

## “E” Summary of Capabilities for Utility Line Clearance Arborist Endorsement

The pruning, trimming, repairing, maintaining, removing, or clearing of trees, or the cutting of brush, which is performed for the purpose of clearing space around electric power generation, transmission, or distribution lines or equipment and on behalf of an organization that operates, or that controls the operating procedures for those lines or equipment.

Line Clearance Tree Trimmers are workers who, through related training and on-the-job experience, are familiar with the special techniques and hazards involved in line-clearance tree trimming without bodily entry into the Minimum Approach Distance (MAD).

Workers performing Utility Line Clearance Arborist may be a qualified electrical worker who has the training and experience to establish proficiency for work within the Minimum Approach Distance.

Utility Line Clearance Arborists perform work in various conditions which include remote access and rough terrain. Work on power restoration and storm responses involve clearing right of ways of down limbs, trees and other vegetation debris.

All endorsement summaries represent safety related capabilities which a CUSP may be responsible for within the scope of the endorsement. They are intended to give a snapshot of knowledge, skills and attitudes a CUSP uses to identify and address safety and compliance related issues for protecting workers and avoiding unintended outcomes.

Capability Name	Relevance to the CUSP	Example of a Supporting Ability
<p><b>E1 - Qualifications and Training</b></p> <p><b>1910.269</b>  <b>(a)(1)(i)(E)</b>  <b>(a)(2)(iii)</b>  <b>(a)(2)(v)</b>  <b>(b)</b>  <b>(r)(1)(i)</b></p> <p><b>ANSI Z-133</b>  <b>3.2.1-5</b>  <b>Annex B, 1-5</b></p>	<p>Must know the required training and qualifications for Utility Line Clearance Arborists who are not qualified electrical workers and understand the different skills and abilities which differentiates them from qualified electrical workers.</p>	<p>Determine that all workers are familiar with safety-related work practices, procedures and requirements for the risk of the hazards involved.</p> <p>All workers must be trained in:</p> <ul style="list-style-type: none"> <li>● Job Briefings</li> <li>● Emergency rescue and response.</li> <li>● First Air/ CPR</li> <li>● PPE</li> </ul> <p>All workers shall receive additional training or retraining as required.</p> <p>Utility Line Clearance Arborist who are not <b>qualified electrical workers</b> must be proficient in:</p> <ul style="list-style-type: none"> <li>● Determining if work is Line Clearance Tree Trimming.</li> </ul>

		<ul style="list-style-type: none"> <li>● Determining nominal voltage and/or highest exposure voltage.</li> <li>● Distinguishing exposed live parts from other parts.</li> <li>● The minimum approach distances and the skills and techniques necessary to maintain those distances.</li> <li>● Inspection and use of insulated equipment.</li> <li>● Supervising Line Clearance Tree Trimmers in training and non-qualified ground workers.</li> </ul>
<b>E2 - Information Transfer</b>  <b>1910.269 (a)(3)</b>  <b>ANSI Z-133 4.3.8 (a)(b)(c)</b>	Provide for the exchange of information so work rules and procedures provide equal protection for workers of the contract and the host employer	Coordinate the exchange of the following information related to the safety of the individuals performing work: <ul style="list-style-type: none"> <li>● Characteristics of installations.</li> <li>● Conditions and hazards known to exist or anticipated to arise during work.</li> <li>● Information about the design and operation of installation.</li> <li>● Contract employer responsibilities to advise a host of conditions on unique or unanticipated hazards.</li> </ul>
<b>E3 - Job Briefings</b>  <b>1910.269 (c)</b>  <b>ANSI Z-133 3.4 8.5.11 8.6.2 8.8.1</b>  <b>Annex B, 2.6</b>	CUSP is knowledgeable of pre-job briefing requirements and ensures that, before each job and as hazards change, the Arborist/Person in charge conducts a pre-job briefing with all workers.	Require job briefings to address the hazards identified by Information Transfer and: <ul style="list-style-type: none"> <li>● A Utility Line Clearance Arborist determines if direct supervision is needed.</li> <li>● Hazards associated with the work.</li> <li>● Procedures to be used.</li> <li>● Any special precautions.</li> <li>● Control of energy sources.</li> <li>● Personal protective equipment (PPE) required</li> <li>● Adequate communication plan between workers aloft and workers on the ground.</li> <li>● Scope and complexity of the work shall govern the number and extent of briefing.</li> <li>● Emergency Procedures.             <ul style="list-style-type: none"> <li>○ CPR/First Aid</li> <li>○ Medical Facility locations</li> <li>○ Aerial Rescue</li> </ul> </li> </ul>

<p><b>E4 - Adverse Weather Conditions and Storm Restoration Work</b></p> <p><b>1910.269 (r)(1)(vi)</b></p> <p><b>ANSI Z133-4.1.16 4.3.6&amp;7</b></p>	<p>Establishing parameters for stopping work when weather conditions make work excessively hazardous. Workers must be trained in the hazards associated with line clearance tree trimming after a storm.</p>	<p>Weather conditions which could pose excessive hazards could be:</p> <ul style="list-style-type: none"> <li>● High Wind</li> <li>● Lightning in the area</li> <li>● Temperature extremes <ul style="list-style-type: none"> <li>○ Heat index</li> <li>○ Wind chill factor</li> </ul> </li> </ul> <p>Workers performing line clearance tree trimming to support power restoration need to be trained in special hazards such as:</p> <ul style="list-style-type: none"> <li>● Downed lines</li> <li>● Unstable poles and structure.</li> <li>● Grounding procedures</li> <li>● Stored energy <ul style="list-style-type: none"> <li>○ Lines under tension</li> <li>○ Spring poles</li> </ul> </li> <li>● Previous storm damage to trees <ul style="list-style-type: none"> <li>○ Hanging limbs</li> <li>○ Leaning or up rooted trees</li> </ul> </li> </ul>
<p><b>E5 - Tree Climbing and Fall Protection</b></p> <p><b>1910.269 (g)(2) (r)(7)(i) (r)(8)</b></p> <p><b>ANSI Z-133 6.3.6 7.1.5-6 8.1 8.2</b></p> <p><b>Annex B B4.4 B5.1</b></p>	<p>CUSP should be able to conduct a walk around of a tree to assess it for potential hazards and have a working knowledge of techniques, tools, and equipment necessary to protect climbers from falls and ensure safe working positions in trees.</p>	<ul style="list-style-type: none"> <li>● CUSP must have the understanding and knowledge to identify and control hazards associated with working aloft while trimming trees.</li> <li>● Tree hazard assessments: <ul style="list-style-type: none"> <li>○ Structural defects and weakness: <ul style="list-style-type: none"> <li>■ Branch mortality,</li> <li>■ Weak branch unions,</li> <li>■ Cabling/Bracing.</li> </ul> </li> <li>○ Disease and parasites: <ul style="list-style-type: none"> <li>■ Moss, Mushrooms, Cankers,</li> <li>■ Insect infestation</li> <li>■ Bees and animal inhabitants</li> </ul> </li> <li>○ Proximity of energy hazards: <ul style="list-style-type: none"> <li>■ Power lines.</li> <li>■ Nominal voltage and applicable MAD</li> <li>■ Cell sites.</li> </ul> </li> </ul> </li> <li>● Climbing and fall protection gear <ul style="list-style-type: none"> <li>○ Climbing lines: <ul style="list-style-type: none"> <li>■ Minimum Breaking Strength (MBS),</li> <li>■ Work Load Limit (WLL),</li> </ul> </li> </ul> </li> </ul>

		<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>■ Use only for climber’s fall protection raising and lowering tools,</li> <li>■ Minimum Climbing line diameter, Z133 8.2.4</li> <li>■ Arborist Saddles,</li> <li>■ Work positioning lanyards,</li> <li>■ Climbing Gaffs/Spurs,</li> <li>■ Self-closing double locking gate for carabiners.</li> </ul> </li> <li>● Climbing gear care and inspection: <ul style="list-style-type: none"> <li>○ All gear pre-use inspection and process for removing from service: <ul style="list-style-type: none"> <li>■ Damaged, cut, abraded, or deteriorated gear</li> <li>■ Components with excessive wear</li> </ul> </li> <li>○ Rope ends finished to prevent unraveling</li> <li>○ Manufacturer's label is readable</li> </ul> </li> <li>● Climbing Techniques <ul style="list-style-type: none"> <li>○ SRT – Single Rope Technique</li> <li>○ DRT – Double Rope Technique</li> <li>○ Split tail system</li> <li>○ Limb walking</li> <li>○ Means of attachment</li> <li>○ Secured at all times.</li> <li>○ Anchor point or a tie in point</li> </ul> </li> <li>● Required tools and assistance. <ul style="list-style-type: none"> <li>○ Hand saw and scabbard</li> <li>○ Second climber trained in Emergency Procedures and Readiness within visual/voice communication <ul style="list-style-type: none"> <li>■ CPR/First Aid</li> <li>■ Emergency rescue</li> <li>■ Line down procedures</li> </ul> </li> </ul> </li> </ul>
<p><b>E6 - Ropes and Rigging</b></p> <p><b>1910.269 (r)(7)</b></p> <p><b>ANSI Z-133</b></p> <p><b>8.1</b></p> <p><b>8.2</b></p> <p><b>8.5</b></p> <p><b>Annex B</b></p> <p><b>B5.2</b></p>	<p>Use national standards such as ANSI Z133 to ensure system components and working-load limits are rated for rigging operations and are suitable for the maximum potential forces.</p>	<p>Utility Line Clearance Arborist shall have knowledge of fundamental rigging techniques. Able to identify the correct usage and application of the following equipment and techniques:</p> <ul style="list-style-type: none"> <li>● Care and storage <ul style="list-style-type: none"> <li>○ Rope ends are finished to prevent unraveling.</li> <li>○ Coiled, hung with good ventilation.</li> <li>○ Protected from: <ul style="list-style-type: none"> <li>■ Cutting edges and sharp tools.</li> <li>■ Chemical exposure.</li> </ul> </li> </ul> </li> </ul>

		<ul style="list-style-type: none"><li>● Pre-use inspection, remove from service:<ul style="list-style-type: none"><li>○ Contaminated or damaged rope.</li><li>○ Rope found to be:<ul style="list-style-type: none"><li>■ Defective, or overloaded.</li><li>■ Excessive wear or glazing.</li></ul></li><li>○ Failing braids and splices</li><li>○ Damaged rigging devices</li></ul></li><li>● Rope used for rigging:<ul style="list-style-type: none"><li>○ Rigging ropes never used for climbing.</li><li>○ Minimum rope diameter.</li><li>○ Work Load Limits (WLL).</li><li>○ Minimum Breaking Strength (MBS).</li><li>○ Maximum synthetic rope elasticity.</li></ul></li><li>● Rigging operations:<ul style="list-style-type: none"><li>○ Establish a communication system.</li><li>○ Establish a drop zone.</li><li>○ Assessed tree structural integrity.</li><li>○ Knot identification and specific uses and strength.</li><li>○ Load ratings for rigging devices.</li><li>○ Minimum number of connecting links.</li><li>○ Dynamic vs static loads.</li><li>○ Log weight estimation.</li><li>○ Minimize shock loading.</li></ul></li></ul>
--	--	--

<p><b>E7 - Brush chippers</b></p> <p><b>1910.269 (r)(2)</b></p> <p><b>ANSI Z-133 8.7 Annex B 4.1 5.1 5.9.18 Annex C2</b></p>	<p>Brush chippers used in Line Clearance Tree Trimming expose workers to hazards which require strict adherence to procedures and controls to protect workers.</p> <p>Set up, operation and shut down for each specific type of chipping equipment, are critical tasks to ensure worker safety.</p> <p>The CUSP must have a working knowledge of the equipment being used by the workers which they are responsible for and to provide procedures and training for the safe operation of this type of equipment.</p>	<p>Ensure workers have programs, policies, and training in place to address the safe operation of brush chippers. The the following topics shall be covered:</p> <ul style="list-style-type: none"> <li>● Pre-operation inspection. <ul style="list-style-type: none"> <li>○ Access panels, guards, discharge chutes and cutter housing are secured according to the manufacturer.</li> <li>○ Work area and temporary traffic control</li> <li>○ Discharge shoots are correct and in place</li> <li>○ Chalk wheels when unhitched.</li> <li>○ Define the chip zone</li> <li>○ Minimum specifications for: <ul style="list-style-type: none"> <li>○ Manual infeed tables</li> <li>○ Quick-stop and reversing devices</li> <li>○ Flexible anti-kickback device</li> <li>○ Safety devices.</li> </ul> </li> </ul> </li> <li>● Operations <ul style="list-style-type: none"> <li>○ Do not reach beyond the plane of the infeed hopper while the chipper is running.</li> <li>○ Loose-fitting items such as clothing, jewelry, fall protection equipment, or gauntlet-type gloves, shall not be worn while operating chippers.</li> <li>○ Appropriate PPE may include: <ul style="list-style-type: none"> <li>■ Breakaway hi-vis traffic vest</li> <li>■ Enhanced hearing protection</li> <li>■ Face protection</li> </ul> </li> <li>○ Chipping area is clear of throwlines, climbing and rigging lines</li> <li>○ Brush is clear of metal, stone fencing and wire.</li> <li>○ Feed from the curb side.</li> <li>○ Feed brush butt or cut end first</li> <li>○ Ground workers maintain clearance from truck and towed equipment when aerial lift approaches minimum approach distance</li> </ul> </li> <li>● Stopping and shutdown <ul style="list-style-type: none"> <li>○ Engine and all moving parts have come to a complete stop</li> </ul> </li> </ul>
--	--	--

		<ul style="list-style-type: none"> <li>○ Equipped with a locking device in the ignition system.</li> <li>○ Maintenance restricted to authorized persons.</li> <li>○ See hazardous energy control</li> </ul>
<p><b>E8 - Sprayers and related equipment</b></p> <p><b>1910.269 (r)(3)</b></p> <p><b>ANSI Z-133 8.9 8.10 Annex B 4.1 5.3</b></p>	<p>Requirements for applying chemicals for vegetation management vary from state to state. CUSP s must develop and implement procedures which ensure that workers, the public and the environment are protected from spills and exposures to herbicides and the hazards from their storage, use, and clean up.</p>	<p>Workers applying herbicides must be certified as required by state or local agencies. Chemical manufacturer’s labels have the force of law. CUSPs must ensure workers have procedures, policies, programs and training to ensure the following:</p> <ul style="list-style-type: none"> <li>● Chemical resistant PPE <ul style="list-style-type: none"> <li>○ Follow manufacturer label</li> <li>○ Gloves to forearms</li> <li>○ Splash resistant goggles</li> <li>○ Clothing or suit appropriate for chemical hazard.</li> </ul> </li> <li>● Spills <ul style="list-style-type: none"> <li>○ Prevention</li> <li>○ Spill kits</li> <li>○ Containment procedures</li> <li>○ Reporting</li> </ul> </li> <li>● Drift control considerations <ul style="list-style-type: none"> <li>○ Weather</li> <li>○ Spray characteristics</li> <li>○ Equipment and application</li> </ul> </li> <li>● Chemical information <ul style="list-style-type: none"> <li>○ Safety Data Sheets (SDS)</li> <li>○ Manufacturer’s labels</li> </ul> </li> <li>● Spray record book</li> <li>● Maintenance of equipment <ul style="list-style-type: none"> <li>○ Replace worn parts, spliced hoses</li> <li>○ Walking surfaces are non-skid.</li> <li>○ Vehicles shall have guardrails around the working area.</li> <li>○ Check and change oils</li> <li>○ Clean tank</li> <li>○ Calibration check</li> <li>○ Recheck for leaks</li> <li>○ Run water through system under pressure</li> </ul> </li> <li>● Permit required confined space program for workers trained not to enter confined spaces: <ul style="list-style-type: none"> <li>○ Evaluate workplace for permit required confined spaces</li> <li>○ Post danger signs at entrances to confined spaces</li> </ul> </li> </ul>

		<ul style="list-style-type: none"> <li>○ Re-evaluate changes in use or configuration.</li> <li>○ Advise contactors of confined space hazards</li> </ul>
<b>E9 - Stump grinders</b>  <b>1910.267 (r)(4)</b>  <b>ASNI Z-133 5.5 Annex B4.1</b>	<p>Understand the safe operation of a stump cutter</p>	<p>Ensure workers understand and are familiar with:</p> <ul style="list-style-type: none"> <li>● Call for utility stake out (811)</li> <li>● Secure area to ensure that co-workers and homeowners are not exposed to the hazards of flying debris created during the grinding process</li> <li>● Wear proper PPE. <ul style="list-style-type: none"> <li>○ Face protection</li> <li>○ Gloves</li> <li>○ Hearing protection</li> <li>○ Safety toed footwear</li> <li>○ Hard hat</li> </ul> </li> <li>● Ensure that the operator is not wearing loose fitting clothing or jewelry when operating the stump cutter</li> <li>● Familiar with Manufactures safety features and guards</li> </ul>
<b>E10 - Hazardous Energy Control</b>  <b>1910.147</b>  <b>ANSI Z-133 ANNEX C</b>	<p>Protection of workers from unexpected energization or startup of machinery and equipment, or the release of hazardous energy during service or maintenance activities.</p>	<p>Able to apply a performance based program for controlling different types of hazardous energy which may include mechanical, hydraulic, pneumatic, chemical, thermal, or other energy. CUSP's must be familiar with energy control program requirements such as:</p> <ul style="list-style-type: none"> <li>● Isolate the energy supply and put appropriate lockout or tag out devices on the energy-isolating devices to prevent unexpected re-energization.</li> <li>● Train workers on the energy-control program.</li> <li>● Audit these procedures periodically to ensure that they are being followed and that they remain effective.</li> </ul>



<p><b>E11 - Chain Saws, Pole Saws, Pole Pruners and Other Power Operated Specialty Saws.</b></p> <p><b>1910.269</b> <b>(r)(5)</b> <b>1910.266</b> <b>(e)</b></p> <p><b>ASNI Z-133</b> <b>6.1</b> <b>6.3</b> <b>6.4</b></p>	<p>Power operated saws can be hand held or pole mounted and capable of causing serious injury. CUSPs should be familiar with the type of saws in use and the various power sources such as gas, hydraulic and battery. CUSPs should be able to identify correct procedures, and precautions including manufacturers' operating, maintenance, and safety instructions.</p>	<p>Ensure workers receive:</p> <ul style="list-style-type: none"> <li>● Training to identify hazards and manufacturers' safety devices. <ul style="list-style-type: none"> <li>○ Chainsaw brake inertia/manual</li> <li>○ Correct chain selection</li> <li>○ Throttle Lock</li> <li>○ Chain Catcher</li> <li>○ Right Hand Guard</li> <li>○ Stop and Start Control</li> <li>○ Bar and chain guard</li> <li>○ Spark Arrestor</li> </ul> </li> <li>● Access to and training on PPE such as: <ul style="list-style-type: none"> <li>○ Face and head protection.</li> <li>○ Hearing protection.</li> <li>○ Gloves for work on bars and chains.</li> <li>○ Appropriate chainsaw leg protection while on the ground.</li> <li>○ Correct footwear</li> </ul> </li> <li>● Starting and operating instruction which includes: <ul style="list-style-type: none"> <li>○ Proper starting procedures</li> <li>○ Fueling and oil instructions</li> <li>○ Power saw carried in a manner that will prevent operator contact with cutting chain and muffler.</li> <li>○ Power saw reactive forces.</li> <li>○ Two hands at all times when operating a power saw.</li> <li>○ Maintain safe distance between saw operator and anyone else.</li> </ul> </li> </ul> <p>Requirements for operating this equipment aloft:</p> <ul style="list-style-type: none"> <li>● Hand held chainsaw <ul style="list-style-type: none"> <li>○ Never cut above shoulders</li> <li>○ Climbers tied in and using a second means of being secured.</li> <li>○</li> </ul> </li> <li>● Identify a drop zone <ul style="list-style-type: none"> <li>○ Establish communication protocol between arborists aloft and personnel working on the ground using a command-and-response protocol. Hand signals or whistles may also be used. Eye contact with, or line-of-sight between, the arborist aloft and the ground</li> </ul> </li> </ul>
--	---	--

		<p>person should also be established when communicating.</p> <ul style="list-style-type: none"> <li>● Long reach pole saws <ul style="list-style-type: none"> <li>○ Never cut directly above your head</li> </ul> </li> </ul>
<p><b>E12 - Aerial Lift Equipment</b></p> <p><b>1910.269</b></p> <p><b>ASNI Z-133 5.2</b></p> <p><b>Annex B B4.1 B4.2</b></p>	<p>Aerial lifts used for Line Clearance Tree trimming which are operated within 10 feet of power lines must comply with all requirements for insulated boom equipment. CUSPs must have a working knowledge of these requirements.</p>	<p>Ensure workers have programs, policies, and training in place to address required maintenance, inspection and operation of insulated boom aerial lift equipment.</p> <ul style="list-style-type: none"> <li>● Maintenance <ul style="list-style-type: none"> <li>○ Di-electric testing for boom basket.</li> <li>○ Use only di-electric hydraulic fluid.</li> <li>○ Signage correct for load and attachment points.</li> </ul> </li> <li>● Inspection, pre-use <ul style="list-style-type: none"> <li>○ Critical safety components.</li> <li>○ DOT current.</li> <li>○ Daily pre-flight</li> <li>○ Current di-electric test</li> </ul> </li> <li>● Operation <ul style="list-style-type: none"> <li>○ Familiar with equipment being used.</li> <li>○ Emergency response and rescue.</li> <li>○ Set up, placement and stability.</li> <li>○ Outrigger use.</li> <li>○ Smooth operation of lift.</li> <li>○ Any portion of boom must maintain minimum approach distance</li> <li>○ Observer to monitor minimum approach distance</li> <li>○ Elevator lifted booms</li> <li>○ Ground workers maintain clearance from truck and towed equipment when aerial lift approaches minimum approach distance</li> <li>○ Load limits</li> <li>○ Bucket to tree transfer</li> <li>○ Fall protection <ul style="list-style-type: none"> <li>● Full Body harness</li> <li>● Energy absorbing lanyard</li> <li>● Falling clear of lower level</li> </ul> </li> </ul> </li> </ul>

<p><b>E13 - Electrical Insulated Equipment</b></p>	<p>Understand the purpose, application and use of insulated tools.</p>	<p>Familiar with the selection, use, inspection which includes:</p> <ul style="list-style-type: none"> <li>● Design and specific type</li> <li>● Use voltage rating</li> <li>● Testing requirement for <ul style="list-style-type: none"> <li>○ In service</li> <li>○ Inspection before use</li> <li>○ Removal from service due to defects</li> <li>○ After repair</li> </ul> </li> <li>● In service care</li> <li>● Proper storage</li> </ul>
<p><b>E14 - Work adjacent to energized power lines.</b></p> <p><b>1910.269(r)</b></p> <p><b>ANSI Z133 4.3.6 -16</b></p> <p><b>Right-of-way access -non sure that the US reg reference is</b></p>	<p>CUSP's must have a working knowledge of the provisions and requirements to ensure worker safety while performing line clearance tree trimming adjacent to electric supply lines and equipment.</p> <p>Crews often access undeveloped or unmaintained paths with trucks, ATV, UTV and attention to safe access and navigating heavy terrain.</p>	<p>The pruning, trimming, repairing, maintaining, removing, or clearing of trees, or the cutting of brush within 10 feet of exposed power lines requires qualified Utility Line Clearance Arborist to:</p> <ul style="list-style-type: none"> <li>● Determine the nominal or highest voltage of electric power lines posing a hazard.</li> <li>● Identify and maintain the correct MAD.</li> <li>● Provide a second line-clearance tree trimmer or trainee when: <ul style="list-style-type: none"> <li>○ A line-clearance tree trimmer approaches more closely than 10 feet to any conductor energized at more than 750 volts.</li> <li>○ Branches or limbs being removed are within the MAD.</li> <li>○ Roping is necessary to remove branches or limbs from MAD over 750 volts.</li> </ul> </li> <li>● Only use insulating equipment to remove limbs and branches from within the MAD.</li> <li>● Ensure workers entering restricted areas such as substations are aware of the hazards and have received site specific training.</li> <li>● Ensure workers are trained in emergency rescue and response.</li> <li>● Maintain MAD for insulated boom mechanical equipment, and implement measures to protect workers on the ground.</li> <li>● Shutdown operation when adverse weather conditions threaten the safety of workers.</li> <li>● Ensure employee are trained and qualified in ATV/UTV equipment</li> <li>● Remote access emergency planning.</li> <li>● Knowledge of general 4x4 access safety with bucket trucks and similar equipment that may be in tow.</li> </ul>