Before darkening the room, offer a welcome and overview.

Begin by introducing the program and its topic:

Welcome to First Responder Beware: Staying Safe While Saving Others, Electrical Safety for First Responders. Today's session will share strategies for working safely around electric power lines and for handling certain emergencies involving electricity. By following the procedures we'll cover here today, you can keep yourself, your fellow first responders and the public safe. Now I know that some of you will have heard this information before, and so for you, this program will be a refresher. For others, this may be the first time you're hearing about this topic, but I hope everyone will find the program valuable.

Darken the room.

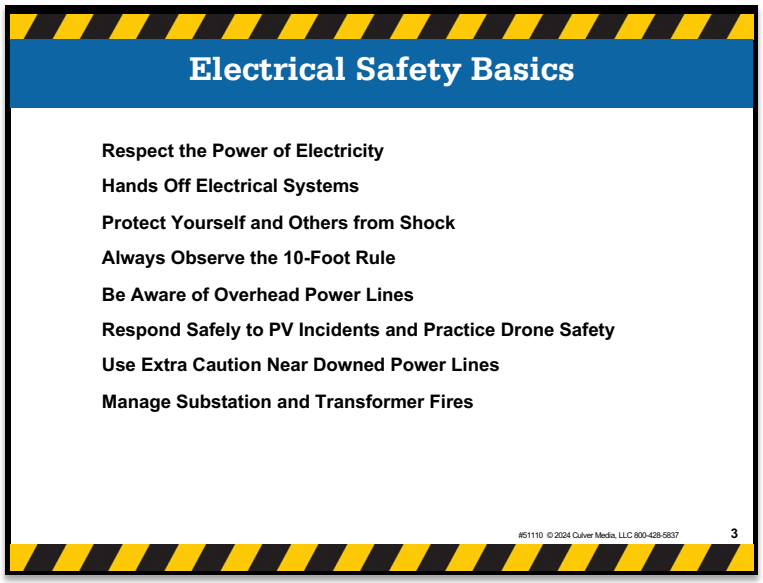
Presenter's Notes

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).

This is a good time to reiterate the importance of this information: that it can protect first responders, incident victims and bystanders from electricity-related injury or death.

Please note: Each local department will have its own standard operating procedures about electrical safety. Emphasize to participants that this program is not designed to replace these procedures, only to supplement them.

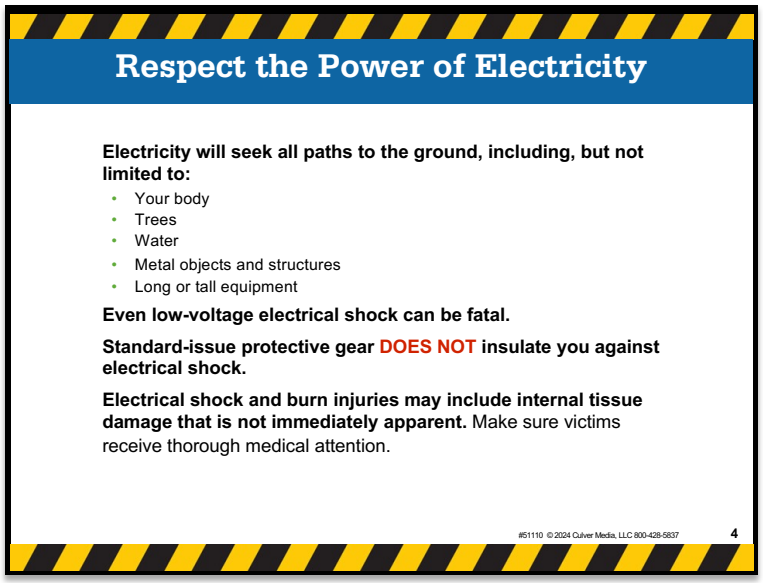
Presenter's Notes



This presentation will cover key practices you need to know to keep yourself safe around electric power lines and on the scene of emergencies involving electricity. The topics we are going to focus on are:

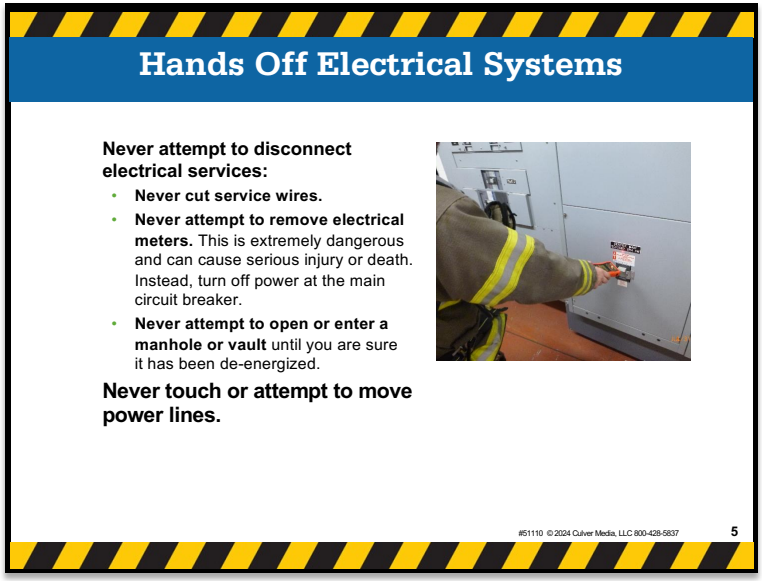
- Respect the Power of Electricity
- Hands Off Electrical Systems
- Protect Yourself and Others from Shock
- Always Observe the 10-Foot Rule
- Be Aware of Overhead Power Lines
- Respond Safely to PV Incidents and Practice Drone Safety
- Use Extra Caution Near Downed Power Lines
- Manage Substation and Transformer Fires

Presenter's Notes



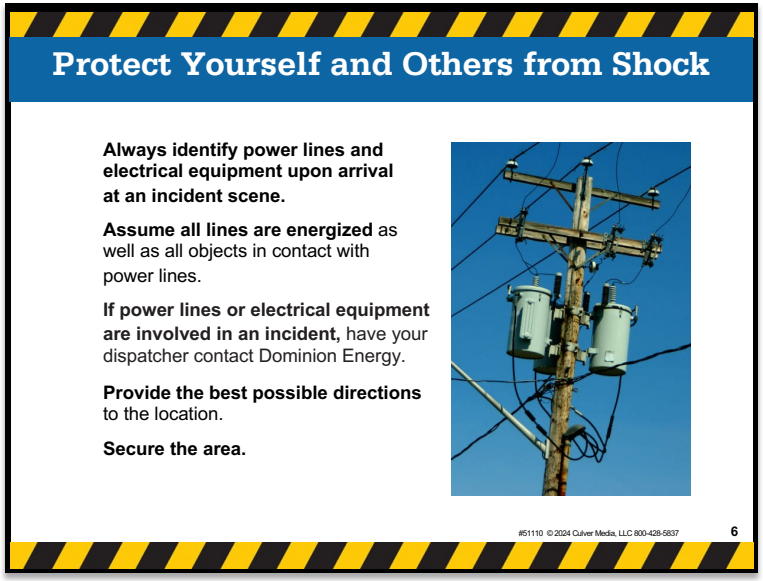
First of all, we need to know a few basic things about electricity.

- Electricity will seek all paths to the ground, including, but not limited to:
  - Your body
  - Trees
  - Water
  - Metal objects and structures including fences and gutters
  - And long or tall equipment such as ladders
- Even low-voltage electrical shock can be fatal. Protecting yourself means always remembering that there are no minor risks when dealing with electricity.
- 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. Shock victims often show no visible injuries or only minor burns on the skin, but the internal organs can be critically wounded. Treat these injuries as serious regardless of their appearance.



Remember that even low-voltage electrical shock is potentially fatal. To avoid this risk, keep away from electrical equipment and systems.

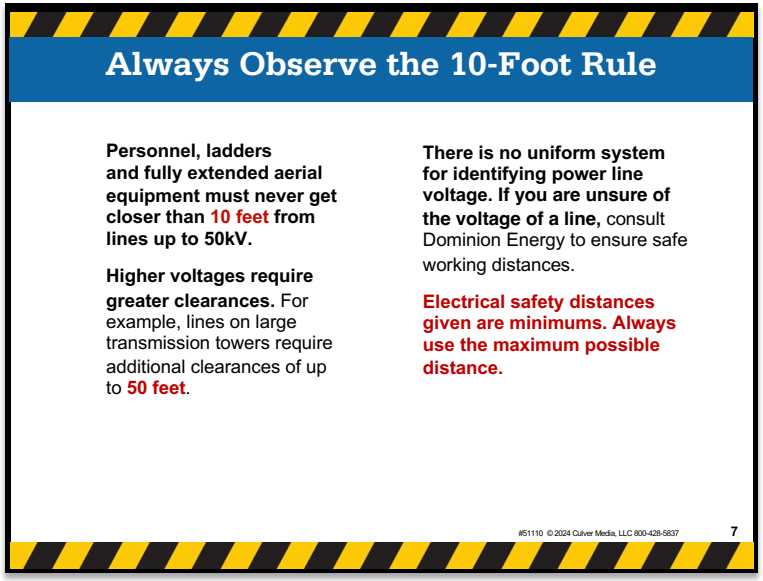
- Never attempt to disconnect electrical services. This can be an extremely dangerous, even deadly, mistake.
  - Never cut service wires or power lines.
  - Never attempt to remove electrical meters. This is extremely dangerous and can cause serious injury or death.
  - Never attempt to open or enter a manhole or vault until you are sure it has been de-energized.
- Never touch or attempt to move power lines. Remember, your protective gear does not insulate you against electrical shock. In dealing with electrical systems, employ a hands-off policy and call Dominion Energy.



Following some simple best practices can minimize the risk of electrical shock.

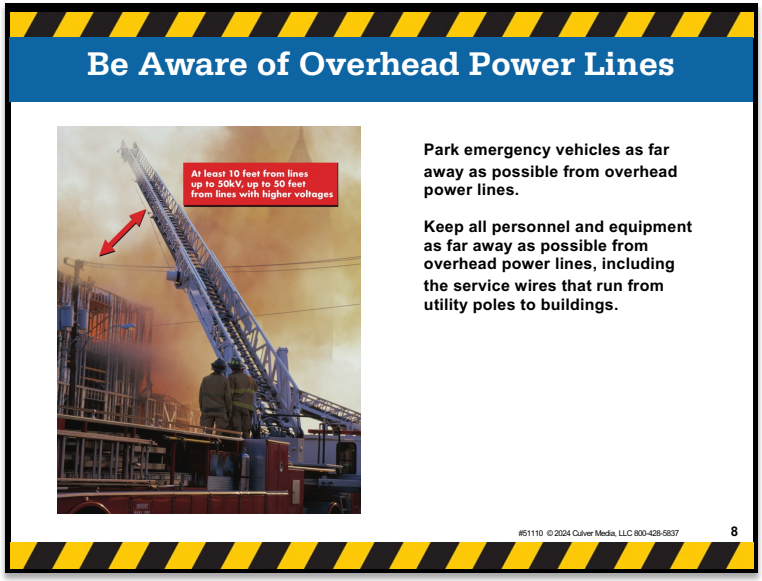
- Always identify power lines and electrical equipment upon arrival at an incident scene. The first thing to do is to survey the area for overhead power lines, downed lines and equipment such as transformers. Especially during or after a storm, look for lines down in trees or on fences. Proper electrical safety procedures should figure into any operational planning.
- Assume all lines are energized as well as all objects in contact with power lines. Even if lines appear to be insulated, the coating you see is not designed to protect you from shock. Additionally, areas around power lines and electrical equipment or objects in contact with them (such as trees, fences or vehicles) should also be treated as energized. This includes the ground. Approach with caution.
- If power lines or electrical equipment are involved in an incident, have your dispatcher contact Dominion Energy. Calling is always the right thing to do whether you identify electrical infrastructure or are just unsure. They want you and the public to be safe and will respond quickly. Their personnel will switch off the power and tell you when the area is safe and de-energized.
- As simple as it sounds, provide the best possible directions to the location. Intersections, landmarks and specific buildings will help.
- Secure the area. When dealing with electricity, your priority is to protect yourself and the public. Utility personnel will tell you when it is safe to approach.

Presenter's Notes



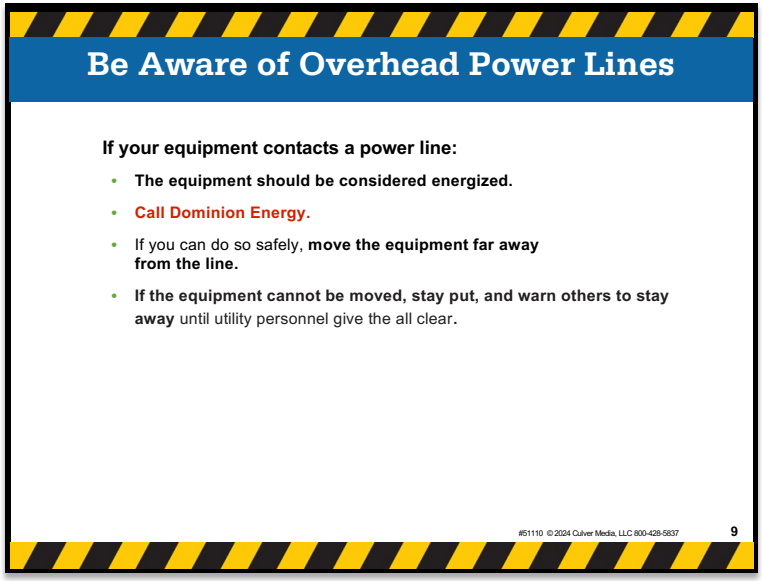
The minimum safe distance from power lines is 10 feet.

- Personnel, ladders and fully extended aerial equipment must never get closer than 10 feet from lines up to 50,000 volts.
- Higher voltages require greater clearances.
- There is no uniform system for identifying power line voltage. If you are unsure of the voltage of a line, consult Dominion Energy to ensure safe working distances. Their line workers get a lot of specialized training that teaches them to recognize the voltages they're dealing with at any given site. Don't make the mistake of thinking you can know the appropriate voltage and safe clearance by looking at a line.
- Electrical safety distances given are minimums. Always use the maximum possible distance. Your best practice is always to stay as far away as possible from power lines and electrical infrastructure.



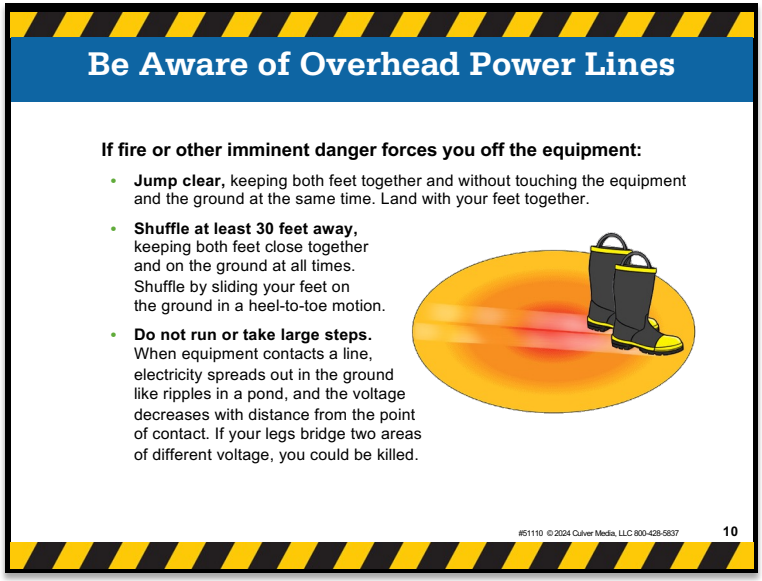
When overhead lines are present at an incident scene, remember a few simple safety rules.

- Park emergency vehicles as far away as possible from overhead power lines. You don't want to be surprised by a falling power line.
- Keep all personnel and equipment as far away as possible from overhead power lines, including the service drops that run from utility poles to buildings. Remember the 10-foot rule and that metal ladders are conductors. Be aware that wind can move aerial equipment, and assign a spotter to monitor your equipment's proximity to power lines. (A good rule of thumb is to maintain a safety clearance that is greater than the length of the equipment when extended.)



Remember that anything touching a power line may be energized.

- If your equipment contacts a power line, the most important thing to do is remain calm and stay put.
  - The equipment should be considered energized, as should the power line.
  - Call Dominion Energy immediately.
  - If you can do so safely, move the equipment far away from the power line.
  - If the equipment cannot be moved, stay put, and warn others to stay away until utility personnel give the all clear. All personnel on the equipment should remain there. This is your safest course of action. Utility personnel will respond quickly, switch off the power, and tell you when it is safe to get off. Wait for their instructions.

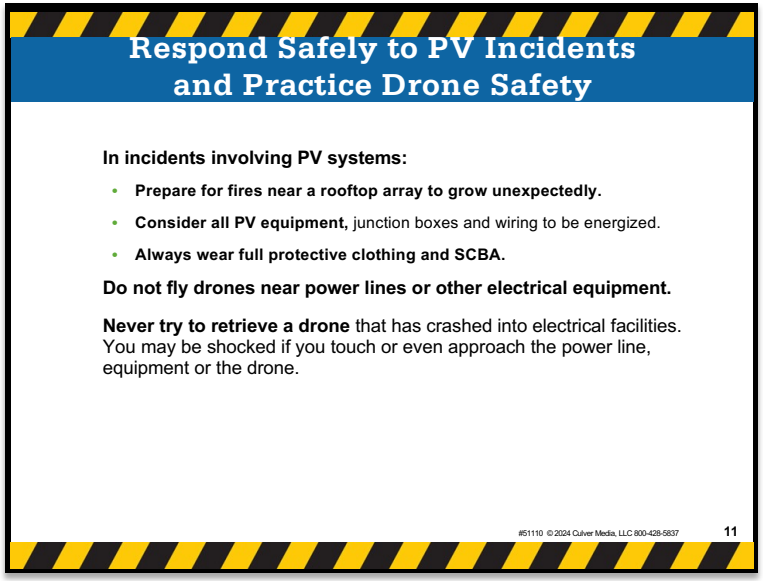


In some cases, other hazards such as fire make it impossible to stay on the energized equipment until utility personnel give the all clear.

- 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. If you do, you will become electricity's path to the ground and you will be seriously—or fatally—shocked. Make every attempt to land on both feet at the same time.
  - Shuffle at least 30 feet away, keeping both feet close together and on the ground at all times. Shuffle by sliding your feet on the ground in a heel-to-toe motion.
  - Do not run or take long 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.

Demonstrate the jump-off procedure.

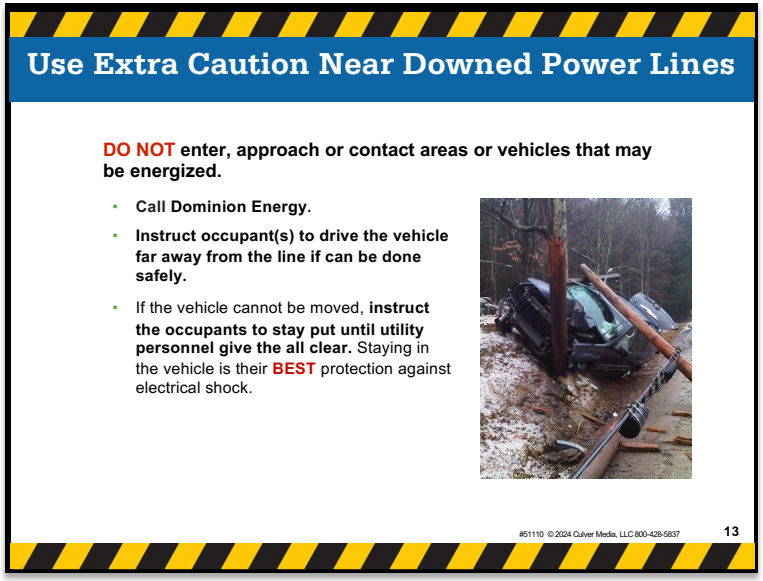
Presenter's Notes



- In incidents involving PV systems, be alert for electrical, structural and chemical hazards.
  - Prepare for fires near a rooftop array to grow unexpectedly, causing rapid structural failure in some cases.
  - Consider all PV equipment, junction boxes and wiring to be energized. Do NOT touch or cut into PV modules, conduit or equipment.
  - Always wear full protective clothing and SCBA. Batteries that ignite or overheat may release hazardous materials and highly toxic and explosive gases.
- Do not fly drones near power lines or other electrical equipment.
- Never try to retrieve a drone that has crashed into electrical facilities.
  - You may be shocked if you touch or even approach the power line, equipment or the drone.
  - Call Dominion Energy, and they will help you to retrieve it.

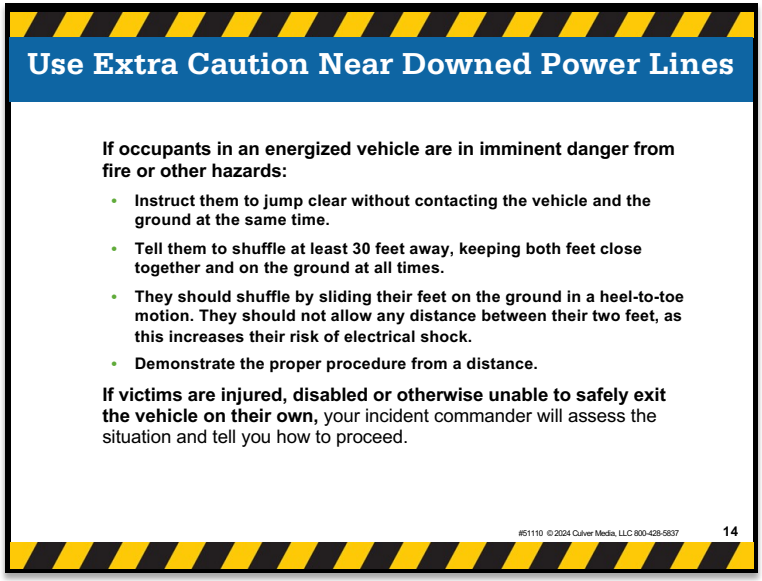
Use extra caution near downed power lines. Dealing with downed lines requires additional measures to protect life and property.

- Park emergency vehicles away from fallen lines. The ground and objects in the vicinity of a fallen power line may be energized. Wait for utility personnel to give the all clear.
- 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. Always remember that objects and even the ground near downed lines may be energized.
  - Transmission lines from large towers require a distance of 100 feet. In any incident involving downed lines, recall that wind as well as electric charge can cause lines to whip and move. Observing these expanded clearances can help protect everyone from the unexpected.
- Never touch or attempt to move fallen lines or objects contacting them. Doing so endangers you and incident victims. Contact Dominion Energy immediately so they can de-energize the scene.



When incident victims are in or around the energized area, particularly in vehicles that have contacted power lines, remember that both you and they are safest staying put.

- Do not enter, approach or contact areas or vehicles that may be energized. Resist the temptation to attempt to extract passengers. You risk both your own and the victims' safety when you enter the energized area. Instead, stay away. You chose this work to save lives, and that instinct is strong. However, in this case, if you enter the energized area, you have a very high risk of electrical shock. Becoming a victim yourself puts everyone in greater danger.
  - Call Dominion Energy immediately. They will respond quickly and de-energize the scene.
  - Instruct occupants to drive the vehicle far away from the line if this can be done safely. Keeping your distance, find a position where occupants can see you without exiting or moving around inside the vehicle, and attempt to reassure them.
  - If the vehicle cannot be moved, instruct the occupants to stay put until utility personnel give the all clear. Staying in the vehicle is their best protection against electrical shock. Tell them utility personnel are on the way to turn off the electricity; to stay put; and to try to relax. If vehicle occupants are injured or panicked, talk with them, keep them calm and alert, and use the wait time to prepare medical assistance.



In some cases, fire or other hazards make it impossible for victims to remain in the vehicle.

- If occupants in an energized vehicle are in imminent danger from fire or other hazards, you must resist the temptation to approach the vehicle. Contacting an energized vehicle is a sure way to become a shock victim yourself! Follow these procedures to get everyone out alive.
  - Instruct them to jump clear without contacting the vehicle and the ground at the same time. Find a vantage point where victims in the vehicle can see and hear you, but keep your distance.
  - Tell them to shuffle at least 30 feet away, keeping both feet close together and on the ground at all times. They should shuffle by sliding their feet on the ground in a heel-to-toe motion. They should not allow any distance between their two feet, as this increases their risk of electrical shock. Emphasize that they must not run or take long steps.
  - Demonstrate the proper procedure from a distance. Show occupants how to exit the vehicle and shuffle away before they attempt their escape.
- If victims are injured, disabled or otherwise unable to safely exit the vehicle on their own, your incident commander will tell you how to proceed. Wait for instructions before taking action or you could become another victim.

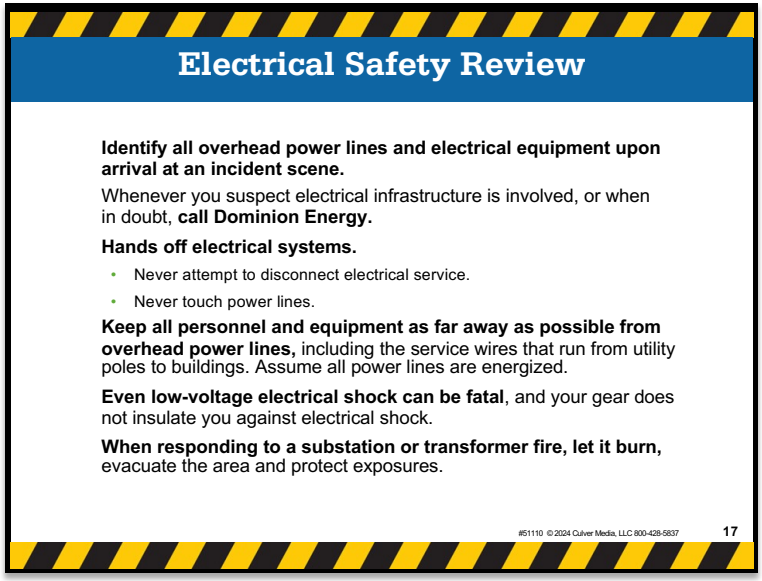
Presenter's Notes

Substations present specific risks.

- Burning electrical equipment is already ruined and will be replaced. The safest course of action is to let it burn.
- Contact Dominion Energy 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. Your most important responsibility in these types of emergencies is to protect the public.
- Electrical equipment contains oil. Be alert for explosions and toxic smoke.
- Monitor for oil runoff. Direct it away from catch basins, surface waters and wetlands to prevent contamination of water resources.
- Protect area exposures to prevent the fire from spreading. Once the area is evacuated, focus on defending nearby property and green space.
- If an equipment fire must be suppressed, utility personnel and the incident commander will tell you how to proceed.

Burning transformers call for response procedures similar to those required by substation fires.

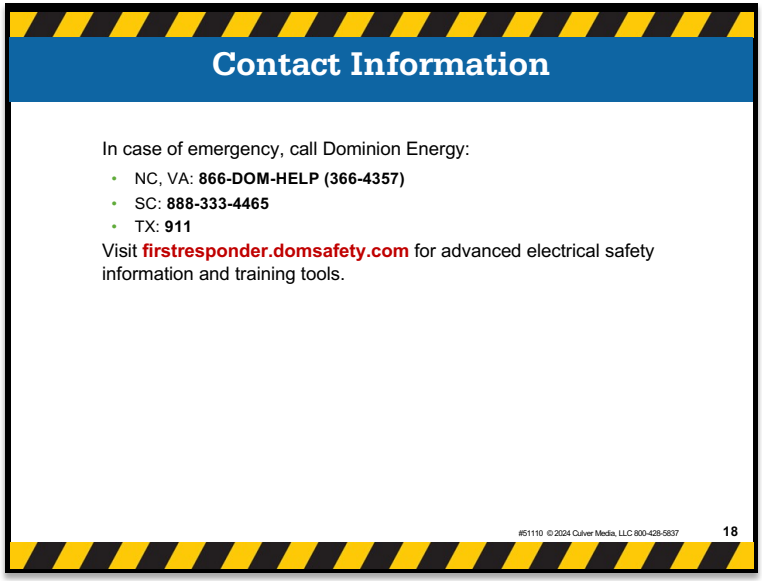
- Do not open or enter switch cabinets or pad-mounted transformers such as the one shown in this photo. This is very dangerous and unnecessary.
  - Never cut locks or pry cabinets open. Equipment contains live electrical components, and if you contact them, you could be killed. Once a fire has begun, the equipment is unsalvageable and will be replaced. Don't risk your life to save ruined equipment.
- Call Dominion Energy, evacuate the public and protect area exposures. Whether it's a transformer on the ground or on a pole, be alert for explosions and toxic smoke, and once the area is secure, do what you can to keep the fire from spreading.
- Let transformers burn until otherwise instructed by utility personnel. They will determine when it is safe to extinguish an equipment fire, and will advise your incident commander regarding the safest procedures.



So let's review the key points of this presentation.

- Identify all overhead power lines and electrical equipment upon arrival at an incident scene. Do this as part of your initial situation survey, and include electrical infrastructure in your operational planning.
- Whenever you suspect electrical infrastructure is involved or when in doubt, call Dominion Energy. They want to help keep you and the public safe.
- Hands off electrical systems.
  - Never attempt to disconnect electrical service.
  - Never touch power lines. Utility personnel will switch off the electricity to de-energize a scene and will inform you when the area is safe.
- Keep all personnel and equipment as far away as possible from overhead power lines, including the service drops that run from utility poles to buildings. Assume all power lines are energized.
- Even low-voltage electrical shock can be fatal, and remember, 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. Your focus should be on safeguarding life and property.

Presenter's Notes



In case of emergency, call Dominion Energy:

- NC, VA: 866-DOM-HELP (366-4357)
- SC: 888-333-4465
- TX: 911
- Visit firstresponder.domsafety.com for advanced electrical safety information and training tools.

Thank you for your attention.

Take questions and begin discussion.

(If you are using the Trainer's Guide, in it you will find more detail about how electricity works, ideas for discussion, suggested tabletop and role-play simulations, and other information about safety procedures.)

Discuss how this information conflicts with what your audience believed about electricity, and how they may have put themselves or others at risk in the past. Ask what they would have done differently had they had this training before.

Dominion Energy thanks you for helping to keep first responders safe.