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First Responder Beware

Electrical Safety Slide Show Presenter's Notes

Slide 1

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.

Click for the next slide. (Throughout this presentation you will need to click for text and graphics on each slide, and to bring up new slides.)

Slide 2

- *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.

Click for next slide.

Slide 3

Begin when the title appears.

- *Electrical safety basics. 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:*

Click for each of the seven bullets and read them off as they appear:

- *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*
- *Use Extra Caution Near Downed Power Lines*
- *Manage Substation and Transformer Fires*

Click for next slide.

Slide 4

Begin when the title appears.

- *Respect the power of electricity. First of all, we need to know a few basic things about electricity.*

Click for first bullet.

- *Electricity always seeks the easiest, most direct path to the ground through conductors like:*

Click for each sub-bullet and read the following as they appear (Photos will appear automatically.)

- *Your body*
- *Trees*
- *Water*
- *Metal objects and structures including fences and even gutters*
- *And long or tall equipment such as ladders.*

Click for second bullet.

- *Even low-voltage electric shock can be fatal. Protecting yourself means always remembering that there are no minor risks when dealing with electricity.*

Click for third bullet.

- *Standard-issue protective gear does not insulate you against electric shock.*

Click for fourth bullet.

- *Electric 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.*

Click for next slide.

Slide 5

Begin when the caution sign appears.

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

Click for first bullet.

- *Never attempt to disconnect electrical services. This can be an extremely dangerous, even deadly, mistake.*

Click for each sub-bullet and read the following as they appear.

- *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.*

Click for last bullet.

- *Never touch or attempt to move power lines. Remember, your protective gear does not insulate you against electric shock. In dealing with electrical systems, employ a hands-off policy and call Duke Energy.*

Click for next slide.

Slide 6

Begin when the title appears.

- *Protect yourself and others from shock. Adhering to some simple best practices can minimize the risk of electric shock.*

Click for first bullet.

- *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.*

Click for second bullet.

- *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.*

Click for third bullet.

- *If power lines or electrical equipment are involved in an incident, have your dispatcher contact Duke 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.*

Click for fourth bullet.

- *As simple as it sounds, provide the best possible directions to the location. Intersections, landmarks, and specific buildings will help.*

Click for last bullet.

- *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.*

Click for next slide.

Slide 7

Begin when the title appears.

- *Always observe the 10-foot rule. The minimum safe distance from power lines is 10 feet.*

Click for first bullet.

- *OSHA requires that you keep yourself and your equipment at least 10 feet away from power lines. Maintain a minimum 10-foot clearance for power lines of 50,000 volts or less.*

Click for second bullet.

- *Higher voltages require greater clearances. OSHA regulations specify greater distances for lines of more than 50,000 volts. For example, the minimum clearance for a 500,000-volt line is 18 feet.*

Click for third bullet.

- *There is no uniform system for identifying power line voltage. When in doubt, contact Duke Energy for clearance information. 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 clearance by looking at a line.*

Click for fourth bullet.

- *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.*

Click for next slide.

Slide 8

Begin when the title appears.

- *Be aware of overhead power lines. When overhead lines are present at an incident scene, remember a few simple safety rules.*

Click for first bullet.

- *Park emergency vehicles as far away as possible from overhead power lines. You don't want to be surprised by a falling power line.*

Click for second bullet.

- *Keep all aerial equipment at least 10 feet away from overhead lines. Remember the 10-foot rule and that metal ladders are conductors. Be aware that wind can move aerial equipment, and when possible, assign a spotter to monitor your equipment's proximity to power lines. Remember that higher voltages require greater clearances, and always use the maximum possible distance. (A good rule of thumb is to maintain a safety clearance that is greater than the length of the equipment when extended.)*

Click for last bullet.

- *Never use a solid water stream to fight fires near overhead power lines. A solid stream can create a clear path for electric current. When overhead lines are in the vicinity of a fire, you can, with extreme care, use a spray or mist. But remember that ALL water is a conductor and always be extremely cautious when using water around overhead lines.*

Click for next slide.

Slide 9

Begin when the title appears.

- *Be aware of overhead power lines. Remember that anything touching a power line may be energized.*

Click for first bullet.

- *If your equipment contacts a power line, the most important thing to do is remain calm and stay put.*

Click for first sub-bullet.

- *The equipment should be considered energized, as should the power line.*

Click for second sub-bullet.

- *Call Duke Energy immediately.*

Click for third sub-bullet.

- *If you can do so safely, move the equipment away from the power line.*

Click for fourth sub-bullet.

- *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.*

Click for next slide.

Slide 10

Begin when title appears.

- *Be aware of overhead power lines. In some cases, other hazards such as fire make it impossible to stay on the energized equipment until utility personnel give the all clear.*

Click for first bullet.

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

Click for first sub-bullet.

- *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.*

Click for second sub-bullet.

- *Shuffle away with small steps, keeping both feet together and on the ground at all times.*

Click for third sub-bullet.

- *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.

Click for next slide.

Slide 11

Begin when the title appears.

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

Click for first bullet.

- *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.*

Click for second bullet.

- *Secure the area.*

Click for first sub-bullet.

- *Keep yourself and the public at least 30 feet away from fallen power lines. Always remember that objects and even the ground near downed lines may also be energized.*

Click for second sub-bullet.

- *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.*

Click for third bullet.

- *Never touch or attempt to move fallen lines or objects contacting them. Doing so endangers you and incident victims. Contact Duke Energy immediately so they can de-energize the scene.*

Click for fourth bullet.

- *Never use a solid water stream to fight fires near downed lines. If you must use water to extinguish a fire near downed lines, use only a fog or spray, and be extremely cautious.*

Click for next slide.

Slide 12

Begin when the title appears.

- *Use extra caution near downed power lines. 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.*

Click for first bullet.

- *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 electric shock. Becoming a victim yourself puts everyone in greater danger.*

Click for first sub-bullet.

- *Call Duke Energy immediately. They will respond quickly and de-energize the scene.*

Click for second sub-bullet.

- *Instruct victims to drive the vehicle away from the line if this can be done safely. Keeping your distance, find a position where passengers can see you without exiting or moving around inside the vehicle and attempt to reassure them.*

Click for third sub-bullet.

- *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 electric shock. Tell them utility personnel are on the way to turn off the electricity; to stay put; and to try to relax. If passengers are injured or panicked, talk with them, keep them calm and alert, and use the wait time to prepare medical assistance.*

Click for next slide.

Slide 13

Begin when the title appears.

- *Use extra caution near downed power lines. In some cases, fire or other hazards make it impossible for victims to remain in the vehicle.*

Click for first bullet.

- *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.*

Click for first sub-bullet.

- *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.*

Click for second sub-bullet

- *Tell them to shuffle away keeping both feet together and on the ground at the same time. Emphasize that they must not run or take long steps.*

Click for third sub-bullet.

- *Demonstrate the proper procedure from a distance. Show occupants how to perform the jump-and-shuffle procedure from a visible distance before they attempt their escape.*

Click for second bullet.

- *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.*

Click for next slide.

Slide 14

Begin when caution graphic appears.

- *Substation fires. Substations present specific risks.*

Click for first bullet.

- *Burning electrical equipment is already ruined and will be replaced. The safest course of action is to let it burn.*

Click for second bullet.

- *Contact Duke Energy and wait for their personnel to arrive. Never attempt to enter a substation without utility personnel present.*

Click for third bullet.

- *Evacuate the area and keep everyone at least 300 feet away from the substation. Your most important responsibility in these types of emergencies is to protect the public.*

Click for fourth bullet.

- *Electrical equipment contains oil. Be alert for explosions and toxic smoke.*

Click for fifth bullet.

- *Protect area exposures to prevent the fire from spreading. Once the area is evacuated, focus on defending nearby property and green space.*

Click for last bullet.

- *If an equipment fire must be suppressed, utility personnel and the incident commander will tell you how to proceed.*

Click for next slide.

Slide 15

Begin when title appears.

- *Transformer fires. Burning transformers call for similar procedures as substation fires.*

Click for first bullet.

- *Do not open or enter switch cabinets or pad-mounted transformers such as this one. This is very dangerous and unnecessary.*

Click for sub-bullet.

- *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.*

Click for second bullet.

- *Call Duke 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.*

Click for last bullet.

- *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.*

Click for next slide.

Slide 16

Begin when the title appears.

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

Click for first bullet.

- *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.*

Click for second bullet.

- *Whenever you suspect electrical infrastructure is involved or when in doubt, call Duke Energy. They want to help you keep you and the public safe.*

Click for third bullet.

- *Hands off electrical systems.*

Click for first sub-bullet.

- *Never attempt to disconnect electrical service.*

Click for second sub-bullet.

- *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.*

Click for fourth bullet.

- *Assume all power lines are energized, and keep yourself and your equipment at least 10 feet away.*

Click for fifth bullet.

- *Even low-voltage electric shock can be fatal, and remember, your gear does NOT insulate you against electric shock.*

Click for last bullet.

- *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.*

Click for next slide.

Slide 17

Begin when the title appears.

- *For Customer emergencies, call the public numbers.*
- *For First Responder emergencies, call the non-published number provided to you by Duke Energy.*
- *For additional information, visit Duke Energy's website at www.duke-energy.com/publicsafety/firstresponders*

Click for the final slide.

Slide 18

- *Thank you for your attention.*

Take questions and begin discussion.

The Trainer's Guide includes more detail about how electricity works, when to contact Duke Energy, what sort of materials and objects conduct electricity, jump-off procedure, 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.

Consider some of the suggested simulations or use your own.

Duke Energy *thanks you for helping to keep first responders safe.*

Click to clear screen.

Bring up the lights.