

STATE OF CALIFORNIA

---

**RULES**

FOR

**Overhead Electric Line Construction**

---



---

Prescribed by the  
**PUBLIC UTILITIES COMMISSION**

OF THE

**STATE OF CALIFORNIA**

**GENERAL ORDER No. 95**

**May 2018**

## Section III Requirements for All Lines

Rule	Page
31. Application	III-5
31.1 Design, Construction and Maintenance	III-5
31.2 Inspection of Lines	III-6
31.3 Avoidance of Conflicts and Crossings	III-6
31.4 Cooperation to Avoid Conflicts	III-7
31.5 Joint Use of Poles	III-7
31.6 Abandoned Lines	III-8
32. General Arrangements of Lines	III-8
32.1 Two or More Systems	III-8
32.2 Relative Levels	III-8
A. Supply Circuits of 750 - 20,000 Volts	III-9
B. Supply Circuits of 0 - 750 Volts	III-9
C. Supply Circuits of 0 - 750 Volts and Class T Circuits	III-9
D. Communication Circuits	III-9
E. Supply Service Drops of 0 - 750 Volts	III-9
F. Communication Service Drops	III-10
G. Exceptional Cases	III-10
32.3 Colinear Lines and Crossing Lines	III-10
32.4 Circuits of Different Classification on the Same Crossarm	III-11
A. Supply Circuits	III-11
(1) 750 - 7,500 Volts and More than 20,000 Volts	III-11
(2) 0 - 750 Volts and More than 7,500 Volts	III-11
(3) 0 - 750 Volts and 750 - 7,500 Volts	III-12
(4) More than 750 Volts, Different Ownerships	III-12
(5) 0 - 750 Volts, Different Ownerships	III-12
(6) Common Neutral Conductor	III-12

Rule	Page	
32.4	Circuits of Different Classification on the Same Crossarm (continued)	
B.	Supply Circuits of 0 - 750 Volts and Communication Circuits	III-12
C.	Supply Circuits and Private Communication Circuits	III-12
(1)	7,500 - 22,500 Volts, Same Ownership	III-13
(2)	750 - 7,500 Volts, Same Ownership	III-13
(3)	0 - 750 Volts	III-13
33.	Grounds and Neutrals	III-13
33.1	Neutral Conductors	III-13
33.2	Ground or Earth as a Conductor	III-14
33.3	Ground Connections	III-14
A.	Effective Grounds	III-14
B.	Independent Ground Connections	III-14
34.	Foreign Attachments	III-15
A.	Supports	III-16
(1)	Messenger and Span Wires	III-16
(2)	Rope	III-17
(3)	Apparatus Supported on Brackets Attached to Poles	III-17
B.	Climbing Space	III-17
C.	Clearances	III-17
(1)	Messengers and Span Wires	III-17
(2)	Energized Apparatus	III-18
(3)	Non-Energized Apparatus	III-18
(4)	Miscellaneous Equipment	III-18
D.	Vertical Clearance Requirements above Thoroughfares, Ground, Etc.	III-18
E.	Vertical and Lateral Runs	III-18
F.	Energized Conductor (Wire or Cable)	III-19
G.	Guying	III-19
35.	Vegetation Management	III-19
36.	Pole Clearances from Railroad Tracks	III-21

Rule	Page
37. Minimum Clearances of Wires above Railroads, Thoroughfares, Buildings, Etc.	III-22
Table 1	III-24
38. Minimum Clearances of Wires from Other Wires	III-28
Table 2	III-29
39. Minimum Clearances of Wires from Signs	III-33
Table 2A	III-34

(This Space Intentionally Left Blank)

## **Section III**

### **Requirements for All Lines**

---

Rule 31.1

---

#### **31 Application**

The following rules apply to all classes of overhead lines under all conditions.

##### **31.1 Design, Construction and Maintenance**

Electrical supply and communication systems shall be designed, constructed, and maintained for their intended use, regard being given to the conditions under which they are to be operated, to enable the furnishing of safe, proper, and adequate service.

For all particulars not specified in these rules, design, construction, and maintenance should be done in accordance with accepted good practice for the given local conditions known at the time by those responsible for the design, construction, or maintenance of communication or supply lines and equipment.

A supply or communications company is in compliance with this rule if it designs, constructs, and maintains a facility in accordance with the particulars specified in General Order 95, except that if an intended use or known local conditions require a higher standard than the particulars specified in General Order 95 to enable the furnishing of safe, proper, and adequate service, the company shall follow the higher standard.

For all particulars not specified in General Order 95, a supply or communications company is in compliance with this rule if it designs, constructs and maintains a facility in accordance with accepted good practice for the intended use and known local conditions.

All work performed on public streets and highways shall be done in such a manner that the operations of other utilities and the convenience of the public will be interfered with as little as possible and no conditions unusually dangerous to workmen, pedestrians or others shall be established at any time.

Note: The standard of accepted good practice should be applied on a case by case basis. For example, the application of "accepted good practice" may be aided by reference to any of the practices, methods, and acts engaged in or approved by a significant portion of the relevant industry, or which may be expected to accomplish the desired result with regard to safety and reliability at a reasonable cost.

Note: Revised January 13, 2005 by Decision No. 0501030 and January 12, 2012 by Decision No. 1201032.

### **31.2 Inspection of Lines**

Lines shall be inspected frequently and thoroughly for the purpose of ensuring that they are in good condition so as to conform with these rules. Lines temporarily out of service shall be inspected and maintained in such condition as not to create a hazard.

**A. Communication Lines** (See Rule 80.1)

**B. Supply Lines** shall be inspected in compliance with the requirements of General Order 165.

Note: Revised January 12, 2012 by Decision No. 1201032.

### **31.3 Avoidance of Conflicts and Crossings**

In locating and constructing lines, efforts shall be made to avoid creating any conflicts with other lines. Where it is not reasonably practicable to maintain a sufficient separation of the lines, conflicts may in many cases be avoided by means of joint pole construction.

In the construction of new lines care shall be taken to avoid all unnecessary crossings. Crossing requirements are covered in Sections X and XI.

Supply and communication lines other than lines on jointly used poles, shall not occupy the same side of the road (fence line construction excluded, i.e., where the fence is used as all or part of the supporting structure) unless the consent of existing party or parties is obtained, or where both sides of the road are already occupied by the same class of line.

---

Class H circuits shall not occupy both sides of thoroughfares except where special permission is obtained from the Public Utilities Commission, unless, prior to such construction the pole-setting line operator shall have filed with the Commission a description of the route and configuration of the lines involved and copies of letters showing mutual consent for such occupancy by all pole using line operators having serving areas or routes in the general vicinity of the length of thoroughfare concerned.

Note: Revised January 2, 1962 by Resolution No. E-1109.

### **31.4 Cooperation to Avoid Conflicts**

Any party contemplating construction or reconstruction which would create a conflict with a line of another classification shall notify the party or parties owning or operating the other line, in advance of such construction, giving full information as to the location and character of the proposed construction, and the parties concerned shall cooperate with a view of avoiding or, if this is impracticable, of minimizing the hazard.

### **31.5 Joint Use of Poles**

Joint use of poles shall be given consideration by all interested parties where construction or reconstruction is involved and where used it shall be subject to the appropriate grade of construction as specified in Section IV. Nothing herein shall be construed as requiring joint use of the same poles, or as granting authority for the use of any poles without the owner's consent (see Rule 32.2 and Section IX).

Each party should definitely designate its space requirements on joint poles, which space shall not be occupied without consent, by equipment of any other party.

Non-climbable poles in partial underground distribution systems (see Rules 22.6-D and 22.5) shall not be jointly used.

Note: Revised February 7, 1964 by Decision No. 66707.



### **31.6 Abandoned Lines**

Lines or portions of lines permanently abandoned shall be removed by their owners so that such lines shall not become a public nuisance or a hazard to life or property. For the purposes of this rule, lines that are permanently abandoned shall be defined as those lines that are determined by their owner to have no foreseeable future use.

Note: Revised January 13, 2005 by Decision No. 0501030.

## **32 General Arrangements of Lines**

### **32.1 Two or More Systems**

Where two or more systems are concerned in any clearance, that owner or operator who last in point of time constructs or erects facilities, shall establish the clearance required in these rules from other facilities which have been erected previously. Relative to the clearance which it bears to older lines in the vicinity, each succeeding line erected should be constructed with a view to the requirements of such older lines when they are reconstructed to the standards which current rules have specified. Subsequent entrants into an area shall recognize the provisions for future development made by all prior entrants into the field as indicated by their installed facilities.

### **32.2 Relative Levels**

Where supply and communication circuits or supply circuits of different voltage classifications are involved in crossings, conflicts or joint use, the higher voltage circuit shall in general be carried at the higher level. This arrangement is not feasible in all cases, for example where trolley circuits are involved or where poles are jointly occupied.

---

It is recommended that lines be arranged by mutual agreement of those concerned at standardized voltage levels throughout a given community in order to minimize difficulties when new crossings or extensions to existing lines are to be installed.

**A. Supply Circuits of 750 - 20,000 Volts**

Supply circuits of 750 - 20,000 volts should not be above supply circuits in excess of 20,000 volts.

**B. Supply Circuits of 0 - 750 Volts**

Supply circuits of 0 - 750 volts should not be above supply circuits in excess of 7,500 volts.

**C. Supply Circuits of 0 - 750 Volts and Class T Circuits**

Supply circuits 0 - 750 volts and all Class T circuits may cross under communication and railway circuits provided clearances not less than those given in Tables 1 and 2 are maintained.

**D. Communication Circuits**

Communication circuits should not be above supply circuits in excess of 7,500 volts. Insulated single conductors, paired wire or duplex communication line conductors above supply circuits (including Class T circuits) of 750 - 7,500 volts shall be supported on messengers or constructed in accordance with Rule 32.2-G.

**E. Supply Service Drops of 0 - 750 Volts**

Supply service drops of 0 - 750 volts shall not cross in a span above supply circuits (excepting Class T circuits) in excess of 750 volts, but service drops may cross above such circuits when supported on the same pole.

## **F. Communication Service Drops**

Communication service drops should not cross in a span above supply circuits (excepting Class T circuits) of 750 - 7,500 volts and shall not cross in a span above supply circuits in excess of 7,500 volts. Where it is necessary that communication service drops cross in a span above supply circuits of 750 - 7,500 volts, an auxiliary attachment or its approved equivalent shall be used at the service end of the service drop to insure against the drop falling across the supply circuit in the event of the failure of the usual means of attachment.

## **G. Exceptional Cases**

Where it is not possible to conform to the usual arrangement whereby the higher voltage circuit shall be carried at the higher level, the positions may be reversed provided the lower voltage circuit, installed at the higher level, shall be erected and maintained with the same strength requirements as the higher voltage circuits would require with the usual arrangement of levels. Where neither circuit carries in excess of 750 volts this provision does not apply.

Where supply and communication circuits carrying less than 750 volts cross trolley contact conductors carrying in excess of 750 volts, they shall conform to the strength requirements for supply lines corresponding to the voltage of the trolley contact conductors.

## **32.3 Colinear Lines and Crossing Lines**

The centerline clearance between poles and conductors which pass unattached shall be not less than 1 1/2 times the clearance specified in Table 1, Case 8, except where the interset pole is within 10 feet of a pole to which the passing conductors are attached. Where poles of the two lines are less than 10 feet apart, clearances not less than as specified in Table 1, Case 8 shall be maintained between the centerline of any pole and conductors which pass unattached. Where clearance crossarms are installed in the construction and maintenance of colinear lines or crossings, clearances not less than as specified in Table 1, Case 8 shall be maintained between all conductors on the clearance crossarms and the centerline of poles to which such crossarms are attached.

---

The provisions of the foregoing rules for colinear lines are subject to modifications specified in Rule 84.4 –D3 where communication circuits only are concerned and the provisions of Table 1, Case 10.

Note: Revised January 8, 1980 by Decision No. 91186.

## **32.4 Circuits of Different Classification on the Same Crossarm**

### **A. Supply Circuits**

#### **(1) 750 – 7,500 Volts and More than 20,000 Volts:**

Supply circuits of 750 - 7,500 volts shall not be carried on the same crossarm with circuits of more than 20,000 volts unless the higher voltage circuit is not energized when men are working at this level. Where this construction is used, circuits of different classification shall be carried on opposite ends of the crossarm with a horizontal separation of not less than pin spacing required for the highest voltage concerned, but not less than 36 inches between the nearest conductors of different classification.

#### **(2) 0 - 750 Volts and More than 7,500 Volts:** Supply circuits of 0 - 750 volts shall not be carried on the same crossarm with circuits of more than 7,500 volts, except that, on transformer structures, bus conductors of 0 - 750 volts and bus conductors of 7,500 - 22,500 volts may be supported on opposite ends of the same bus-supporting timbers provided the horizontal separation between conductors of different classifications supported on the same arm is not less than 36 inches, the bus conductors of 7,500 - 22,500 volts are not extended longitudinally as line conductors, service drops are not supported on arms which support conductors of 7,500 - 22,500 volts, and conductors on related buck arms are not less than 4 feet vertically from such bus timbers.

Note: Revised March 29, 1966 by Decision No. 70489 and August 9, 1966 by Decision No. 71094.

- (3) 0 - 750 Volts and 750 - 7,500 Volts:** Supply circuits of 0 - 750 volts and 750 - 7,500 volts which are owned and operated by the same utility may be carried on opposite ends of the same crossarm with the nearest conductors of the two classifications separated a horizontal distance of not less than 36 inches. For requirements applicable to buck arm construction, climbing space, and service drops on combination arms, see Rule 54.4–C2b and 54.8–E respectively.
- (4) More than 750 Volts, Different Ownerships:** Supply circuits of more than 750 volts and of different ownership may be carried on opposite ends of the same crossarm with the nearest conductors of different ownerships separated a horizontal distance of not less than 36 inches, provided proper ownership designation is maintained.
- (5) 0 - 750 Volts, Different Ownerships:** Supply circuits of 0 - 750 volts and of different ownership may be carried on opposite ends of the same crossarm with the nearest conductors of different ownerships separated a horizontal distance of not less than 30 inches.
- (6) Common Neutral Conductor:** See Rule 59.3–E for the location of the common neutral conductor in common neutral systems.

**B. Supply Circuits of 0 - 750 Volts and Communication Circuits**

Supply circuits of 0 - 300 volts and Class C communication circuits of different ownership may be supported on the same crossarm, provided the two classifications of circuits are installed on opposite ends of the arm and the nearest conductors of the two classifications are separated a horizontal distance of not less than 36 inches. Where the two classes of circuits are of the same ownership, the horizontal distance may be reduced to not less than 30 inches and the supply circuit voltage may be 0 - 750 volts. Services direct from such a crossarm are not permitted to cross conductors of the other classification supported on the same crossarm.

**C. Supply Circuits and Private Communication Circuits (see Rules 20.6–A and 89)**

- 
- (1) 7,500 - 22,500 Volts, Same Ownership:** Supply circuits of 7,500 - 22,500 volts and private communication circuits owned (or leased) and operated and maintained by the same organization may be supported on the same crossarms as provided in Rule 89.2–A1.

Note: Revised March 29, 1966 by Decision No. 70489; August 9, 1966 by Decision No.71094; and January 19, 1994 by Resolution SU–25.

- (2) 750 - 7,500 Volts, Same Ownership:** Supply circuits of 750 - 7,500 volts and private communication circuits owned (or leased) and operated and maintained by the same organization may be supported on the same crossarms as provided in Rule 89.2–A2.

- (3) 0 - 750 Volts:** Supply circuits of 0 - 750 volts and private communication circuits may be supported on the same crossarms as provided in Rule 89.2–A3, or Rule 89.2–A4.

## **33 Grounds and Neutrals**

### **33.1 Neutral Conductors**

Neutral conductors of supply circuits, other than in distribution systems of 22,500 volts or less with common primary and secondary grounded neutrals, shall be considered as carrying the same voltage as the other conductors of the circuit. Insulators used to support neutral conductors shall meet the requirements of Rule 55, based on the nominal voltage of the circuit, but are not required to have the same insulating value as insulators actually used on the phase conductors. Where a common neutral system is installed, the neutral conductor may be considered as carrying the same voltage as any of its related system conductors, compliance with special practices and construction requirements being necessary (see Rule 59).

This rule need not apply to overhead lightning protection wires installed on metal structures or grounded wood structures.

Note: Revised March 29, 1966 by Decision No. 70489; August 9, 1966 by Decision No. 71094 and March 30, 1968 by Decision No. 73813

### **33.2 Ground or Earth as a Conductor**

Ground or earth shall not be used as a normal return or circuit conductor. In direct current supply systems or in single phase or polyphase supply systems, a neutral or any other conductor shall be used under normal use as a return or circuit conductor; however, the grounding of the neutral or any other conductor is not permitted as a normal return or circuit conductor. The neutral or any other conductor is permitted to be grounded only for the purposes of stabilization and protection.

Note: Revised January 19, 1994 by Resolution SU-25.

### **33.3 Ground Connections**

#### **A. Effective Grounds**

Supply equipment of the following types, when grounded to conform to requirements of this Order or for any other reasons, shall be effectively grounded:

- Neutral conductors of low voltage supply circuits (0 - 750 volts, see Rule 58.2–A);
- Neutral conductors of supply circuits exceeding 750 volts;
- Bond wires;
- Lightning arresters;
- Transformer cases grounded in accordance with Rule 58.2–A.

#### **B. Independent Ground Connections**

Ground connections for equipment of any one of the types listed in Rule 33.3–A shall not be interconnected with ground connections for equipment of any other type listed therein, EXCEPT:

In common neutral systems the neutral conductors of 0 - 750 volt supply circuits and of supply circuits of 750 - 22,500 volts may be interconnected and grounded in accordance with the provisions of Rule 59; and

A ground connection for a set of lightning arresters may be interconnected with:

---

A ground connection for the neutral conductor of the circuit protected by the set of lightning arresters,

A ground connection for the neutral conductor of a dedicated transformer and associated equipment cases solely for the purpose of providing power to operate electric utility supply equipment,

The cable sheath or body of the cable pothead where the cable conductors are connected to the circuit protected by the set of lightning arresters,

Metallic conduit enclosing conductors of the circuit protected by the set of lightning arresters,

Transformer cases grounded in accordance with Rule 58.2–A where the transformers are connected to the circuit protected by the set of lightning arresters, and

The ground connection of another set of lightning arresters, provided the circuits protected are of the same voltage classification.

Where more than two sets of lightning arresters on supply circuits of the same voltage classification are installed on a pole or structure, and their ground terminals are interconnected at the top of the ground connections, two complete and effective ground connections will be considered sufficient for the purposes of this rule. Connection to an effectively grounded cable sheath or conduit of a circuit protected by the lightning arresters will be considered as one of these two effective ground connections.

Note: Revised March 29, 1966 by Decision No. 70489, August 9, 1966 by Decision No. 71094 and October 9, 1996 by Resolution SU–40.

### **34 Foreign Attachments**

Nothing in these rules shall be construed as permitting the unauthorized attachment, to supply, street light or communication poles or structures, of antennas, signs, posters, banners, decorations, wires, lighting fixtures, guys, ropes and any other such equipment foreign to the purposes of overhead electric line construction.



Nothing herein contained shall be construed as requiring utilities to grant permission for such use of their overhead facilities; or permitting any use of joint poles or facilities for such permanent or temporary construction without the consent of all parties having any ownership whatever in the poles or structures to which attachments may be made; or granting authority for the use of any poles, structures or facilities without the owner's or owners' consent.

All permanent attachments must be approved by the Commission (see Rule 15.1) and the owner(s) involved.

All temporary attachments shall be restricted to installations where the period is estimated to be one year or less.

The utilities, or other governmental entities may require construction standards which are more restrictive than the requirements of this Rule 34.

The following rules shall apply to approved temporary foreign attachments installed on climbable poles and structures and shall be maintained as required by Rule 12.2.

#### **A. Supports**

**(1) Messengers and Span Wires:** Messengers and Span Wires (when used under the definitions of Rules 22.3 and 23.5 respectively) may be used as supports when the following requirements are met:

**(a) Material and Size Requirements:** See Rule 49.7 Messengers and Span Wires.

**(b) Sectionalizing Requirements:** Insulators shall be installed in all messengers and span wires, when used within the scope of this rule, and shall be located at a distance of not less than 6 feet and not more than 9 feet, measured along the messenger or span wire, from the points of attachment to the poles or structures. Sectionalizing insulators shall meet the requirements of Rules 56.8 and 86.8.

**(c) Attachments:** Messengers and span wires shall be attached to poles with through bolts and shall be protected by the use of guy thimbles or their equivalent where attached to the through bolts. Steel pole bands or their equivalent shall be used for steel and concrete poles.

In no case shall any apparatus (decorations, banner, wire, cable, lights, etc.) be supported by the utilities' or licensees' conductors, cables, messengers, span wires or guys.

- (2) Rope:** Rope may be used as a support for banners and decorations for short periods of time (to be determined by the granting authority) when the following conditions are met:
- (a)** Only non-energized banners and decorations shall be supported with rope.
  - (b)** The rope must be securely tied to the pole or structure with all excess rope removed and must not contact or obstruct any pole steps.
  - (c)** The rope must supply a safe minimum working load strength of 200 pounds, which is equivalent to 3/8 inch manila rope.
- (3) Apparatus Supported on Brackets Attached to Poles:** All attachments supported on brackets with a supply voltage of 0 - 750 volts shall meet the requirements of Rules 58.5-B and 92.1-F5.

## **B. Climbing Space**

All apparatus shall be installed outside of climbing space.

**EXCEPTION:** When temporary pole bands or ropes are used to support attachments, the bands or ropes shall be limited to 6 inches in width with no more than one band or width of rope allowed in any 24 inch section of climbing space.

Note: Revised October 9, 1996 by Resolution SU-40.

## **C. Clearances**

### **(1) Messengers and Span Wires:**

- (a) Messengers:** Messengers supporting energized apparatus, insulated wires or cables, etc. shall meet the clearance requirements of Rule 57.

**(b) Span Wires:** Span wires supporting non-energized equipment (banners, decorations, etc.) shall meet the clearance requirements of Rule 56.

**(2) Energized Apparatus:** All energized apparatus (decorations, wire, cable, lights, etc.) shall maintain the same clearances from conductors as those required for 0 - 750 volt service drops (Table 2, Column D, and Rule 54.8).

**(3) Non-Energized Apparatus, Vertical and Radial Clearances:**

**(a)** A minimum vertical clearance of 6 feet below any energized conductor level shall be maintained to any part of attachments supporting non-energized equipment.

**(b)** A minimum radial clearance of 1 foot shall be maintained from any street light and its supporting fixtures.

**(c)** A minimum radial clearance of 1 foot shall be maintained from all communication cables and messengers.

**(4) Miscellaneous Equipment:** A minimum radial clearance of 1 foot shall be maintained from any supply or communication device (power supply cabinets, communication drop distribution terminals, switch enclosures, operating equipment, etc.) where access may be required by workers. To ensure access and operation a greater clearance may be required by the utility or licensee involved.

**D. Vertical Clearance Requirements above Thoroughfares, Ground, etc.**

Vertical clearance requirements as in Rule 37, Table 1, Column B, Cases 1 to 5 inclusive, shall be maintained.

**E. Vertical and Lateral Runs**

For the requirements of vertical and lateral runs of conductors see Rule 54.6.

---

**F. Energized Conductor (Wire or Cable)**

All energized conductor (wire or cable) shall be covered with an insulation suitable for the voltage involved (See Rule 20.9–G).

**G. Guying**

Where mechanical loads imposed on poles or structures exceed safety factors as specified in Rule 44, or at the request of the granting authority, additional strength shall be provided by the use of guys or other suitable construction. When guying is required, refer to Rules 56 and 86 for applicable requirements.

Note: Revised November 6, 1992 by Resolution No. SU-15.

**35 Vegetation Management**

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.

Note: Revised November 6, 1992 by Resolution No. SU-15, September 20, 1996 by Decision No. 96-09-097, January 23, 1997 by Decision No. 97-01-044 and January 13, 2005 by Decision No. 0501030..

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.

Note: Added October 22, 1997 by Decision No. 97-10-056. Revised August 20, 2009 by Decision No. 09-08-029 and January 12, 2012 by Decision No. 1201032

## **36 Pole Clearances from Railroad Tracks**

Poles or other supporting structures which are set in proximity to railroad tracks shall be so located that the clearance requirements of General Order 26-D are met. The clearance requirements of General Order 26-D, applicable to pole line construction, are contained in Appendix E.

Note: Revised February 1, 1948 by Supplement No. 1 (Decision No. 41134, Case No. 4324).

---

**37 Minimum Clearances of Wires above Railroads, Thoroughfares, Buildings, Etc.**

Clearances between overhead conductors, guys, messengers or trolley span wires and tops of rails, surfaces of thoroughfares or other generally accessible areas across, along or above which any of the former pass; also the clearances between conductors, guys, messengers or trolley span wires and buildings, poles, structures, or other objects, shall not be less than those set forth in Table 1, at a temperature of 60° F. and no wind.

The clearances specified in Table 1, Case 1, Columns A, B, D, E and F, shall in no case be reduced more than 5% below the tabular values because of temperature and loading as specified in Rule 43, or other conditions. The clearances specified in Table 1, Cases 2 to 6 inclusive, shall in no case be reduced more than 10% below the tabular values because of temperature and loading as specified in Rule 43, or other conditions.

The clearance specified in Table 1, Case 1, Column C (22.5 feet), shall in no case be reduced below the tabular value because of temperature and loading as specified in Rule 43.

The clearances specified in Table 1, Cases 11, 12 and 13, shall in no case be reduced below the tabular values because of temperatures and loading as specified in Rule 43.

Where supply conductors are supported by suspension insulators at crossings over railroads which transport freight cars, the initial clearances shall be sufficient to prevent reduction to clearances less than 95% of the clearances specified in Table 1, Case 1, through the breaking of a conductor in either of the adjoining spans.

Where conductors, dead ends, and metal pins are concerned in any clearance specified in these rules, all clearances of less than 5 inches shall be applicable from surface of conductors (not including tie wires), dead ends, and metal pins, except clearances between surface of crossarm and conductors supported on pins and insulators (referred to in Table 1, Case 9) in which case the minimum clearance specified shall apply between center line of conductor and surface of crossarm or other line structure on which the conductor is supported.

All clearances of 5 inches or more shall be applicable from the center lines of conductors concerned.

When measuring the minimum allowable vertical conductor clearances in a span, the minimum clearance applies to the specific location under the span being measured and not for the entire span.

Note: Modified January 8, 1980 by Decision No. 91186, March 9, 1988 by Resolution E-3076; and November 6, 1992 by Resolution SU-15, September 20, 1996 by Decision 96-09-097, January 23, 1997 by Decision 97-01-044 and January 13, 2005 by Decision No. 0501030.



**Table 1: Basic Minimum Allowable Vertical Clearance of Wires above Railroads, Thoroughfares, Ground or Water Surfaces; Also Clearances from Poles, Buildings, Structures or Other Objects (nn) (Letter References Denote Modifications of Minimum Clearances as Referred to in Notes Following This Table)**

Case No.	Nature of Clearance	Wire or Conductor Concerned						
		A Span Wires (Other than Trolley Span Wires) Overhead Guys and Messengers	B Communication Conductors (Including Open Wire, Cables and Service Drops), Supply Service Drops of 0 - 750 Volts	C Trolley Contact, Feeder and Span Wires, 0 - 5,000 Volts	D Supply Conductors of 0 - 750 Volts and Supply Cables Treated as in Rule 57.8	E Supply Conductors and Supply Cables, 750 - 22,500 Volts	F Supply Conductors and Supply Cables, 22.5 - 300 kV	G Supply Conductors and Supply Cables, 300 - 550 kV (mm)
1	Crossing above tracks of railroads which transport or propose to transport freight cars (maximum height 15 feet, 6 inches) where not operated by overhead contact wires. (a) (b) (c) (d)	25 Feet	25 Feet	22.5 Feet	25 Feet	28 Feet	34 Feet	34 Feet (kk)
2	Crossing or paralleling above tracks of railroads operated by overhead trolleys. (b) (c) (d)	26 Feet (e)	26 Feet (e) (f) (g)	22.5 Feet (h) (i) (eee)	27 Feet (e) (g)	30 Feet (g)	34 Feet (g)	34 Feet (g) (kk)
3	Crossing or along thoroughfares in urban districts or crossing thoroughfares in rural districts. (c) (d)	18 Feet (j) (k) (ii)	18 Feet (j) (l) (m) (ii) (kkk)	19 Feet (hh) (eee)	20 Feet (ii)	25 Feet (o) (ii)	30 Feet (o) (ii)	30 Feet (o) (ii) (kk)
4	Above ground along thoroughfares in rural districts or across other areas capable of being traversed by vehicles or agricultural equipment.	15 Feet (k)	15 Feet (m) (n) (p)	19 Feet (eee)	19 Feet	25 Feet (o)	30 Feet (o) (p)	30 Feet (o) (kk)
5	Above ground in areas accessible to pedestrians only	8 Feet	10 Feet (m) (q)	19 Feet (eee)	12 Feet	17 Feet	25 Feet (o)	25 Feet (o) (kk)
6	Vertical clearance above walkable surfaces on buildings, (except generating plants or substations) bridges or other structures which do not ordinarily support conductors, whether attached or unattached.	8 Feet (r)	8 Feet (r)	8 Feet	8 Feet	12 Feet	12 Feet	20 Feet (ll)
6a	Vertical clearance above non-walkable surfaces on buildings, (except generating plants or substations) bridges or other structures, which do not ordinarily support conductors, whether attached or unattached	2 Feet	8 Feet (yy)	8 Feet	8 Feet (zz)	8 Feet	8 Feet	20 Feet
7	Horizontal clearance of conductor at rest from buildings (except generating plants and substations), bridges or other structures (upon which men may work) where such conductor is not attached thereto (s) (t)	-	3 Feet (u)	3 Feet	3 Feet (u) (v)	6 Feet (v)	6 Feet (v)	15 Feet (v)
8	Distance of conductor from center line of pole, whether attached or unattached (w) (x) (y)	-	15 inches (s) (aa)	15 inches (aa) (bb) (cc)	15 inches (o) (aa) (dd)	15 or 18 inches (o) (dd) (ee) (jj)	18 inches (dd) (ee)	Not Applicable
9	Distance of conductor from surface of pole, crossarm or other overhead line structure upon which it is supported, providing it complies with case 8 above (x)	-	3 inches (aa) (ff)	3 inches (aa) (cc) (gg)	3 inches (aa) (dd) (gg)	3 inches (dd) (gg) (jj)	1/4 Pin Spacing Shown in Table 2 Case 15 (dd)	1/2 Pin Spacing Shown in Table 2 Case 15 (dd)

**Table 1 (Continued)**

Case No.	Nature of Clearance	Wire or Conductor Concerned						
		A Span Wires (Other than Trolley Span Wires) Overhead Guys and Messengers	B Communication Conductors (Including Open Wire, Cables and Service Drops), Supply Service Drops of 0 - 750 Volts	C Trolley Contact, Feeder and Span Wires, 0 - 5,000 Volts	D Supply Conductors of 0 - 750 Volts and Supply Cables Treated as in Rule 57.8	E Supply Conductors and Supply Cables, 750 - 22,500 Volts	F Supply Conductors and Supply Cables, 22.5 - 300 kV	G Supply Conductors and Supply Cables, 300 - 550 kV (mm)
10	Radial centerline clearance of conductor or cable (unattached) from non-climbable street lighting or traffic signal poles or standards, including mastarms, brackets and lighting fixtures, and from antennas that are not part of the overhead line system.	-	1 Foot (u) (rr) (ss)	15 inches (bb) (cc)	3 Feet (oo)	6 Feet (pp)	10 Feet (qq)	10 Feet (ll)
11	Water areas not suitable for sailboating (tt) (uu) (ww) (xx)	15 Feet	15 Feet	-	15 Feet	17 Feet	25 Feet	25 Feet (kk)
12	Water areas suitable for sailboating, surface area of: (tt) (vv) (ww) (xx) (A) Less than 20 acres (B) 20 to 200 acres (C) Over 200 to 2,000 acres (D) Over 2,000 acres	18 Feet 26 Feet 32 Feet 38 Feet	18 Feet 26 Feet 32 Feet 38 Feet	- - - -	18 Feet 26 Feet 32 Feet 38 Feet	20 Feet 28 Feet 34 Feet 40 Feet	27 Feet 35 Feet 41 Feet 47 Feet	27 Feet (kk) 35 Feet (kk) 41 Feet (kk) 47 Feet (kk)
13	Radial clearance of bare line conductors from tree branches or foliage (aaa) (ddd)	-	-	18 inches (bbb)	-	18 inches (bbb)	1/4 pin spacing shown in table 2, Case 15 (bbb) (ccc)	1/2 pin spacing shown in table 2, Case 15
14	Radial clearance of bare line conductors from vegetation in the Fire-Threat District (aaa) (ddd) (hhh)(jjj)			18 inches (bbb)		48 inches (bbb) (iii)	48 inches (fff)	120 inches (ggg)

**References to Rules Modifying Minimum Clearances in Table 1**

(a) Shall not be reduced more than 5% because of temperature or loading	37	2. Trolley span wires	Rule 77.4-A
1 Supply lines	54.4-B1	(i) May be reduced for trolley contact and span wires in subways, tunnels, under bridges and in fenced areas	
2 Communication lines	84.4-B1	1 Trolley contact conductors	74.4-E
(b) Shall be increased for supply conductors on suspension insulators, under certain conditions	37	2 Trolley span wires	77.4-B
(c) Special clearances are provided for traffic signal equipment	58.4-C	(j) May be reduced at crossings over private thoroughfares and entrances to private property and over private property	
(d) Special clearances are provided for street lighting equipment	58.5-B	1 Supply service drops	54.8-B2
(e) Based on trolley pole throw of 26 feet. may be reduced where suitably protected	56.4-B2	2 Supply guys	56.4-A
1 Supply guys	56.4-B2	3 Communication service drops	84.8-C2
2 Supply cables and messengers	57.4-B2	4 Communication guys	86.4-A
3 Communication guys	86.4-B2	(k) May be reduced along thoroughfares where not normally accessible to vehicles	
4 Communication cables and messengers	87.4-B2	1 Supply guys	56.4-A1
(f) May be reduced depending on height of trolley contact conductors		2 Communication guys	86.4-A1
1 Supply service drops	54.8-C5	(l) May be reduced where within 12 feet of curb line of public thoroughfares	
2 Communication service drops	84.8-D5	1 Supply service drops	54.8-B1
(g) May be reduced and shall be increased depending on trolley throw		2 Communication service drops	84.8-C1
1 Supply conductors (except service drops)	54.4-B2	(m) May be reduced for railway signal cables under special conditions	84.4-A4
2 Communication conductors (except service drops)	84.4-B2		
(h) May be decreased where freight cars are not transported.			
1. Trolley contact and feeder conductors.	74.4-B1		

**References to Rules Modifying Minimum Clearances in Table 1**

(n) May be reduced in rural districts	
1 Intentionally left blank	
2 Intentionally left blank	
3 Communication conductors along roads	84.4-A2
(o) May be reduced for transformer, regulator or capacitor leads	
1 Transformer leads	58.1-B
2 Regulator or capacitor leads	58.1-B
(p) May be reduced across arid or mountainous areas	
1 Supply conductors of more than 22,500 volts	54.4-A1
2 Communications conductors	84.4-A1
(q) Shall be increased or may be reduced under special conditions	
1 Supply service drops	54.8-B3
2 Intentionally left blank	
3 Communications conductors	84.4-A3
4 Increased for communication service drops on industrial or commercial premises	84.8-C3a
5 Communication service drops on residential premises	84.8-C3b
(r) May be reduced above roofs of buildings under special conditions	
1 Supply overhead guys	56.4-G
2 Supply service drops	54.8-B4
3 Communication overhead guys	86.4-F
4 Communication conductors and cables	84.4-E
5 Communication service drops	84.8-C4
(s) Also applies at fire escapes, etc.	
1 Supply conductors	54.4-H1
2 Vertical clearances	54.8B4a
3 Horizontal clearance	54.8-B4b
4 Communication conductors	84.4-E
(t) Special clearances where attached to buildings, bridges or other structures	
1 Supply conductors of 750 - 22,500 volts	54.4-H2
2 Trolley contact conductors	74.4-E
3 Communication conductors	84.4-F
(u) Reduced clearances permitted under special conditions	
1 Supply service drops on industrial or commercial premises	54.8-B4a
2 Supply cables, grounded	57.4-G
3 Communication cables beside buildings, etc.	84.4-E
4 Communication conductors under bridges, etc.	84.4-F
5 Communication service drops	84.8-C4
6 Communication cables passing nonclimbable street light poles, etc.	84.4-D4a
(v) May be reduced under special conditions	
1 Supply conductors of 750 - 7,500 volts	54.4-H1
2 Supply transformer lead and bus wires, where guarded	58.1
(w) May be reduced at angles in lines and transposition points	
1 Supply conductors	54.4-D1
2 Communication conductors	84.4-D5
(x) May be reduced for suitably protected lateral or vertical runs	
1 Supply bond wires	53.4
2 Supply ground wires	54.6-B
3 Supply lateral conductors	54.6-C
4 Supply vertical runs	54.6-D
5 Supply risers	54.6-E
6 Communication ground wires	84.6-B

	Rule
7 Communication lateral conductors	84.6-C
8 Communication vertical runs	84.6-D
9 Communication risers	84.6-E
(y) Increased clearances required for certain conductors	
1 Unattached conductors on colinear and crossing lines	32.3
2 Unattached supply conductors	54.4-D3
3 Supply service drops on clearance crossarms	54.8-C2
4 Supply service drops on pole top extensions	54.8-C3
5 Unattached supply service drops	54.8-D
6 Communication lines, colinear, conflicting or crossing	84.4-D3
7 Communication conductors passing supply poles and unattached thereto	84.4-D4
8 Communication service drops on clearance crossarms	84.8-D2
9 Communication service drops on pole top extensions	84.8-D3
10 Unattached communication service drops	84.8-E
(z) Special provisions for police and fire alarm conductors require increased clearances	92.2
(aa) May be reduced under special provisions	
1 Supply conductors of 0 - 750 volts in rack configuration	54.4-D5
2 Service supply drops from racks	54.8-F
3 Supply cables and messengers attached to poles	57.4-F
4 Communication conductors on communication poles	84.4-D
5 Communication conductors on crossarms	84.4-D1
6 Communication conductors attached to poles	84.4-D2
7 Communication service drops attached to poles	84.8-B
8 Communication cables and messengers	87.4-D
9 Supply or communication cables and messengers on jointly used poles	92.1-B
10 Communication open wire on jointly used poles	92.1-C
11 Multiconductor cable with bare neutral	54.10-B1
(bb) May be reduced for class t conductors of not more than 750 volts and of the same potential and polarity	74.4-D
(cc) Not applicable to trolley span wires	77.4-E
(dd) Special clearances for pole-top and deadend construction	
1 Conductors deadended in vertical configuration on poles	54.4-C4
2 Conductors deadended in horizontal configuration	54.4-D8
(ee) Clearance requirements for certain voltage classifications	54.4-D2
(ff) Not applicable to communication conductors	84.4-D
(gg) Clearance from crossarms may be reduced for certain conductors	
1 Suitable insulated leads to protect runs	54.4-E
2 Leads of 0 - 5,000 volts to equipment	54.4-E
3 Leads of 0 - 5,000 volts to cutouts or switches	58.3-A2
(hh) Reduced clearance permitted from temporary fixtures and lighting circuits	
0 - 300 volts	78.3-A1
(ii) Special Clearances Required Above Public and Private Swimming Pools	
1 Supply line conductors	54.4-A3
2 Supply service drops	54.8-B5
3 Communication line conductors	84.4-A5
4 Communication service drops	84.8-C5
5 Supply guys, span wires	56.4-A3
6 Communication guys	86.4-A3
(jj) May be decreased in partial underground distribution	54.4-D2

**References to Rules Modifying Minimum Clearances in Table 1**

	Rule
(kk) Shall be increased by 0.025 feet per kV in excess of 300 kV	
(ll) Shall be increased by 0.04 feet per KV in excess of 300 kV	
(mm) Proposed clearances to be submitted to the cpuc prior to construction for circuits in excess of 550 kV.	
(nn) Voltage shown in the table shall mean line-to-ground voltage for direct current (DC) systems	
(oo) May Be reduced for grounded or multi-conductor cables	
1 Grounded cables	57.4-H
2 Multi-Conductor cables	54.10-B2
(pp) May be reduced to 4 feet for voltages below 7,500 volts	54.4-D3
(qq) May be reduced to 6 feet for voltages below 75 kV	
(rr) May be reduced for supply service drops	54.8-D1
(ss) May be reduced for communications service drops	84.8-E1
(tt) Where a federal agency or surrogate thereof has issued a crossing permit, clearances of that permit shall govern.	
(uu) Or where sailboating is prohibited and where other boating activities are allowed	
(vv) Clearance above contiguous ground shall be 5 feet greater than in cases 11 or 12 for the type of water area served for boat launch facilities and for area contiguous thereto, that are posted, designated or specifically prepared for rigging of sailboats or other watercraft.	
(ww) For controlled impoundments, the surface areas and corresponding clearances shall be based upon the high water level. for other waters, the surface area shall be that enclosed by its annual flood level. the clearance over rivers, streams and canals shall be based upon the largest surface areas of any one-mile long segment which includes the crossing. The clearance over a canal, river or stream normally used to provide access for sailboats to a larger body of water shall be the same as that required for the larger body of water.	
(xx) Water areas are lakes, ponds, reservoirs, tidal waters, rivers, streams and canals without surface obstructions.	
(yy) May be reduced over non-walkable structures	54.8 (Table 10)
(zz) May be reduced to 2 feet for conductors insulated in accordance with	20.9-G
(aaa) Special requirements for communication and supply circuits energized at 0 - 750 volts	35
(bbb) May be reduced for conductor of less than 60,000 volts when protected from abrasion and grounding by contact with tree	35

Rule

(ccc) For 22.5 kV to 105 kV, minimum clearance shall be 18 inches.
(ddd) Clearances in this case shall be maintained for normal annual weather variations, rather than at 60 degrees, no wind.
(eee) May be reduced to 18 feet if the voltage does not exceed 1000 volts and the clearance is not reduced to more than 5% below the reduced value of 18 feet because of temperature and loading as specified in Rules 37 and 43.
(fff) Clearances in this case shall be increased for conductors operating above 72 kV, to the following:
1 Conductors operating between 72kV and a 110 kV shall maintain a 72 inch clearance
2 Conductors operating above 110 kV shall maintain a 120 inch clearance
(ggg) Shall be increased by 0.40 inch per kV in excess of 500 kV
(hhh) The High Fire-Threat District is defined in GO 95, Rule 21.2-D.
(iii) May be reduced to 18 inches for conductors operating less than 2.4 kV.
(jjj) Clearances in this case shall not apply to orchards of fruit, nut or citrus trees that are plowed or cultivated. In those areas Case 13 clearances shall apply.
(kkk) For communication conductors across or along public thoroughfares see 84.4-A(6).

Note: Revised February 1, 1948 by Supplement No. 1 (Decision No. 41134, Case No. 4324); January 2, 1962 by Resolution E-1109; February 7, 1964 by Decision No. 66707; March 29, 1966 by Decision No. 70489; August 9, 1966 by Decision No. 71094; September 18, 1967 by Decision No. 72984; March 30, 1968 by Decision No. 73813; January 8, 1980 by Decision No. 91186; March 9, 1988 by Resolution E-3076; November 21, 1990 by Resolution SU-6; January 21, 1992 by Resolution SU-10; and November 6, 1992 by Resolution SU-15, September 20, 1996 by Decision 96-09-097, October 9, 1996 by Resolution SU-40, January 23, 1997 by Decision 97-01-044, January 13, 2005 by Decision No. 0501030, January 12, 2012 by Decision No. 1201032, January 21, 2015 by Decision 1501005, and December 14, 2017, by Decision D. 17-12-024.

---

**38 Minimum Clearances of Wires from Other Wires**

The minimum vertical, horizontal or radial clearances of wires from other wires shall not be less than the values given in Table 2 and are based on a temperature of 60° F. and no wind. Conductors may be deadended at the crossarm or have reduced clearances at points of transposition, and shall not be held in violation of Table 2, Cases 8–15, inclusive.

The clearances in Table 2 shall in no case be reduced more than 10 percent, except mid-span in Tier 3 of the High Fire-Threat District where they shall be reduced by no more than 5 percent, because of temperature and loading as specified in Rule 43 or because of a difference in size or design of the supporting pins, hardware or insulators. All clearances of less than 5 inches shall be applied between surfaces, and clearances of 5 inches or more shall be applied to the center lines of such items. The utilities of interest (including electric supply and/or communication companies) shall cooperate and provide relevant information for sag calculations for their facilities, upon request.

Note: Revised May 22, 1990 by Resolution No. SU-5, and December 14, 2017, by Decision D.17-12-024.

(This Space Intentionally Left Blank)

**Table 2: Basic Minimum Allowable Clearance of Wires from Other Wires at Crossings, in Midspans and at Supports (Letter References Denote Modifications of Minimum Clearances as Referred to in Notes Following This Table) All Clearances are in Inches**

Case No.	Nature of Clearance and Class and Voltage of Wire, Cable or Conductor Concerned	Other Wire, Cable or Conductor Concerned											
		A Span Wires, Guys and Messengers	B Trolley Contact Conductors 0 – 750 Volts	C Communication Conductors (Including Open Wire, Cables and Service Drops)	D 0 – 750 Volts (Including Service Drops) and Trolley Feeders (a)	Supply Conductors (Including Supply Cables)							
						E 750 - 7,500 Volts	F 7,500 - 20,000 Volts	G 20,000 - 35,000 Volts	H 35,000 - 75,000 Volts	I 75,000 - 150,000 Volts	J 150,000 - 300,000 Volts	K (kk) 300,000 - 550,000 Volts	
	<b>Clearance between wires, cables and conductors not supported on the same poles, vertically at crossings in spans and radially where colinear or approaching crossings</b>												
1	Span wires, guys and messengers (b)	18 (c)	48 (d, e)	24 (e)	24 (e)	36 (f)	36	72	72	78	78 (gg)	138 (hh)	
2	Trolley contact conductors, 0 - 750 volts	48 (d, e)	-	48 (d)	48 (d, h)	48	72	96	96	96	96 (gg)	156 (hh)	
3	Communication conductors	24 (e)	48 (d)	24	48 (i)	48 (dd)	72	96	96	96	96 (gg)	156 (hh)	
4	Supply conductors, service drops and trolley feeders, 0 - 750 volts (qq)	24 (e)	48 (d, h)	48 (i)	24	48	48	96 (oo)	96	96	96(gg)	156 (hh)	
5	Supply conductors, 750 - 7,500 volts (qq)	36 (f)	48	48 (dd)	48	48 (h)	72	96 (oo)	96	96	96(gg)	156 (hh)	
6	Supply conductors, 7,500 - 20,000 volts (qq)	36	72	72	48	72	72	96 (oo)	96	96	96 (gg)	156 (hh)	
7	Supply conductors, more than 20,000 volts (qq)	72 (g)	96 (g)	96 (g)	96 (g, oo)	96 (g, oo)	96 (g, oo)	96 (g, oo)	96 (g)	96	96 (gg)	156 (hh)	
	<b>Vertical separation between conductors and/or cables, on separate crossarms or other supports at different levels (excepting on related line and buck arms) on the same pole and in adjoining midspans</b>												
8	Communication Conductors and Service Drops	-	-	12 (j, rr)	48 (k, l, m, n, pp)	48 (k)	72 (m n)	72 (m)	72	78	87 (gg)	147 (hh)	
9	Supply Conductors Service Drops and Trolley Feeders, 0 - 750 Volts	-	-	48 (k, l, m, n, pp)	24 (h, k, m, o)	48 (k, m, p)	48 (k, m, p)	72 (m, nn)	72	78	87 (gg)	147 (hh)	

**Table 2 (Continued)**

		Other Wire, Cable or Conductor Concerned										
Case No.	Nature of Clearance and Class and Voltage of Wire, Cable or Conductor Concerned	Supply Conductors (Including Supply Cables)										
		A Span Wires, Guys and Messengers	B Trolley Contact Conductors 0 – 750 Volts	C Communication Conductors (Including Open Wire, Cables and Service Drops)	D 0 – 750 Volts (Including Service Drops) and Trolley Feeders (a)	E 750 - 7,500 Volts	F 7,500 - 20,000 Volts	G 20,000 - 35,000 Volts	H 35,000 - 75,000 Volts	I 75,000 - 150,000 Volts	J 150,000 - 300,000 Volts	K (kk) 300,000 - 550,000 Volts
10	Supply conductors, 750 – 7,500 volts	-	-	48 (k)	48 (k, m, p)	48 (m, o, r, ee)	48 (m, q)	48 (m, q)	48 (q)	60 (ff)	90 (gg)	150 (hh)
11	Supply conductors, 7,500 – 20,000 volts	-	-	72 (m, n)	48 (k, m, p)	48 (m, q)	48 (m, o, q, r, ee)	48 (m, q)	48 (q)	60 (ff)	90 (gg)	150 (hh)
12	Supply conductors, 20,000 – 75,000 volts	-	-	72 (m)	72 (m, nn)	48 (m, q)	48 (m, q)	48 (o, q)	48 (o, q)	60 (ff)	90 (gg)	150 (hh)
13	Supply conductors, more than 75,000 volts	-	-	72	72	60 (q)	60 (q)	60 (q)	60 (q)	60 (ff)	90 (gg)	150 (hh)
	<b>Vertical clearance between conductors on related line arms and buck arms</b>											
14	Line arms above or below related buck arms (s, t)	-	-	6	12 (u)	18 (u)	18 (u)	24	48	60 (ff)	90 (gg)	150(hh)
	<b>Horizontal separation of conductors on same crossarm</b>											
15	Pin spacing of longitudinal conductors vertical conductors and service drops (v, w, zz)	-	-	3 (x)	11–1/2 (h, x)	11 1/2 (x)	17–1/2 (x)	24 (x)	48	60 (ff)	90 (gg)	150 (hh)
	<b>Radial separation of conductors on same crossarm, pole or structure—incidental pole wiring</b>											
16	Conductors, taps or lead wires of different circuits (v, y, s, zz)	-	-	3 (x)	11–1/2 (h, x)	11 1/2 (x)	17–1/2 (x)	24 (x)	48	60 (ff)	90 (gg)	150 (hh)
16a	Uncovered, grounded, non-dielectric fiber optic cables on metallic structures, in transition (ss)	-	15	15	15	18	18	18	18	24	36	120
17	Conductors, taps or lead wires of the same circuit (v, s, aa, zz)	-	-	3	3	6	6	12	24	60 (ff)	90 (gg)	150 (hh)
	<b>Radial separation between guys and conductors</b>											
18	Guys passing conductors supported on other poles, or guys approximately parallel to conductors supported on the same poles	-	-	3	11–1/2	11–1/2	17–1/2	24	36	36 (ff)	78 (gg)	138 (hh)

**Table 2 (Continued)**

		Other Wire, Cable or Conductor Concerned										
		Supply Conductors (Including Supply Cables)										
Case No.	Nature of Clearance and Class and Voltage of Wire, Cable or Conductor Concerned	A Span Wires, Guys and Messengers	B Trolley Contact Conductors 0 – 750 Volts	C Communication Conductors (Including Open Wire, Cables and Service Drops)	D 0 – 750 Volts (Including Service Drops) and Trolley Feeders (a)	E 750 - 7,500 Volts	F 7,500 - 20,000 Volts	G 20,000 - 35,000 Volts	H 35,000 - 75,000 Volts	I 75,000 - 150,000 Volts	J 150,000 - 300,000 Volts	K (kk) 300,000 - 550,000 Volts
19	Guys and span wires passing conductors supported on the same poles	(cc)	-	3 (bb)	3	6	9	12	18	24	48 (ii)	86 (jj)
<b>Vertical and horizontal insulators clearances between conductors</b>												
20	Vertical clearance between conductors of the same circuit on horizontal insulators	-	-	-	-	24	24	24	36 or 48 (ll, mm)	48 (mm)	48 (mm)	48 (mm)
<b>Vertical clearance above supply and/or communication lines</b>												
21	Antennas and associated elements on the same support structure. (tt, uu)	24 (vv)	48 (vv)	24(ww)	48(vv, xx)	72	72	72	120 (vv, yy)	-	-	-

**References to Rules Modifying Minimum Clearances in Table 2**

	Rule		Rule
(a) The clearances in column D are also applicable to supply cables of any voltage under certain conditions	57.4	(h) May be reduced for certain conductors of Class T Circuits of the same system	74.4-C
(b) Clearances for guys and span wires apply vertically at crossings (see case 18 for radial clearances from conductors)		(i) May be reduced for service drops under special conditions	
1 Supply guys and span wires from conductors	56.4-C	1 Supply service drops and communication line conductors	54.8-C1a
2 Supply guys and span wires from guys and span wires	56.4-D1	2 Supply service drops and communication service drops	54.8-C4
3 Communication guys and span wires from conductors	86.4-C	3 Communication service drops and supply line conductors	84.8-D1a
4 Communication guys and span wires from guys and span wires	86.4-D1	4 Communication service drops and supply service drops	84.8-D4
(c) Not applicable between messengers or span wires of the same system		(j) May be reduced or shall be increased for certain communication conductors or cables	
1 Supply messengers	57.4-E	1 Open wire conductors, attached to poles, within 3 feet of topmost conductor	84.4C1c
2 Trolley span wires	77.4-D	2 Line conductors of police or fire-alarm circuits and service drops from other communication circuits	84.8-D1b
3 Communication messengers	87.4-G	3 Cables and messengers attached to poles	87.4-C3
(d) Protection Required on guys, span wires, messengers and cables where within trolley throw		(k) Special clearances for 0 - 750 volts in rack configuration and messengers and cables attached to poles	
1 Supply guys and span wires	56.4-B2	1 Supply conductors of 0 - 750 volts in rack configuration	54.9
2 Supply messengers and cables	57.4-B2	2 Supply cables and messengers attached to poles	57.4-F
3 Communication guys and span wires	86.4-B2	3 Communication cables and messengers attached to poles	87.4-C3
4 Communication messengers	87.4-B2	4 On jointly used poles	92.1
(e) Not applicable to certain conductors supported on trolley span wires			
1 Trolley contact and feeder conductors	74.4-G2		
2 Trolley feeder conductors	78.1		
3 Trolley system communication conductors	78.2		
4 Foreign conductors	78.3		
(f) Increased clearance required over trolley contact conductors 750 - 7,500 volts	74.4-G2		
(g) Shall be increased for voltages above 75,000 as required by Table 2, Columns I, J and K	N/A		



**References to Rules Modifying Minimum Clearances in Table 2**

	Rule		Rule
(l) May be reduced for service drops and police and fire-alarm conductors, under special conditions		(z) Not applicable to the following:	
1 Supply service drops and communication line conductors	54.8-C1b	1 Clearances between conductors at different levels specified in cases 8 to 13 inclusive	N/A
2 Supply service drops on clearance arms	54.8-C2	2 Supply lateral conductors, suitably protected	54.6-C
3 Supply service drops on pole-top extensions	54.8-C3	3 Supply vertical runs, suitably protected	54.6-D
4 Supply service drops and communication service drops	54.8-C4	4 Supply risers, suitably protected	54.6-E
5 Communication service drops and police, fire-alarm or supply line conductors	84.8-D1b	5 Communication conductor	87.4-C1
6 Communication service drops on clearance arms	84.8-D2	(aa) Not applicable between cables and their supporting messengers	
7 Communication service drops on pole-top extensions	84.8-D3	1 Supply	57.4-D
8 Communication service drops and supply service drops	84.8-D4	2 Communication	87.4-F
9 Police or fire-alarm conductors	92	(bb) May be reduced for guys and communication conductors supported on the same pole	
(m) May be reduced for lead wires		1 Supply	56.4-C4
1 Supply lead wires above supply conductors	54.4-C6	2 Communication	86.4-C
2 Supply drip loops above communication conductors	92.1-F3	(cc) Clearance required between guys	
(n) May be reduced for supply conductors and private communication conductors of the same ownership	89.2-B	1 Supply guys, crossing	56.4-D2
(o) May be reduced or shall be increased for triangular or vertical configuration or for pole-top construction		2 Supply guys, approximately parallel	56.4-D3
1 Triangular or vertical configuration on crossarms	54.4-C1c	3 Communication guys, crossing	86.4-D2
2 deadended on pole in vertical configuration	54.4-C4	4 Communication guys, approximately parallel	86.4-D3
(p) May be reduced for supply service drops of 0 - 750 volts	54.8-C6	(dd) Shall be increased where within 6 feet of a pole	103.5
(q) Shall be increased between circuits where conductors are at pole top	54.4-D8	(ee) May be decreased in partial underground distribution	54.4-C4c
(r) May be reduced under special conditions		(ff) Shall be increased by 0.40 inch per kV in excess of 75 kV	
1 Supply conductors of 750 - 7,500 volts	54.4-C1a	(gg) Shall be increased by 0.40 inch per kV in excess of 150 kV	
2 Supply conductors of 7,500 - 20,000 volts	54.4C1b	(hh) Shall be increased by 0.40 inch per kV in excess of 300 kV	
(s) Does not apply where conductors do not cross		(ii) Shall be increased by 0.25 inch per kV in excess of 150 kV	
1 Supply conductors of different phase or polarity	54.4-C2a	(jj) Shall be increased by 0.25 inch per kV in excess of 300 kV	
2 Communication conductors	84.4-C1a	(kk) Proposed clearances to be submitted to the CPUC prior to construction for circuits in excess of 550 kV	
(t) Shall not be applied consecutively both above and below the same supply conductors	54.4-C2a	(ll) 36-inch clearance applies 35 kV to 68 kV. 42-inch clearance applies over 68 kV.	
(u) Shall be increased where conductors of different classification are supported on the same crossarm		(mm) Vertical clearances shall be increased by 1/2 inch for each kV over 68 kV	
1 Supply conductors of 0 - 750 volts and conductors of 7,500 - 22,500 volts	32.4-A2	(nn) The vertical separation between supply conductors and service drops of 0 - 750 volts and supply conductors of 20,000 - 22,500 volts may be reduced to 48 inches	
2 Supply conductors of 0 - 750 volts and conductors of 750 - 7,500 volts	32.4-A3	(oo) May be reduced to 72inches for conductors of 20,000 - 22,500 volts	
(v) Not applicable to certain kinds of conductors		(pp) May be reduced to 36 inches vertically at midspan only when the supply conductors consist of abrasion resistant cable with a grounded metallic sheath or neutral-supported cable as specified in Rules 57 and 54.10.	
1 Supply conductors of same phase or polarity	54.4-C3c	(qq) Vertical clearances may be reduced between supply conductors of the same circuit at crossings in spans 54.4-C7	
2 Insulated supply conductors in multiple-conductor cables	57.4-C	(rr) Can be less than 12" for strand mounted terminals, splice cases and other equipment located 8" or more from centerline of pole but not less than 1" with mutual agreement between affected owners.	
3 Communication insulated conductors or multiple-conductor cables	87.4-C1	(ss) Requirements for transition of Fiber optic cable facilities	87.10
(w) Shall apply radially to conductors on brackets attached to crossarms		(tt) For Antennas utilized by utilities for the sole purpose of operating and monitoring their supply system see Rules 54.4-G and 58.6.	
1 Supply conductors	54.4-C3b	(uu) For clearances below supply and communication lines see Rules 94.4-A and 94.4-B	
2 Communication conductors	84.4-C1b	(vv) Clearances for exposed associated cables may be reduced by 12 inches.	
(x) Shall be increased between conductors of different classification supported on the same crossarm		(ww) May be reduced to 10 inches for cables installed by Antenna owner/operator.	
1 Supply conductors of different voltage classification	32.4-A	(xx) Clearance from service drop point of attachment on structure to Antenna(s) and associated supporting elements may be reduced to 10 inches.	
2 Supply circuits of 0 - 750 volts and communication circuits	32.4-B	(yy) Up to 50 kV.	
3 Supply circuits and private communications circuits	89.2-A	(zz) In areas that are subjected to high winds, a utility may need to take extra measures to maintain all required separations. Measures may include but are not limited to, spacer bars and increased pin spacing	
(y) Special clearances for unprotected supply conductors from one level to another level	54.6-A 58.5-B3 92.1-F5		

Note: Revised February 7, 1964 by Decision No. 66707; September 18, 1967 by Decision No. 72984; March 30, 1968 by Decision No. 73813; July 22, 1968 by Decision No. 74342; September 11, 1974 by Decision No. 83420; March 9, 1988 by Resolution E-3076; November 6, 1992 by Resolution No. SU-15, January 19, 1994 by Resolution SU-25, October 9, 1996 by Resolution SU-40, January 13, 2005 by Decision No. 0501030 and October 2, 2008 by Decision No. 0810017.

---

**39 Minimum Clearances of Wires from Signs**

Clearance between any overhead line conductor and all signs, whether mounted on buildings, isolated structures or otherwise constructed shall not be less than the values given in Table 2–A at a temperature of 60° F. and no wind.

The clearances specified in Table 2–A shall in no case be reduced more than 10% because of temperature and loading as specified in Rule 43. All clearances of more than 5 inches shall be applicable from the centerlines of conductors concerned. Lesser clearances shall be applicable from conductor surfaces.

(This Space Intentionally Left Blank)

**Table 2–A Minimum Clearances of Wires from Signs Mounted on Buildings and Isolated Structures (a) (Letter References Denote Modifications of Minimum Clearances as Referred to in Notes Following this Table)**

Case No.	Nature of Clearance Type of Sign	A Span Wires (Other than Trolley Span Wires) Overhead Guys and Messengers, Communication Cables and Communication Service Drops	B Communication Open Wire Conductors Supply Cables Treated as in Rule 57.8 and Supply Service Drops 0 - 750 Volts	C Supply Conductors, Supply Cables of 0 - 750 Volts and Trolley Span Wires	D Supply Conductors and Supply Cables, 750 - 300,000 Volts (b)	E Supply Conductors and Supply Cables, 300 - 550 kV
1	Vertical clearance above all signs upon which men can walk	8 Feet	8 Feet	8 Feet	12 Feet	20 Feet (g)
2	Vertical clearance above all signs upon which men cannot walk	2 Feet	2 Feet	3 Feet	8 Feet	20 Feet (g)
3	Vertical clearance under signs which are illuminated	2 Feet (c)	2 Feet (e)	3 Feet	Prohibited (f)	Prohibited
4	Vertical clearance under signs which are non-illuminated	6" (d)	1 Foot	3 Feet	Prohibited (f)	Prohibited
5	Horizontal clearance from signs which are illuminated	3 Feet (c)	3 Feet (e)	3 Feet	6 Feet	15 Feet (h)
6	Horizontal clearance from signs which are non-illuminated	6" (d)	1 Foot	3 Feet	6 Feet	15 Feet (h)

**References to Rules Modifying Minimum Clearances in Table 2–A**

Rule

Rule

- (a) These clearances do not apply to service drop conductors which are attached to signs for the purpose of serving such signs.
- (b) Nothing herein contained shall be construed as authorization of noncompliance with standards of the California division of industrial safety, including article e760–2 entitled "provision for preventing accidents due to proximity of high-voltage lines, 24 Cal. Adm. Code, Part 3, Basic Electrical Regulations.
- (c) May be reduced to 6 inches provided illuminated sign is grounded.
- (d) May be reduced if adequate separation is provided by means of a suitable non-conducting separator.
- (e) May be reduced to 1 foot for communication open wire conductors only, provided illuminated sign is grounded

- (f) When conductors are at a level of 8 feet or more below the level of the lowest portion of the sign but not vertically under the sign, no horizontal clearance is required between the vertical planes through the conductor nearest the sign and the vertical projection of the extremities of the sign. Also note (b) above.
- (g) Shall be increased by 0.04 foot per kV in excess of 300 kV.
- (h) Not applicable to certain kinds of conductors.

- 1 Supply conductors of same phase and polarity 54.4–C3c
- 2 Insulated supply conductors in multi-conductor cables 57.4–C
- 3 Communication insulated conductors or multiple-conductor cables 87.4–C1

Note: Resolution E–1068 dated May 31, 1960 authorized the addition of the above Rule 39 and Table 2–A to be effective July 1, 1960. Revised March 30, 1968 by Decision No. 73813