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**STOP. LOOK. LIVE.**

# Staying Safe While Saving Others

## Electrical Safety for First Responders



**Firefighters, police, and EMTs are typically first on the scene in an emergency and face the greatest risk from electrical infrastructure contacts.**

**Understanding the potential dangers and dealing with them correctly makes everyone safer.**

**This program is designed to supplement, not replace, your department's standard operating procedures (SOPs).**

# Electrical Safety Basics

- **Respect the Power of Electricity**
- **Hands Off Electrical Systems**
- **Protect Yourself and Others from Shock**
- **Protect Yourself and Others from Step Potential**
- **Always Observe the 20-Foot Rule**
- **Be Aware of Overhead Power Lines**
- **Use Extra Caution Near Downed Power Lines**
- **Manage Substation and Transformer Fires**

# Respect the Power of Electricity

- **Electricity will seek all paths to ground, including, but not limited to:**
  - Your body
  - Trees
  - Water
  - Metal objects and structures
  - Long or tall equipment
- **Even low-voltage electric shock can be fatal.**
- **Standard-issue protective gear **DOES NOT** insulate you against electric shock.**
- **Electric shock and burn injuries may include internal tissue damage that is not immediately apparent.** Make sure victims receive thorough medical attention.

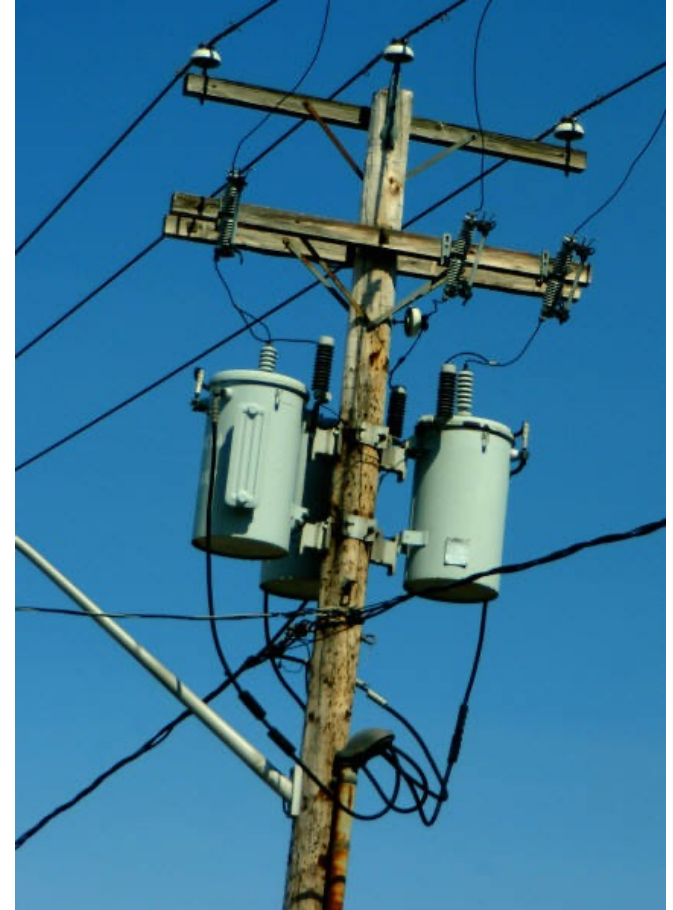
# Hands Off Electrical Systems

- **Never attempt to disconnect electrical services:**
  - **Never cut service wires.**
  - **Never attempt to remove electrical meters.** This is extremely dangerous and can cause serious injury or death. Instead, turn off power at the main circuit breaker.
  - **Never attempt to open or enter a manhole or vault** until you are sure it has been de-energized.
- **Never touch or attempt to move power lines.**



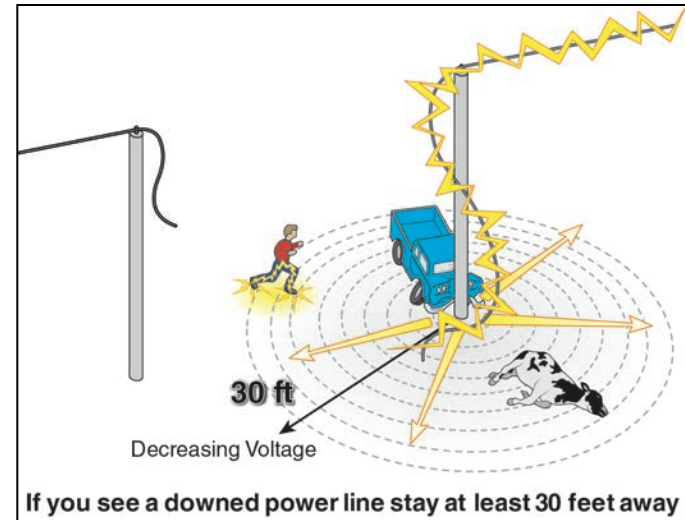
# Protect Yourself and Others from Shock

- **Always identify power lines and electrical equipment upon arrival at an incident scene.**
- **Assume all lines are energized** as well as all objects in contact with power lines.
- **If power lines or electrical equipment are involved in an incident,** have your dispatcher contact 911.
- **Provide the best possible directions** to the location.
- **Secure the area.**



# Protect Yourself and Others from Step Potential

- **Step potential is a difference in voltage across the ground near an energized, grounded object.** It can be as dangerous and deadly as touching a live wire.
- **When a downed power line touches the ground,** electric current flows into the ground and spreads out in concentric circles of decreasing voltage from the point of contact. If you walk or stand with one foot in an area of higher voltage than the other, the step potential in the ground could cause you to be electrocuted. Electricity will use your legs as a path to equalize the voltage.
- **Always stay at least 30 feet away from downed power lines and anything they are touching.** This safety zone differs from the 20-foot rule for operating near overhead power lines. Fallen transmission lines require a safety zone of at least 100 feet.
- **Keep others away.** BLOCK OFF the area at least 30 feet in all directions.
- **Call 911 and confirm that your dispatcher has notified your FirstEnergy electric company.**



# Always Observe the 20-Foot Rule

- **Personnel, ladders, and fully extended aerial equipment must never get closer than 20 feet from overhead power lines up to 50 kV.**
- **Higher voltages require greater clearances.** For example, higher-voltage lines on large transmission towers require additional clearances of up to **50 feet**.
- **There is no uniform system for identifying power line voltage.** When in doubt, contact your FirstEnergy electric company for clearance information.
- **Electrical safety distances given are minimums. Always use the maximum possible distance.**



# Be Aware of Overhead Power Lines

- **Park emergency vehicles as far away as possible from overhead power lines.**
- **Keep all personnel and equipment as far away as possible from overhead power lines**, including the service wires that run from utility pole to buildings.



# Be Aware of Overhead Power Lines

- **If your aerial equipment contacts a power line:**
  - **The aerial equipment should be considered energized.**
  - **Warn others to stay away.** Have someone **call 911** immediately.
  - If you can do so safely, **move the equipment far away from the line.**
  - **If the equipment cannot be moved, stay put, and warn others to stay away** until FirstEnergy utility crews give the all clear.

# Be Aware of Overhead Power Lines

- **If fire or other imminent danger forces you off the equipment:**

- **Jump clear**, keeping both feet together. Do NOT touch the equipment and the ground at the same time. Land with your feet together.
- **Shuffle at least 30 feet away**, keeping both feet close together and on the ground at all times.

- **Do not run or take large steps.**

When equipment contacts a line, electricity spreads out in the ground like ripples in a pond and the voltage decreases with distance from the point of contact. If your legs bridge two areas of different voltage, you could be killed.



# Use Extra Caution Near Downed Power Lines

- **Park emergency vehicles away from fallen lines.**
- **Secure the area:**
  - Keep yourself and the public as far away as possible from fallen power lines and objects that may be energized—never get closer than 30 feet.
  - Downed transmission lines from large towers require a distance of 100 feet.
- **Never touch or attempt to move fallen lines or objects contacting them.**



# Use Extra Caution Near Downed Power Lines

- **DO NOT** enter, approach, or touch areas or vehicles that may be energized.
  - Notify your FirstEnergy electric company through 911.
  - Instruct occupant(s) to drive the vehicle far away from the line if this can be done safely.
  - If the vehicle cannot be moved, instruct the occupants to stay put until FirstEnergy utility crews give the all clear. Staying in the vehicle is their **BEST** protection against electric shock.





# Use Extra Caution Near Downed Power Lines

- **If occupants in an energized vehicle are in imminent danger from fire or other hazards:**
  - **Instruct them to jump clear without contacting the vehicle and the ground at the same time.**
  - **Tell them to shuffle at least 30 feet away, keeping both feet close together and on the ground at all times.**
  - **Demonstrate the proper procedure from a distance.**
- **If victims are injured, disabled, or otherwise unable to safely exit the vehicle on their own, your incident commander will assess the situation and tell you how to proceed.**

# Substation Fires

- **Burning electrical equipment is already ruined and will be replaced. The safest course of action is to LET IT BURN.**
- **Contact your FirstEnergy electric company through 911 and wait for their personnel to arrive. Never attempt to enter a substation without utility personnel present.**
- **Isolate the area AT LEAST 300 feet in all directions. Keep unauthorized persons away.**
- **Be alert for explosions and toxic smoke, and stay upwind.** Electrical equipment contains oil and potentially other hazardous materials.
- **Prevent contamination of water resources.** Monitor for oil runoff and direct it away from catch basins, surface waters, and wetlands.
- **Protect area exposures** to prevent fire from spreading.
- **If an equipment fire must be suppressed,** utility personnel and the incident commander will tell you how to proceed.

# Transformer Fires

- **Do not open or enter switch cabinets or pad-mounted transformers.**
  - **Never cut locks or pry cabinets open.** Equipment contains live electrical components, and if you contact them you could be killed.
- **Call 911, evacuate the public, and protect area exposures.**
- **Let transformers burn, unless or until otherwise instructed by utility personnel.**





# Electrical Safety Review

- **Identify all overhead power lines and electrical equipment upon arrival at an incident scene.**
- Whenever you suspect electrical infrastructure is involved, or when in doubt, **call your FirstEnergy electric company through 911.**
- **Hands off electrical systems.**
  - Never attempt to disconnect electrical service.
  - Never touch power lines.
- **Keep all personnel and equipment as far away as possible from overhead power lines**, including the service wires that run from utility poles to buildings. Assume all power lines are energized.
- **Even low-voltage electric shock can be fatal**, and your gear does not insulate you against electric shock.
- **When responding to a substation or transformer fire, let it burn**, evacuate the area, and protect exposures.

# Contact Information

- In case of emergency, call 911 to reach your FirstEnergy electric company.
- To learn more about first responder safety, visit **[firstenergycorp.com/firstresponders](https://firstenergycorp.com/firstresponders)**.

# Thank You

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