant shift in the approach to electrical equipment maintenance. Previously considered a "Recommended Practice," NFPA 70B is now a "Standard" containing **mandatory** language and requirements.

This change makes NFPA 70B a key driver of electrical maintenance and safety in the United States (U.S.) – including inspection methods and recommended equipment – and underscores the importance of properly maintaining electrical, electronic, and communications systems.

While every organization has a unique problem-solving approach, this document provides step-by-step instructions for 2023 NFPA 70B standard compliance.



When do I need to comply?

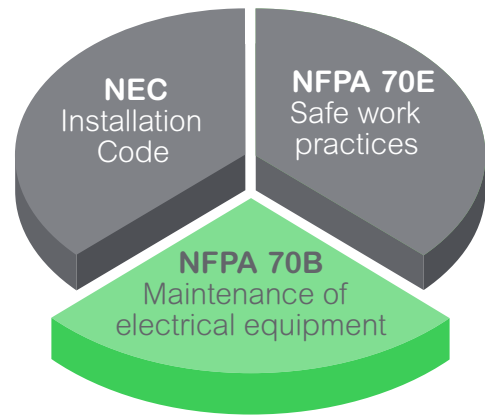
NFPA 70B became effective January 16, 2023, and is enforceable by any authority having jurisdiction (AHJ), e.g., any organization, office, or individual responsible for enforcing standards.

Who monitors compliance?

The equipment owner is [responsible for implementing and documenting](#) their electrical maintenance program (EMP). NFPA 70B defines an EMP coordinator as the individual responsible for the program's coordination, implementation, and operation.

Due to the interrelationship between NEC Installation Code, NFPA 70E's Electrical Safety Program, and the NFPA 70B's EMP, compliance with requirements of Occupational Safety and Health Administration (OSHA), 70E, and 70B must all be included.

A comprehensive approach
to electrical safety



Step One

Designate an electrical maintenance program coordinator

The first step towards NFPA 70B compliance is appointing a dedicated EMP coordinator, which NFPA 70B, Section 4.2 defines as the individual overseeing the EMP implementation and operation.

Key actions to ensure effectiveness:

1

Conduct training and annual audits/evaluations:

The EMP coordinator should undergo comprehensive NFPA 70B training and annual audits or evaluations to assess adherence to the maintenance and test procedures.

2

Inspect equipment compliance: Regularly inspect electrical equipment to ensure applicable code and standard compliance. Use inspection results to develop and refine maintenance tasks within the EMP.

3

Integrate with safety programs: Collaborate with safety programs, particularly the Electrical Safety Work Program (ESWP), to align EMP activities with broader safety initiatives. Integrate EMP tasks within the existing safety framework.

4

Design for maintainability: Develop and implement processes to incorporate design for maintainability into installations. This proactive approach helps ensure that maintenance considerations are factored into the initial design, enhancing long-term efficiency.

Conduct an initial electrical infrastructure and equipment condition assessment

This comprehensive evaluation lays the groundwork for NFPA 70B compliance, addressing infrastructure gaps and ensuring effective maintenance strategies. Regular assessments and inspections uphold electrical system reliability and enhance overall safety.



Did you know?

89% of audited sites had no or only partial electrical single-line diagrams.*

1

Review electrical single-line diagrams (SLDs) and studies: Thoroughly evaluate SLDs (often called one-line diagrams) and studies to help ensure documents accurately reflect current system configurations.

2

Evaluate existing systems and procedures: Meticulously analyze existing electrical systems and maintenance procedures, identifying and documenting non-compliant areas to target corrective measures.

3

Document and maintain records: Scrutinize current documentation practices and establish or enhance systematic record-keeping procedures. Comprehensive records are key to demonstrating [NFPA 70B](#) compliance.

4

Inspect electrical equipment: Categorize electrical equipment based on its physical and environmental condition and criticality to operations. This will help you prioritize maintenance tasks and resource allocation.

What is an electrical digital twin?

A virtual digital replica of a company's physical electrical system that simulates system behavior under various conditions, anticipates potential failures, and plans future expansions. For **NFPA 70B compliance**, it can:

- Provide a detailed, real-time system overview, ideal for the initial assessment required for compliance.
- Allow for proactive maintenance planning by predicting potential issues before they occur, aligning with the NFPA 70B preventive maintenance program.
- Help train operators by creating a safe, virtual environment to test scenarios, reducing the risk of non-compliance due to operational errors.

[Learn more](#)



*Source: Schneider Electric Data collected by Schneider Electric from on-site audits of electrical distribution systems across 400 customer sites between 2017 and 2022.

Based on previous assessments, update SLDs and other studies older than five years

Detailed documentation and adherence to regulatory requirements create a proactive approach, enabling efficient record-keeping and informed decision-making for ongoing maintenance planning.

1 Update studies: As outlined in [NFPA 70B Chapter 6](#), once you've assessed existing SLDs and other studies, you must update those SLDs, short circuits, coordination, and arc flash studies accordingly. If they are older than five years, they must also be updated. Regularly review and audit these studies at least every five years to ensure their relevance and accuracy.

2 Maintain detailed documentation: Follow the guidelines outlined in NFPA 70B Chapter 6 for maintaining SLDs and short-circuit studies. Document personnel, equipment, and maintenance records meticulously to ensure accuracy and facilitate easy reference.

3 Cultivate comprehensive records-retention policies: Develop policies tailored to equipment types and industry-specific regulatory requirements. This helps ensure documentation compliance for efficient record retrieval when needed.

4 Identify maintenance planning trends: Utilize updated documentation to identify electrical system performance trends. These insights enable future maintenance planning based on comprehensive studies.

Documentation studies are to be reviewed and updated by the NFPA 70B chapter

Chapter 6.2

SLDs shall be maintained legibly and accurately and contain the latest revision date.

Chapter 6.3/6.5/6.7

SC/Coord/Arc flash study shall be completed, updated when major system changes occur, and reviewed at least every five years.

Chapter 6.5

Load flow study, if needed to complete maintenance, shall be kept updated when major system changes occur and reviewed every five years.

Chapter 6.6

Reliability study shall be conducted as necessary on critical facility electrical systems to identify equipment or system configurations that can lead to unplanned outages.

Chapter 6.8

Electrical maintenance-related design study shall be conducted to develop risk-reducing design options when a recognized hazard presents an increased risk during maintenance.

Perform remediation identified by assessments

Now, it is time to execute the remediation measures identified during your assessments. Refer to NFPA 70B guidelines* and manufacturer instructions throughout this process.

1 Prioritize: Rank remediation tasks based on urgency, safety risks, and operational impacts. Address critical equipment or higher-risk safety items first.

2 Plan and schedule: Arrange necessary resources and schedule tasks. This might involve carefully accounting for potential downtime to help minimize disruption.

3 Prepare: Train the team on the new NFPA 70B standards or specific equipment maintenance procedures. Ensure everyone understands the importance of these measures and how to implement them correctly.

4 Execute: Whether replacing outdated equipment, repairing faulty components, or performing routine maintenance tasks, the goal is to ensure electrical safety and reliability.

5 Document: Keep detailed records of all remediation actions and services. This documentation is vital for demonstrating current (and future) NFPA 70B compliance and as a valuable reference for ongoing maintenance.



* Procedures for remediation after assessments are spread across multiple chapters in the 2023 NFPA 70B.

Determine maintenance intervals and scope based on the assessment

Define the scope of maintenance tasks and determine the appropriate intervals between each.

1

Follow manufacturer recommendations:

Always adhere to the recommended practices provided by the equipment manufacturers. These guidelines are often designed specifically for the equipment and are based on extensive testing and operational experience.

2

Refer to NFPA 70B Chapter 9: If manufacturer information is unavailable, you can refer to [NFPA 70B Chapter 9](#). This chapter provides mandatory scopes of work and maintenance intervals broken down by product type and based on equipment condition assessments.

3

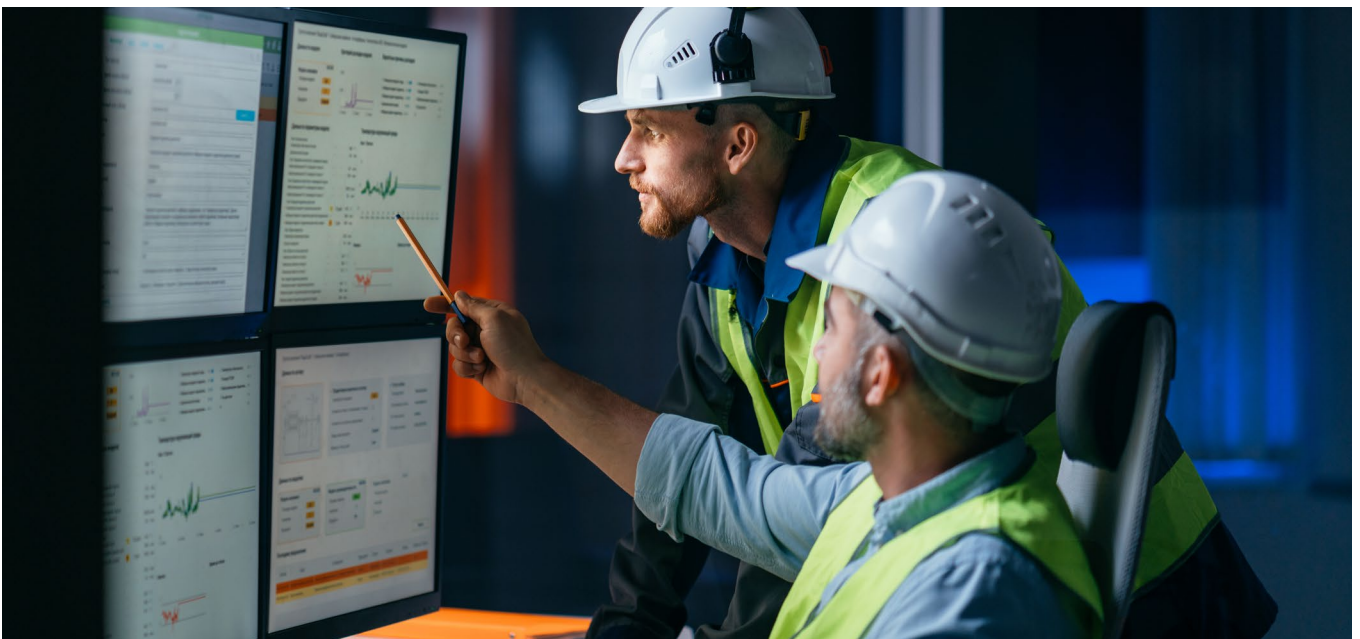
Use continuous monitoring or predictive techniques:

The NFPA 70B allows for continuous monitoring and/or predictive techniques when determining maintenance intervals. Leverage technology and data analysis to anticipate potential issues and schedule maintenance proactively, enhancing the efficiency and reliability of your equipment over time.*



Did you know?

76% of audited sites had no or only partial digital monitoring systems.**



*See Step 8 for a more detailed comparison of maintenance and monitoring techniques.

**Source: Schneider Electric Data collected by Schneider Electric from on-site audits of electrical distribution systems across 400 customer sites between 2017 and 2022.

Update EMP to verify compliance requirements

Updating your EMP involves ensuring all electrical equipment is properly maintained for safety and optimal performance.

1 Visual indication: After each maintenance event, provide a visual indication via a decal or a digital marker – like a QR code or scannable barcode – to record the inspection status and details for that specific asset. This representation should indicate the date of the last inspection, the inspector's name, and any issues found during the maintenance.

2 Documentation: Record all inspections and maintenance procedures to provide evidence of NFPA 70B compliance.

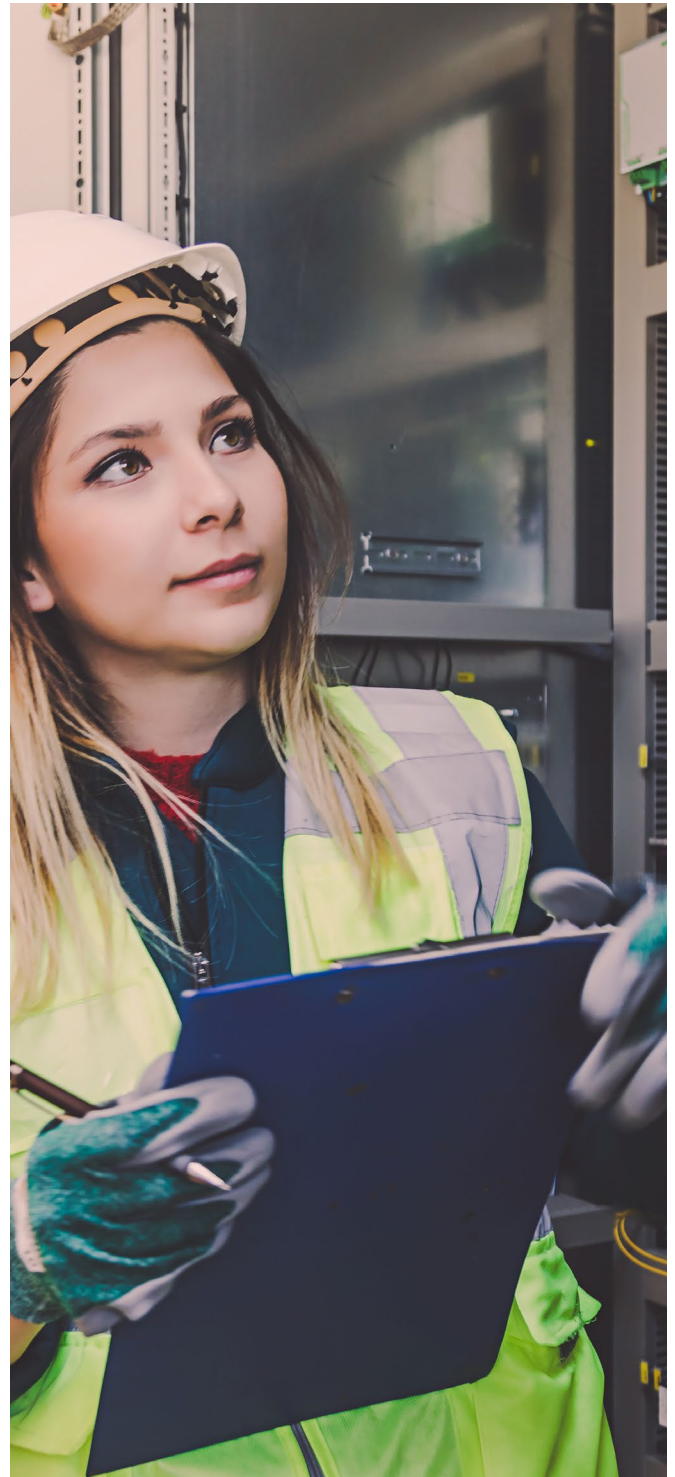
3 Software and service plans: Use offerings that provide detailed records and reports of complete electrical systems. These tools can simplify compliance and make record-keeping more efficient.

⚠ Common non-compliance pitfalls

⚠ Delayed or missed maintenance: Falling behind schedule or missing maintenance tasks can lead to equipment failure and non-compliance.

⚠ Lack of training: Without proper training, personnel may not fully understand the standard's requirements or how to implement them correctly.

⚠ Poor record-keeping: Inadequate records make it difficult to prove compliance or to plan future maintenance activities effectively.



Audit your EMP every five years or less

Audits are a vital part of the continuous effort to ensure electrical systems operate safely and efficiently.

1

Review the current EMP: The current EMP should include all maintenance procedures, schedules, documentation, and other relevant aspects of the program.

2

Compare with NFPA 70B standards: This comparison will help identify gaps or discrepancies between your program and the standards.

3

Identify areas for improvement: Use the comparison insights to pinpoint areas for improvement. This could involve updating maintenance procedures, refining documentation practices, or adjusting maintenance schedules.

4

Implement changes: After identifying areas for improvement, take action. This might mean revising EMP procedures, training staff on new practices, or investing in new equipment or technologies.

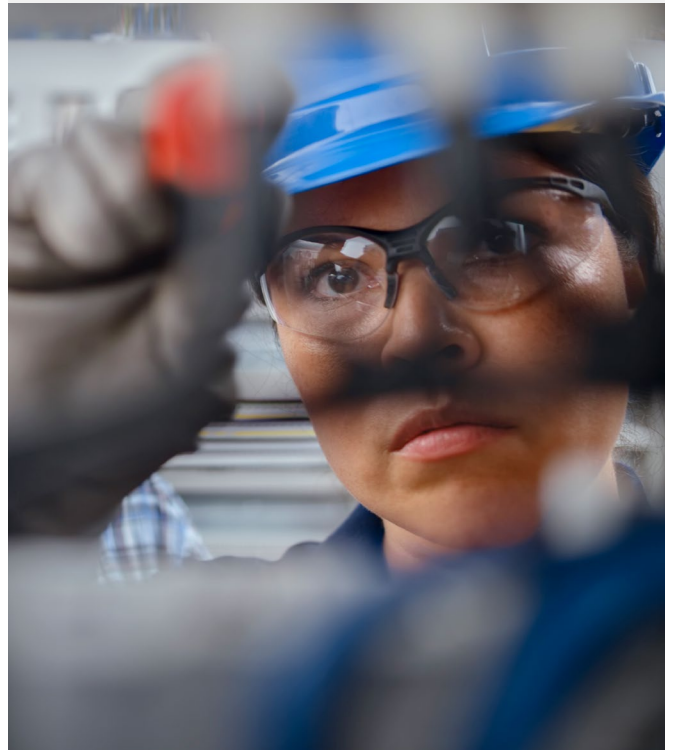
5

Document changes: As part of the audit process, document all changes made to the EMP. This documentation serves as evidence of your commitment to continual improvement and compliance.

EcoConsult audits help ensure compliance

Schneider Electric™ audits evaluate and map electrical and automation assets and systems to help you understand current system limitations and potential areas for improvement:

- Assessment of current systems
- Recommendations for preventive maintenance and best practices
- Training and support
- Documentation and record-keeping



Embrace digitization and digitalization

With NFPA 70B's maintenance emphasis on predetermined, condition-based, and predictive techniques, *digitizing* – upgrading your electrical equipment for enhanced connectivity and intelligence – and *digitalizing* – using that data in your operational decisions – is crucial.

Good



Predetermined maintenance

Also known as calendar-based maintenance, it schedules preventive measures at regular intervals. It involves systematic actions based on assumed operation conditions and the expected life of the assembly and components. A unique benefit is that it accommodates planned maintenance interruption, minimizing costs associated with downtime and ensuring available power to connected loads when expected.

Better



Condition-based maintenance

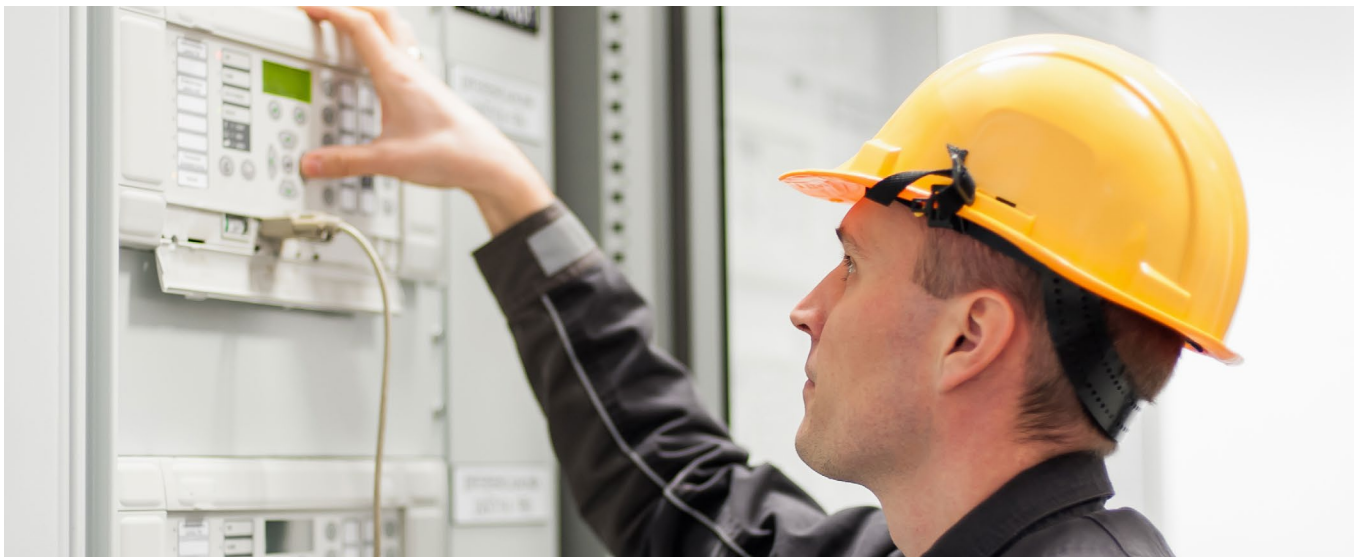
A flexible preventive approach to actively monitor equipment conditions to determine when to schedule maintenance tasks. By adding sensors to equipment, access data to adjust maintenance schedule intervals in real time, based on set parameters. For LV switchgear and control gear assemblies, schedule maintenance based on the number of mechanical operations, over-current trips, loading, harmonics, and ambient environmental data.

Best



Predictive maintenance

An advanced form of condition-based maintenance, it analyzes developing faults to predict better when a piece of equipment might fail and help prevent unexpected downtime. It helps to optimize maintenance schedules and decisions as equipment approaches its end of life, reducing unnecessary interruptions. Multiple equipment sensors provide frequent (daily, hourly) data to a central processor, where algorithms simulate and trend aging based on live operating conditions.



Step Eight

Additional digitalization benefits



Reduced risk: Connected equipment communicates with energy management software (EMS), providing alerts and warnings about potential issues. This reduces risks associated with equipment failure, breakdown, or malfunction, enhancing workers' safety, property, and processes.



Efficient compliance: Using connected equipment simplifies NFPA 70B compliance. Digital records from connected equipment provide clear evidence of regular inspections and maintenance, making compliance verification more straightforward and efficient.



Energy-efficient equipment: NFPA 70B compliance promotes optimized components. Improperly maintained equipment is less energy efficient than well-maintained equipment; normal wear and tear causes component stress over time, causing reduced efficiency and higher carbon emissions.



Spare parts management: Parts alone can be half the total maintenance costs. In the context of NFPA 70B, substituting a “break-fix” maintenance strategy with proactive spare parts management – ensuring the right parts are in stock – can help reduce these costs.



Business continuity: Most businesses rely on 24/7 availability of their information technology (IT) and operations technology (OT), making proper maintenance plans a competitive asset. Complying with NFPA 70B contributes to business operations' resilience and continuity.



Schneider Electric Services can help simplify NFPA 70B compliance

We believe the NFPA 70B is a major advancement in electrical safety and the need for proper preventative maintenance of electrical, electronic, and communications systems and equipment. We can help by:

1

Consulting services with [EcoConsult](#) for audits, assessments, and system studies to help you align with the NFPA 70B standard's emphasis on regular inspections and evaluations.

2

Leveraging [Electrical Digital Twin](#) technology for accurate modeling, simulation, and testing, anticipate potential issues and plan for expansion.

3

Implementing [EcoCare membership-based service plans](#) for fast, priority support, 24/7 proactive remote monitoring, and discounts on spare parts and other services.

4

Utilizing [EcoStruxure™ Asset Advisor](#) for effective asset management and monitoring.

5

Shifting from traditional to [condition-based maintenance](#) to determine which maintenance tasks to carry out and when.

6

Following NFPA 70B to help meet sustainability goals by adding resilience and efficiency and reducing energy consumption, waste, and emissions.

Additional resources

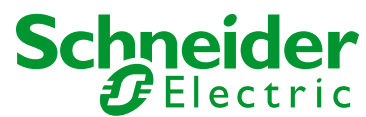
For a deeper understanding of the **2023 NFPA 70B**:

- [NFPA 70B eGuide](#)
- [NFPA 70B frequently asked questions](#)
- [How an electrical digital twin achieves compliance](#)
- [There's a big change to NFPA 70B](#)

For related [NFPA.org](#) documents:

- [NFPA 70 NEC](#) – Installation requirements for electrical conductors, equipment, and raceways.
- [NFPA 70E](#) – Identifying electrical hazards and implementing an electrical safety program.

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To learn more about NFPA 70B
compliance, visit:

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