



# Tree Clearances From Overhead Electric Lines

ISSUING DIVISION: Electric Engineering  
SVP SPONSOR: Kevin Keating, Manager

Signed by Kevin Keating  
Date Signed 9 August, 2016  
SHEET: Sheet 1 of 8

**SECTION: Clearances**

**OH 1230**

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## Scope of Standard

This document is intended to provide guidance and direction to installers of landscaping near and/or under overhead electrical lines. Please refer to specific design and construction drawings for details and locations where these standards may be required.

## Purpose of Revision

Update existing OH 1230 rev 0. Revision 1 is a complete overhaul of OH 1230. Tree planting requirements were updated to reflect new Federal and State of California requirements. Additional sections were added to describe different tree planting zones around power lines. Also revised the list of approved trees that might be planted in the vicinity of overhead electric lines.

## References

- California Public Utilities Commission, General Order 95, Rule 35.
- California Public Resource Code 4292.
- California Public Resource Code 4293.
- Title 14, California Code of Regulations, section 1254, Minimum Clearance Provisions PRC 4292.
- Title 14, California Code of Regulations, section 1256, Minimum Clearance Provisions PRC 4293.
- ANSI A300 (Part 7)-2012 “Integrated Vegetation Management a. Utility Rights-of-way”
- *Western Garden Book*, Sunset Publishing Corp, Menlo Park, CA
- Urban Forest Ecosystems Institute, [www.selectree.calpoly.edu/search/](http://www.selectree.calpoly.edu/search/)

## Rescissions

OH 1230 “Tree Clearances from Overhead Electric Lines” dated 09/03 previously issued by the SVP Electric Engineering Division is superseded by this revision. All previously issued Electric Department tree lists are also rescinded and replaced by this document.

By: J. Brice	<b>Tree Clearances From Overhead Electric Lines</b> Silicon Valley Power	Drawn By: AA	
Approved: K <sup>2</sup> 9 August, 2016		SHEET 2 of 8	
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## Definition of Terms

- **Building Inspector:** City of Santa Clara Building Dept. Inspector, responsible for verifying proper installation and repair of all private building facilities. This includes the electric service entrance and meter service panel.
- **Developer:** A developer is any person who causes land to be divided into two or more parcels for himself or others; or is engaged in the development of property, in whole or in part, by the placing of any improvements thereon, whether the property was previously developed in whole, in part, or at all.
- **Contractor:** The person or persons, firm, partnership, corporation or combination thereof, who has entered into a contract with the City of Santa Clara, as a party or parties of the second part of his or their legal representative.
- **City:** City of Santa Clara or the City Council of the City of Santa Clara.
- **City Engineer:** City Engineer of the City of Santa Clara.
- **High Voltage (Marking):** Safety identifier of any electric system where the nominal system voltage is greater than 1000 volts. This is not the same as the NEC definition for “High Voltage”.
- **Landscaping:** Any activity that modifies the visible features of an area of land, including: living elements, such as flora or fauna.
- **Low Voltage:** Any electric system where the nominal system voltage is less than 600 volts.
- **Primary/Distribution:** SVP Electric facilities operating at 12,000 volts.
- **Public Works Inspector:** City of Santa Clara Public Works Dept. Inspector, responsible for verifying proper installation and repair of all facilities within City right of ways and easements.
- **Silicon Valley Power (SVP):** Municipal Electric Department of the City of Santa Clara.
- **SVP Inspector:** Silicon Valley Power Electric Inspector responsible for verifying proper installation of electric substructures installed for use of SVP.
- **Transmission:** SVP Electric facilities operating at greater than 44,000 volts.

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**Inspections:**

**A. Work in a Public Right of Way or Public Easement**

The Public Works Inspector shall be responsible for inspection. The Public Works Inspector will inspect all backfill and tree planting. The Silicon Valley Power Inspector will be responsible only for inspecting conduits, manholes, vaults, boxes, SVP equipment pads, streetlight foundations, and backfill around SVP substructures in accordance with UG 0345. Phone: 408-615-3000 for Public Works Inspector (Have permit number available). 408-640-6302 for S.V.P. Inspector (Give Estimate Number of job when calling).

**B. Work outside of a Public Right of Way or Public Easement**

The Silicon Valley Power Inspector shall be responsible for inspection and will inspect all work including backfill. Phone: 408-640-6302 (Give Estimate Number of job when calling)

**C. Inspector Notification**

The Inspector shall be informed at least 24 hours in advance before commencing any item of construction or installation of material in order to permit proper inspection of materials and workmanship. No work shall be embedded, backfilled or otherwise covered until such time as it has been inspected and approved by the Inspector. Any materials and / or workmanship failing to meet the requirements of this Specification, good acceptable engineering or construction practices, or installed without prior notice to Inspector shall be subject to rejection. If required by the Inspector, the Developer or Contractor shall, at his own expense, remove rejected work, finish and install approved material and /or workmanship.

**D. Safety Regulations**

It is the Developer's and Contractor's responsibility to comply with all applicable State and OSHA Safety Regulations.

**Permits:**

For all work performed within a public right of way or public easement, an encroachment permit shall be obtained from the City Engineer's Office. For work within an electric easement, written permission shall be obtained from the Director of the Electric Utility or his designee.

An encroachment permit is not required for work outside of a public right of way, electric easement or other public easement. Other agency permits may be required for work performed within the jurisdictional area of the respective agency

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## **Tree Planting and Pruning:**

Extreme care and understanding of the hazards associated with power lines should be acknowledged before any planting or tree pruning is performed. If trees need to be pruned near electrical lines, notify SVP before starting work. The tree trimming contractor must be certified to work near energized electric lines.

Electrical safety standards require that poles supporting electrical conductors carry the highest voltage at the highest point of attachment. The voltage decreases as points of attachment move down the pole with telephone and cable at the lowest attachment, if they are attached to the pole.

## **Clearances Under and Near Primary/Distribution Overhead Lines**

### **Low Zone Distribution**

The Distribution Low Zone extends 20 feet out from electrical wires. In general, tree planting within the "low zone" is not recommended by SVP, and should be avoided. Most SVP easements do not allow planting of trees within the easement area. If plantings are selected, heights are limited to a maximum of 25 feet. It is important to recognize that pruning and/or removal may eventually become necessary to ensure safe and reliable electric service, and also maintain compliance with State Laws. Planting directly under conductors especially near the middle of a span should always be avoided.

### **Medium Zone Distribution**

The Distribution Medium Zone extends 30 out feet from the Low Zone (see above). Tree planting selections within the "middle zone" should recognize proximity of utilities in relation to tree height, root structure and canopy width upon maturity. If tree plantings are selected, heights are limited to a maximum of 35 feet. It is important to recognize that pruning and/or removal may eventually become necessary to ensure safe and reliable electric service, and also maintain compliance with State Laws. Planting trees that will become tall enough to target or "fall into" the power lines should always be avoided in this zone.

### **Tall Zone Distribution**

The Distribution Tall Zone begins 50 feet out from electrical wires. There is no stated maximum tree height in this zone, but failure of trees with the ability to reach energized conductors (utility wires) is of primary concern. Eventual topping or removal may be required to ensure safe and reliable electric service, and also maintain compliance with State Laws.

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**TALL ZONE**

**Trees planted more than 50 ft. from pole line**

All tall trees are acceptable  
such as: Coast Redwood  
Sycamore  
Poplar  
Douglas Fir  
Valley Oak  
Palm trees

**MEDIUM ZONE**

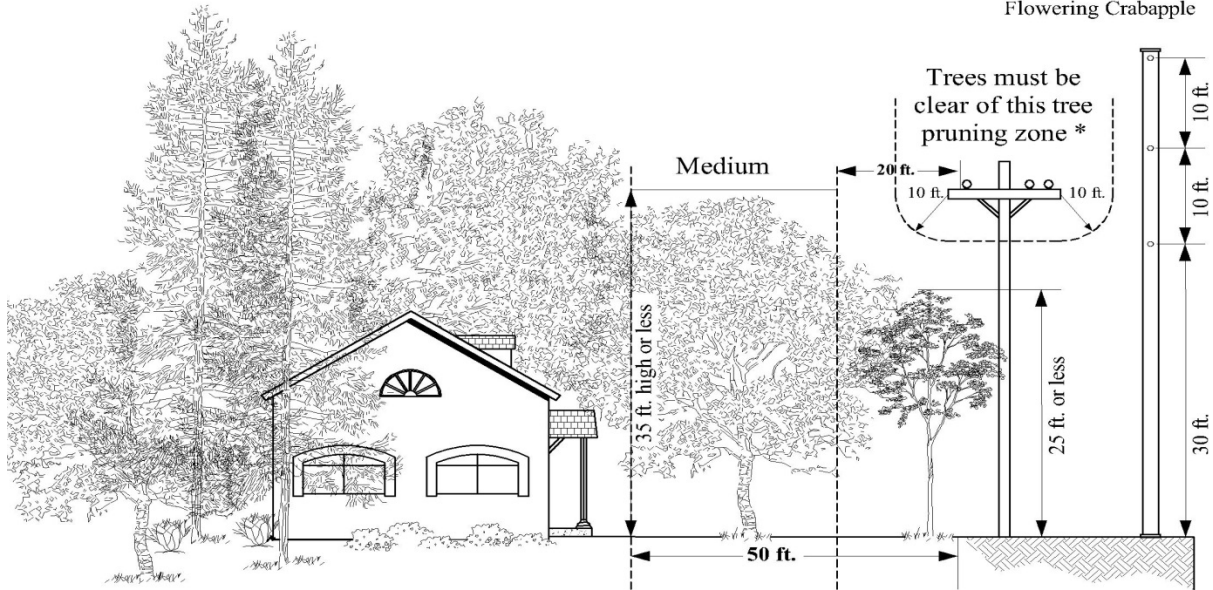
**Trees planted 20-50 ft. from pole line**

Plant medium trees that grow to 35 ft or less  
such as: Citrus fruit trees  
Flowering Cherry  
Evergreen Pear  
Saucer Magnolia  
Three Flower Maple

**LOW ZONE**

**Trees planted 20 ft. or less from pole line**

Plant small trees that grow 25 ft or less high when mature  
such as: Crape Myrtle  
Japanese Maple  
Western Redbud  
Honey Locust  
Flowering Crabapple



**Figure 1: Tree Zones Near Distribution Lines**

Figure 1 is a visual representation of the above mentioned tree zones. It is intended to be a typical depiction of the zones. Actual layouts may differ from this example due to terrain, pole line construction styles, and types of structures. Questions about specific locations should be directed to SVP for clarification.

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**Clearances Under and Near Transmission Overhead Lines**

**Wire Zone Transmission**

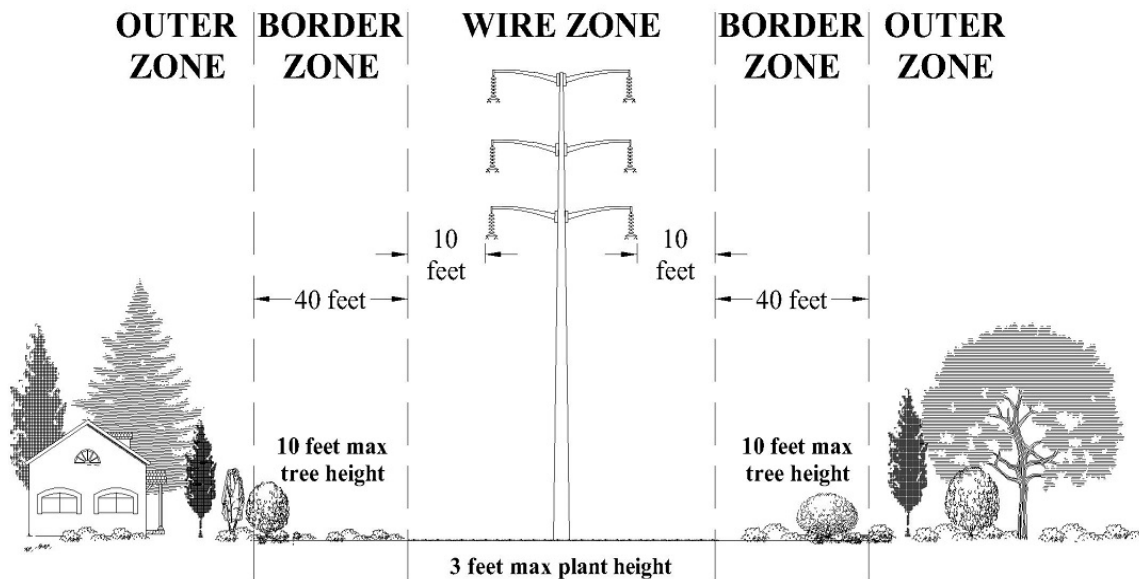
The Wire Zone under Transmission lines extends 10 feet out from conductors. Maximum vegetation height in this zone is 3 feet. In general, tree planting within the "wire zone" is not recommended by SVP, and should be avoided. Most SVP easements do not allow planting of trees within the easement area. If plantings are selected, it is important to recognize that removal may become necessary to ensure safe and reliable electric service, and also maintain compliance with Federal and State Laws.

**Border Zone Transmission**

The Border Zone extends 40 feet out from the Wire Zone (see above). Maximum vegetation height in this zone is 10 feet. Tree planting selections within the "border zone" should recognize proximity of utilities in relation to tree height, root structure and canopy width upon maturity. If tree plantings are selected, it is important to recognize that removal may eventually become necessary to ensure safe and reliable electric service, and also maintain compliance with Federal and State Laws. Planting trees that will become tall enough to target or "fall into" the power lines should always be avoided in this zone.

**Outer Zone Transmission**

The Outer Zone begins 50 feet out from conductors. There is no stated maximum tree height in this zone, but failure of trees with the ability to reach energized conductors (utility wires) is of primary concern. Eventual topping or removal may be required to ensure safe and reliable electric service, and also maintain compliance with Federal and State Laws.



**Figure 2: Tree Zones Near Transmission Lines**

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Figure 2 is a visual representation of the tree zones in the vicinity of transmission lines. It is intended to be a typical depiction of the zones. Actual layouts may differ from this example due to terrain, transmission line construction styles, and types of structures. Questions about specific locations should be directed to SVP for clarification.

### Tree List

The following table represents a list of trees that are approved for planting in the vicinity of SVP overhead electric distribution lines. Refer to the Low and Medium Zone sections of this document to determine the appropriate tree to plant within each zone. Substitutions for trees other than this approved list must be submitted by a certified arborist. The submittal must state the reason for the substitution and the submittal must be approved by SVP.

Common Name	Botanical Name	Height	Width	Growth Rate	Flower
BLUE PALO VERDE	<i>Cercidium floridum</i>	25'	20'	Moderate	Yellow
CATALINA IRONWOOD	<i>Lyonothamnus floribundus</i>	30'	15'	Rapid	White
CHASTE TREE	<i>Vitex agnuscastus</i>	15'	15'	Moderate	Lavender/blue
CRAPE MYRTLE	<i>Lagerstroemia hydrid</i>	25'	12'	Moderate	Pink,White, Lav.
EVERGREEN PEAR	<i>Pyrus kawakamii</i>	30'	35'	Moderate	White
FERN PINE	<i>Podocapus gracilior</i>	20'	12'	Slow	insignificant
FLOWERING CHERRY	<i>Prunus 'Okame'</i>	30'	30'	Rapid	White/Pink
FLOWERING CRABAPPLE	<i>Malus 'Adirondack'</i>	16'	22'	Moderate	White
FLOWERING PLUM	<i>Prunus cerasifera 'Krauter Vesuvius'</i>	20'	15'	Moderate	Pink
HONEY LOCUST	<i>Gleditsia triacanthos f. inermis</i>	8'	8'	Rapid	Yellow-Green
JAPANESE CRABAPPLE	<i>Malus floribunda</i>	18'	25'	Moderate	White
JAPANESE MAPLE	<i>Acer palmatum</i>	25'	20'	Slow	Red
JAPANESE SNOWBELL	<i>Styrax japonicus</i>	20'	20'	Slow	White
JERUSALEM THORN	<i>Parkinsonia aculeata</i>	20'	25'	Rapid	Yellow
LOCUST	<i>Robinia pseudoacacia f. umbraculifera</i>	12'	12'	Rapid	White
OLIVE	<i>Olea eupropaea 'Swan Hill'</i>	30'	20'	Slow	White
SARATOGA SWEET BAY LAUREL	<i>Laurus 'Saratoga'</i>	30'	25'	Slow	Pale yellow
MAGNOLIA, LITTLE GEM	<i>Magnolia grandiflora 'Little Gem'</i>	20'	10'	Slow	White
MAGNOLIA, SAUCER	<i>Magnolia x soulangeana</i>	30'	25'	Moderate	Pink to White
PURPLE SMOKE TREE	<i>Cotinus coggygria</i>	16'	12'	Moderate	Pink
REDBUD, EASTERN	<i>Cercis canadensis</i>	30'	20'	Moderate	Pink to White
REDBUD, WESTERN	<i>Cercis occidentalis</i>	15'	10'	Moderate	Purplish-pink
THREE-FLOWER MAPLE	<i>Acer triflorum</i>	30'	20'	Slow	Pink/Yellow-Green
WRIGHT ACACIA	<i>Acacia wrightii</i>	25'	30'	Slow	White to Cream

References:

Sacramento Municipal Utility District (SMUD), [www.smud.org/en/residential/environment/shade-trees/choices.htm](http://www.smud.org/en/residential/environment/shade-trees/choices.htm)  
 Marina Tree & Garden Club, [www.marinatreeandgarden.org/treelist](http://www.marinatreeandgarden.org/treelist).  
 Friends of the Urban Forest, Trees of San Francisco: A Guide to Street-Tree Planting and Care, FUF, 1994, [www.fuf.net](http://www.fuf.net).  
 Urban Forest Ecosystems Institute, [www.selectree.calpoly.edu/search/](http://www.selectree.calpoly.edu/search/)  
 Western Garden Book, Sunset Publishing Corporation, Menlo Park, CA  
 Sacramento Tree Foundation, [www.sactree.com](http://www.sactree.com)