Short on Shade

Research on Equity and Exposure in Los Angeles

swa

Authors
Han Fu
Qiaoqi Dai

Advisor
Ying-yu Hung

Editor
Liz Batchelder

Graphic Designer
Paul Wehby

Special Thanks
Gerdo Aquino
Anya Domlesky
Jonah Susskind

swa

Highland Park Streetscape, Los Angeles
Photo © Jonnu Singleton/SWA Group.

Foreword

by Ying-yu Hung, Principal, SWA

In 2005, when I first came to Los Angeles to open a new office for SWA, I arrived in the middle of a summer heat wave. The afternoon sun glinted off buildings and radiated up from the dusty asphalt as I squinted to observe the daily choreography of a city without shade. People hugged the walls as they walked along exposed sidewalks, covering their heads with newspapers and fanning themselves before ducking into air-conditioned businesses. Others stood, sweating in the narrow shadow of a fan palm as they waited for the bus. As I reflected on the scene, I reminded myself why I had come here in the first place: to find opportunities to make a difference… to improve the public realm through landscape architecture.

A little over a decade later, in 2019, Mayor Eric Garcetti launched his Cool Streets LA Program to confront the effects of climate change at the neighborhood level. The program piloted various shading and cooling strategies in many of L.A.'s most vulnerable communities. It has since been extended as part of the mayor's Green New Deal, which aims to meet ambitious new temperature reduction targets and tree planting goals by 2028. This program, and others like it, will undoubtably improve the lives of innumerable Angelenos by making the city's streets more livable. But it's just a start — and it's nowhere near enough.

Due to climate change, average summer temperatures are continuing to break records year after year, and those without adequate access to shade are increasingly vulnerable to heat-related health risks. As landscape architects, we understand that these risks are also a product of the built environment. Neighborhoods with fewer trees and lots of pavement, large buildings, and other heat-absorbing surfaces can be more than 10 degrees warmer than surrounding areas.

Over the past 18 years, SWA has undertaken public realm improvement projects throughout the greater Los Angeles metro area — particularly in underserved communities in South Los Angeles. Our design teams have given new life to formerly blighted stretches of freeway-adjacent neighborhoods, infilled remnant parcels along the city's channelized waterways with neighborhood parks, and remediated contaminated sites with native habitat. In every instance, we have been unwavering in our mission to plant trees, more trees, and many more trees!

Looking into the future, I'm reminded of something one of SWA's founding principals once told me. In reflecting on his own career, he noted that even years after a project was completed, when materials might have failed, walls cracked, or irrigation lines broken, the trees he planted often continued to grow tall and flourish as a life-affirming presence. As we continue to help communities adapt to the effects of climate change, life of all forms will continue to thrive under these wonderful, protective, shaded canopies for generations to come, ensuring a pathway to a sustainable future.

2000 Avenue of the Stars, Los Angeles (Design by SWA.
Photo © Goran Kosanovic)

Introduction

by Jonah Susskind, XL Lab

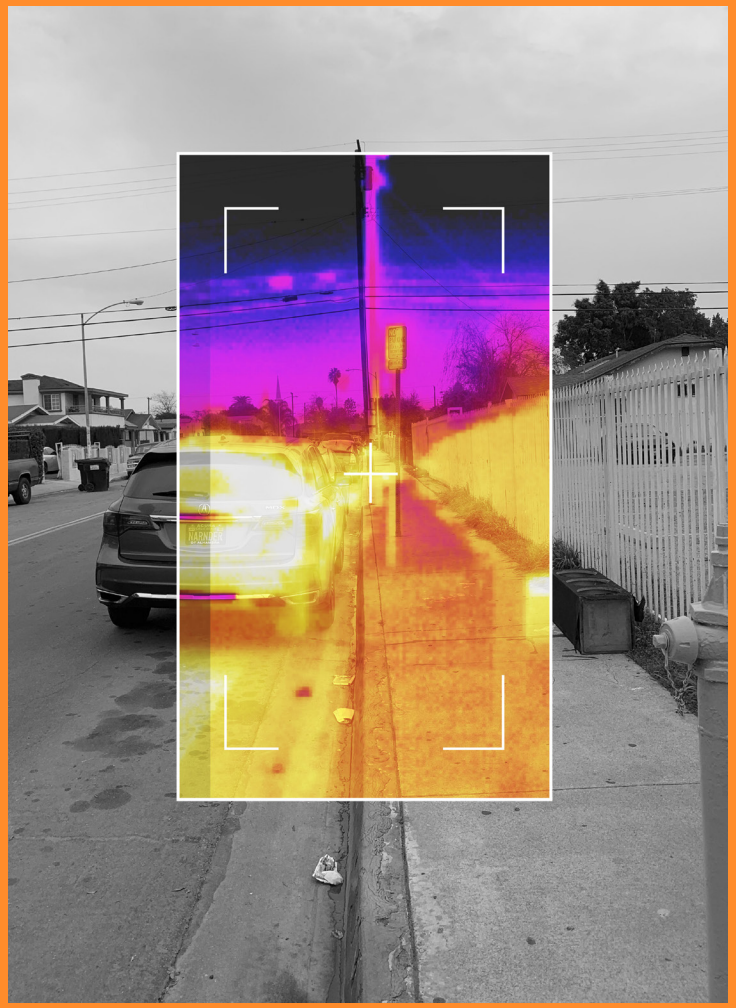
Today, in the United States and around the world, cities are confronting inequities that have been structurally embedded into the streets, parks, and plazas of our contemporary urban world through layered histories of exclusionary zoning and predatory development practices. In cities where climate change impacts intersect with the legacies of racial discrimination and economic inequality, design engagement represents an important outlet in the pursuit of social justice.

In Los Angeles, California, where the effects of climate change have included dangerously high temperatures and longer and more frequent droughts, the City's lower-income communities and communities of color have been disproportionately affected by a glaring lack of publicly available shade.

Relationships between sun and shade are inextricably tied to both the natural and built environments. In both cases, these relationships represent important criteria for human comfort, vegetal growth, and social vitality. Los Angeles' cultural identity is deeply rooted in the washed-out bliss of the California sun, from its long sandy beaches to its bountiful citrus groves. But today, after decades of discriminatory urban planning and the weaponization of sunlight against the City's homeless population, Angelenos are fighting for shade.

This publication represents the culmination of a year-long design research fellowship focused on the uneven distribution of shade along socioeconomic lines throughout the city of Los Angeles.

Thermal image of a streetscape in a wealthy neighborhood in West Los Angeles.



Thermal image of streetscape in Florence, a low-income neighborhood in Los Angeles.

The outcomes of this research include a compendium of city-specific constraints related to improving the equitable distributions of shade throughout LA's most exposed public streetscapes.

This work seeks to extend our typical understanding of landscape and ecology to include the atmosphere itself as a context for design intervention. By decoupling "big" problems from "big" solutions, the authors reveal the widespread potential for a fine-grained network of smaller, pedestrian-scale urban resilience strategies to have meaningful impact in the face of extreme climatic conditions. The project draws clear connections between broader discussions around climate change and environmental justice, and demonstrates the capacity for design to reduce environmental risk in one of today's most precarious urban environments.

Short on Shade presents a vision for the future of Los Angeles' public realm by calling attention to the disproportionate distribution of shade as a critical amenity throughout the city's lower-income neighborhoods and along its sprawling bus system. It offers readers a conceptual window into the experience of Angelenos, and serves as a call to action for designers to engage with the dual challenges of climate change and environmental justice in one of today's most complex urban environments.

Essay

Subduing the Sunshine

by Han Fu and Qiaoqi Dai

Why is Shade Important?

Los Angeles has always been synonymous with sunshine, as illustrated by the motto adopted by the 2028 Olympic Games hosted by the city: “Follow the Sun.” However, changes brought about by climate change have also made abundant sunshine in the “City of Angels” dangerous.

Urban heat is increasing, and its effects can be fatal. It is estimated that between 600 and 1,500 heat-related deaths occur in an average summer in the U.S., and the Los Angeles area has the highest urban heat island effect in California.[1,2] The City is projected to experience an estimated 22 record heat days per year by 2050, compared to six days in 1990.[3] In 2006, a heat wave in Los Angeles was responsible for the deaths of 350 people.[4]

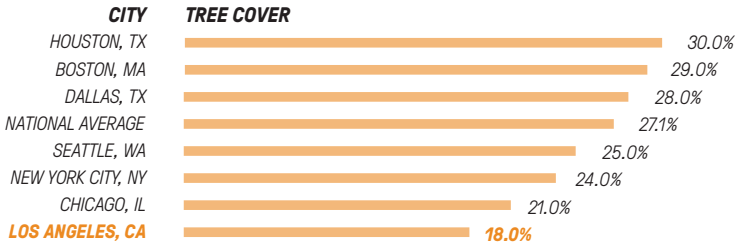
Excessive exposure to sunlight is a major cause of skin cancer; a single blistering sunburn can double a person’s risk of developing the disease. More than 9,500 people in the US are diagnosed with skin cancer everyday, causing more than 7,200 deaths every year. Eleven percent of those cases were in California.[5]

It is time for landscape architects and urban planners to address public shade as a public health requirement, an indicator of social inequality, and as part of cities’ critical infrastructure. This research lays the ground for further investigation into this issue.

Shade Inequity in the City of Los Angeles

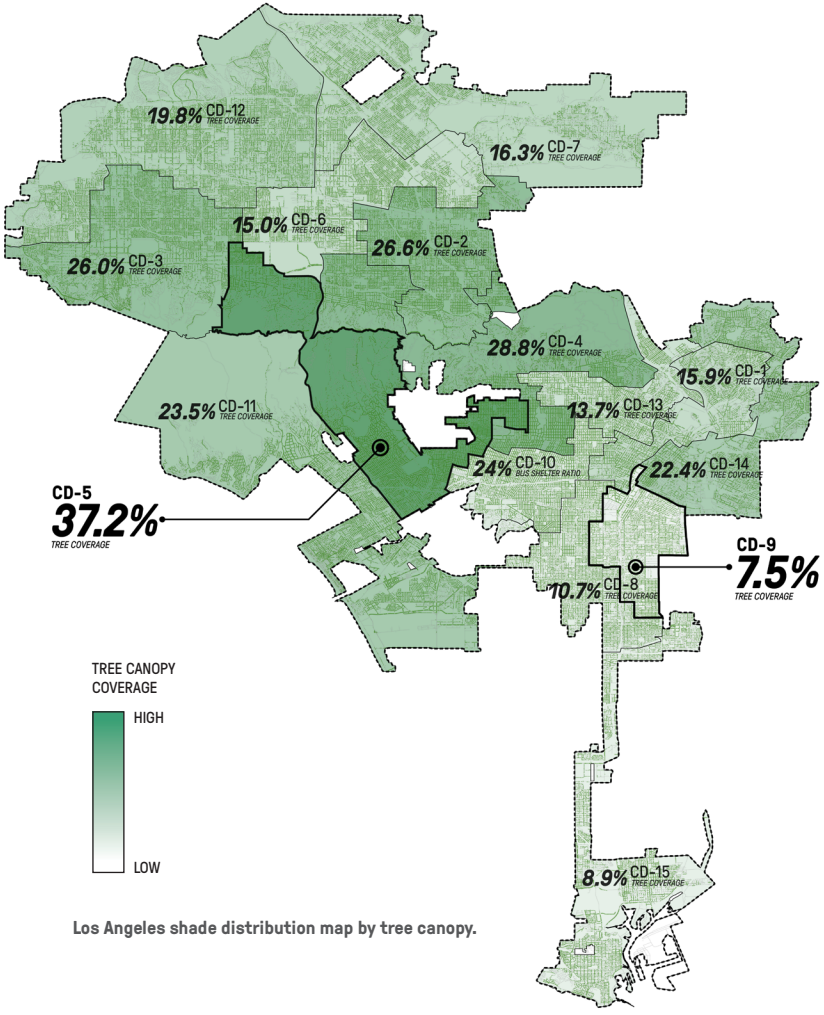
The discouraging current status of public shade coverage in Los Angeles is informed by three major issues.

Firstly, the City’s shade coverage in general is lower than that of other major cities, with tree coverage falling behind the national average cities of Seattle, New York, and Chicago at 18 percent.[6]

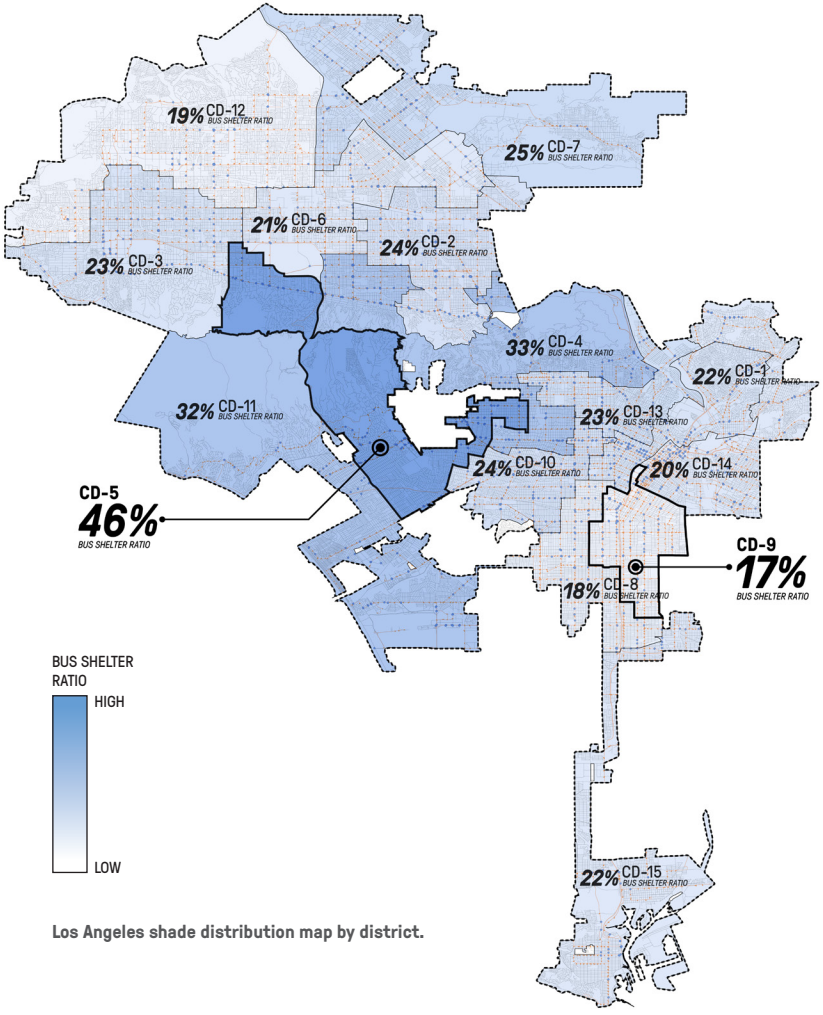


Secondly, shade in Los Angeles is unevenly distributed. Council District 5 (CD-5), the highest tree canopy coverage district, has 4.96 times more coverage than the lowest-coverage district, Council District 9 (CD-9).7 CD-5 also has 2.[7] times more bus shelters than CD-9.[8]

Lastly, shade distribution is directly correlated with wealth. CD-5, which has the second highest median household income, also has the highest shade coverage, while CD-9 has both the lowest shade coverage and the lowest median household income.[9]



Los Angeles shade distribution map by tree canopy.



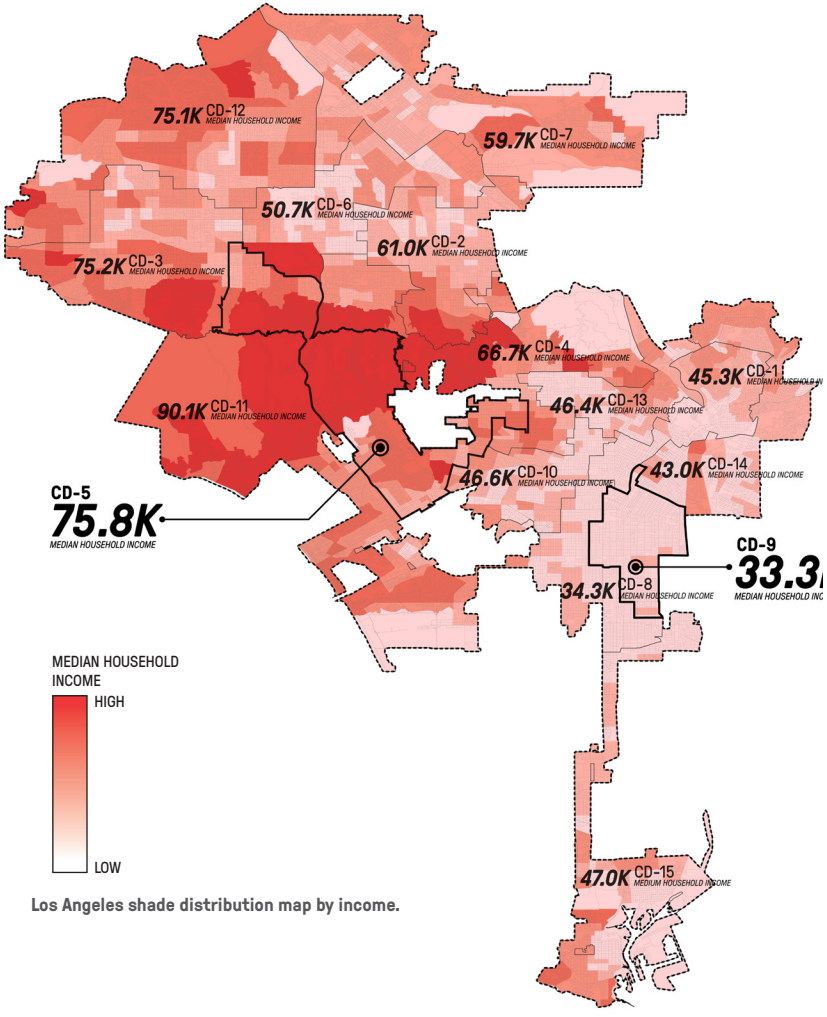
Los Angeles shade distribution map by district.

Behind the Inequities

Policy and code, cultural determinants, and privatization are the overarching drivers behind shade inequity in Los Angeles. State and municipal policies and codes create and sustain barriers to shade creation; prized cultural symbols, like palms and sunny oases, combine with a car-centric culture and aggressive policing and surveillance to contribute to the lack of shade overall. Also, lower-income areas are impacted by the privatization of streetscape maintenance, as well as by disincentives to bus shelter creation and optimal siting of such structures.

Same as other environmental injustices, shade inequity in Los Angeles is a result of systematic ignorance. The complication of the causes and barriers calls for more innovative responses.

There is no easy fix to the overall issue of shade inequity. However, small breakthroughs and innovations at different scales are becoming common practice among landscape architects, urban designers, and planners. In this booklet, we present our findings with the goal of revealing barriers to shade equity and providing a reference to support for designers and urbanists' engagement with urban shade issues.



Los Angeles shade distribution map by income.

NOTES

1 CDC (U.S. Centers for Disease Control and Prevention). Indicator: Heat-related mortality. National Center for Health Statistics, 2020.
https://ephtracking.cdc.gov

2 Sanden Totten, "LA Area has Highest Urban Heat Island Effect in California," KPCC News, September 21, 2015
https://www.kpcc.org/2015-09-21/la-area-has-highest-urban-heat-island-effect-in-ca.

3 First Street Foundation, "The 6th National Climate Risk Assessment: Hazardous Heat, 2022.
https://report.firststreet.org/heat

4 Jia-Rui Chong, "California's 2006 Heat Wave was Much Deadlier than Previously Reported, Researchers Say," Los Angeles Times, July 21, 2009.
https://www.latimes.com/archives/la-xpm-2009-jul-21-me-heat-deaths21-story.html#:~:text=The%20researchers%20analyzed%20nine%20counties,450%20deaths%20were%20more%20likely.

5 Skin Cancer Foundation, "Skin Cancer Facts & Statistics," 2023.
https://www.skincancer.org/skin-cancer-information/skin-cancer-facts/

6 Fiona Watt and Bram Gunther, "Tree Cover % - How Does Your City Measure Up," Deeproot, April 25, 2010.
https://www.deeproot.com/blog/blog-entries/tree-cover-how-does-your-city-measure-up/

7 United States Department of Agriculture (USDA), E. Gregory McPherson, et. al, "Los Angeles 1-Million Tree Canopy Cover Assessment," page 27, January, 2008

8 Outfront / JCDecaux, "Bus Shelters Around LA," (accessed January, 2023).
http://www.outfrontjcdecaux.com/

9 City of Los Angeles, LA Census 2020: Citywide.
https://census.lacity.org/sites/g/files/wph1201/f/a_Council%20District%20maps_FINAL_0.pdf

Barriers to Shade Equity

Sunset over Venice Beach, Los Angeles
Photo © Chris Gold via Flickr (CC BY-NC 2.0)

This booklet identifies four of the most significant barriers to shade equity in Los Angeles.

1. POLICY & CODE

Los Angeles zoning ordinances, such as minimum tree setbacks, FAR regulation, and utility line clearances have produced some of California's least shady streetscapes.

2. CULTURAL IDENTITY

Angelenos' attitude toward sunshine further complicates the provision of shade; the bright Southern California sun is part of the city's culture.

3. CAR-CENTRIC URBANISM

Road-widening projects have systematically diminished Los Angeles' parkways. Shade trees have been eliminated in parts of the city to avoid vehicular obstructions.

4. SHADE STEWARDSHIP

With the burden of maintenance falling largely on property owners, Los Angeles' public realm has become increasingly exposed.

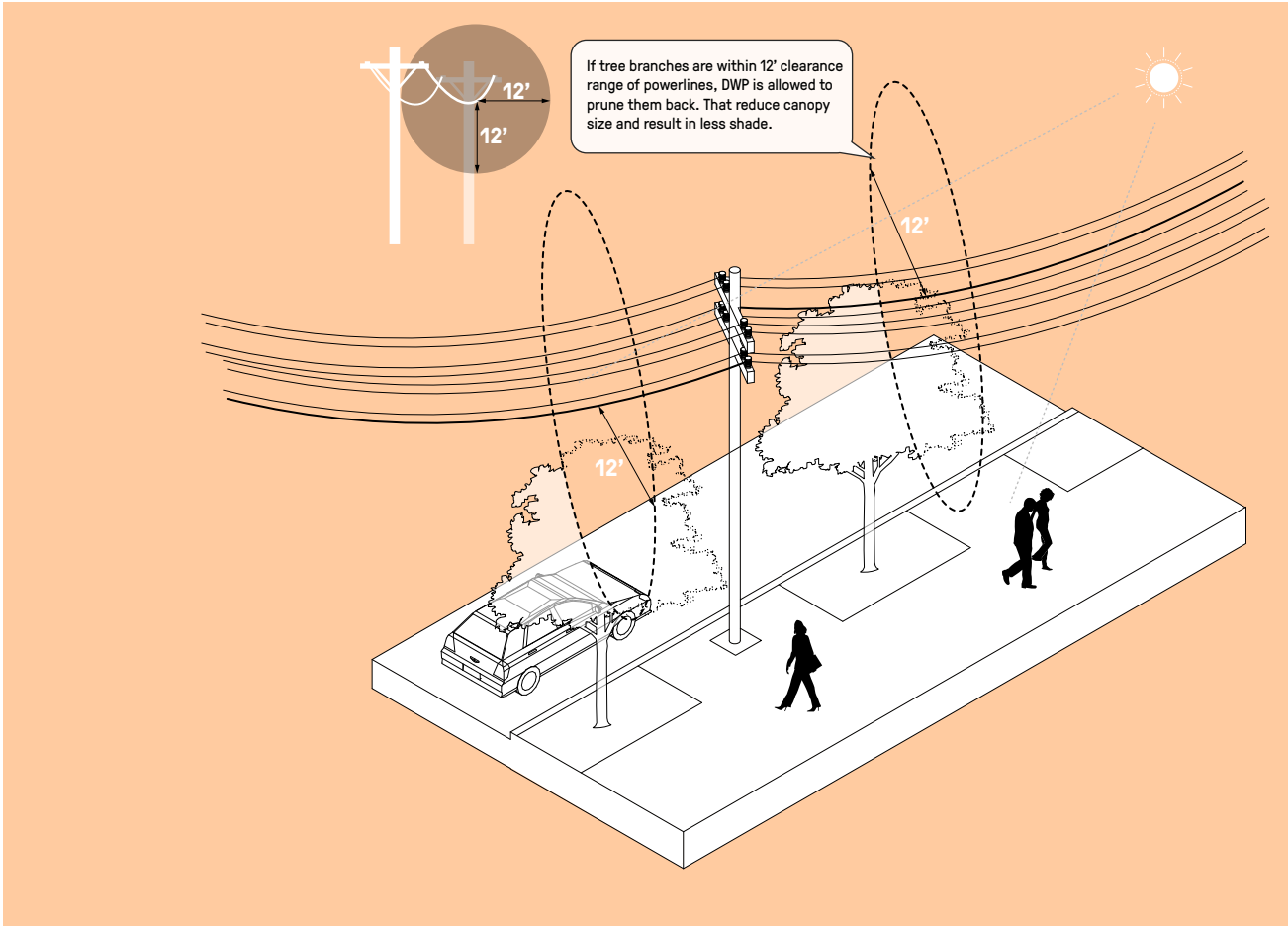
01

Utility Clearance

California State's standard for clearance around power lines has increased from 4 feet to 12 feet since 2017.

POLICY AND CODE

State of California
California Public Utilities Commission
Order 95, Rule 35, Table 1:
Case 14 for High Fire-Risk Areas



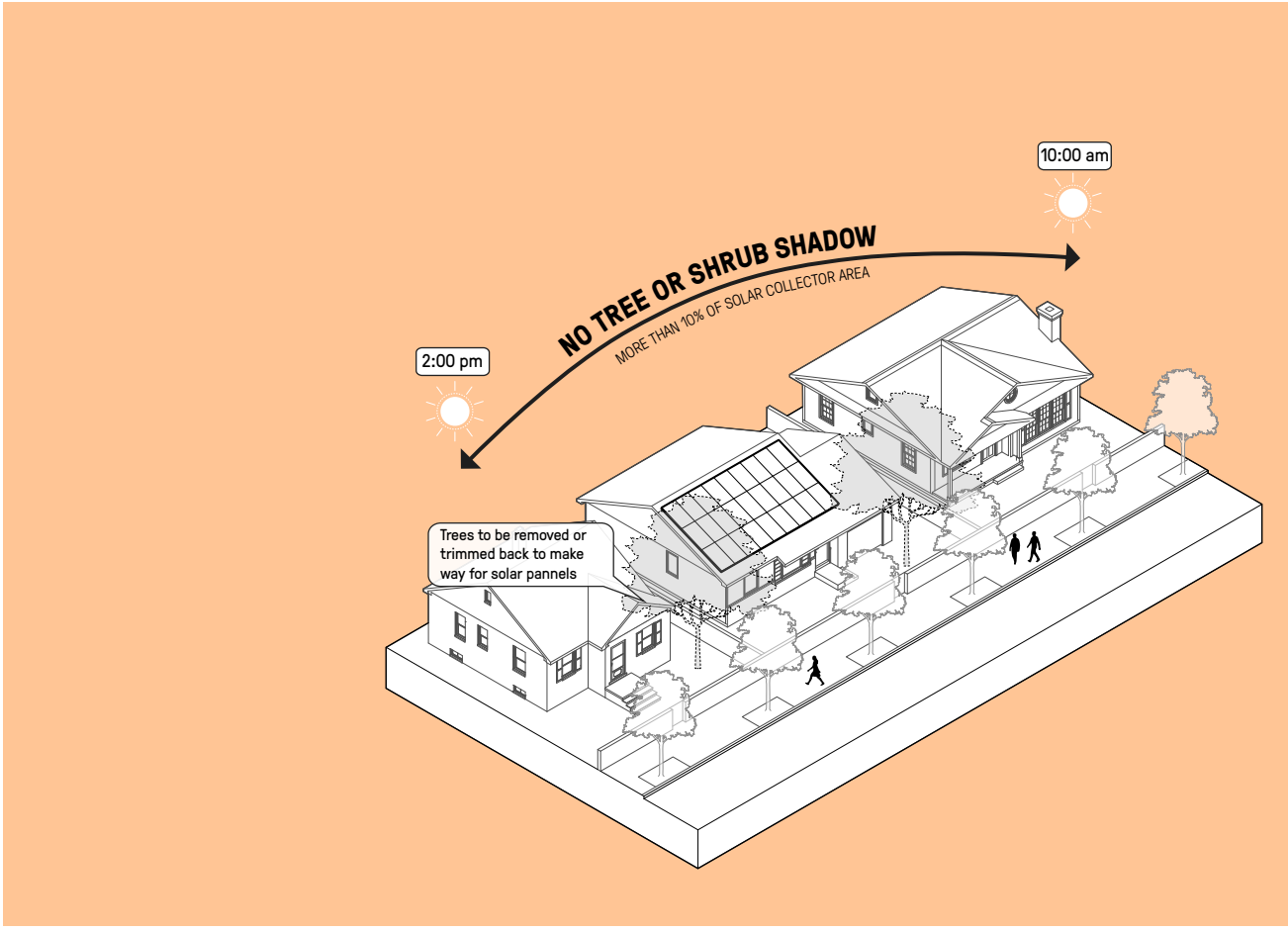
02

Solar Rights

Solar Shade Control Act: Trees, shrubs or other shade forms give way to solar collectors.

POLICY AND CODE

State of California
California Public Resources Code
Division 15, Chapter 12: Solar Shade Control
[25980 - 25986]



03

Intersection Setbacks

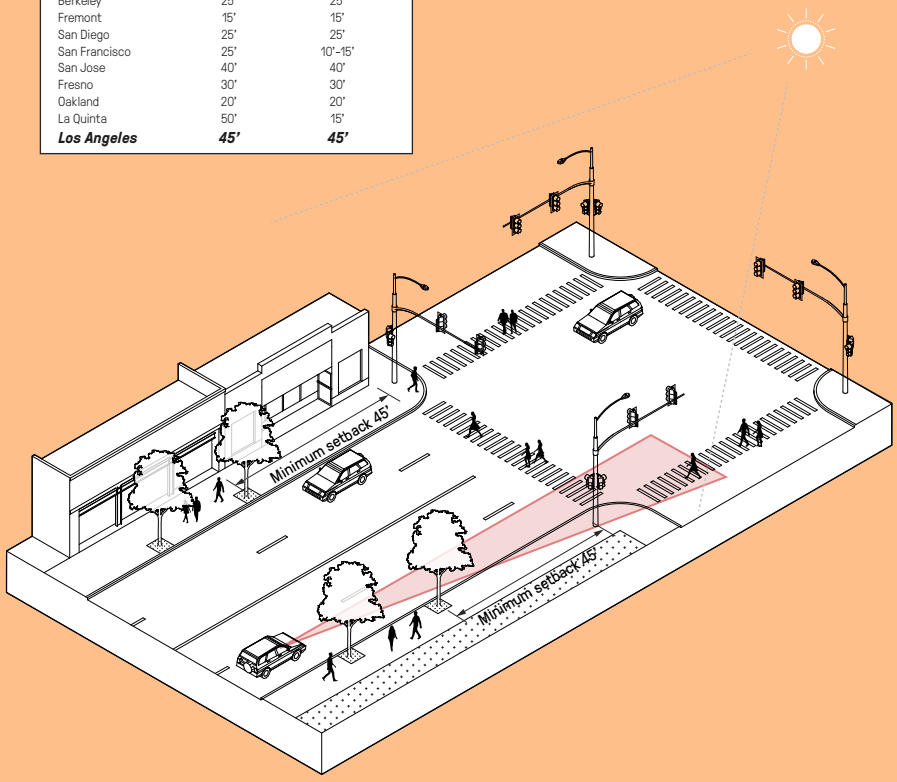
City guidelines require a 45-foot setback from intersections for tee planting.

POLICY AND CODE

State of California
Tree Spacing Guidelines
Bureau of Street Services
City of Los Angeles

MINIMUM SETBACK FROM INTERSECTION IN OTHER CITIES

	Approach to Intersection	Departure from Intersection
Berkeley	25'	25'
Fremont	15'	15'
San Diego	25'	25'
San Francisco	25'	10'-15'
San Jose	40'	40'
Fresno	30'	30'
Oakland	20'	20'
La Quinta	50'	15'
Los Angeles	***45'***	***45'***



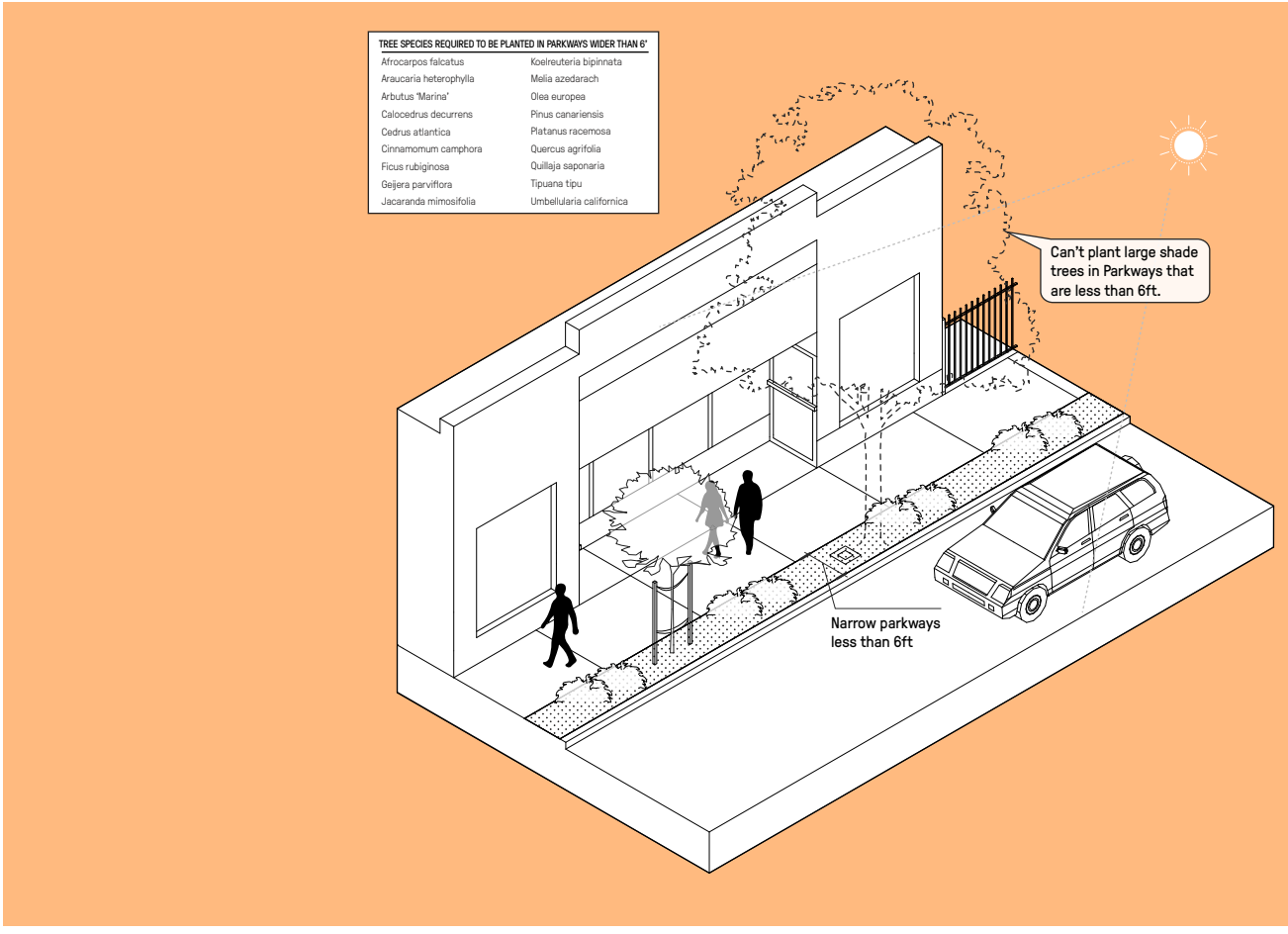
04

Narrow “Hellstrips”

The City prohibits planting of large trees in parkways less than 6 feet wide in order to protect sidewalks and underground utilities.

POLICY AND CODE

City of Los Angeles
Approved Street Tree List
City of Los Angeles



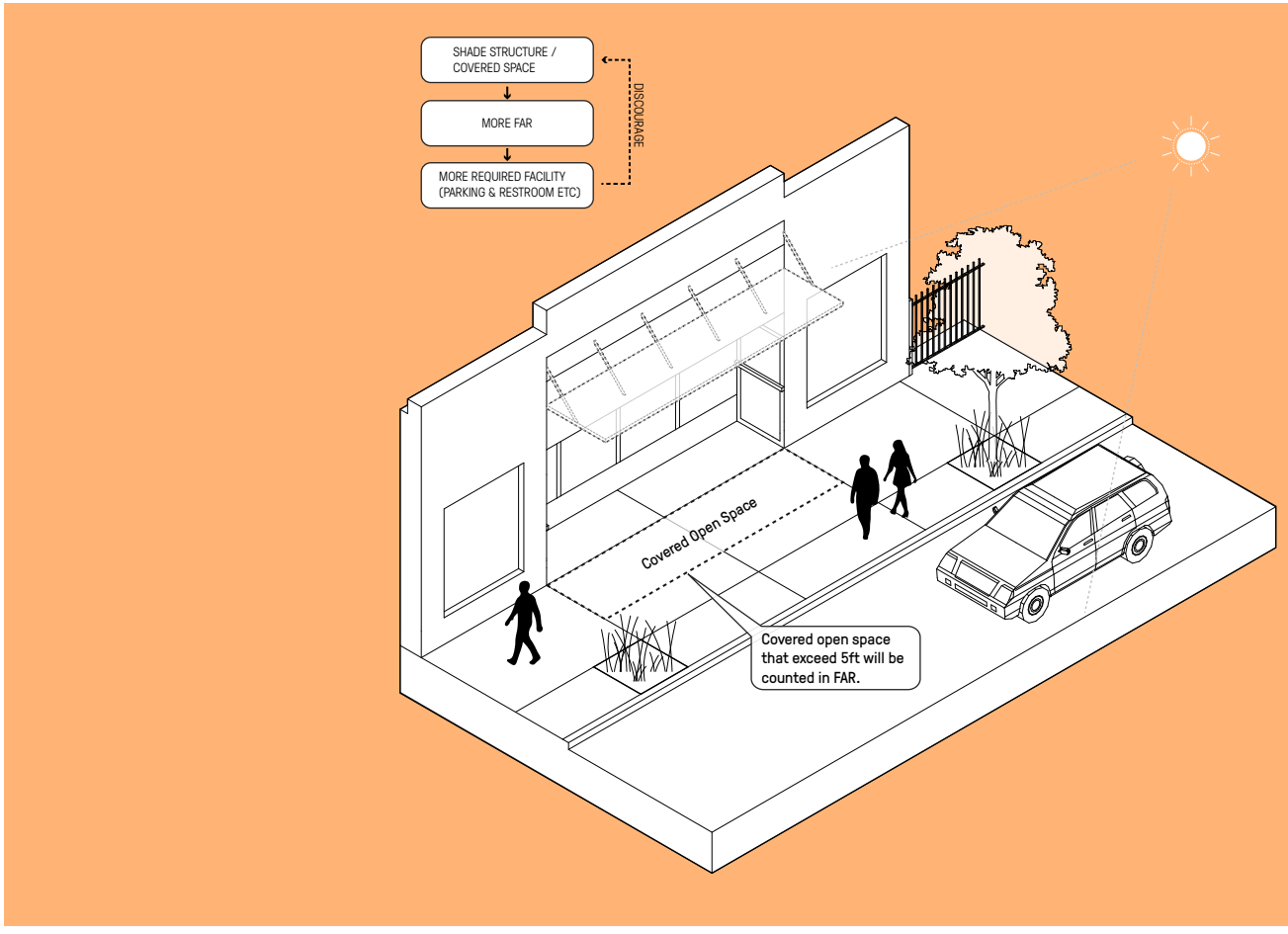
05

Floor Area Ratio

Covered open space that exceeds 5 feet, or that is supported by columns, is counted as floor space in FAR code, discouraging developers from building shade structures in the public realm.

POLICY AND CODE

City of Los Angeles
Los Angeles Municipal Code
Section 12.03: Balconies Projection for Height and Floor Area,
City of Los Angeles



06

Parking Requirements

Dingbats, a housing type that originating in a car-centric era, provide generous parking space but limit planting areas.

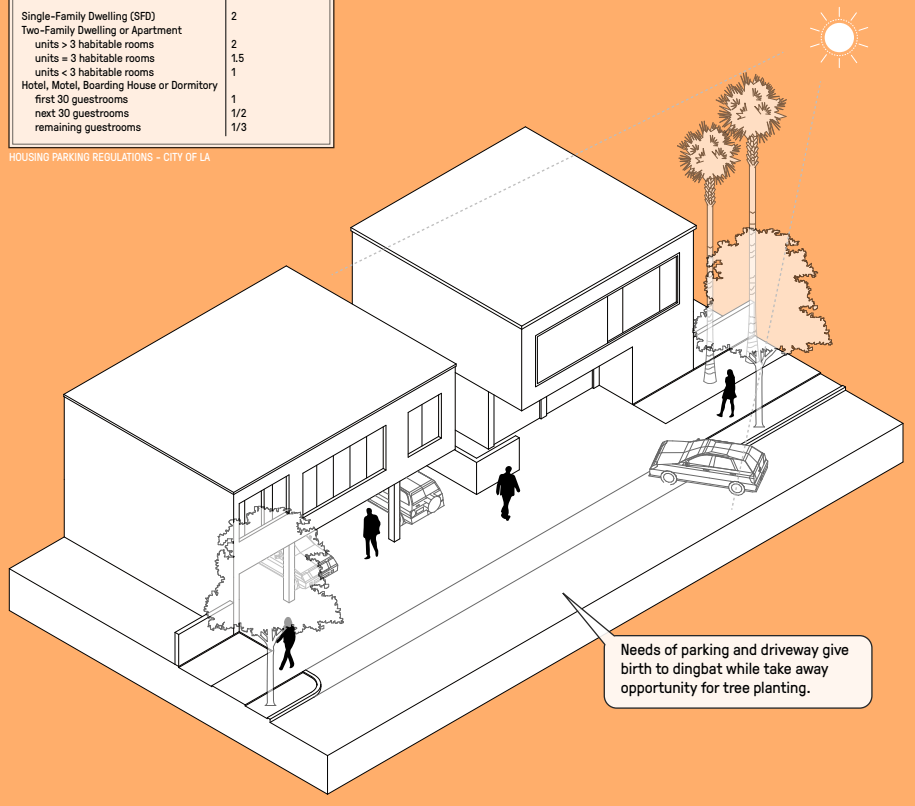
Parking and driveway needs supercede opportunities for tree shade.

POLICY AND CODE

[City of Los Angeles]

Use of Building	Ratio (space/ unit)
Single-Family Dwelling (SFD)	2
Two-Family Dwelling or Apartment	
units > 3 habitable rooms	2
units = 3 habitable rooms	1.5
units < 3 habitable rooms	1
Hotel, Motel, Boarding House or Dormitory	
first 30 guestrooms	1
next 30 guestrooms	1/2
remaining guestrooms	1/3

HOUSING PARKING REGULATIONS - CITY OF LA



07

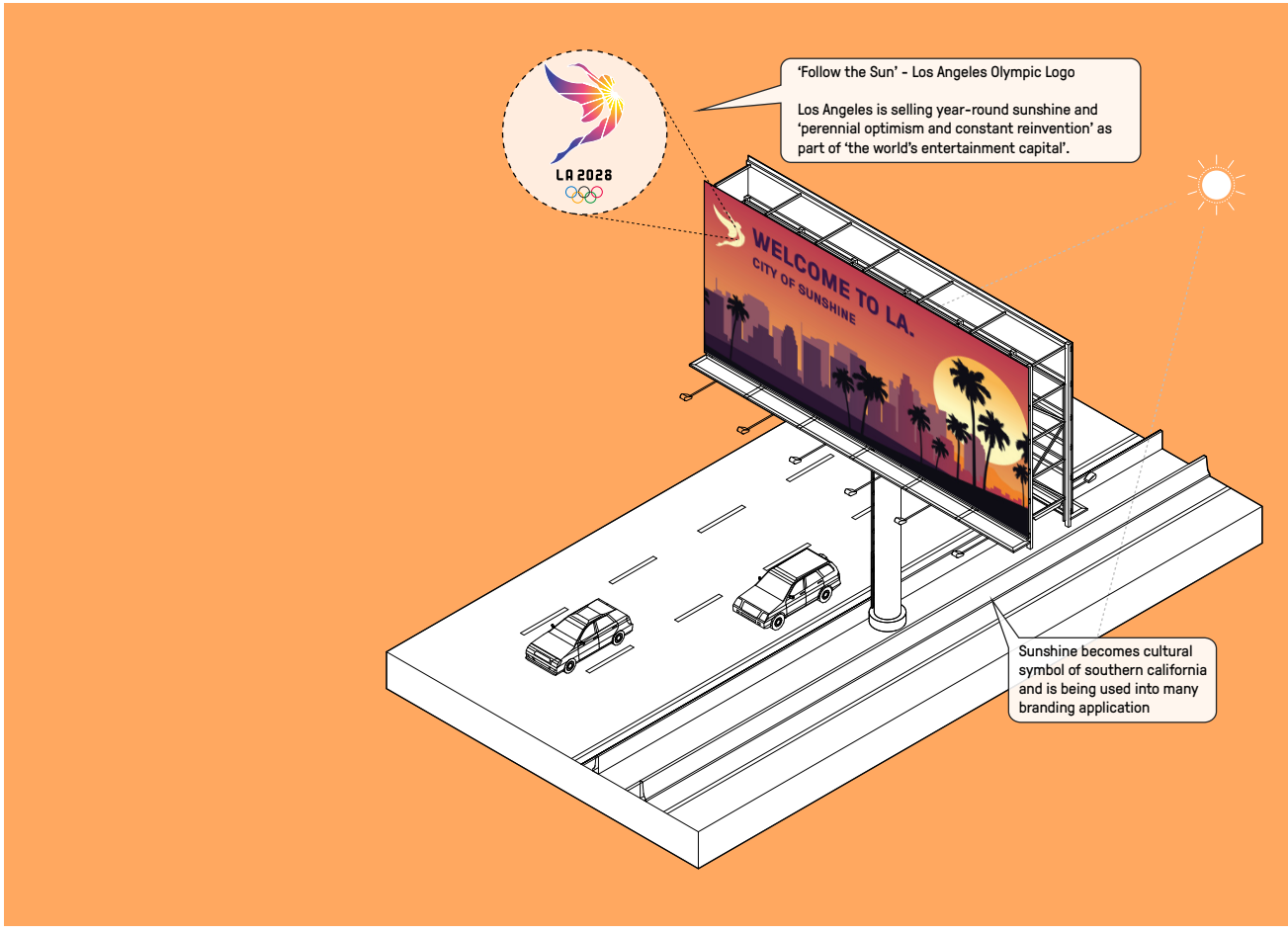
Sun Symbolism

Sunshine is culturally prized by Los Angelenos as a symbol of their city.

Angelenos' altitude towards sunshine complicate the provision of shade.

CULTURAL IDENTITY

City of Los Angeles



08

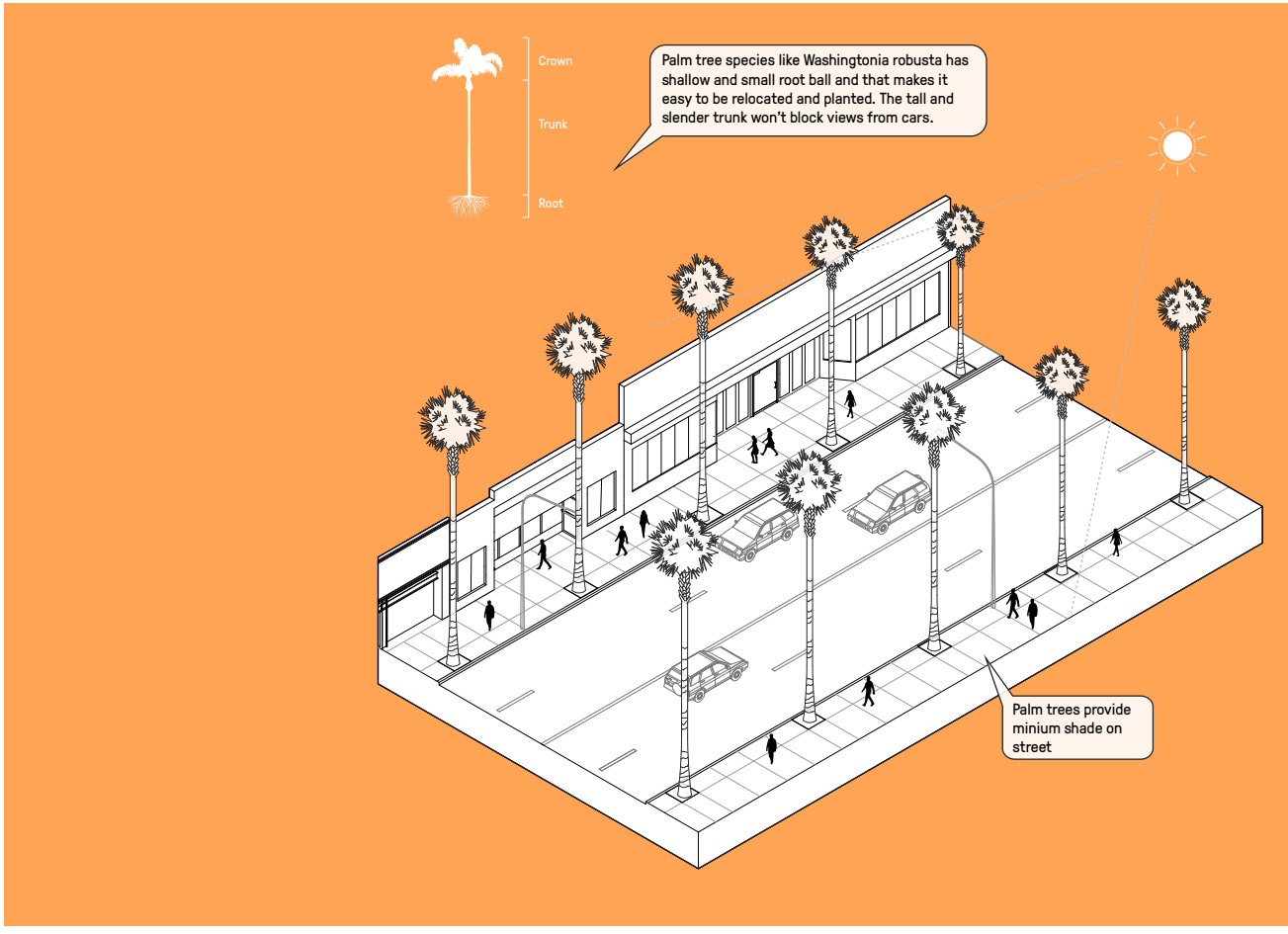
Palms Mean Paradise

Palm trees became one of the dominant Los Angeles street tree species, due in part to characteristics that were ideal for an era dominated by cars.

The ubiquity of these trees has resulted in less overall street shade.

CULTURAL IDENTITY

City of Los Angeles



09

Cars Trump Trees

Car-oriented road-widening development practices resulted in diminished parkways that are not wide enough for shade trees.

CAR-CENTRIC URBANISM

City of Los Angeles

10

Policing and Surveillance

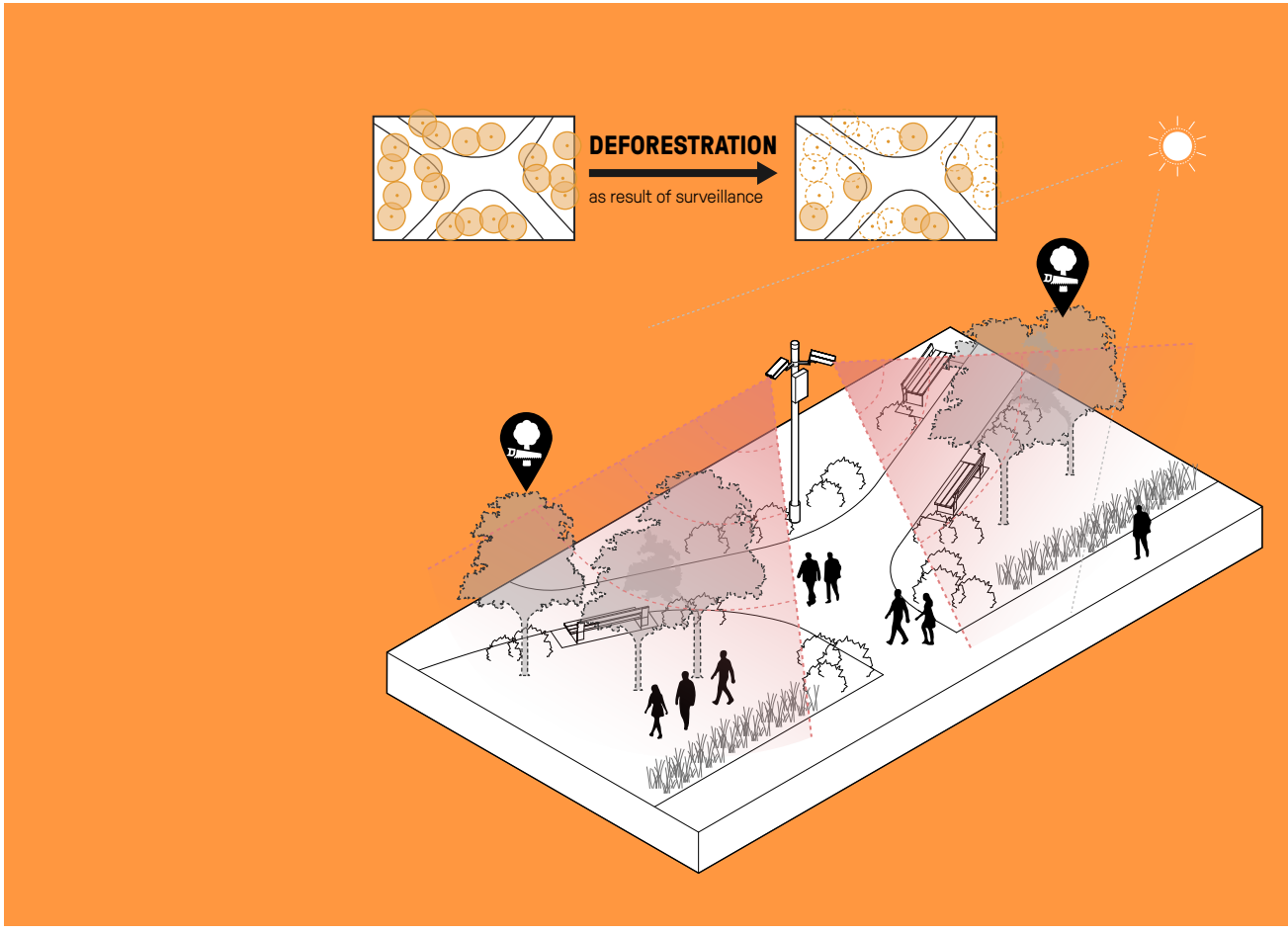
Shade is considered as an impediment to surveillance and safety, resulting in a preference for unshaded public spaces by law enforcement agencies. Sunlight was weaponized to deter "deviants and criminals" in Los Angeles.

SHADE STEWARDSHIP

City of Los Angeles

In 1964, business owners sponsored a redesign intended to clear out "deviants and criminals." The City removed perimeter benches and culled shade trees and even palms so that office workers and shoppers could move through the park without being "accosted by derelicts and 'bums.'" Sunlight was purposely weaponized with the intent that "before long, pedestrians (could) be walking through, instead of avoiding, Pershing Square."

—Sam Bloch, "Shade," *Places Journal*, April 2019. (Accessed 11 Dec 2019.)



11

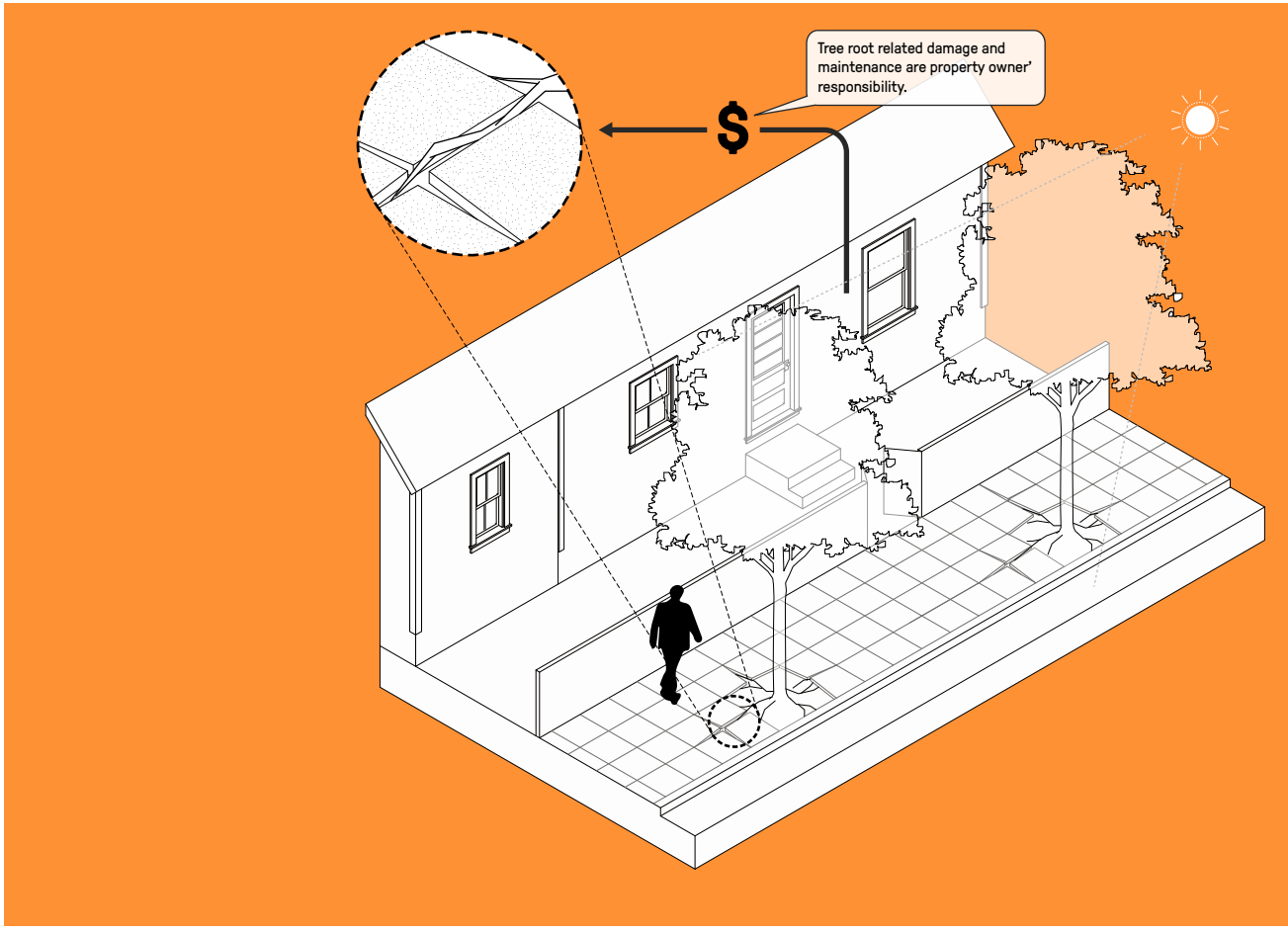
Tree Maintenance

Adjacent owners are responsible for the maintenance of parkway trees, resulting in their becoming a private financial burden.

Tree watering and maintenance were historically the obligation of property owners until 1932, when the City began to take more responsibility for managing street trees. However, root-related damage and maintenance remain property owners' responsibility today.

SHADE STEWARDSHIP

City of Los Angeles



12

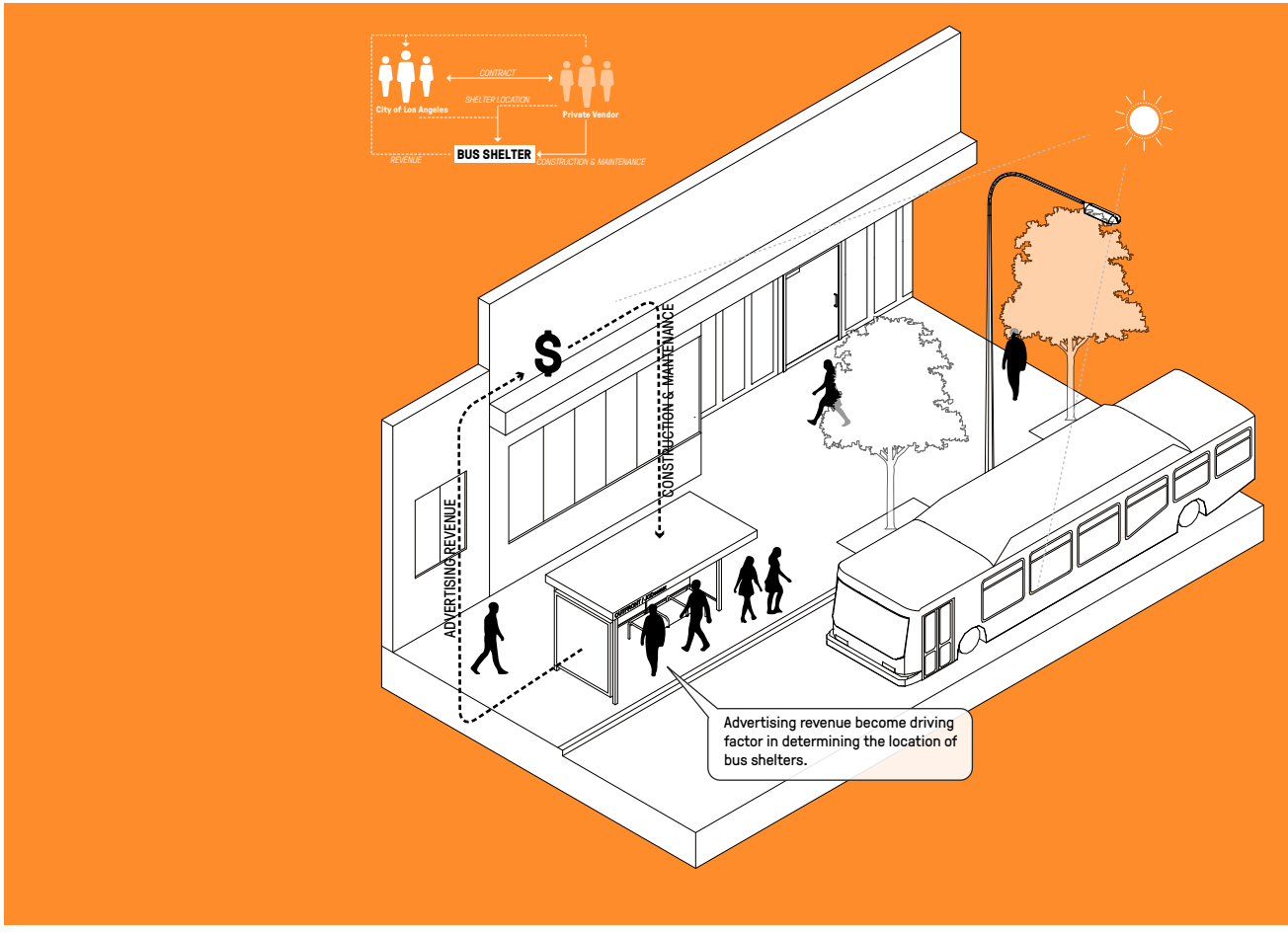
Advertising Dollars

The City of Los Angeles signed contracts with private vendors to install and maintain bus shelters in exchange for advertising space on the shelters themselves.

Advertising revenue became a driving factor in determining bus shelter locations, with the result that "high-value" neighborhoods benefit from more bus shelter shade.

SHADE STEWARDSHIP

[City of Los Angeles]



Highland Park Streetscape, Los Angeles
Photo © Jonnu Singleton/SWA Group.

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