

### 35 Tree Trimming

Where overhead wires pass through trees, safety and reliability of service demand that tree trimming be done in order that the wires may clear branches and foliage by a reasonable distance. The minimum clearances established in Table 1, Case 13, measured between line conductors and vegetation under normal conditions, shall be maintained. (Also see Appendix E for tree trimming guidelines.)

When a utility has actual knowledge, obtained either through normal operating practices or notification to the utility, dead, rotten and diseased trees or portions thereof, that overhang or lean toward and may fall into a span, should be removed.

Communication and electric supply circuits, energized at 750 volts or less, including their service drops, should be kept clear of limbs and foliage, in new construction and when circuits are reconstructed or repaired, whenever practicable. When a utility has actual knowledge, obtained either through normal operating practices or notification to the utility, that any circuit energized at 750 volts or less shows strain or evidences abrasion from tree contact, the condition shall be corrected by slacking or rearranging the line, trimming the tree or placing mechanical protection on the conductor(s).

#### 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 18 inches, from primary distribution conductors are exempt from the 18-inch 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.

## Rule 37

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### 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. 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.

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.

**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)**

		Wire or Conductor Concerned						
Case No.	Nature of Clearance	A	B	C	D	E	F	G
		Span Wires (Other than Trolley Span Wires) Overhead Guys and Messengers	Communication Conductors (Including Open Wire, Cables and Service Drops), Supply Service Drops of 0 - 750 Volts	Trolley Contact, Feeder and Span Wires, 0 - 5,000 Volts	Supply Conductors of 0 - 750 Volts and Supply Cables Treated as in Rule 57.8	Supply Conductors and Supply Cables, 750 - 22,500 Volts	Supply Conductors and Supply Cables, 22.5 - 300 kV	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)	19 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) (aa)	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	B	C	D	E	F	G
		Span Wires (Other than Trolley Span Wires) Overhead Guys and Messengers	Communication Conductors (Including Open Wire, Cables and Service Drops), Supply Service Drops of 0 - 750 Volts	Trolley Contact, Feeder and Span Wires, 0 - 5,000 Volts	Supply Conductors of 0 - 750 Volts and Supply Cables Treated as in Rule 57.8	Supply Conductors and Supply Cables, 750 - 22,500 Volts	Supply Conductors and Supply Cables, 22.5 - 300 kV	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	-	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	18 Feet	18 Feet	-	18 Feet	20 Feet	27 Feet	27 Feet (kk)
	(B) 20 to 200 acres	26 Feet	26 Feet	-	26 Feet	28 Feet	35 Feet	35 Feet (kk)
	(C) Over 200 to 2,000 acres	32 Feet	32 Feet	-	32 Feet	34 Feet	41 Feet	41 Feet (kk)
	(D) Over 2,000 acres	38 Feet	38 Feet		38 Feet	40 Feet	47 Feet	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

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

(a) Shall not be reduced more than 5% because of temperature or loading 37

1 Supply lines 54.4-B1

2 Communication lines 84.4-B1

(b) Shall be increased for supply conductors on suspension insulators, under certain conditions 37

(c) Special clearances are provided for traffic signal equipment 58.4-C

(d) Special clearances are provided for street lighting equipment 58.5-B

(e) Based on trolley pole throw of 26 feet. may be reduced where suitably protected 56.4-B2

1 Supply guys 56.4-B2

2 Supply cables and messengers 57.4-B2

3 Communication guys 86.4-B2

4 Communication cables and messengers 87.4-B2

(f) May be reduced depending on height of trolley contact conductors

1 Supply service drops 54.8-C5

2 Communication service drops 84.8-D5

(g) May be reduced and shall be increased depending on trolley throw

1 Supply conductors (except service drops) 54.4-B2

2 Communication conductors (except service drops) 84.4-B2

(h) Shall be increased where freight cars are transported

1 Trolley contact and feeder conductors 74.4-B1

2 Trolley span wires 77.4-A

(i) May be reduced for trolley contact and span wires in subways, tunnels, under bridges and in fenced areas

1 Trolley contact conductors 74.4-E

2 Trolley span wires 77.4-B

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

(j) May be reduced at crossings over private thoroughfares and entrances to private property and over private property

1 Supply service drops 54.8-B2

2 Supply guys 56.4-A

3 Communication service drops 84.8-C2

4 Communication guys 86.4-A

(k) May be reduced along thoroughfares where not normally accessible to vehicles

1 Supply guys 56.4-A1

2 Communication guys 86.4-A1

(l) May be reduced where within 12 feet of curb line of public thoroughfares

1 Supply service drops 54.8-B1

2 Communication service drops 84.8-C1

(m) May be reduced for railway signal cables under special conditions 84.4-A4

(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 Intentionally left blank

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
- 7 Communication lateral conductors 84.6-C
- 8 Communication vertical runs 84.6-D
- 9 Communication risers 84.6-E

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

(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
- 12 Communication conductors across or along public thoroughfares 84.4-A6

(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

(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-B6

(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

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

(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 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 20.8-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

(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.

**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	B	C	Supply Conductors (Including Supply Cables)								
					D	E	F	G	H	I	J	K (kk)	
		Span Wires, Guys and Messengers	Trolley Contact Conductors 0 - 750 Volts	Communication Conductors (Including Open Wire, Cables and Service Drops)	0 - 750 Volts (Including Service Drops) and Trolley Feeders (a)	750 - 7,500 Volts	7,500 - 20,000 Volts	20,000 - 35,000 Volts	35,000 - 75,000 Volts	75,000 - 150,000 Volts	150,000 - 300,000 Volts	300,000 - 550,000 Volts	
	<b>Horizontal separation of conductors on same crossarm</b>												
15	Pin spacing of longitudinal conductors vertical conductors and service drops (v, w)	-	-	3 (x)	11-1/2 (h, x)	11 1/2 (x)	17-1/2 (x)	24 (x)	48	60 (ff)	90 (gg)	150 (hh)	

(ff) Shall be increased by 0.40 inch per kV in excess of 75 kV

(gg) Shall be increased by 0.40 inch per kV in excess of 150 kV

(hh) Shall be increased by 0.40 inch per kV in excess of 300 kV