



Electrical Transmission & Distribution Partnership

Continuing Education Training

Presenter Guide – Q3 – Line of Fire – Pole Handling

Introduction:

This **Line of Fire – Pole Handling** Refresher course is a presenter (supervisor, safety professional) process. The presenter may choose to augment the material with videos, handouts, or other media to enhance the learning experience. The presenter may want to incorporate visual aids to enhance the presentation.

Using this material in combination with practical experience, good presentation skills and knowledge of adult learning techniques, the presenter has a greater opportunity to deliver the information.

Edgar Dale stated that 2 weeks after a learning event, adult learners remember:

- 10% of what they read.
- 20% of what they hear.
- 30% of what they see.
- 50% of what they see and hear.
- 70% of what they say.
- 90% of what they say while performing a task.

Microsoft® PowerPoint® combined with good instructional skills and instructor/student dialogue work strongly in the fifty to seventy percent range. PowerPoint® presents the information to the attendee and the instructor summarizes the content of the slides. It is critical to engage and involve the attendee in the process. Ask open-ended questions that will elicit conversation and discussion but be cautious to maintain control of the discussion.

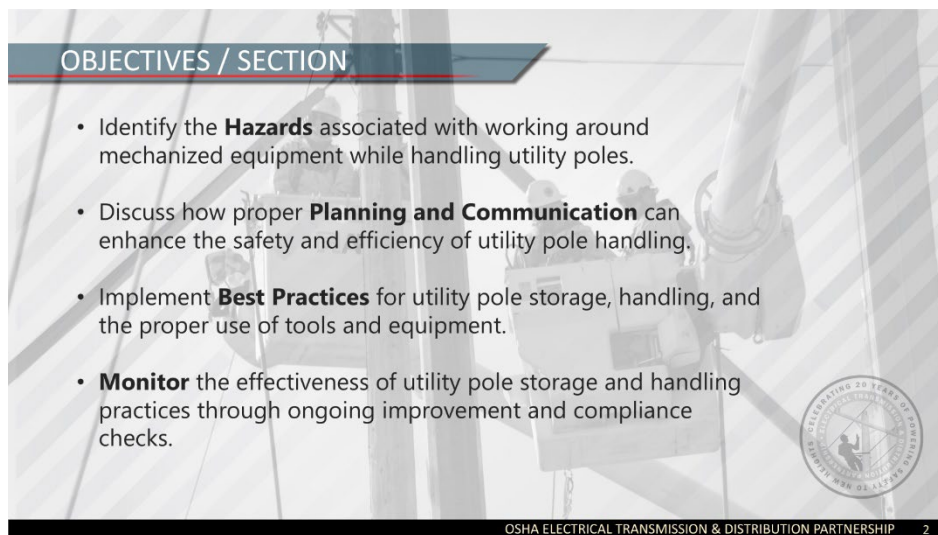
Conversation and scenarios are good but can cause the discussion to run long. If it seems like the group is losing focus during the course, the presenter can direct the group back on track by using comments like "Good discussion, but let's get back to the subject at hand".

Another tool is the "Parking Lot" which is simply a newsprint chart or dry erase board or note pad where the presenter records questions/discussion points not answered or addressed during the meeting and that may require more research. It is vital to capture any ongoing discussions or questions on the "Parking Lot" and follow up when the information is known.

Deliver this refresher during the third quarter of 2025. Delivery time is approximately 45 minutes to 1 hour, in one setting or divided- up into three, 15-to-twenty-minute settings. The presenter may deliver the topic in a formalized meeting room setting using the PowerPoint slide deck or by using the three key point sheets (located at the end of each session) as in a tailgate safety talk. **It is critical that the facilitator makes him or herself familiar with the material prior to delivery.**



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The primary goal of this training program is to enhance the safety and efficiency of employees working around mechanized equipment and handling utility poles. By focusing on key objectives, the program aims to create a safer work environment, reduce the risk of accidents and injuries, and improve overall operational efficiency.

The objectives of the training program are as follows:

1. **Identify the Hazards Associated with Working Around Mechanized Equipment and Handling Utility Poles:** This includes recognizing risks such as line-of-fire, pinch points, stored energy, inadequate tool use, poor visibility, environmental factors, and electrical contact with overhead lines.
2. **Discuss How Proper Planning and Communication Can Enhance the Safety and Efficiency of Utility Pole Handling:** Emphasizing the importance of pre-job risk assessments, job safety analyses, scheduling, coordination, effective communication techniques, team coordination, and regular briefings.
3. **Best Practices for Utility Pole Storage, Handling, and the Proper Use of Tools and Equipment:** Focusing on proper stacking, clear walkways, lighting, use of approved equipment, safe lifting techniques, exclusion zones, proper tool selection, tool maintenance, and hands-on training.
4. **Monitor the Effectiveness of Utility Pole Storage and Handling Practices Through Ongoing Improvement and Compliance Checks:** Conducting regular field audits and inspections, providing feedback, updating training materials, offering ongoing training, and encouraging incident reporting and analysis.

By addressing these objectives, the training program ensures that all employees are well-equipped with the knowledge and skills necessary to perform their duties safely and effectively.



Hazard Identification

- Using the Energy Wheel, we can better understand the various energy sources associated with working around mechanized equipment and handling utility poles, including:
 - Line-of-Fire Risks
 - Pinch Points
 - Stored Energy
 - Electrical Contact with Overhead Lines
 - Other Hazards and Considerations
 - Handling
 - Transport
 - Properly Rated Tools
 - Visibility and Environmental Factors





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Explain that the energy wheel can be used to identify the various energy sources associated with working around mechanized equipment and handling utility poles. For example, when analyzing the task of loading and unloading poles in a utility environment, we can expect to see motion, gravity, mechanical, and electrical hazards.

- **Line-of-Fire Risks:** Employees can be struck by moving equipment or falling objects, such as poles or pole pieces.
- **Pinch Points:** Areas where body parts can be caught between moving parts of equipment or between equipment and stationary objects.
- **Stored Energy:** Equipment or materials that retain energy, such as elevated poles, can release that energy unexpectedly, causing injuries.
- **Inadequate Tool Use:** Using tools or equipment for purposes other than their intended use can lead to accidents.
- **Poor Visibility:** Operators may have obstructed views, leading to accidents if they cannot see other workers or obstacles.
- **Environmental Factors:** Uneven terrain, weather conditions, and other environmental factors can increase the risk of accidents.
- **Electrical Contact with Overhead Lines:** Working near overhead power lines poses a risk of electrical contact, which can result in severe injuries or fatalities. Proper clearance and awareness are essential to prevent accidental contact with live wires.



Planning & Communication

Proper planning, clear communication, and the use of appropriate tools and equipment can create a safe work environment, minimizing risks and ensuring smooth operations.

- **Pre-Job Risk Assessments**
- **Yard and Jobsite Preparation**
- **Daily Job Briefing and Job Safety Analysis (JSAs)**
- **Scheduling and Coordination**



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1. Pre-Job Risk Assessments

- Conducting thorough risk assessments before starting any job is crucial to identify potential hazards and plan the safest method to accomplish the task.
- This involves evaluating the work environment, identifying potential risks (e.g., unstable pole piles, overhead power lines), and determining the necessary precautions and equipment to mitigate these risks.
- A comprehensive risk assessment ensures that all potential hazards are addressed and that appropriate safety measures are implemented, reducing the likelihood of accidents and injuries.

2. Yard and Jobsite Preparation

- Inspect the yard and job site to ensure they are well-lit, clean, and free of identified hazards.
- Whenever possible, design the storage layout to eliminate the need for climbing on pole piles and ensure adequate clearance for safe handling.
- Place clear and visible signage to guide workers and delivery drivers, ensuring proper communication and adherence to safety protocols.
- Proper preparation of the yard and jobsite creates a safe and organized work environment, minimizing risks and improving efficiency.

3. Daily Job Briefing and Job Safety Analysis (JSAs)

- Developing detailed JSAs that outline each step of the task, including potential hazards and required safety measures.
- Break down the job into individual steps, identify potential hazards associated with each step, and specify the safety measures and equipment required to mitigate these hazards.
- JSAs provide a clear and structured approach to job planning, ensuring that all safety considerations are addressed and communicated to the team.

4. Scheduling and Coordination

- Effective scheduling and coordination are crucial for the procurement and delivery of poles.
- Ensuring proper communication with delivery companies and utilities about best practices for wood pole storage helps prevent accidents and mishaps.
- Poles should be organized by size and placed on cribbing to prevent unnecessary movement, which can lead to injuries or equipment damage.
- Clear signage at storage areas instructs delivery drivers to contact company representatives before offloading poles, ensuring that poles are placed correctly and further emphasizing the importance of coordination.



Storage

- Limit the height of pole piles to prevent rolling.
- Use dedicated piles/bunks based on type/size.
- Consider using bunks when storing poles that are more than two rows high.
- Stanchions must support both vertical and horizontal loads.
- Pole bunks can eliminate the need for employees to climb on pole piles.



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- Store poles in designated locations according to their size and type.
- Pole bunks prevent poles from rolling when stored more than two rows high.
- Ensure that stanchions used on pole bunks can support both vertical and horizontal loads.
- Reinforce that proper storage and sorting of poles is a preventative control that can eliminate the need for employees to climb on pole piles.



Storage

- Clearance around pole piles
- Housekeeping around piles
 - Debris & lighting



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Consider the following when storing poles.

- Provide adequate clearance for walking and vehicles.
- Ensure the storage area is well-lit, clean, and free from debris.
- Ensure walkways around storage areas are clear of debris and obstacles to prevent trips and falls.
- Maintain well-lit storage areas to improve visibility and reduce the risk of accidents.



Handling – Pole Weight

LENGTH	1	2	3	4	5	6	7	8	9
30	1000	850	730	610	500	420	350	325	250
35	1200	1000	850	750	650	560	470	450	
40	1500	1300	1100	900	800	700			
45	1800	1550	1300	1150	1000				
50	2000	1800	1550	1400	1300				
55	2300	2000	1750	1600	1500				
60	2600	2200	2000	1900					
65	3200	2500	2300	2200					
70	3600	2800	2700	2600					
75	4200	3600	3100	3000					
80	5000	4200	3600	3500					
85	5500	4500	4000						
90	6600	5600	4800						

LENGTH	1	2	3	4	5	6	7	8	9
30	1280	1082	921	784	660	550	454	513	371
35	1567	1343	1155	1004	862	742	646	697	
40	1884	1622	1403	1219	1059	921	807		
45	2222	1911	1664	1444	1274	1114	976		
50	2585	2214	1925	1687	1494	1329	1169		
55	2993	2567	2200	1934	1718	1563			
60	3765	3210	2740	2385	2130	1965			
65	4380	3645	3070	2680	2440				
70	5040	4125	3430	2980	2715				
75	5670	4620	3825	3295					

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Knowing the weight helps prevent overloading equipment, which can lead to accidents and injuries.

Accurate weight information ensures the use of appropriate rigging materials and techniques, reducing the risk of pole failure during lifting.

POLES – AVERAGE WEIGHTS (When furnished to A.S.A. Specifications)

- It should be understood that poles, even within the same class, vary not only in diameter, but in weight.
- It should be understood that moisture content of a pole will also bring about a change in the weight of a pole as well.
- Therefore, the weights given in these tables should be taken as average values only.

Handling – Shell Rot and Decay



- When handling old poles, be aware of the existing hardware and the condition of the pole.
- When possible, remove existing hardware to prevent it from snagging or getting caught on equipment or personnel.
- Decay and shell rot can cause rigging failure and/or load drop.

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Existing Hardware

- **Snagging Risks:** Old poles often have hardware like bolts, brackets, and guy wires that can snag on equipment or personnel, leading to injuries or equipment damage.
- **Removal:** When possible, remove existing hardware before handling the pole. This reduces the risk of snagging and makes the pole easier to manage.

Pole Condition

- **Inspection:** Thoroughly inspect the pole for signs of decay, shell rot, and other structural weaknesses. Decay can compromise the pole's integrity, making it more likely to fail under stress.



- **Handling:** Handle poles with visible decay or shell rot with extra caution. Use appropriate rigging and support to prevent unexpected failures.

Rigging Failure and Load Drop

- **Decay Impact:** Decay and shell rot weaken the pole, increasing the risk of rigging failure. This can lead to load drops, which are dangerous for both personnel and equipment.
- **Preventive Measures:** Use rigging that is rated for the load and condition of the pole. Regularly inspect rigging equipment for wear and damage.

Safety Precautions

- **Proper Training:** Ensure all personnel handling utility poles are properly trained in safe handling practices and aware of the risks associated with old poles.
- **Protective Gear:** Use appropriate protective gear, such as gloves and helmets, to minimize injury risks.
- **Communication:** Maintain clear communication among team members to coordinate movements and ensure everyone is aware of potential hazards.

Handling

- Use proper **Equipment**(Digger derricks, forklifts with attachments) and **Tooling**(Cant Hook/Peavey) for pole handling.
- Utilize proper **Rigging** and **Blocking** to secure poles during lifting.
- Create **Exclusion Zones** to keep workers at a safe distance.



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Equipment & Tooling

- Using the right equipment is essential for safely handling poles. Digger derricks, forklifts with grapple or pole attachments, and traditional tools like Cant Hook/Peavey are all important for this task.

Safe Lifting Techniques

- Safe lifting involves proper rigging and blocking to secure poles during lifting. Clear communication and coordination among team members are crucial to ensure everyone knows their roles and the lifting plan.

Exclusion Zones

- Establishing exclusion zones around areas where poles are being lifted or moved is vital. These zones should be clearly marked with barriers and signage to keep other workers at a safe distance.

By following these guidelines, you can create a safer working environment and reduce the risk of accidents. Do you have any specific questions or need further details on any of these points?

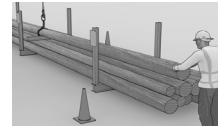


Lifting Poles From Piles with Slings

- To avoid climbing on pole piles, consider the following work method:
 - Ensure **ALL** personnel are clear of the pole pile.
 - Using a wire rope or chain sling, lift the pole from the side approximately 12-16 inches.
 - Place blocking under pole near the balance point*
 - Ensure the pole is secure, then remove the rigging from the end of the pole.
 - Install chain sling at balance point and perform test lift, adjusting if necessary.
 - Keep hands and body parts clear of pinch points when lifting and lowering during adjustments.

*If the pole is not accessible from the ground level, do not climb on the pole pile!

- Ensure all personnel are clear and lift/drag the pole out of the pile.
- Once the pole is lifted/dragged out, the sling can be moved to the desired location on the pole for loading.



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- Inspect the pole pile. Look for stability and signs of shifting or instability in the pile. Identify the pole to be lifted.
- Use a cant hook to ensure the selected pole is free from the pile and not entangled with adjacent poles.
- Ensure no employees are standing on the pole pile at any point in the pole selection or handling process.
- Using a wire rope or chain sling, lift the pole from the side.
- Step away from the load and signal the operator to lift the pole 12-16 inches.
- Place blocking under pole near balance point, step away from the load and signal operator to lower the pole onto cribbing.
- Ensure pole is secure, then remove rigging from the end of the pole.

Tools and Equipment

- Proper Tool Selection:** Ensure employees use the correct tools for the job and do not repurpose tools for unintended uses.
- Tool Maintenance:** Regularly inspect and maintain tools and rigging to ensure they are in good working condition.



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Tools and Equipment

- Each day, before being used, slings, fastenings, and attachments shall be inspected.
- Damaged or defective slings must be immediately removed from service.
- Alloy steel lifting chains must have a documented inspection performed at intervals no greater than every 12 months,
- Remove wire rope slings from service if any defects are found.



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Alloy Sling Inspection Items:

- Missing or illegible sling identification
- Cracks or breaks
- Excessive wear, nicks, or gouges
- Stretched chain links or components.
- Bent, twisted, or deformed chain links or components.
- Evidence of heat damage
- Excessive pitting or corrosion
- Lack of ability of chain or components to hinge (articulate) freely
- Weld splatter
- For hooks, removal criteria as stated below.
- For rigging hardware, removal criteria as stated below.
- Other conditions, including visible damage, cause doubts as to the continued use of the sling.

Wire Rope Sling Inspection Items:

- Sling identification (rating/capacity) tag is missing or illegible.
- On wire rope slings, look for excessive broken wires, kinking, bird caging, crushing, and deformation.
- Broken wires, if there are ten (10) randomly distributed broken wires in one rope lay or five (5) broken wires in one strand in one rope lay, the wire rope sling must be removed from service.
- Corrosion or rust
- Any other conditions, including visible damage which causes doubt as to its strength.



Tools and Equipment



Do Not Choke a Winch Line



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Using a choked winch line reduces its working load by at least 20% due to stress concentration at the choke point, leading to increased wear and decreased durability.

When a rope bends more than 10 degrees or across any surface, the surface diameter should be at least three times the rope diameter to prevent damage.

The eye of the winch line is meant for rigging gear attachment, not the load line.

Transport



Adjustable bolsters should be positioned to reduce or minimize pole movement when cargo securement straps are installed and removed.



• Trailer Selection:

- Use the appropriate trailer for the type and size of the pole.
- Adjust extendable tube pole trailers to the proper length for safe transport.

• DOT Requirements:

- Use bunked, bolstered, or staked trailers for hauling five poles or more.
- Non-bunked trailers can be used for hauling four poles or fewer if they provide adequate stabilization and securement.

• Cargo Securement:

- Effective cargo securement methods vary depending on how poles are loaded.



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The appropriate trailer must be utilized for the type and size of the pole being transported.

This includes ensuring that extendable tube pole trailers have been adjusted to the proper length to accommodate the pole and allow for safe transport.

DOT requires that a bunked, bolstered, or staked trailer be used if hauling five poles or more. A non-bunked trailer can be used if hauling four poles or less allows for adequate stabilization and securement.

Effective cargo securement methods will change depending on how poles are loaded.



Transport Plan & Communication

- Discuss responsibilities before hauling poles
- Perform vehicle and trailer inspection
- Determine the best route of travel
- Review and test communication
- Cargo securement and oversized load permits



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Before hauling poles, review employee responsibilities (qualified drivers, proper licensing, spotter vehicle, passenger spotter, etc.), vehicle inspection (height, length, permits, pole securement, pole trailer lights, flags, pole length, trailer extension, swing radius, etc.), route of travel (vehicle & pedestrian traffic, tight turns, narrow roads, rush hour, etc.), and communication (test and verify radio, hand, or audible signals).

The requirements and process for obtaining oversized load permits vary and may require a special travel route. Circumstances that will result in the need for an oversized load permit include loads greater than 80,000 lbs., 8'6" wide, 13'6" tall, 70' long in combination (ex: straight truck and trailer), or 45' long (straight truck).

When transporting poles on pole trailers, crews should have a lead and shadow vehicle to guard traffic against the pole's swing when taking turns. Communication must be maintained.

between all vehicles. Vehicles should be close enough to keep third-party vehicles from getting between your trucks but far enough away to avoid rear-ending the pole or the lead vehicle.

Displayed a red flag at the trailing end of the longest pole.

When transporting poles after dark, stop lights, taillights, and turn signals must be attached to the trailing end of the load. The end of the longest pole must have a light.

Evaluation and Monitoring

- Are you conducting a Daily Job Briefing to identify hazards when loading or unloading poles?
- Can scheduling and coordination with customers or delivery drivers be improved to prevent hazards?
- Are the poles in your work location sorted and stored in a stable pile or bunk, eliminating the need to climb on pole piles?
- Do you have the proper tooling and equipment to handle poles and pole pieces?



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Review these questions with the group you are presenting to. Use this time to discuss or walk through your show-up/yard to see how pole handling can be improved at your work location.

- **Regular Inspections:** Conduct regular field audits and inspections to ensure compliance with SOPs and safety regulations.
- **Feedback:** Provide feedback to employees based on audit findings and address any areas of non-compliance.
- **Update Training Materials:** Regularly update training materials based on audit findings, employee feedback, and changes in safety regulations.
- **Ongoing Training:** Offer continuous training opportunities to keep employees updated on the latest safety practices and technologies.
- **Incident Reporting and Analysis:** Encourage prompt reporting of all incidents and near-misses and analyze them to identify root causes and prevent future occurrences.

Thank You!

