



Los Angeles County
Department of Regional Planning

Planning for the Challenges Ahead



Richard J. Bruckner
Director

May 26, 2015

The Honorable Board of Supervisors
County of Los Angeles
383 Kenneth Hahn Hall of Administration
500 West Temple Street
Los Angeles, CA 90012

Dear Supervisors:

**HEARING ON THE TREE PLANTING ORDINANCE
PROJECT NO. R2007-02988-(1-5)
ADVANCE PLANNING CASE NO. 201400003
(ALL SUPERVISORIAL DISTRICTS) (3-VOTES)**

SUBJECT

This action is to adopt an ordinance amending Title 21 (Subdivisions) and Title 22 (Planning and Zoning) of the Los Angeles County Code to repeal the drought tolerant landscaping and green building requirements in Sections 21.24.430 and 21.24.440 and Parts 20 and 21 of Chapter 22.52 that are found in Title 31; and to establish tree planting requirements for new projects. Division 1 of Chapter 22.08 is to be amended to add definitions. Part 20 (Tree Planting Requirements) of Chapter 22.52 is to be added to establish tree planting requirements that provide environmental benefits.

IT IS RECOMMENDED THAT THE BOARD, AFTER THE PUBLIC HEARING:

1. Determine that the project is Categorically Exempt (Class 8) from California Environmental Quality Act (CEQA) reporting requirements because it is an action by a regulatory agency for the protection of the environment.
2. Approve the recommendation of the Regional Planning Commission (Commission) to amend the County Code to repeal green building and drought tolerant requirements from Title 22 and establish new tree planting requirements in Title 22 as reflected in the draft ordinance.
3. Indicate the Board of Supervisor's (Board) intent to approve the Tree Planting Ordinance (Advance Planning Case No. 201400003).
4. Instruct County Counsel to prepare the final ordinance amending the County Code as recommended by the Commission and submit to the Board for its consideration.

PURPOSE/JUSTIFICATION OF RECOMMENDED ACTION

The purpose of this ordinance is to repeal the drought tolerant landscaping and green building requirements from Title 21 (Subdivisions) and Title 22 (Planning and Zoning) that are found in Title 31 (Green Building Standards Code); and to establish tree planting requirements in Part 20 of Chapter 22.52 that provide environmental benefits. Trees planted pursuant to Part 20 will reduce greenhouse gasses that cause global warming by absorbing carbon dioxide, reduce water pollution and recharge groundwater by retaining storm water onsite, and reduce the urban heat island effect by shading impervious surfaces and by transpiration.

Implementation of Strategic Plan Goals

The ordinance promotes Goal 2 (Community Support and Responsiveness) which states, "Enrich lives of Los Angeles County residents by providing enhanced services, and effectively planning and responding to economic, social, and environmental challenges." The ordinance is a response to the environmental challenges of global warming, water pollution, ground water depletion and the urban heat island effect which contributes to air pollution and energy consumption. Trees planted pursuant to the ordinance will reduce greenhouse gasses that cause global warming by absorbing carbon dioxide, reduce water pollution and recharge groundwater by retaining storm water onsite, and reduce the urban heat island effect by shading impervious surfaces and by transpiration.

FISCAL IMPACT/FINANCING

Adoption of the ordinance will not result in significant costs to the County. Implementation of this ordinance is not expected to require additional staff support. Therefore, a request for financing is not requested at this time.

FACTS AND PROVISIONS/LEGAL REQUIREMENTS

A public hearing is required pursuant to Section 22.16.200 of the County Code and Section 65856 of the Government Code. Required notice must be given pursuant to the procedures and requirements set forth in Section 22.60.174 of the County Code. These procedures exceed the minimum standards of Section 6061, 65090, and 65856 of the Government Code relating to notice of public hearing.

Background

On November 18, 2008, the Board adopted the following ordinances:

Ordinance No. 2008-0064 entitled, "An ordinance amending Title 21 - Subdivisions and Title 22 - Planning and Zoning of the Los Angeles County Code to establish drought-tolerant landscaping requirements for projects constructed after January 1, 2009."

Ordinance No. 2008-0065 entitled, "An ordinance amending Title 21 - Subdivisions and Title 22 - Planning and Zoning of the Los Angeles County Code to establish green building development standards for projects constructed after January 1, 2009."

The ordinances took effect December 18, 2008, and became operative January 1, 2009.

On November 23, 2010, the Board adopted Ordinance No. 2010-0058 entitled, "An ordinance adding Title 31 – Green Building Standards Code of the Los Angeles County Code, relating to the adoption of the 2010 California Green Building Code by reference, with certain changes and modifications." The ordinance took effect December 23, 2010, and become operative January 1, 2011.

Since the adoption of Ordinance No. 2010-0058 on November 23, 2010, there have been redundancies and inconsistencies in the County Code because Titles 21 and 22 also have green building and drought tolerant requirements. This ordinance amendment will remove said redundancies and inconsistencies.

On June 25, 2014, the Commission conducted a public hearing that was continued to August 13, 2014, so that the ordinance's impacts to private property rights, small business and public infrastructure could be addressed. There were no testifiers present.

On August 13, 2014, the Commission conducted a public hearing that was continued until December 17, 2014, so that a Tree Planting Guide could be developed. There were no testifiers present.

At the December 17, 2014, public hearing, the Commission expressed a concern that requiring trees in parking lots may reduce the required number of parking spaces, commercial floor area and residential units. The Commission suggested that cool pavement be considered as an alternative in those situations. Accordingly, the modification section of the ordinance was revised to require the use of cool pavement in

uncovered parking areas that would otherwise be shaded by required trees. There being no testifiers present, the Commission closed the public hearing and recommended that the Board adopt the revised ordinance to include a provision for cool pavement.

ENVIRONMENTAL DOCUMENTATION

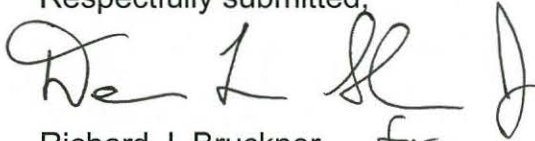
The adoption of the Tree Planting Ordinance is exempt (Class 8) from CEQA pursuant to Sections 15308 (Actions by Regulatory Agencies for Protection of the Environment) of Title 14 of the California Code of Regulations.

IMPACT ON CURRENT SERVICES (OR PROJECTS)

Action on the proposal is not anticipated to have a significant impact on current services or projects.

Should you have any questions, please contact Carmen Sainz via e-mail at csainz@planning.lacounty.gov or Dean Edwards at dedwards@planning.lacounty.gov or at (213) 974-6425.

Respectfully submitted,


Richard J. Bruckner
Director

for
RJB

RJB:MC:CS:de:ems

Attachments:

1. Resolution
2. Draft Tree Planting Ordinance
3. Draft Tree Planting Guide
4. Regional Planning Commission Hearing Packages

c: Executive Office, Board of Supervisors
County Counsel
Chief Executive Office

**RESOLUTION OF THE REGIONAL PLANNING COMMISSION
COUNTY OF LOS ANGELES
TREE PLANTING ORDINANCE**

WHEREAS, the Regional Planning Commission (Commission) of the County of Los Angeles (County) has reviewed the amendments to Title 21 (Subdivisions) and Title 22 (Planning and Zoning) of the Los Angeles County Code that 1) repeal the drought tolerant landscaping and green building requirements in Sections 21.24.430 and 21.24.440 and Parts 20 and 21 of Chapter 22.52 that are now found in Title 31; and 2) establish tree planting requirements for most new projects; collectively the Tree Planting Ordinance (Ordinance). Division 1 of Chapter 22.08 is to be amended to add definitions pertinent to the new tree planting requirements. Part 20 of Chapter 22.52 is to be amended to establish the new tree planting requirements.

WHEREAS, the Commission finds as follows:

1. November 18, 2008: The Board of Supervisors (Board) adopted the following ordinances:

Ordinance No. 2008-0064 entitled, "An ordinance amending Title 21 - Subdivisions and Title 22 - Planning and Zoning of the Los Angeles County Code to establish drought-tolerant landscaping requirements for projects constructed after January 1, 2009."

Ordinance No. 2008-0065 entitled, "An ordinance amending Title 21 - Subdivisions and Title 22 - Planning and Zoning of the Los Angeles County Code to establish green building development standards for projects constructed after January 1, 2009."

The ordinances took effect December 18, 2008, and became operative January 1, 2009.
2. November 23, 2010: The Board adopted Ordinance No. 2010-0058 entitled, "An ordinance adding Title 31 – Green Building Standards Code of the Los Angeles County Code, relating to the adoption of the 2010 California Green Building Code by reference, with certain changes and modifications." The ordinance took effect December 23, 2010, and become operative January 1, 2011.
3. November 26, 2013: The Board adopted Ordinance No. 2013-0053 entitled, "An ordinance amending Title 31 - Green Building Standards Code of the Los Angeles County Code, by adopting the 2013 California Green Building Standards Code by reference, with certain changes and modifications, and making other revisions thereto." The ordinance became operative on January 1, 2014.
4. Since the adoption of Ordinance No. 2013-0053 on November 23, 2010, there have been redundancies and inconsistencies in the County Code because Title 22 also has green building and drought tolerant requirements. The Ordinance will remove said redundancies and inconsistencies.
5. The Ordinance establishes new tree planting requirements that provide environmental benefits. Trees planted pursuant to Part 20 will reduce greenhouse gasses that cause global warming by absorbing carbon dioxide, reduce water pollution and recharge groundwater by retaining storm water onsite, and reduce the urban heat island effect by shading impervious surfaces and by transpiration.
6. Excluding certain exemptions as provided by the Ordinance, the tree planting requirements apply to: new buildings; additions with a cumulative floor area of at least 50 percent of the total existing building floor area on the subject property, within any 12-month period; new uncovered surface parking lots with a minimum of 15 parking spaces; and existing uncovered surface parking lots expanded by 15 or more parking spaces.

7. The Ordinance includes Appendix A, which establishes shade plan requirements.
8. The Tree Planting Guide is a supplement to the Ordinance that includes detailed shade plan requirements; a Tree Species List; and recommendations for irrigation, professional services and resources for tree planting and maintenance.
9. The Staff Report prepared by the Department for the Ordinance contains a detailed analysis of applicable General Plan policies as applied to the Ordinance, and concludes that the Ordinance is consistent with such policies. The analysis is hereby adopted and is incorporated herein by this reference.
10. The adoption of the Tree Planting Ordinance is exempt (Class 8) from CEQA pursuant to Sections 15308 (Actions by Regulatory Agencies for Protection of the Environment) of Title 14 of the California Code of Regulations.
11. Two communications regarding the Ordinance were received from the public. One identified concerns about tree impacts to solar facilities. The impacts to solar facilities are covered by the California Solar Shade Control Act (Pub Res C § 25980 et seq.). The other was from the organization TreePeople. The Ordinance was revised to address TreePeople's comments.
12. Pursuant to the provisions of Section 22.60.174 of the County Code, the public hearing notice was published in the *Los Angeles Times* and *La Opinión* newspapers on May 20, 2014.
13. At the December 17, 2014 hearing, the Commission expressed a concern that requiring parking lot trees may reduce parking spaces, commercial space and residential units. The Commission suggested that cool pavement be considered as an alternative in those situations. Accordingly, the modification section of the Ordinance was revised to require the use of cool pavement in uncovered parking areas that would otherwise be shaded by required trees.
14. There was no public testimony for this item.
15. The location of the documents and other materials constituting the record of proceedings upon which the Commission's decision is based in this matter is at the Los Angeles County Department of Regional Planning, 13th Floor, Hall of Records, 320 West Temple Street, Los Angeles, CA 90012. The custodian of such documents and materials shall be the Section Head of the Community Studies East Section, Los Angeles County Department of Regional Planning.

NOW, THEREFORE, BE IT RESOLVED THAT, the Regional Planning Commission recommends to the Los Angeles County Board of Supervisors as follows:

1. That the Board hold a public hearing to consider proposed amendments to Title 21 (Subdivisions) and Title 22 (Planning and Zoning) of the Los Angeles County Code to repeal the drought tolerant landscaping and green building requirements and establish the Tree Planting Ordinance; and
2. That the Board find the adoption of the Tree Planting Ordinance exempt from CEQA guidelines, pursuant to Section 15308 (Actions by Regulatory Agencies for Protection of the Environment) of Title 14 of the California Code of Regulations; and
3. That the Board adopt an ordinance containing amendments Title 21 (Subdivisions) and Title 22 (Planning and Zoning) of the Los Angeles County Code recommended by this Commission, and determine that the amendments are compatible with and supportive of the goals and policies of the Los Angeles County General Plan.

I hereby certify that the foregoing was adopted by a majority of the voting members of the Regional Planning Commission of the County of Los Angeles on December 17, 2014.

By: Rosie O. Ruiz

Rosie O. Ruiz, Commission Secretary
Regional Planning Commission
County of Los Angeles

APPROVED AS TO FORM:
OFFICE OF THE COUNTY COUNSEL

By: _____
Lawrence Hafetz
Deputy County Counsel

VOTE

Concurring: Valadez, Shell, Louie, Pedersen, Modugno

Dissenting:

Abstaining:

Absent:

Action Date: December 17, 2014

DRAFT TREE PLANTING ORDINANCE

An ordinance amending Title 21 – (Subdivisions) and Title 22 – (Planning and Zoning) of the Los Angeles County Code to repeal the drought tolerant landscaping and green building requirements; and to establish tree planting requirements for projects constructed after the effective date of this ordinance amendment.

The Board of Supervisors of the County of Los Angeles ordains as follows:

SECTION 1. Section 21.24.430 and 21.24.440 of Title 21 are hereby repealed in their entirety.

SECTION 2. Chapter 22.08 of Title 22 is hereby amended to read as follows:

22.08.030 C.

“Cool pavement” means paving materials that reflect the sun to provide cooler surfaces and increased water evaporation than traditional paving materials.

22.08.040 D.

“Developed area” shall mean the area of the project site where construction or expansion has or will take place.

22.08.190 S.

“Shade Plan” shall mean a landscape plan that depicts and quantifies the amount of tree shade for a project site as set forth in Appendix A.

22.08.200 T.

“Tree Species List” shall mean the list of tree species prepared and maintained pursuant to Section 22.52.2120.B.

22.08.210 U.

“Uncovered Parking Area” shall mean, for the purpose of implementing Part 20 Tree Planting Requirements, uncovered impervious surface areas of a parking lot that includes parking stalls, pedestrian loading areas, driveways within the property line, areas for maneuvering and walkways within the parking lot but excludes: areas covered by solar panels; truck loading, maneuvering and parking areas not connected to and exclusive of any vehicle parking; and display, sales, service and vehicle storage areas associated with uses such as automobile dealerships.

“Utility-scale renewable energy facility, ground-mounted” shall mean a facility affixed to the ground where renewable resources are used to generate energy primarily for off-site use. This definition includes all on-site and off-site equipment and accessory structures related to the facility, including but not limited to solar collector arrays, wind turbines, mounting posts, substations, electrical infrastructure, transmission lines, operations and maintenance buildings, and other accessory structures.

SECTION 3. Part 20 of Chapter 22.52 is hereby repealed in its entirety.

SECTION 4. Part 20 of Chapter 22.52 is hereby added to read as follows:

Part 20

TREE PLANTING REQUIREMENTS

- 22.52.2100 Purpose.
- 22.52.2110 Applicability.
- 22.52.2120 Development Standards.
- 22.52.2130 Plan Requirements.
- 22.52.2140 Modification of Development Standards.

22.52.2100 Purpose.

The purpose of this Part 20 is to establish tree planting requirements that provide environmental benefits. Trees planted pursuant to this Part 20 will reduce greenhouse gasses by absorbing carbon dioxide, water pollution by retaining storm water onsite and the urban heat island effect by shading impervious surfaces.

22.52.2110 Applicability.

- A. This Part 20 shall apply to projects that include:
 - 1. New buildings as defined in Section 22.08.020 of the Los Angeles County Code;
 - 2. Additions with a cumulative floor area of at least 50 percent of the total existing building floor area on the subject property, within any 12 month period.
 - 3. New uncovered surface parking lots with a minimum of 15 parking spaces and existing uncovered surface parking lots expanded to have 15 or more parking spaces.
- B. The following projects are exempt from the requirements of this Part 20:
 - 1. Any project where a complete application was filed with the Department prior to the effective date of this ordinance;
 - 2. Accessory structures and buildings;
 - 3. Utility-scale renewable energy facilities, ground-mounted.
- C. Trees required by this Part 20 are minimum requirements; however, they may contribute to fulfilling all other landscaping required in this Title 22, including any such requirements in a Community Standards District.

22.52.2120 Development Standards.

A. Number of Trees.

1. Projects subject to Sections 22.52.2110.A.1 and 22.52.2110.A.2 shall comply with the following requirements:

a. For three or fewer residential units per lot, a minimum of two trees shall be planted.

b. For four or more residential units per lot, a minimum of one tree shall be planted for every 5,000 square feet of developed area.

c. For non-residential or mixed-use developments, a minimum of three trees shall be planted for every 10,000 square feet of developed area per lot.

2. Any existing tree located on the project site with a minimum trunk diameter of .75 inches, as measured six inches above the soil line, may count towards meeting the requirement of Section 22.52.2120.A.1.

3. For projects subject to Section 22.52.2110.A.3, at least 50 percent of uncovered parking areas, as defined in Section 22.08.140, shall be shaded with trees within 15 years of planting, consistent with the shade plan requirements of Appendix A. Trees planted pursuant to this requirement may count towards the requirements of Sections 22.52.2120.A.1.b and 22.52.2120.A.1.c.

B. Species. The tree species planted shall be those that provide adequate shade, are not invasive, are resistant to local pest and diseases, are adaptable to the local climate, and are appropriate for the planting location. The Director shall prepare and maintain the Tree Species List, which shall contain a list of tree species which the Director has determined satisfy the criteria set forth in this subsection.

C. Planting Size. Required trees shall be a minimum size of 15 gallons and shall have a trunk diameter of .75 to 1.5 inches as measured six inches above the soil line.

D. Location.

1. Trees shall be planted in locations that maintain the required lines of sight for safe pedestrian and vehicular movement and will not cause root damage to the sidewalk or other public infrastructure, to the satisfaction of the Department of Public Works.

2. Trees planted near buildings or fire lanes shall not be in locations that adversely impact Fire Department operations or response times, to the satisfaction of the Fire Department.

E. Maintenance.

1. Trees shall be supported with staking and ties, made of soft and mold resistant material (such as rubber), until the trees are able to support themselves.
2. Trees subject to Sections 22.52.2120.1.b, 22.52.2120.1.c and 22.52.2120.3, and not planted in turf shall require an irrigation system.
3. Trees failing to survive shall be replaced.

22.52.2130 Plan Requirements.

- A. For projects subject to Sections 22.52.2110.A.1 and 22.52.2110.A.2, required trees shall be depicted on the site plan and the species labeled.
- B. For projects subject to Section 22.52.2110.A.3, a shade plan that is consistent with the requirements of Appendix A is required.
- C. For projects located in a Fire Hazard Severity Zone, required site and/or shade plans shall be routed to the Fire Department's Fuel Modification Unit for review and approval in order to ensure proposed tree locations are in compliance with Title 32 of the County Fire Code.

22.52.2140 Modification of Development Standards.

The requirements of Section 22.52.2120.A may be modified by the Director, without additional fees where:

- A. The soil type would prevent tree survival as documented in a notarized letter by a certified arborist and submitted to the Director.
- B. The requirement would conflict with other provisions set forth in the County Code. When the Director reduces the required shade area for a project subject to Section 22.52.2120.A.3 in order to comply with parking requirements, the Director may require cool pavement, preferably permeable, to be used in Uncovered Parking Areas which would otherwise be shaded by required trees; or
- C. The parking lot subject to Subsection 22.52.2120.3 is retrofitted with solar panels.

APPENDIX A – SHADE PLAN REQUIREMENTS

In addition to site plan requirements, the shade plan shall comply with the following requirements:

1. Depict and label drainage features such as drop inlets, catch basins and swales.
2. Indicate landscape details such as soil preparation and tree staking, where appropriate.

3. Depict and label heights of any power lines, lighting, signage or other above ground infrastructure.
4. Depict planters in parking lots with concrete curbs that are a minimum of six (6) inches high/wide. Label the inside planter width that conforms to the minimum size identified in the Tree Species List.
5. Depict location and canopy of existing trees that shade the uncovered parking area. Label tree "To Remain" or "To Be Removed". Canopies of trees to remain shall be drawn to scale at the size of 15 years maturity as indicated in the Species List.
6. Depict location and canopy of proposed trees. Canopies shall be drawn to scale at the size of 15 years maturity.
7. Label trees with symbols keyed to the shade calculation table to identify species. For trees planted under power lines, signage or other above ground infrastructure, the species shall not have a maximum height that exceeds the height of the lowest point of above ground infrastructure that the tree is planted under.
8. Label trees with shade credit. Shade credit is the percent of parking area directly beneath the canopy or drip line that will be shaded by the tree at 15 years of maturity and shall be estimated at 25, 50, 75 or 100 percent. Areas where canopies overlap shall not be counted twice.
9. Depict any proposed cool pavement and label square footage and pavement type.
10. Include a shade calculation table (table). If a site has two or more unconnected parking areas, shade shall be calculated separately for each area using a separate calculation table. The table shall include the following:
 - a. Uncovered parking area.
 - b. Required shade area.
 - c. Tree symbols keyed to the shade plan.
 - d. Botanical and common name for proposed trees and existing trees.
 - e. Tree canopy diameter at 15 years maturity for each species
 - f. Tree canopy area at 15 years maturity for each species.
 - g. Tree quantity per species and shade credit (100%, 75%, 50% or 25%).
 - h. Shade area (square feet) per species and shade credit.
 - i. Provided shade area per species.
 - j. Total provided shade area.
 - k. Percent Shade Coverage.

SECTION 5. Part 21 of Chapter 22.52 is hereby repealed in its entirety.

DRAFT TREE PLANTING GUIDE

TABLE OF CONTENTS	Page
I. Introduction	1
II. Professional Services	1
III. Tree Species	1
IV. Shade Plans	2
V. Irrigation	7
VI. Resources	7
VII. Attachment A – Tree Species List	8

I. INTRODUCTION

To implement Part 20 Tree Planting Requirements (Requirements) of Title 22, this document, the Tree Planting Guide (Guide) was developed as a guide for planting trees. It includes detailed shade plan requirements; a list of approved tree species (Tree Species List); and recommendations for irrigation, professional services and resources for tree planting and maintenance.

II. PROFESSIONAL SERVICES

Since the full [benefits](#) of trees are not realized until the trees mature, the planting of trees is both an investment in the future and a financial investment. To protect this investment and to maximize the benefits that trees provide, proper placement, species selection, planting and maintenance is necessary. Qualified professionals are available to provide assistance in these matters. Their services and expertise are described below.

Part 20 of Title 22 requires shade plans for new uncovered surface parking lots. Shade plans should be prepared by professional landscape architects. To locate a licensed landscape architect, contact the [American Society of Landscape Architect \(ASLA\)](#).

Three professional organizations, [The International Society of Arboriculture \(ISA\)](#), [Tree Care Industry Association \(TCIA\)](#), and [American Society of Consulting Arborists \(ASCA\)](#) certify arborists to provide critical tree care services such as planting, soil modification and aeration, pruning, pest and disease diagnosis and treatment, and tree removal.

Part 20 of Title 22 requires irrigation systems for certain projects. Irrigation systems should be designed, installed and programmed by a certified irrigation professional. To locate a certified irrigation professional, contact the [Irrigation Association](#).

III. TREE SPECIES

The species of planted trees must meet certain criteria set forth in Part 20 of Title 22. The attached Tree Species List identifies shade tree species that have been deemed suitable for planting in developed areas. Additionally, invasiveness, climate change, and tree pest and diseases in the region were considered in the preparation of the list. The Tree Species List includes both botanical and common names, and also the following associated information to aid in the selection of suitable species for a particular location: canopy diameter, height, type (evergreen, deciduous or semi deciduous), Sunset Magazine Climate Zone, sun requirement, water requirement, planter size requirement, root damage potential, growth rate, California native and notes regarding the species. The Tree Species List includes a key on a separate sheet that describes the fields and abbreviations used in the list.

When planting in locations where root damage to structures or infrastructure is a concern, it is recommended that species from the Tree Species List with low root damage potential be chosen. Additionally, it is recommended that underground root barriers be installed to deflect roots downward.

Title 31 of the County Code states that, "Non-Invasive drought-tolerant plant and tree species appropriate for the climate zone region shall be utilized in at least 75 percent of the total landscaped area." Species identified in the Tree Species List with a water requirement of very low (VL) to moderately low (M/L) are considered drought-tolerant.

Large tree species provide greater benefits than smaller species trees. It is therefore recommended that the largest tree species that is appropriate for the planting location be selected whenever possible. For further information, please see the US Forest Service's [Large Tree Argument](#) publication.

IV. SHADE PLANS

All projects subject to Part 20 of Title 22 of the Los Angeles County Code that include a new uncovered surface parking lot, require submittal of a shade plan to the Department of Regional Planning for review and approval to ensure the parking lot is designed to result in at least 50 percent shading of uncovered parking areas by trees within 15 years. See Figure A for an example of a shade plan. In addition to items required for site plans, the shade plan shall comply with the following:

1. Depict and label drainage features such as drop inlets, catch basins and swales. The parking lot should be designed so that the trees benefit by the drainage.
2. Indicate landscape details (i.e., soil preparation, tree staking, etc.) where appropriate.
3. Depict and label heights of any power lines, lighting, signage or other above ground infrastructure. Parking lot lighting should not conflict with tree locations and growth. Light standards no greater than 16 feet in height are strongly encouraged.
4. Depict planters in parking lots with minimum six (6) inch high/wide concrete curbs for protection. Label inside planter width that conforms to the minimum size identified in the

Tree Species List. Continuous planting islands are encouraged to allow for multiple tree plantings to increase soil area available for roots.

5. Depict location and canopy of existing trees that shade the parking area. Label tree "To Remain" or "To Be Removed". Canopies of trees to remain shall be drawn to scale at the size of 15 years maturity as indicated in the Tree Species List.
6. Depict location and canopy of proposed trees. Canopies shall be drawn to scale at the size of 15 years maturity as indicated in the Tree Species List.
7. Label trees with symbols keyed to the shade calculation table (below) to identify species. It is recommended that the species of trees be varied throughout the parking lot. For trees planted under power lines, signage or other above ground infrastructure, the species shall not have a height identified in the Tree Species List that exceeds the height of the lowest point of above ground infrastructure that the tree is planted under. Trees located within storm water runoff areas should be species with a moderate to very high water requirement.
8. Label trees with shade credit. Shade credit is the percent of parking area directly beneath the canopy or drip line that will be shaded by the tree at 15 years of maturity and shall be estimated at 25, 50, 75 or 100 percent. Areas where canopies overlap shall not be counted twice.
9. Depict any proposed [cool pavement](#) and label square footage and pavement type. Cool payment can only be used in lieu of trees when the Director has determined that it is necessary to reduce the amount of required shade area to meet parking requirements.
10. Shade calculation table (table). See Figure B for example of a completed table. Include any existing trees that will remain. If a site has two or more unconnected parking areas, shade shall be calculated separately for each area using a separate calculation table. A spreadsheet that calculates tree shade for parking lots (Shade Calculator) is on the Department of Regional Planning's website. The table shall include the following:
 - a. Uncovered parking area. Uncovered impervious surface area of the parking lot that includes parking stalls, pedestrian loading areas, driveways within the property line, areas for maneuvering and walkways within the parking lot. Excludes: areas covered by solar panels, truck loading areas in front of overhead doors; truck maneuvering and parking areas unconnected to and exclusive of any vehicle parking; and display, sales, service, and vehicle storage areas associated with uses such as automobile dealerships or lumber yards.
 - b. Required shade area. The total area required to be shaded by trees. This field is calculated by the Shade Calculator.
 - c. Tree symbols keyed to the shade plan. A unique identifier for each tree species. Example: "T1".
 - d. Botanical and common name for proposed trees and existing trees.
 - e. Tree canopy diameter at 15 years maturity for each species. Diameters shall be from the Tree Species List.

- f. Tree canopy area at 15 years maturity for each species. This field is calculated by the Shade Calculator
- g. Tree quantity per species and shade credit (100%, 75%, 50% or 25%). This is number of provided trees per species and shade coverage.
- h. Shade area (square feet) per species and shade credit. The area of provided shade for each species and shade credit. This field is calculated by the Shade Calculator.
- i. Provided shade area per species. The total provided shade area for each species. This field is calculated by the Shade Calculator.
- j. Total provided shade area. The total provided shade area for all species. This field is calculated by the Shade Calculator.
- k. Percent Shade Coverage. Percentage of the parking area to be shaded by trees. This field is calculated by the Shade Calculator.

The diagram illustrates a parking lot layout with various features and tree preservation percentages. Key elements include:

- Buildings:** (Existing) OFFICE, (Existing) OFFICE, (New) Retail, (Existing) Retail.
- Property Line:** Indicated on the right side.
- Walkway:** Located between the buildings and the parking area.
- 8' landscape width:** Indicated along the walkway and near the buildings.
- Handicap:** Two designated spaces are marked.
- Loading Zone:** Located on the left side.
- Trash:** A trash area is marked on the left side.
- Tree Preservation Percentages:** Various percentages are shown for different trees and areas, including 50%, 75%, 100%, and 25%.
- Tree Markers:** T1, T2, T3, and T4 are used to identify specific trees.
- EXISTING TREE TO BE REMOVED:** Indicated with an arrow pointing to a tree.
- EXISTING TREE TO REMAIN:** Indicated with an arrow pointing to a tree.
- Standard Parking Space (S):** Represented by small rectangles.
- North Arrow:** Located at the bottom left.
- Legend:** S = Standard Parking Space.

(This Sample is not drawn to scale)

Figure B. Shade Calculation Table Example

PARKING LOT SHADE CALCULATION TABLE													
Symbol	Species Name		Canopy Diameter	Canopy Area	100% Shade Credit			75% Shade Credit			50% Shade Credit		
	Botanical	Common			Quantity	Area	Quantity	Quantity	Area	Quantity	Quantity	Area	Quantity
T1	Pistacia chinensis	Chinese Pistache	30	707	3	2121	1		530	0		0	1
T2	x Chitalpa tashkentensis	Chitalpa	30	707	0	0	4		2121	9		3181	0
T3	Quercus agrifolia	Coast Live Oak	35	962	0	0	0		0	1		481	0
T4	Ficus benjamina	Weeping Fig	35	962	0	0	0		0	0		0	0
				0		0			0			0	0
				0		0			0			0	0
				0		0			0			0	0
				0		0			0			0	0
				0		0			0			0	0
Diameters are in feet and areas are in square feet.													
Complete white cells only. Grey cells are calculated.													
Total Provided Shade Area :												8,610	
Percent Shade Coverage:												54%	
Uncovered Parking Area:												16,000	
Required Shade Area:												8,000	
Provided Shade Area												2,827	

V. IRRIGATION

On average, trees need the equivalent of one inch of rain every 7 to 10 days, which is less than the normal rainfall in Los Angeles County. Generally it will take one full year per inch of trunk diameter for a tree to get established (e.g. It will take 3 years for a 3 inch caliper/diameter tree to establish itself). To ensure that newly planted trees, which have a limited root system, survive until they are established, Title 22 Part 20 requires that trees, for certain projects, not planted in turf have irrigation systems. To ensure that required trees are irrigated appropriately, it is recommended that irrigation systems be designed, installed and programmed by a certified irrigation professional.

Following, is a recommended watering schedule for a newly planted 15 gallon tree:

- Month 1: Twice a week.
- Months 2–3: Once a week.
- Months 4–7: Once every two weeks.
- Months 8–12: Once every three weeks.
- Years 1-3: Once every four to five weeks.
- Years 4–5: Once every five to six weeks.

Fifteen gallons of water per tree is generally recommended for each watering. However, actual watering requirements vary based on the trees species. The Tree Species List indicates water requirements for each species.

It is recommended that both newly planted trees and mature trees be watered until water stops soaking in the ground because the soil has become saturated and reached its water-holding capacity. Sandy soils will drain quicker than soils with clay. It is best to check the soil for moisture about four inches down before watering. If it's really wet, don't water, even though the schedule says to.

In drought conditions, even older trees will start to show symptoms of drought stress and will need supplemental water although less frequently than younger trees. Established drought tolerant species may also need supplemental watering with continued drought.

VI. RESOURCES

Following, are online resources that include helpful information about tree planting such as: benefits, placement, species selection, planting techniques and maintenance (including pruning and care). Also, websites for relevant professional organizations are provided.

Miscellaneous

These resources are ordered by potential usefulness.

Trees Are Good: <http://www.treesaregood.com/treeowner/treeownerinformation.aspx>

TreePeople: <http://www.treepeople.org/>

US Forest Service's Large Tree Argument

http://www.fs.fed.us/psw/programs/uesd/uep/products/cufr_511_large_tree_argument.pdf

Smart Landscaping and Energy Efficiency

https://www.firstenergycorp.com/content/customer/help/saving_energy/trees.html

Tree Benefit Calculator: www.treebenefits.com

Adverse Effects of Topping (over pruning crowns): <http://www.urbantree.org/topping.asp>

Dig Alert (for underground utilities): <http://www.digalert.org/home.html>

Cal Poly San Luis Obispo, Urban Forest Ecosystems Institute: <http://selectree.calpoly.edu/>

EPA Cool Pavement: <http://www.epa.gov/heatisland/mitigation/pavements.htm>

Professional Organizations

American Society of Landscape Architects: <http://www.asla.org/>.

American Society of Consulting Arborists (ASCA): <http://www.asca-consultants.org/>

International Society of Arboriculture (ISA): <http://www.isa-arbor.com/>

Irrigation Association: <http://www.irrigation.org/>

Tree Care Industry Association (TCIA): <http://tcia.org/>

ATTACHMENT A – TREE SPECIES LIST

TREE SPECIES LIST

Botanical Name	Common Name	Canopy Diameter at 15 Years (Feet)	Canopy Diameter at Maturity (Feet)	Height (Feet)	Type	Sunset Climate Zone (Click To Look-up)	Sun	Water	Soil	Planter Size (Width in Feet)	Root Damage Potential	Growth Rate	California Native	Notes
Afrocarpus falcatus (Podocarpus gracilior)	fern pine	35	45	40-60	E	18-24	S-P	M	C,L,S	6-8	L	S-M		1"-2" narrow leaves, very little leaf litter. Pest/disease-free. Lawn watering ok.
Agonis flexuosa	peppermint tree	20	40	25-35	E	20-24	S-P	M/L	C,L,S	4-6	M	M-F		Weeping branches. 6" long peppermint scented leaves. White flowers in June.
Albizia julibrissin	silk tree	35	50	25-40	D	18-23	S-P	M	C,L,S	4-6	M	M-F		Umbrella canopy. Pink, fluffy summer flowers. Ferny leaves fold up at night.
Araucaria heterophylla (Araucaria excelsa)	Norfolk Island pine, star pine	35	60	60-100	E	21-24	S-P	M	C,L,S	8+	M	M		Not a pine. Large and symmetrical. Cones fall apart as they mature.
Arbutus 'Marina'	Marina strawberry tree	20	30	20-30	E	18-24	S-P	M/L	C,L,S	6-8	L	S-M		Red peeling bark. Red edible fruit. Pink bell-shaped flowers. Needs part shade in zone 18.
Arbutus unedo	strawberry tree	20	35	15-35	E	18-24	S-Sh	M/L	C,L,S	4-6	L	S-M		Red peeling bark. Red 1" round, edible fruit. White bell-shaped flowers. Shrubby.
Bauhinia variegata (Bauhinia purpurea)	purple orchid tree	20	20	25-35	E	18-24	S-P	M	L,S	3-4 (5)	L	S-M		Semi-deciduous mid-winter. Lightly fragrant purple/pink flowers Jan-April. Needs more structural pruning in youth.
Bauhinia variegata 'Candida'	white orchid tree	20	20	25-35	E	18-24	S-P	M	L,S	3-4 (5)	L	S-M		Semi-deciduous mid-winter to spring. White, lightly fragrant flowers Jan-April. Needs more structural pruning in youth.
Bauhinia x blakeana	Hong Kong orchid	20	30	20-25	E	19-24	S-P	M	WD, L,S	3-4	L	S-M		5-6" magenta flowers winter to spring. No seedpods. Sprawling, needs pruning.
Calistemon citrinus	Lemon Bottlebrush	20	25	15-20										See Melaleuca citrina
Callistemon salignus	White bottlebrush	20	20	15-20										See Melaleuca saligna
Callistemon viminalis	Weeping Bottlebrush	20	20	20-25										See Melaleuca viminalis
Cedrus atlantica	blue Atlas cedar	35	35	40-60	E	18-24	S-P	M/L	C,L,S	8+	M	S-M		Conifer. Short, stiff needles. 'Glauca' is a blue cultivar.
Cedrus deodara	deodar cedar	35	40	60-80	E	18-24	S-P	M/L	C,L,S	8+	M	F		Conifer. Long, soft needles. Drooping leader and low sweeping branches.
Cedrus libani	cedar of Lebanon	35	40	60-80	E	18-24	S-P	M/L	C,L,S	8+	L	S		Conifer. Irregular crown with long branches and short needles.

TREE SPECIES LIST

Botanical Name	Common Name	Canopy Diameter at 15 Years (Feet)	Canopy Diameter at Maturity (Feet)	Height (Feet)	Type	Sunset Climate Zone (Click To Look-up)	Sun	Water	Soil	Planter Size (Width in Feet)	Root Damage Potential	Growth Rate	California Native	Notes
<i>Celtis australis</i>	European Hackberry	35	50	30-50	D	18-20	S-Sh	M	C,L,S	6	M	M		Dark green leaves, 2-5" long. Small edible fruit in summer.
<i>Cercis canadensis</i>	Eastern Redbud	20	25	25-35	D	18-24	S-P	M	C,L,S	3-4	L	F		Rose-pink flowers, yellow fall color. 'Forest Pansy' has red leaves. Part shade in the valley.
<i>Cercis occidentalis</i>	Western Redbud	20	20	15-25	D	18-24	S-P	M/L	C,L,S	3-4	L	M-F	x	Often multi-trunked. Magenta flowers, seed pods. Yellow fall color. Part shade in the valley.
<i>Chilopsis linearis</i>	desert willow	20	25	15-25	D	18-21	S	M/L	WD, L,S	4-6	L	M-F	x	Long-blooming fragrant, pink trumpet flowers. Attracts hummingbirds.
<i>Chionanthus retusus</i>	Chinese fringe tree	20	20	20-25	D	18-24	S	M	C,L	4-6	L	M		White, fringe flowers June - July. Males, larger flowers. Yellow fall color. Part shade in the valley.
<i>Chitalpa tashkentensis</i>	Chitalpa	30	30	20-35	D	18-24	S-P	M/L	L,S	4-6	L	F		Pink flowers like <i>Chilopsis</i> but bigger. Staked a long time. Can get aphids. Needs more structural pruning in youth.
<i>Cinnamomum camphora</i>	camphor	35	80+	30-40	E	18-24	S-P	M	WD, C,L,S	8+	H	M		Camphor scented leaves. New leaves red/lime green. Heavy March leaf-drop.
<i>Eriobotrya deflexa</i>	bronze loquat	20	20	25-30	E	18-24	S-P	M	C,L,S	3-4	L	F		White fragrant flowers Dec.-March. 5/8" non-edible fruit. Best with moist soil.
<i>Geijera parviflora</i>	Australian willow	20	25	20-35	E	18-24	S	M/L	WD, C,L,S	6-8	L	S-M		Low maintenance. Deep roots. Pest-free. Willow-like, thick leaves droop.
<i>Ginkgo biloba</i> (Male only)	ginkgo, maidenhair tree	30	60	35-80	D	18-24	S-P	M	C,L,S	4-6	M	S-M		Smog tolerant. Summer water till 10-20' tall. Yellow fall color. Long-lived.
<i>Handroanthus impetiginosus</i> (Tabebuia avellanedae)	pink trumpet tree	25	30	30-50	D	20-24	S	M	WD, C,L,S	4-6	L	S-M		Pink trumpet flowers in late winter/early spring before leaves.
<i>Heteromeles arbutifolia</i>	toyon	20	20	12-25	E	18-24	S-P	M/L	WD, C,L,S	3-4	L	S-M	x	Great for wildlife. White flowers in spring-summer turn to red berries in winter.
<i>Jacaranda mimosifolia</i>	jacaranda	25	40+	25-40	D to S	18-24	S	M	WD, L,S	6-8	L	M		Purple flowers April - Sept. Lots of leaf/flower litter. Poor bloom at coast.
<i>Koelreuteria bipinnata</i>	Chinese flame tree	30	40	25-45	D	18-24	S-P	M	C,L,S	6-8	L	S-M		Yellow summer flowers. Bright red fall color. Salmon "paper lantern" pods in fall.

TREE SPECIES LIST

Botanical Name	Common Name	Canopy Diameter at 15 Years (Feet)	Canopy Diameter at Maturity (Feet)	Height (Feet)	Type	Sunset Climate Zone (Click To Look-up)	Sun	Water	Soil	Planter Size (Width in Feet)	Root Damage Potential	Growth Rate	California Native	Notes
Lagerstroemia indica and cultivars	Crape Myrtle	20	25	15-25	D	18-21	S	M	C,L,S	3-4	L	M		Yellow/orange fall color. Many flower colors. Powdery mildew in zones 22-24. Indian Tribe cultivars partly resist mildew.
Laurus nobilis	Sweet Bay	25	30	40	E	18-24	S-P	M/L	C,L,S	4-6	M	S-M		Leaves for cooking. Multi-trunk. Black scale & psyllids issue. 'Saratoga' is 25', single trunk and psyllid-resistant.
Lophostemon confertus (Tristania conferta)	Brisbane box	25	40	30-60	E	19-24	S-P	M	C,L,S	4-6	M	M-F		Red, peeling bark. White summer flowers. Not for windy areas. Smog/lawn tolerant.
Lyonothamnus floribundus asplenifolius	Ironwood: Santa Cruz island, fernleaf Catalina	25	40	30-60	E	19-24	S-P	M/L	WD, L,S	4-6	M	M	x	Red, peeling bark. White flowers. Needs excellent drainage. Great near the coast.
Macadamia integrifolia	smoothshell macadamia	20	20	25-30	E	19-24	S	M	L,S	4-6	M	M		White pendulous flowers. Edible nuts late fall to May. Best near the coast.
Melaleuca citrina (Callistemon citrinus)	lemon bottlebrush	20	25	15-20	E	18-24	S-P	M/L	C,L,S	4-6	L	F		Showy red flowers spring-summer. Stiff branches. Lemon scented leaves.
Melaleuca linariifolia	flaxleaf paperbark	20	30	20-30	E	18-24	S-P	M	C,L,S	4-6	L	F		White flaky bark. Small white summer flowers. Small, narrow leaves.
Melaleuca quinquenervia	cajeput tree	25	30	20-40	E	20-24	S-P	M	C,L,S	4-6	L	M		Weeping tree. White, spongy peeling bark. Summer-fall white bottlebrush flowers.
Melaleuca saligna (Callistemon salignus)	white bottle brush	20	20	15-20	E	18-24	S-P	M/L	C,L,S	3-4	L	F		Papery peeling bark. Pink new leaves. Cream flowers attract hummingbirds. Dense canopy.
Melaleuca viminalis (Callistemon viminalis)	weeping bottle brush	20	20	20-25	E	18-24	S-P	M/L	C,L,S	3-4	L	F		Red flowers attract butterflies and hummingbirds. Pendulous branches.
Melia azedarach	China berry	35	50	30-50	D	18-24	S-P	M/L	L,S	6-8	M	F		Spring-summer lilac flowers. Yellow berries. All parts poisonous. Invasive.
Metrosideros excelsus	New Zealand Christmas tree	20	30	15-30	E	23-24	S-P	M/L	L,S	3-4	M	S		Red flowers May-July. White leaf underside. Aerial roots. Smog tolerant.
Olea europaea 'Swan Hill'	Swan Hill olive	30	35	35	E	18-24	S	M/L	C,L,S	6-8	M	M		Swan Hill olive has no fruit or pollen. Grey-green leaves.
Parkinsonia 'Desert Museum'	Desert Museum palo verde	25	25	20-30	D	18-24	S	M/L	WD, L,S	4-6	L	M		Thornless. Few seedpods. Yellow spring-summer flowers. Light shade.

TREE SPECIES LIST

Botanical Name	Common Name	Canopy Diameter at 15 Years (Feet)	Canopy Diameter at Maturity (Feet)	Height (Feet)	Type	Sunset Climate Zone (Click To Look-up)	Sun	Water	Soil	Planter Size (Width in Feet)	Root Damage Potential	Growth Rate	California Native	Notes
Photinia x fraseri	photinia, Fraser's photinia	20	20	10-15	E	18-24	S	M	C,L,S	3-4	L	M-F		White spring flowers. Red new leaves. No berries. Susceptible to aphids.
Pinus canariensis	Canary Island pine	35	40	65-80	E	18-24	S-P	M/L	L,S	6-8	M	F		Smog tolerant. Tall narrow pine. 9"-12" weeping needles. 4"-9" cones.
Pinus eldarica	eldarica pine, Afghan pine, Mondell pine	30	30	65	E	18-24	S-P	M	C,L,S	6-8	M	F		5"-6" dark green needles. For desert or coast. "Christmas tree" shape.
Pinus halepensis	Aleppo pine	35	45	30-65	E	18-24	S-P	L/VL	C,L,S	6-8	M	M-F		Light green, 2½"-4" soft needles. Poor soil and heat ok. Susceptible to mites.
Pinus muricata	bishop pine	30	35	40-50	E	22-24	S-P	L/VL	L,S	6-8	M	VF	x	Irregular shape with age. Good wind break. Susceptible to pitch canker.
Pinus patula	Jelescote pine, Mexican weeping pine	30	50	40-80	E	18-24	S-P	M/L	L,S	6-8	M	F-VF		Graceful, weeping 12" needles. Can become chlorotic. Great at the coast.
Pinus pinea	Italian stone pine	30	50	40-80	E	18-24	S-P	M/L	L,S	6-8	M	M-F		Massive, broad-canopied tree. Great at the coast/valleys. Edible pine nuts.
Pinus torreyana	Torrey pine	30	30	40-60	E	18-24	S-P	L/VL	C,L,S	6-8	M	F	x	Native to San Diego coast, but ok in high desedrt. 8" - 13" dark gray-green needles. Open habit.
Pistacia chinensis	Chinese pistache	30	50	60	D	18-23	S	M	C,L,S	6-8	L	M		Scarlet & orange fall color. Fruit is red, then blue. Tolerates lawn watering.
Platanus acerifolia 'Yarwood', 'Bloodgood', x hispanica 'Columbia'	London plane tree	35	70	40-80	D	18-24	S-P	M	C,L,S	6-8	H	F		Like CA sycamore. Smog tolerant. Disease resistant: Yarwood - powdery mildew, Bloodgood - anthracnose.
Platanus racemosa	California sycamore	35	70	50-100	D	18-24	S-P	H/M	C,L,S	6-8	M	F	x	Very allergenic. Anthracnose and powdery mildew are issues. Likes a lot of water, but survives with less.
Podocarpus gracilior	fern pine	35	45							6-8				See Afrocarpus falcatus
Podocarpus macrophyllus	yew pine	30	40	20-50	E	18-24	P	M	C,L,S	4-6	L	M		Like Afrocapus falcatus, but wider, longer leaves & more drought tolerant.
Prosopis alba 'Colorado'	Argentine mesquite	30	40	25-40	S	18-24	S	M/L	L,S	4-6	L	F		Thornless. Makes light shade. Best away from the coast.
Prosopis hybrid 'Phoenix'	Phoenix mesquite	30	35	25-35	S	18-24	S	M/L	L,S	4-6	L	F		Thornless. Deep, strong roots prevent blow-over. Best away from the coast.

TREE SPECIES LIST

Botanical Name	Common Name	Canopy Diameter at 15 Years (Feet)	Canopy Diameter at Maturity (Feet)	Height (Feet)	Type	Sunset Climate Zone (Click To Look-up)	Sun	Water	Soil	Planter Size (Width in Feet)	Root Damage Potential	Growth Rate	California Native	Notes
<i>Prunus caroliniana</i>	Carolina laurel cherry	30	40	40	E	18-24	S-P	M	C,L,S	4-6	L	F		White spring flowers. Messy, poison 1/2" fruit & leaves. Often multi-trunked. Dense.
<i>Prunus ilicifolia</i> ssp <i>lyonii</i> (<i>Prunus lyonii</i>)	Catalina cherry	25	35	20-40	E	5-9, 12-24	S-P	M/L	C,L,S	4-6	L	M	x	White spring flowers. Edible cherries. <i>P. ilicifolia</i> is too shrubby - use <i>P.i.lyonii</i> .
<i>Pyrus calleryana</i> 'Aristocrat'	Aristocrat flowering pear	25	35	35-44	D	18-21	S	M	C,L,S	3-4	M	M		White spring flowers. Dark red-purple fall color. Fairly resistant to fireblight. Good branch spacing and crotches.
<i>Pyrus calleryana</i> 'Chanticleer'	Chanticleer flowering pear	25	25	40	D	18-21	S	M	C,L,S	3-4	M	M		Upright-pyramidal tree. Red fall color. Resistant to limb breakage, fireblight & smog. White flowers.
<i>Quercus agrifolia</i>	coast live oak	35	85	20-70	E	18-24	S-P	M/L	WD, C,L,S	8+	M-H	M	x	No lawn watering. The most widely used oak for southern CA.
<i>Quercus coccinea</i>	Scarlet Oak	35	60	60-75	D	18-24	S-P	M	C,L,S	8+	L	M-F		High, light, open-branching. Bright green leaves turn bright scarlet in cold autumn nights (Zones 18-20), but color less in zones 21-24. Deep roots. Prefers moist acidic soils. Native to the eastern US where it likes drier sandy soils, but in southern CA it prefers clay to loam soils that are moist.
<i>Quercus engelmannii</i>	Engelmann oak, mesa oak	35	40	50	E, S	18-21	S-P	M/L	C,L,S	8+	M	S-M	x	Drought-deciduous 2" grey-green oblong leaves. Likes some water.
<i>Quercus frainetto</i> 'Schmidt'	Forest Green Hungarian Oak; Forest Green Oak	35	40	50	D	2-12, 14-21	S-P	M/L	C,L,S	8+	L	F		Tall tree with large, glossy deep green leaves (up to 8"x 4") with deeply cut lobes. Erect, shapely; takes aridity once established. Drought-tolerant, acorns.
<i>Quercus ilex</i>	holly oak	35	50	30-65	E	18-24	S-P	M/L	C,L,S	6-8	L	M		Narrow leaves are dark green above and white underneath.
<i>Quercus kelloggii</i>	California Black Oak	35	40	30-80	D	5-7,15,16,18-21	S-P	M/L	L,S	8+	M	M	x	Dark, furrowed and checked bark. New leaves are soft pink or dusty rose, becoming glossy green and turning yellow or yellow orange in the fall.

TREE SPECIES LIST

Botanical Name	Common Name	Canopy Diameter at 15 Years (Feet)	Canopy Diameter at Maturity (Feet)	Height (Feet)	Type	Sunset Climate Zone (Click To Look-up)	Sun	Water	Soil	Planter Size (Width in Feet)	Root Damage Potential	Growth Rate	California Native	Notes
Quercus lobata	valley oak	35	80	70+	D	18-24	S-P	M/L	L,S	8+	M	M-F	x	Largest U.S. oak. Native to CA interior valleys away from direct ocean influence. Likes heat and deep soils.
Quercus suber	cork oak	35	100	70-100	E	18-23	S-P	M/L	WD, C,L,S	6-8	M	M-F		White leaf underside. Bark is source of commercial cork. Best inland.
Quercus virginiana	southern live oak	35	100	60	E	18-24	S-P	M	C,L,S	6-8	M	M-F		Best oak for lawns. Huge spreading tree. 1½-5" leaves are white beneath.
Quillaja saponaria	soapbark tree	30	35	25-60	E	18-24	S-P	M/L	WD, C,L,S	6-8	L	S		May-June small, white flowers. Bark toxic if eaten. Weeping branches.
Rhus lancea	African sumac	30	30	30	E	18-24	S-P	M/L	C,L,S	4-6	L	M		Rough cinnamon bark. Heat/wind tolerant. Suckers in youth. No pests.
Tabebuia avellanedae Tabebuia impetiginosa	pink trumpet tree lavender trumpet													See Handroanthus impetigosus
Tipuana tipu	tipu	35	50+	50	S	18-24	S-P	M	C,L,S	8+	M	F		Yellow-orange flowers June-July. Best with heat. Semi-deciduous mid-winter to spring. Early structural pruning needed.
Tristania conferta	Brisbane box													See Lophostemon confertus

TREE SPECIES LIST

KEY

Species

The Director may approve other species that comply with Section 22.52.2120.B of the County Code.

Canopy Diameter at 15 Years

Canopy diameter used for shade calculations.

Canopy Diameter at Maturity

Canopy diameter at maturity should be considered when selecting planting location and to ensure that trees aren't crowded.

Height: Tree height at maturity (not necessarily at 15 years).

Type

E = Evergreen. The tree has leaves year-round.

D = Deciduous. The tree loses all its leaves in one season.

S = Semi-deciduous. The tree loses most of its leaves, but not all in a season. The amount of leaf loss often depends on the coldness of the winter or

Sunset Climate Zone

Climate zones that trees thrive in from the latest publication of the Sunset Western Garden Book. Zone 24 is the immediate coast, zones 21 - 23 are the L.A. Basin, zones 18 - 20 are the Valley. Find your Sunset Western Climate Zone at: <http://plantfinder.sunset.com/climatezone.jsp>

Sun: The amount of sun required for the tree to thrive.

S = Full Sun

P = Part Sun/Shade

SH = Shade

Continued on next page.

TREE SPECIES LIST

Watering

Water requirement ratings from Landscape Plants for California Gardens book by Bob Perry. Plants with two ratings divided by a "/", such as "M/L" are climate appropriate plants with a lower water use (the second letter) during the summer.

VL = Very low. Trees should not need water other than natural rainfall. Prolonged drought may require a deep watering once or twice if severe wilting

L = Low. One deep watering per summer month, or every other month in dry season if needed.

M = Moderate. Two deep waterings per summer month. Perhaps one deep watering in spring and fall.

H = High. One deep watering per week in summer months. One deep watering every other dry season month.

VH = Very High. The soil needs to be kept moist. These trees naturally occur in riparian zones - stream or lake-side.

Soil: Soil types required for the tree to thrive.

C = Clay

L = Loam

S = Sand

WD = Well Drained

Planter Size

The width of the inside of the planter. For provided ranges (example: "4-6"), the lower number ("4") is the minimum planter width required for the tree to survive, and the larger number ("6") is the width that will allow maximum growth of the tree.

Root Damage Potential

The potential that tree roots may damage surrounding infrastructure. Ratings obtained from the Cal Poly Web site: <http://selectree.calpoly.edu>.

L = Low

M = Moderate

H = High

Growth Rate

S = Slow - up to 12"/year

M = Moderate - 24"/year

F = Fast - 36"/year

VF = Very fast - more than 36"/year