LET US BE YOUR
ELECTRICAL COMPLIANCE PARTNER

CBS ArcSafe®
A Group CBS Company

Distance is Safety®

Companies must comply with NFPA 70, 70E, 70B, and IEEE standards for electrical equipment maintenance and safety. Failure to comply can lead to injuries, downtime, and OSHA penalties. CBS ArcSafe can help.

CBSArcSafe.com

877-4-SAFETY | 877-472-3389

WHAT IS AN ELECTRICAL MAINTENANCE PLAN (EMP)?

Per NFPA 70B 205.4, electrical equipment must be maintained in accordance with manufacturers' instructions or industry consensus standards to reduce the risk associated with failure. The equipment owner or representative is responsible for maintenance and documentation. An EMP delineates the following:

> *Before electricians can perform equipment maintenance, the equipment should be de-energized and disconnected. But disconnecting equipment isn't feasible in every instance. Remote switching, racking, and bucket extraction/installation are potential solutions.*

- The personnel responsible for implementing each element of the program
- Survey and analysis of electrical equipment to determine maintenance requirements and priorities
- Developed and documented maintenance procedures for all equipment within the scope of the plan
- Complete maintenance documentation, including a plan of inspections, servicing, and suitable tests
- A defined process to identify, implement, and document corrective measures using data-driven findings
- A program review and revision process that considers failures and findings for continuous improvement

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Operations That Increase the Chance of Arc Flash

- Operation of a circuit breaker or switch upon initial installation, after completion of maintenance, or during routine operation following extended service life
- Insertion or removal of individual starter buckets from a motor control center (MCC)
- Insertion or removal (racking) of circuit breakers or starters from cubicles (doors open or closed)
- Insertion or removal of plug-in devices into or from busways
- Opening voltage transformer or control power transformer compartments
- Operation of an outdoor disconnect switch (hookstick-operated) at 1–15 kV
- Operation of an outdoor disconnect switch (gang-operated, from grade) at 1–15 kV

ELECTRICAL STANDARDS KEEP US PROTECTED

In 1942, the American Electricians Handbook told electricians to test low-voltage electrical circuits by placing conductors on the tongue. Touching live wires below 250 V with bare fingers was acceptable as recently as 1953. Today, companies must comply with a series of electrical standards to make sure their equipment is well maintained and safe to operate. CBS ArcSafe's remote racking and switching solutions can help you comply with all these standards.

Key Players in Electrical Safety

NFPA 70
is the governing standard for the safe installation of electrical wiring and equipment.

NFPA 70

NFPA 70B
electrical equipment maintenance practices were officially adopted as a standard in 2023.

NFPA 70B

NFPA 70E
addresses electrical safety in general, including the NFPA 70B maintenance standard.

NFPA 70E

IEEE 1584
provides the standard for calculating arc flash hazard levels as required by both NFPA 70B and 70E.

IEEE 1584

OSHA
is a federal agency that investigates workplace accidents and assesses penalties for unsafe work practices using NFPA and IEEE standards as guides.

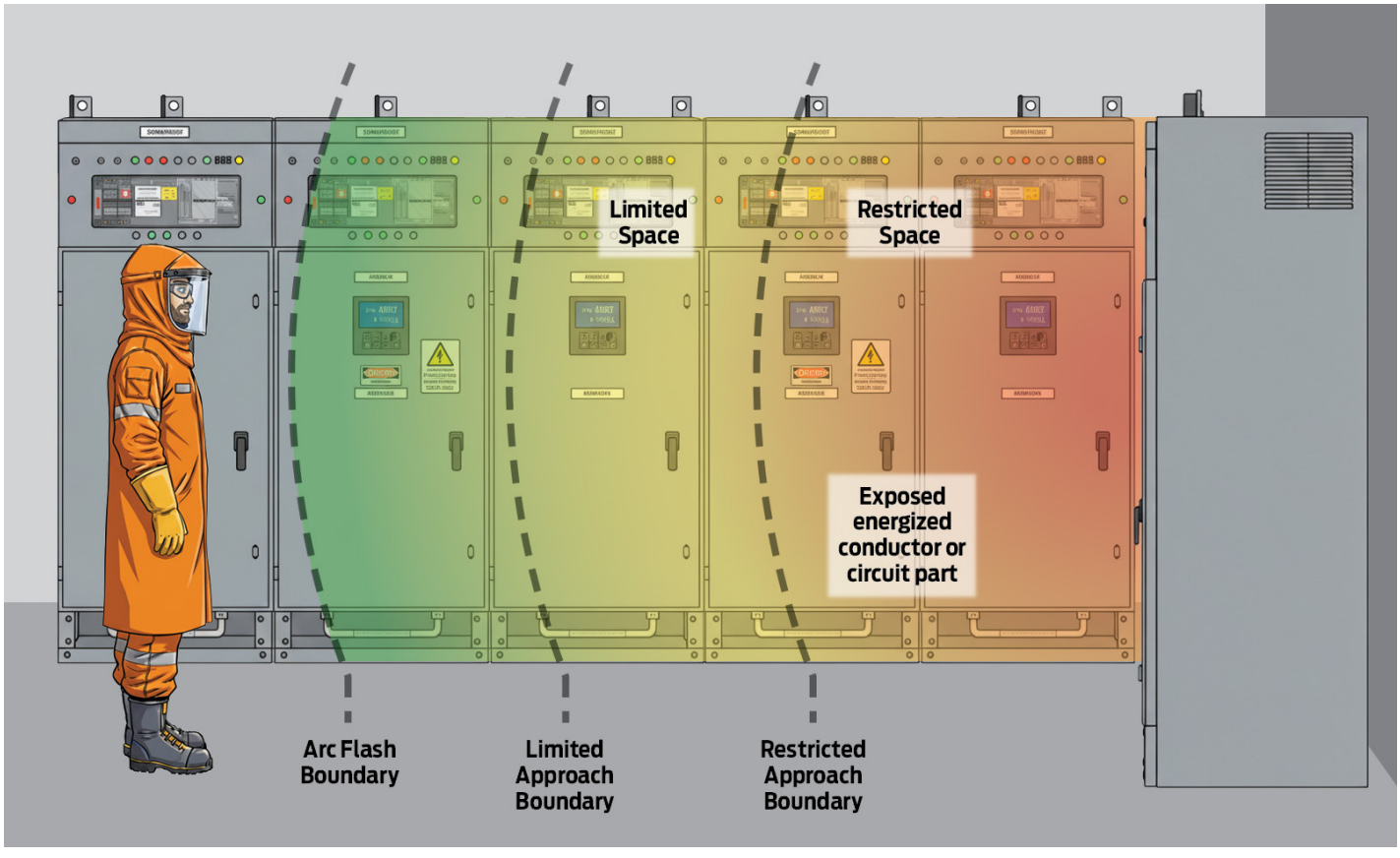
OSHA

Today, electrical equipment maintenance programs are the foundation for electrical safety compliance in the workplace. CBS ArcSafe solutions allow workers to perform regular maintenance without the risk of arc flash injuries from short circuits and other failure conditions.

ARC FLASH INFORMATION AND DANGERS

Inverse Square Law and Incident Energy

When you double the distance between you and the power source, you reduce the incident energy you're exposed to by one-quarter. This is an estimation and by no means exact, but it demonstrates that distance is the best thing to have between you and an arc flash. Use engineering calculations to determine the **arc flash boundary:** the distance at which incident energy equals 1.2 cal/cm^2. This amount of incident energy will produce a second-degree burn.



The three main factors that affect heat intensity and ultimately determine incident energy levels are:

1. Available fault current (power of the arc)
2. Working distance from the arc
3. Duration of the arc (clearing time)

Physical dangers	Risk to personnel
Heat	Burns
Shrapnel	Wounds
Percussive force and pressure	Broken bones
High decibel/sound level	Hearing loss
Intense UV and IR light	Vision loss
Hot air from rapid expansion	Lung injuries
Molten metal	Chronic pain
Electrical explosion	Scarring
	Death

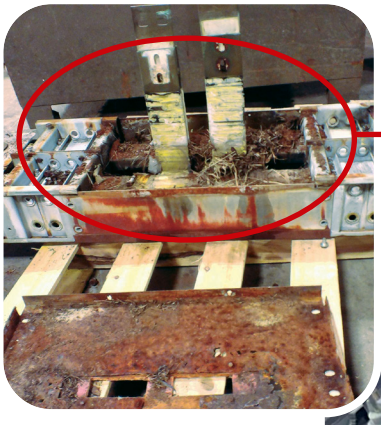
KNOW THE COMMON CAUSES OF ARC FLASH

Human Error

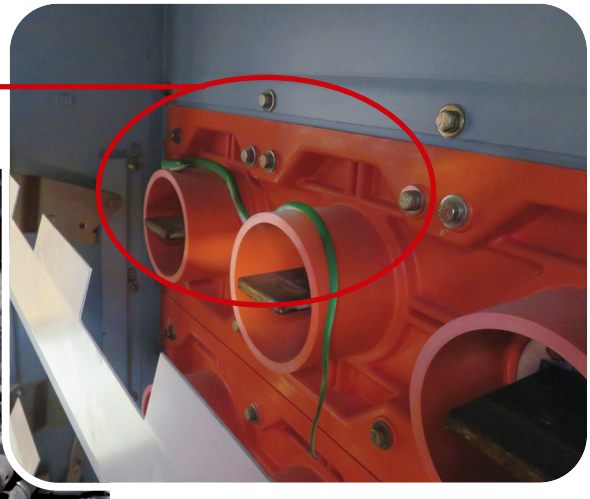
- Accidental contact (people, animals, tools)
- Incorrect wiring, labeling, or installation
- Improper use of tools
- Neglected signs of impending failure
- Insufficient employee training

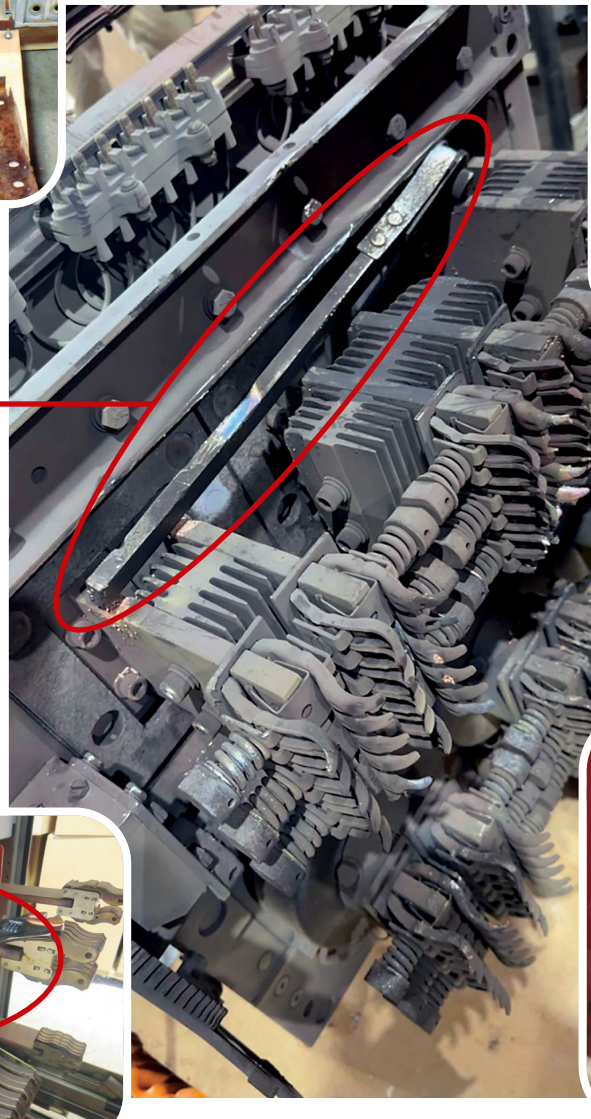
Equipment Failure

- Insulation breakdown
- Utility transients and lightning
- Poor maintenance (dust, condensation, and corrosion)
- Loose connections
- Interaction with equipment that has not been properly maintained
- Improperly rated equipment



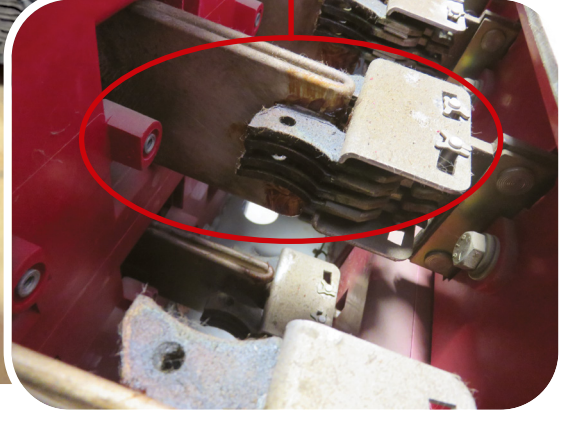
Environmental Factors





Tools left behind

Poorly-maintained equipment



WHAT IS AN ELECTRICALLY SAFE WORK CONDITION?

NFPA 70E 110.2 states that an employer must establish, document, and implement an electrically safe work condition policy that does both of the following:

- Makes hazard elimination the first priority in the implementation of safety-related work practices
- Complies with NFPA 70E 110.2B

NFPA 70E 110.2B requires any equipment over 50 V to be in an electrically safe work condition if the employee is within the limited approach boundary or the employee is interacting with equipment where conductors or circuit parts are not exposed but an increased likelihood of injury from exposure to an arc flash hazard exists.

An exception to this requirement is a normal operating condition, which exists when **ALL** the following apply:

- Complies with NFPA 70E 110.2B
- The equipment is properly installed
- The equipment is properly maintained
- The equipment is rated for the available fault current (not underrated)
- The equipment is used in accordance with instructions included in the listing and labeling and in accordance with manufacturer's instructions
- The equipment doors are closed and secured
- All equipment covers are in place and secured
- There is no evidence of impending failure

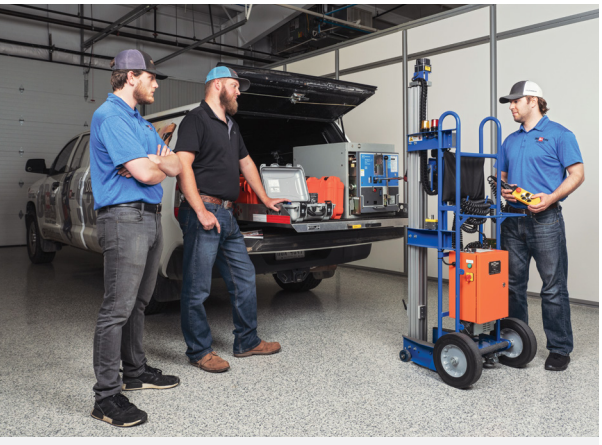
Notes on Exceptions

1. "Properly maintained" means the equipment has been maintained in accordance with the manufacturer's recommendations and applicable industry codes and standards.
2. Evidence of impending failure includes arcing, overheating, loose or bound equipment parts, visible damage, deterioration, or water damage.
3. Normal operation does not include installation or removal of a circuit breaker.

WHAT STANDS BETWEEN YOU AND ELECTRICAL DANGER? WE DO.

CBS ArcSafe products keep technicians outside of the arc flash hazard boundary while they perform potentially dangerous electrical tasks. With the largest selection of remote switching and racking solutions available, we are the industry leader in electrical remote operations. As a Group CBS Company, CBS ArcSafe has access to the industry's largest inventory of low- and medium-voltage switchgear. We offer parts, on-site service, comprehensive repair, and need-it-now delivery.

We take pride in being available and capable of responding anytime, anywhere.



- We have the largest selection of new, surplus, and reconditioned low- and medium-voltage power equipment and replacement parts in North America.
- Our product specialists and Group CBS partners can provide on-site demonstrations, training, and in-depth site evaluations.
- OEM training by CBS ArcSafe is included in the purchase of select equipment. Per NFPA 70E Article 110.6(3), we recommend OEM retraining every three years and/or as staff attrition occurs. In addition to on-site training, you can visit our CBS ArcSafe YouTube channel for demonstration videos for a variety of devices.

For after-hours or emergency support, contact us 24/7 via our emergency phone number: 877-472-3389. We continue to develop new solutions for our customers on a daily basis. Contact us to discuss custom solutions.

CBS ArcSafe Facilities

All CBS ArcSafe equipment is manufactured in the United States at our Denton, Texas, headquarters, ensuring the highest quality components and systems. Our capabilities include production at scale and custom solutions to meet specific customer design requirements.

We can provide product engineering, SolidWorks/CAD design, CNC milling, 3D printing, programming, and water jet and laser cutting.

Distance is Safety®

The POWER of ONE™

GROUP CBS
Providing Electrical Solutions Worldwide

ONE GROUP WITH ONE GOAL

TO PROVIDE COMPLETE ELECTRIC POWER SYSTEM LIFE CYCLE SOLUTIONS

Shop and Engineering Services

- Electrical Equipment Repair
- Remanufacturing & Reconditioning
- Testing Services

Emergency Restoration Services

- 24/7/365 After-Hours Support
- Nationwide On-Site Emergency Services
- Self-Contained Portable Workshops

Unmatched Parts Inventory

- Renewal & Replacement Parts
- Millions of Parts in Stock
- Vacuum Interrupter Replacements

Electrical Apparatus in Stock

- Largest Inventory of Power Distribution Equipment
- New, Surplus & Remanufactured Apparatus

Custom Electrical Safety Solutions

- Remote Racking & Switching
- No Modifications to Equipment
- Enhanced Operational Response

NETA-Certified Field Services

- Maintenance & Acceptance Testing
- Electrical Testing & Commissioning
- Power System Studies

FIND A GROUP CBS COMPANY NEAR YOU

Group CBS has global subsidiaries offering products and services for the low-, medium-, and high-voltage industrial, utility, electrical distribution, and repair markets.