



# Electrical Hazards

A Fact Sheet prepared by the National Telecommunications Safety Panel

## Introduction

Natural disaster events (hurricanes, tornadoes, earthquakes, floods, etc.) often cause damage to electrical transmission and distribution systems that may pose hazards to response and cleanup personnel. The use of temporary and/or portable power supplies may create additional hazards.

## Downed Power Lines

- **Assume all power lines are energized. Other lines, e.g. telephone, cable TV, may also be energized.**
- Downed or sagging lines can energize other objects, e.g. trees, towers, fences, poles, pipes, metal buildings, etc.
- Lines that appear to be de-energized may become re-energized at any moment by contact with a power source.
- Low-hanging wires have voltage potential even if they are not touching the ground.
- Do not enter any body of water that is touching a downed power line.
- Never drive over downed power lines.
- If contact is made with an energized power line while in a vehicle, do not attempt to get out unless the vehicle is on fire. If possible, call for help.
- If you must exit a vehicle that may be energized, jump clear of the vehicle without touching it. Try to land with both feet together and shuffle away in small steps to minimize the voltage potential.

## Temporary Power Supplies

- Maintain and operate portable generators in accordance with the manufacturer's instructions.
- Be sure the main circuit breaker is off and locked out prior to starting the generator.
- Never operate generators indoors or where exhaust gases may be drawn indoors.
- Never attach a portable generator directly to the electrical system of a structure unless it has a properly installed open-transition transfer switch.
- If a portable generator is providing electric power to a structure via a transfer switch, it must be connected to a grounding electrode system such as a ground rod.

- Generator transfer switches must be approved for the intended use and installed by a qualified electrician.
- Temporary power poles must be installed in accordance with NEC requirements, including adequate clearance and overload protection.
- Power supplies to temporary structures, e.g. tents or trailers, must be installed by a qualified electrician.
- Use only heavy-duty extension cords that contain a grounding conductor and are approved for the intended use.
- Extension cords, connection devices, and fittings should be equipped with strain relief.
- All electrical equipment used in damp or wet locations must be protected by ground fault circuit interrupters (GFCI's).

## Equipment

- Maintain at least the minimum clearance distance per OSHA between vehicles, equipment and overhead lines.
- Use non-conductive ladders.
- Use double-insulated power tools.
- Never operate electrical equipment while standing in water.
- Use battery-operated tools where possible.
- Visually inspect all electrical equipment before use. Remove from service any equipment with frayed cords, missing ground prongs, cracked tool casings, etc.
- Follow lock-out/tag-out procedures whenever possible when working with electrical equipment.
- Electrical equipment that has been structurally damaged or submerged in water should be inspected by a qualified electrician before being put back into service.
- Check for explosive gases before restoring power to underground vaults.

## Personal Protective Equipment

- Use the appropriate Personal Protective equipment that is prescribed by OSHA or your company for the electrical exposures encountered.

## Additional Information:

### Occupational Safety and Health Administration (OSHA) Fact Sheets

- “Working Safely with Electricity” - [http://www.osha.gov/OshDoc/data\\_Hurricane\\_Facts/elect\\_safety.pdf](http://www.osha.gov/OshDoc/data_Hurricane_Facts/elect_safety.pdf)
- “Electrical Safety” - [http://www.osha.gov/OshDoc/data\\_Hurricane\\_Facts/electrical\\_safety.pdf](http://www.osha.gov/OshDoc/data_Hurricane_Facts/electrical_safety.pdf)
- “Downed Electrical Wires” - [http://www.osha.gov/OshDoc/data\\_General\\_Facts/downed\\_electrical\\_wires.pdf](http://www.osha.gov/OshDoc/data_General_Facts/downed_electrical_wires.pdf)
- “Grounding Requirements for Portable Generators” - [http://www.osha.gov/OshDoc/data\\_Hurricane\\_Facts/grounding\\_port\\_generator.pdf](http://www.osha.gov/OshDoc/data_Hurricane_Facts/grounding_port_generator.pdf)
- OSHA Electrical Standards for Construction - <http://www.osha.gov/doc/outreachtraining/htmlfiles/ecstd.html>

### National Institute for Occupational Safety and Health (NIOSH)

<http://www.cdc.gov/niosh/flood.html>