



Colorado Springs Utilities

It's how we're all connected

first responder
beware®

Staying Safe While Protecting 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.

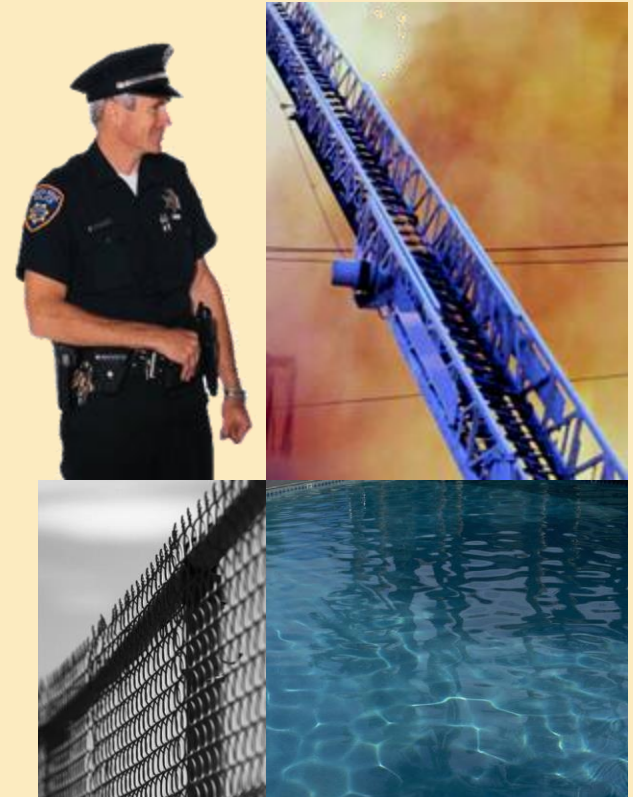
This program is designed to supplement, not replace, your department's standard operating procedures (SOPs).

Electrical Safety Basics

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

Respect the Power of Electricity

- ❑ **Electricity always seeks the easiest, most direct path to ground** through conductors like:
 - Your body
 - Trees
 - Water
 - Metal objects and structures
 - Long or tall equipment
- ❑ **Even low-voltage electrical shock can be fatal.**
- ❑ **Standard-issue protective gear DOES NOT insulate you against electrical shock.**
- ❑ **Electrical shock and burn injuries may include internal tissue damage that is not immediately apparent.** Make sure victims receive thorough medical attention.

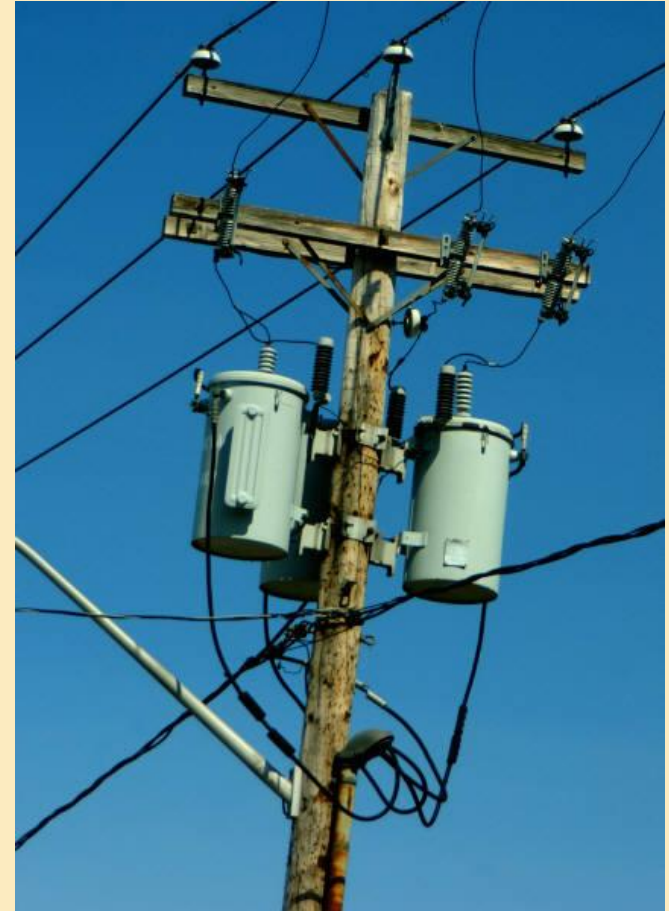


Hands Off Electrical Systems

- **Never attempt to disconnect electrical services:**
 - **Never cut service wires.** This is extremely dangerous. Instead, turn off power at the main circuit breaker.
 - **Never attempt to remove electrical meters.** This is extremely dangerous and can cause serious injury or death.
 - **Never attempt to open or enter a manhole or vault** until utility personnel tell you it has been de-energized.
- **Never touch or attempt to move power lines.**
 - **Some wires may appear to be insulated but they are not.** Their coating is weatherproofing and is not designed to protect you from electrical shock.

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 touching power lines.
- ❑ If power lines or electrical equipment are involved in an incident, have your dispatcher contact **Colorado Springs Utilities**.
- ❑ Provide the best possible directions to the location.
- ❑ **Secure the area.** Be prepared for the utility vehicle to arrive, and make sure there is a clear path to the incident site for Colorado Springs Utilities personnel.



Always Observe the 20-Foot Rule

- ❑ Keep yourself and your equipment *at least 20 feet away* from overhead power lines.
- ❑ Higher voltages require greater clearances.
- ❑ There is no uniform system for identifying power line **voltage**. When in doubt, contact Colorado Springs Utilities for clearance information.
- ❑ Have a spotter monitor the placement of ladders near power lines and service wires to make sure they remain a safe distance away when fully extended.
- ❑ **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 aerial equipment *at least 20 feet away* from overhead lines.
- ❑ Use a spotter to keep your aerial equipment away from power lines.
- ❑ Never use a solid water stream to fight fires near overhead power lines.

Be Aware of Overhead Power Lines

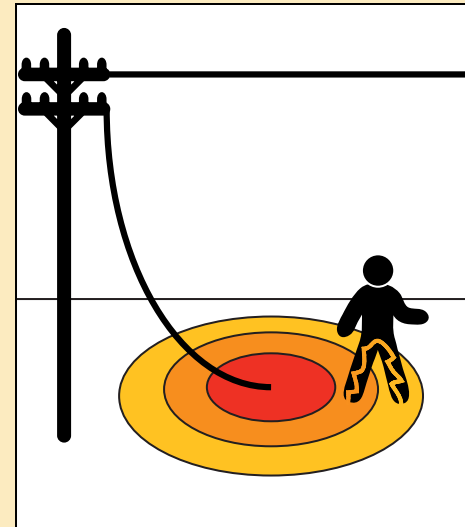
- **If your aerial equipment contacts a power line:**
 - **Remain on the equipment.** Move the equipment away from the line if you can do so safely. If the equipment cannot be moved, all personnel on the equipment should remain there.
 - **Warn others to stay far away.** Anyone who touches the equipment or even the ground nearby may be injured or killed.
 - **Have someone call Colorado Springs Utilities at 719-448-4800 immediately.** Utility personnel will respond quickly, switch off the power and tell you when it is safe to get off the equipment. Wait for their instructions.

Be Aware of Overhead Power Lines

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

- **Jump clear**, keeping both feet together and without touching the equipment and the ground at the same time.
- **Shuffle away with small steps**, 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, serious injury or death can occur.



Always Assume Solar PV Systems Are Energized

- ❑ **In incidents involving solar photovoltaic (PV) systems, be alert for electrical, structural and chemical hazards.**
 - **Consider all solar PV equipment**, junction boxes, batteries and wiring to be energized at all times. Do not touch or cut into solar PV modules, conduit or equipment.
 - **Prepare for fires** near a rooftop array to grow unexpectedly, in some cases causing rapid structural failure.
 - **Always wear full protective clothing and SCBA.** Batteries that ignite or overheat may release hazardous materials and highly toxic and explosive gases.



Use Extra Caution Near Downed Power Lines



- ❑ Assume every downed power line, and anything in contact with it, is energized and dangerous.
- ❑ Park emergency vehicles away from fallen lines.
- ❑ Secure the area:
 - Keep yourself and the public *at least 50 feet away* from fallen power lines.
 - Transmission lines from large towers require a distance of **100 feet**.
- ❑ Never touch or attempt to move fallen lines or objects contacting them.
- ❑ Never use a solid water stream to fight fires near downed lines.

Use Extra Caution Near Downed Power Lines

- ❑ **DO NOT** enter, touch or even approach a vehicle that may be energized. Resist the temptation to extract passengers.
 - **Call Colorado Springs Utilities.**
 - **Instruct occupants to drive the vehicle far away from the line if this can be done safely.**
 - **If the vehicle cannot be moved, instruct all occupants to stay put until utility personnel give the all clear.** Staying in the vehicle is their **BEST** protection against electrical 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 touching the vehicle and the ground at the same time.
 - **Tell them to shuffle away with small steps**, keeping both feet close together and on the ground at all times.
 - **Demonstrate the proper procedure from a distance.**
- **If occupants 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 Colorado Springs Utilities, and wait for their personnel to arrive. **Never attempt to enter a substation without utility personnel present.**
- ❑ **Evacuate the area,** and keep everyone *at least* **330 feet** away from the substation.
- ❑ **Be alert for explosions and toxic smoke, and stay upwind.** Electrical equipment contains oil and other hazardous materials.
- ❑ **Protect area exposures** to prevent fire from spreading.
- ❑ **Prevent contamination of water resources.**
- ❑ **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 touch them, serious injury or death can occur.
- ❑ **Call Colorado Springs Utilities, 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 Colorado Springs Utilities**. Be prepared for the utility vehicle to arrive and make sure there is a clear path to the incident site for utility personnel.
- ❑ **Hands off electrical systems.**
 - Never attempt to disconnect electrical service.
 - Never touch power lines.
- ❑ **Assume all power lines are energized and keep yourself and your equipment *at least 20 feet away*.**
- ❑ **Use a spotter to keep equipment away from power lines.**
- ❑ **Even low-voltage electrical shock can be fatal.** Your gear does not insulate you against electrical shock.
- ❑ **When responding to a substation or transformer fire, let it burn,** evacuate the area and protect exposures and water resources.

Contact Information

- In case of emergency, call Colorado Springs Utilities at 719-448-4800.
- For additional information, visit Colorado Springs Utilities first responder safety website at csu.org/firstrespondersafety.



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Thank You