NFPA 70B

Navigating Compliance

Compliance is more than passing an inspection. Standards are necessary to protect your operation and those who manage your facility.

- The value of a proactive electrical maintenance plan is higher than ever.
- Equipment is expensive and lead times are long. 70B aims to protect these investments.
- Training and 70E focus on investing in your people and their safety, but the same is necessary for the equipment they maintain.
- The NFPA Electrical Cycle of Safety unites the 70, 70B, and 70E standards.
- Insurance companies require Standards enforcement.

Compliance is not achieved through a single standard. It is the result of a continuous process incorporating the electrical system's design, installation, maintenance, and age assessment.

For ownership, compliance demonstrates that every reasonable effort was made to provide employees with an electrically safe workplace while also protecting the organization's physical assets and operation processes.

Electrical systems deteriorate over time. Small changes occur, often unnoticed, until a failure occurs. NFPA compliance is designed to identify these issues before they become hazards.

- Arc Flash Incidents
- Arc Blast Injuries
- Electric Shock
- Electrical Fires
- Protective Equipment Failure
- Insurance and Liability Exposure

Ultimately, compliance reduces the likelihood that an employee will be seriously injured while operating or servicing electrical equipment.

Protects More Than Just Personnel

NFPA 70B enforces the implementation of an Electrical Maintenance Plan that will increase the effectiveness of the 70E Standard for Electrical Safety in the Workplace.

- Greater Equipment Reliability
- Longer Equipment Lifespan
- Reduced Emergency Repairs
- Increased Production Uptime
- Lower Maintenance Costs
- Improved Energy Efficiency

NFPA 70B 4.2.4.2 states that an Electrical Maintenance Plan shall include the following:

- An electrical safety program that addresses the condition of maintenance
- Identification of personnel responsible for implementing each element of the program
- Survey and analysis of electrical equipment and systems to determine maintenance requirements and priorities
- A plan of inspections, servicing, and suitable tests
- A maintenance, equipment, and personnel documentation and records-retention policy
- A process to prescribe, implement, and document corrective measures based on collected data
- A process for incorporating design for maintainability in electrical installations
- A program review and revision process that considers failures and findings for continous improvement

BREAK IT UP INTO PHASES

"I wisely started with a map."

It can be difficult to know where you stand with compliance if you don't already have a maintenance plan in place. We break it down into three phases that include the following:

- Scheduled Inspections
- Preventive Maintenance
- Equipment Testing
- Employee Training
- Corrective Actions
- Documentation

Documentation is often overlooked.

- Equipment Inventory
- Arc Flash Studies
- Test Reports
- Infrared Scan Reports
- Torque Verification Records
- Calibration Certificates

The more information you have about your system, the better equipped you will be to correct, maintain, and improve its condition.

Your goal during this phase should be to develop a clear understanding of your system's health, identify immediate safety concerns, and establish a baseline for future maintenance.

A qualified electrical maintenance contractor will:

PHASE 1 Assess & Inspect

- Conduct a detailed visual inspection of all major electrical equipment.
- Inventory electrical assets, including switchgear, panel boards transformers, motor control centers, circuit breakers, and distribution equipment.
- Review existing maintenance records, single-line diagrams, and equipment documentation.
- Verify equipment labeling, accessibility, and code-related deficiencies.
- Identify signs of aging, overheating, corrosion, contamination, moisture intrusion, loose connections, or physical damage.
- Evaluate overall compliance with applicable NFPA Standards land industry best practices.

Visual inspection alone rarely catches electrical issues. Electrical testing provides valuable data about the condition and performance of critical equipment, identifying issues long before they turn into failures or safety incidents.

You want to replace assumptions with measurable data, allowing maintenance decisions to be based on actual equipment condition, rather than reacting to unexpected failures.

PHASE 2 Test & Evaluate

- Infrared Inspections (Thermographic Survey) to identify hot spots
- Electrical testing of circuit breakers, protective relays, transformers, and switchgear
- Torque verification of electrical connections
- Insulation resistance and continuity testing
- Protective device coordination
- Power quality analysis to identify voltage disturbances and harmonic issues
- Arc flash and shock risk assessments
- Evaluation of equipment against manufacturer recommendations and NFPA maintenance requirements

Following testing, results are analyzed and reported to:

- Prioritize repairs based on safety and operational risk
- Identify equipment nearing the end of its serviceable life
- Recommend corrective actions
- Establish maintenance intervals based on equipment condition and criticality

For electrical equipment, 70B outlines three categories for identifying the equipment's condition and the frequency of maintenance required.

CONDITION 1

- The equipment appears in like new condition.
- The enclosure is clean, free from moisture intrusion, and tight.
- No unaddressed notification from the continuous monitoring system has occurred.
- There are no active recommendations from predictive techniques.
- Previous maintenance has been performed in accordance with the EMP.

CONDITION 2

- Maintenance results deviate from past results or have indicated more frequent maintenance in accordance with manufacturer's published data.
- The previous maintenance cycle has revealed issues requiring the repair or replacement of major equipment components.
- There have been notifications from the continuous monitoring system since the prior assessment.
- There are active recommendations from predictive techniques.

CONDITION 3

- The equipment has missed the last two successive maintenance cycles in accordance with the EMP.
- The previous two maintenance cycles have revealed issues requiring the repair or replacement of major equipment components.
- There is an active or unaddressed notification from the continuous monitoring system.
- There are urgent actions identified from predictive techniques.

PHASE 2: Equipment Condition

Maintenance Intervals NFPA 70B Table 9.2.2

Product	Scope of Work	Condition 1	Condition2	Condition 3
Switchgear	Visual Inspection	12 Months	36 Months	6 Months
Switchgear	Cleaning	60 Months	36 Months	12 Months
Switchgear	Lubrication	60 Months	36 Months	12 Months
Switchgear	Mechanical Servicing	60 Months	36 Months	12 Months
Switchgear	Electrical Testing	60 Months	36 Months	12 Months
Switchgear	Special	60 Months	36 Months	12 Months

An Electrical Maintenance Program that is continuously audited turns isolated inspections into a proactive strategy that protects employees, equipment, and operations year after year.

This phase establishes a culture of continuous improvement that enhances system reliability while helping to reduce costly repairs and overall risk.

Continuous Maintenance Plan: A Long-Term Strategy

- Scheduled preventive maintenance based on NFPA Standards and manufacturer recommendations
- Routine inspections and recurring equipment testing
- Predictive maintenance activities, including infrared scanning and condition monitoring
- Documentation of maintenance, testing, repairs, and equipment history
- Regular updates to the Arc Flash studies, single-line diagrams, and equipment labeling
- Employee electrical safety training and safe work environments
- Long-term budgeting and asset replacement planning for aging equipment
- Regular audits to adapt maintenance intervals as equipment ages or facilities change

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