

## **Laws and Regulations Related to Overhead Power Lines**

### **Statue**

**PRC 4292:** Except as otherwise provided in Section 4296, any person that owns, controls, operates, or maintains any electrical transmission or distribution line upon any mountainous land, or forest-covered land, brush-covered land, or grass-covered land shall, during such times and in such areas as are determined to be necessary by the director or the agency which has primary responsibility for fire protection of such areas, maintain around and adjacent to any pole or tower which supports a switch, fuse, transformer, lightning arrester, line junction, or dead end or corner pole, a firebreak which consists of a clearing of not less than 10 feet in each direction from the outer circumference of such pole or tower. This section does not, however, apply to any line which is used exclusively as telephone, telegraph, telephone or telegraph messenger call, fire or alarm line, or other line which is classed as a communication circuit by the Public Utilities Commission. The director or the agency which has primary fire protection responsibility for the protection of such areas may permit exceptions from the requirements of this section which are based upon the specific circumstances involved.

**PRC 4293:** Except as otherwise provided in Sections 4294 to 4296, inclusive, any person that owns, controls, operates, or maintains any electrical transmission or distribution line upon any mountainous land, or in forest-covered land, brush-covered land, or grass-covered land shall, during such times and in such areas as are determined to be necessary by the director or the agency which has primary responsibility for the fire protection of such areas, maintain a clearance of the respective distances which are specified in this section in all directions between all vegetation and all conductors which are carrying electric current:

- (a) For any line which is operating at 2,400 or more volts, but less than 72,000 volts, four feet.
- (b) For any line which is operating at 72,000 or more volts, but less than 110,000 volts, six feet.
- (c) For any line which is operating at 110,000 or more volts, 10 feet.

In every case, such distance shall be sufficiently great to furnish the required clearance at any position of the wire, or conductor when the adjacent air temperature is 120 degrees Fahrenheit, or less. Dead trees, old decadent or rotten trees, trees weakened by decay or disease and trees or portions thereof that are leaning toward the line which may contact the line from the side or may fall on the line shall be felled, cut, or trimmed so as to remove such hazard. The director or the agency which has primary responsibility for the fire protection of such areas may permit exceptions from the requirements of this section which are based upon the specific circumstances involved.

**PRC 4294:** A clearing to obtain line clearance is not required if self-supporting aerial cable is used. Forked trees, leaning trees, and any other growth which may fall across the line and break it shall, however, be removed.

**PRC 4295:** A person is not required by Section 4292 or 4293 to maintain any clearing on any land if such person does not have the legal right to maintain such clearing, nor do such sections require any person to enter upon or to damage property which is owned by any other person without the consent of the owner of the property.

PRC 4295.5: (a) Notwithstanding any other law, including Section 4295, any person who owns, controls, operates, or maintains any electrical transmission or distribution line may traverse land as necessary, regardless of land ownership or express permission to traverse land from the landowner, after providing notice and an opportunity to be heard to the landowner, to prune trees to maintain clearances pursuant to Section 4293, and to abate, by pruning or removal, any hazardous, dead, rotten, diseased, or structurally defective live trees. The clearances obtained when the pruning is performed shall be at the full discretion of the person that owns, controls, operates, or maintains any electrical transmission or distribution line, but shall be no less than what is required in Section 4293. This section shall apply to both high fire threat districts, as determined by the California Public Utilities Commission pursuant to its rulemaking authority, and to state responsibility areas.

(b) Nothing in subdivision (a) shall exempt any person who owns, controls, operates, or maintains any electrical transmission or distribution line from liability for damages for the removal of vegetation that is not covered by any easement granted to him or her for the electrical transmission or distribution line.

PRC 4296: Sections 4292 and 4293 do not apply if the transmission or distribution line voltage is 750 volts or less.

PUC 8037: The commission may grant such additional time and shall inspect all work which is included in the provisions of this article, and may make such further additions or changes as the commission deems necessary for the purpose of safety to employees and the general public. The commission shall enforce the provisions of this article.

## **Board Regs**

CCR 14 § 1251: The following definitions apply to this Article unless the context requires otherwise.

Defined word or phrase

“Conductor” means connector, a wire, or a combination of wires, and/or any other appliance designed and manufactured for use in the transmission and distribution of electrical current.

“Connector” means a device approved for energized electrical connections.

“Duff” means partially decayed leaves, needles, grass or other organic material accumulated on the ground.

“Firebreak” means a natural or artificial barrier usually created by the removal or modification of vegetation and other flammable materials for the purpose of preventing spread of fire.

“Hot line tap or clamp connector” means a connector designed to be used with a Grip-All Clamp stick (Shotgun) for connecting equipment jumper or tap conductors to an energized main line or running connector.

“Outer Circumference” means the exterior surface of a pole or tree at ground level or a series of straight lines tangent to the exterior of the legs of a tower at ground level. (See Figure 1, this Article.)

“Self-supporting aerial cable” means an assembly of abrasion resistant insulated conductors supported by a messenger cable which is normally grounded, designed and manufactured to carry electrical current for installation on overhead pole lines or other similar overhead structures.

“Tree wire” means an insulated conductor covered with a high abrasion resistant, usually non-metallic, outer covering, designed and manufactured to carry electrical current for installation on overhead pole lines or other similar overhead structures.

CCR 14 § 1252: The Director will apply PRC 4292-4296 in any mountainous land, forest covered land, brush covered land or grass covered land within State Responsibility Areas unless specifically exempted by 14 CCR 1255 and 1257.

CCR 14 § 1252.1: The official maps of State Responsibility Areas defined in 14 CCR § 1220 are available for viewing and copying during normal business hours at the California Department of Forestry and Fire Protection, 1416 Ninth Street, Sacramento, California, 95814, in the Fire Protection Section.

When, pursuant to PRC 4125-4128, the Board revises State Responsibility Area boundaries, the Director will forward a legal description of a boundary change(s) to the respective electric utility(s) serving the area(s).

CCR 14 § 1252.2: Where the boundaries of areas described in 14 CAC 1252 are along roads, highways, streets, railroads, streams, canals or rivers, the actual boundary shall be the center-line of the course of such roads, highways, streets, railroads, streams, canals, and rivers.

CCR 14 § 1252.3: Where the boundaries of the area described in 14 CAC 1252 are on section, township or range lines, or on powerline rights-of-way, the poles, towers and conductors located thereon are within the area described.

CCR 14 § 1253: The minimum firebreak and clearance provisions of PRC 4292-4296 are applicable during the declared California Department of Forestry and Fire Protection fire season for a respective county. The Director shall post the declaration on the official Department web site.

CCR 14 § 1254: The firebreak clearances required by PRC 4292 are applicable within an imaginary cylindrical space surrounding each pole or tower on which a switch, fuse, transformer or lightning arrester is attached and surrounding each dead end or corner pole unless such pole or tower is exempt from minimum clearance requirements by provisions of 14 CCR 1255 or PRC 4296. The radius of the cylinder is 3.1 m (10 feet) measured horizontally from the outer circumference of the specified pole or tower with height equal to the distance from the intersection of the imaginary vertical exterior surface of the cylinder with the ground to an intersection with a horizontal plane passing through the highest point at which a conductor is attached to such pole or tower. (See Figure 2 this Article.) Flammable vegetation and materials located wholly or partially within the firebreak space shall be treated as follows:

- (a) At ground level -remove flammable materials, including but not limited to, ground litter, duff and dead or desiccated vegetation that will allow fire to spread, and;
- (b) From 0-2.4 m (0-8 feet) above ground level -remove flammable trash, debris or other materials, grass, herbaceous and brush vegetation. All limbs and foliage of living trees shall be removed up to a height of 2.4 m (8 feet).
- (c) From 2.4 m (8 feet) to horizontal plane of highest point of conductor attachment -remove dead, diseased or dying limbs and foliage from living sound trees and any dead, diseased or dying trees in their entirety.

CCR 14 § 1255: The minimum clearance provisions of PRC 4292 are not required around poles and towers, including line junction, corner and dead end poles and towers:

- (a) Where all conductors are continuous over or through a pole or tower; or

- (b) Where all conductors are not continuous over or through a pole or tower, provided, all conductors and subordinate equipment are of the types listed below and are properly installed and used for the purpose for which they were designed and manufactured;
- (1) compression connectors,
  - (2) automatic connectors,
  - (3) parallel groove connectors,
  - (4) hot line tap or clamp connectors that were designed to absorb any expansion or contraction by applying spring tension on the main line or running conductor and tap connector,
  - (5) Fargo GA 300 series piercing connectors designed and manufactured for use with tree wire,
  - (6) flat plate connectors installed with not less than two bolts,
  - (7) tapered C-shaped member and wedge connectors,
  - (8) solid blade single phase bypass switches and solid blade single phase disconnect switches associated with circuit reclosers, sectionalizers and line regulators,
  - (9) equipment that is completely sealed and liquid-filled;
  - (10) current limiting non-expulsion fuses or
- (c) On the following areas if fire will not propagate thereon;
- (1) fields planted to row crops,
  - (2) plowed or cultivated fields,
  - (3) producing vineyards that are plowed or cultivated;
  - (4) fields in nonflammable summer fallow;
  - (5) irrigated pasture land;
  - (6) orchards of fruit, nut or citrus trees that are plowed or cultivated,
  - (7) Christmas tree farms that are plowed or cultivated; and
  - (8) swamp, marsh or bog land; or
- (d) Where vegetation is maintained less than 30.48 cm (12 inches) in height, is fire resistant, and is planted and maintained for the specific purpose of preventing soil erosion and fire ignition.

CCR 14 § 1256: Minimum clearance required by PRC 4293 shall be maintained with the specified distances measured at a right angle to the conductor axis at any location outward throughout an arc of 360 degrees. (See Figure 3 this Article.)

Minimum clearance shall include:

- (1) any position through which the conductor may move, considering, among other things, the size and material of the conductor and its span length;
- (2) any position through which the vegetation may sway, considering, among other things, the climatic conditions, including such things as foreseeable wind velocities and temperature, and location, height and species of the vegetation.

CCR 14 § 1256: (a) The minimum clearance provisions of PRC 4293 applicable in State Responsibility Areas are exempted:

- (1) Where conductors are:
  - (A) insulated tree wire, maintained with the high density, abrasion resistant outer covering intact, or
  - (B) insulated self-supporting aerial cable, maintained with the insulation intact, or
  - (C) supported by sound and living tree trunks from which all dead or decadent branches have been removed.
- (2) On areas described in 14 CCR 1255(c).
- (3) For mature trees ("Exempt Trees") whose trunks and major limbs are located more than six inches, but less than the distance required for clearance by PRC 4293, from primary distribution equipment (conductor and energy carrying hardware, generally less than 35 kilovolts).

(A) Exempt Trees must meet all of the following criteria, as confirmed by a Certified Arborist or a Registered Professional Forester:

1. The tree or limb must be six (6) inches or more from the line at all times.
2. The size of the tree or limb at the conductor level must be at least six (6) inches in diameter.
3. The tree must not have "scaffold branches," below eight and one-half feet from the ground (so the tree can not be easily climbed).

(B) All Utility Companies with primary distribution conductors in State Responsibility Areas (SRA) of California shall:

1. Inspect Exempt Trees annually to verify they continue to meet the criteria in 14 CCR 1257(a)(3).
2. Maintain a database of information about Exempt Trees that includes 1) location, using the format of latitude/longitude in decimal degrees (DDD.DDDD Datum WGS84); 2) species; and 3) last date of inspection. If any Utility does not currently maintain such a database it must establish one and provide its initial report to CAL FIRE by July 1, 2013. Utilities may request, and the Director may approve, an extension of time in which to achieve compliance with this reporting requirement.
3. Report the information required pursuant to 14 CCR 1257(a)(B)(2) above, in an electronically researchable format, annually to CAL FIRE by July 1 of each year for the previous calendar year.
4. When constructing, installing, replacing, or maintaining primary distribution equipment, prevent the creation of new Exempt Trees, to the extent feasible.

(C) Where there are site specific indications that a conductor has or will come into contact with an Exempt Tree, or portion thereof as described above, the condition will be corrected either by altering the tree or by applying an engineering solution. The actions taken will be documented in that utility's Exempt Tree database.

(b) These exemptions do not apply to "Hazard Trees" as identified and explained on pages 1-20 through 1-24 in the Department's "Powerline Fire Prevention Field Guide" dated November 2008 and posted on the Department's website at:  
<http://cdfdata.fire.ca.gov/pub/fireplan/fpupload/fppguidepdf126.pdf>.

## **PUC Regs – General Order 95, Rule 35 & Appendix E**

**Rule 35:** Where overhead conductors traverse trees and vegetation, safety and reliability of service demand that certain vegetation management activities be performed in order to establish necessary and reasonable clearances, the minimum clearances set forth in Table 1, Cases 13 and 14, measured between line conductors and vegetation under normal conditions shall be maintained. (Also see Appendix E for tree trimming guidelines.) These requirements apply to all overhead electrical supply and communication facilities that are covered by this General Order, including facilities on lands owned and maintained by California state and local agencies. When a supply or communication company has actual knowledge, obtained either through normal operating practices or notification to the company, that dead, rotten or diseased trees or dead, rotten or diseased portions of otherwise healthy trees overhang or lean toward and may fall into a span of supply or communication lines, said trees or portions thereof should be removed.

Communication and electric supply circuits, energized at 750 volts or less, including their service drops, should be kept clear of vegetation in new construction and when circuits are reconstructed or repaired, whenever

practicable. When a supply or communication company has actual knowledge, obtained either through normal operating practices or notification to the company, that its circuit energized at 750 volts or less shows strain or evidences abrasion from vegetation contact, the condition shall be corrected by reducing conductor tension, rearranging or replacing the conductor, pruning the vegetation, or placing mechanical protection on the conductor(s). For the purpose of this rule, abrasion is defined as damage to the insulation resulting from the friction between the vegetation and conductor. Scuffing or polishing of the insulation or covering is not considered abrasion. Strain on a conductor is present when vegetation contact significantly compromises the structural integrity of supply or communication facilities. Contact between vegetation and conductors, in and of itself, does not constitute a nonconformance with the rule.

Exceptions:

1. Rule 35 requirements do not apply to conductors, or aerial cable that complies with Rule 57.4-C, energized at less than 60,000 volts, where trimming or removal is not practicable and the conductor is separated from the tree with suitable materials or devices to avoid conductor damage by abrasion and grounding of the circuit through the tree.

2. Rule 35 requirements do not apply where the utility has made a “good faith” effort to obtain permission to trim or remove vegetation but permission was refused or unobtainable. A “good faith” effort shall consist of current documentation of a minimum of an attempted personal contact and a written communication, including documentation of mailing or delivery. However, this does not preclude other action or actions from demonstrating “good faith”. If permission to trim or remove vegetation is unobtainable and requirements of exception 2 are met, the utility is not compelled to comply with the requirements of exception 1.

3. The Commission recognizes that unusual circumstances beyond the control of the utility may result in nonconformance with the rules. In such cases, the utility may be directed by the Commission to take prompt remedial action to come into conformance, whether or not the nonconformance gives rise to penalties or is alleged to fall within permitted exceptions or phase-in requirements.

4. Mature trees whose trunks and major limbs are located more than six inches, but less than the clearance required by Table 1, Cases 13E and 14E, from primary distribution conductors are exempt from the minimum clearance requirement under this rule. The trunks and limbs to which this exemption applies shall only be those of sufficient strength and rigidity to prevent the trunk or limb from encroaching upon the six-inch minimum clearance under reasonably foreseeable local wind and weather conditions. The utility shall bear the risk of determining whether this exemption applies, and the Commission shall have final authority to determine whether the exemption applies in any specific instance, and to order that corrective action be taken in

accordance with this rule, if it determines that the exemption does not apply.

**Appendix E:**

The following are guidelines to Rule 35.

The radial clearances shown below are recommended minimum clearances that should be established, at time of trimming, between the vegetation and the energized conductors and associated live parts where practicable. Reasonable vegetation management practices may make it advantageous for the purposes of public safety or service reliability to obtain greater clearances than those listed below to ensure compliance until the next scheduled maintenance. Each utility may determine and apply additional appropriate clearances beyond clearances listed below, which take into consideration various factors, including: line operating voltage, length of span, line sag, planned maintenance cycles, location of vegetation within the span, species type, experience with particular species, vegetation growth rate and characteristics, vegetation management standards and best practices, local climate, elevation, fire risk, and vegetation trimming requirements that are applicable to State Responsibility Area lands pursuant to Public Resource Code Sections 4102 and 4293.

<u>Voltage</u>	<u>Normal Clearance</u>	<u>High Fire Threat District* Clearance</u>
2,400-72,000	4ft †	12ft †‡
72,000-110,000	6ft †	20ft †‡
110,000-300,000	10ft †	30ft †‡
300,000 or more volts	15ft †	30ft †‡

\*High Fire Threat District is defined in GO 95, Rule 21.2-D (and below)

† Clearances in this case shall be maintained for normal annual weather variations, rather than at 60 degrees, no wind.

‡ Clearances in this case shall not apply to orchards of fruit, nut or citrus trees that are plowed or cultivated. In those areas “normal” clearances shall apply.

*High Fire-Threat District* means those areas comprised of the following:

- 1) Zone 1 is Tier 1 of the latest version of the United States Forest Service (USFS) and CAL FIRE’s joint map of Tree Mortality High Hazard Zones (HHZs). (Note: The Tree Mortality HHZs Map may be revised regularly by the USFS and CAL FIRE.)
- 2) Tier 2 is Tier 2 of the CPUC Fire-Threat Map.
- 3) Tier 3 is Tier 3 of the CPUC Fire-Threat Map.