NATURAL DISASTER ELECTRICAL EQUIPMENT CHECKLIST: REPAIR OR REPLACE?

When electrical systems are damaged in a natural or man-made disaster, electricians need to make critical decisions about the damaged electrical equipment's ability to be salvaged or not. This checklist is intended to highlight and simplify key aspects of this decision-making process and builds off of recommendations in Annex K of NFPA 70B, *Standard for Electrical Equipment Maintenance* (2023 edition). The numbers in parenthesis refer to the sections within NFPA 70B. This checklist is not a part of the requirements of NFPA 70B. For more information about NFPA 70B, go to nfpa.org/70B. To access the complete standard in NFPA LiNK®, go to nfpa.org/link.

Types of Natural Disasters

Disaster scenarios include, but are not limited to, the following, which can inflict damage of varying degrees to facilities (K.2.1).

- Fire: Soot, material and equipment damage, water damage, structural damage
- Flooding: Water damage, structural damage
- Hurricane: Water damage, structural damage, utility infrastructure damage
- Tornado: Water damage, structural damage, utility infrastructure damage
- Earthquake: Structural damage, utility infrastructure damage

Steps for Assessing Equipment

Step 1. Assess Initial Damage. (K.2.6)

- ❑ Gather all pertinent drawings and documentation available.
- ❑ Perform a walkthrough of the entire facility or area.
- ❑ Document any damaged electrical components or equipment in accordance with K.2.7 of NFPA 70B.

Step 2. Assess Equipment Priority. (K.2.6.2)

Equipment repair priorities should be assessed with a focus on the highest priority equipment, in accordance with the specific safety and operational needs of the facility. Examples of typical equipment categories are shown in the table below.

Priority Assessment Table

Category	Type	Description
Category 1	Medium-voltage equipment including distribution transformers	Medium-voltage equipment typically serves as the backbone to the electrical power system and should be the primary focus of the initial recovery activities.
Category 2	Low-voltage distribution equipment	Affected components of low-voltage equipment should be removed to facilitate cleaning and drying of the structures. During the removal of the equipment, care should be taken to keep all wiring for each component well marked and together.
Category 3	Electric motors	When a disaster event involves water, electric motor repair is a major component of a flood recovery project.
Category 4	Power and control wiring	Power and control wiring should be tested to determine serviceability. (See Annex A.18.3.5 for cable testing.)
Category 5	Balance of the plant electrical equipment	The balance of electrical devices consists of all equipment other than medium-voltage equipment, low-voltage distribution equipment, and motors. These devices are typically repaired rather than replaced.

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Step 3. Identify Factors for Replacement or Repair. (K.2.7.7)

The factors listed below should be used to determine whether the damaged equipment will be repaired or replaced.

Can the damaged electrical equipment be repaired?

Yes	No	
❑	❑	Will equipment performance be compromised if repaired?
❑	❑	Can the equipment be effectively repaired?
❑	❑	Is the repair contractor qualified for the task?
❑	❑	Is the manufacturer still in business?
❑	❑	Will the authority having jurisdiction allow repair?
❑	❑	Can the repair be done adequately and time efficiently on site?

What is the financial impact of repairing the equipment? _____

What is the total outage time required? _____

Can the equipment be replaced?

Yes	No	
❑	❑	Is the equipment currently manufactured?
❑	❑	Are there long lead times to replace with new?
❑	❑	Is the manufacturer still in business?
❑	❑	Will the authority having jurisdiction allow replacement?

What is the financial impact of replacing the equipment? _____

What is the total outage time required? _____

Additional factors to consider for repair or replacement:

What is the age of the equipment? _____

What is the reliability requirement? _____

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