



# *Best Practices Identified at the* **2024 UAA Florida Safety Summit**

March 6 & 7, 2024





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# Welcome & Safety PSA Video

- Thomas Moore; TECO
  - Welcome and intro UAA Step and Touch PSA
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# UAA Safety PSA Video





# **Trees Under Tension; Tim Walsh, The Davey Tree Expert Company**







# **Step & Touch Potential; Steve Harrison and Curtis Korabek, Trees LLC**

# ELECTRICAL SAFETY



## Step and Touch Potential

Always stay away from low or downed powerlines.  
Always assume they are **LIVE** - meaning **energized**.

**30 FEET** is the minimum safe distance - about the length of a school bus.



# Effects of Current on the Body

EFFECT ON THE BODY	CURRENT LEVEL THROUGH THE BODY	
	MEN	WOMEN
Perception Threshold	0.001 Amps (1 mA)	0.0007 Amps (0.7 mA)
Painful Shock	0.009 Amps (9 mA)	0.0012 Amps (1.2 mA)
Cannot Let Go level	0.010 Amps (10 mA)	0.010 Amps
Ventricular Fibrillation	0.100 Amps (100 mA)	0.100 Amps
Heart Failure	0.500 Amps (500 mA)	0.500 Amps
Organ Burn and Cell Breakdown	1.5 Amps (1500 mA)	1.5 Amps



EXPOSURE TO  
CURRENT FLOW  
CAN BE  
**FATAL**

**Step Potential Hazard** – Step potential is the voltage between the feet of a person standing near an energized grounded object. The hazard occurs when two points of contact (like your feet) are in different voltage zones. Voltage values that are equal do not pose the same danger.

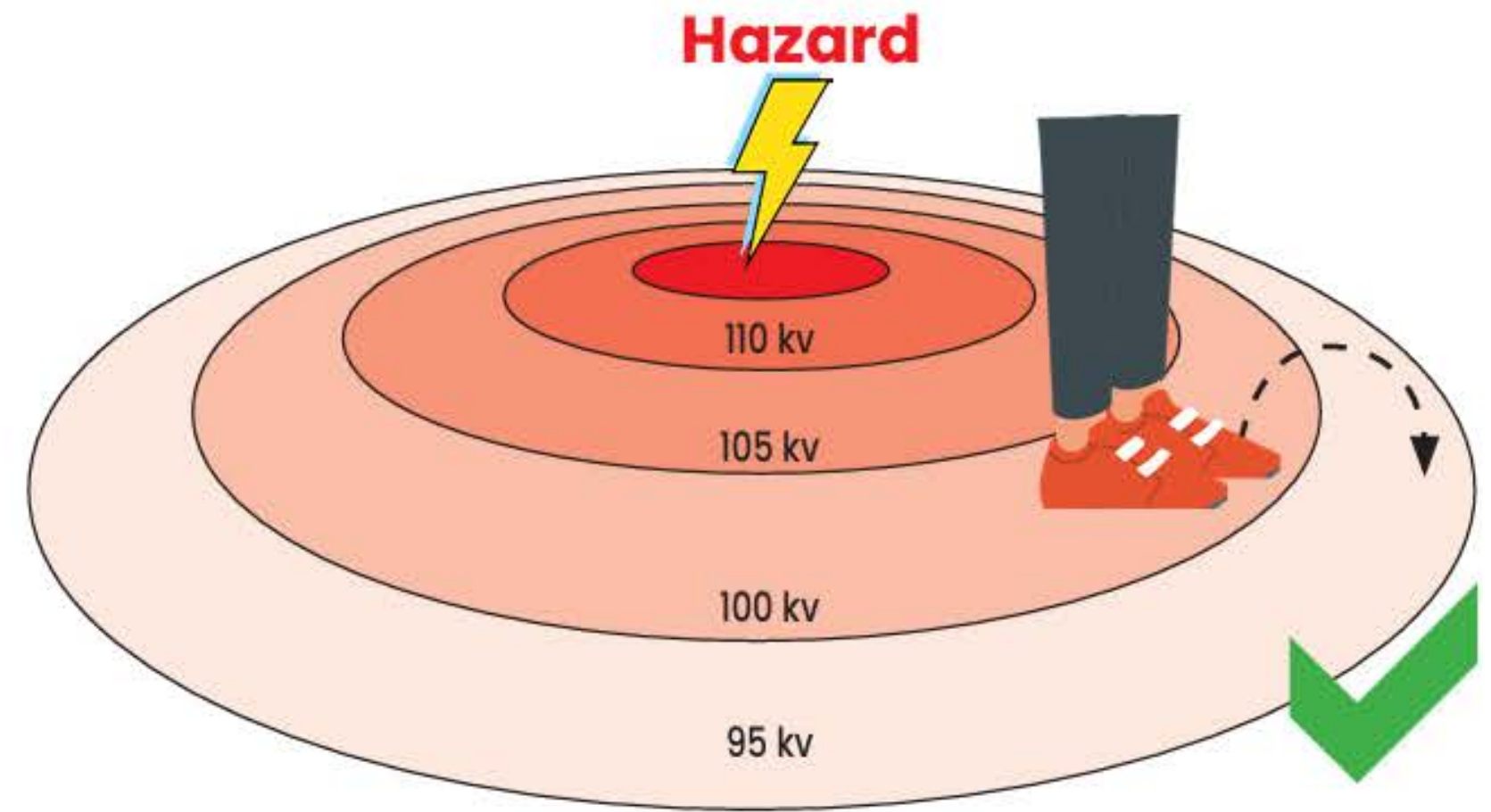
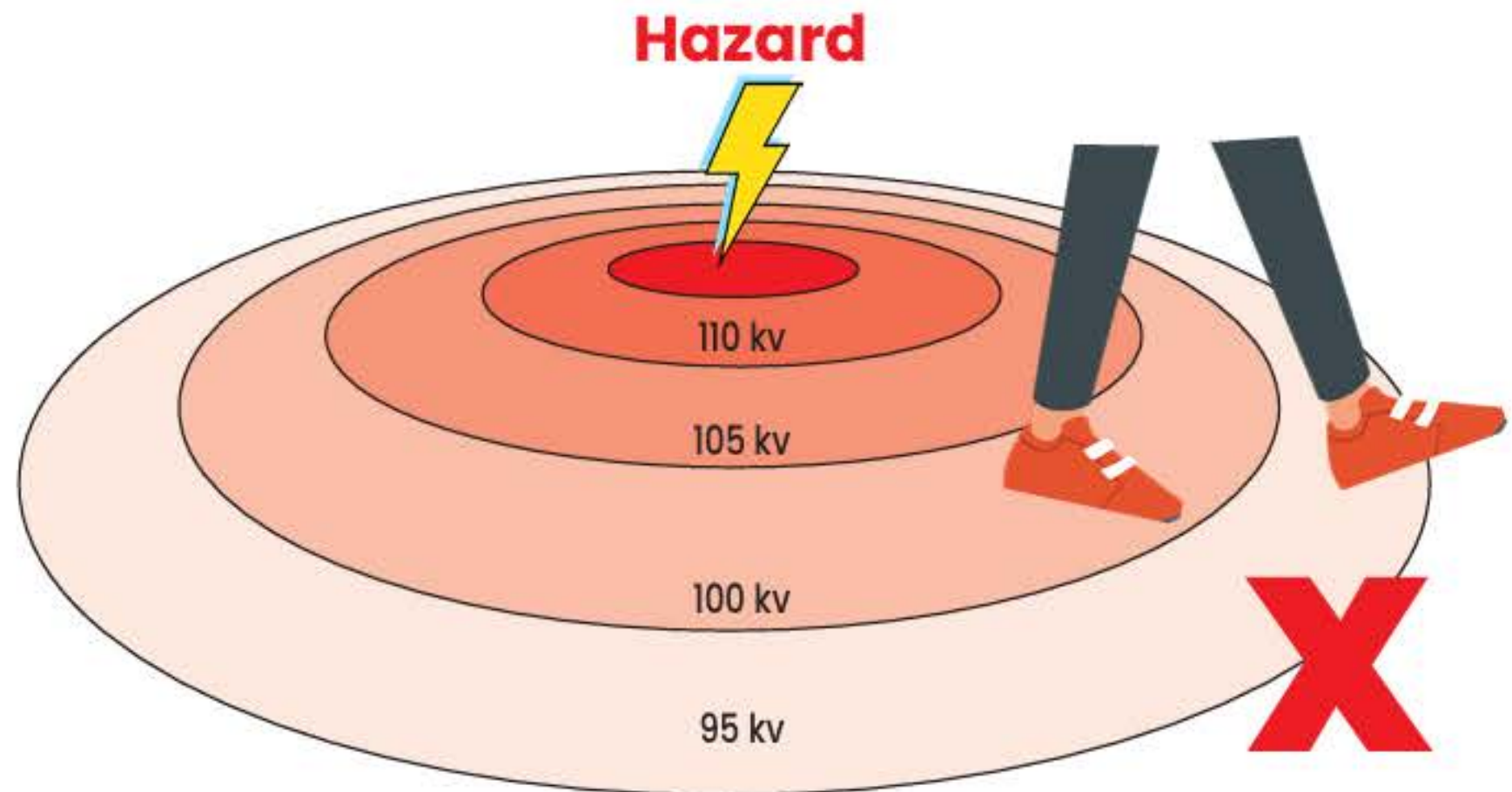
If you are **near** an **electrical hazard**, it's **best to stay put until help comes.**

If you are in **immediate danger**, for example near a fire, and **must move...**



**NEVER WALK or RUN AWAY**

**SHUFFLE or HOP to safety**



kv=kilovolt

If you're in an accident with a car or other vehicle near a downed power line, stay in the vehicle. A first responder will tell you when it's safe to get out. Keep in mind, it is OK to use your cell phone from inside your car.

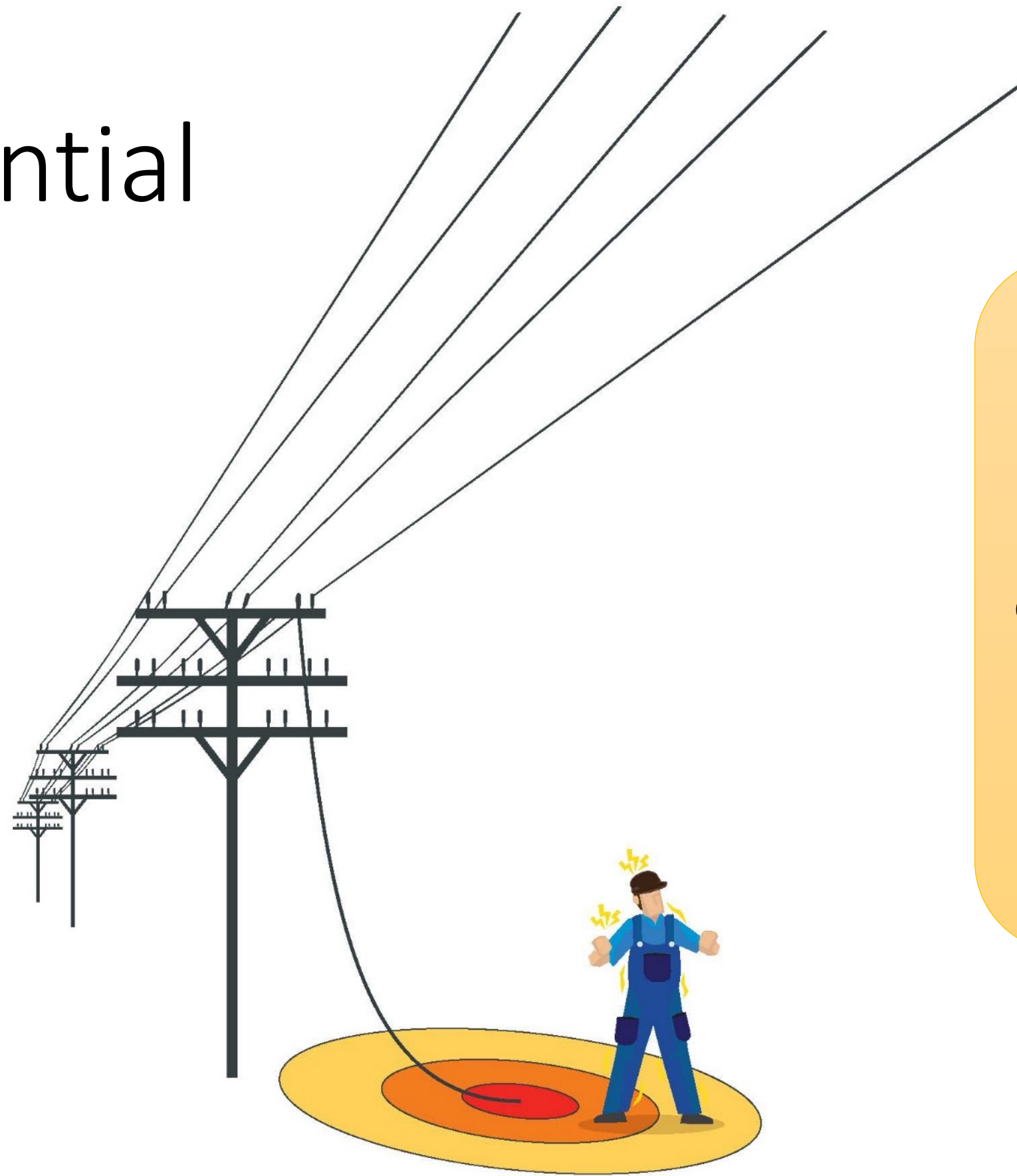
If there's a fire or other emergency forcing you to exit the vehicle, there is a special procedure to follow when moving to safety:

- \*Open the door and jump clear of the car. Never have one foot touching the ground and the other in the car. Land with both feet together.

- \*Immediately shuffle or hop away from the vehicle. Keep your feet as close together as you can, so the voltage stays the same.

- \*Once you are as far away as possible from the vehicle, call 911 immediately and report the emergency.

# Step Potential



Step potential is the voltage between the feet of a person standing near an energized grounded object (the electrode). A person could be at risk of injury during a fault simply by standing near the object.





Standing or walking near a downed power line can be just as dangerous as touching the line – a hazard called step potential.

Step potential is the danger present when two parts of your body (usually your feet) are in two different voltage zones. This difference in voltage causes the current to run through you and shock you, which can be fatal.



**STEP POTENTIAL**

A conductive path may be a tool, tree limb, cable, truck or any object capable of transferring electricity.

# Step Potential

When electricity makes its path to ground, the earth becomes "hot" and the voltage dissipates in concentric circles from the point of contact

14 kV

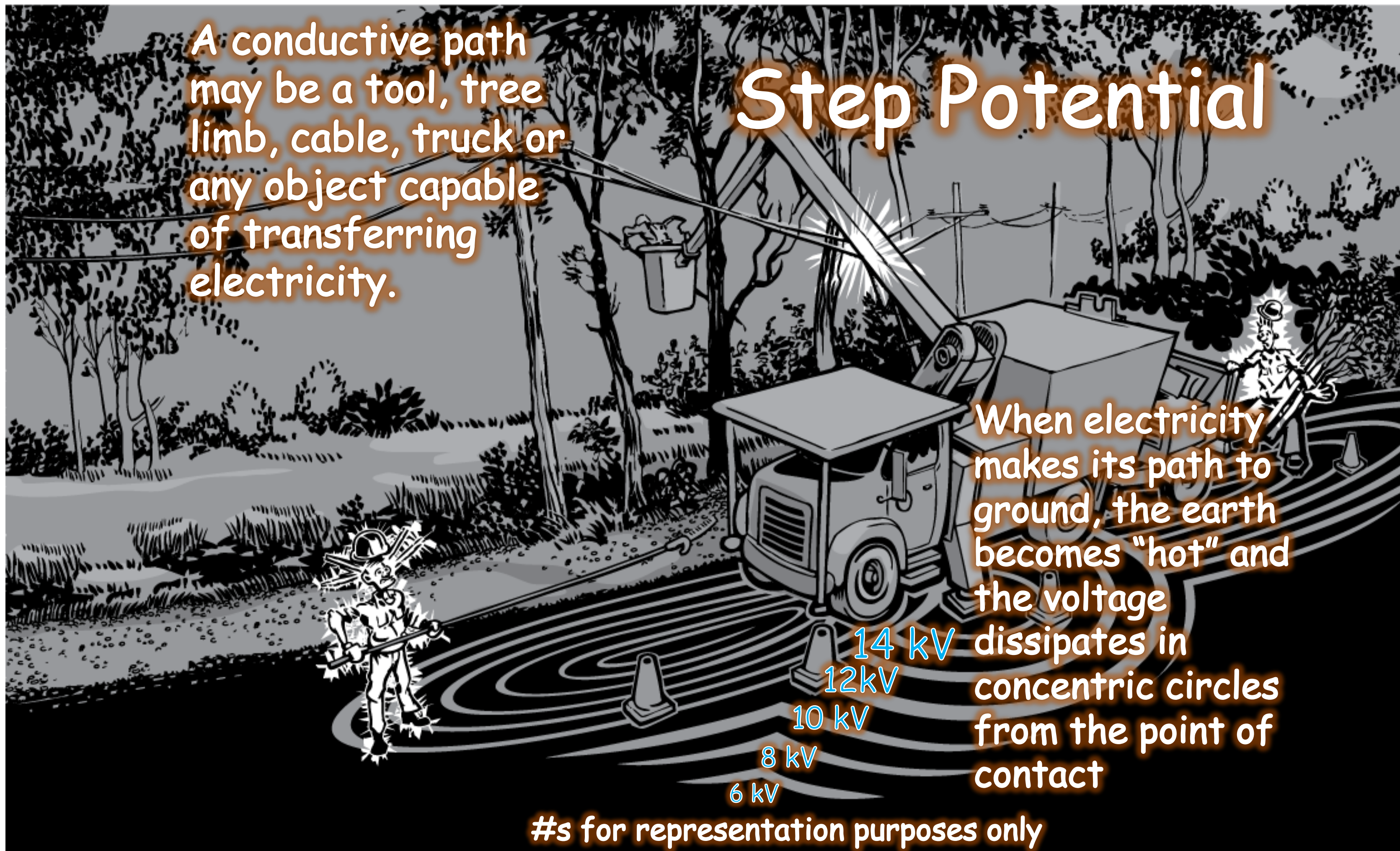
12 kV

10 kV

8 kV

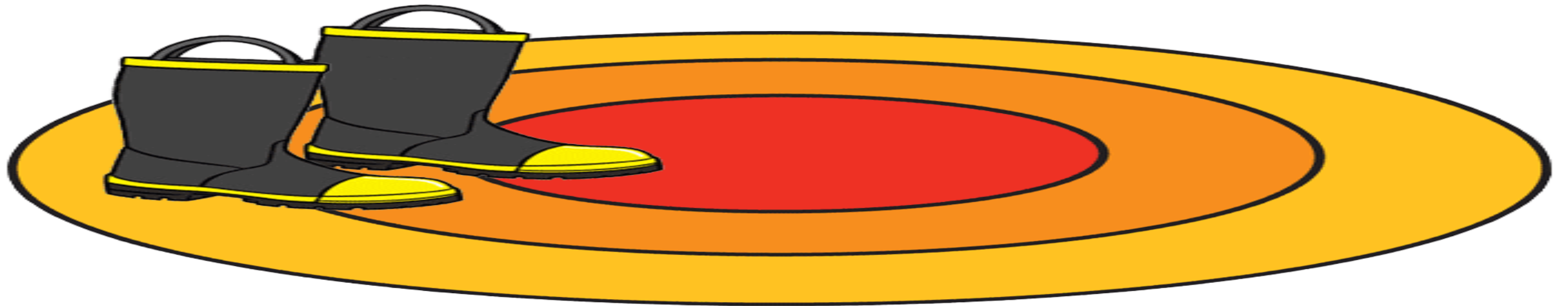
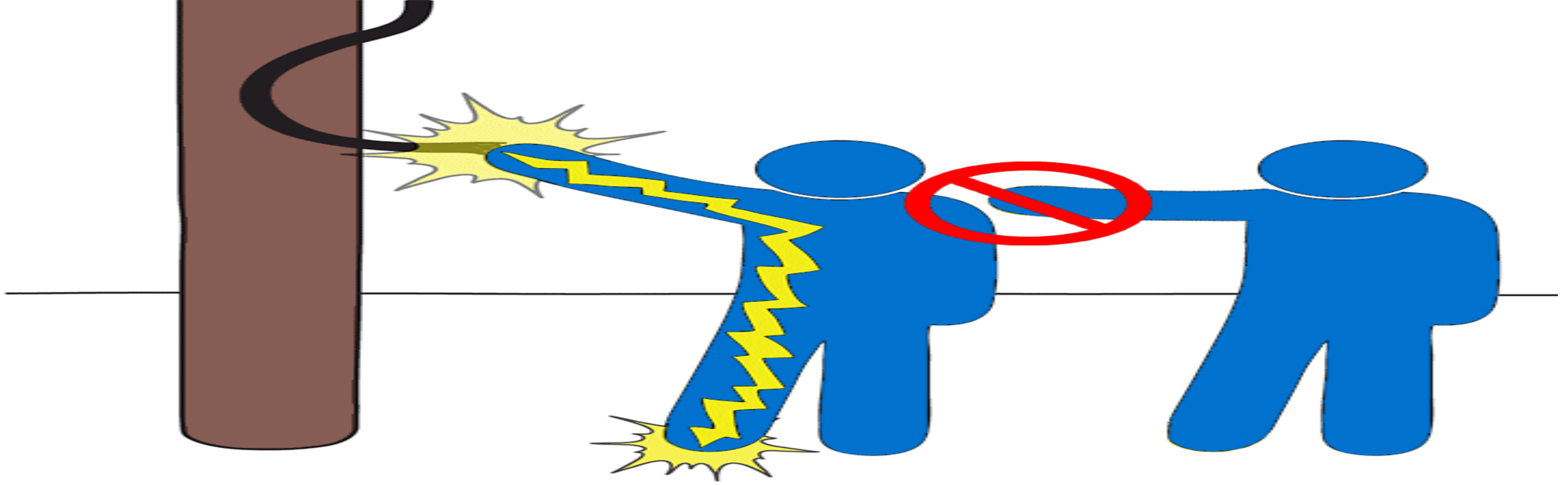
6 kV

#s for representation purposes only





**FOLLOW YOUR EMPLOYER'S RULES  
TO HOP OR SHUFFLE-STEP AWAY**



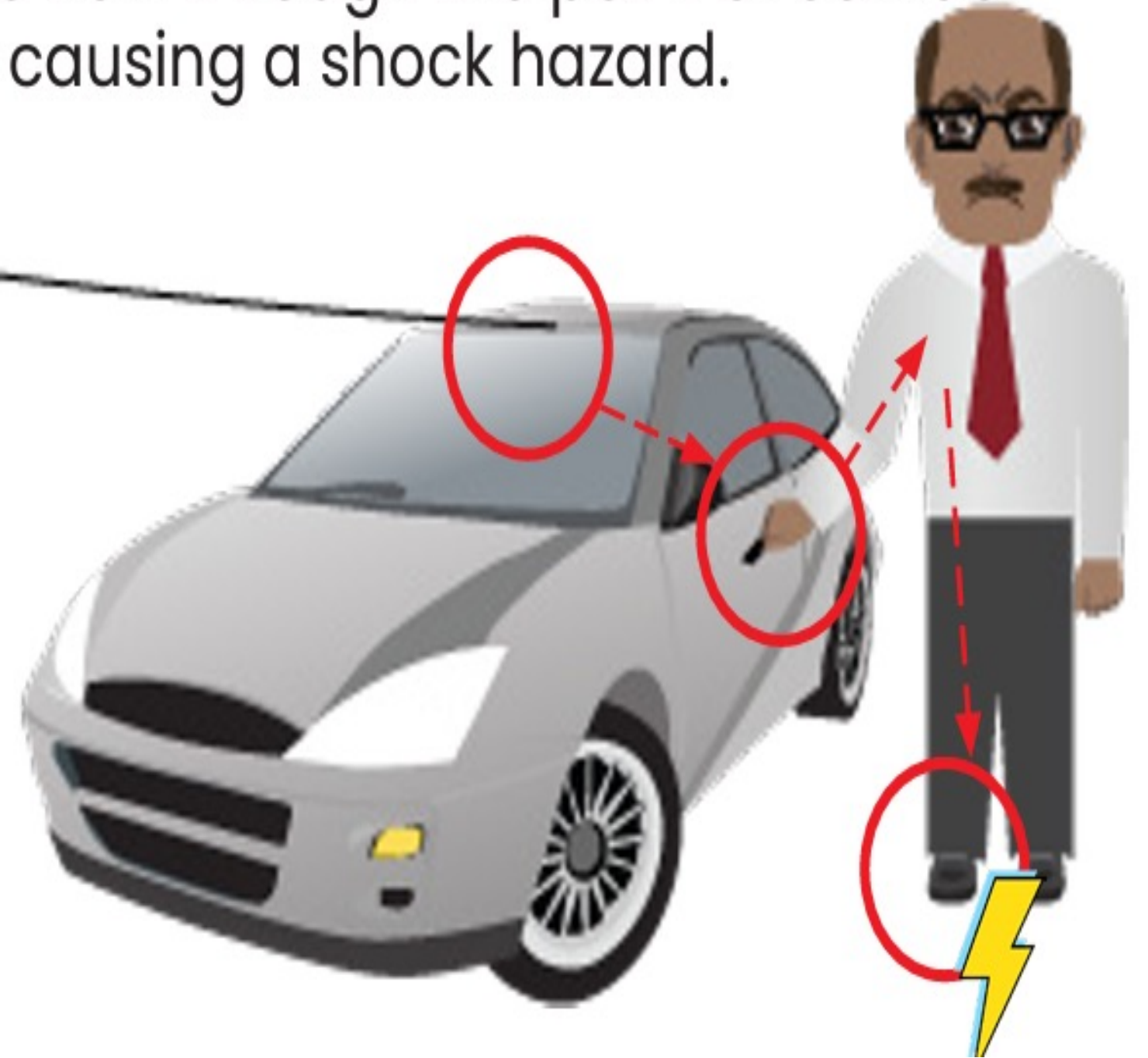


**TOUCH POTENTIAL**



**Touch Potential Hazard** – Touch potential is the difference in voltage between the energized object and the person in contact with it. The difference in voltage causes the current to flow through the point of contact and into the ground causing a shock hazard.

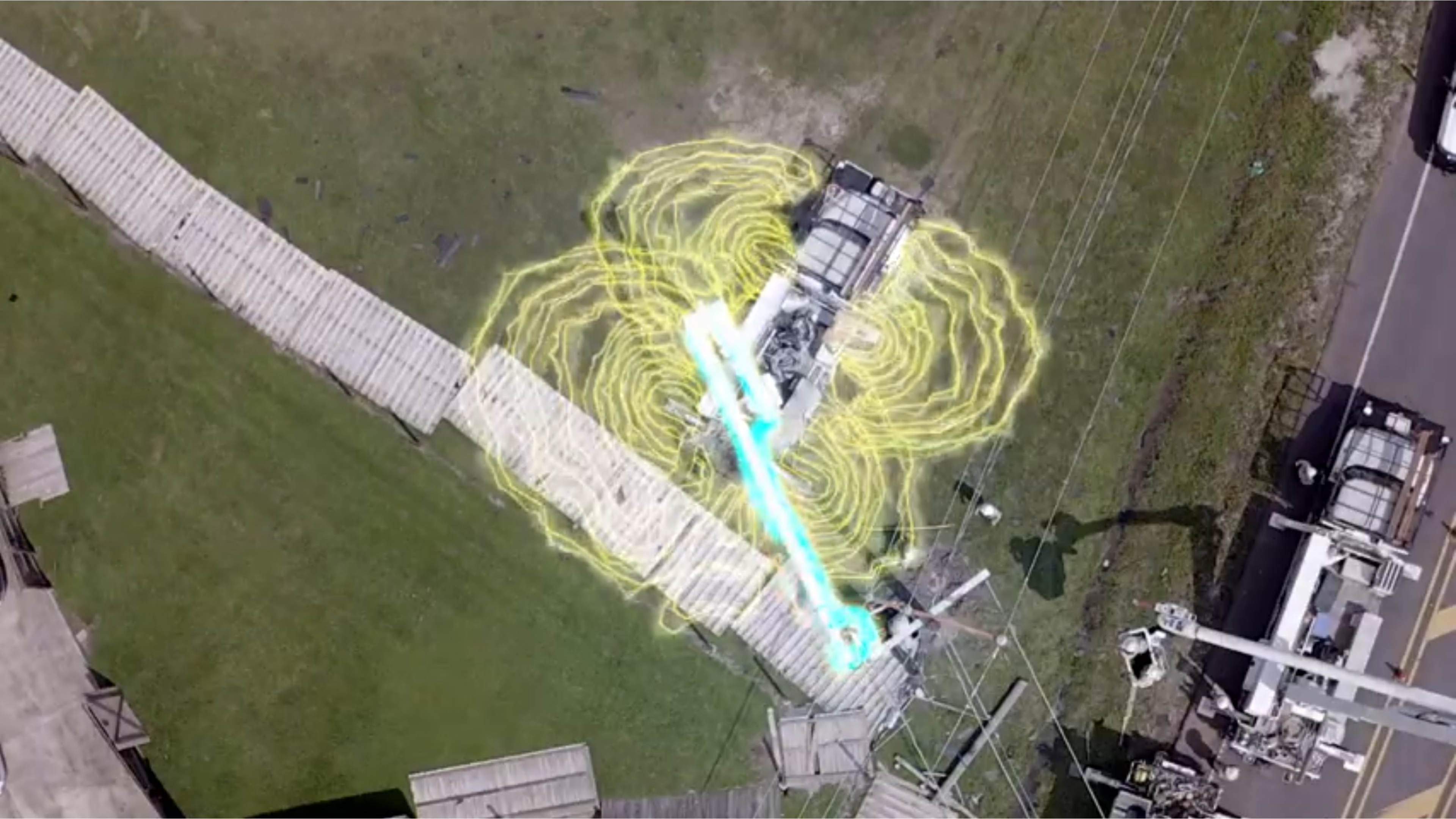
For example, if an overhead conductor falls on a car, and a person touches that car, current could pass from the energized car through the person to the ground.











Whenever you see downed or malfunctioning power equipment, you need to worry about step and touch potential.

Broken power equipment can feed electricity directly into the ground, charging the earth beneath your feet. If you have one foot closer to the source of the charge than the other, you can be shocked.

If you see a downed power line or other piece of broken equipment, be sure to stay as far away as possible. Call 911 and keep your distance until they make the area safe for everyone.



**DO NOT TOUCH SIGNS, POSTS, TREES OR  
OTHER NEARBY OBJECTS**



**AVOID STEP AND TOUCH POTENTIAL HAZARDS**

An aerial photograph of a residential street. A utility truck with a long boom is parked on the right side of the road, facing away from the camera. The boom is extended upwards. Several workers in high-visibility vests are visible on the grass and near the truck. A yellow banner with black text is overlaid at the bottom of the image. The street is lined with trees and houses. A white house is visible on the left side of the road. A car is driving on the left side of the road. A stop sign and a fire hydrant are visible on the right side of the road.

**KEEP UNINSULATED PORTIONS OF EQUIPMENT  
OUTSIDE MINIMUM APPROACH DISTANCE**



**CONSIDER THE GROUND AND CHASSIS ENERGIZED**



**GROUND WORKERS SHOULD STAY CLEAR OF UNIT  
AND ATTACHED EQUIPMENT**



A construction worker wearing a white hard hat, safety glasses, and a safety harness is operating a large orange piece of machinery. The worker is positioned on a white bucket or platform. The machinery has a prominent orange vertical beam and a grey mechanical component. The background is a blurred outdoor construction site.

**KEEP UNAUTHORIZED PERSONNEL  
OUTSIDE THE WORK AREA**

An aerial photograph of a utility site. In the center, a large piece of equipment, possibly a transformer or a large generator, is being worked on. Several workers in high-visibility vests and hard hats are visible around the equipment. The site is surrounded by green grass and some trees. The background shows a road and more utility lines.

# **YOUR EMPLOYER MAY REQUIRE OTHER PROTECTIVE MEASURES**

**POSTING OBSERVERS**

**ESTABLISHING  
EQUIPOTENTIAL ZONES**

**BONDING, GROUNDING, AND  
BARRICADING EQUIPMENT**

**USING GROUND MATS**

**USING INSULATING  
PROTECTIVE EQUIPMENT**



**Break**



# Live Line Best Practices

## Mike Smith, NG Gilbert





1. The starting & stopping of electron flow through the length of a conductive path is virtually instantaneous (speed of light - 186,000 mps) from one end of a conductor to the other.
2. Direct/Indirect contact- Both are likely fatal
3. Entry wound/exit wound- Extreme injuries; pictures
4. Step Potential; Concentric rings radiating from point of contact with earth. Can extend in excess of 60 feet.
5. Conductive tools/Non-conductive tools; be sure that they are clean dry
  - The human body is considered conductive because of the minerals and water that is in the body.
6. Always maintain proper MAD:
  - Qualified Line clearance/Must be working under contract with utility.
  - Non- Qualified If not, trained personnel are incidental.
7. Large impact on what we do every single day
8. Back feed; Incorrect generator connection; voltage feeds back through transformer to primary voltage.
9. Z133: Section 4 Electrical Hazards
10. Treat all wires as energized
  - Requesting grounds
11. If you can't do the job safely, don't risk it.
12. Remember, when electricity is involved, your life is on the line!
13. Who do you do Safety for?







# **Human Performance Best Practices**

## **Annie Fletcher, Duke Energy (Retired)**



1. Be in the moment / Mindful moment/ Situational awareness
2. Collaborative Culture is critical
  - Be able to share your failures and learn from them so you can relate to others as well.
3. Cultural Differences: each generation has a different thought of what they can or cannot share or talk about:
  - Baby boomers
  - Gen x
  - Millennials
  - Gen z
4. The Seven R's
  - Respect
  - Relevance
  - Revenue
  - Rewards
  - Recognition
  - Responsibility
  - Relaxation



5. Workplace safety / Being able to speak up
6. Time based / Time factor of how the stress of work effects us
7. Redoing a job briefing/re-evaluate your surroundings and take in what's changed
  - Which rules do you want people to follow so “walk the walk if you are talking”
8. Pre & post job briefings:
  - Post job almost feels more important
  - Lessons learned and share from what did and did not work from the day
9. Important Actions:
  - Stop
  - Think
  - Act
  - Review

## It's about people and behaviors

1. How we respond is based on our experiences and influences
2. Organizations will have a culture (Collaborative, Punitive, Control Bases, etc).
3. Collaborative Workplace Culture:
  - Being able to share our events, near misses is critical so others can benefit from our experiences.
  - Lead by Example – Which rules do you want your team to follow?
  - Encourage Open Communications
  - Teamwork
  - Share Lessons Learned – Being able to speak up.
  - Respect Others Point of View
  - Respect and encourage sharing of ideas, events, near misses and lessons learned.
4. Our teams are from individuals across the globe. We have a broad spectrum of age differences, cultures and life experiences. Respect that!!

## It's about people and behaviors

5. Each generation has different thoughts and life experiences. (Baby boomers, Gen X, Millennials and Gen Z)
6. Most individuals want the same thing - 7Rs - Respect, Relevant, Revenue, Recognition, Reward, Responsibility & Relaxation
7. Using HP Tools
  - Be Mindful and in the Moment
  - Conduct pre-job brief, but revisit when the situation changes. Re-evaluate your surrounding and take in what has changed.
  - Post job briefing almost feels more important – sharing what worked and did not work from the day.
8. Important Actions – Stop, Think, Act, Review (STAR)



# **Contractor Safety Management Best Practices**

## **Barrett Higgins;**





1. Used to be a hands-off thought process to now it is a contractor safety managed focus
2. Everyone has the responsibility to say something if they feel or think something is unsafe
3. Joint investigations
4. Contractor and utility together
  - What happened and how can we correct
5. Let everyone speak up / Give space to talk about things
6. Don't degrade new guy
7. Speak up and say if it is unsafe
8. Any injuries you must report immediately
9. What is high energy risk and access it: Refer to Energy Wheel
  - Powerline
  - Tees
  - Heights
  - High energy impact
  - Heavy equipment
  - Classifying line clearance vendors as high risk
10. ISNetworld (<https://www.isnetworld.com/en/>)
  - What is it
  - How do you get in
  - What to do if a contractor is not a vetted ISN organization
  - Research it and see what works for your organization
11. Subcontractors
  - Held at the same standard as contractors





# **Aerial Lift & Life Support Critical Components Best Practices Brandon Betts, Wright Tree Service**

1. Rotation Bearing bolts and unit mounting bolts (also known as huck bolts depending on year/model) must be checked daily
2. There are 6 to 8 stabilization points on most tree lift units (outriggers/ tires/tracks)
3. Tires must meet DOT compliance standards/tread height, no cuts exposing steel plies etc.
4. Level indicators shall be legible(operable) units need to be set up within 5 deg front to back and side to side before outrigger placement. (Most manufactures/units do not guarantee stability if set up out of parameters)
5. Lanyard attachment points shall be serviceable/not bent or obstructed, only body attachment lanyards are permitted to be connected.
6. All control decals shall be legible
7. Interlock devices and emergency stops shall be operable/properly functioning.
8. Check all other components before use daily
9. Don't be afraid to say no if something looks or feels unsafe
10. Once you see it ..... You own it





# **Chainsaw Safety Best Practices**

## **Reinier OdioRuiz, Wright Tree Service**



1. The electric chainsaw is evolving
  - They now have a clutch.
  - Has more power and has an overload protection.
2. 36000 people injured every year (CDC)
3. Read the operators manual.
  - How to use it
  - How to maintain it
  - Go online and review
4. Active vs passive Safety features
  - **Passive** does not need user interaction (like the inertia brake)
  - **Active** requires user interaction (like the on/off switch)
5. Proper PPE
  - Chaps (if the interior strands are damaged on the chaps they are to be discarded and replaced)
  - Eye protection (Safety Glasses Z87.1).
  - Ear protection (Earplugs or Earmuffs)
  - Cut resistant Gloves when doing maintenance.
  - Hardhat or Helmet Z89.1 Class E.
6. Site hazards
  - Check around you
  - Situational awareness
7. Review how to start the saw properly:
  - Start it on the floor / supporting start
  - Leg lock
  - Properly use of the chain brake.

8. Proper Red Tag procedure
  - FOLLOW IT
  - Take the bar and chain off and put the cover back on it
  - Communicate to the crew members.
9. Kickback zone on the saw.
  - Avoid the area of the tip of the bar.





# Closing comments and Adjourn





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