TREE WORK NEAR ELECTRICAL HAZARDS: BEST PRACTICES

Electricity is an ever-present danger, silent, swift, and often hidden in the crowns of trees. Conducting tree work near power lines is hazardous, highly regulated, and must only be performed by qualified personnel. Every arborist, regardless of qualifications or experience, must take electrical hazards seriously. Below is a summary of key regulations and best practices for tree work near overhead lines.

Most agencies engage in some degree of tree work. It's very important to remember that conducting tree work near potentially energized power lines on your agency's properties, including communications lines, is dangerous. All overhead and underground electrical conductors, guy wires, pole grounds, and communication wires and cables should be considered energized with potentially fatal voltages.

If any part of a tree or brush is within 10 feet of wires (up to 50kV), it should not be pruned or removed unless the employee(s) have the required OSHA 1910.269 electric power training and are qualified arborists.

A qualified arborist, as defined by ANSI Z133-2017, is an individual who, by possession of a recognized degree, certification, or professional standing, or through related training and on-the-job experience, is familiar with the equipment and hazards involved in arboricultural operations and who has demonstrated the ability in the performance of the special techniques involved.

The employer determines and documents who may be designated as a qualified arborist in accordance with the above criteria. If the employee has the requisite electrical hazard training and is designated by the employer as a qualified arborist, they can be considered an Incidental Line Clearance Arborist per the ANSI Z133-2017 standard.

Table 1. Minimum approach distances to energized conductors for arborists not qualified by training and experience to work within 10 feet (3.05 m) of electrical conductors.

Nominal Voltage (Phase-to-Phase)*	Minimum Approach Distance (MAD)	
kV	ft-in	m
50.0 and less	10-00	3.048
50.1 to 72.5	11-00	3.353
72.6 to 121.0	12-08	3.861
138.0 to 145.0	13-04	4.064
161.0 to 169.0	14-00	4.267
230.0 to 242.0	16-08	5.08
345.0 to 362.0	20-08	6.299
500.0 to 550.0	26-08	8.128
785.0 to 800.0	35-00	10.668
*Exceeds phase-to-ground per 29 CFR 1910.333		

MAD for Unqualified Personnel

Incidental line clearance includes tree work performed where an electrical hazard exists to the arborist. However, the arborist is not working for the purpose of clearing space around the conductor on behalf of the utility that controls or operates the wires/lines. This typically includes agency and commercial arborists working where power lines are present, but the objectives do not include clearing vegetation for the power company.

For example, there is a tree on the agency's property that they want removed, but part of the tree is within 10 feet of the lines. If the agency has an employee(s) deemed an Incidental Line Clearance Arborist, they may be able to perform the work, provided regulations, standards, and best practices are followed.

Although an Incidental Line Clearance Arborist may proceed within 10 feet of the lines, they must comply with all OSHA and ANSI Z133-2017 regulations, standards, and Minimum Approach Distances (MAD).

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Best Practices

- Although an agency may have employees designated as Incidental Line Clearance Arborists, a good working relationship with the local power company's vegetation management or forestry services department should be maintained. In many instances, the utility will perform or arrange for any necessary work near energized conductors on the agency's properties. If the agency's Incidental Line Clearance Arborists still choose to perform work within the Minimum Approach Distance of the lines, a notification to the power company may be in order before conducting any work. The utility may de-energize the lines, provide clarification and guidance, or possibly prohibit the work.

Table 2. Approach distances for incidental line clearance-alternating current.

Voltage Range (Phase-to-Phase)*	Minimum Approach Distance (MAD)	
kV	ft-in	m
0.300 and less	*Avoid Contact*	*Avoid Contact*
0.301 to 0.750	1-06	0.457
0.751 to 5.0	2-09	0.838
5.1 to 15.0	2-10	0.864
15.1 to 36.0	3-04	1.016
36.1 to 46.0	3-08	1.118
46.1 to 72.5	4-04	1.321
72.6 to 121.0	12-08	3.861
138.0 to 145.0	13-04	4.064
161.0 to 169.0	14-00	4.268
230.0 to 242.0	16-08	5.080
345.0 to 362.0	20-08	6.300
500.0 to 550.0	26-08	8.128
785.0 to 800.0	35-00	10.668
*Exceeds Table S-5 29 CFR 1910.333.		

MAD for Qualified Personnel

- Generally, most power companies employ independent contractors with skilled, professional utility crews. These crews help ensure safe and reliable service by pruning trees to maintain adequate clearance between limbs and lines and by removing trees that pose an unacceptable risk to facilities. Utility crews perform the work, following American National Standards Institute (ANSI) A300 pruning standards, under the guidance and inspection of professional utility forestry staff. The agency should also be cautious about potentially interfering with the power companies' contracted tree service(s) and their duties and responsibilities.

- If the agency hires a private tree company to do tree work within 10 feet of potentially energized conductors, it is recommended to ensure that the arborists involved are classified as Incidental Line Clearance Arborists.

Regulations and Standards

29 CFR 1910.269 (Electric Power Generation, Transmission, and Distribution)

- Only qualified line-clearance arborists may work within 10 feet of energized power lines.
- Unqualified workers must maintain at least a 10-foot clearance from energized power lines.

ANSI Z133 Safety Standard ANSI Z133-2017 is the industry safety standard for arboriculture operations.

- NJ PEOSH requires that the ANSI Z133-2017 be followed for all tree work operations.
- Requires hazard assessments before work begins.
- Specifies minimum approach distances based on voltage.
- Mandates the use of PPE and insulated tools when working near energized lines.

Personal Protective Equipment (PPE)

- Hard hats, eye protection, hearing protection, chainsaw chaps or applicable leg protection (*when using a chainsaw on the ground), gloves, and suitable boots.
- Use insulated tools and equipment.

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Safe Work Practices

- Never touch power lines: All wires are considered energized unless confirmed and secured by the local utility.
- Maintain communication: With ground crew and utility representatives.
- Emergency Preparedness: Have a plan for electrical contact incidents.
- Bucket trucks, lifts, and chainsaws must be operated by trained personnel.
- Maintain safe distances between equipment and power lines.

References

- OSHA Tree Trimming Operations Near Power Lines
- ANSI Z133 Safety Standard
- Check your local utility's website

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