



INTERNATIONAL WINDOW CLEANING ASSOCIATION

Water-fed Pole Safe Practices

Safe Use of Water-fed and Extension Poles in Window Cleaning

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ABOUT THIS PUBLICATION

Published by the International Window Cleaning Association (IWCA). This is not an OSHA publication and has not been reviewed or endorsed by OSHA or the U.S. Department of Labor. It does not create legal obligations or replace applicable regulations.

Purpose and Application

These safe practices give the industry one consistent way to use water-fed and extension poles safely. They are a practical reference for employers, supervisors, trainers, and operators when they look for hazards, plan the work, choose equipment, and carry out the work. In this document, “pole” means a water-fed pole or an extension pole unless stated otherwise. The guidance on hoses and water applies wherever water is used.

They cover the whole job: transporting the equipment, assembling it, setting up, extending the pole, using it, moving it, lowering it, and storing it. The main idea is to **plan and control the whole job**, not just where the pole is during cleaning. Section 12 covers the added hazards of cleaning solar panels.

How to read this document

Shaded blue boxes summarize **existing OSHA requirements**. Everything else is an **IWCA recommendation**. This document does not create a new OSHA standard, replace applicable regulations, or authorize work on energized electrical equipment.

The electrical rules cited here are mainly for general industry (29 CFR Part 1910). Where the work counts as construction, the employer must look at the construction rules that apply, including 29 CFR 1926.416.

1. Assess the Site and Plan the Work

Before unloading, assembling, or raising any equipment, assess the work area and the routes used to move equipment. Look for:

- Overhead power lines and electrical equipment mounted on the building;
- Uneven or slippery ground, landscaping, and overhead obstructions;

- Vehicle traffic and places where people walk;
- Fall hazards and weather conditions.

Choose equipment and working positions that fit the site. Then decide:

- How far the pole may be extended;
- Where the pole can be raised and lowered;
- Which routes to use between work areas.

Decide whether the job needs more people, a closed-off area, or a different cleaning method. Decide who will explain the plan to the crew and who will respond to changing conditions.

Write down the main hazards and how they will be controlled. Review them with the workers doing the job. Review the plan again whenever the equipment, the working locations, or the conditions change.

The employer is responsible for putting effective hazard controls in place. Telling workers to “remain alert” does not replace a safe work plan.

2. Inspect the Complete Pole System

Inspect the equipment before each use. Inspect it again after anything that could have damaged it, such as a drop or an impact.

Check pole sections, locks, clamps, extension limits, brushes, attachments, connectors, hoses, and fittings. Look for cracks, damaged surfaces, loose parts, sections that slip, attachments that are not secure, leaks, and anything else that could make the pole hard to control.

Make sure the parts are made to work together and that the equipment is assembled and maintained according to the manufacturer's instructions.

Take defective equipment out of service and mark it clearly so no one else uses it before it is repaired or replaced. Do not go beyond the manufacturer's limits. Do not use makeshift repairs or changes that could make the equipment less safe.

3. Identify and Resolve Electrical Hazards

Check the whole work area for overhead power lines, service drops, electrical connections on the building, transformers, lighting, damaged wiring, and any other electrical equipment the work could affect.

Treat overhead lines as energized unless the owner or operator of the line has confirmed otherwise through proper electrical safety procedures. Do not judge what a line is, its voltage, or whether it is insulated by how it looks. Larger towers and structures generally carry higher voltages and call for greater distances, but the voltage must still be confirmed with the utility.

For ordinary water-fed and extension pole work, plan as if the equipment conducts electricity. OSHA treats any object without an insulating rating for the voltage involved as conductive around overhead lines. Do not rely on the pole material, a coated handle, ordinary gloves, footwear, or purified water as a reason to work closer to an electrical hazard.

Never use a pole to:

- Measure how high a power line is;
- Judge distance by moving toward a line;
- Move a wire; or
- Test whether equipment is energized.

If electrical conditions could affect the work and the voltage, the minimum approach distance, or the protective arrangements are not certain, stop that work. Do not restart until the employer has the information and help needed to make a safe plan.

4. Establish Safe Operating Positions and Preserve the Minimum Approach Distance

EXISTING OSHA REQUIREMENTS

29 CFR 1910.333(c)(3)(i): An unqualified worker in an elevated position must be located so that the worker and the longest conductive object they may contact cannot come closer than 10 feet to an unguarded, energized overhead line at 50 kV or less to ground. Above 50 kV, add 4 inches for every additional 10 kV.

An unqualified worker on the ground may not bring any conductive object closer to unguarded, energized overhead lines than those same distances.

MINIMUM APPROACH DISTANCE (MAD)

The higher the voltage, the farther electricity can arc through the air. Higher voltage means a greater distance.

Line voltage	Distance to keep from the line	Minimum
Up to 50 kV		10 ft
Over 50 to 200 kV		15 ft
Over 200 to 350 kV		20 ft
Over 350 to 500 kV		25 ft
Over 500 to 750 kV		35 ft
Over 750 to 1,000 kV		45 ft
Over 1,000 kV	Distance not fixed by the table	
		Set by utility or qualified engineer

Electricity can arc to a pole that never touches the line. Confirm the line voltage with the utility. If the voltage is not known, stop that work.

Distances shown are from OSHA Table A, 29 CFR 1926.1408. They meet or exceed the distances required by 29 CFR 1910.333(c)(3)(i) at every voltage shown.

The distances above are the minimum approach distance (MAD). The MAD is measured from the energized line itself. It is not just how far the worker's feet are from the line.

Where the line voltage is above 50 kV or cannot be verified, IWCA recommends stopping that work and getting the required distance from the utility.

IWCA recommended planning practice

Choose working positions and pole-length limits that keep the minimum approach distance the whole time: during setup, raising, cleaning, moving, and lowering, and if the operator loses control. Look at the whole area the worker and the equipment could reach:

- **How the equipment can move:** the actual pole length, attachments, extension, flex, and rotation, and where the pole or its parts could go while being raised or lowered, or if they slip or fall.
- **How the worker can move:** height, hand position, reach, stepping, changing position, losing balance, and slips or trips.
- **Site conditions:** changes in ground level, obstructions, hoses that interfere with the pole, wind, movement of the power line, visibility, and how well distances can be judged.

Keep the minimum approach distance beyond everything the worker and the whole pole system could reach.

Illustrative planning calculation

PLANNING AID ONLY

This is one way to calculate the distance needed between the operator and a power line. It is an IWCA planning aid, not an OSHA formula, and it does not prove a work location is safe. It does not reduce, replace, or change any OSHA requirement.

Plan for where the pole could go if the operator loses control, not only where it is during cleaning. Before raising the pole, mark out a pole fall zone: a clear area around the operator in every direction. No energized line may be inside it.

Keep the operator at least this far from any energized line, in every direction:

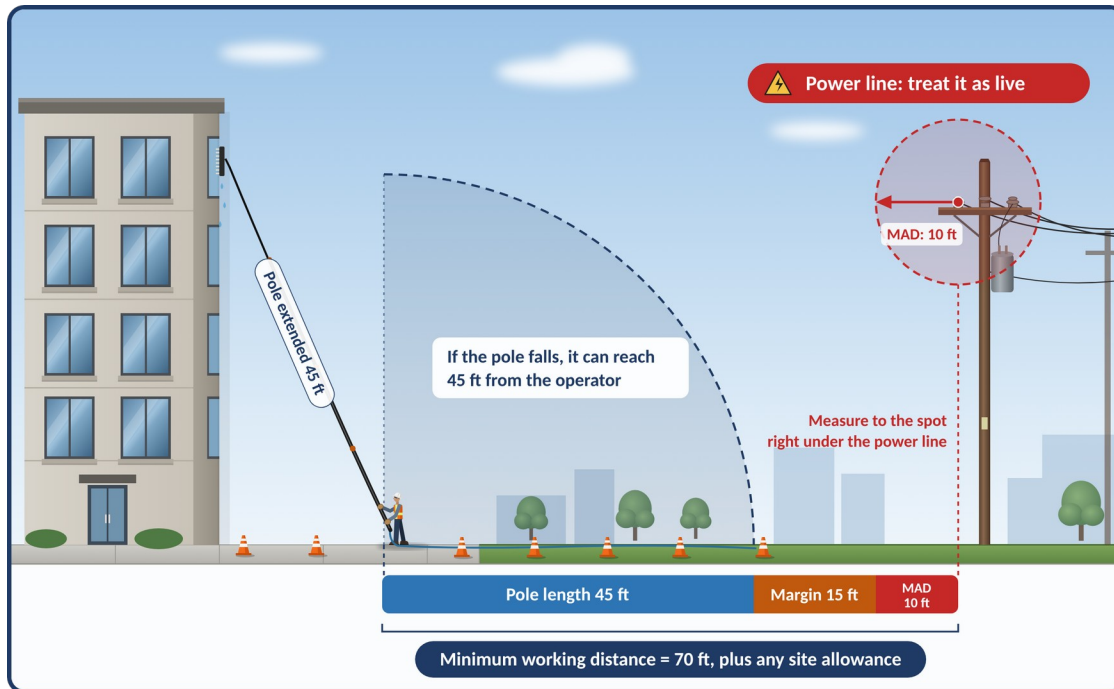
Extended pole length + one-third of that length + minimum approach distance (MAD)

Example distances

These examples are for work near a line verified at 50 kV or less, where the minimum approach distance is 10 feet.

Pole extended to	Safety margin (one-third)	MAD	Minimum working distance
15 ft	5 ft	10 ft	30 ft
30 ft	10 ft	10 ft	50 ft
45 ft	15 ft	10 ft	70 ft
60 ft	20 ft	10 ft	90 ft

The operator must stay at least this far from the line, plus any distance the site assessment adds. If that is not possible, do not use the pole at that length. Calculate other pole lengths the same way.



- Use the length the pole is actually extended to, including the brush and attachments, not an advertised working height. If the pole is extended farther, recalculate.
- The safety margin accounts for the angle at which the pole could fall. Round it up to the next whole foot.
- Add distance where the site assessment calls for it. Consider how far the operator may step or reach, how the equipment and the line could move, and how exact the measurements are.
- Measure on level ground from where the operator stands to the point directly below the nearest energized line. Do not measure to the utility pole, the building wall, or the property line.
- The pole fall zone moves with the operator. Check it from every position the operator will work from.
- Do not judge safety by how far the pole is from the line while the brush is on the glass.
- Check hoses, water discharge, and other equipment separately. This calculation covers only the pole.

THE CALCULATED DISTANCE IS NOT AN AUTOMATIC SAFE WORKING DISTANCE

Before approving the work area, make sure the worker and every part of the pole system will stay outside the minimum approach distance through every movement the job could involve. If you can't show that, increase the distance or change the work method.

Work from a height, sloping ground, or power lines whose location is not certain need their own assessment. Do not apply this example directly. Do not assume 10 feet is enough when the voltage is unknown.

Set and share the working limits

Write down the allowed working positions, the maximum pole extension, where the pole may be raised and lowered, and the routes for moving equipment. Communicate them to the crew. Mark boundaries where that helps make the limits clear. Review the limits when the equipment or the site conditions change.

A spotter can help watch and communicate. A spotter does not replace enough distance or effective electrical protection.

When enough distance cannot be kept

Stop that work. Move the work, use equipment that cannot reach as far, choose another cleaning method, or arrange proper electrical protection.

EXISTING OSHA REQUIREMENT

29 CFR 1910.333(c)(3): Lines must be deenergized and grounded, or other protective measures provided, before work near overhead lines begins. Deenergizing and grounding arrangements must be made with the person or organization that operates or controls the circuits.

Do not let window-cleaning workers move power lines or improvise electrical covers or insulating barriers.

When the work depends on electrical protection being in place, write down who the electrical contact is, which circuits are affected, and the conditions under which cleaning may go ahead. A written confirmation does not replace actually putting the protection in place and checking it.

Electrical protective equipment and insulated pole sections

Distance is the main protection. Electrical protective equipment and insulated pole sections are a backup in case the planned distance is lost through reach, flex, wind, arcing, or loss of control. They do not allow a worker or any part of the pole system to come within the minimum approach distance.

EXISTING OSHA REQUIREMENTS

29 CFR 1910.335(a)(1)(i): Employees working in areas where there are potential electrical hazards must be provided with, and must use, electrical protective equipment appropriate for the parts of the body to be protected and the work to be performed.

29 CFR 1910.335(a)(1)(ii)–(iii): Protective equipment must be maintained in a safe, reliable condition, periodically inspected or tested as required by 29 CFR 1910.137, and protected where its insulating capability may be damaged during use.

29 CFR 1910.335(a)(2)(i): When working near exposed energized conductors or circuit parts, employees must use insulated tools or handling equipment if the tools or handling equipment might make contact with those conductors or parts.

When the site assessment finds overhead lines, service drops, transformers, rooftop solar, or other electrical equipment that the pole could reach if it moves or fails, the employer should assess the risk and provide:

- Voltage-rated rubber insulating gloves with leather protectors, chosen for the hazard, inspected before each use, and tested as required by 29 CFR 1910.137;
- Electrical-hazard-rated footwear that meets ASTM F2413;
- A pole with insulating sections: at least a non-conductive base section and, where practical, insulating sections everywhere the operator's hands may go, including when reaching up to collapse the pole; and
- Head, eye, and face protection where shock, burn, or arc exposure can reasonably be expected, and arc-rated clothing where arc flash can reasonably be expected.

Use insulating pole sections only within the manufacturer's stated rating. Follow the manufacturer's instructions for inspecting, cleaning, and storing them. Water, dirt, and surface damage can make a section insulate less well. Treat any section without a documented insulating rating for the voltage involved as conductive.

Treat rooftop and building-mounted solar panels as energized whenever light is on them, even when they are described as switched off or isolated.

PROTECTIVE EQUIPMENT IS A BACKUP LAYER, NOT A SUBSTITUTE FOR DISTANCE

Rubber insulating gloves are rated by class for a maximum use voltage. Class 0 gloves are rated for 1,000 volts AC, well below the voltages commonly found on overhead distribution lines. Electricity can also arc across an air gap to a pole that has not touched the line. An insulated handle gives no protection once a hand moves onto an uninsulated section.

Do not use protective equipment, insulated sections, or purified water as a reason to work closer. The distance requirements of 29 CFR 1910.333(c)(3) still apply to unqualified workers no matter what equipment they wear.

Train workers to choose, inspect, use, and care for this equipment, and to know its limits, consistent with 29 CFR 1910.132(f). Take damaged or out-of-test equipment out of service. Stop that work when required protective equipment or insulating sections are missing or fail inspection.

5. Maintain Control While Raising, Using, and Moving the Pole

Use the shortest pole setup that can do the job safely within the work plan.

Raise, extend, move, and lower the pole only where it has room to move without putting workers or anyone else at risk. Keep the brush, the pole, nearby obstructions, and the path the pole will take in view.

Stand on firm footing and keep a controlled working posture. Move your position instead of overreaching. Check where you are walking before you step, especially when looking up. Before moving to another work area, retract or lower the pole as needed to follow the planned route safely.

Never leave an extended pole unattended. Do not lean or store equipment where it could fall, slide, or swing into another area.

Add people or change the work method when one operator cannot reliably control the equipment. Do not rely on catching a falling pole.



6. Protect the Public and Other Workers

Set up a controlled work area sized for where the pole, brush, attachments, and other equipment could move or fall. Use cones, barriers, signs, closed-off areas, and attendants where needed. Place them to cover the whole area at risk, not just the spot where the operator stands.

Plan the work around entrances, sidewalks, parking areas, delivery routes, and doors that open into the work area. Keep emergency access clear.

Pause the work whenever a person or vehicle enters an area where they could be hurt. Move the protective measures as the work moves. Stop work when the controlled area cannot be kept.

Pedestrian barriers and warning signs are not electrical insulating barriers.

7. Manage Hoses, Water, and Supply Equipment

Run hoses and supply lines so they do not trip anyone, tangle, snag, or get in the way of the pole. Keep extra hose out of the operator's working area. Where a hose crosses a walkway or route, protect the crossing or control access. Do not block exits.

Control runoff and correct slippery conditions before continuing work.

EXISTING OSHA REQUIREMENT

29 CFR 1910.22: Employers must inspect and maintain walking-working surfaces and correct hazardous conditions, or guard them until correction is completed.

Keep water and overspray away from exposed electrical parts and from electrical connections that are not made for wet conditions.

EXISTING OSHA REQUIREMENT

29 CFR 1910.334: For cord-connected pumps and associated equipment, addresses inspection, removal of damaged equipment, suitability for wet or conductive locations, and restrictions on connecting or disconnecting energized equipment with wet hands.

Secure tanks, reels, and supply equipment so they cannot move unexpectedly. Get help or use lifting aids when loading or moving heavy parts. Review the plan when changes in hose routing, water flow, or ground conditions affect the work.

8. Address Fall Hazards and Select Protective Equipment

Work from the ground whenever the job can be done safely that way.

Before working from a roof, platform, or other raised location, assess it separately. Look at access, edges, openings, skylights, footing, and how the pull of the pole or hose could affect balance.

EXISTING OSHA REQUIREMENT

29 CFR 1910.28: Where applicable, establishes the employer's duty to provide fall and falling-object protection. Using a water-fed or extension pole does not remove those obligations.

Do not stand on makeshift platforms or improvise a raised position to gain reach. Ladders, lifts, scaffolds, and other access equipment need their own assessment and safe operating procedures.

Choose protective equipment that fits properly and matches the hazards found. This includes suitable footwear and any eye, head, hand, or high-visibility protection the job needs.

EXISTING OSHA REQUIREMENT

29 CFR 1910.132: Addresses personal protective equipment assessment, selection, fit, and training.

29 CFR 1910.335: Addresses protective equipment and safeguards for electrical exposures.

Ordinary work gloves, footwear, and pole grips are not a reason to work closer to an electrical hazard. For electrical protective equipment and insulated pole sections, see Section 4.

9. Monitor Weather, Heat, and Fatigue

Check the forecast before work and keep watching conditions during the job. Stop or change the work when wind, rain or snow, poor visibility, ice, or other conditions make it harder to control the pole, keep your footing, keep distance from electrical hazards, or protect others.

Follow the limits for the specific equipment. These safe practices do not set one wind-speed limit for every pole, operator, and location.

Identify a suitable lightning shelter before work begins. Take shelter immediately when you hear thunder or lightning threatens. Stay sheltered for at least 30 minutes after the last thunder, consistent with National Weather Service guidance.

Provide drinking water, rest breaks, and shade or a cooler place to recover. Adjust work and rest periods to the heat and the workload.

Plan tasks to limit long periods in awkward positions and heavy physical strain. Use suitable equipment, rotate tasks, or add help where needed. Encourage workers to report fatigue, pain, dizziness, or difficulty controlling the pole. Change or stop that work before those conditions affect safety.

10. Train Operators and Verify Safe Performance

Train a worker before letting them operate alone. Training should cover:

- Inspecting equipment and recognizing electrical hazards;
- Working limits and the limits of planning calculations;
- Controlling the pole, protecting the public, and managing hoses;

- Weather, fall hazards, stop-work procedures, and emergency response.

Include hands-on training with the equipment the worker will use. Confirm that the worker can show the needed skills and understands the limits of the assigned work.

Explain jobsite instructions in language and terms the worker understands. Give more training when equipment or methods change, when unsafe practices are observed, or when an incident or near miss reveals a gap.

Keep records of training and hands-on evaluation. Observe field work periodically to confirm that workers are following the work plan.

EXISTING OSHA REQUIREMENT

29 CFR 1910.332: Requires applicable electrical safety training for workers exposed to the risks covered by that section. Water-fed or extension pole training alone does not establish the qualifications required for energized electrical work.

11. Stop Unsafe Work and Prepare for Emergencies

Stop-work authority

Set an employer policy that lets workers stop the work when conditions are unsafe or uncertain, without retaliation for raising the concern. Stop work when:

- Enough distance from electrical hazards cannot be kept;
- Equipment is defective or control is being lost;
- Protective barriers are not effective; or
- Conditions no longer match the work plan.

The employer or the supervisor in charge should review the concern, arrange corrective action, and explain the revised plan before work restarts.

Emergency preparation and response

Before starting, confirm the site address, emergency access, how the crew will communicate, and who will contact emergency services and the utility. Where working alone is appropriate, set up check-ins and a way to get help.

If you suspect electrical contact, call 911 and notify the utility or the responsible electrical authority. Do not touch a person or equipment that may still be energized. Keep others away from the pole, hoses, connected equipment, and any ground or water that could be affected. Do not try to recover equipment, move a power line, or attempt a rescue while an electrical hazard remains.

Give first aid only when the scene is safe, and follow your training and emergency instructions.

Take the equipment involved out of service. Record and review incidents and near misses. Correct the conditions that contributed to them before restarting that work.

12. Cleaning Solar Panels

Solar panels (photovoltaic, or PV, systems) add electrical and fall hazards that ordinary window cleaning does not have. Everything in Sections 1 through 11 applies to solar panel cleaning. This section adds what is specific to solar.

Know the hazard

- Solar panels produce electricity whenever light is on them. They cannot be switched off at the panel. Turning off an inverter or a disconnect does not remove the voltage from the panels or from the wiring between them.
- A string of panels can carry hundreds of volts of direct current (DC). Some large systems carry up to 1,500 volts DC.
- Cracked glass, damaged frames, worn cable insulation, and loose connectors can put voltage on the panel surface, the frame, the mounting, or the water on them.

Before cleaning

- Get approval and information from the system owner or operator: the system voltage, any known damage, the panel manufacturer's cleaning instructions, and any shutdown procedure.
- Inspect the system from a safe position before applying water. Look for cracked or shattered glass, burn marks, exposed or damaged cables, loose connectors, damaged junction boxes, and standing water around electrical equipment.
- Do not clean damaged panels. Report the damage to the system owner or operator.
- Do not let window-cleaning workers open, disconnect, or handle PV connectors, cables, combiner boxes, or inverters. That is work for a qualified electrical worker.

While cleaning

- Do not walk, stand, kneel, or lean on the panels.
- Follow the panel manufacturer's instructions for water pressure, brushes, cleaning agents, and panel temperature.
- Keep water and overspray away from inverters, combiner boxes, disconnects, and open electrical enclosures.
- On roofs, control fall hazards as described in Section 8. Panels are often near roof edges, skylights, and openings.
- Keep the distances from overhead power lines described in Section 4.
- If anyone feels a tingle or a shock, stop work immediately, move away from the system, keep others clear, and report it to the system owner or operator.

EXISTING OSHA REQUIREMENTS

29 CFR 1910.28, 1910.332, and 1910.335: The fall protection, electrical safety training, and electrical protective equipment requirements summarized in Sections 4, 8, and 10 apply to solar panel cleaning in the same way.

Protective equipment for solar panel cleaning

Solar panel cleaning is a different kind of electrical hazard because the panels stay energized whenever light is on them. In most cleaning work the system is not locked out and tagged out, so the worker is cleaning energized panels. Even when the panels show no damage, the electrical hazard is still there. Damage can also be hard to find, especially on residential systems, where wiring may have been damaged during installation or by birds.

For these reasons, protective equipment is a primary protection for a worker using a water-fed or extension pole to clean solar panels. This is different from work near overhead power lines, where distance is the main protection (Section 4). The site assessment should always determine whether the work could expose workers to the system's electrical hazards. The employer should assess the risk and provide protection that matches it:

- Rubber insulating gloves with leather protectors (ASTM D120), in a class rated for the system's voltage, inspected before each use, and tested as required by 29 CFR 1910.137;
- A Class E (electrical) hard hat that meets ANSI/ISEA Z89.1;
- Electrical-hazard-rated footwear that meets ASTM F2413;
- Eye and face protection, and arc-rated clothing where arc flash can reasonably be expected;
- A pole with insulating sections, as described in Section 4; and
- Fall protection where required. Where the work has both a fall hazard and an arc-flash hazard, use a harness and lanyard that are arc-rated (ASTM F887).

Stop the work when

- Damaged panels, cables, or connectors are found;
- Anyone feels a tingle or a shock;
- The system owner or operator cannot provide the information needed to plan the work;
- Water is reaching electrical equipment that is not made for wet conditions; or
- Fall hazards cannot be controlled.

13. Employer Responsibilities and Worker Rights

Employers are responsible for providing a safe and healthy workplace and for following the safety and health requirements that apply. This includes providing the training, equipment, supervision, and protective measures the work needs. Workers should not be left responsible for fixing hazards outside their control.



Workers have the right to safety information and training they can understand, to report hazards and injuries, and to raise safety concerns without unlawful retaliation. Workers may contact OSHA about unsafe conditions.

OSHA's On-Site Consultation Program offers free, confidential help to small and medium-sized businesses, with priority given to high-hazard worksites. Employers and workers may contact OSHA at 1-800-321-OSHA (6742) or www.osha.gov for information and assistance.

CORE SAFETY MESSAGE

Assess the site before raising the pole. Plan for everywhere the worker and the equipment could move. Keep the minimum approach distance beyond that movement. Maintain control and protect others. When these conditions cannot be met, stop and change the work plan.

Regulatory References

Citation	Subject
29 CFR 1910.22	Walking-working surfaces: general requirements
29 CFR 1910.28	Duty to have fall protection and falling-object protection
29 CFR 1910.132	Personal protective equipment: general requirements
29 CFR 1910.137	Electrical protective equipment
29 CFR 1910.332	Electrical safety-related work practices: training
29 CFR 1910.333	Electrical: selection and use of work practices (including overhead lines)
29 CFR 1910.334	Electrical: use of equipment
29 CFR 1910.335	Electrical: safeguards for personnel protection
29 CFR 1926.416	Construction: electrical protection of employees
ASTM D120	Rubber insulating gloves (voltage classes)
ASTM F887	Personal climbing equipment, including arc-rated harnesses and lanyards
ASTM F2413	Protective footwear, including electrical-hazard rating
ANSI/ISEA Z89.1	Industrial head protection, including Class E (electrical) hard hats
National Weather Service	Lightning safety guidance (30-minute rule)