



Urban Cooling + First/Last Mile Strategies

SHERMAN WAY STATION | CANOGA PARK, CA

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*This Study is dedicated
to Victor Chanorathaikul.
Without his leadership,
this Study would not
have been possible.*



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Introduction



Project Background

Extreme heat and transit access are two critical issues impacting the health and quality of life of communities across Southern California.

This project focused on a study area within a 10-minute walk (half-mile) from the Sherman Way Station Orange Line Station, exploring conceptual designs to simultaneously mitigate extreme heat (“Urban Cooling”) and improve transit access (“First/Last Mile”). This Study and seeks to:

- Create a toolkit of design solutions that reduce heat and help people more comfortably and safely access transit, ultimately encouraging mode shift towards more sustainable modes of transportation;
- Gather community and stakeholder feedback on these design concepts; and
- Position the City to secure grant funding to bring these concepts to life in Canoga Park and elsewhere in Los Angeles.

KEY STUDY OBJECTIVES



Design solutions for comfortable access to transit



Gather community feedback



Position the city to receive grant funding

This report documents the proposed concepts, community response, and lessons learned during the Study. **This effort is a model for other communities seeking to address extreme heat and cool temperatures, encourage active transportation and transit access, and improve overall quality of life for all.**

Timeline

StreetsLA identified Canoga Park, a community in Los Angeles's San Fernando Valley in which the effects of extreme heat is a pressing health and safety issue, as the neighborhood in which to explore design concepts related to cooling and improving access to transit. After receiving an Adaptation Planning Grant from Caltrans to conduct this Study, StreetsLA launched this study in December 2018 with support from a consultant team led by Alta Planning + Design. In 2019, the project team evaluated existing conditions and conducted traffic counts; identified potential urban cooling and first/last mile strategies; and collaborated with more than 650 community members to understand key needs and refine proposed strategies. Staff presented final design concepts in February 2020 and will begin applying for funding to implement these concepts in Canoga Park and beyond.

Community and stakeholder participation played a central role in shaping the project, from workshops and pop-up events to community surveys, presentations to the business improvement district, and events with local youth. Engagement efforts from the Study are summarized in Chapter 2: Canoga Park and are detailed in the Appendix. StreetsLA is committed to encouraging broad and meaningful



Top: The project team utilized community events such as the Canoga Park Farmers' Market to gather community feedback throughout the Study.

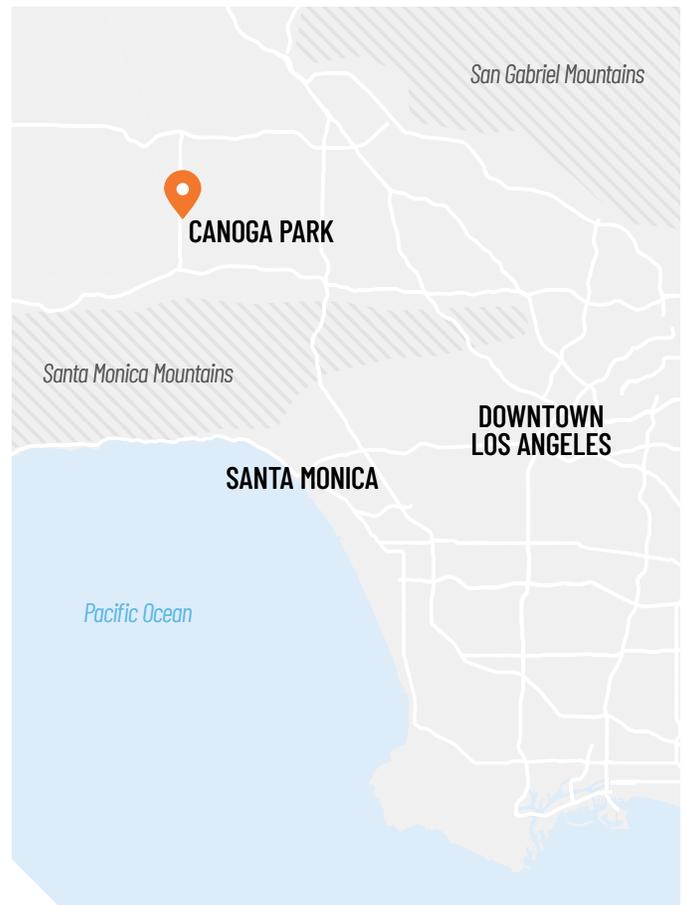
Bottom: Project workshops included snacks and activities for children to help ensure families could participate.

community participation and ensuring that neighbors' feedback informs decisions related to urban cooling in Canoga Park and other neighborhoods in which these concepts may be implemented. StreetsLA will continue to engage residents throughout future planning and implementation phases in Canoga Park and other communities in which urban cooling strategies are applied.

Why Urban Cooling?

The **Urban Heat Island Effect** causes urban areas—with impermeable, dark-colored surfaces like parking lots, roads, and roofs—to experience higher surface temperatures throughout the day, and to retain heat into the night, increasing electricity usage and posing added health risks.¹ While it may not receive as much news coverage as other dangerous weather phenomenon like floods, fires, hurricanes, or tornadoes, extreme heat kills more Americans every year than any other weather-related disaster.² Communities in Southern California already experience multiple days in which temperatures exceed 90 to 95 degrees Fahrenheit—the threshold for “extreme heat”—and poor air quality. These effects are acutely felt in Canoga Park and throughout the San Fernando Valley because the lack of cool winds from the Pacific Ocean intensifies the heat island effect in the valleys of the Los Angeles region.

Trees, on the other hand, help reduce extreme heat and improve air quality. Mature trees can cool surface temperatures by as much as 45 degrees Fahrenheit.³ These valuable assets are unequally distributed throughout the region, with many wealthier neighborhoods enjoying higher concentrations of trees than lower-income communities. Tree canopy



Extreme heat kills more Americans every year than any other weather-related disaster.²

density is also incredibly dependent on landowners: 90% of the urban forest in the City of Los Angeles is on private land—leaving only 10% within public control.⁴ Furthermore, the U.S. Forest Service estimates 129 million trees have died in California since 2010 due to conditions caused by climate change, drought, and pests.⁵

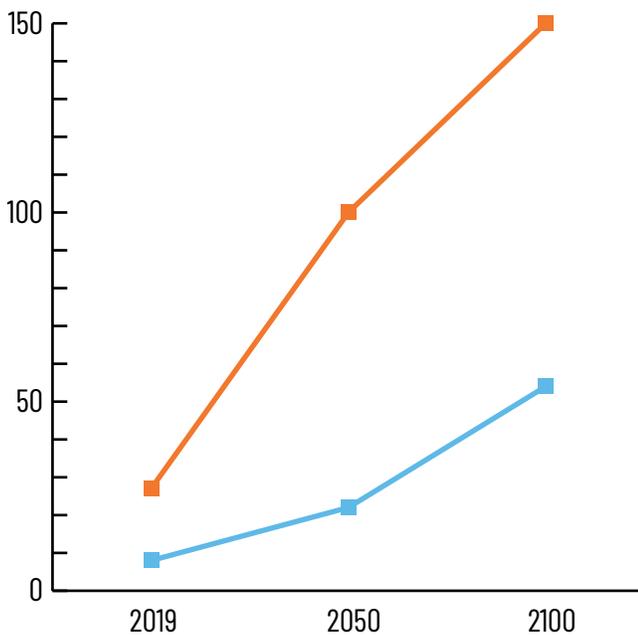


FIGURE 1. Projected Number of Extreme Heat Days by Year

Source: www.latimes.com/local/california/la-me-ln-extreme-heat-la-20160620-snap-story.html.

—■— San Fernando Valley

—■— Downtown Los Angeles

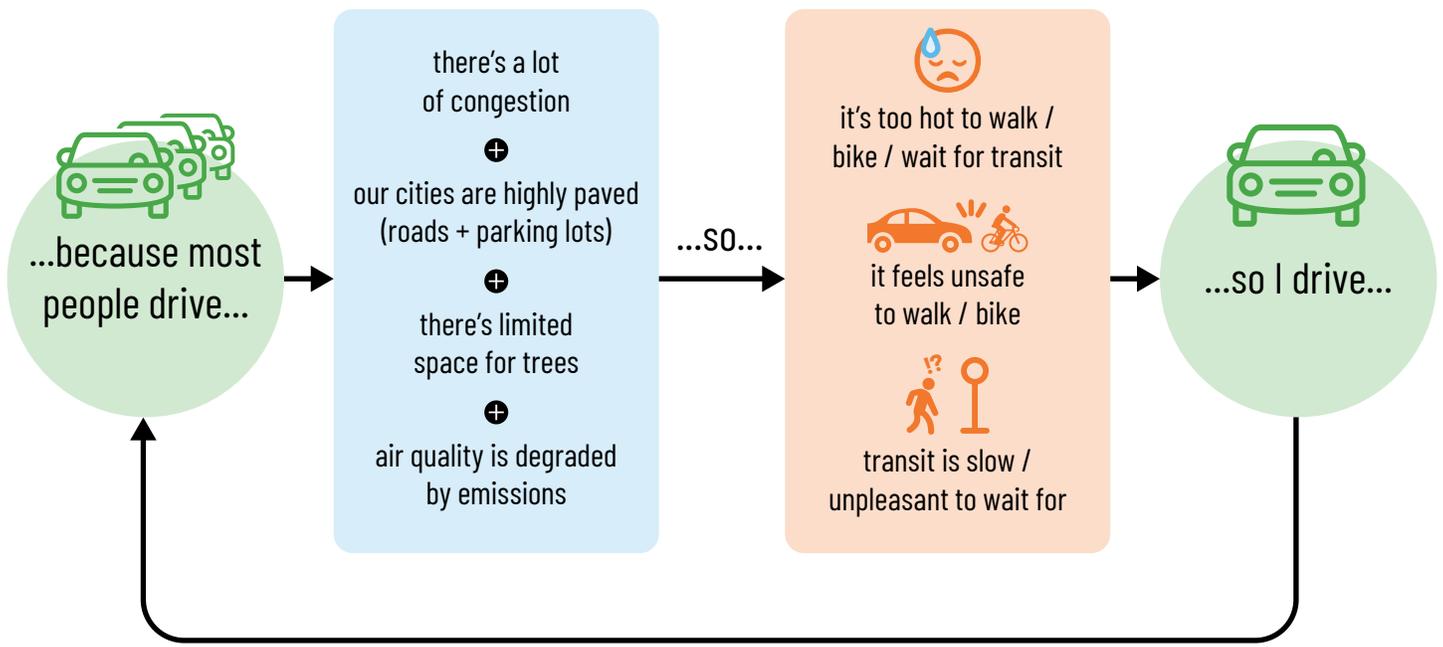
In July of 2018, Canoga Park was frequently 15 to 20 degrees Fahrenheit warmer than Santa Monica, although the communities are just 15 miles apart.⁶ That summer, Southern California experienced one of the worst heat waves in history, setting all-time temperature highs in multiple communities across the region. Due to overheated and overburdened electrical equipment, tens of thousands of Los Angeles residents lost power. Nearly 27,000 were still without electricity two days after the “heat storm,” and were forced to combat triple-digit temperatures without air conditioning, fans, or refrigerators.⁷ Monitoring equipment in Woodland Hills, a neighborhood immediately south of Canoga Park, recorded 118 degrees Fahrenheit on July 6, 2018.⁸

Such temperatures can be fatal, particularly for individuals under 18 and over 65 years of age, and especially

in areas where shade coverage is lacking. In a stark reminder of the potential health threats presented by extreme heat, U.S. Postal Service employee, Peggy Frank, died from hyperthermia while working her route in Woodland Hills that same day.⁹

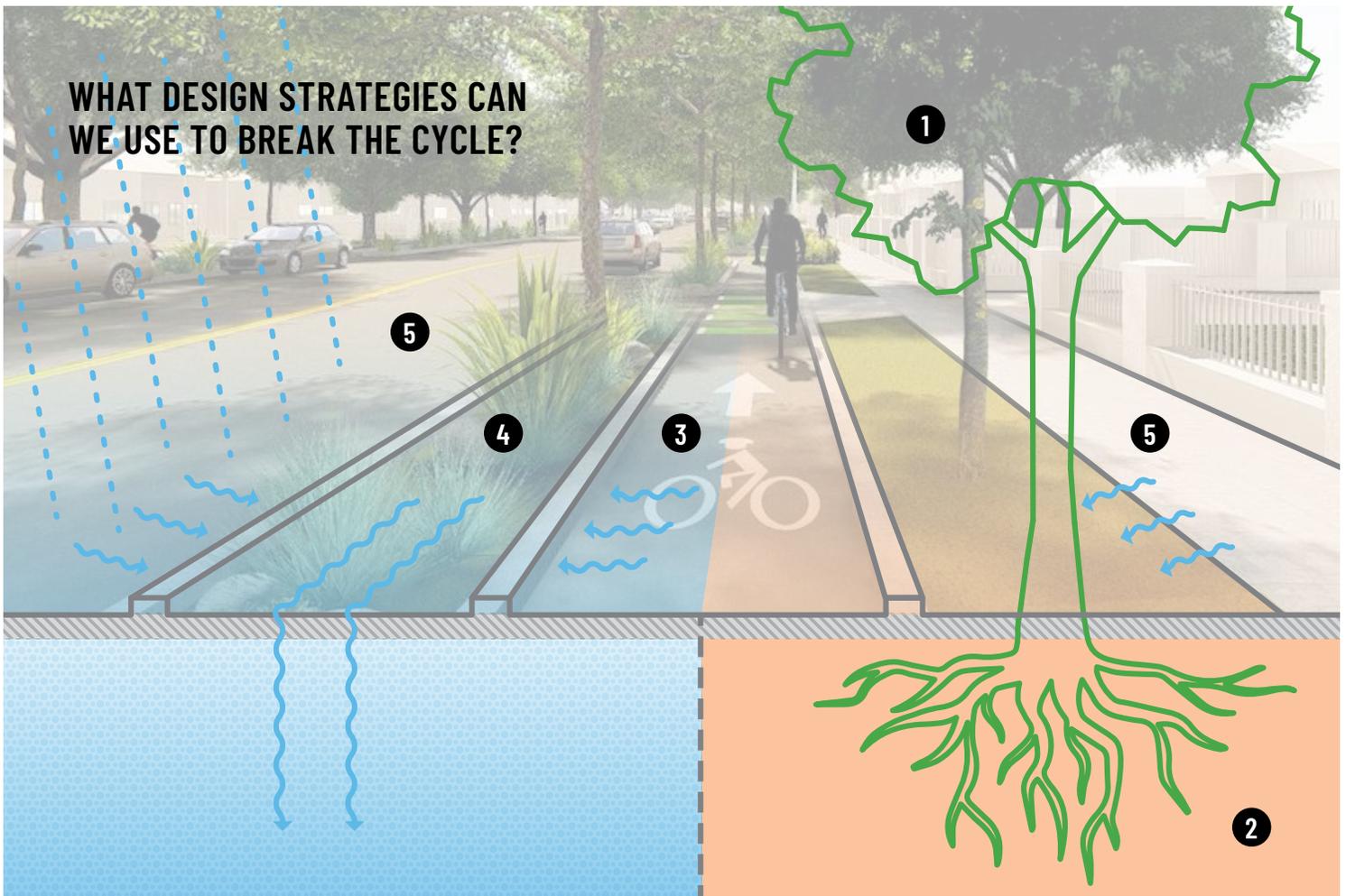
The heat wave of July 2018, scientists predict, is the “new normal.”

A study published in 2015 forecasted that the number of days of extreme heat will continue to increase. While downtown Los Angeles is predicted to experience 22 days of extreme heat by 2050, and 54 days by 2100, the San Fernando Valley is predicted to have 100 to 150 extreme heat days each year by 2100.¹⁰ This equates to one-third of a year spent in temperatures over 95 degrees Fahrenheit. The same study highlights reducing carbon emissions as a way to curtail these estimates by as much as half.



One of the most effective measures for reducing emissions is to drive less. Making it easier for people to walk, bike, and utilize transit helps to encourage a shift towards more environmentally-friendly travel options and therefore mitigates climate impacts. However, when temperatures reach “extreme” levels, outdoor activities become dangerous. Waiting for the Orange Line, biking to Quimby Park, or walking down Sherman Way in 110-degree weather is not only uncomfortable—it could be deadly. Pollution-caused heat may even push residents to drive even more, further escalating the problem and necessitating additional adaptation strategies.

The Urban Cooling Strategies highlighted in this Study aim to break this cycle.



WHAT DESIGN STRATEGIES CAN WE USE TO BREAK THE CYCLE?

1 SHADE TREES

- Increase comfort and lowers temperatures
- Filter air and water, improving the quality of both

2 EXTENDED PLANTING AREAS

- Create expanded space for roots so trees can grow faster; share nutrients; better resist disease, pests, and drought; and live longer.
- Reduce risk of pavement damage by root systems
- Stormwater capture,* recharge, and potential storage opportunity.

3 FIRST/LAST MILE FACILITIES

- Complete sidewalk networks, enhanced bike facilities, improved crossings, and streetscape amenities encourage people to walk and bike more to local destinations and transit
- Improves safety
- Increases mode shift towards sustainable transportation options
- Expand ways to reach jobs, housing, recreation, and services for all residents, especially those who do not have access to a vehicle

4 SEPARATED BIKEWAY BUFFERS

- Reduce collisions, improves safety for all roadway users
- When planted, capture rain runoff* and manage stormwater, creating opportunity for aquifer recharge and to pre-treat runoff by filtering debris and sediment before it enters our rivers and oceans.

5 COOL PAVING AREAS

- Increase reflectivity of pavement, thereby lowering temperatures and providing immediate cooling benefits

**These types of stormwater capture systems are modular and can easily work around utilities or design constraints.*

WHAT ARE THE BENEFITS OF THIS KIND OF DESIGN?

LIVABILITY + HEALTH

30 MINUTES 

of physical activity a day, such as walking or biking to the bus, can **reduce risk of heart disease, diabetes**

Walking and biking generate **no greenhouse gas emissions** or air pollutants 



Visitors to tree-lined business districts will spend

9 TO 12% MORE  for products, boosting the local economy

ENVIRONMENT

CA's street trees **remove 567,748 T CO2** annually, equivalent to taking **120,000 cars** off the road 

567,748 T CO₂

cool paving reflects sunlight instead of absorbing it, which can **cool surfaces by as much as**

20°F 

trees and shade structures can **cool surfaces by as much as 45°F**,  making it more comfortable for people to walk and bike

SAFETY + EQUITY

46% DECREASE



in collisions on major roads after landscape improvements were installed



Walking, biking, and riding transit can help households save over

\$9,700 A YEAR

Sources: www.naturewithin.info/Roadside/ArbNews_TreeSafety.pdf; www.fs.fed.us/psw/publications/mcpherson/psw_2016_mcpherson004.pdf; www.cityoflompoc.com/home/showdocument?id=960; www.cityoflompoc.com/home/showdocument?id=960; www.bls.gov/news.release/pdf/cesan.pdf

City Commitments to Change

This Study aligns with multiple other planning efforts in the City and helps advance the following goals:

GREEN NEW DEAL: SUSTAINABLE CITY PLAN (2019)

- Increase the percentage of all trips made by walking, biking, micro-mobility / matched rides or transit to at least 35% by 2025; 50% by 2035; and maintain at least 50% by 2050
- Reduce VMT per capita by at least 13% by 2025; 39% by 2035; and 45% by 2050
- Increase tree canopy in areas of greatest need by at least 50% by 2028
- Install cool pavement material on 250 lane miles of City streets, prioritizing neighborhoods with the most severe heat island effect

RESILIENT LOS ANGELES (2018)

- Prepare and protect those most vulnerable to increasing extreme heat

MOBILITY PLAN 2035 (2016)

- Protected bike lane on Sherman Way
- Pedestrian enhancements on Sherman Way and Canoga Ave

CITY OF LOS ANGELES SUSTAINABILITY PLAN (2015)

- Reduce the urban-rural temperature differential by 3 degrees Celsius by 2035



Canoga Park

High Heat, High Vulnerability

Canoga Park, a neighborhood of the City of Los Angeles, is located in the western portion of the San Fernando Valley. The community has been served by the Los Angeles County Metropolitan Transportation Authority's (Metro) Orange Line Bus Rapid Transit (BRT) busway since 2005. The local Orange Line station, Sherman Way, sees more than 2,000 passengers boarding or alighting each day and connects the Valley to downtown via Metro's Red Line (transfer required at North Hollywood).

Approximately 28,000 residents live within a half-mile of the Sherman Way Station. These residents generally have lower incomes; are more likely to be renters, non-White, Spanish speaking, and within a vulnerable age group (below 18 years or over 65); and are less likely to have access to a vehicle than their counterparts in other areas of the City and County. These demographic factors point to a high reliance on walking, biking, and transit. Coupled with projections for increased days with extreme heat, these factors suggest that residents in the study area are highly vulnerable to the effects of climate change.



These demographic factors point to a high reliance on walking, biking, and transit.

Existing Conditions

WALKING AND BICYCLING

Current conditions around the Sherman Way Station are challenging for walking and biking due to large, busy roadways and a discontinuous network of sidewalks and bikeways. Most of the larger streets in the study area have sidewalks. However, many streets in the industrial and residential areas (particularly between Saticoy and Valerio Streets) lack sidewalks and curb ramps. The main corridor, Sherman Way, is a wide arterial street with Class II bike lanes, shade trees, and pedestrian-oriented businesses west of Canoga Avenue; however, east of Canoga Avenue, there are no bicycle facilities and the sidewalks have few shade trees and are primarily adjacent to large asphalt parking lots.

A Class I separated bike and pedestrian trail runs parallel to the Orange Line route, marking the most significant existing low-stress active transportation facility in the area. An unpaved shared-use path runs along both shores of the Los Angeles River to the south. However, this path does not directly connect to the existing Orange Line Pedestrian and Bike Path. Other than the Class II bike lanes on Sherman Way, no other bike

facilities exist in the study area, although many were proposed in the City’s Mobility Plan 2035 (adopted in 2016).

Walking and Bicycling Counts

To understand existing usage, the project conducted counts of people walking and biking along some of the corridors in the area and reviewed existing historical data when available. The active transportation counts were conducted on a weekday (Thursday June 6, 2019) when public school was in session to simulate the majority of days in the calendar year, as well as a Saturday (June 1, 2019) to capture recreational use of the pathway and other facilities (see Table 1).

Key Findings

Counts were conducted at two locations on Sherman Way: west of the station at Alabama Avenue, and east of the station at Independence Avenue. The counts show that both sides of Sherman Way are used by people on bike and on foot, despite the lack of bike lanes and auto-oriented land uses on the eastern side.

TABLE 1. Bicyclist & Pedestrian Counts in the Project Area (Weekday 7-9 AM & 4-6 PM, Saturday 11 AM - 1 PM)

COUNT STREET	CROSS STREET	ACTIVE TRANSPORTATION FACILITIES	BICYCLISTS WEEKDAY AM+PM	BICYCLISTS WEEKEND	PEDESTRIANS WEEKDAY AM+PM	PEDESTRIANS WEEKEND	TOTAL
Sherman Way	Alabama Avenue	Class II Bike Lane, Sidewalks	92	55	311	261	719
Sherman Way	Independence Avenue	Sidewalks	81	54	308	200	643
Owensmouth Avenue	Valerio Street	Intermittent Sidewalks	12	7	51	60	130
Orange Line Bike Path	Valerio Street (north of Sherman Way Station)	Class I Shared-Use Path	31	21	62	28	142
Orange Line Bike Path	Hart Street (south of Sherman Way Station)	Class I Shared-Use Path	17	39	105	23	184

Owensmouth Avenue at Valerio Street is a residential area, where the road narrows from 60 feet to 40 feet north of the intersection. There are sidewalks south of the intersection, but none north of the intersection. Of the total 111 pedestrians, more than half (58) were traveling north/south, walking in the portion of the corridor without sidewalks.

The project team also conducted simultaneous counts along the Orange Line Bike Path, both north of the Sherman Way Station (at Valerio Street) and south (at Hart Street). Overall, the number of cyclists was similar between the two locations (52 and 56 respectively), while there were significantly more pedestrians south of the station (90 and 128 respectively). That difference in count data from the two locations along the path suggest that a large number of people are exiting the path at Sherman Way.

Walking and Bicycling Collisions

Between 2012 and 2016, 104 collisions involved people walking or biking within a half-mile of the Sherman Way Station (one collision involved both a pedestrian and a bicyclist). In the City of Los Angeles, pedestrian-involved collisions tend to be nearly twice as frequent as those involving bicyclists. However, the proportion of collisions in the study area involving bicyclists (56 collisions) was greater than those involving pedestrians (49 collisions), even though counts conducted for this Study showed pedestrians significantly outnumbered people on bikes.

Of the 104 collisions, 12 resulted in severe injuries, 51 in visible injuries, and one in fatality. Collisions more frequently occurred along Sherman Way, a higher speed, wide arterial road. However, none of the collisions resulting in severe injuries occurred on Sherman Way, and instead occurred primarily on residential streets.

TRANSIT

Although the Sherman Way Station has the highest ridership of all transit stops in the study area, there are 16 additional bus stops on Sherman Way between Topanga Canyon Boulevard and De Soto Avenue (see Map 1). Most stops have benches and a few have shelters. However, there is no shelter or bench at the bus stop immediately adjacent to the Sherman Way Station.

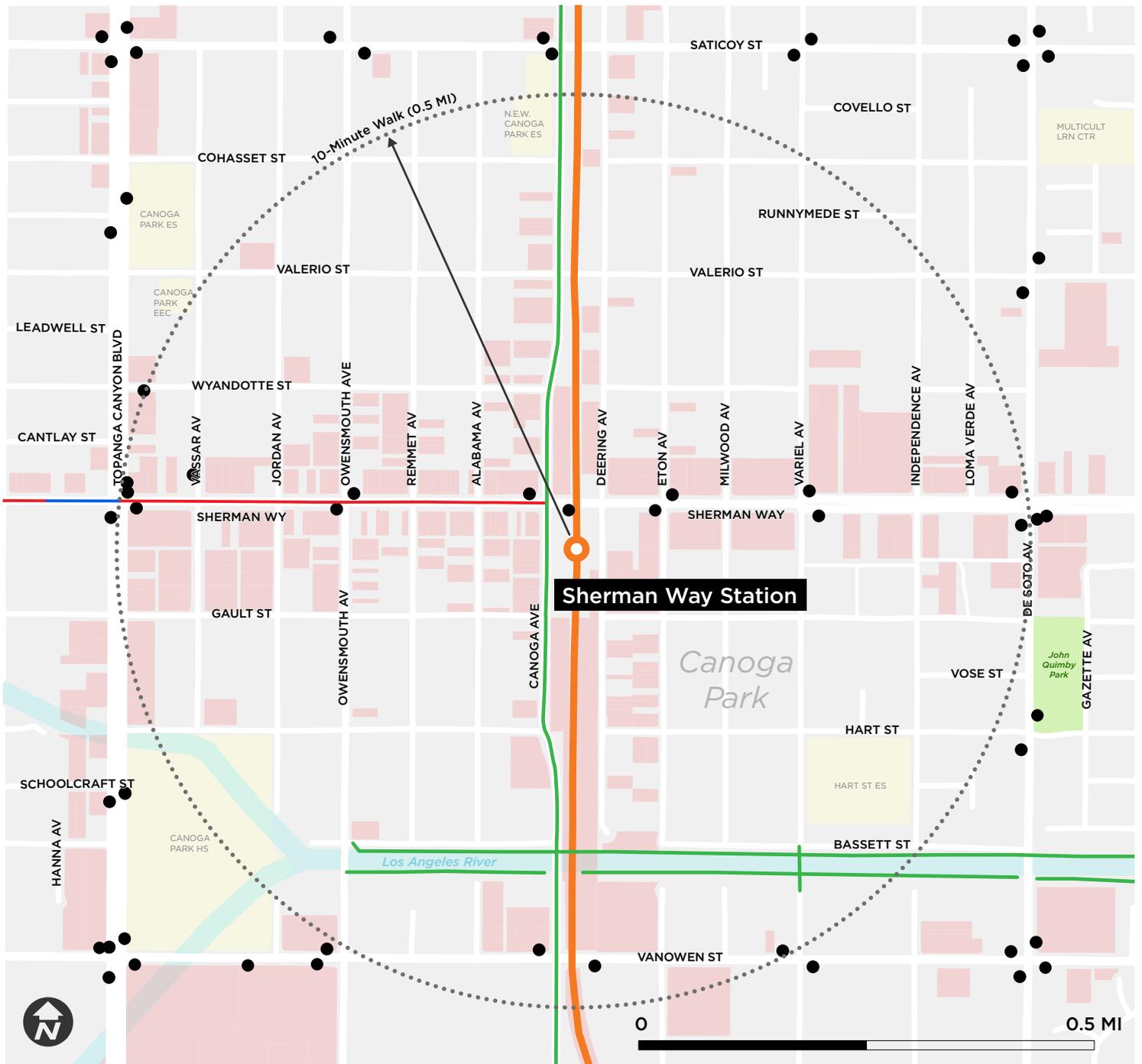
104 

people walking or biking were **injured or killed** within the study area from 2012 to 2016

nationally, the fatality rate is

30% higher for Black bicyclists, and

23% higher for Hispanic bicyclists



MAP 1. Sherman Way Station Area

LEGEND

Existing Bikeways

- Shared-Use Bike Path
- Bike Lane
- Bike Route

- Bus Stop
- Metro Orange Line & Sherman Way Station

- School
- Park
- Los Angeles River
- Commercial
- ⋯ Half-Mile from Station



Sherman Way east of Canoga Avenue (looking east towards Milwood Avenue)



Owensmouth Avenue looking north towards Cohasset Street

MOTOR VEHICLE TRAFFIC

Motor Vehicle Counts

To understand existing traffic patterns, the project conducted vehicle counts along some of the corridors in the area. The vehicle counts were conducted on a weekday when public school was in session to simulate the majority of days in the calendar year.

On Sherman Way east of Canoga Avenue, the counts showed 13,833 in the eastbound direction and 14,719 in the westbound direction, for an annual average daily traffic (AADT) of 28,552. On streets with this high volume of vehicles and speed limits of 35 MPH or higher, it is recommended that bikes be physically separated from vehicle traffic.

Vehicle Counts collected on Owensmouth Avenue just south of Valerio Street found an AADT of 8,406 with a relatively even number of vehicles in each direction. Owensmouth Avenue has significantly lower traffic volumes than parallel arterial streets such as Topanga Canyon Boulevard and Canoga Avenue. However, during the commute hours, there were significant peaks of traffic symmetrically dispersed by time of day with traffic flowing south in the morning and north in the evening. Counts found more than 600 southbound vehicles between 6:00 AM – 7:00 AM and nearly 500 northbound vehicles between 5:00 PM – 6:00 PM.

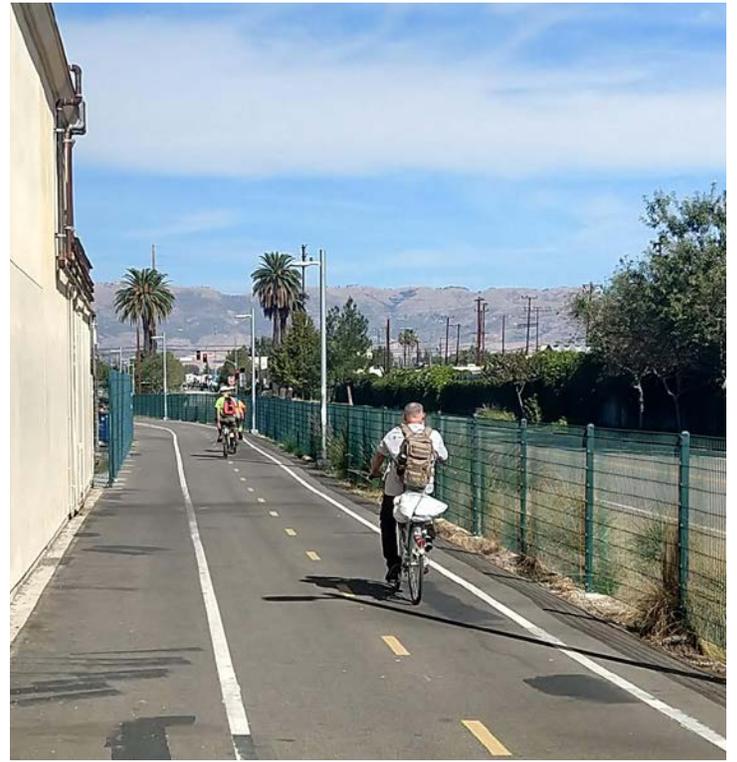


Sherman Way west of Canoga Avenue (looking west towards Jordan Avenue)

Motor Vehicle Parking

A 2019 Parking Utilization Study,¹¹ commissioned by Councilmember Bob Blumenfield, analyzed the number and utilization of publicly-available parking spots in the neighborhood. The parking study assessed the volume, utilization, turnover, and duration of parking for both on and off-street inventory on typical weekdays and Saturdays from February 15th to March 17th, 2018. The study found that both on- and off-street utilization on weekdays and weekends peaks at midday, and does not exceed 60%. This is significantly lower than 85%, the utilization rate parking management strategy suggests is optimal for commercial districts.¹² Most importantly, parking is relatively easy to find at utilization rates of 85% and below.

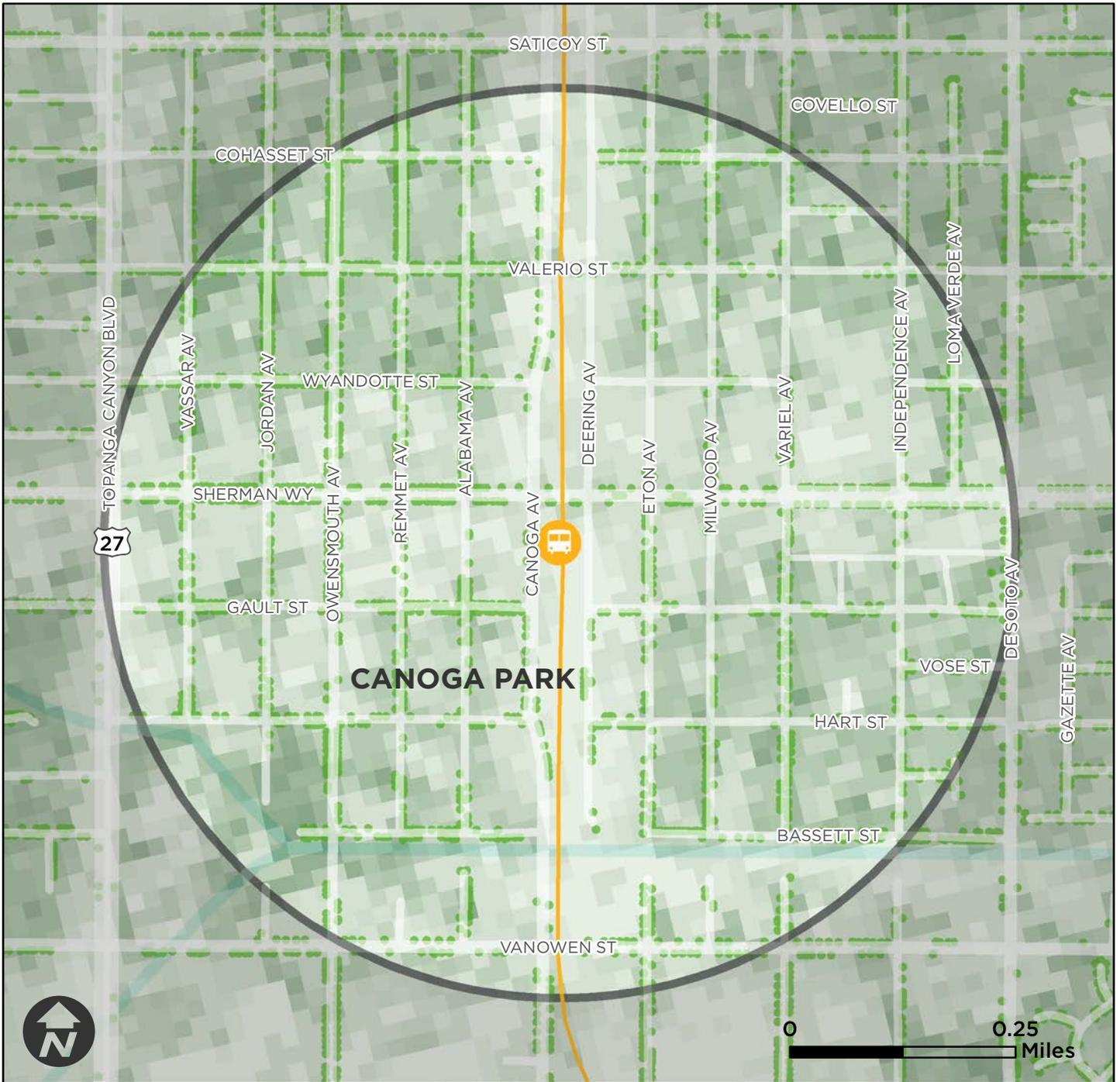
Overall, these findings demonstrate that the existing parking supply in the area is underutilized, and that roadway space currently used for parking could be reallocated for other modes without significantly impacting parking demand. Nevertheless, some community members and stakeholders voiced concerns during this Study about reducing the existing parking supply. As the City moves into implementation, additional outreach efforts should further explore the community's concerns related to parking.



SHADE

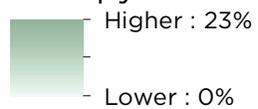
The City's data on street trees indicates almost 1,700 trees exist in the study area. Of the 1,200 trees identified by species and planting location, approximately 22% are a type of palm. In fact, the most frequent species of all trees in the study area is Mexican Fan Palm (*Washingtonia robusta*). While this iconic Southern California tree is known for growing between 70 to 100 feet, Mexican Fan Palms offer little shade coverage due to its tall and small canopy. Overall, six of the nine most prevalent tree species in the study area offer low to medium shade; thus, only 52% of trees accounted for in StreetsLA's dataset are known to substantially contribute to the tree canopy in the study area.

The National Land Cover Database's (NLCD) imaging data from 2011 suggests that existing tree canopy covers only 5% of the study area (see Map 2). For comparison, parts of nearby neighborhoods such as West Hills and Woodland Hills boast 8% and 15% coverage, respectively. Much of Canoga Park's existing tree canopy is concentrated away from Sherman Way and the Orange Line station, and instead is more frequently located on residential streets. The lack of shade on Sherman Way—where pedestrian volumes are highest—further intensifies unpleasant and potentially dangerous walking and biking conditions during days of high temperatures.



MAP 2. Existing Tree Canopy

Canopy Coverage



● Trees



Sherman Way Station

Orange Line Busway

Los Angeles River



Half-Mile from Station



Delfino and his family have found that following the installation of cool pavement on Jordan Avenue, they “can actually take the dogs out any time of the day.”

COOL PAVEMENT

Other heat-reducing measures also exist in the community, including two installations of cool pavements. Because darker materials in general absorb and radiate more heat than lighter surfaces, “cool pavements” involve treating roadways to have lighter, more reflective surfaces. In May of 2017, the City applied a reflective (“high-albedo”) cool pavement seal on a half block of Jordan Avenue, just north of Hart Street and less than a half-mile southwest of the Sherman Way Station. Installed the morning of the first heat wave of 2017, the light gray pavement read 23 degrees Fahrenheit cooler than nearby black asphalt within minutes of being installed.¹³

Resident Delfino Esparza has lived on Jordan Avenue since 2011. During an interview with the project team, he shared that residents started noticing the impacts of the cool paving once the summer heat came. Air conditioning units took less time to cool down his and neighbors’ apartments, and the street no longer reached temperatures too unbearable for walking his dogs. Delfino and his family have found that now, they “can actually take the dogs out any time of the day.”

Inspired by the installation on Jordan Avenue, the Emerson Unitarian Universalist Church five blocks north of the Sherman Way station decided to reseal their surface parking lot with cool pavement less than three months later.

 **400+ HOURS**
spent on *direct*
community outreach

all outreach materials and events were conducted in Spanish and English



 *more than 650 people participated in shaping this Study*



Community Voice

In order to identify urban cooling strategies that respond to the needs, interests, and concerns of existing community members, the project team engaged with residents and other stakeholders throughout the duration of the Study. Project staff and volunteers spent more than 400 hours in direct community outreach including talking to business owners, transit riders, and community members. Community engagement efforts followed three general phases and included a community survey, presentations to community groups, and public workshops at or adjacent to the Farmer's Market. All outreach materials and events were conducted in Spanish and English; additionally, all three public workshops included snacks and activities for children.

The project team also worked with 13 Bridge to the Future (B2F) scholars to help with engagement efforts; eleven (11) students volunteered their time to help with intercept surveys and workshops, and two (2) joined the project team as paid interns. The B2F Scholars Program awards up to 25 Canoga Park High School graduating seniors with four-year, tuition-free education and supporting services at California State University at Northridge. From their local knowledge of growing up in Canoga Park, the scholars also provided invaluable insights and connections for this Study. These scholars supported engagement efforts and helped shape the recommendations throughout the project.

Overall, more than 650 people participated in shaping this Study. This section highlights the various strategies utilized during each phase; a detailed account of community engagement is available in the Appendix.

PHASE 1:

Canoga Today, Vision for Tomorrow

Phase 1 aimed to understand community members' perceptions about existing conditions; challenges to walking, biking, and accessing transit; and hotspots for heat-related issues. Phase 1 also measured reactions to various tools for managing heat and water, enhancing livability, and improving transportation. The project team used the following methods to capture this feedback:

MARCH THROUGH MAY 2019

Presentations at Schools: 14 presentations; 356 attendees

- » CSUN Bridge to the Future Scholars Program
- » Canoga Park High School
- » Alliance for Community Engagement

APRIL 13, 2019

Workshop 1: 75 attendees, Canoga Park Community Center

Community Survey: 462 respondents, reached via in-person intercept surveys at transit centers, along the corridors, and at community meetings, presentations, and targeted online advertising

KEY TAKEAWAYS FROM PHASE 1



Support for crossing improvements, separated bikeways, and street lighting



Support for street trees, water fountains, shade structures, and cool paving

Key takeaways from Phase 1 included support for crossing improvements, separated bikeways, and street lighting, as well as support for street trees, water fountains, shade structures, and cool paving.



PHASE 2:

Exploring Preliminary Strategies

Using feedback from Phase 1, the project team developed preliminary strategies to improve transit access and reducing heat in Canoga Park. The team shared photosimulations of what these could look like when applied to three corridors in the study area at the following events:

APRIL 27, 2019

Presentation to the Canoga Park Neighborhood Council:

1 presentation, 25 attendees

JUNE 2, 2019

Presentation to Emerson Unitarian Church: 1 presentation; 20 attendees

AUGUST 15, 2019

Booth at the Third Thursday August ArtWalk: Interacted with approximately 40 people

SEPTEMBER 21, 2019

Workshop 2: 40 attendees, Emerson Unitarian Church

OCTOBER 28, 2019

Presentation to the Business Improvement District: 20 attendees

KEY TAKEAWAYS FROM PHASE 2



Driver support for protected bikeways



Desire for more traffic calming, including speed bumps and high-visibility crossings



Questions regarding traffic flow patterns and vehicle access

Key takeaways from Phase 2 included:

- **Driver support for protected bikeways.** Drivers in particular felt the protected bikeways would create a more comfortable environment not just for people on bikes, but also for people driving.
- **Desire for more traffic calming,** including speed bumps and high-visibility crossings.
- **Questions regarding traffic flow patterns** and vehicle access that could be impacted by the preliminary design strategies.



PHASE 3:

Ground-Truthing Design Concepts

After completing Phase 2 of engagement efforts, the project team had buy-in from community members about the urban cooling strategies they want to see come to life in their neighborhoods. The team then developed video renderings of each corridor to help portray how these design concepts would look and feel. The videos (which can be viewed at altaplanning.com/urbancooling) were promoted online via social media and various partner websites, and were presented to community members at the following events:

JANUARY 11, 2020

Workshop 3: 80 attendees, Canoga Park Farmers Market Booth

JANUARY 27, 2020

Presentation to the Business

Improvement District: 12 attendees

Community members expressed overwhelming support for the three concepts presented. They voiced excitement about the pedestrian plaza, protected bikeways, planted buffers and bioswales, and trees. They were happy to visualize a future in which Canoga Park looks more like the videos and asked when they would be able to see the changes on their streets.

KEY TAKEAWAYS FROM PHASE 3



Support for pedestrian plaza, protected bikeways, planted buffers and bioswales, and trees



Questions and concerns about funding, maintenance, and parking

Concerns, when voiced, centered around:

- **Funding:** How would the City pay for this? Would funding the project increase taxes for residents or reduce opportunities to address homelessness?
- **Maintenance:** Will these facilities be maintained regularly and kept in a presentable, operable state? Will shade and water fountains along the Orange Line Path attract encampments?
- **Parking:** People perceive parking as limited, regardless of what the Canoga Park Parking Utilization Study (2019) found. Will we be able to accommodate our visitors and residents if we reduce parking supply?



Community members were able to immerse themselves in animations that visualize a cooler, more active Canoga Park

Continuing Engagement Through Implementation

Once the City secures funding for detailed design and implementation of these or similar projects, additional public outreach will continue to ensure specific project context and community needs are fully considered before design is finalized. Given that this project was primarily a feasibility study at the Planning-level, additional design details will need to be vetted by community members and stakeholders.

Corridors + Design Concepts



Corridor Selection Process

This Study focuses on three corridor typologies found in Canoga Park and throughout the region: a major arterial, a neighborhood street, and a multi-use trail. In order to explore what urban cooling and first/last mile design solutions are feasible to implement in each typology, specific corridors were selected based upon:



Findings from the existing conditions assessment

- What corridors have high volumes of people walking and biking vs. driving today?
- Where are the collision hot spots?
- Where are there critical first/last mile network gaps?
- Where are shade and other urban cooling strategies most needed?



Feedback from community members

- What types of urban cooling and first/last mile improvements are preferred?
- Where are those improvement types most requested, and feasible?
- Where do people want safety enhancements?
- Where do people want to see more shade and other cooling strategies?



Applicability to other neighborhoods

- Which corridors in the study area represent similar street conditions in other communities in the City, so that solutions developed under this study have the broadest potential application and opportunity for mitigating and adapting to climate change?



Based upon this criteria, the project team selected three Study Corridors:

- 1 Sherman Way**, east of Canoga Avenue (a major arterial),
- 2 Owensmouth Avenue**, north of Sherman Way (a neighborhood street), and
- 3 The Orange Line Trail**, north of Sherman Way (a multi-use trail).

Design Approach

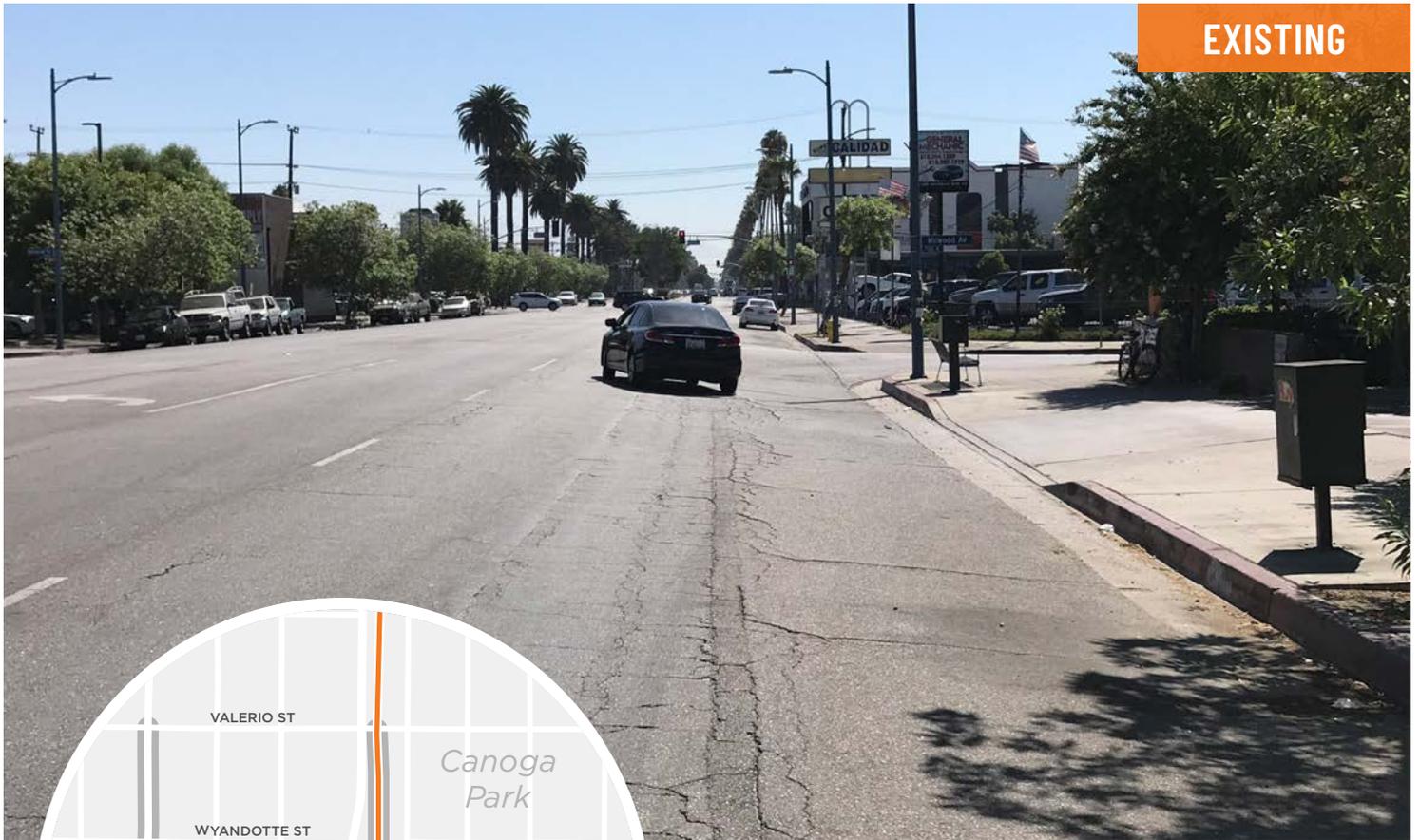
The design approach for each of these study corridors were driven by:

- **Best practices in active transportation and first/last mile planning and design**
- **Findings from the Adaptation Concept report (available in the Appendix):** What cooling strategies have the greatest co-benefits?
- **Opportunities to integrate multi-benefit solutions:** How can we maximize and amplify benefits by using multiple adaptation strategies in one study area?

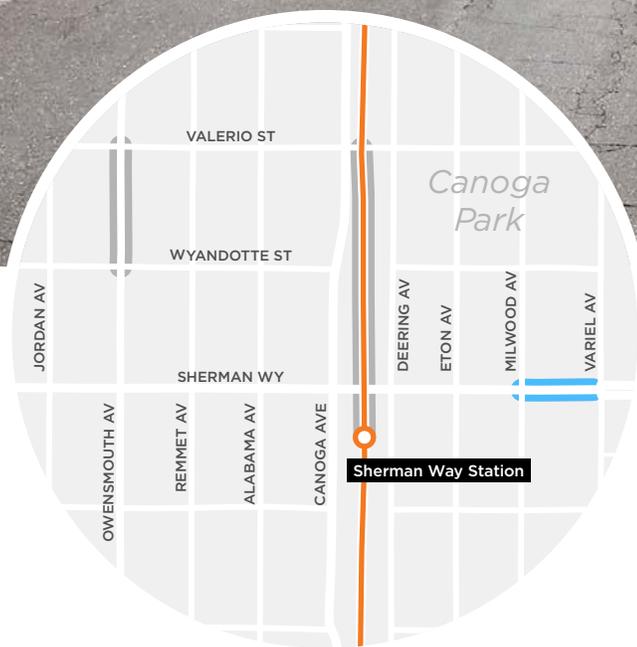
- **Shade phasing:** Trees and green infrastructure have the greatest number of co-benefits (see Table 2). However, the quality and quantity of those benefits increases as plants mature. For example, a young tree has a smaller canopy than a mature tree, and therefore provides less shade and sequesters less carbon. How can human-made solutions like cool paving and shade structures be integrated into early phases of a project to realize immediate cooling benefits while plantings mature?

TABLE 2. Summary of urban cooling adaptation strategy co-benefits from the Adaptation Concept Report

	IMPROVED HUMAN HEALTH	IMPROVED WATER QUALITY	ENHANCED STORMWATER MANAGEMENT	ENHANCED SAFETY & IMPROVED QUALITY OF LIFE	REDUCED ENERGY USE	IMPROVED AIR QUALITY	INCREASED PAVEMENT LIFE	INCREASED HABITAT
Street Trees	◆	◆	◆	◆	◆	◆	◆	◆
Green Infrastructure	◆	◆	◆	◆	◆	◆		◆
Cool Paving	◆	◆		◆	◆	◆	◆	◆
Hydration Stations	◆	◆		◆	◆			
Shade Structures	◆			◆			◆	



Sherman Way looking east toward Milwood Avenue

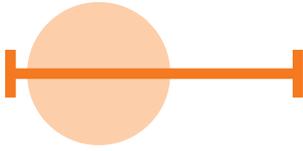


Sherman Way is a commercial corridor and in many ways the heart of the community, home to many businesses, grocery stores, restaurants, and shopping destinations. Yet, the design of the roadway prioritizes the movement of vehicle traffic through the community, rather than facilitating local trips on foot to support the local economy.

This street was designed with the private vehicle in mind. It is wide with multiple lanes and traffic signals timed to move cars and trucks quickly, but less welcoming for those walking and biking. A few of the reasons include:

Major Arterial: Sherman Way

Sherman Way is a wide arterial that is similar to many found throughout the San Fernando Valley.



It is wide, ranging between 95' and 100' from one sidewalk edge to the other. With six lanes of traffic or more on the street, people walking and bicycling are exposed to uncomfortable levels of vehicle traffic when crossing. This issue is exacerbated because there are few marked crossings or signals for pedestrian crossings.



There are high traffic volumes and it is often fast. Although the existing speed limit is 35 miles per hour, community members report drivers often speed. Traffic counts for this project showed more than 28,500 vehicles using the street on an average weekday. This makes people feel unsafe crossing the street and hesitant to use the existing Class II bike lane as it currently provides bicyclists with no physical separation from vehicles.



It has limited bike and pedestrian facilities. A Class II bikeway exists west of Canoga Avenue, but there are no bicycle facilities on Sherman Way east of Canoga Avenue. There are large distances between signalized intersections with crosswalks, especially east of Canoga Avenue.



It is hot. Two major factors contribute to the heat:

1. There is little shade, with few street trees adjacent to the sidewalk, and few bus shelters to shade riders while waiting for transit.
2. There is a lot of asphalt, both in the roadway and covering the surface parking lots that occur frequently along the corridor. On-street weekday parking is underutilized with as much as 50-75% of the parking unoccupied.¹⁴ This translates to additional exposed asphalt amplifying the heat.

The design solution for Sherman Way (shown in Figure 2) addresses these issues by:

Maximizing greenery: Trees are added in a planted center median, and to a bikeway buffer that provides shade for both those walking and biking. Street trees are planted more closely together (suggested minimum 30' on center) along sidewalks.

Enhancing transit facilities: Shade structures are added at all bus stops and, where space permits, floating bus boarding islands can be added to give transit riders a dedicated, cool space to wait for the bus. Additional amenities such as benches, bike racks, lighting, wi-fi hotspots, USB charging, and real-time arrival information can further enhance the transit rider's experience.

Incorporating cool paving: Cool paving is most effective on streets with lower volumes of traffic to reduce wear. While it is not feasible to apply to all of Sherman Way, the bikeway represents an ideal space for cool paving as newly-planted trees mature. This use of shade phasing helps realize immediate cooling benefits and incentivize active transportation.

Enhanced pedestrian facilities:

Pedestrian enhancements, such as curb extensions that shorten crossing distances and high-visibility crosswalks, are added. New crossings with pedestrian-activated flashing beacons make it easier to cross the street at unsignalized intersections.

Enhanced bike facilities:

In this scenario, street parking is removed on one side of the street, as parking is underutilized and the abundant parking in surface lots make the on-street parking redundant. This creates space to add a separated bikeway (Class IV) which makes biking more attractive and safer by creating dedicated space for both drivers and cyclists, and reducing the potential for conflicts and collisions. Protected intersections are added at signalized intersections, which further separate those biking from those driving, reducing the risk of collisions.

The project team created an animated fly-through of a re-imagined Sherman Way as a cool, active, and connected corridor for all users. To view the animation of what the corridor could look like in the future, see: altaplanning.com/urbancooling



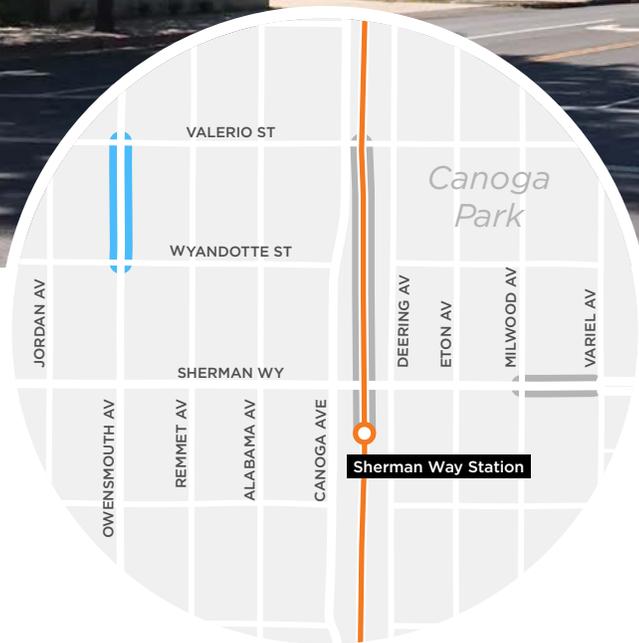


FIGURE 2. Proposed design for Sherman Way east of Canoga Avenue





Owensmouth Avenue looking south at Wyandotte Street



Neighborhood Street: Owensmouth Avenue

Owensmouth Avenue just north of Sherman Way is home to a variety of businesses and cultural institutions

including non-profit service providers, a neighborhood museum, a community theater, and a child care center.

It also hosts the popular weekly Canoga Park Farmers Market, which takes place every Saturday and serves as a central locus for the community. During engagement efforts, community members expressed frustration that the street was used as a cut-through for commuters seeking to avoid congestion on the parallel arterials of Canoga Avenue and Topanga Canyon Boulevard during rush hour.

Some of the challenges along this corridor include:



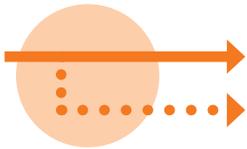
Lack of sidewalks and other pedestrian amenities. Blocks north of Valerio Street lack sidewalks; many intersections lack ADA-compliant curb ramps. The urban tree canopy is inconsistent and largely comprised of palm trees, which provide little shade. There is sparse street lighting, and no pedestrian-scale lighting.



Lack of bike facilities. Despite connecting many community destinations, there are no bike facilities on this street.



Over-abundance of street parking: On-street parking on Owensmouth Avenue between Sherman Way and Wyandotte Street does not exceed 50% utilization on weekdays, and is only slightly higher on the weekends. This space allocated for cars and paving contributes to higher temperatures.



It is used as a “cut through” street. Community members report this street experiences high volumes of vehicular traffic during rush hour because drivers use it to bypass congestion on Canoga Avenue and Topanga Canyon Boulevard. Because the corridor has few stop signs, segments with two south-bound lanes, and signals at both Satcoy Street and Sherman Way, this shortcut entices drivers hoping to reduce travel time.



Owensmouth Avenue looking north towards Valerio Street

The design solution for Owensmouth Avenue addresses these issues by:

Dedicating more space to people, bikes, and plants: Converting a portion of Owensmouth between Wyandotte Street and Sherman Way into a flexible plaza space amplifies the role the street plays as a community hub (Figure 3). This space can host not only the weekly farmer's market, but also additional community programming, such as play spaces, outdoor dining, and art or performances. For parts of the corridor, removing parking on one

side of the street creates space to add a separated bike lane with a planted buffer - making choosing active modes safer, more appealing and comfortable.

Closing network gaps: New sidewalks are added, while preserving existing trees.

Maximizing greenery: Shade trees can be planted between palms to maximize shade and provide a continuous shaded pedestrian experience without reducing the urban tree canopy.

Encouraging local traffic and minimizing congestion and conflicts:

One of the two existing south-bound travel lanes is removed to discourage cut-through traffic and encourage drivers to use major roadways instead. Mini-roundabouts can replace stop-controlled intersections, calming traffic and enhancing safety. This design treatment has been demonstrated to reduce the types of crashes where people are seriously hurt or killed by as much as 82%.¹⁵ Although traffic counts for Owensmouth and Valerio Street exceeded the maximum threshold often

used when determining the feasibility of a traffic circle (10,220 AADT and 10,000 AADT, respectively), the number of north/southbound vehicles would likely be dramatically reduced if the plaza were to be constructed, thus presenting ideal conditions for a roundabout (see Figure 4).

Incorporating cool paving: Because Owensmouth Avenue has lower volumes of traffic than major streets like Sherman Way, cool paving is appropriate to apply to the entire roadway surface, which will provide immediate cooling benefits.



The project team created an animated fly-through of a re-imagined Owensmouth Avenue as a shade-rich resident-focused corridor. To view the animation of what the corridor could look like in the future, see: altaplanning.com/urbancooling

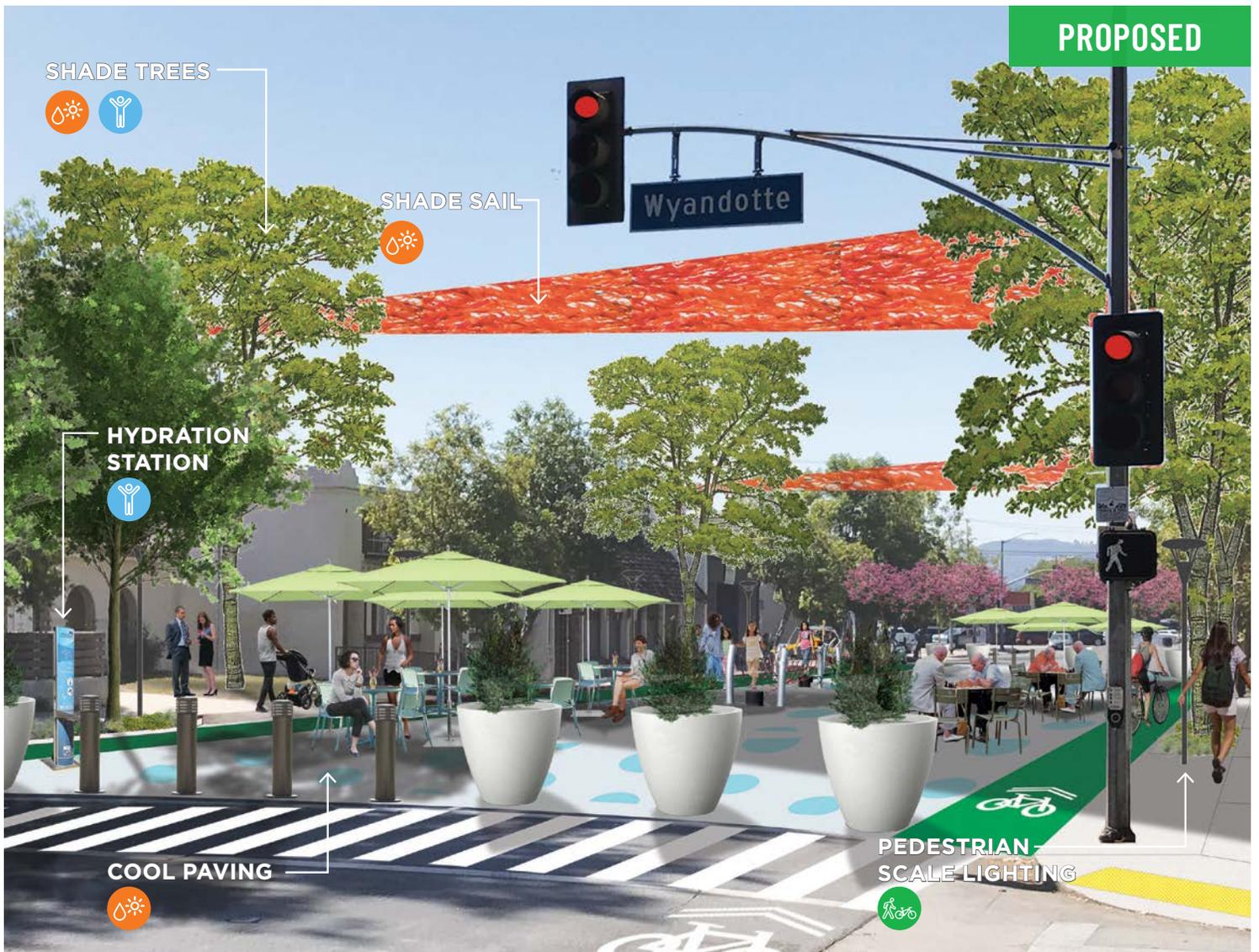


FIGURE 3. Proposed design for Owensmouth Plaza between Wyandotte Street and Sherman Way



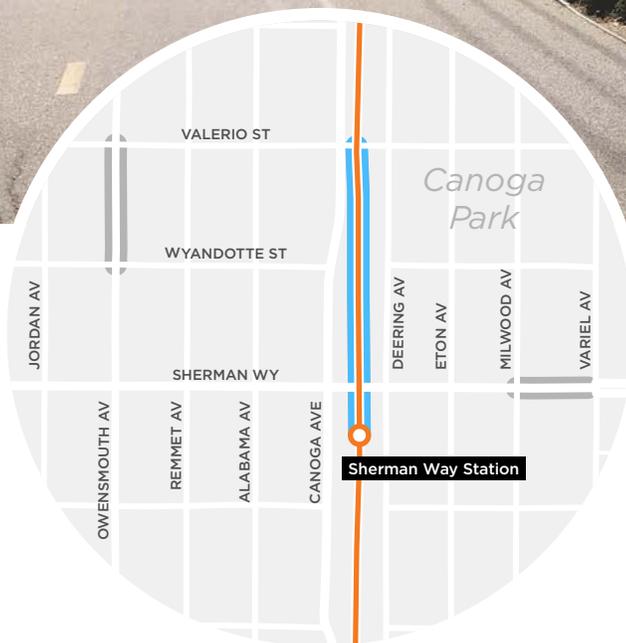


FIGURE 4. Proposed design for Owensmouth Avenue at Valerio Street





An entrance to the Orange Line Bike Path near Canoga Park



Multi-Use Trail: Orange Line Bike Path

The Orange Line Bike Path is an off-street (Class I) trail for people walking and biking that parallels the Orange Line BRT route.

This trail is an important regional connector that intersects the LA River Trail, numerous bikeways, and other community destinations.

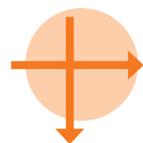
Some of the conditions that impact the comfort of using the trail include:

Minimal shade along the route and at crossings with limited commercial activities.

Few amenities, with no hydration stations, bathrooms, shade structures, or wayfinding.

Minimal lighting which residents expressed concerns of personal safety when using the trail before sunrise or after sunset, and which reduces the visibility of pavement defects.

Busy crossings, particularly along major arterials.



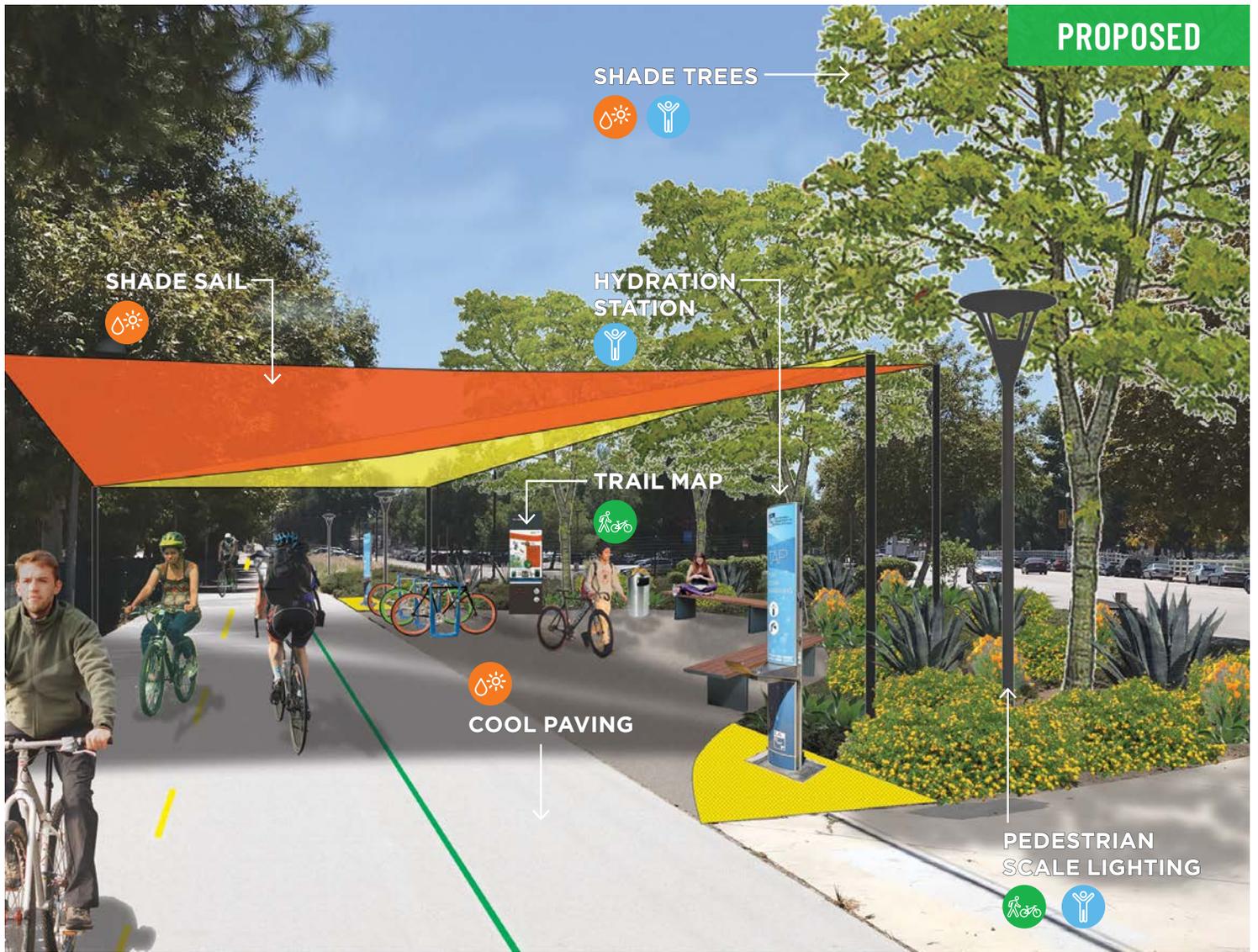


FIGURE 5. Proposed design for the Orange Line Bike Path





Orange Line Bike Path at Sherman Way (looking north)

The design solution for the Orange Line Trail depicted in Figure 5 addresses these issues by:

Adding “cool zones”: These are places along the corridor where amenities are clustered, such as benches, exercise equipment, bike racks, hydration stations, shade structures, artistic cool paving elements, and enhanced planting areas.

Enhanced crossings: Community members reported that it can be uncomfortable to wait to cross the

street at traffic signals. Adding shade structures, cool paving, and hydration stations near street crossings helps make the wait more comfortable and creates a greater sense of place.

Art and wayfinding: Artistic elements, such as murals, paving patterns, and sculptures can be integrated along the trail to reflect the communities through which it passes. Wayfinding can be enhanced, including trail maps and signs denoting distances to major destinations via intersecting bike routes.

The project team created an animated fly-through of a re-imagined Orange Line Trail as a cool connector with regular “cool zones” with shade, seating, and hydration stations. To view the animation of what the corridor could look like in the future, see: altaplanning.com/urbancooling



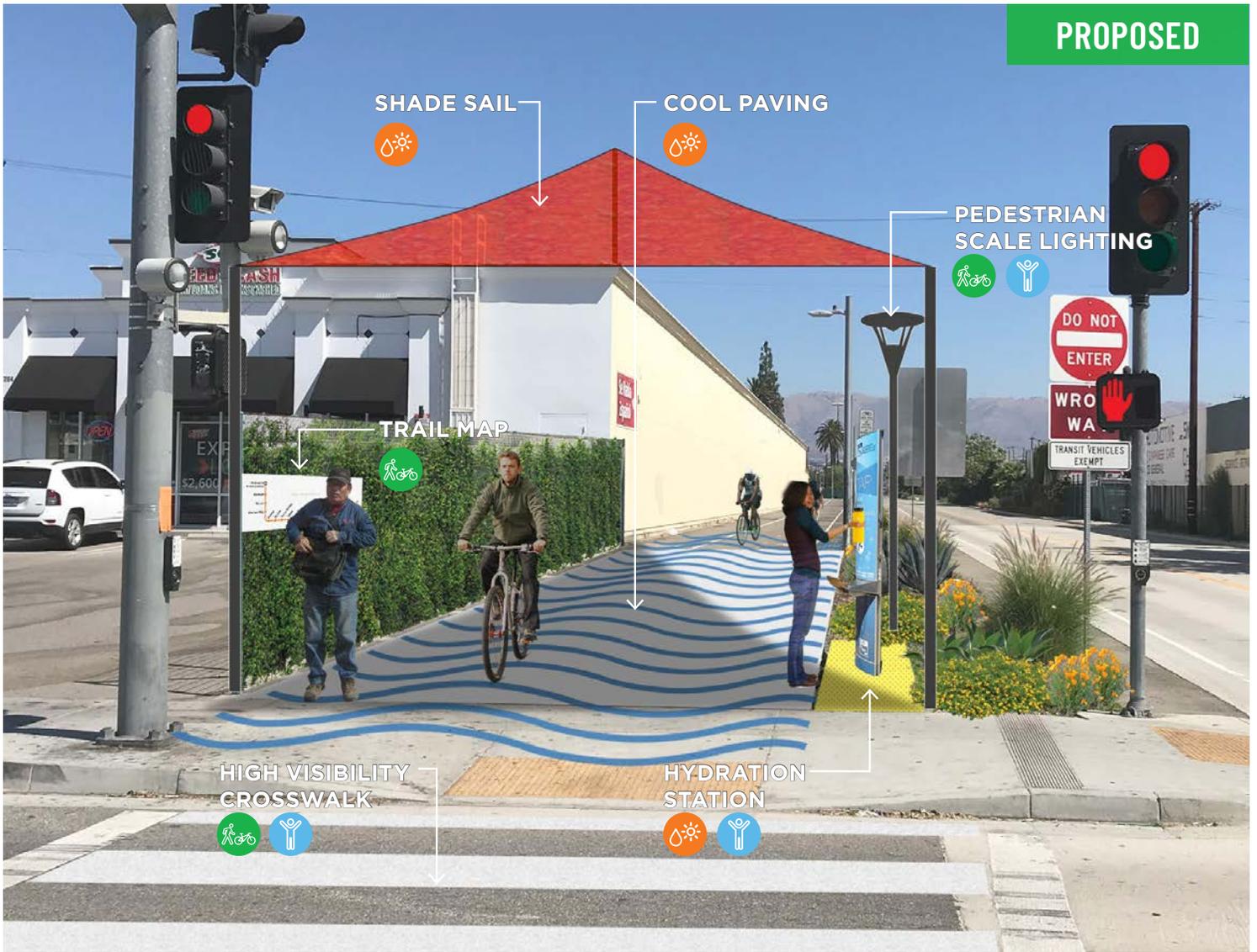


FIGURE 6. Proposed design for the Orange Line Bike Path at Sherman Way (looking north)



Implementation





Secure Funding

The urban cooling strategies presented in this Study call for improvements related to transportation, landscape, water management, and more, and may require multiple funding sources to ensure each recommended type of improvement can be built and maintained. Throughout this Study, community members expressed support for the designs presented, but a desire that the City commit to regular maintenance. Therefore, any funding requests should include a commitment to maintain the facilities. The “best fit” funding sources the City will explore are listed in this section; a full list of additional funding sources can be found in the Appendix. The descriptions are intended to provide an overview of available options and do not represent a comprehensive list. This section reflects the funding available at the time of writing. The funding amounts, fund cycles, and even the programs themselves are susceptible to change without notice.

SAFE AND CLEAN WATER PROGRAM: MEASURE W

Approved by Los Angeles County voters in 2018, The Safe and Clean Water Program generates up to \$285 million per year from a special parcel tax of 2.5 cents a square foot of “impermeable space” will help cities around the county meet their obligations under the federal Clean Water Act. This program funds projects and programs that focus on stormwater and water quality benefits. The City of LA will receive an annual allocation of funds, and is also eligible to apply for additional competitive funding. Eligible project types that can be supported through this funding stream include feasibility studies, pilot projects, detailed design and construction, and ongoing operations and maintenance costs.

LADOT PEOPLE ST PROGRAM

The Los Angeles Department of Transportation provides an application-based program that builds partnerships with community groups and the City to transform LA streets into active and accessible places for community members. Types of projects could include: parklets, plazas, bicycle corrals, intersection murals, and decorative crosswalks. The application window for plazas opens annually in the Spring.

Business Improvement Districts (BIDs), Community Benefit Districts (CBDs), non-profits and community organizations, and other organizations may apply to become People St Community Partners. Community Partners are required to be active players in order to build neighborhood support for a project, identify an appropriate site, conduct outreach, raise funds required for materials and furnishings, install project elements, and provide and fund long-term management, maintenance, and operations of the project.

CALTRANS' ACTIVE TRANSPORTATION PROGRAM

The California State Legislature created the Active Transportation Program to encourage active modes of transportation. Senate Bill 1 (SB 1) stipulates that \$100,000,000 of revenues from the Road Maintenance and Rehabilitation Account will be available annually to the ATP. The ATP consolidates existing federal and state transportation programs, including the Transportation Alternatives Program (TAP), Bicycle Transportation Account (BTA), and State Safe Routes to School (SR2S), into a single program with a focus to make California a national leader in active transportation. Applications are to be submitted typically in July.

CONGESTION MITIGATION AND AIR QUALITY IMPROVEMENT PROGRAM (CMAQ)

CMAQ provides funding to state and local agencies for transportation projects that help meet Clean Air Act objectives. Funded projects must work to reduce congestion and improve area quality in nonattainment or maintenance zones for ozone, carbon monoxide or particulate matter. CMAQ funds can be used for bicycle and pedestrian projects that are included in the metropolitan planning organization (MPO) current transportation plan and transportation improvement program (TIP). Projects can include bicycle and pedestrian facilities that are not exclusively recreational and for outreach related to safe bicycle use. Studies that are part of the project development pipeline (e.g., preliminary engineering) are also eligible for funding. Approximately \$138.5 million is available in Los Angeles County for fiscal years 2016 to 2020. LA Metro offers CMAQ funding to other agencies through the Metro Call for Projects or other Metro Board action.

Continued Community Involvement

The design concepts presented in this Study involve substantial changes to existing conditions including closing streets to vehicular traffic, altering the design of neighborhood roadways, and planting new trees and vegetation. Transformative projects of this scale require thorough, sustained community involvement in the planning process. If the City secures funding for detailed design and implementation of these or similar concepts, additional public outreach will be conducted to ensure the community has opportunities to review and further refine specific project elements, and to ensure that the project addresses the needs and desires of the community.

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- 15 Edmund Waddell and James Alberston, "The Dimondale Mini: America's First Mini-Roundabout," Transportation Research Board, May 2005, http://onlinepubs.trb.org/Onlinepubs/circulars/ec083/28_Waddellpaper.pdf.



Urban Cooling + First/Last Mile Strategies

APPENDICES

SHERMAN WAY STATION | CANOGA PARK, CA

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Appendix A: Existing Conditions Report

I. Introduction

This memorandum details key existing conditions and characteristics of the Canoga Park community near the Sherman Way Orange Line Station. The Urban Cooling Strategies project is focused on improving the safety and comfort of Canoga Park residents' access to the station—both in terms of traffic safety and reducing the health effects of extreme heat—and focuses on the area within a half-mile (10-minute walk) from the station. To facilitate these goals, the project team reviewed three key factors in the study area: equity and demographics; heat-related information; and active transportation information. This memorandum provides a summary of these findings, and is complemented by a review of existing plans and projects in the City of Los Angeles relevant to this work.

Local Context

The Canoga Park neighborhood is located in the western portion of the San Fernando Valley (see **Map 1**). Originally founded in 1912 as the town of Owensmouth, Canoga Park joined the City five years later and gained its current name in 1931.¹ Previously a small agricultural community, Canoga Park is now an L.A. suburb and home to over 60,500 people.² Running through the heart of Canoga Park, Sherman Way is the community's main street and commercial hub. Since 2005, the community has been served by the Los Angeles County Metropolitan Transportation Authority's (Metro) Orange Line Bus Rapid Transit (BRT) busway. At the center of the community is the Sherman Way Station, with more than 2,000 passengers boarding or alighting at the station each day (see **Map 2**). The Orange Line BRT connects the San Fernando Valley to Metro's Red Line at the North Hollywood Station 13 stops east of the Sherman Way Station. A Class I separated bike and pedestrian trail runs parallel to the Orange Line route throughout the area.

Cut off from cooling sea breezes by the Santa Monica Mountains, much of the San Fernando Valley experiences warmer temperatures than not just other undeveloped parts of the region, but also other developed areas of the Los Angeles region. The heat island effect causes urban areas—replete with impermeable, dry, and dark surfaces compared to rural surroundings—to experience higher surface temperatures throughout the day, and to retain heat into the night.³ Parks, open land, vegetation, and bodies of water help mitigate heat in developed areas, which can be more than 5 degrees Fahrenheit warmer

¹ “Canoga Park: A History,” Canoga Park and West Hills Chamber of Commerce, accessed March 27, 2019, <https://www.cpwhchamber.org/community/canoga-park-a-history/>.

² “Canoga Park,” Los Angeles Times, accessed March 27, 2019, <http://maps.latimes.com/neighborhoods/neighborhood/canoga-park/>.

³ EPA, “Learn About Heat Islands,” accessed April 15, 2019, <https://www.epa.gov/heat-islands/learn-about-heat-islands>.

Map 1. Project Location



Existing Transit Routes

- Orange Line Busway
- Metro Blue Line
- Metro Expo Line
- Metro Gold Line
- Metro Green Line
- Metro Red Line

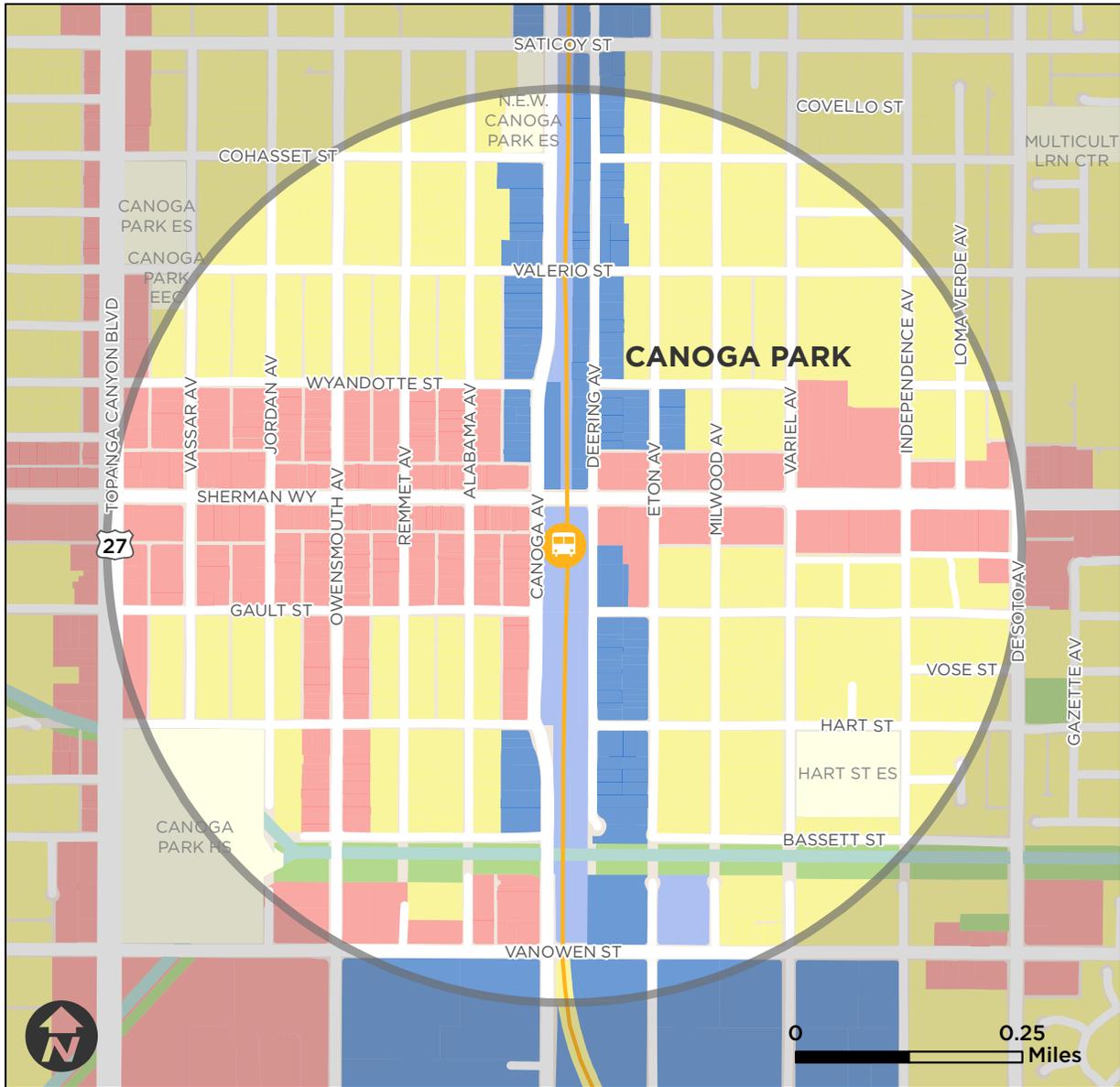
----- County of Los Angeles Boundary

- - - - - City of Los Angeles Boundary

Sherman Way Station



Map 2. Study Area



Land Use

- | | |
|--|--|
|  Residential |  Sherman Way Station |
|  Commercial |  Orange Line Busway |
|  Public Facilities |  Park |
|  Industrial/Manufacturing |  Los Angeles River |
|  Open Space |  Half-Mile from Station |



than surroundings. Canoga Park already experiences the negative effects of heat islands, and is expected to experience increasingly frequent extreme heat days in the coming decades.

The lack of cool winds from the Pacific Ocean exacerbates the heat island effect in the valleys of the Los Angeles region, making places like the San Fernando Valley significantly hotter than nearby coastal communities. In July of 2018, Canoga Park was frequently 15 to 20 degrees Fahrenheit warmer than Santa Monica, although the communities are just 15 miles apart.⁴ That summer, Southern California experienced one of the worst heat waves in history, setting all-time temperature highs in multiple communities across the region. Due to overheated and overburdened electrical equipment, tens of thousands of Los Angeles residents lost power. Nearly 27,000 were still without electricity two days after the “heat storm,” and were forced to combat triple-digit temperatures without air conditioning, fans, or refrigerators.⁵ Monitoring equipment in Woodland Hills, a neighborhood immediately south of Canoga Park, recorded 118 degrees Fahrenheit on July 6, 2018.⁶ Such temperatures can be fatal, particularly for individuals under 18 and over 65 years of age. In a stark reminder of the potential health threats presented by extreme heat, U.S. Postal Service employee, Peggy Frank, died from hyperthermia while working her route in Woodland Hills that same day, prompting the introduction of a congressional bill to require air conditioning in all Postal Service vehicles.⁷

The heat wave of July 2018, scientists predict, is the “new normal.” A study published in 2015 forecasted that the number of days of extreme heat—where temperatures reach at least 95 degrees Fahrenheit—will continue to increase. While downtown Los Angeles is predicted to experience 22 days of extreme heat by 2050, and 54 days by 2100, the San Fernando Valley is predicted to have 100 to 150 Extreme Heat Days each year by 2100.⁸ This equates to one-third of a year spend in temperatures over 95 degrees Fahrenheit. The same study identifies a reduction in carbon emissions as a key way to reduce these effects by as much as half.

One of the most effective ways to reduce emissions is to drive less. Making it easier for residents to walk, bike, and utilize transit helps encourage mode shift towards more environmentally-friendly travel options and therefore mitigates climate impacts. However, when temperatures reach “extreme” levels, outdoor activities become dangerous. Waiting for the Orange Line, biking to Quimby Park, or walking down Sherman Way in 110-degree weather is not simply uncomfortable—it could be deadly. Pollution-caused heat may even push residents to drive more, further escalating the problem and necessitating additional adaptation strategies to make living in a community possible. This Study aims to address climate impacts and transit access in Canoga Park, focusing on the area within a 10-minute walk (half-mile) from the Sherman Way Station and offering recommendations so that people can more easily and comfortably access transit in their community.

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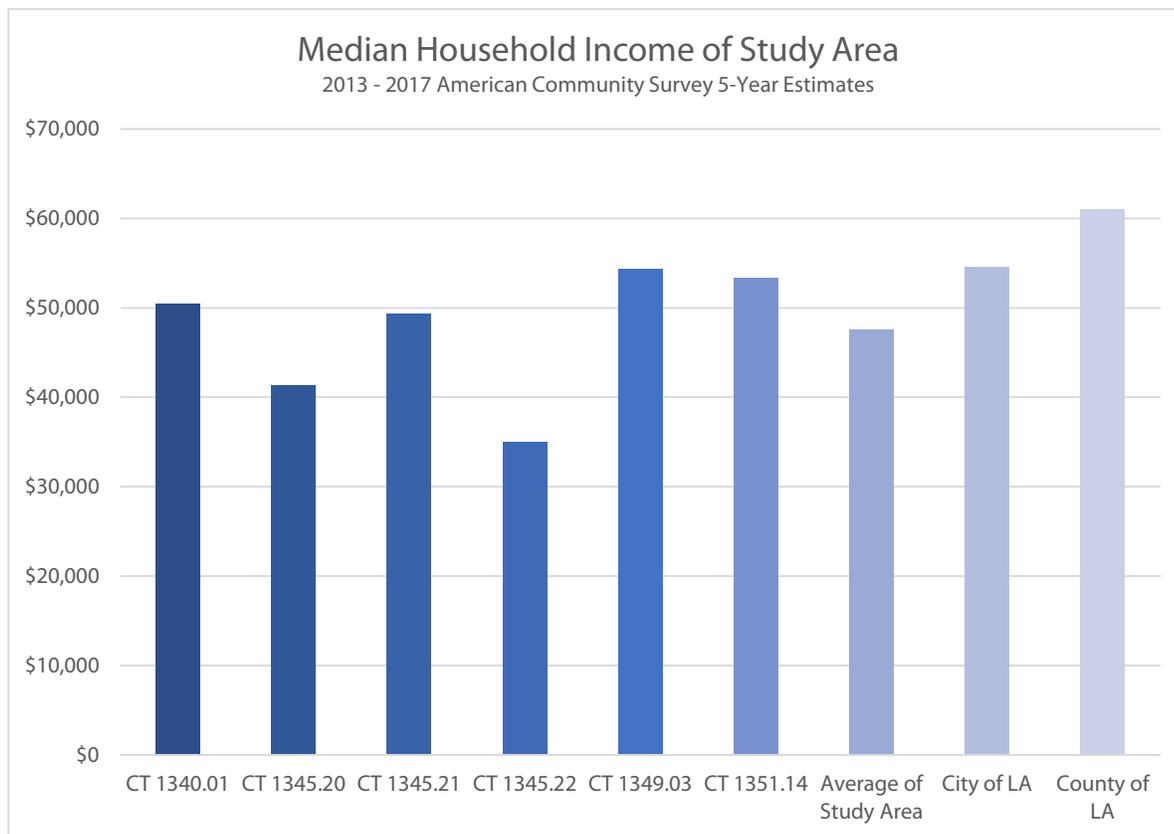
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II. Equity & Demographics

The project’s study area encompasses five census tracts and consists of approximately 28,000 residents. The residents in the study area generally have lower incomes, are more likely to be renters, and are less likely to have access to a vehicle than their counterparts in other areas of the City and County. The study area’s population has more people under 18, but fewer people over 65 than other census tracts in the City and County. Combined, these factors indicate that because of the low number of home owners and median household incomes, the residents of Canoga Park are more likely to be at risk of displacement. These population indicators are an important consideration as the project makes recommendations, since improvements may be likely to attract attention from speculative development which may increase economic and housing insecurity for the existing residents. In order to prevent the potential for economic pressure to increase displacement of low-income households, improvements should be focused on increasing the livelihood, safety, and comfort of existing residents—rather than focusing on the needs of potential future residents. A detailed description of the demographics follows.

Among these residents, the average median household income is \$47,580, which is \$7,000 less than the median household income for the entirety of the City of Los Angeles, and over \$13,000 less than that of the County (see **Figure 1**).⁹ None of the census tracts have median household incomes that exceed the City average—much less that of the County.

Figure 1. Median Household Income of Study Area, City, County, and State



⁹ United States Census Bureau, “2013-2017 American Community Survey 5-Year Estimates,” accessed March 27, 2019, <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>.

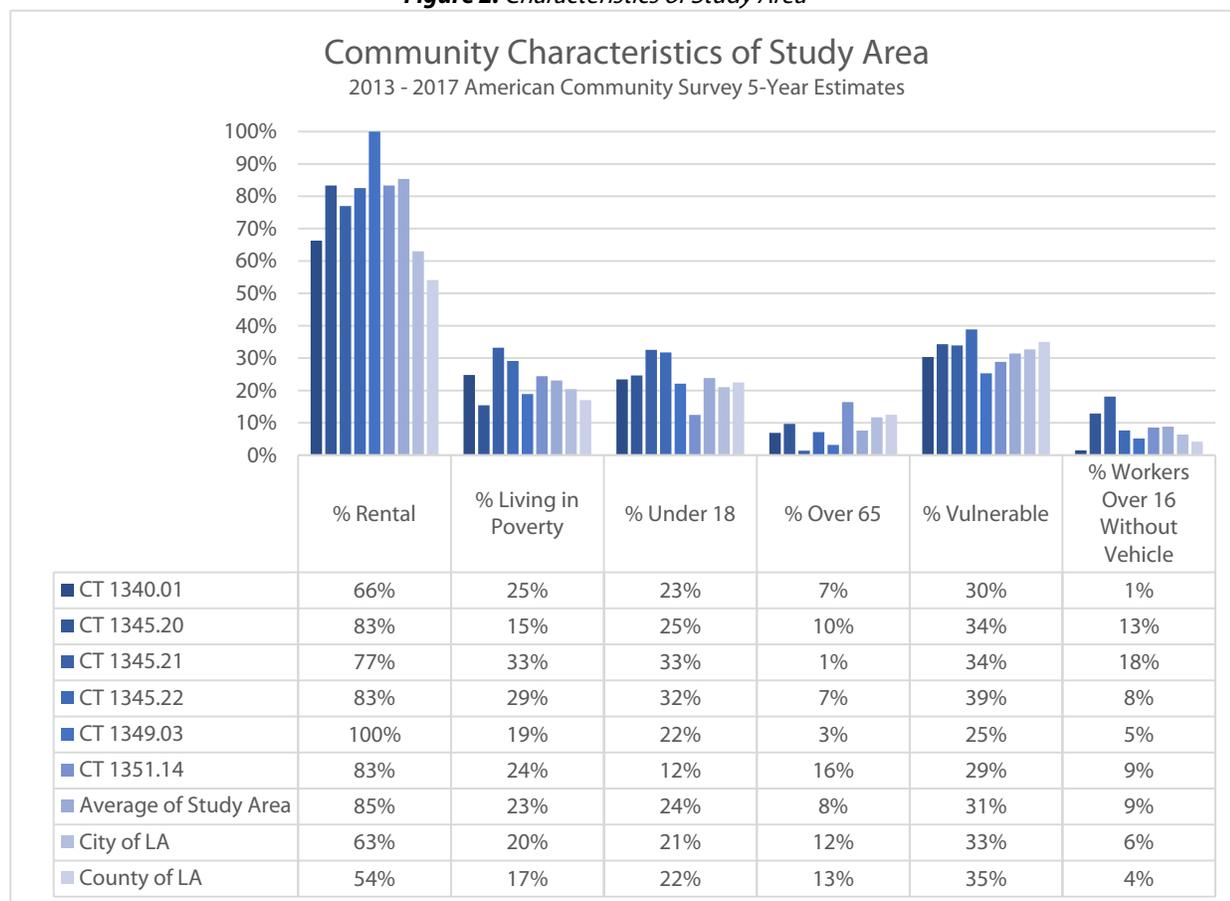
Analysis of additional community characteristics of the study area¹⁰ (see **Maps 3 – 6**) show a community that is at risk of displacement due to socio-economic factors. The study area has a higher percentage of renter-occupied households than the City, County, or State averages—especially Census Tract 1349.03, which is comprised entirely of renter-occupied households. However, this census tract also boasts the highest median household income in the study area, and one that is only \$150 less than the median household income of the City.

On average, there is a higher percentage of people living below the poverty line in the study area (23%) than in the City or County (20% and 17%, respectively). In general, the study area has a slightly higher percentage of people under 18 years of age (24%) than what is typically found throughout the City (21%) or County (22%). Youth are particularly prevalent in the northern portion of the study area. Conversely, the highest percentage of population over the age of 65 is found in the southern edge of the study area, or Census Tract 1351.14. While 16% of the population in that Census Tract are over 65, the average for the study area is only 8%—two-thirds the averages of the City and County (12% and 13%, respectively).

Nine percent of the work-eligible population (over the age of 16) in the study area do not have access to a vehicle, and must utilize other means of transportation for their commutes. This is significantly higher than the rest of City and County (6% and 4%, respectively). Of note, the proportion of workers who do not have access to a vehicle in Census Tracts 1345.20 and 1345.21 are extremely high (13% and 18%, respectively), which is more than double and triple the City's average.

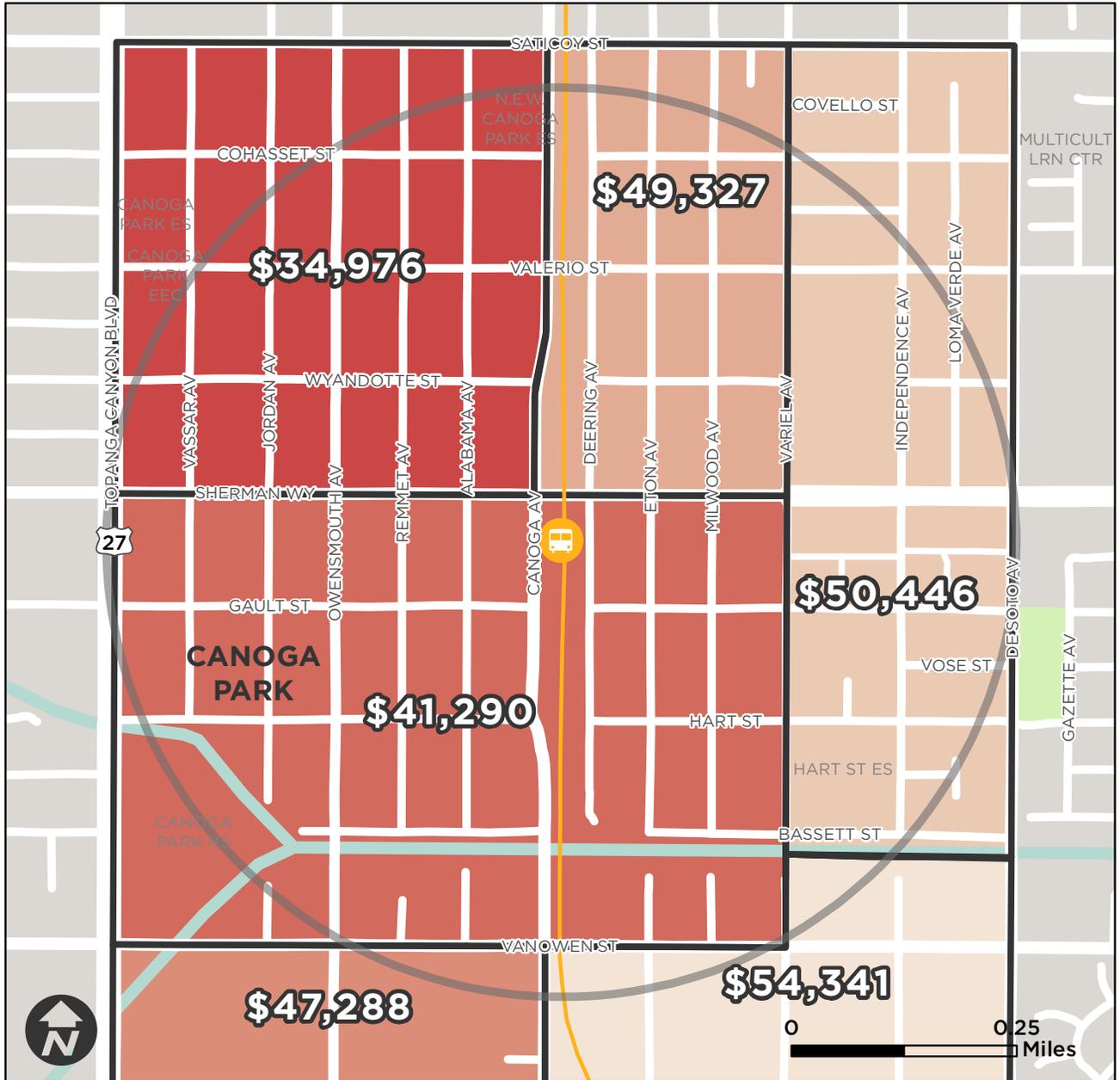
¹⁰ Ibid.

Figure 2. Characteristics of Study Area



In order to identify which tracts are the most disadvantaged or the greatest risk for displacement and least equitable, a Composite Inequity Score was created (**Figure 3**). This score was created by adding four data points found in Figure 2: percent renters, percent living in poverty, percent of vulnerable population, and percent of workers without access to a vehicle. Combining these four percentages could achieve a total score of 4.0, and the City of Los Angeles average was calculated at 1.22 and the County average was 1.10. The study area's average was 1.45, with all census tracts having a higher rate of inequity than both the City and County averages. This Composite Inequity Score shows that the study area is more at risk for displacement than the average of the city and should inform decision-making processes throughout the project. These concepts are laid out in detail in the Equity Framework, found later in this document.

Map 3. Median Household Income by Census Tract within Half Mile of Sherman Way Station

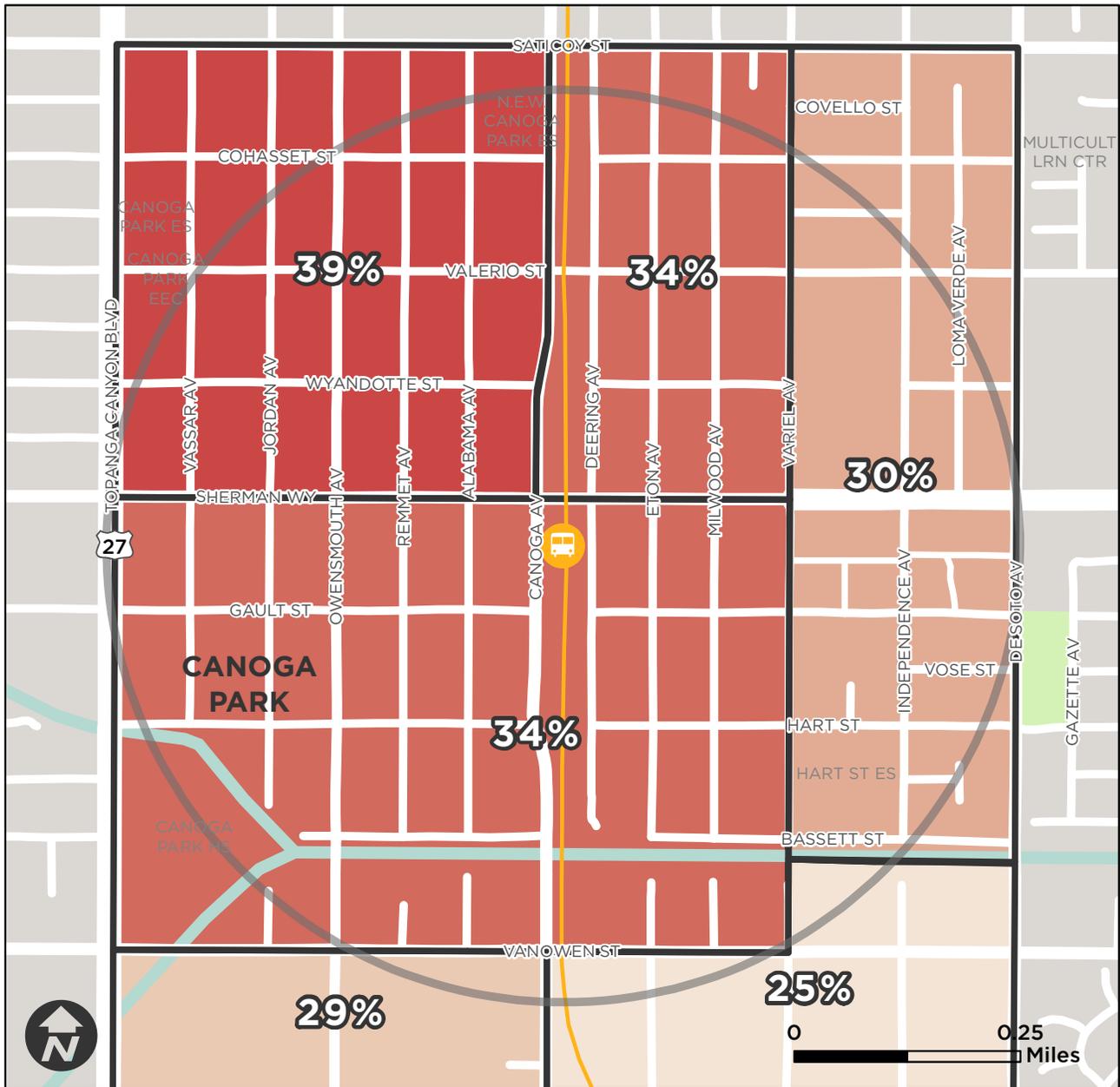


Median Household Income



Map 4. Vulnerable Population

Percent of People Under 18 or Over 65

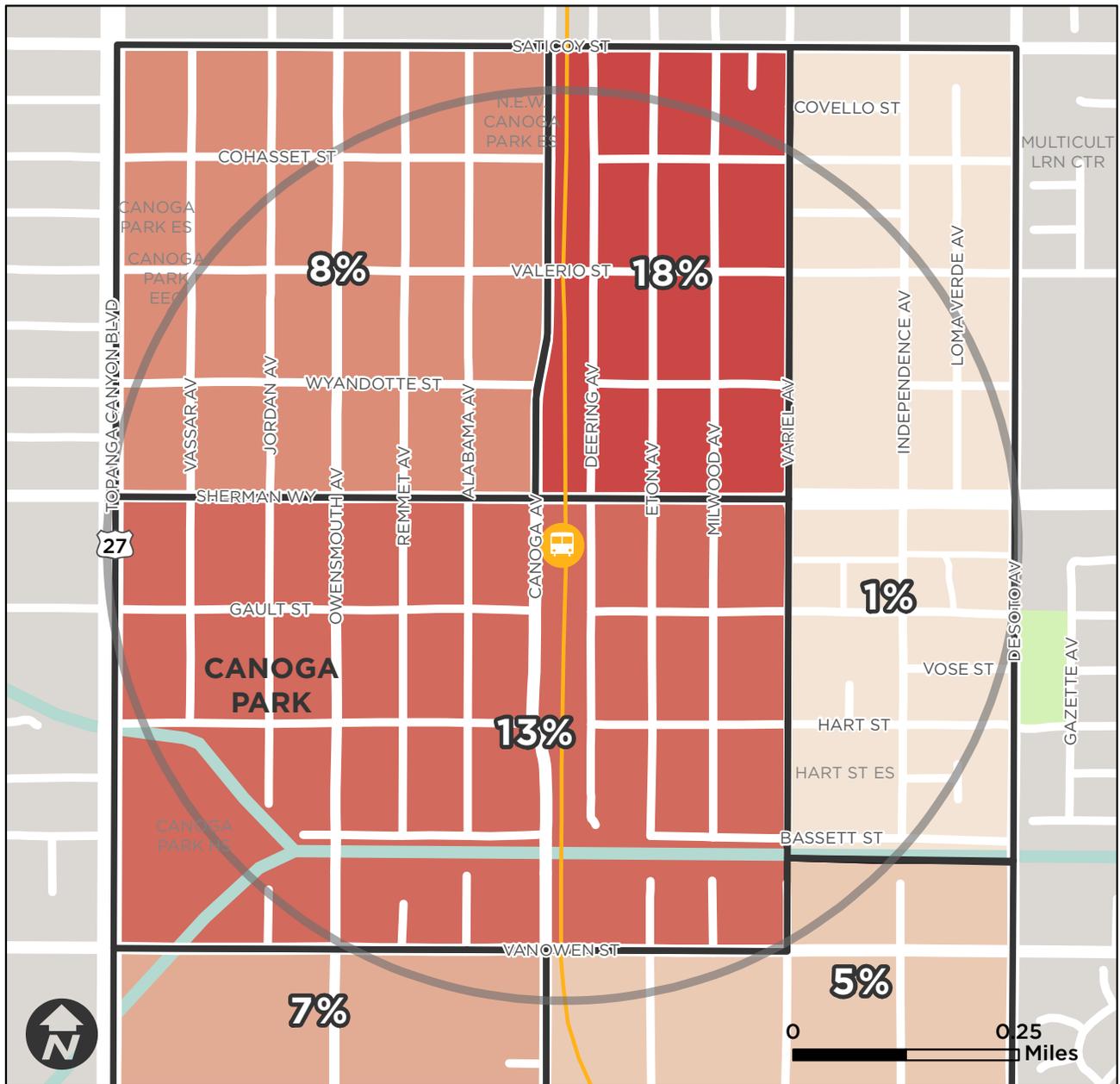


Vulnerable Population



Map 5. No Vehicle Access

Percent of Workers without Access to Vehicle

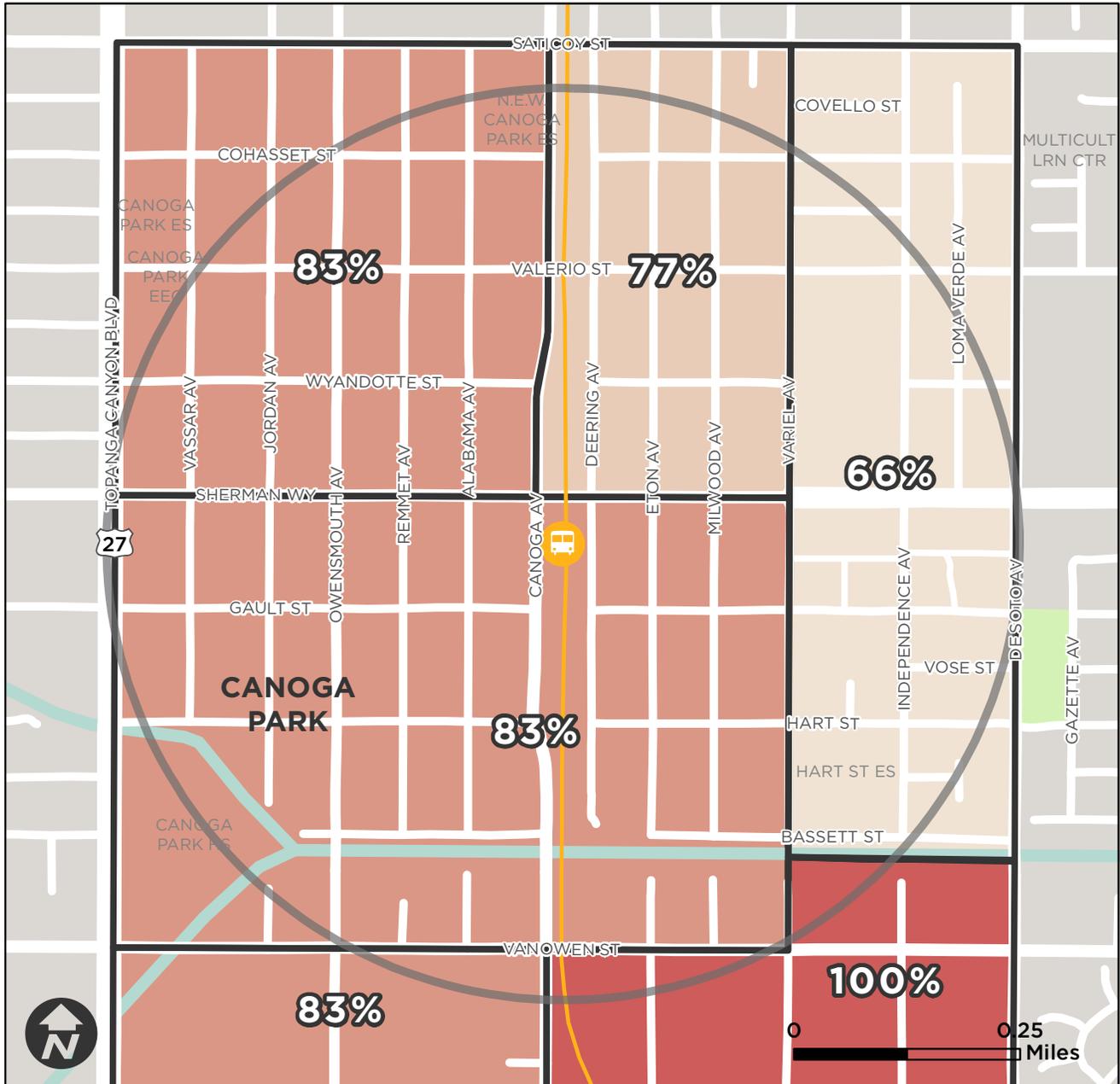


Workers Without Vehicles



Map 6. Renter-Occupied Households

Percent of People who Rent Housing Rather than Own



Renter-Occupied Households

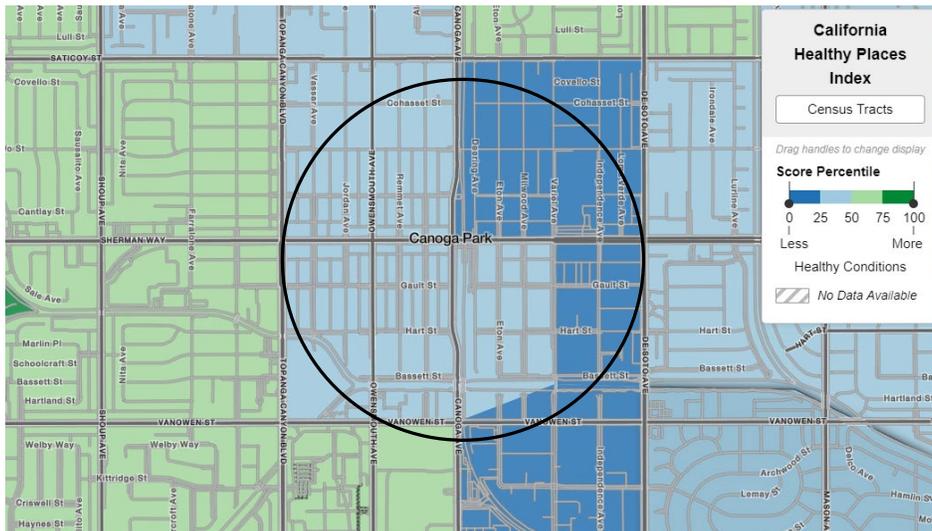


Figure 3. Composite Equity Score

Location	Composite Equity Score (Highest Possible Risk: 4.0)
1340.01	1.23
1345.20	1.46
1345.21	1.62
1345.22	1.58
1349.03	1.49
1351.14	1.45
Average of Study Area	1.49
Average of City of LA	1.22
Average of County of LA	1.10

Lastly, the project team reviewed the health indicators of the study area using existing data sources. The California Healthy Places Index (HPI) aggregates a collection of 25 conditions that predict life expectancy and allows users to see how existing conditions for health intersect with areas of climate risk (such as wildfire risk) and strategies for resilience (tree canopy). The HPI can be used to compare the relative health impacts of living in different locations throughout California while informing and driving policy decisions. The characteristics taken into account for the HPI analysis include social equity, healthcare access, economic, educational, housing, transportation, and environmental factors such as air and water pollutants. The higher the rating, the healthier the community conditions are. The HPI for the five census tracts in the study area averages to the 26th percentile; however, when removing census tract 1351.14—which has an HPI in the 50th percentile, but is only partly in study area—the HPI decreases to the 21st percentile, making it overall a community of concern (see **Figure 4**).¹¹

Figure 4. Healthy Places Index of Study Area



¹¹ Public Health Alliance of Southern California, “The California Healthy Places Index (HPI),” accessed March 28, 2019, <https://map.healthyplacesindex.org/>.

Equity Framework

Given the demographics of this area, it is essential that the project team recognizes the potential that improvements to the public realm can increase risks of displacement of existing residents and works to support the existing residents' right to remain in their community. As housing costs continue to rise across Southern California, existing households (especially renters and working-class families) face the very real threats of unaffordable housing options, which could lead to losing contact with the community they depend on. As this project moves forward, the project team must work to identify potential threats to community cohesion and seek a wide array of opinions on any recommendations or concepts in this project.

The American Community Survey estimates that 55% of residents in the study area speak Spanish at home, making bilingual outreach and communication of project information a crucial and necessary step for equitable participation of community members.¹² Public events will be conducted in both Spanish and English and public-facing materials will be translated into Spanish. Feedback in both languages will be used to shape the project.

Events will be held at community centers that are welcoming for all people, at days and times that allow people of differing work schedules to attend and will be complemented by outreach events across the community to further create opportunities for input. Activities for children and healthy snacks will be provided to make it easier for families to attend.

Lastly, the project recommendations will be shaped by—and designed for—the existing residents of Canoga Park. Too often, public projects are designed to attract new development and appeal to future hypothetical tenants, rather than serving the people who have called the areas home before the project began. The project team will strive to prioritize the needs of existing residents and identify ways to not only improve their safety and comfort and health, but to improve community access to public resources and create a healthier, more sustainable, and more inclusive community.

¹² United States Census Bureau, "2013-2017 American Community Survey 5-Year Estimates," accessed April 15, 2019, https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_17_5YR_S1601&prodType=table; in comparison, an average of 7% of City residents and 5.3% of County residents speak Spanish at home.

II. Built + Natural Environmental Conditions

Current conditions around the Sherman Way Station are challenging for walking and cycling due to large, busy roadways and a discontinuous network of sidewalks and bikeways. Much of the properties near the station are zoned for commercial and light industrial use, with commercial corridors along the main east-west and north-south corridors through the study area. Off of the main streets, much of the study area is zoned for medium and low medium residential uses and consists of single-family homes and multi-family properties (see **Map 2**). This land use pattern reduces the number of people who live and/or work within walking distance of the Station compared to more densely-populated areas of Los Angeles.

The Environmental Protection Agency (EPA) estimates that trees and shade structures can cool surfaces by as much as 45 degrees Fahrenheit, making them an important tool in combatting the heat island effect and extreme heat.¹³ Trees not only reduce outdoor temperatures of streets and sidewalks, but also help reduce the need for air conditioning in nearby buildings. Together with cool pavement, which uses light-colored surfaces to reflect the sun's rays and can help reduce surface temperatures by 30 degrees Fahrenheit, trees are an instrumental tool in mitigating heat and reducing households' carbon footprints.¹⁴

However, trees remain a vulnerable part of the urban landscape. While tree canopy is essential to the health and wellbeing of the community, 90% of the urban forest in the City of Los Angeles is on private land—leaving only 10% within public control.¹⁵ According to estimates by the U.S. Forest Service, 129 million trees have died in California due to conditions caused by climate change, drought, and pests since 2010,¹⁶ making it imperative to identify opportunities to increase shade coverage across California and in the study area. To that effect, the project team used data from the National Land Cover Database (NLCD) to conduct a tree canopy analysis of Canoga Park. Using 2011 imaging data presented at the census-block level, it is estimated that approximately 5% of the study area is covered by the existing tree canopy (see **Figure 5**).¹⁷ The study area has noticeably lower rates of tree canopy coverage than neighboring communities; parts of the adjacent West Hills neighborhood boast 8% coverage, while other parts of Woodland Hills enjoy 15% tree canopy coverage.

¹³ Environmental Protection Agency, "Using Trees and Vegetation to Reduce Heat Islands," accessed March 27, 2019, <https://www.epa.gov/heat-islands/using-trees-and-vegetation-reduce-heat-islands#1>.

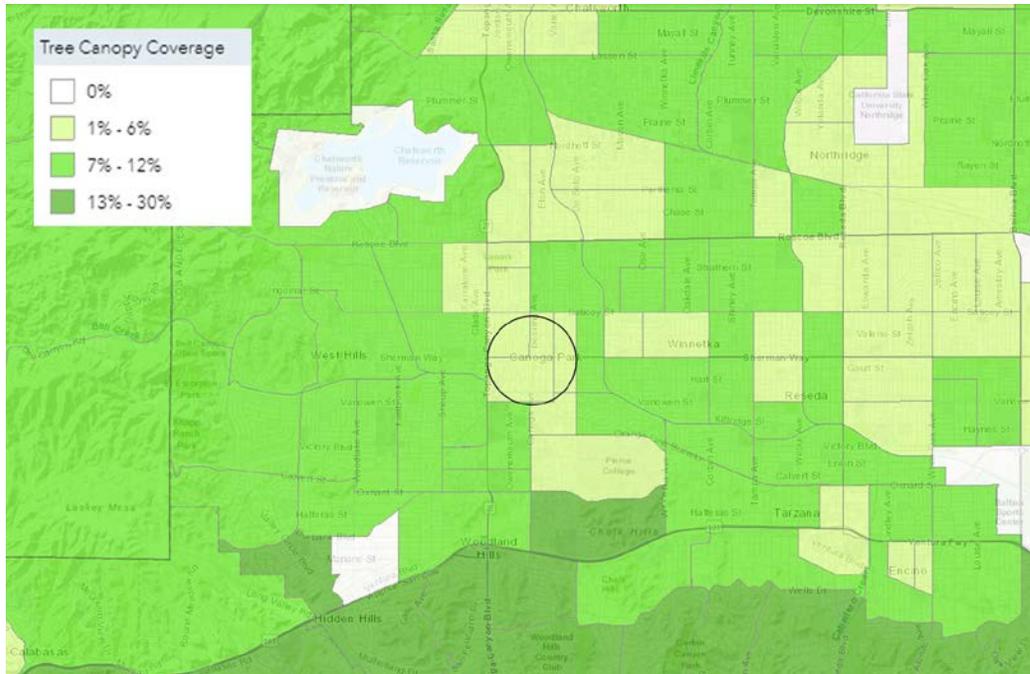
¹⁴ GuardTop, "Cool Seal," accessed April 15, 2019, <https://guardtop.com/coolseal/>.

¹⁵ City Plants, 2018, "First Step: Developing an Urban Forest Management Plan for the City of Los Angeles," http://www.cityplants.org/wp-content/uploads/2018/12/10939_LA-City-Plants_FirstStep_Report_FINAL_rev12-7-18.pdf.

¹⁶ U.S. Forest Service, "Tree Mortality in California," accessed April 15, 2019, https://www.fs.fed.us/psw/topics/tree_mortality/california/index.shtml.

¹⁷ SCAG, "Active Transportation Database," accessed April 9, 2019, <https://maps.scag.ca.gov/ATDB/>.

Figure 5. Tree Canopy Coverage at Census-Tract Level for Western San Fernando Valley

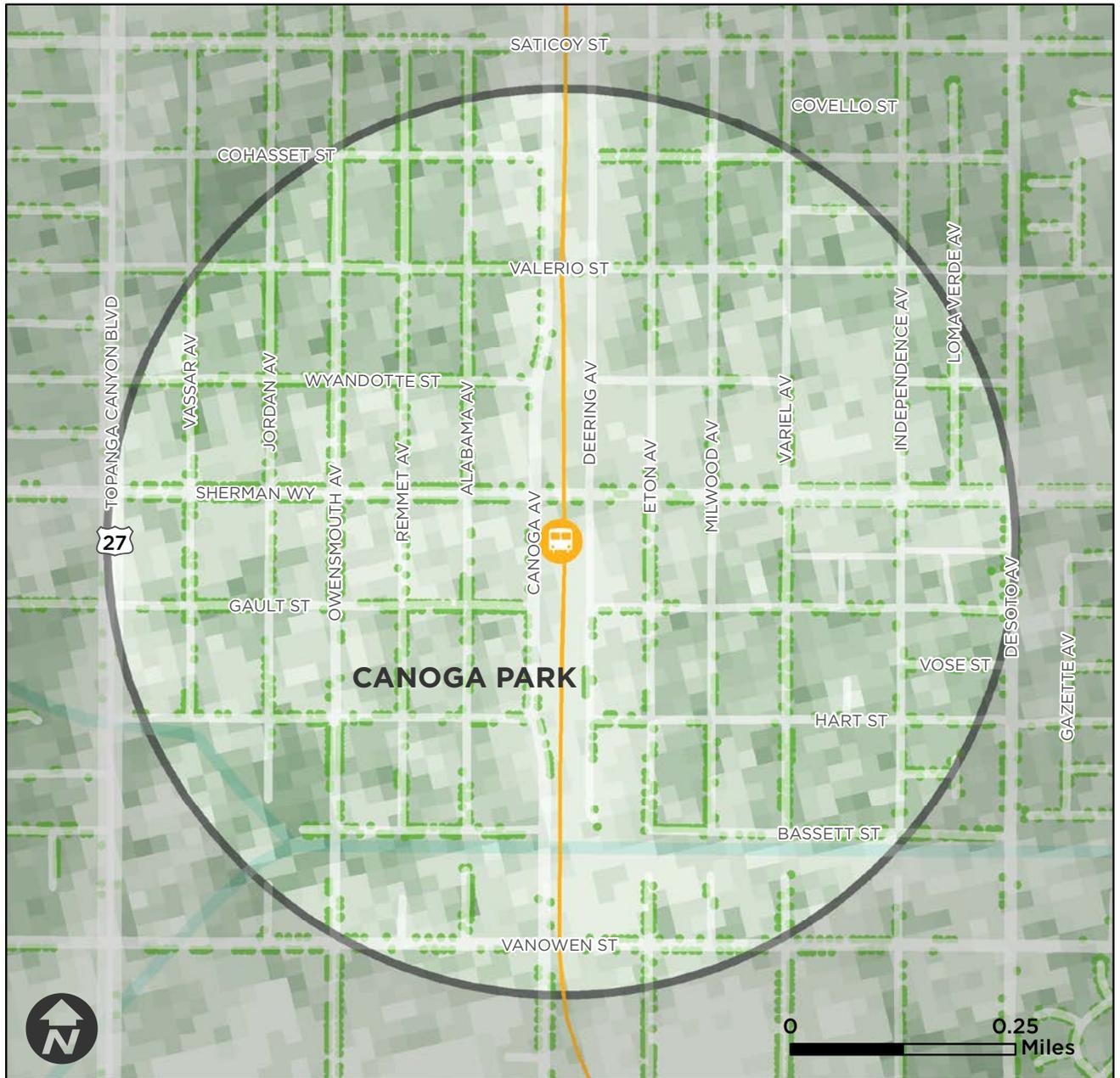


When analyzed at a 90-square meter level, the NLCD data demonstrates much of the tree coverage in the study area is concentrated away from the main corridors and Sherman Way Station, and instead is more frequently located on residential streets (see **Map 7**). However, given the age and limited granularity of this data set, it is important to understand these findings as a general indication of recent coverage in the community, rather than definitive snapshot of present-day conditions. A preliminary audit of street-level conditions of the area surrounding the Sherman Way Station likewise indicates very little shade cover exists on the main corridors, corroborating these findings and further intensifying already unpleasant walking and biking conditions in the study area during days of high temperatures (see **Photos 1 – 6**).

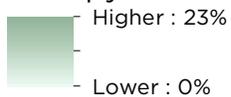
Photos 1-8. Street Conditions Near the Sherman Way Station:

1. *Intersection of Sherman Way and Canoga Avenue looking west.*
2. *Crossing the Orange Line busway on the north side of Sherman Way looking east.*
3. *View of Sherman Way east of the Sherman Way Station.*
4. *View of Deering Avenue from Valerio Street.*
5. *Class I trail parallel to the Orange Line runs behind a shopping center on the north side of Sherman Way.*
6. *Further north on the Orange Line pedestrian and bike path features landscaped buffers and street trees.*
7. *Pedestrians headed north on Jordan Avenue towards Wyandotte Street.*
8. *Street trees shade Jordan Avenue from the afternoon sun.*

Map 7. Tree Canopy Coverage in Study Area



Canopy Coverage



• Trees



Sherman Way Station



Orange Line Busway



Los Angeles River



Half-Mile from Station

Canopy data: National Land Cover Database
Tree data: City of Los Angeles BSS



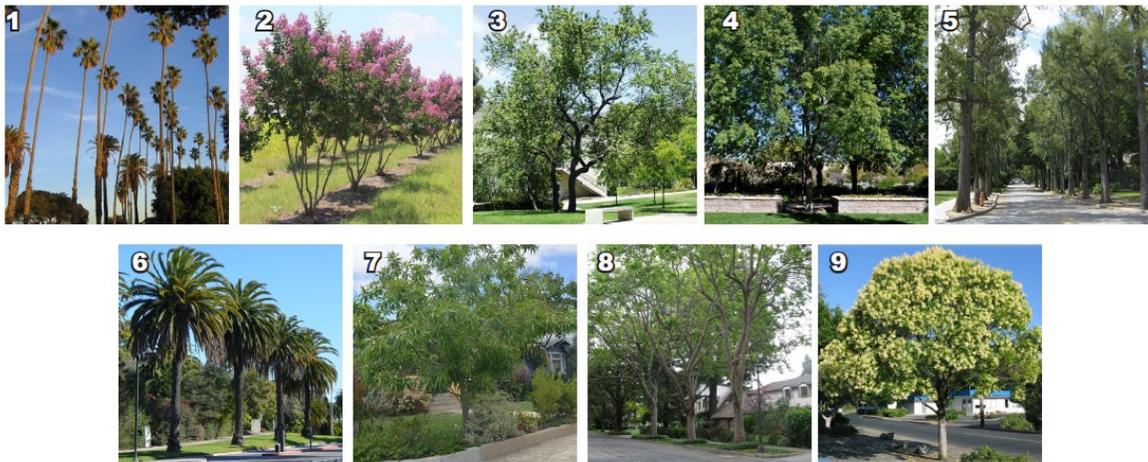




StreetsLA (formerly the Bureau of Street Services and part of the City’s Department of Public Works) maintains a database of all street trees in the City. According to their most recent data set, there are almost 1,700 trees in the study area. However, almost 30% of all trees lack identifying information such as species name or description. Of the 1,229 trees in the study area identified by species and planting location, an additional 70 are vacant tree wells or dead trees, while 271 are a type of palm. The most frequent species of trees in the study area is a Mexican Fan Palm (*Washingtonia robusta*; see **Figure 6**); known for growing to reach 70 to 100 feet, Mexican Fan Palms offer little and unreliable shade coverage for the sidewalks they serve. Thus, only 52% of trees accounted for in StreetsLA’s dataset are known to substantially contribute to the tree canopy in the study area.

Figure 6. Most Common Tree Species Found in Study Area and Corresponding Images

Rank	Common Name	Species Name	Count	Shade Provided
1	Mexican Fan Palm	<i>Washingtonia robusta</i>	209	Low
2	Crape Myrtle	<i>Lagerstroemia indica</i>	183	Low
3	Evergreen Pear	<i>Pyrus kawakamii</i>	75	Medium
4	Modesto Ash	<i>Fraxinus velutina 'Modesto'</i>	54	High
5	River She-Oak	<i>Casuarina cunninghamiana</i>	47	Medium
6	Canary Island Date Palm	<i>Phoenix canariensis</i>	40	Low
7	Chitalpa	<i>Chitalpa tashkentensis</i>	39	Low
8	London Plane Tree	<i>Platanus x hispanica</i>	37	High
9	Glossy Privet	<i>Ligustrum lucidum</i>	35	High



Some of the area includes concrete streets which tend to have more of a cooling effect than black asphalt streets, but often present additional challenges for improvements due to their old age and difficulties repairing cracks or potholes. The Berkeley Lab Heat Island Group provides a map that analyzes the solar reflectance of existing roofs, and their interactive map shows a relatively low albedo (or reflectivity) for many of the roofs in the area. The southwestern portion of the study area appears to have fewer very-low-albedo roofs compared to the other areas.¹⁸ Aerial images also suggest that many lighter-colored roof and street surfaces (such as concrete) exist, helping increase reflectivity of solar rays and diminish heat absorption.

Other heat-reducing measures also exist in the community, including at least two installations of cool pavements. In May of 2017, the City applied a high-albedo pavement seal on a half block of Jordan Avenue, just north of Hart Street near the headwaters of the Los Angeles River and less than a half-mile southwest of the Sherman Way Station. Installed the morning of the first heat wave of 2017, the light gray pavement read 23 degrees Fahrenheit cooler than nearby black asphalt within minutes of being installed.¹⁹ Five blocks north, the Emerson Unitarian Universalist Church converted their surface parking lot into a cool pavement facility less than three months afterwards. The team is working with the church to document any noticed improvements or reactions to the installation.

Interventions similar to these facilities will become increasingly important in the future. In addition to the study published in 2015, which predicted drastic increases in days of extreme heat in the San Fernando Valley, other sources likewise predict this trend will worsen. Cal-Adapt, a web-based tool designed to provide access to scientific data and offer a view of how climate change might affect California at the local level, models the number of extreme heat days by year for any region in the state. According to the data, the Canoga Park area experienced on average 36 days of extreme heat—in which temperatures surpassed 95 degrees Fahrenheit—annually from 1961 to 2005. The model projections, however, anticipate an average of 110 such days will occur each year in the Canoga Park community between 2070 and 2099 (**Figure 7**). The annual mean temperature for this area, which from 1961 to 2005 was 78.7 degrees Fahrenheit, could increase to 84.4 degrees in 2070 if emissions peak around 2040, or to 87.1 degrees if emissions continue rising strongly and only begin to plateau in 2100 (**Figure 8**).²⁰

¹⁸ Berkeley Lab Heat Island Group, “Warm Roofs Hot Cities,” accessed April 5, 2019, <https://albedomap.lbl.gov/#1>.

¹⁹ Dana Bartholomew, “‘Cool Pavement’ to Cut Urban Street Heat Gets First California Tryout in Canoga Park,” *Los Angeles Daily News*, May 20, 2017, <https://www.dailynews.com/2017/05/20/cool-pavement-to-cut-urban-street-heat-gets-first-california-tryout-in-canoga-park/>.

²⁰ Cal-Adapt, “Extreme Heat Days & Warm Nights,” accessed March 28, 2019, <http://cal-adapt.org/tools/extreme-heat/>.

Figure 7. Cal-Adapt Projections of Extreme Heat in Canoga Park

This chart shows number of days in a year when daily maximum temperature is above the extreme heat threshold of 95 °F. Data is shown for Grid Cell (34.21875, -118.59375) under the RCP 8.5 scenario in which emissions continue to rise strongly through 2050 and plateau around 2100.

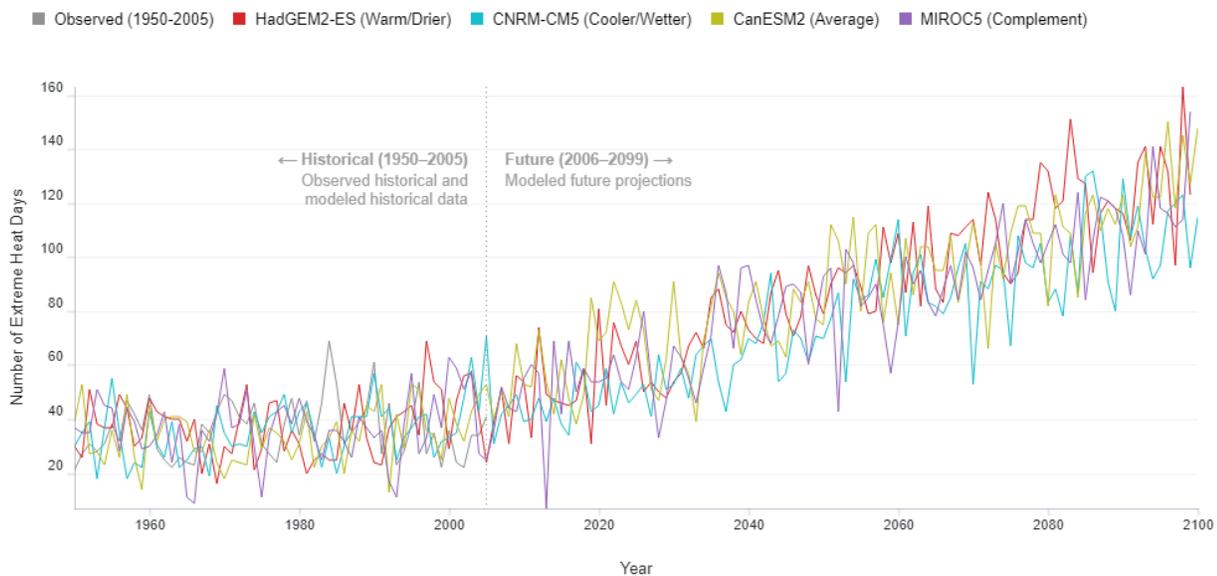
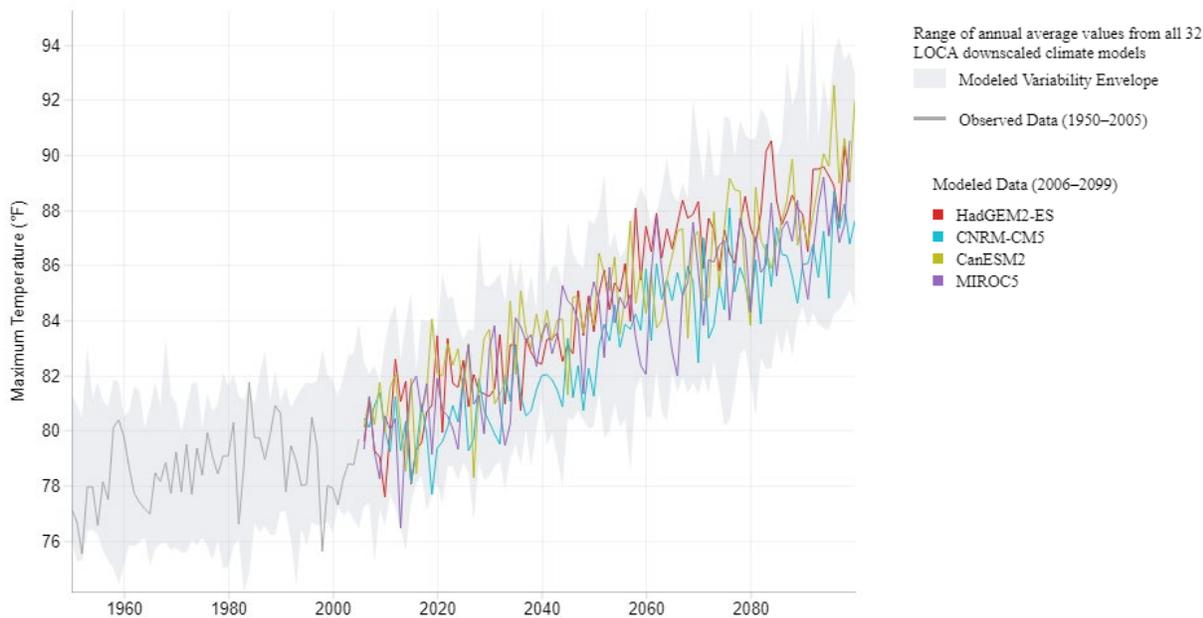
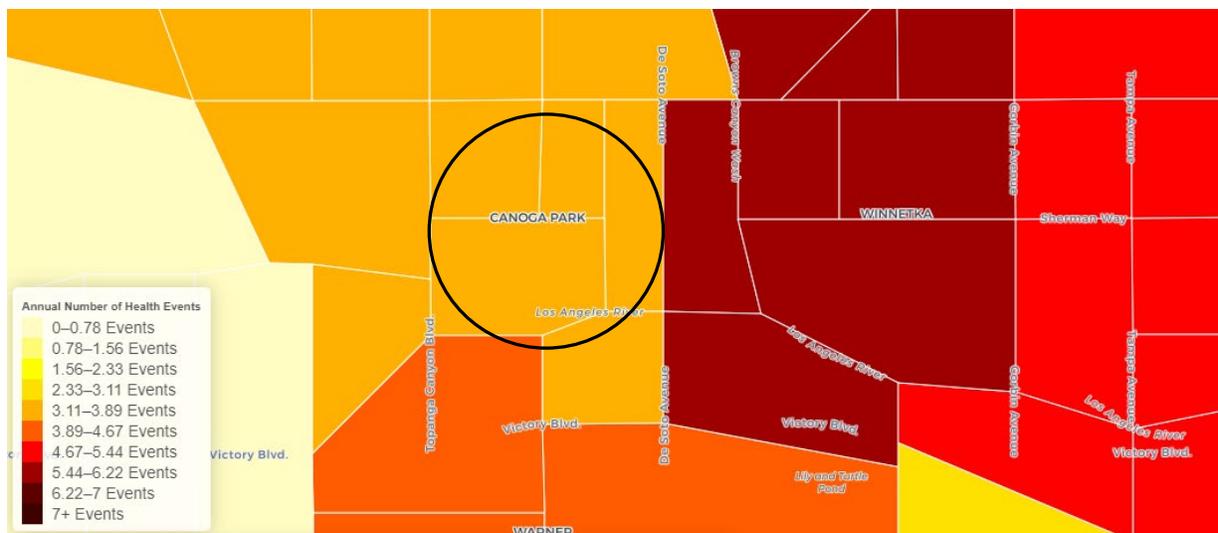


Figure 8. Cal-Adapt Projections of Annual Average Temperatures in Canoga Park



The California Heat Assessment Tool (CHAT) was developed to better understand and illustrate dimensions of heat vulnerability driven by climate changes and where action can be taken to mitigate the public health impacts of extreme heat in the future. CHAT documents historical Heat Health Events (HHEs), or any event that results in negative public health impacts regardless of absolute temperature, by pairing daily meteorological data with emergency department visitation data, and uses models to predict their likelihood in the future. Currently, CHAT estimates that the Canoga Park area experiences 0.15 HHE annually. However, by 2041, this will increase to 0.9 HHE annually; and by 2081, residents may even experience 3.4 HHE each year (**Figure 9**).²¹ Surrounding neighborhoods are projected to fare even worse, particularly those east and south of Canoga Park (e.g., Winnetka, Reseda, and Woodland Hills).

Figure 9. CHAT Projections of HHE in Canoga Park from 2018 – 2099



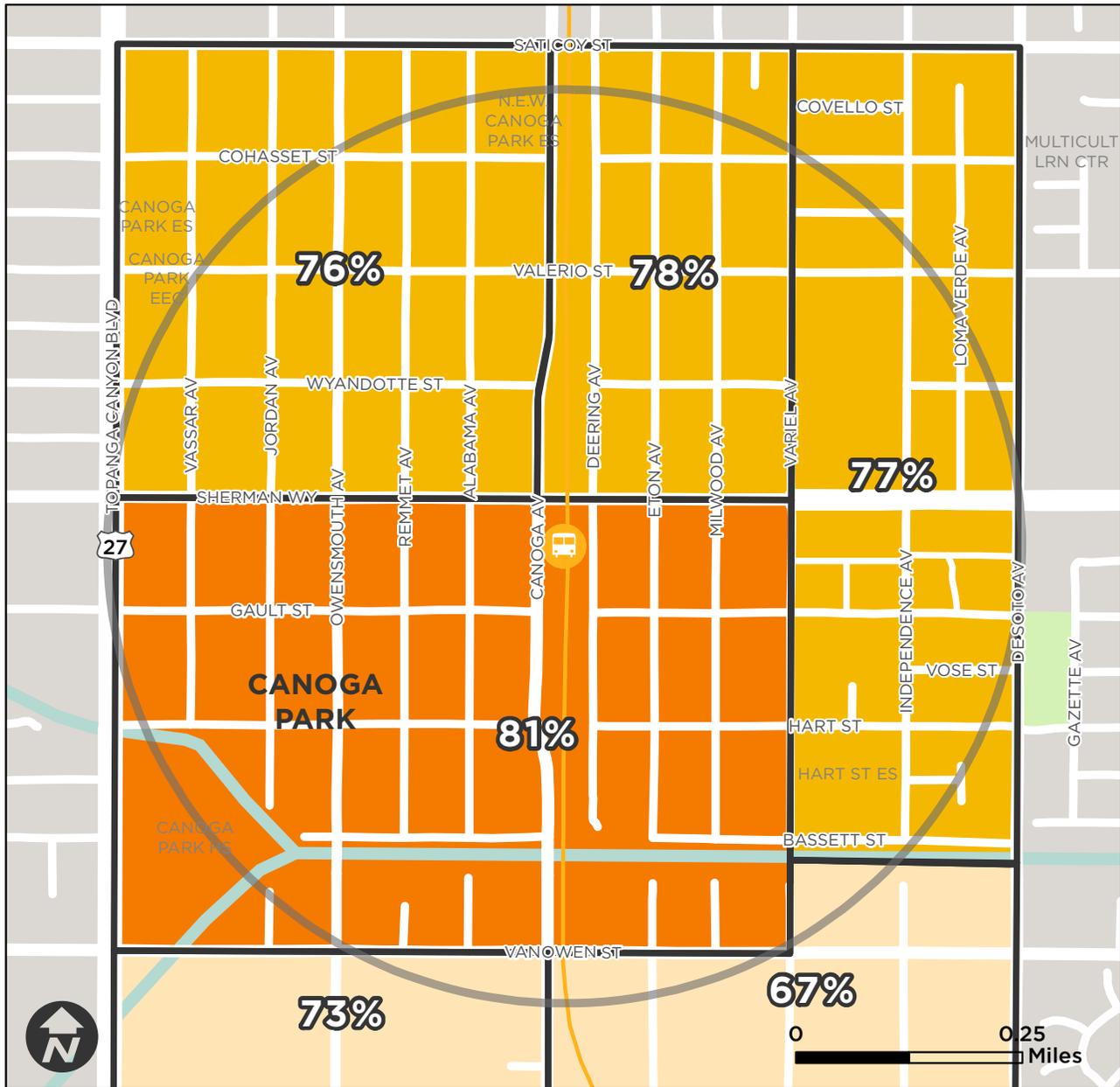
The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to help identify communities that are disproportionately burdened by multiple sources of pollution. It combines pollution data (such as ozone concentrations and drinking water contaminants) with population indicators (such as birth weight and educational attainment), and is used in California’s Active Transportation Program grant application scoring. Communities that score in the highest 25 percent of the state are considered to be disadvantaged and receive a small advantage in the competitive funding process. The area around the Sherman Way Station experiences a relatively high pollution burden, with most of the study area falling in the 75th to 85th percentiles, and is therefore classified as disadvantaged (see **Map 8**).²² The census tract immediately south of the station bears the most pollution burden of census tracts in the study area.

These findings do not entirely correlate with those of the Healthy Places Index, and instead suggest that the southern portion of the study area (as opposed to the eastern portion of the study area per the HPI) experiences less healthy community conditions than the rest of the neighborhood near the Sherman Way Station.

²¹ California Heat Assessment Tool, “Heat Health Events: Projected Changes to HHEs,” accessed March 28, 2019, <https://www.cal-heat.org/explore>.

²² Office of Environmental Health Hazard Assessment, “CalEnviroScreen 3.0 Results (2018 June Update),” accessed March 28, 2019, <https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30>.

Map 8. CalEnviroScreen of Study Area



CalEnviroScreen Percentile



III. Mobility Assessment

The Orange Line pedestrian and bicycle path provides a traffic-separated, north-south Class I Bike and Pedestrian path through the study area (see **Map 9**). There is also an unpaved, east-west greenway along both shores of the Los Angeles River in the southern portion of the study area; however, there is no direct connection between the two paths, as the L.A. River path's northern segment continues under Sherman Way while the southern pathway stops approximately 75 feet east of the path. Where the River path exits onto Basset Street to provide access to surface streets, there is no marked crossing or ramp allowing access on foot or bicycle. People wishing to cross Canoga Way to access the Class I path must walk 600 feet south or 2,000 feet north to cross using a marked crossing and ramp. There is also a Class II unprotected bike lane on Sherman Way, beginning at the Orange Line busway and continuing for many miles to the west, with a small gap just west of Topanga Canyon Avenue. No other bike facilities exist in the study area, although many have been proposed in the Los Angeles 2010 Bicycle Plan and the Mobility Plan 2035.

Pedestrian infrastructure in the study area includes a discontinuous sidewalk network (see **Map 10**). Some of the study area, particularly the northern residential section between Saticoy Street and Valerio Street, lack sidewalks and curb ramps on nearly every street. Some industrial roads also lack sidewalks (such as Deering Avenue); on other industrial roads, existing sidewalks are often impeded by parked cars (such as on Eton Avenue) or utility poles (Deering Avenue east of the Station). The southern portion of the study area has a much more complete sidewalk network, though some streets still lack portions of sidewalks and curb ramps. Nearly all of the signalized crossings include marked crosswalks, and very few midblock crosswalks exist. However, marked crossings are inconsistently applied throughout the area with occasional markings at intersections along side streets.

While the Class I pathway appears to provide a spine throughout the study area, there are very few opportunities to enter or exit the Class I path other than at major intersections (Valerio Street, Sherman Way, and Vanowen Street). These few options reduce the true connectivity of the path to the larger street network and limit the opportunity for creating convenient access to the Sherman Way Station along the pathway.

- Bike, Pedestrian, and Vehicular Counts Assessment (5 locations): *Proposed to conduct counts after areas are identified in community workshop. Placeholder until counts are conducted.*

Map 9. Existing Pedestrian, Bicycle, and Transit Network



Existing Pedestrian and Bicycle Facilities

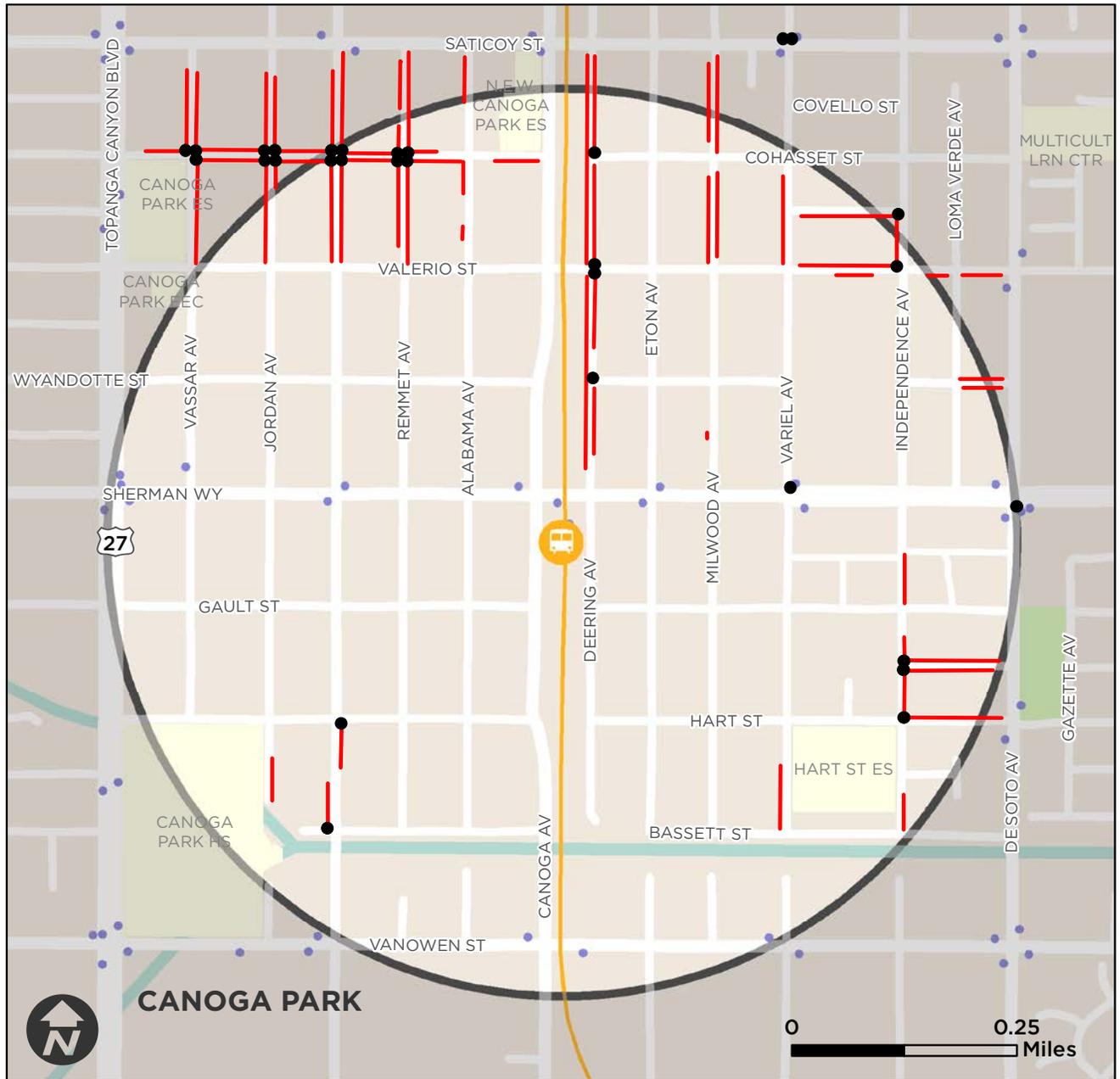
- Shared-Use Path (Paved)
- Shared-Use Path (Unpaved)
- Bike Lane
- Bike Route
- Existing Crosswalk

- Bus Stop
- Sherman Way Station
- Orange Line Busway
- Park
- Los Angeles River
- Half-Mile from Station



Map 10. Existing Barriers to Walking and Biking

Missing Sidewalks and Curb Ramps

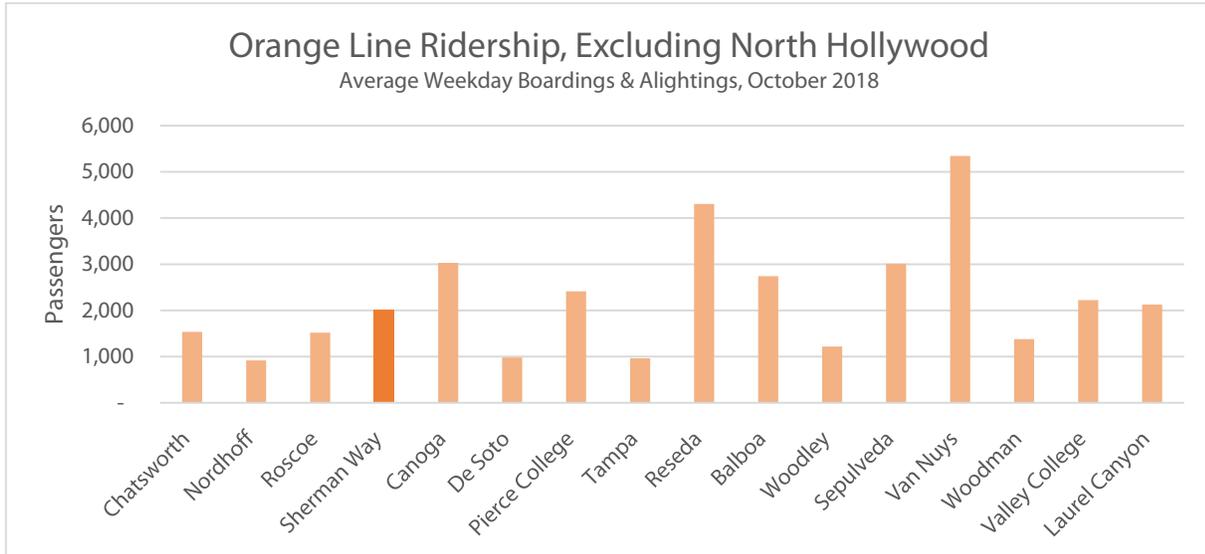


- Missing Curb Ramp
- Bus Stop
- Missing Sidewalk
- Sherman Way Station
- Orange Line Busway
- Park
- Los Angeles River
- Half-Mile from Station



Average weekday ridership data from October 2018 for Metro routes in the study area can be seen in **Map 11**. Unsurprisingly, the Sherman Way Station has the highest ridership of all transit stops in the study area, with average weekday boardings and alightings from both east and west directions totaling to more than 2,000 riders. The majority of boardings were from east-bound passengers, while the majority of alightings were from west-bound travelers. The Sherman Way Station experienced the tenth-highest ridership of the 17 bus stations along the Orange Line (see **Figure 10**).

Figure 10. Average Weekday Ridership of the Orange Line
(excludes North Hollywood Station to maintain scale), October 2018

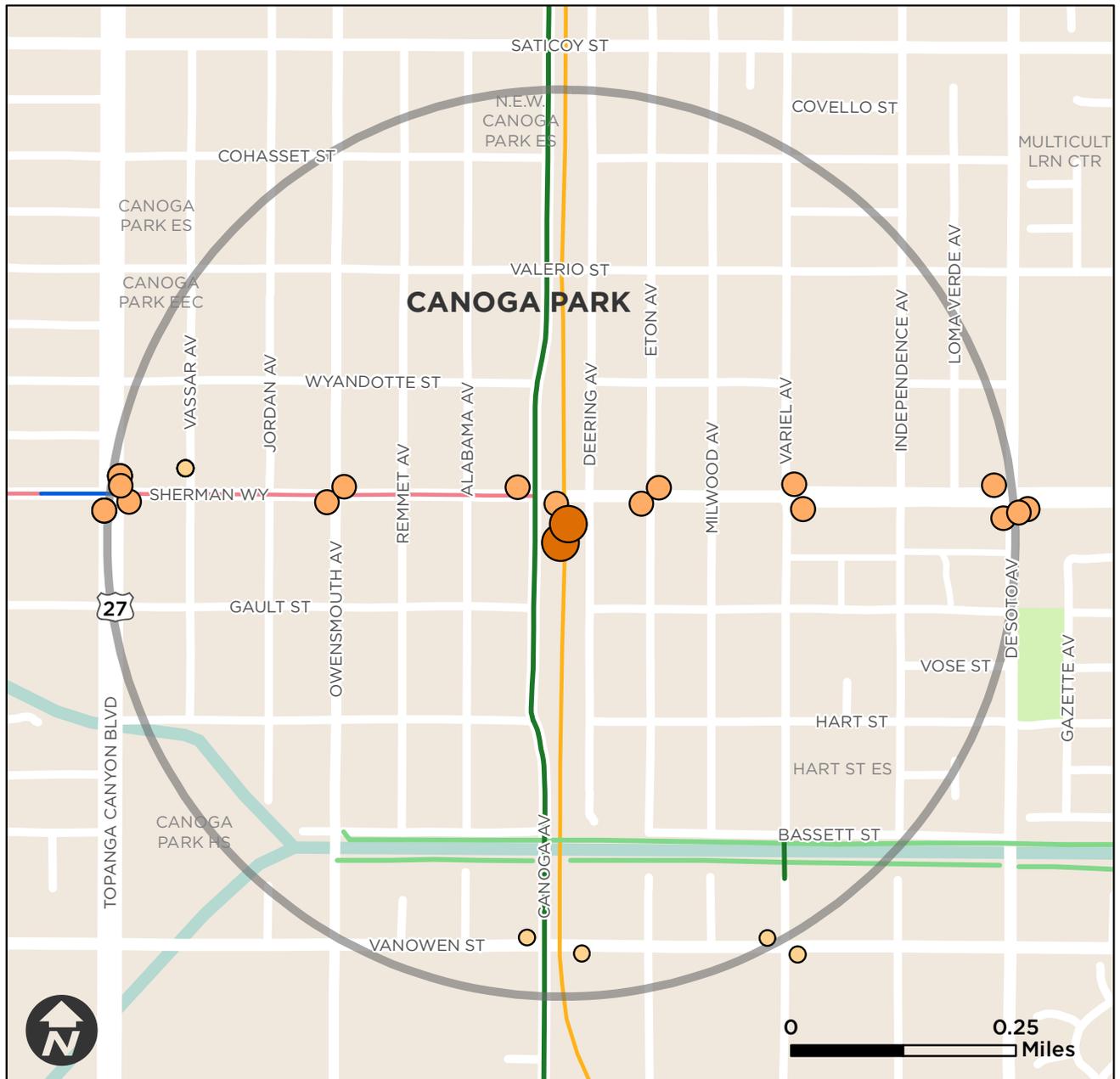


The other 16 bus stops on Sherman Way in the study area (Routes 162 and 163) have a relatively similar ridership to each other, ranging from 100 to 500 boardings and alightings a day. The remaining 4 stops on Vanowen Street (Routes 165 and 601) and one additional stop on Vassar Avenue (Route 150) have less than 100 boardings and alightings daily.

Given transit ridership in the study area is concentrated at the Sherman Way Station and along Sherman Way, it is likely that this corridor experiences the highest volume of pedestrian activity in the study area.

Map 11. Transit Ridership Activity

Boardings and Alightings Per Weekday



Transit Ridership

Boardings / Alightings

- 36 - 100
- 101 - 500
- 501 - 1017

Existing Pedestrian and Bicycle Facilities

- Shared-Use Path (Paved)
- Shared-Use Path (Unpaved)
- Bike Lane
- Bike Route

- Orange Line Busway
- Park
- Los Angeles River
- Half-Mile from Station

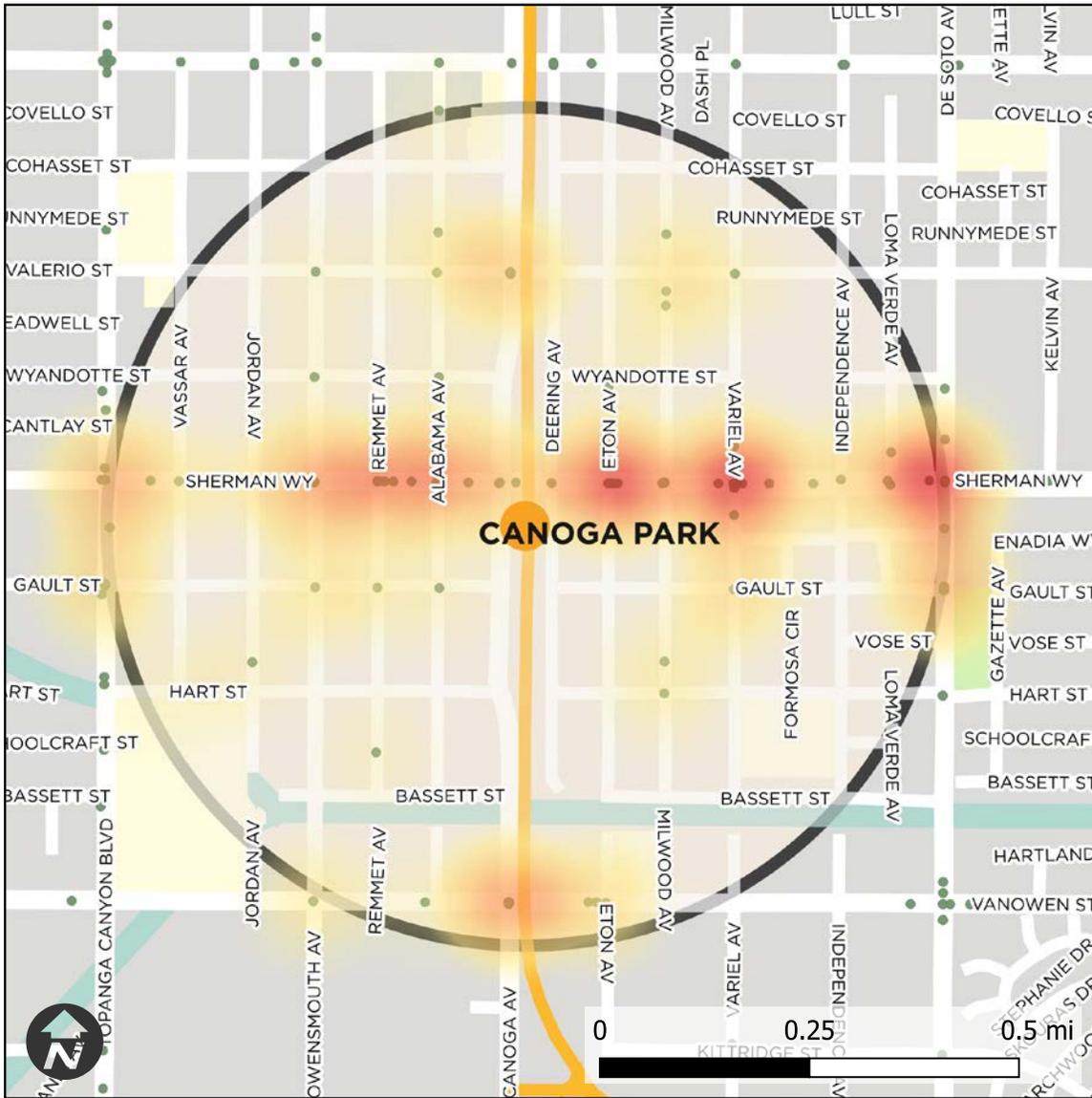


The project team reviewed collision data for the study area from 2012 through 2016 (see **Map 12**). In that time period, there were 104 collisions involving bicyclists or pedestrians. Unlike most other collision analyses done in the region in which collisions are more frequently found to involve pedestrians, the proportion of collisions in the study area involving bicyclists (56 collisions) was greater than those involving pedestrians (49 collisions). In the City of Los Angeles, pedestrian-involved collisions tend to be nearly twice as frequent as bicyclists. It is unclear if this is due to a high rate of bicycling, or a lower rate of walking, in the study area. There was one fatality involving an active transportation user. At 6:30 AM on March 20, 2013, a male pedestrian was traveling straight across Canoga Avenue at Vanowen Street in the crosswalk when a driver traveling south hit and killed him. Additionally, there were 12 Severely Injured (Severity Level 2) in the study area, and 51 Visible Injuries (Severity Level 3). The remaining 40 collisions were classified as 'Complaint of Pain' (Severity Level 4).

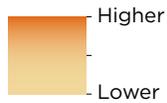
As is often the case, collisions are more frequent along higher speed, wider arterial roads like Sherman Way. However, the Severe Injury (Severity Level 2) collisions occurred primarily on the residential streets, rather than Sherman Way. It is noteworthy that there appears to be few active transportation collisions near the Orange Line Station, despite the frequency of people bicycling and walking to the station.

Map 12. Collisions Involving Bicyclists and Pedestrians

2012 - 2016



Collision Density



● Bicyclist/Pedestrian Collisions (2012-2016)

● Sherman Way Station

— Orange Line Busway

■ School

■ Park

■ Los Angeles River

□ Half Mile from Station



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Appendix B: Policies & Standards Memorandum

1. PURPOSE

The purpose of this memorandum is to provide an overview of current policy and standards related to sustainability and climate adaptation as they pertain to the City of Los Angeles, and determine how they may affect the selection of heat mitigation options for the StreetsLA project “Addressing Transit Access and Heat in Canoga Park”.

2. SUMMARY

- This project will support the [LA City Sustainability pLAn](#) by contributing to the reduction of the urban-rural temperature differential, and help to increase the proportion of trips safely completed by foot, bike, or public transit.
- Co-benefits expected from this project include healthier communities, increased access to public transit, reduction in GHG emissions, improved air quality, and potentially water savings.
- The identification of strategies will depend on a combination of factors, such as modal priorities for the area identified in the [Mobility Plan 2035](#), design limitations from existing policies and standards, and cooling potential of various strategies.

3. BACKGROUND

The “Addressing Transit Access and Heat in Canoga Park” project, led by StreetsLA, aims to improve the transit users’ first/last mile experience, especially during hotter temperatures driven by climate change. Extreme heat (when the temperature exceeds 95° F) adversely affects public health, which is exacerbated in part due to the Urban Heat Island effect (UHI). Vulnerable populations, such as the young, elderly, and outdoor workers are most impacted by increased heat exposure. Extreme heat also worsens air quality by accelerating the formation of air pollutants such as ozone.

a. City of Los Angeles Sustainability pLAN

By 2035 the [City of Los Angeles' Sustainability pLAN](#) seeks to achieve a target of 50% of all trips to be taken by foot, bike, micro-mobility or public transit. However, in the face of a projected increase in the incidence of extreme heat days due to climate change, there is a need to develop UHI mitigation measures which will enable Angelenos to take advantage of those transit options in a way that is both safe and comfortable. The City of Los Angeles' Sustainability pLAN aims to reduce the urban-rural temperature differential by 3 degrees Celsius by 2035, which would make it the leader in UHI mitigation among U.S. cities. To meet this ambitious goal, the City is planning to do the following:

- Identify neighborhoods with the most asphalt cover, highest temperature, and buildings with most heat evacuations
- Add additional street trees and cool roofs, prioritizing neighborhoods with the most severe heat island effect
- Promote “softening” of hardscape in alleys and parking lots
- Install cool-pavement and cool-street coverings
- Prepare additional city buildings to function as cooling centers and disaster gathering places

b. City of Los Angeles Resilience Plan

Similarly to the City's Sustainability pLAN, [Resilient Los Angeles](#) has a specific goal (i.e. Goal 6) to “Prepare and protect those most vulnerable to increasing extreme heat”. The Canoga Park project is aligned with the City's ambition to create a *Los Angeles Urban Heat Island Mitigation Plan* to accelerate extreme heat mitigation and make the city heat-resilient.

c. City of Los Angeles Mobility Plan 2035

The City of Los Angeles [Mobility Plan 2035](#) lays the foundation for the development of the transit network around the City of LA. Some of the targets relate to this project, and are summarized below:

- Create complete streets to provide safe and efficient transportation for pedestrians (especially for vulnerable users such as children, seniors and the disabled), bicyclists, transit riders, and car and truck drivers, and more.
- Increase the use of technology (applications, real time transportation information) and wayfinding to expand awareness of and access to parking options and a host of multi-modal options (car share, bicycle share, car/ van pool, bus and rail transit, shuttles, walking, bicycling, and driving).
- Increase the role of “green street” solutions to treat and infiltrate stormwater.

The “Addressing Transit Access and Heat in Canoga Park” project advances these goals by fostering a framework to explore and incorporate new technologies to cool streets within the project

area, identify locations to add street trees and shade structures along pedestrian and bicycle pathways, and strategize a long-term maintenance plan to sustain the proposed systems. At this stage, the following urban cooling strategies are being considered: (1) Landscaping (urban greenery); (2) Cool pavements; (3) Shade structures; (4) Stormwater retention; (5) Water systems.

4. PROJECT AREA

A half-mile radius around the Sherman Way Orange Line station defines the extent of the project area, which extends to Topanga Canyon Boulevard to the West, Saticoy Street to the North, De Soto Avenue to the East, and Vanowen St to the South. It includes a commercial stretch on Sherman Way, as well as a small portion of the LA River. Several stretches of road in the project area have been identified by the city in its Mobility Plan 2035 as being suitable for various projects. These are outlined below.

a. Transit Enhanced Network

Sherman Way, between Canoga Ave and De Soto Ave is proposed as a Moderate Transit Enhanced Street, while the stretch of Canoga Ave in the project area is an existing busway. There is an Orange Line transit station at Sherman Way and Canoga Ave. Sample treatments are proposed in the Complete Streets Design Guide.



Figure 1. Transit Enhanced Network within the project area (LA Mobility Plan 2035, Network Concept Map B)

b. Neighborhood Enhanced Network

Valerio St, as well as Owensmouth Ave between Saticoy St and Valerio St are part of the proposed Neighborhood Enhanced Network. This is also the case for Variel Ave between Saticoy St and Vanowen St. These streets are meant to provide a calm and safe environment for walking, biking, and circulation of slower moving modes, and may therefore form a suitable area for cooling measures targeting transit users.

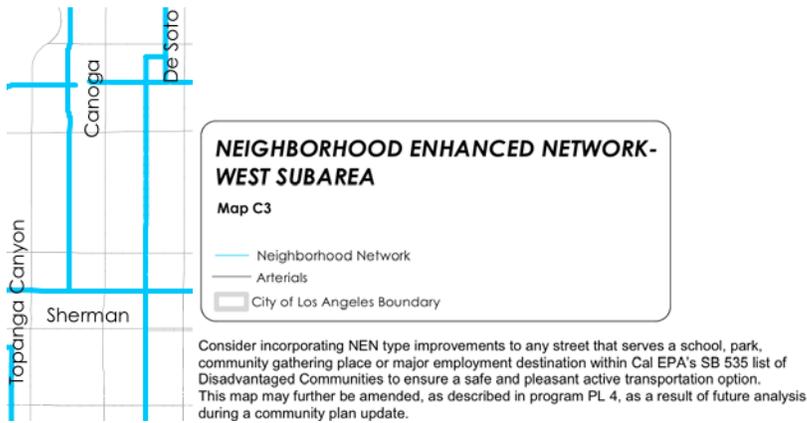


Figure 2. Neighborhood Enhanced Network (LA Mobility Plan 2035, Network Concept Map C3)

c. Bicycle Enhanced Network

Bicycle paths (i.e. bicycle facilities outside of the roadway) are proposed along the LA River stretch that falls within the project area. In addition, Tier 1 Protected Bicycle Lanes (i.e. bicycle facilities on arterial roadways with physical separation) are proposed for the Sherman Way segment. Tier 2 Bicycle Lanes are proposed for Owensmouth between Valerio St and Vanowen St, while Tier 3 Bicycle Lanes are proposed for Topanga Canyon Blvd and De Soto Ave. Tier 2 and 3 Bicycle Lanes Bicycle are facilities on arterial roadways with striped separation, and Tier 2 bicycle lanes are more likely than Tier 3 bicycle lanes to be built by 2035.

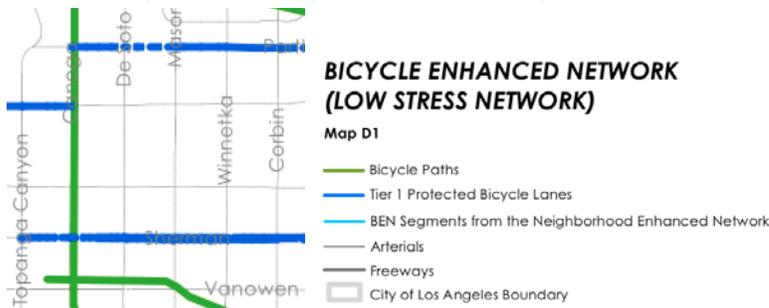


Figure 3. Bicycle Enhanced Network within the project area (LA Mobility Plan 2035, Network Concept Map D1)



Figure 4. Bicycle Lane Network within the project area (LA Mobility Plan 2035, Network Concept Map D2)

d. Vehicle Enhanced Network

Topanga Canyon Blvd will be part of the Vehicle Enhanced Network.

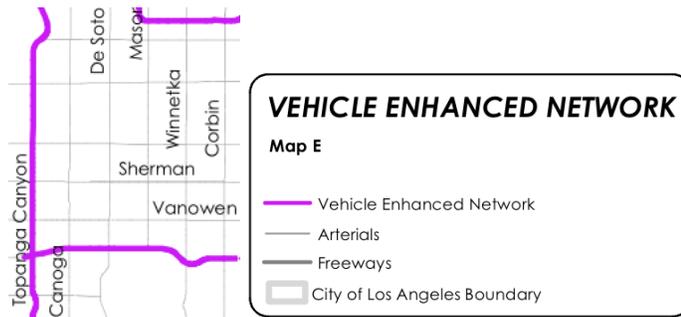


Figure 5. Vehicle Enhanced Network within the project area (LA Mobility Plan 2035, Network Concept Map E)

e. Pedestrian Enhanced Districts

The following segments of streets were identified for pedestrian enhancement (i.e. targeted areas on arterial streets prioritized for pedestrian safety enhancements): Vanowen St, Topanga Canyon Blvd, Sherman Way west of Variel Ave, Canoga Ave south of Valerio St, and a short stretch of Saticoy St including near the intersection with Topanga Canyon Blvd.

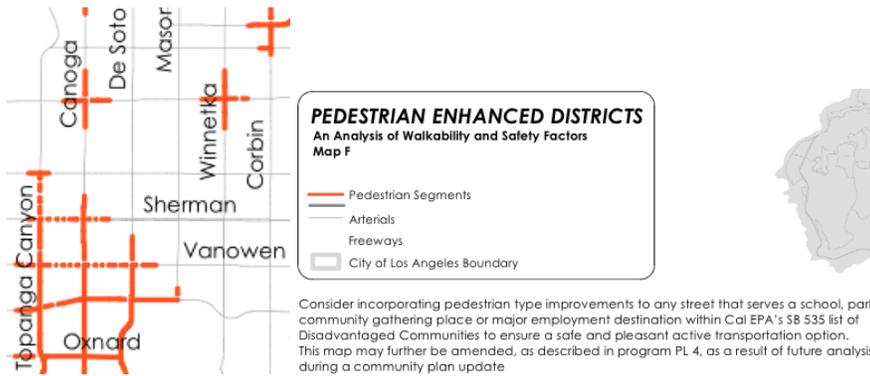


Figure 6. Pedestrian Enhanced Districts within the project area (LA Mobility Plan 2035, Network Concept Map F)

f. Goods Movement

Topanga Canyon Blvd is an existing truck route (>3 tons).

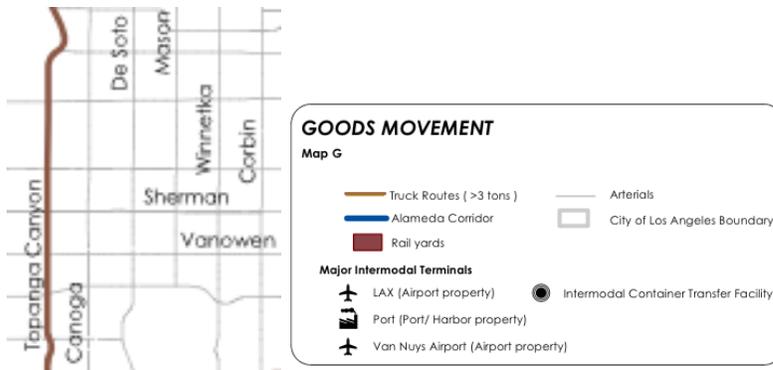


Figure 7. Goods Movement within the project area (LA Mobility Plan 2035, Network Concept Map G)

5. LA CITY DESIGN CONSIDERATIONS

The following table summarizes key guidance documents that place restrictions on or otherwise influence the range of design options for the various cooling strategies.

Organization or Division	Document name	Document summary	Considerations
Urban Design Studio	Mobility Hub Readers' Guide	Highlights key regulations as they pertain to urban mobility and transit.	<ul style="list-style-type: none"> -For bikeshare stations that are powered by solar energy, the use of any shade cover should be minimized in their immediate surroundings. -New design features involving sidewalks should not interfere with the path of travel, as per the American With Disabilities Act (ADA). -The physical space used by technologies on the street and sidewalks should meet the LADOT street design regulations (see City of Los Angeles Complete Streets Design Guide below).
LA City Planning	City of Los Angeles Complete Streets Design Guide	Highlights specific regulations as they pertain to complete street design.	<p>Chapter 4: Sidewalk Area considerations:</p> <ul style="list-style-type: none"> -Building awnings may provide shade to sidewalk areas; -Entrance canopies for buildings provide shading, but require BOE permitting; -Guidelines for planters (e.g. visibility, durability, placement, aesthetics); -Guidelines for pavement textures (e.g. to meet ADA needs to be poured-in-place porous paving and not modular); -Public seating (e.g. combining with raised planter beds); -Tree planting with respect to existing urban landscape components such as business signage & BOE requirements for subsurface utilities; -Parkway strip divided only by driveway entrances is public property, but private property owners are responsible to plant and maintain the parkway area in front of their property; -Soil conditions and water infiltration (e.g. soil quality and compaction issues); -Plant selection and placement (e.g. height, drought tolerance, thorns, sidewalk width requirements). For tree selection, refer to the Urban Forestry Division Street Tree Selection Guide; -Stormwater treatment (e.g. infiltration BMP vs flow-through depending on physical context, curb extensions to accommodate BMPs); -Permeable pavements require site/soil surveys, and can only be considered for low-traffic driveways and alleys; -Limit sidewalk clutter and consider guidance for surface-mounted facilities and above-ground infrastructure (AGI);

			<ul style="list-style-type: none"> -Parklets and esplanades may be interesting avenues to explore with the neighborhood. Chapter 5: Roadways considerations: <ul style="list-style-type: none"> -Greening for buffer space for protected bike lanes; -Red painted pavement for priority bus lanes; -Evaluate if concrete bus pads require special considerations; -If median bus boarding areas exist, consider shading options; -Neckdowns are an opportunity for siting of urban cooling features to limit encroachment on sidewalks; -Medians are an opportunity for siting of urban cooling features; -Some chicanes could be an opportunity for siting of urban cooling additions.
LA City Bureau of Street Services	Urban Forestry Division Street Tree Selection Guide	List of trees acceptable for planting in public right-of-way along with key characteristics.	-Tree selection limited to approved list.
	Street Tree Division Planting Guidelines & Spacing Guidelines	Lists tree planting requirements and spacing requirements.	<ul style="list-style-type: none"> -Minimum tree size at planting. -Root control barriers. -Watering requirements. -Tree spacing.
LA City Department of Public Works	Residential Parkway Landscaping Guidelines	List of preferred plants (not including street trees) and requirements for non-vegetative land cover for the landscaped area between the curb and the sidewalk.	<ul style="list-style-type: none"> -Drought-tolerance -Visibility -Buffer space around utility infrastructure and street trees -Thorns -Height of growth (low growing is encouraged) -Slant of surfaces -Presence of an active stormwater capture system -Ease of alighting and access to buildings -Irrigation system -Maintenance of plants and other groundcover
Canoga Park - Winnetka -	Community Plan	Details the urban design priorities and guidelines for the	<ul style="list-style-type: none"> -Tree species must be drought and smog tolerant, and fire-resistant. -Tree selection may be limited by existing trees.

Woodland Hills - West Hills		neighborhood.	Specifically: "Select specific species to be the common tree for street frontages. A single flowering species may be selected for all residential neighborhoods and commercial districts or different species selected to distinguish one neighborhood, district, or street from another. In residential neighborhoods, the trees should be full, to provide shade and color. In commercial districts, the trees should provide shade, but be more transparent to promote views of store fronts and signs." -Solar exposure should be minimized in public open space and plazas.
City of Los Angeles Stormwater Program	Low Impact Development Handbook	Summarizes the City's project review and permitting process, identifies stormwater mitigation measures, and references source and treatment control BMP information.	-The Stormwater Low Impact Development Ordinance does not apply to infrastructure projects within the public right-of-way. - However, it provides stormwater best management practices and design guidelines applicable to the urban context, and is referenced in the Complete Streets Design Guide .
City of Los Angeles Stormwater Program	Enhanced Watershed Management Plan Appendix 6.C	Provides a stormwater control measure opportunity assessment.	--Appendix 6.C provides an overview map of soil infiltration rates for Los Angeles, and shows that the project area exceeds the minimum subsoil infiltration rates of 0.3 in/hr for the installation of green infrastructure underdrains. Hence, LID BMPs would likely not require underdrains for the project area.

6. CONCLUSIONS

The selection of appropriate cooling strategies depends on a number of factors, including technical and financial limitations, local policies and standards, and the needs and priorities identified by community members. This memorandum highlights the local policies and standards which need to be taken into consideration when designing cooling strategies. It also describes the synergies across plans and frameworks and how they support the project's goals, and it mentions opportunities for co-benefits as well as design limitations.

Overall, priority should be given to cooling strategies which can bring other significant benefits, such as urban greenery (i.e. improved air quality, stormwater retention, carbon sequestration). Moreover, the project should take advantage of any planned upgrades of the local infrastructure (e.g. Mobility Plan 2035 and Community Plan) to implement supplemental urban cooling strategies (e.g. cool pavements). Finally, by working closely with the community, it may be possible to identify further opportunities for areas where sidewalks space could be transformed to include cooling strategies (e.g. parklets, esplanades).

APPENDIX

LA County and State of California Programs and Resources

Organization or Division	Document name	Document summary	Considerations
Los Angeles County	Safe, Clean Water for Los Angeles County Residents (Measure W)	The Safe Clean Water program adds cooling green space to urban landscapes, protecting residents from heat and the health effects of contaminated stormwater runoff.	Measure W may fund a number of nature-based built features to capture stormwater, a co-benefit of urban cooling options such as urban greening and bioswales, for instance.
State of California	2018 California Climate Adaptation Strategy	A roadmap showing how California's state government is taking action to respond to climate change.	<ul style="list-style-type: none"> -Improve health equity by increasing access for low-income and other vulnerable communities to clean transportation and mobility options (P-1.3.). -Provide cooling centers and encourage public transit design decisions that lessen urban heat islands, and use passive cooling where possible at transit stops (T-4.6.). -Along pedestrian facilities with high-heat days, provide shade sidewalks/paths and public water fountains to prevent heat illness, use pervious pavement for bicycle and pedestrian pathways to increase water infiltration (T-4.7.).
State of California	Hazard Mitigation Plan	Highlights the need to tackle extreme heat hazards associated with climate change, and provides several best-practice resources to increase preparedness	<ul style="list-style-type: none"> -California Heat Assessment Tool, a decision-support tool for city planners - www.cal-heat.org -CalEPA Urban Heat Island Interactive Maps, to help target areas for urban cooling projects - https://calepa.ca.gov/climate/urban-heat-island-index-for-california/urban-heat-island-interactive-maps/ -Preparing California for Extreme Heat: Guidance and recommendations - Heat Adaptation Work Group of the Climate Action Team's Public Health Workgroup & CalEPA - https://www.climatechange.ca.gov/climate_action_team/reports/Preparing_California_for_Extreme_Heat.pdf

Appendix C: Potential Funding Source Report

The concepts described in the “Addressing Transit Access and Heat in Canoga Park” project can be applied to nearly every community in Los Angeles, bringing opportunities for improving traffic safety and climate adaptation to millions of Angelenos. This Funding Sources Report identifies more than 40 sources for funding the work described in the Adaptation Concepts and community meetings, including federal, state, regional, and private funding sources. Research for this document was prepared in November of 2019 and is accurate as of this time, but it is important to acknowledge that these funding sources could change without notice.

While the transportation components, such as bikeways, crosswalks and traffic signals are easily funded under Active Transportation sources, other components such as plantings, shade structures, cool pavement materials, and hydration stations are often excluded from many funding sources because they are perceived as ‘beautification efforts’ or additional amenities. For this reason, the project team has worked to expand this list to include health, environmental, creative placemaking, and climate change funding sources, as well.

The document is structured as follows:

- 1) Federal Sources
- 2) State Sources
- 3) Regional and Local Sources
- 4) Private Sources

A chart summarizing the materials is also included.

A. FEDERAL SOURCES

Fixing America's Surface Transportation Act (FAST Act)

The FAST Act, which replaced Moving Ahead for Progress in the 21st Century Act (MAP-21) in 2015, provides long-term funding certainty for surface transportation projects, which allows states and local governments to move forward with critical transportation projects. The FAST Act authorizes \$305 billion over fiscal years 2016 through 2020 for highway, highway and motor vehicle safety, public transportation, motor carrier safety, hazardous materials safety, rail, and research, technology, and statistics programs. The FAST Act maintains its focus on safety, keeps intact the established structure of highway-related programs, continues efforts to streamline project delivery and provide funding for freight projects as well. This funding opportunity comes out on a yearly basis and could potentially fund numerous transportation projects. \$2.9 million was accumulated for use between FY 2016-2020 for Los Angeles County.

Federal Highway Administration Surface Transportation Block Grant (STBGP)

The FAST Act expanded the existing Surface Transportation Program (STP) into the Surface Transportation Block Grant Program (STBGP), which places more decision-making power in the hands of state and local governments. The FAST Act simplifies the list of uses eligible for program funds and increases the ways that funds can be used for local roads and rural minor collectors. Eligible projects for this funding are; Highways, bridges, and tunnels, transit capital projects, truck parking facilities, pedestrian and bicycle improvements. Projects must be identified in the STP/TIP and be consistent with the long-range statewide transportation plan and metropolitan transportation plan.

The Transportation Alternatives Program (TAP) is a set-aside program of this block grant. The new program requires 55 percent of program funds be distributed within each state on the basis of population, compared to 50 percent under STP. In California, STBGP is allocated through the Regional Surface Transportation Program (RSTP). The TAP program is allocated through the Active Transportation Program (ATP). \$31.7 million was accumulated for use between FY 2016-2020 for Los Angeles County.

Congestion Mitigation and Air Quality Improvement Program (CMAQ)

CMAQ provides funding to state and local agencies for transportation projects that help meet Clean Air Act objectives. Funded projects must work to reduce congestion and improve area quality in nonattainment or maintenance zones for ozone, carbon monoxide or particulate matter. CMAQ funds can be used for bicycle and pedestrian projects that are included in the metropolitan planning organization (MPO) current transportation plan and transportation improvement program (TIP). Projects can include bicycle and pedestrian facilities that are not exclusively recreational and for outreach related to safe bicycle use. Studies that are part of the project development pipeline (e.g., preliminary engineering) are also eligible for funding.

While CMAQ is a federal funding source, the program is administered at the local level through the Metropolitan Transit Authority and sub allocated through Caltrans. These funds are eligible for transportation projects that contribute to the attainment or maintenance of National Ambient Air Quality Standards in non-attainment or air quality maintenance areas. Examples of eligible projects include enhancements to existing transit services, rideshare and vanpool programs, projects that encourage bicycle transportation options, traffic light synchronization projects that improve air quality, grade separation projects, and construction of high-occupancy vehicle (HOV) lanes. Projects that apply for this program are required to develop reliable air quality estimates using the CMAQ Emissions Calculator Toolkit. Projects that are proven to reduce direct PM2.5 emissions are to be given priority.

Urban Cooling Strategies Funding Sources Report Memo

Federal High Administration Bus and Bus Facilities Grants Program

The Bus and Bus Facilities Grant Program makes federal resources available to states and direct recipients to replace, rehabilitate, and purchase buses and related equipment and to construct bus-related facilities including technological changes or innovations to modify low or no emission vehicles or facilities. On November 25, 2019, FTA announced \$423 million to improve the safety and reliability of America's bus systems and enhance mobility for transit riders. The federal share of eligible costs is 80% of the net capital project cost. This program occurs on a yearly basis and typically opens in May and the grant deadline is typically around June.

National Endowment for the Arts Our Town

The Our Town grant program supports creative placemaking projects that help to transform communities into lively, beautiful, and resilient places – achieving these community goals through strategies that incorporate arts, culture, and/or design. Creative placemaking is when art is deliberately integrated into community revitalization work - placing arts at the table with land-use, transportation, economic development, education, housing, infrastructure, and public safety strategies. Grant applicants require partnerships between arts organizations and government, other nonprofit organizations, and private entities. Funding ranges from \$25,000-\$200,000 per project with a minimum cost share/match equal to the grant amount. This program occurs on a yearly basis and the application deadline typically falls in August.

Federal Transit Administration Urbanized Area Formula Program

This program makes federal resources available to urbanized areas for transit capital and transit-related planning. An urbanized area is an incorporated area with a population of 50,000 or more. A 20% match is required; however, bicycle facilities, including routes to transit, bike racks, shelters and equipment and can receive a 95% federal share for the first 1% of program funds.

The Better Utilization Investments to Leverage Development Discretionary Grant (BUILD)

The BUILD (formerly TIGER) reimbursement grant, available through the U.S. Department of Transportation, allows sponsors at the State and local levels to obtain funding for multi-modal, multi-jurisdictional projects that are more difficult to support through traditional funding initiatives. Eligible projects include: recreational trails, road diets, separated bike lanes, shared use paths, sidewalks, signal improvements, signed pedestrian or bicycle routes, traffic calming, trailside and trailhead facilities, bicycle parking, racks, repair stations, storage, and bike share programs. A program of projects can be assembled and should demonstrate significant regional impacts and be construction-ready. The minimum grant request in rural areas is \$1 million and in urban areas it is \$5 million.

Environmental Protection Agency Brownfield Assessment Grant Program

Assessment grants provide funding for a grant recipient to inventory, characterize, assess, and conduct planning and community involvement related to brownfield sites. Revolving Loan Fund (RLF) grants provide funding for a grant recipient to capitalize a revolving loan fund and to provide sub-grants to carry out cleanup activities at brownfield sites, a property. The EPA defines a brownfield property as the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. A grant applicant applying for a community-wide assessment may request up to \$300,000 and applicants applying for a site-specific assessment may request up to \$200,000. Application deadlines typically are in December.

Urban Cooling Strategies Funding Sources Report Memo

Highway Safety Improvement Program (HSIP)

The Federal Highway Administration provides funding to states for projects that help communities achieve significant reductions in traffic fatalities and serious injuries on all public roads, bikeways, and walkways. Eligible projects include pedestrian safety improvements, enforcement activities, traffic calming projects, and crossing treatments in school zones. Non-infrastructure projects are not eligible. All HSIP projects must be consistent with the state's Strategic Highway Safety Plan. Funding is available up to \$10 million and requires a 10% match.

B. STATE FUNDING

Active Transportation Program (ATP)

The California State Legislature created the Active Transportation Program to encourage active modes of transportation. Senate Bill 1 (SB 1) stipulates that \$100,000,000 of revenues from the Road Maintenance and Rehabilitation Account will be available annually to the ATP. The ATP consolidates existing federal and state transportation programs, including the Transportation Alternatives Program (TAP), Bicycle Transportation Account (BTA), and State Safe Routes to School (SR2S), into a single program with a focus to make California a national leader in active transportation. Applications are to be submitted typically in July.

Funding Sources:

- State and Federal Funding
 - \$34 million in State Highway Account (per-year)
 - \$88.5 million In Federal (per-year)
- \$10 million (California Climate Investments)-Cycle 3 one-time program
- \$100 million (SB1 State Funds per-year)

Goals of the ATP are currently defined as the following:

- Increasing the proportion of trips accomplished by walking;
- Increasing safety and mobility for active transportation users;
- Advancing active transportation efforts of regional agencies to achieve the greenhouse gas reduction goals;
- Enhancing public health;
- Ensuring that disadvantaged communities fully share in the benefit of the program; and,
- Providing a broad spectrum of projects to benefit many types of active transportation users.

Caltrans Sustainable Transportation Planning Grant Program

The Sustainable Transportation Planning Grant Program supports transportation planning processes which address local and regional transportation needs and issues. The program offers two types of grants: Strategic Partnerships and Sustainable Communities. The Sustainable Communities Grants has about \$29.5 million in funding to encourage local and regional planning that furthers state goals. The Strategic Partnership Grant has about \$4.5 million to identify and address statewide or regional deficiencies on the State highway system in partnership with Caltrans. Eligible planning projects must directly benefit the multi-modal transportation system, improve public health, social equity, environmental justice, the overall environment, and other community benefits. Applications are to be submitted typically in October.

Environmental Enhancement and Mitigation Funds

The California Natural Resources Agency provides grants to projects that indirectly mitigate the environmental impacts of new transportation facilities. Funds are available for land acquisition and construction and should fall into one of the following three categories: urban forestry projects, resource lands projects, or mitigation projects beyond the scope of the lead agency. The local Caltrans district must support the project. The maximum award amount is \$500,000. The application deadline usually falls in June.

Urban Cooling Strategies Funding Sources Report Memo

Urban Greening Program

The California Natural Resource Agency provides grants through this program to projects that reduce greenhouse gases by sequestering carbon, decreasing energy consumption, and reducing vehicle miles travelled, while also transforming the built environment into places that are more sustainable, enjoyable, and effective in creating healthy and vibrant communities. These projects will establish and enhance parks and open space, using natural solutions to improving air and water quality and reducing energy consumption, and creating more walkable and bike-able trails. Approximately \$19 million is available for urban greening projects, and there are no maximum or minimum grant amounts.

Green Infrastructure Program

The California Natural Resource Agency appropriated \$18.5 million for competitive grants for multi benefit green infrastructure investments in or benefiting disadvantaged communities. Applicants can be awarded between \$50,000-\$3 million. Applicants must show that their projects will achieve measurable benefits by, acquiring, creating, enhancing or expanding community parks and green spaces or use natural systems, or systems that mimic natural systems to achieve multiple benefits to create sustainable and vibrant communities.

Regional Park Program

The California Department of Parks and Recreation provides a Regional Parks Program which provides competitive grants that will create, expand, and improve regional parks. Projects will create at least one new creation feature that attracts visitors from at least a 20-mile radius or county-wide population to a regional park. The program has approximately \$23,125,000 in funds available. Applicants can receive funding between \$200,00-\$3 million. Projects eligible for this grant include, new recreation features, non-motorized trail, equestrian center, aquatic feature, regional sports complex, playground, plaza, public art, etc. There is no match required.

Statewide Park Development and Community Revitalization Program (SPP)

The California Department of Parks and Recreation provides a competitive grant program that will create new parks and new recreation opportunities in critically underserved communities. The types of projects that are eligible for funding include, new parks, expanding an existing park, and renovating an existing park. Applicants can receive funding between \$200,00 and \$8,500,000. There is no match required. Application deadlines usually fall in August.

Rubberized Pavement Grant Program

The California Department of Resources Recycling and Recovery (Cal Recycle) provides the Rubberized Pavement Grant Program, formerly called the Rubberized Asphalt Concrete (RAC) Grant Program, to promote markets for recycled-content surfacing products derived from waste tires generated in California and decrease the adverse environmental impacts created by unlawful disposal and stockpiling of waste tires. There is approximately \$7,750,000 available funding. \$350,000 maximum for individual application. If applying for a regional application, the maximum is \$500,000.

The program will award ten cities grants of up to \$25,000 annually.

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Transformative Climate Communities

The California Strategic Growth Council funds community-led development and infrastructure projects that achieve major environmental, health, and economic benefits in California's most disadvantaged communities. Funded by California's Cap-and-Trade Program, TCC empowers the communities most impacted by pollution to choose their community vision, strategies, and projects to enact transformational change – all with data-driven milestones and measurable outcomes. In its first round, and through a competitive process, the California Strategic Growth Council (SGC) awarded TCC grants to three recipients in three locations: including \$66.5 million to the City of Fresno, \$33 million to the Watts neighborhood of Los Angeles, and \$33 million to the City of Ontario.

Affordable Housing and Sustainable Communities

The California Strategic Growth Council funds healthier communities and protects the environment by increasing the supply of affordable places to live near jobs, stores, transit, and other daily needs. The most successful applications include affordable housing sites as well as funds to build or improve walkways, bikeways, transit amenities, and urban greening. Funded by auction proceeds from California's Cap-and-Trade emissions reduction program, AHSC is administered by the Strategic Growth Council and implemented by the California Department of Housing and Community Development. AHSC reduces emissions by funding projects that make it easier for residents to get out of their cars and walk, bike, or take public transit. The City of Los Angeles was highly successful in Cycle IV, winning all five of their applications, bringing nearly \$100 million in housing, transportation, and urban greening.

Strategic Growth Council Sustainable Communities Program

The program provides technical assistance and a variety of grants to SCAG member jurisdictions. Grants are available in three categories: Integrated Land Use (Sustainable Land Use Planning, Transit Oriented Development (TOD) and Land Use & Transportation Integration); Active Transportation (Bicycle, Pedestrian and Safe Routes to School Plans); and Green Region (Natural Resource Plans, Climate Action Plans (CAPs) and Greenhouse Gas (GHG) Reduction programs). SCAG has awarded approximately \$22.3 million in total funding to many local sustainability and active transportation planning projects

Caltrans State Transportation Improvement Program

STIP funds are available for new construction projects that add capacity to the transportation network. Funding is a mix of state, federal, and local taxes and fees; and consists of two components: Caltrans' Interregional Transportation Improvement Program (ITIP) and regional transportation planning agencies' Regional Transportation Improvement Program (RTIP). Pedestrian and bicycle projects may be programmed under ITIP and RTIP. The funds are announced during the month of June every other year and there is a minimum 11.5% match.

California Department of Parks and Recreation Habitat Conservation Fund

This fund allocates approximately \$2 million each year to cities, counties, and districts for nature interpretation programs to bring urban residents into park and wildlife areas, protection of various plant and animal species, and the acquisition and development of wildlife corridors and trails. Funds are available for trail maintenance, interpretive signage, lighting and waysides. The program requires a 50% match.

Coastal Conservancy Proposition 1 Grants

These grants fund ecosystem and watershed protection and restoration projects focused on water sustainability, wetland restoration and urban greening. These grants can be used for the urban greening

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or water sustainability elements incorporated in bikeway, walkway and trail projects and funding can be used for planning, land acquisition, and construction though there is a focus on supporting projects that will be quickly built. The total amount of funding for this grant is approximately \$100.5 million with about a 25%-50% match requirement.

California Transportation Commission Local Partnership Program

This program provides local and regional transportation agencies that have passed sales tax measures, developer fees, or other imposed transportation fees with a continuous appropriation of \$200 million annually to fund transportation improvement projects including biking, walking, safety and health-related projects. Projects are given funding priority that can show that they are planning on implementing their project through construction and demonstrate their project will improve air quality.

Caltrans Transportation Development Act (TDA)

The Transportation Development Act (TDA) provides funding annually to be allocated to transit and non-transit related purposes that comply with regional transportation plans. Funding is based on sales tax collected in each county, but has generated approximately \$1.9 million. The TDA funds a wide variety of transportation programs, including planning and program activities, pedestrian and bicycle facilities, community transit services, public transportation, and bus and rail projects.

C. REGIONAL AND LOCAL FUNDING

Metro Local Return Programs

Proposition A, Proposition C, Measure R, and Measure M Local Return programs are each one-half cent sales taxes that finance countywide transit development. Metro is responsible for distributing a certain proportion of the tax revenues to cities and counties to develop and improve public transit, paratransit, and related transportation infrastructure. Funds from Propositions C, R, and M can be used for bicycle-related uses such as infrastructure, signage, bicycle sharing, and education efforts. These Local Return Funds are distributed monthly to jurisdictions on a per capita basis. Metro's local return program has generated approximately \$500 million and distributes them to cities monthly on a per capita basis.

Safe and Clean Water Program: Measure W

Approved by voters in 2018, The Safe and Clean Water Program generates up to \$285 million per year from a special parcel tax of 2.5 cents a square foot of "impermeable space" will help cities around the county meet their obligations under the federal Clean Water Act and associated permits given out by the state. The revenue that will be generated from this measure will be used to pay for regional and municipal projects that improve water quality and that may also increase water supply including parks and wetlands, which will also benefit communities.

LADOT People Street Program

The Los Angeles Department of Transportation provides an application-based program that builds partnerships with community groups and the City to transform LA streets into active and accessible places for community members. Types of project could include; Parklets, Plazas, Bicycle Corrals, Intersection Murals, and Decorative Crosswalks.

City of Los Angeles Great Streets Initiative

The Great Streets Challenge is a program of Los Angeles Mayor Eric Garcetti's Great Streets Initiative to envision, collaborate on, and build transformative street infrastructure projects. The Great Streets Challenge aims to:

Build strong partnerships between communities and the City of Los Angeles.

Empower communities to develop a vision to transform their corridors.

Design streets with a community's vision of how to improve our neighborhoods for all people.

Implement projects that transform our streets into safe, accessible, and vibrant public spaces in alignment with adopted City policies.

Non-Profit Organization may apply for this competitive funding opportunity to transform their communities. Projects could include, bicycle and pedestrian improvements, park improvements, parklets, community murals, sculptures, etc.

Metro Active Transport Program (MAT)

The MAT Program encourages increased use of active modes of transportation, such as biking and walking, and enhance pedestrian and bicycle safety. The goals on the MAT Program is to advance the Active Transportation Strategic Plan, First/Last Mile policy, and the Equity Platform Network. Within the MAT Program there are two programmatic categories you can apply for which are, the First/Last Mile Priority Network around major transit stations and the Active Transportation Corridor Priority Network countywide. There is approximately \$37.7 million in funding available between the fiscal years 2021-2025 for each category. For the First/Last Mile Priority Network category, projects can receive between

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\$500,000-\$5 million in funding annually or the Active Transportation Corridor Priority Network category, projects can receive between \$7 million-\$8 million annually.

[Metro Open Streets Program](#)

This competitive grant program funds a series of regional car-free events. The goals of the Open Streets Grant Program are to provide opportunities for, riding transit, walking and riding a bike, encourage future mode shifts to more sustainable transportation modes and for civic engagement to foster the development of multi-modal policies and infrastructure. For the FY 2020 cycle, there over \$1 million in funds available and project can receive up to \$500,000 in funding. There is a minimum 20% match requirement and the grant is administered annually.

[Metro Transit Oriented Development \(TOD\) Planning Grant Program](#)

This \$5 million fund is intended to spur the adoption of transit-supportive land use and other regulatory plans around station areas in order to increase access to and utilization of public transit. Eligibility is for Los Angeles County jurisdictions with land use authority within one-half mile of existing, planned, or proposed transit stations.

[Metro ExpressLanes Net Toll Revenue Reinvestment Grant Program](#)

State law requires the net toll revenues generated from the Metro ExpressLanes be reinvested in the corridor from which they were derived, pursuant to an approved expenditure plan. Gross toll revenues from the ExpressLanes program are first used to cover the direct expenses related to the maintenance, administration and operation, including marketing, toll collection, and enforcement activities related to the ExpressLanes. Any remaining revenue produced is used in the corridor for which it was generated through the Net Toll Revenue Reinvestment Grant Program. Grant funds were reinvested in projects that provide direct mobility benefits. Funds were made available into three categories, Transit use, Systems Connectivity/Active Transportation, and Roadway Improvements/Highway Improvements. There is approximately \$22 million-\$28 million in funding available

[City of Los Angeles Neighborhood Purpose Grant \(NPG\)](#)

The Neighborhood Purpose Grant provides funding to benefit communities while supporting and building partnerships with local organizations. Canoga Park Neighborhood Council has the opportunity to apply for grant. All funds must go to a public resource. Applicants can receive up to \$5,000 in grant funding.

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D. Private Sources

Conservation Fund-The KODAK American Greenways Program

The Conservation Fund's American Greenways Program has teamed with the Eastman Kodak Corporation and the National Geographic Society to award small grants (\$500 to \$2,500) to stimulate the planning, design, and development of greenways. These grants can be used for activities such as mapping, conducting ecological assessments, surveying land, holding conferences, developing brochures, producing interpretive displays, incorporating land trusts, and building trails. Grants cannot be used for academic research, institutional support, lobbying, or political activities.

PeopleForBikes Community Grant Program

PeopleForBikes is a coalition of bicycle suppliers and retailers that has awarded \$2.9 million in community grants and leveraged an additional \$670 million since 1999. The grant program funds bicycle paths and rail trails, as well as mountain bicycle trails, bicycle parks, BMX facilities, and large-scale bicycle advocacy initiatives. Grants awarded have ranged between \$800 and \$10,000.

The Robert Wood Johnson Foundation

The Robert Wood Johnson Foundation was established as a national philanthropy in 1972, and today, it is the largest U.S. foundation devoted to improving the health and health care of all Americans. Grant making is concentrated in four areas:

- To assure that all Americans have access to basic health care at a reasonable cost
- To improve care and support for people with chronic health conditions
- To promote healthy communities and lifestyles
- To reduce the personal, social and economic harm caused by substance abuse: tobacco, alcohol, and illicit drugs

The Robert Wood Johnson Foundation has numerous grant program to apply to and funding is based on those grant opportunities.

The Kresge Foundation

The Kresge Foundation is a private, national foundation that works to expand opportunities in America's cities through grantmaking and social investing in arts and culture, education, environment, health, human services, and community development. The foundation awards operating support and project and planning grants through their six programs. One of their six programs include Environment, where they offer grant funding in order to help cities implement comprehensive climate-resilience approaches grounded in equity. Approximate funding is shown on the application when grant application is open.

Bloomberg American Cities Initiative

The Bloomberg Philanthropies supports U.S. city leaders to address climate change, combat obesity and gun violence, and catalyze new opportunities for artists and volunteers to work within their communities to solve problems. The Initiative includes a number of sub-categories including American Cities Climate Challenge, Partnership for Healthy Cities, and What Works in Cities. Grant funding is made available for the multiple categories they invest in, including climate change, road safety, research for health, public art, and sustainable cities.

Urban Cooling Strategies Funding Sources Report Memo

Bloomberg Philanthropies Asphalt Art Initiative

Bloomberg Philanthropies' Asphalt Art Initiative responds to the growing number of cities around the world embracing art as an effective and relative low-cost strategy to activate their streets. The focus of this initiative is to create art on roadways (intersections and crosswalks), pedestrian spaces (plazas and sidewalks), and vertical infrastructure (utility boxes, traffic barriers, and underpasses). The overall goal of the program is:

- Improving street and pedestrian safety
- Revitalizing and beautifying underutilized public space
- Promoting collaboration and civic engagement in local communities

Applicants can receive up to \$25,000 each to implement their own arts-driven transportation projects. Cities who apply must have populations of 30,000-500,000.

FEDERAL FUNDING SOURCES						
Name	Amount Available	Types of Eligible Projects	Key Eligibility Factors	Frequency	Local Matches	Priority Assessment
Federal Highway Administration Fixing America's Surface Transportation Act (FAST Act)	\$2.9 million between FY2016-2020 in Los Angeles County	<ul style="list-style-type: none"> ▪ Public transportation ▪ Hazardous materials safety ▪ Motor carrier safety ▪ Rail ▪ Research ▪ Technology ▪ Statistics 	The application will fund eligible projects that best achieve program goals and meet program requirements	Annually from FY 2016-FY 2020	N/A	High
Federal Highway Administration Surface Transportation Block Grant	\$ 31.7 million between FY2016-2020 in Los Angeles County	<ul style="list-style-type: none"> ▪ Federal aid highway improvements ▪ Bridge and tunnel projects ▪ Pedestrian and Bicycle infrastructure ▪ Transit capital projects 	Projects must be identified in the STP*/TIP* and be consistent with the Long-Range Statewide Transportation Plan and Metropolitan Transportation Plan.	Annually from FY 2016-FY 2020	N/A	High
Federal Highway Administration Congestion Mitigation and Air Quality Improvement Program (CMAQ)	\$138.5 million between FY16-2020 2020 in Los Angeles County	<ul style="list-style-type: none"> ▪ Transportation projects or programs ▪ Hazardous materials safety ▪ Motor carrier safety ▪ Rail ▪ Research ▪ Technology ▪ Statistics 	A project or program that is likely to contribute to the attainment or maintenance of a national ambient air quality standard	Annually from FY 2016-FY 2020	N/A	High
Federal Transit Administration Bus and Bus Facilities Program	\$423 million nationally	<ul style="list-style-type: none"> ▪ Bus facility rehabilitation ▪ Bus facility construction ▪ Technology improvements ▪ Bus purchases 	To program provides funds to designated recipients that allocate funds to fixed route bus operators, states, or local governmental authorities that operate fixed route bus services	Annually	Federal share of eligible costs: 80% of net capital of project cost	Medium

Our Town (National Endowment for the Arts)	\$25,000-\$200,000	<ul style="list-style-type: none"> ▪ Artist residency ▪ Arts festivals ▪ Public art ▪ Artist/designer-facilitated community planning ▪ Public space design ▪ Design of cultural facilities ▪ Etc. 	Required partnership between local government and nonprofit organization	Annually	Cost share/match equal to the grant amount	Medium
Federal Transit Administration Urbanized Area Formula Program	N/A	<ul style="list-style-type: none"> ▪ Planning ▪ Engineering ▪ Design and evaluation of transit projects ▪ Capital investments in bus and bus-related activities ▪ Crime prevention ▪ Etc. 	The program is available for urbanized areas for transit capital and transit-related planning.	Annually	20% however bicycle facilities, bike racks, shelters, etc. can receive 95% federal share for the first 1% of program funds	High
Federal Highway Administration The Better Utilization Investments to Leverage Development Discretionary Grant (BUILD)	\$1 million-\$5 million	<ul style="list-style-type: none"> ▪ Recreation trails ▪ Road diets ▪ Separated bike lanes ▪ Shared-use paths ▪ Sidewalks ▪ Signal improvements ▪ Bicycle parking, racks, repair stations, storage ▪ Bike share programs 	Projects should demonstrate significant regional impacts and be construction-ready	Annually	Funding may be used for up to 80% of the costs of the project in urban areas, 100% in rural areas	High
Environmental Protection Agency Brownfield Assessment Grant Program	\$200,000-\$300,000	<ul style="list-style-type: none"> ▪ Brownfield site assessments ▪ Public outreach ▪ Groundwater monitoring ▪ Site surveying ▪ Creation of parks, greenways, other types of recreation properties 	Grants should be used to protect human health and the environment, promote economic development, and the creating or addition of parks, greenways, underdeveloped properties.	Annually	N/A	Medium
Federal Highway Administration Highway Safety Improvement Program (HSIP)	\$10 million	<ul style="list-style-type: none"> ▪ Pedestrian safety improvements ▪ Enforcement Activities ▪ Traffic Calming ▪ Crossing enhancements at schools 	Non-infrastructure projects are not eligible and must be consistent with the State's Strategic Highway Safety Plan	Annually	10%	High

STATE FUNDING SOURCES						
Name	Amount Available	Types of Eligible Projects	Key Eligibility Factors	Frequency	Local Matches	Priority Assessment
Caltrans Active Transportation Program (ATP)	\$400 million	<ul style="list-style-type: none"> ▪ Infrastructure projects ▪ Plans – community wide bicycle, pedestrian, SR2S, or active transportation plans ▪ Non-infrastructure projects – education, encouragement, enforcement activities ▪ Combination Projects – Infrastructure and non-infrastructure projects 	Projects under the Plan category must be located in a disadvantaged community	Annually	N/A	High
Caltrans Sustainable Transportation Planning Grant Program	\$34 million	<ul style="list-style-type: none"> ▪ Community needs assessments ▪ Transit-oriented development ▪ Long-range transportation plans ▪ Complete streets plan ▪ Active Transportation Plans ▪ Bike and Pedestrian Plans ▪ Station area planning ▪ Etc. 	Must directly benefit the multi-modal transportation system, improve public health, social equity, environmental justice, the overall environment, and other community benefits.	Annually	11.47%-20%	High
California Natural Resource Agency Environmental Enhancement and Mitigation Funds	\$500,000	<ul style="list-style-type: none"> ▪ Urban forestry projects ▪ Resource land projects ▪ Mitigation projects 	Projects must mitigate, either directly or indirectly, the environmental impacts of the modification of an existing Transportation Facility or new facility.	Annually	N/A	Medium
California Natural Resource Agency Urban Greening Grant Program	\$19 million	<ul style="list-style-type: none"> ▪ Active Transportation Projects ▪ Green streets and alleyways ▪ Non-motorized urban trails ▪ Urban heat island mitigation ▪ Neighborhood park expansion, enhancement, and establishment 	Projects must reduce greenhouse gas emissions. Project must also acquire, create, enhance, or expand community parks and green spaces, and use natural systems	Annually	N/A	High
California Natural Resource Agency Green Infrastructure Program	\$50,000-\$3 million	<ul style="list-style-type: none"> ▪ Community parks ▪ Green spaces ▪ GHG emissions reduction ▪ Green infrastructure improvements ▪ Stormwater capture ▪ Recycled water ▪ Community education 	All projects must benefit communities, disadvantaged communities, and prevent displacement	Annually	N/A	High
California Department of Parks and Recreation Regional Park Program	\$200,000-\$3 million	<ul style="list-style-type: none"> ▪ Non-motorized trails ▪ Equestrian centers ▪ Plazas ▪ Playgrounds ▪ Public art ▪ Etc. 	Only one park per application, if there is more than one park, applicants must submit more than one application. Creation of new regional parks are prioritized.	Annually	No	High
California Department of Parks and Recreation Statewide Park Development and community Revitalization Program	\$200,000-\$8,500,00	<ul style="list-style-type: none"> ▪ New parks ▪ Expanding existing parks ▪ Renovating existing parks 	Only one park per application, if there is more than one park, applicants must submit more than one application. Creation of new regional parks are prioritized.	Annually	No	High

California Department of Resources Recycling and Recovery Rubberized Pavement Grant Program	\$7,750,000	<ul style="list-style-type: none"> ▪ Rubberized pavement projects for roadways, Class I bikeways, greenways, and access at parks 	Projects must use a minimum of 3,500 tons of RAC hot-mix and 40,000 square yards of chip seal material	Annually	N/A	Medium
California Strategic Growth Council Transformative Climate Communities Program	\$60 million	<ul style="list-style-type: none"> ▪ Transit access and mobility ▪ Solar installation ▪ Water efficiency ▪ Recycling and waste management ▪ Urban greening and green infrastructure ▪ Health and well-being 	All projects must meet readiness requirements (CEQA documentation, site control, permits, project maps and designs, etc.)	Annually	N/A	Medium
California Strategic Growth Council Affordable Housing and Sustainable Communities	\$30 million maximum per project type	<ul style="list-style-type: none"> ▪ Affordable housing ▪ Pedestrian infrastructure improvements ▪ Bicycle improvements ▪ Transit amenities ▪ Urban greening 	Projects must reduce GHG emissions and reduce vehicle miles travelled. Must promote mode shift to low carbon transportation options	Annually	N/A	High
California Strategic Growth Council Sustainable Communities Program	\$4.4 million	<ul style="list-style-type: none"> ▪ Land-Use Planning ▪ Transit Planning ▪ Bicycle and Pedestrian Planning ▪ Safe Routes to School ▪ Climate Action Plans ▪ GHG Reduction Programs ▪ Natural Resource Plans 	Applicants must identify which category they wish to apply their projects for	Annually	N/A	High
Caltrans State Transportation Improvement Program	Caltrans presents funds in June every other year	<ul style="list-style-type: none"> ▪ Transit and Rail projects ▪ Bicycle and Pedestrian projects ▪ Multi-modal corridor projects ▪ Transportation Management System Improvements 	Priority is given to projects that build climate preparedness and reduce GHG emissions	Every two years	11.5%	High

California Department of Parks and Recreation Habitat Conservation Fund – Trails	\$2 million	<ul style="list-style-type: none"> ▪ Wetlands restoration ▪ Trails development ▪ Acquisition of habitat ▪ Protect endangered, threatened, or fully protected species. 	Project must bring urban residents into park and wildlife areas, protection of various plants and animal species	Annually	50%	Low
Coastal Conservancy Proposition 1 Grant	\$100.5 million	<ul style="list-style-type: none"> ▪ Wetland restoration projects ▪ Sustainable forest projects ▪ Climate adaptation projects ▪ Water quality and water protection 	Projects must be consistent with the Conservancy's legislation, support the Strategic Plan	Annually	25%-50%	Low
California Transportation Commission Local Partnership Program	\$200 million	<ul style="list-style-type: none"> ▪ Transit facility improvements ▪ Safety and operational improvements ▪ Corridor improvements ▪ Bicycle and pedestrian safety improvements ▪ Environmental mitigation improvements 	Projects are given priority if can show implementation earlier. Projects show they can demonstrate air quality improvements	50%	Annually	High
Caltrans Transportation Development Act	\$1.9 billion	<ul style="list-style-type: none"> ▪ Planning and program activities ▪ Bicycle and pedestrian facilities ▪ Transit services ▪ Public transportation Projects ▪ Bus and rail projects 	Projects are given funding priority if they can demonstrate offsetting the increase in cost of fuel, enhance existing public transportation services, and meet high priority transportation needs	Annually	70%-80%	High

REGIONAL AND LOCAL FUNDING SOURCES						
Name	Amount Available	Types of Eligible Projects	Key Eligibility Factors	Frequency	Local Matches	Priority Assessment
Metro Local Return Program (Measure A, C, R, & M)	\$500 million	<ul style="list-style-type: none"> ▪ Public Transportation improvements ▪ Congestion management ▪ Bicycle facilities ▪ Street improvements ▪ Safe Routes to School 	Project must comply with Metro's ordinance	Annually	N/A	High
Safe, Clean Water Program (Measure W)	\$ 285 million	<ul style="list-style-type: none"> ▪ Water quality improvements ▪ Park and wetland improvements ▪ Stormwater/urban runoff mitigation 	Projects will be given priority that show a number of different projects that benefit health, including increase stormwater capture, water pollution mitigation, new technology investigation, etc.	Annually	N/A	High
LADOT People Street Program	N/A	<ul style="list-style-type: none"> ▪ Pedestrian plazas ▪ Pedestrian parklets ▪ Bicycle parking 	Community partners apply for the program and work with the city	Annually	N/A	Low
LADOT Great Streets Program	N/A	<ul style="list-style-type: none"> ▪ Bicycle and pedestrian projects ▪ Parklets ▪ Plazas ▪ Community murals 	Community partners apply for the program and work with the city	Annually	N/A	Low
Metro Active Transport Program	\$37.7 million between FY 2021-2025	<ul style="list-style-type: none"> ▪ Bicycle and pedestrian improvements ▪ Bicycle and pedestrian safety projects ▪ First/last mile planning ▪ Traffic calming ▪ Transit station improvements 	Projects must be consistent with Metro's First/Last Mile Strategic Plan or the Active Transportation Strategic Plan	Annually	N/A	High
Metro Open Streets Program	\$1 million	<ul style="list-style-type: none"> ▪ Street closure events ▪ Public engagement 	Events must promote and encourage active transportation use	Annually	20%	Medium
Metro Transit Oriented Development Planning Grant Program (TOD)	\$21.6 million	<ul style="list-style-type: none"> ▪ Bicycle and pedestrian improvements around transit stations ▪ Transit station improvements ▪ Corridor studies near transit stations 	Applicants must demonstrate the corridor's relevancy to the development of transit supportive planning around the station area	Annually	N/A	Medium
Metro ExpressLanes Net Toll Revenues Reinvestment Grant Program	\$22 million-\$28 million	<ul style="list-style-type: none"> ▪ Transit projects ▪ Active Transportation ▪ Roadway Improvements 	Projects must provide transportation benefits around the I-10 and I-110	Annually	N/A	Low
City of Los Angeles Neighborhood Purpose Grant (NPG)	\$5,000 or more	<ul style="list-style-type: none"> ▪ Community Support ▪ Art ▪ Beautification ▪ Education ▪ Community Improvements 	Projects must clearly support and improve communities. Non profit organizations and schools may apply	Annually	N/A	Low

PRIVATE FUNDING SOURCES

Name	Amount Available	Types of Eligible Projects	Key Eligibility Factors	Frequency	Local Matches	Priority Assessment
Conservation Fund- The KODAK American Greenways Program	\$500-\$2,500	<ul style="list-style-type: none"> ▪ Greenway development ▪ Bicycle paths ▪ Surveying ▪ Ecological assessments ▪ Trail planning 	Grants will be awarded to applicants that can show the importance of the project to local greenway development	Annually	N/A	High
PeopleForBikes Community Grant Program	\$800-\$10,000	<ul style="list-style-type: none"> ▪ Bike paths ▪ Trails ▪ Bridges ▪ Bike parks ▪ Bike parking ▪ Programs like Open Street Days 	The program will not consider grant requests in which funding would amount to 50% or more of the project budget	Annually	N/A	High
Robert Wood Johnson Foundation	N/A	<ul style="list-style-type: none"> ▪ Planning and demonstration projects ▪ Research and evaluations ▪ Policy analysis ▪ Public education ▪ Community engagement and coalition-building 	Applicants must choose a Grant program they wish to apply for	Annually	N/A	Low
The Kresge Foundation	N/A	<ul style="list-style-type: none"> ▪ GHG reduction ▪ Community development ▪ Public outreach ▪ Public education 	Applicants must show that their projects will bring out positive change	Annually	N/A	Low
The Bloomberg American Cities Initiative	N/A	<ul style="list-style-type: none"> ▪ Climate change mitigation ▪ Sustainable cities ▪ Road safety ▪ Research ▪ Autonomous vehicles ▪ Public Art ▪ Education 				
Bloomberg Philanthropies Asphalt Art Initiative	\$25,000	<ul style="list-style-type: none"> ▪ Asphalt Art ▪ Pedestrian plazas ▪ Murals on underpasses, utility boxes, etc. 	<p>Cities must have a population between 30,000 and 500,000. The project must address a challenge faced by the identified site (traffic safety, underutilized public space, etc.)</p> <p>The project must provide community engagement</p>	Annually	N/A	Low

Appendix D: Adaptation Concept Report

Introduction

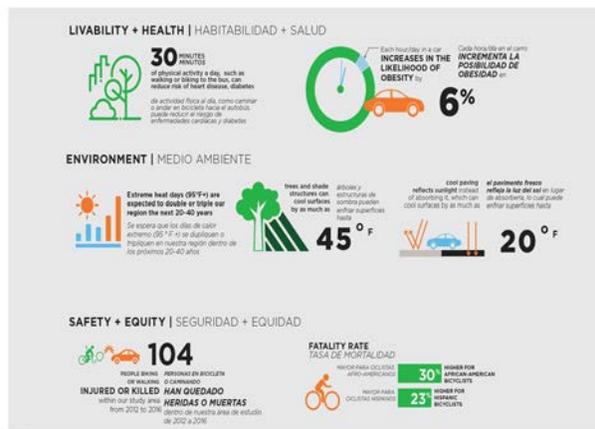
The “Addressing Transit Access and Heat in Canoga Park” project, led by StreetsLA, aims to improve transit users’ first/last mile experience around the Sherman Way Station of Metro’s Orange Line Busway, in the face of a changing climate that is exacerbating extreme heat. The project has multiple objectives: reduce heat and its impacts, capture and manage stormwater, improve pedestrian infrastructure, improve bicycle infrastructure, and provide community amenities. The project focus area is a ½ mile radius around the Metro Orange Line Station at Sherman Way, as a real-world demonstration how the climate adaptation concepts could be applied to communities across Los Angeles.

Earlier in the project, the Existing Conditions Report described the increase in frequency, duration, and severity of extreme heat events that Canoga Park is facing due to climate change, as well as the public health implications of that extreme heat. Climate change is also making precipitation events more intense (the wettest days of the year are getting wetter), which poses new challenges for capturing and managing stormwater. The aim of the project is to address these climate impacts and to improve multi-modal mobility in Canoga Park with solutions that are informed by science and co-created with community members.

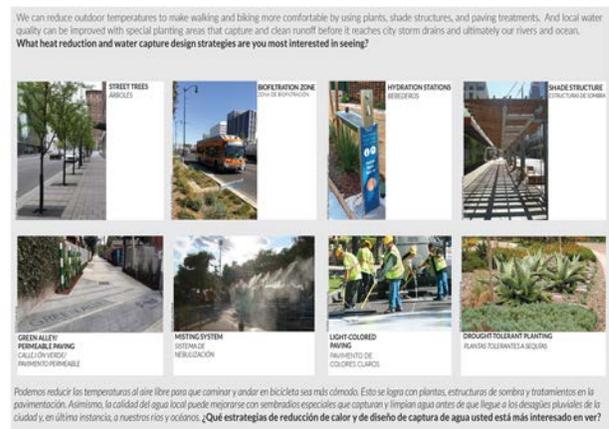
By using both a ‘First/Last Mile’ and climate adaptation approach, this project delivers a more holistic understanding of safety, health and wellbeing. It is difficult to increase rates of walking and bicycling when these activities expose people to extreme heat. By combining traffic safety components with urban cooling concepts, the residents of Canoga Park and all of Los Angeles will be able to access transit by foot and bike more easily and safely.

During the first outreach phase of the project in Spring 2019, Canoga Park community members were asked to rank their favorite design solutions to address the project objectives listed above. An online and in-person survey, as well as a community workshop were held to determine community priorities and preferences. Below is a snapshot of the content covered during this first phase of outreach.

COMMUNITY BENEFITS | BENEFICIOS PARA LA COMUNIDAD



MANAGE HEAT & WATER | CONTROL DEL CALOR & AGUA



CONNECTIONS & SAFETY | CONEXIONES & SEGURIDAD

It is important to address safety concerns through street design that accommodates all users of the road. Improved pedestrian facilities and new bike facilities will provide safe access to the Sherman Way station and will promote public health, support local commercial districts, encourage community connections, and improve quality of life for all. **What design strategies do you want to see used to make walking and biking easier and safer?**



Es importante abordar los problemas de seguridad a través del diseño de la calle que acomode a todos los usuarios. Las instalaciones peatonales y ciclistas brindarán acceso seguro a la estación Sherman Way y promoverán la salud pública, apoyarán a los negocios locales, fomentarán el tejido social y mejorarán la calidad de vida para todos. **¿Qué estrategias de diseño desea usted que se usen para que caminar y andar en bicicleta sea más fácil y seguro?**

LIVABILITY | HABITABILIDAD

This project aims to enhance the experience of walking and biking by adding amenities within the study area. This may include elements like bus shelters, benches, art elements, educational signage, and plantings. **Which elements would make the experience of walking and biking more enjoyable?**



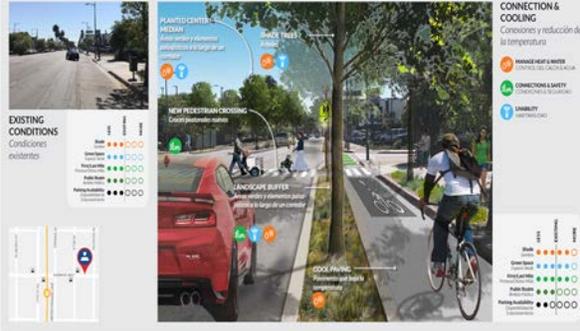
Este proyecto apunta a mejorar la experiencia de caminar y andar en bicicleta agregando servicios dentro del área de estudio. Esto puede incluir elementos como refugios en paradas, bancas, elementos artísticos, señalización educativa y arbolado. **¿Qué elementos harían más agradable la experiencia de caminar y andar en bicicleta?**

The second phase of the project identified possible locations for the amenities, and we returned to the public to share how these concepts could be implemented in their neighborhood and seek input. At a community workshop, people were asked to tell us what they liked and/or would change about the below renderings. Overwhelming, the community was excited about the potential streetscape changes, and welcomed their implementation.

SHERMAN WAY

Sherman Way is the center of Canoga Park. Whether walking, biking, driving, or using transit, residents traverse Sherman Way nearly every day. This project looks at Sherman Way east of Canoga Avenue, where there are no bike lanes and few street trees or pedestrian crossings. Most commercial properties have parking lots, and street parking is rarely utilized. The project imagines a protected bikeway and various ways to reduce the heat island effect while increasing connections to key destinations.

Sherman Way es el centro de Canoga Park. Ya sea caminando, en bicicleta, conduciendo o usando el transporte público, los residentes atraviesan Sherman Way casi todos los días. Este proyecto se concentra en Sherman Way al este de Canoga Avenue, en donde no hay carriles para bicicletas. Hay pocas árboles en las calles y pocas cruces peatonales. La mayoría de las propiedades comerciales tienen estacionamientos, por lo que el estacionamiento en la calle es casi vez utilizado. Este proyecto contempla un carril protegido para los ciclistas, además de varias estrategias para reducir el efecto de isla de calor al mismo tiempo que aumente las conexiones a destinos clave.



ORANGE LINE BIKE PATH | EL SENDERO DE LA LÍNEA NARANJA DEL METRO

The Orange Line Bike Path allows for car-free walking and biking from Chatsworth to North Hollywood. Constructed by Metro and maintained by the City of LA, it has occasional shade trees but no places to rest or find water. Adding more trees and rest areas ("Cooling Refuges") where people can relax in the shade and access drinking water can help reduce risks of extreme heat. Shade structures at major crossings would help pedestrians and bicyclists stay out of the sun while waiting for a walk signal.

El sendero peatonal y ciclista de la "Orange Line" (la Línea Naranja del Metro) permite caminar y andar en bicicleta sin automóviles desde Chatsworth hasta North Hollywood. Construido por Metro y mantenido por la Ciudad de Los Angeles, cuenta con árboles de sombra ocasionales, pero no tiene lugares para descansar o encontrar agua. Agregar más árboles y áreas de descanso ("Refugios de enfriamiento"), donde las personas pueden relajarse en la sombra y acceder al agua potable, ayudará a reducir los riesgos de calor extremo. La estructura de sombra en los cruces principales ayudará a los peatones y ciclistas a mantenerse alejados del sol mientras esperan el semáforo en verde.



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OWENSMOUTH PLAZA | PLAZA OWENSMOUTH

Home to a lively Farmer's Market, this section of Owensmouth Avenue has a wide surface, and lower traffic and parking use than Sherman Way. There is an opportunity to create a public plaza that would provide space year around for the Farmer's Market, cultural events, socializing, and play. Cooling strategies including decorative cool paving, trees, umbrellas, and shade walls could be incorporated to create a refuge for the community at Valley temperatures rise. Vehicles could still access businesses on Owensmouth Avenue via the alley in the back.

Hecho de un animado "Farmer's Market" (mercado de alimentos), esta sección de la Avenida Owensmouth tiene una superficie amplia, menor tráfico y menor uso de estacionamiento que Sherman Way. Existe la oportunidad de crear un espacio público que brinde espacio durante todo el año para el "Farmer's Market", eventos culturales, socialización y juegos. Se podrían incorporar estrategias de enfriamiento tales como pavimentos decorativos que refrescan, árboles, sombrillas, y paredes de sombra, al incorporar estas se puede crear un refugio para la comunidad al Valle las temperaturas se elevan. Los vehículos todavía pueden acceder a los negocios en la Avenida Owensmouth desde la calle trasera en la parte de atrás.



Throughout this project, targeted outreach has also been conducted to local businesses, the Canoga Park Improvement Association (the local BID), the Canoga Park Neighborhood Council, students of Canoga Park High School, and the office of Los Angeles City Council District 3.

The purpose of this report is to provide an overview of the five climate adaptation strategies that had the highest demand from outreach participants, out of the eight strategies that were presented to them. Those five climate adaptation strategies listed in order of highest demand are: shade structures, street trees, cool pavements, hydration stations, and green infrastructure (stormwater capture). This report details their **metrics of effectiveness, variations, compatibilities, limitations, and co-benefits** (secondary benefits from policy actions). This report attempts to quantify the effectiveness of the five climate adaptation strategies, as well as how they complement the community's capacity to protect themselves from the dangers of extreme heat.

1. Shade Structures

A. Overview

Shade structures lower surface temperatures by reducing the amount of solar radiation that reaches areas below their canopies. This lower surface temperature reduces the amount of heat transmitted into buildings and the atmosphere. Shade structures can vary depending on their design elements, such as the medium that is used to support the structure and the type of material that is used for the primary shading element. Studies have shown shade structures to efficiently mitigate heat stress in hot dry climates and increase thermal comfort in the spring, summer, and fall.¹

In the following sections, we describe how the effectiveness of shade structures are measured, types of shade structure options, shading material compositions, and compatibility and limitations of the options.

B. Metrics of Effectiveness

1. Surface temperature reduction

Artificial shade structures have been found to reduce surface temperatures 0.2 to 22.8°C (0.4 to 41°F).² Surface temperature reductions are greater when the shading material is more opaque, and less when the material is more translucent.³

2. Ultraviolet Protection Factor (UPF)

A material's UPF rating is based on the percentage of UV radiation transmitted through the material. Table 1 below shows the corresponding protection categories for different UPF ratings.

Table 1: Grades and classification of UPF⁴

Percentage UV Radiation Transmitted	Percentage UV Radiation Absorbed	Ultraviolet Protection Factor (UPF)	Protection Category
10%	90%	10	Moderate
5%	95%	20	High
3.3%	96.7%	30	Very high
2.5%	97.5%	40	Excellent
2%	98%	50+	Excellent

3. Air temperature reduction

Due to reduced surface temperatures from shade, less heat is emitted into the near-surface air, which results in air temperature reductions. One study detected 0.6 to 2.5°C (1.0 to 4.5°F) decrease in air temperature under shade structures compared to unshaded areas.⁵

C. Types of Shade Structures⁶

1. Cantilever Shade Structures

Cantilever shade structures are built to require structural support on only one side. Their frames are designed to contain their own loads to avoid placing tension on other structures.⁷

- Dimensions: Typically, available in lengths and widths of 15' (min) to 36' (max) and an entry height of up to 12'
- Materials used: Canvas or other tightly woven cloths, knitted polyethylene or woven PVC shade cloth
- Possible locations for use: Business districts, parking lots, plazas, and bus stops, rest areas



Figure 2: Cantilever shade structure⁸

2. Hip Shade Structures: Hip shade structures are square or rectangular shade structures that have options for two, four, six, or eight columns for support.⁹

- Dimensions: Typically, available in lengths and widths of 11' (min) to 40' (max) and an entry height of 7' ~ 15'
- Materials used: Canvas or other tightly woven cloths, knitted polyethylene or woven PVC shade cloth
- Possible locations for use: Playgrounds, parks, and large, outdoor seating areas



Figure 3: Hip shade structure¹⁰

3. Shade Sails: Shade sails are created by running a wire rope around the perimeter of a sail and stretching a high tensile shade cloth between 3 - 5 support structures, attaching it at each corner.¹¹

- Dimensions: Typically, available in lengths and widths of 15' - 40' and an entry height of 8' - 16'
- Materials used: Canvas or other tightly woven cloths, knitted polyethylene or woven PVC shade cloth
- Possible locations for use: Entrances to buildings, plazas, bus stops, parks, playgrounds, and rest areas



Figure 4: Shade sail¹²

4. Bus Shelters: Bus shelters are structures located at a bus stop that provide seating and protection from the weather for waiting passengers.

- Dimensions: 13' x 5'
- Clearances:
 - Minimum 4' clearing for pedestrians to walk in front or behind the shelter (depending on the location of the mounted case)¹³
 - "Minimum 6' clearance from ad panel box for opening and replacing advertisement"¹⁴
 - "Clearance from curb: all shelters must allow a straight unobstructed path of at least 26" between the transit shelter and the face of curb"¹⁵
 - "Trash can: If provided by the city's contractor, trash can shall be installed at a minimum 6' clear from the transit shelter"¹⁶



Figure 5: Bus shelter¹⁸

- “Bus shelters require a minimum 22’-0” long clear sidewalk, curb, and gutter”¹⁷
- Materials used: Aluminum

5. Solar Canopies: Solar canopies are elevated structures that host solar panels and also provide shade.

- Dimensions: Can vary
- Materials used: Silicon solar cells, metal frame (typically aluminum), glass sheet for casing, Standard 12V Wire, Bus wire, Plexiglas¹⁹
- Possible locations for use: Sidewalks, parking lots, on top of bus shelters



Figure 6: Solar Canopy²⁰

D. Shading Materials Comparison

Table 2: Shade material properties²¹

	Approximate Ultraviolet Protection Factor (UPF)	Solar heat gain* (amount of solar heat absorbed)	Light transmission	Suitability	Waterproof	Maintenance requirements	Life span
Canvas or other tightly woven cloths	Very high when new, lower as material deteriorates over time	High if darker-colored material	High if lighter-colored material	Good for small, short-term applications	Watertight up to saturation point	Without specific treatment is not mold resistant	Limited. Susceptible to breakdown due to UV radiation exposure
Knitted polyethylene or woven PVC shade cloth	Moderate UV radiation protection	Darker colors are hotter, but reflect less UV radiation	Light colors allow more light, but reflect and scatter more UV radiation	Canopies	Porous, lacks rain protection	Susceptible to mold growth and dirt accumulation	5 - 10 years
Steel roof sheeting	Very high, direct barrier to UV radiation	High if not insulated	No light transmission	Roofing, walling, steep or low pitches	Yes	Subject to moisture and condensation conditions	Long life if well maintained
Poly-carbonate/fiberglass sheeting	Very high	High	High, but varies according to thickness, profile, and color	Roofing, walling, louvre, awnings, skylights, canopies	Yes	Low maintenance. Impact resistant	About 10 years. Discoloration may occur sooner

Glass	Depending on thickness, house window glass can absorb 90% of UV radiation (UPF of 10)	Less heat gain if tinted	High, depending on tint	Good windbreak where visibility and light are required	Yes	Needs regular cleaning	Long life, if does not sustain impact
Timber	Very high, direct barrier to UV radiation	Does conduct heat	Depends on detailing	Pergolas, trellis, screens	Depends on detailing use	Need to guard against termites	Long life if well maintained

*The spectrum of radiation received on earth from the sun includes infrared, visible and ultraviolet radiation. Because solar heat gain felt from sunlight comes from infrared radiation, it is important to note that heat and temperature represent different areas of the spectrum from UV radiation.²²

E. Compatibility and Limitations

1. Location

- To get the greatest cooling benefit, shade structures should not be installed above cool pavement, plants, or solar-powered machines that may require direct sunlight/rain.
- When installing shade structures, the possibility of blocking store signage or traffic sight lines should be considered.
- Space requirements of shade structure bases should be considered prior to installation.

2. Structure implications

- Canvas or other tightly woven cloths: Guy ropes (if present) can cause obstruction
- Knitted polyethylene or woven PVC shade cloth: Wind drags through porous material
- Steel roof sheeting: Need to incorporate wind uplift considerations into design
- Polycarbonate/fiberglass sheeting: Need to incorporate wind uplift considerations into design
- Glass: Need to select glass appropriate to the site
- Timber: Need to incorporate wind uplift considerations into design

2. Street Trees

A. Overview

Street trees provide multiple benefits that increase in value over time as trees grow. By providing shade, trees reduce the amount of solar radiation that reaches the area below their canopy, which reduces surface temperatures near-surface air temperatures.²³ Trees also reduce air temperature through the process of evapotranspiration in which trees absorb water through their roots and emit it through their leaves, cooling and purifying the air as surrounding heat evaporates the water. Trees also help to manage stormwater by capturing and storing rainfall in the canopy and releasing water into the atmosphere through evapotranspiration.²⁴ They also absorb CO₂ from the atmosphere and release oxygen in exchange.

B. Metrics of Effectiveness

1. Reductions in temperatures through shading and evapotranspiration

Several studies have investigated the impacts of trees on surface and near-surface air temperatures. Studies have focused on temperature differences between shaded and unshaded areas, as well as modeled the potential impacts of additional trees on neighborhood-scale temperatures. One study found that pavement surface temperature is consistently lower in

shaded areas relative to adjacent open areas with a reduction ranging from 0.2 to 22.8°C (0.4 to 41°F).²⁵

The magnitude of neighborhood-scale air temperature reductions from tree-planting programs depends on the number, type, and spatial scale of trees planted. At the scale of single trees, one study showed a 0.6 to 2.5°C (1.0 to 4.5°F) decrease in air temperature under trees compared to unshaded areas.²⁶ Another study found that adding trees to a neighborhood in El Monte, California could reduce spatial average near-surface air temperatures by ~0.22°C (~0.4°F) during the afternoon on a hot summer day.²⁷ (This spatial average includes both shaded and unshaded areas). At larger scale, urban greening can reduce air temperatures via evapotranspiration by up to ~2-3°C (~3.5-5.5°F).²⁸

Tools such as i-Tree can be used to simulate the cooling and energy-saving benefits for buildings with nearby trees.²⁹

2. Stormwater Capture

Tree roots and healthy soil create conditions that promote the infiltration of rainwater into the soil. This helps to replenish our groundwater supply when it rains and maintain streamflow during dry periods.³⁰ Stormwater capture is dependent on tree species and size; the i-Tree Planting tool can be used to calculate the avoided runoff. Stormwater interception can range from 2,287 to 21,975 gallons annually and avoided runoff can range from 464 to 6,683 gallons annually for a single tree (at 1-inch DPH).³¹

3. Carbon Sequestration through photosynthesis

Trees absorb CO₂, removing and storing the carbon while releasing oxygen back into the air. Through the process of photosynthesis, leaves pull in carbon dioxide and water and use the energy of the sun to convert this into chemical compounds such as sugars that feed the tree. As a by-product of that chemical reaction oxygen is produced and released by the tree. Over the course of one year, a mature tree will absorb more than 48 pounds of carbon dioxide from the atmosphere and release oxygen in exchange.³²

C. Factors to Consider When Choosing a Tree

1. City Approval of Tree Species

Not all trees are approved to be planted in public right-of-way within the City of Los Angeles.³³

See Appendix Section A for a list of approved tree species for the City of Los Angeles. Within this list, a total of 55 tree species are suitable for Canoga Park's Sunset Climate Zone. A tree selected from this list will not require special approval or design exceptions from the city, simplifying the design review process.

2. Sunset Climate Zone

A plant's effective cooling and shading properties are governed by its climate including factors such as the length of the growing season, timing and amount of rainfall, winter lows, summer highs, wind, and humidity.³⁴ Sunset Climate Zone Maps can be used to determine the climate zone of a plant which can evaluate its suitability for a specific area. Canoga Park is in Sunset Climate Zone 18, which is described as "Hilltops and Valley Floors of Interior Southern California". Its growing season is typically from mid-March through late-November. Summers are hot and dry; rain comes in winter. Plants from the Mediterranean and Near Eastern regions thrive here.³⁵

3. Deciduous Versus Evergreen

Trees are "categorized by the pattern and seasonality of their foliage growth."³⁶ These categories are deciduous trees and evergreen trees. Deciduous trees seasonally shed their leaves, whereas evergreen trees keep their foliage throughout the entire year.³⁷ As evergreen trees age, old leaves are replaced by new growth.³⁸ Because evergreen trees have their leaves for more

months throughout the year than deciduous trees, their shading capacity can potentially be higher. Thus, for cooling purposes, evergreen trees would be preferable over deciduous and semi-deciduous trees, so long as their branching structure, leaf size and canopy density provide sufficient shade.

4. Parkway Size

Parkway size is a determining factor in deciding what tree can be placed in an area. If the distance between the new trees and adjacent infrastructure provides adequate space for the tree to grow, this minimizes future root damage and prevents the tree from being damaged by passing and parked vehicles.³⁹ The minimum parkway sizes for trees can range from 3 to 10 feet.

5. Water Usage

Trees vary in the amount of water supply they require which can vary by area. Determining a tree's water usage will help one be wary of whether water supply of the area will be able to meet the demands of the tree. Satisfying the water requirement of a tree can minimize future root damage to roads and sidewalks. All trees need to receive irrigation for a minimum establishment period to ensure healthy development. Permanent irrigation can be used to mitigate a lack of water supply but may not be available in all spaces. If the tree is in a stormwater receptive planting area, it should be a type that is suited to periodic inundation.

6. Soil Type

Determining the soil texture and drainage of an area is important when choosing the right tree for a site. Soil types include clay, loam, sand, or any combination of the three. In the project area in Canoga Park the soil type is 28% clay, 43% loam, and 29% sandy loam. This combination of soil types offers good potential for both shallow and deeper infiltration and retention.⁴⁰

7. Required Sunlight Level

Different tree species require different amounts of sunlight. Most trees require full sun for growth, while a few require light shade/full shade. Those selecting trees should verify sunlight preference to ensure healthy growth.

8. Height and Width

A tree's potential height and width should be taken into account to ensure that the tree does not eventually act as an obstruction, such as blocking signage or entangling with power lines.

9. Allergy Potential

Some trees may cause an allergic reaction due to their airborne pollen or a chemical they release onto their bark or leaves. The level of a tree's allergy potential can range from 1 to 10 (with 10 being the highest level).⁴¹

10. Root Damage Potential

When tree roots remain close to the surface of the soil, they can cause costly damage to paving, structures or even water and sewer lines.⁴² Local environmental and tree care conditions, such as soil type or watering habits, can affect a tree's root development. In order to mitigate root damage potential, root barriers should be installed on the sidewalk side of all new trees.⁴³

11. Growth Rate

The growth rate can help determine how fast a tree can reach its full growth and contribute to cooling within a community. When scoping a project, selecting a mixture of trees with different maturity can ensure immediate benefits with the planting of mature trees, along with planting trees with longer growth rates to ensure overall survival of trees in a corridor.

12. Neighborhood Character

Trees should complement the existing neighborhood character to provide a visually compatible and complementary corridor. The chosen trees should be compatible with existing trees in their

size, form, and/or foliage color and should maintain or improve the appearance of the neighborhood.

13. Species Diversity

Tree species diversity is important in contributing to the resilience of a tree population against drought, pests, and disease. New trees should be chosen in respect to the existing character of respective street corridors, proven adaptability and suitability of tree species.

14. Urban Forestry Goals

Each tree chosen will aid the city of Los Angeles' urban forestry goal to plant 90,000 trees by 2021. In addition, the City has set the goal of increasing the tree canopy cover by at least 50 percent by 2028 in areas with the least shade, which tend to be the City's hottest areas and home to its low-income communities.⁴⁴

D. Compatibility and Limitations

In addition to the aforementioned factors to consider, compatibility and limitations of street trees include:

1. Location

- a. To obtain the highest cooling benefit, trees should not be installed above cool pavement or plants that may require direct sunlight/rain.
- b. For bikeshare stations, streetlights, or other items that are powered by solar energy, the use of any shade cover in their immediate surroundings should be minimized.
- c. When planting trees, the possibility of blocking store signage should be considered.
- d. Trees should be placed at a distance away from traffic signals and corners so as not to interrupt the critical sight lines of intersections.

2. Ongoing maintenance needs

- a. Proper establishment of a street tree within the first 3-5 years is important for its future health and maintenance requirements. Procedures include a structural pruning cycle and sufficient watering.

3. Cool Pavement

A. Overview

In general, darker materials have lower solar reflectance than lighter colored materials, and this is true when it comes to pavement surfaces. During the daytime, conventional asphalt concrete pavement absorbs the vast majority of solar energy it is exposed to (~85-95%) and reflects only a small portion upwards back into the atmosphere, causing it to be 20-30°C (68-86°F) hotter than surrounding surface temperatures.⁴⁵ These pavements then transfer heat downward to be stored in the pavement subsurface, and re-release this heat to the atmosphere at night - contributing to the urban heat island and increasing ambient air temperatures, at all hours of the day. Because so much urban space is dominated by streets and parking lots – 40% of LA's land cover is pavement - this has a huge effect on heat throughout the Los Angeles basin. To mitigate this effect, asphalt concrete pavement can be treated with a "cool pavement" product to improve its solar reflectance, causing it to absorb and store less solar energy, reducing the impacts of the Urban Heat Island Effect.

B. Metrics of Effectiveness

1. Solar Reflectance (SR) Value

A surface's solar reflectance (SR) value indicates the fraction of the downward solar radiation that is reflected away, or in other words, to what degree a surface reflects solar energy. SR Value is reported on a scale of 0 to 1, where 0 indicates that no solar energy striking the surface is reflected and 1 indicates that all of the solar energy is reflected. Although light-colored materials tend to have higher solar reflectance than dark-colored materials, color isn't always indicative of reflectance because visible light represents approximately 47% of the energy in the solar spectrum.⁴⁶ Solar reflectance is also commonly referred to as albedo.

SR values of different cool pavements listed in this document range from 0.27 to 0.64.

2. Surface Temperature Reduction

Because cool pavements tend to have higher SR value, they reflect a higher percentage of sunlight than conventional pavements. With this mechanism, the pavement absorbs less solar heat, and its temperature is reduced. Surface temperature reduction of different cool pavements listed in this document range from 10 to 30°F.

3. Ambient Air Temperature Reduction

Because cool pavements absorb less solar energy, the amount of heat they re-release into the atmosphere decreases. Subsequently, ambient air temperature is lowered. "While some model-based research has suggested this might be the case, there is no real world data that supports that conclusion."⁴⁸ A recent climate modeling study suggested that adopting highly reflective pavements (i.e., increasing pavement SR value by 0.4 for entire cities in California) could reduce city-mean summertime daily average near-surface air temperatures by up to ~1.5°F.⁴⁹ Another study focusing on adopting cool pavements at neighborhood scale suggested that increasing pavement SR value by 0.3 in a neighborhood in El Monte, CA could reduce near-surface air temperatures on a hot summer day by ~0.5°F.⁵⁰

4. Thermal Comfort

Thermal comfort refers to the "condition of mind that expresses satisfaction with the thermal environment," and various models are used to assess an individual's thermal perception.^{51,52} The effect of cool pavement on thermal comfort may vary depending on location and time of day. Thermal comfort is partially influenced by air temperature, and partially influenced by direct solar radiation. A recent study suggested that cool pavement may increase direct solar radiation reaching pedestrians and thus degrade their thermal comfort during the day when they are on or near the cool pavement.⁵³ This occurs because the pedestrian may absorb the sunlight that is reflected from the cool pavement, which to some extent negates the effect of reduced air temperatures. More data is needed to determine the extent of thermal discomfort from proximate cool pavements during the day. A recent study has shown that if the pedestrian is sufficiently far from the cool pavement (more than 16 feet away), the effect of reduced air temperature outweighs the negative effect of direct solar radiation and makes the pedestrian more comfortable.⁵⁴ Additionally, at sunset and throughout the night, cool pavements lead to improved thermal comfort since sunlight is no longer reflected and overall air temperature cools due to the cool pavement's insulating properties from heat absorption.

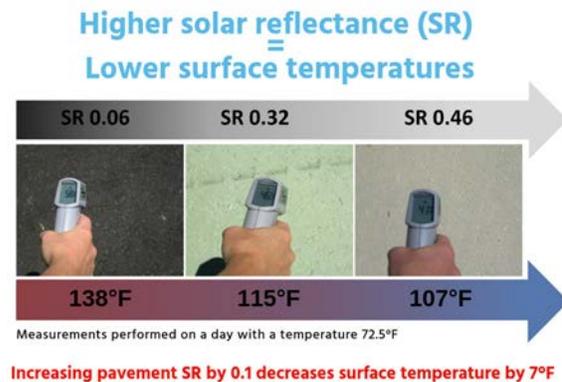


Figure 1: A visual comparison of how SR values affect surface temperature⁴⁷

C. Types of Cool Pavement

Cool pavement products are relatively new to the marketplace and continue to undergo development. There are different types of products that serve different road maintenance functions. They are categorized by their functional types below.⁵⁵

1. **Seal Coat:** Seal coats are asphaltic-based treatments that are applied on top of new or existing pavement that cap aggregate in place and enhances pavement protection from the elements.
 - a. **CoolSeal (GuardTop, LLC):** Asphalt coating / seal applied as a spray or with a squeegee
 - i. SR Value: 0.30
 - ii. Surface Temperature Reduction: 10 to 30°F
 - iii. Service Life: 3 years

2. **Cool Coating:** Cool coating pavement treatments are similar to seal coats, but are not asphaltic-based and have been modified to have cooling properties.
 - a. **StreetBond 120 (GAF):** 2-part epoxy-modified acrylic, waterborne coating for application on asphalt pavements in pedestrian and light vehicle areas, such as parking lots, side streets, and playgrounds
 - i. SR Value: 0.30 - 0.64
 - ii. Surface Temperature Reduction: 14 to 23°F
 - iii. Service Life: 5 - 10 years
 - b. **StreetBond 150 (GAF):** 2-part epoxy-modified acrylic, waterborne coating for application on asphalt pavements in both vehicular and pedestrian applications. Compared to StreetBond 120, Streetbond 150 contains a higher amount of resin thus increasing its durability and cost.
 - i. SR Value: 0.45
 - ii. Surface Temperature Reduction: unknown
 - iii. Service Life: 5 years
 - c. **StreetBondDS (GAF):** Acrylic coating to preserve and enhance the appearance of asphalt pavements (parking lots, schoolyards, walkways)
 - i. SR Value: 0.36
 - ii. Surface Temperature Reduction: unknown
 - iii. Service Life: 5 years
 - d. **Thermacote (ThermaCote, Inc.):** Technologically-advanced weather coating that seals the envelope of any structure and protects from heat and corrosion. Friendly to environments with ultra-low VOC's (volatile organic compounds) in a water-based acrylic formulation.
 - i. SR Value: 0.64 - 0.83
 - ii. Surface Temperature Reduction: 20°F
 - iii. Service Life: 7 years

3. **Overlay:** An overlay consists of installing new pavement over an existing pavement structure and is typically done to repair damage. When installing an overlay, the old surface is usually milled (ground) off, any structural damage is repaired, and then a new surface is applied.⁵⁶
 - a. **E-Pave 1 (E-Pave LLC):** Cement mortar, dry powder, material alternatives like industrial waste products
 - i. SR Value: 0.30
 - ii. Surface Temperature Reduction: 10 to 15°F
 - iii. Service Life: 6 years
 - b. **E-Pave 2 (E-Pave LLC):** Liquid polymer emulsion resin
 - i. SR Value: 0.37
 - ii. Surface Temperature Reduction: 10 to 15°F
 - iii. Service Life: 8-12 years
 - c. **Cool Slurry (PMI):** Emulsion aggregate surfacing made up of sand (60% of total material), water, a UV stable polymer, cement (white and grey), white pigment, and some smaller amounts of additives

- i. SR Value: unknown
- ii. Surface Temperature Reduction: 10 to 25°F
- iii. Service Life: 5 years

4. Portland Cement Concrete: Portland cement concrete is the familiar concrete pavement commonly used for infrastructure such as sidewalks, bridges, buildings, etc. Concrete is formed when Portland cement creates a paste with water that binds with sand and rock to harden.

- i. SR Value: 0.29 - 0.40
- ii. Surface Temperature Reduction: 12°F⁵⁷
- iii. Service Life: 20 years

D. Compatibility and Limitations

1. Location

- a. To get the most cooling benefit, cool pavements should be applied in areas that are not shaded as they are most effective when exposed to direct sunlight to reflect solar energy.
- b. In general, cool pavement seal coats, coatings, and overlays are only suitable to install in low-traffic areas such as sidewalks, trails or bike lanes, parking lots, and low-traffic volume streets, to reduce wear from high vehicle volumes. Concrete is durable enough for application on high-traffic volume streets, but is generally not used on corridors where underground utility maintenance needs exist under the roadway.

2. Glare

- a. A pavement's glare can pose a safety risk by reducing a user's ability to see clearly. However, glare is minimal at the SR value of most cool pavement products and has similar reflectivity to concrete.⁵⁸ Some industry experts have recommended that cool pavements' solar reflectance should not exceed 0.5 to avoid excessive glare.

3. Durability

- a. The service life stated by a manufacturer refers to the pavement's lifespan for maintenance purposes and may not represent the lifespan of the pavement's SR value.⁵⁹
- b. A study found that solar reflectivity of high SR value pavements can decrease by 20% after one-year exposure due to weathering and soiling.⁶⁰

4. Environmental Impact

- a. Cool pavements can require more energy and carbon to produce than traditional surface treatment materials.⁶¹
- b. A study found that using a reflective pavement coating in place of a more traditional surface treatment in Los Angeles can increase 50-year life-cycle GHG emissions by 11 to 13 kgCO₂e/m², a 1.2 to 1.7 percent increase.⁶²
- c. However, SB 100 puts the state on a pathway to 60% renewable by 2030 and 100% renewable by 2045, so we can expect a greater reduction in environmental impacts in the materials and construction stage for cool pavements over time.

5. Cost

- a. The cost of thirteen different cool pavements reviewed in a recent study varied from \$1.70 to \$37.75 per m²; however, several factors can impact the overall cost of procuring and installing cool pavement such as shipping and availability, coverage, and reapplication.⁶³

4. Hydration Stations

A. Overview

Access to water is a key component for human comfort and health during extreme heat. Hydration stations may not reduce heat, but they play a key role in adaptation to urban heat island effects and sudden heat waves by providing access to safe drinking water. Public hydration stations are useful for people walking, bicycling, using transit, and especially for vulnerable populations including children, elderly people, and people experiencing homelessness. These hydration stations not only provide free water for the public but can reduce waste by reducing the need to purchase single use plastic bottles or cups.

B. Metric of Effectiveness

1. Cubic Feet

- a. Flow meter gauges or water meters can be installed in water fountains to monitor usage.⁶⁴ Water meters can measure the amount of water used in the unit of cubic feet.
- b. One (1) 16.9 fluid oz. water bottle is equal to 0.0177 cubic ft. This conversion rate can be used to approximate the number of plastic water bottles avoided.

C. Types of Hydration Stations

The City of Los Angeles has approved different models of hydrations stations that can be installed in public locations.



Figure 11: Standard hydration stations⁶⁵



Figure 11: Bottle-filling hydration station⁶⁶



Figure 12: Combination hydration station⁶⁷

These are examples of hydration stations that are approved by the City of Los Angeles for outdoor installations such as at parks and recreational areas. Their specifications are as follows:

- “Powder-coated exterior over a corrosion-resistant stainless steel type-316 base material provides protection from the elements.”⁶⁸
- “Heavy-gauge construction with tamper-resistant screws that resist stains and corrosion.”⁶⁹
- “Vandal-resistant bubblers feature chrome-plated integral hood guard to prevent contamination from other users, airborne deposits, and tampering.”⁷⁰

D. Compatibility and Limitations

1. Location

- a. The location of installing hydration stations is dictated by where water lines are located. If no plumbing is nearby, the installation costs are much higher. Installation costs typically range in price from \$12,000 - \$50,000.⁷¹

2. Ongoing Maintenance Needs

- a. Most health concerns related to hydration stations can be traced to contamination from poor cleaning and maintenance, aging water infrastructure in buildings, or both.⁷² Ensuring stations and plumbing are properly maintained can help avoid unsafe drinking water.
- b. Recommendations from the EPA and others include daily cleaning and regular flushing to remove sediments or stagnant water, a comprehensive schedule of systematic cleaning and repair, and maintenance of sufficiently high water pressure.⁷³
- c. Stainless steel hydration stations that are vandal resistant are suited for urban environments and bring down maintenance costs as they are equipped with heavy-duty parts such as galvanized frames and steel cabinets, which protect against damage and wear.

5. Green Infrastructure

A. Overview

When rain falls on conventional hard, impermeable surfaces such as roofs, streets, and parking lots, it cannot soak into the ground and instead drains through engineered collection systems. Stormwater runoff carries trash, bacteria, heavy metals, and other pollutants from the urban landscape. Additionally, higher flows resulting from heavy rain can cause erosion and flooding in urban streams, rather than replenishing the groundwater.⁷⁴

When cities replace natural land cover with dense concentrations of pavements, buildings, and other hard surfaces, more heat is absorbed into the stormwater runoff which further contributes to urban heat islands. If hotter than 27°C (80.6°F), pavement surfaces transfer excess heat to stormwater runoff and can degrade water quality.⁷⁵ Discharging warm water into local streams can cause negative effects such as increased anoxic zones and harm to local fauna.⁷⁶

B. Metric of Effectiveness

The performance of green infrastructure is dependent upon its design, such as size, soil characteristics, and the types of plants selected. Existing drainage patterns and the existing soil's ability to percolate may also impact green infrastructure's effectiveness.

1. Stormwater Capture

Green infrastructure provides an enhancement to storm sewers as they can absorb and slow runoff from heavy rains before reaching storm sewer inlets. The amount of stormwater captured can depend on the volume of water the green infrastructure can hold and how fast the water can percolate into the soil.⁷⁷

2. Temperature Reductions

If replacing low-SR value surfaces, the adoption of green infrastructure could potentially reduce surface temperatures, and if installed at sufficiently large spatial scales, could also reduce near-surface air temperatures. Converting pavements to green infrastructure has the potential to alter the heat storage capacity of the ground, the magnitude of which depends in part on soil moisture and thus irrigation practices and precipitation frequency and intensity. In addition, increased soil moisture can lead to increased evaporative cooling during the day. The magnitude of temperature reductions depends on the baseline climate and the design of the green infrastructure system.⁷⁸

C. Types of Green Infrastructure

Green Infrastructure is a broad term that can apply to many treatments, from parks, street trees, to pervious paving. The US EPA defines Green Infrastructure as “...the range of measures that use plant or soil systems, permeable pavement or other permeable surfaces or substrates, stormwater harvest and reuse, or landscaping to store, infiltrate, or evapotranspire stormwater and reduce flows to sewer systems or to surface waters.”

For the purposes of this report, the term “Green Infrastructure” refers to two specific types of treatments:

Bioswales: Bioswales are systems that contain porous materials and plants that can withstand different soil moisture levels ranging from flooded to dry. They are designed to manage a specified amount of runoff from a larger impervious area, such as a parking lot or roadway. Because they need to accommodate greater quantities of stormwater, they often require the use of engineered soils and are designed as linear systems that are greater in length than width.⁷⁹ Some bioswales, such as flow-through planters are designed to slow water before it flows back out into the surrounding drainage system. Other bioswales contain actual detention/retention systems that capture and store water for longer durations.

Rain Gardens: Rain gardens are versatile features that can be installed in almost any unpaved space. Also known as bioretention, or biofiltration cells, they are shallow, vegetated basins that collect and absorb runoff from rooftops, sidewalks, and streets. This practice mimics natural hydrology by infiltrating and evaporating and transpiring stormwater runoff.⁸⁰ Rain gardens typically require more space than bioswales.



Figure 7: Bioswale and curb extension⁸¹



Figure 8: A vegetated swale with curb cuts in El Monte, California⁸²



Figure 9: Rain Garden in an urban environment⁸³

D. Factors to Consider When Choosing Plants for Green Infrastructure

1. Expected Water Levels and Inundation

Most green infrastructure plant lists consist of plants that can be inundated with water. However, if the plants are moderate water use plants, which many green infrastructure plants are, then they will need irrigation in the summer, which is not always feasible. Knowing whether or not the green infrastructure will have irrigation or if it will be solely dependent on rainwater and stormwater will determine what kinds of plants can be used for the green infrastructure. In the case of Canoga Park, a low water use plant that can withstand a lot of water in winter would be most suitable. Useful tools for plant selection are the Water Use Classification of Landscape Species guide⁸⁴ and the Low Impact Development Manual for Southern California.⁸⁵

See Appendix Section B for starter lists of native and non-native plant species that can be used for green infrastructure in Canoga Park’s Sunset Climate Zone.

2. Sunset Climate Zone

Sunset Climate Zone Maps, previously mentioned in reference to tree considerations, are also useful for determining appropriate plants for a particular climate zone. Climate zones take into account factors such as the length of the growing season, timing and amount of rainfall, winter lows, summer highs, wind, and humidity⁸⁶. Canoga Park is in Sunset Climate Zone 18, which is described as “Hilltops and Valley Floors of Interior Southern California.” Its growing season is typically from mid-March through late-November. Summers are hot and dry; rain comes in winter. Plants from the Mediterranean and Near Eastern regions thrive here.⁸⁷

3. Soil Type

Determining the soil texture and drainage of an area is important when choosing the right plant species for a site. Soil types include clay, loam, sand, or any combination of the three. In the project area in Canoga Park the soil type is 28% clay, 43% loam, and 29% sandy loam. This combination of soil types offers good potential for both shallow and deeper infiltration.⁸⁸

4. Sun Exposure

The sun exposure of the green infrastructure site should be taken into consideration when choosing appropriate plant species. Most green infrastructure plants will need to receive full sun exposure, since they are located in or near the roadway, except for when they are shaded by adjacent street trees.

5. Green Infrastructure Sizing

Determining the size of a site where green infrastructure is to be installed can determine what plants are chosen. In each case, mature plant size and pruning needs should be considered to minimize leaf litter or overgrowth within the bioswale or rain garden.

E. Compatibility and Limitations

1. Location

- a. If green infrastructure is adjacent to a tree, it provides a path of irrigation, allowing the tree to become established during its initial 2-3 years of growth.
- b. Green infrastructure can be used as chicanes, bulb-outs, and general traffic calming on low-speed streets. It is important that plantings near crosswalks do not rise above three feet to avoid interfering with traffic sight lines.

2. Necessity of Convenience Strips

- a. Convenience strips are curbside landing areas that provide an area between the curb and the unobstructed sidewalk for people to exit vehicles without damaging green infrastructure.⁸⁹

3. Ongoing Maintenance Needs

- a. Lack of proper maintenance can lead to failure of green infrastructure and high restoration cost.
- b. Maintenance needs include regular cleaning of litter and debris both in the green infrastructure and at the inlet and outlet channels.
- c. If installed, irrigation systems will need periodic maintenance to avoid overwatering and prevent potential discharges via underdrains. Mulch should be applied to bioretention areas to retain moisture, prevent erosion and suppress weed growth.⁹⁰

Co-Benefits of Adaptation Strategies

The table below lists each adaptation strategy in order of the most co-benefits to the least co-benefits. The co-benefits identified are improved human health, enhanced safety and quality of life, reduced energy use, improved water quality, improved air quality, increased pavement life, increased habitat, and enhanced stormwater management.

Table 3: Summary of co-benefits

	Improved Human Health	Enhanced Safety & Improved Quality of Life	Reduced Energy Use	Improved Water Quality	Improved Air Quality	Increased Pavement life	Increased Habitat	Enhanced Stormwater Management
Street Trees	X	X	X	X	X	X	X	X
Cool Pavement	X	X	X	X	X	X	X	
Green Infrastructure	X	X	X	X	X		X	X
Shade Structures	X	X	X			X		
Hydration Stations	X	X	X	X				

A. Street Trees Co-Benefits

The online tool, iTree <<https://planting.itreetools.org>>, can be used to quantify the amount of reduced energy use, reduced pollution, and captured stormwater by planting different species of trees.

1. Improved Human Health

- Reducing air pollution lowers the negative health consequences of poor air quality, such as asthma.
- Shade provided by dense tree canopies reduces direct exposure to UV rays and allows people to more comfortably walk and bicycle during hot days.
- People living in neighborhoods with less than 10% tree canopy are more likely to report symptoms of depression, stress, and anxiety.⁹¹
- Studies show that access to trees and green spaces promotes greater physical activity.^{92, 93}

2. Enhanced Safety / Improved Quality of Life

- Studies show that trees can help beautify the community and lower crime rates in neighborhoods, reduce urban noise, and lead to safer driving.^{94,95,96,97}
- Studies show that trees and landscaping can increase business pedestrian activity in a district.⁹⁸

3. Reduced Energy Use

- Shade and evapotranspiration from street trees can lower the outside air temperature, allowing air conditioners to cool buildings with less energy.⁹⁹

- b. Streets trees can also serve as windbreaks or windshields to reduce wind speed in the vicinity of buildings. This is beneficial in the winter to reduce speeds of cold north winds thus allowing heaters to heat buildings with less energy.¹⁰⁰
- 4. Improved Water Quality**
 - a. Street trees improve water quality by filtering contaminants (such as metals, pesticides, solvents, oils, and hydrocarbons) and by reducing unfiltered stormwater runoff.¹⁰¹
 - 5. Improved Air Quality**
 - a. Depending on the electric power fuel mix, decreased energy consumption associated with heating or cooling buildings will result in lower GHG emissions and associated air pollution.¹⁰²
 - b. Leaves of trees are able to remove various pollutants from the air through “dry deposition.” Additionally, as trees grow, they remove carbon from the atmosphere and store it.¹⁰³
 - 6. Increased Pavement Life**
 - a. Reducing pavement surface temperature can reduce the risk of premature failure of asphalt pavements by rutting.¹⁰⁴
 - 7. Increased Habitat**
 - a. Trees are able to provide habitat, shelter, and food for a variety of species.
 - 8. Enhanced Stormwater Management**

In cities, trees and bioswales can play an important role in stormwater management by reducing the amount of runoff that enters stormwater and combined sewer systems. Trees and bioswales, acting as mini-reservoirs, control stormwater at the source.¹⁰⁵

 - a. *Interception and reduced throughfall*
Leaves, branches, and trunk surfaces intercept and absorb rainfall, reducing the amount of water that reaches the ground. Tree canopies diminish the volume and velocity of rainfall thus lessening the impact of raindrops on barren surfaces and reducing soil erosion.¹⁰⁶
 - b. *Increased infiltration*
Root growth and decomposition can increase soil infiltration capacity and rates, which helps replenish groundwater supplies.¹⁰⁷
 - c. *Phytoremediation*
Along with water, trees take up trace amounts of harmful chemicals, including metals, organic compounds, fuels, and solvents from the soil. Inside the tree, these chemicals may be transformed into less harmful substances, used as nutrients and/or stored in roots, stems, and leaves.¹⁰⁸

B. Cool Pavement Co-Benefits

- 1. Improved Human Health**
 - a. By reducing ambient air temperatures, cool pavement can help reduce heat-related illnesses and make it more comfortable to be outside.¹⁰⁹
 - b. Reducing air pollution lowers the negative health consequences of poor air quality, such as asthma.¹¹⁰
- 2. Enhanced Safety / Improved Quality of Life**
 - a. Cool pavements better reflect street lights and vehicle headlights at night, enhancing visibility for drivers and improving safety for people walking and bicycling.¹¹¹
- 3. Reduced Energy Use**
 - a. Cool pavements lower the outside air temperature, allowing air conditioners to cool buildings with less energy. Cool pavements also save energy by reducing the need for electric street lighting by increasing the light reflectance of roads at night.¹¹²

4. Improved Water Quality

- a. Cool pavements lower surface temperatures, thereby cooling storm water and lessening the damage to local watersheds.^{113,114}
- b. The lower surface temperatures of cool pavements slows down the wear and tear of tires and decreases the amount of microplastics from tires that make their way into local watersheds.¹¹⁵

5. Improved Air Quality

- a. Cooler air temperature slows the rate of chemical reactions that lead to ground-level ozone formation.¹¹⁶ It is important that cool pavements be designed to not increase UV reflectance relative to standard pavements; ground-level ozone formation is highly sensitive to the flux of UV photons, so even small increases in UV reflectance could lead to ozone increases.¹¹⁷
- b. Depending on the electric power fuel mix, decreased energy demand associated with cool pavements will result in lower GHG emissions and associated air pollution.¹¹⁸

6. Increased Pavement Life

- a. Reducing pavement surface temperature can reduce the risk of premature failure of asphalt pavements by rutting.¹¹⁹
- b. Reducing the surface temperature of asphalt pavements can slow the rate of “aging” that contributes to other distresses.¹²⁰

7. Increased Habitat

- a. Reduced surface temperatures can help lower the temperature of stormwater runoff, resulting in a decrease of thermal shock to aquatic life in waterways into which stormwater drains.¹²¹

C. Green Infrastructure Co-Benefits

1. Improved Human Health

- a. Green infrastructure provides benefits to human health by lowering overall surface temperatures.¹²²

2. Enhanced Safety/Improved Quality of Life

- a. Green infrastructure also seeks to beautify streetscapes by making the visual appearance of cities more aesthetically pleasing through the use of vegetation and natural features.¹²³

3. Improved Water Quality

- a. Green infrastructure systems improve water quality through biofiltration by capturing stormwater runoff carrying pollutants such as oil, dirt, chemicals, and lawn fertilizers.

4. Improved Air Quality

- a. An increase in vegetation improves air quality by removing air pollutants and storing and sequestering carbon dioxide.¹²⁴

5. Increased Habitat

- a. The vegetation within green infrastructures can provide habitats for birds, mammals, amphibians, reptiles, and insects. Additionally, by reducing erosion and sedimentation, habitat in small streams and washes can be improved.¹²⁵

6. Enhanced Stormwater Management

By retaining rainfall from storms, green infrastructure reduces and treats stormwater discharges. Lower discharge volumes translate into reduced combined sewer overflows and lower pollutant loads.¹²⁶ By absorbing rainfall, green infrastructure manages both localized and riverine floods.

This also reduces the volume of stormwater that flows into streams and rivers, consequently protecting floodplain functions and reducing property damage.¹²⁷

- a. See Section 3 of “C. Tree Co-Benefits” for additional water related co-benefits of green infrastructure.

D. Shade Structure Co-Benefits

1. Improved Human Health

- a. Shade structures can help people avoid over-exposure to the sun and prevent heat-caused illnesses.

2. Enhanced Safety / Improved Quality of life

- a. Shade structures act as a barrier from the sun, wind, dust, and rain.

3. Reduced Energy Use

- a. Shade structures can reduce the time and energy required to cool vehicle interiors to make them comfortable during hot days.¹²⁸
- b. Solar canopies can reduce the amount of energy a building needs to operate. During peak sunlight, a building can run off of power generated by a solar canopy.

4. Increased Pavement Life

- a. Reducing pavement surface temperature can reduce the risk of premature failure of asphalt pavements by rutting.¹²⁹

E. Hydration Stations Co-Benefits

1. Improved Human Health

- a. Drinking fountains can provide necessary hydration on hot days, which is especially important for vulnerable populations including youth, elderly people, and people experiencing homelessness.
- b. Drinking fountains in public places can provide community members a cost-free alternative to the consumption of sugar-sweetened beverages.¹³⁰
- c. Drinking fountains can also facilitate outdoor physical activity. A study on walking habits in urban areas showed that the greater presence of amenities such as drinking fountains increased walking activity by residents.¹³¹
- d. Drinking fountains reduces single-use plastic water. Studies have found microscopic particles of plastic in nearly all major brands of bottled water. There is an observable correlation between the presence of plastic substances in the blood and higher rates of certain health issues.^{132, 133}

2. Enhanced Safety / Improved Quality of Life

- a. Drinking fountains are a safety feature to reduce the risk of heat-related illnesses such as heat stroke on extreme heat days.

3. Reduced Energy Use

- a. Single-use plastic water bottles are made of a plastic called polyethylene terephthalate (PET).¹³⁴ In addition to processing plastic resins, the transportation of raw materials, and cleaning, filling, storing and packaging plastic bottles contribute to their carbon footprint. “Estimates show that one 500-milliliter (0.53 quarts) plastic bottle of water has a total carbon footprint equal to 82.8 grams (about 3 ounces) of carbon dioxide.”¹³⁵

4. Improved Water Quality

- a. Reducing single-use plastic water bottles is a key component to improving water quality by decreasing plastic that makes its way to waterways and water supply.¹³⁶

Appendix

A. List of Approved Street Trees for the City of Los Angeles

A full list of approved street trees for the City of Los Angeles can be found at the following link: <http://bit.ly/street-trees>

The following information can be found for each tree species:

- Scientific name
- Common name
- Whether or not the tree is a CA native
- Tree type (Evergreen, Deciduous, or Semi)
- Shading capacity in leaf
- Shading capacity out of leaf
- Height x Width (feet)
- Spacing (feet)
- Parkway Size (feet)
- Sunset Climate Zone
- Sun
- Water usage - LA Basin
- Water usage - Valley/Inland
- Soil
- Root damage potential
- Allergy potential
- Growth rate
- Biogenic emissions
- Notes

B. Starter Lists of Plants for Bioswales

Lists of plant species that can be used for bioswales in Canoga Park's Sunset Climate Zone can be found at the following link: <http://bit.ly/bioswale-plants>

Both lists were compiled by TreePeople as part of a Sustainable Landscape Maintenance workshop funded by LADWP. It is important to note that these notes are not complete; there are additional native and non-native plants that may be suitable for bioswales in Canoga Park.

The following information can be found for each plant species:

- Scientific name
- Common name
- Plant type (Evergreen, Deciduous, Semi, Perennial, or Perennial Deciduous)
- Sunset Climate Zone
- Water usage - LA Basin
- Water usage - Valley/Inland
- Sun
- Soil
- Height x Width (feet)
- Flower color and season
- Maintenance notes

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Appendix E: Maintenance Plan

This Maintenance Plan (Plan) includes recommendations for the five adaptation strategies explored as part of this urban cooling project (Street Trees, Green Infrastructure, Cool Paving, Shade Structures, and Hydration Stations).

Maintenance refers to the day-to-day routine maintenance, such as cleaning, removing trash, debris, and graffiti, sweeping, and vegetation management. Maintenance also includes repairs and replacements, such as power washing, wiping down surfaces, fixing cracks and potholes or repairing broken railings.

Contact the City for Additional Clarification/Questions regarding maintenance procedures.

1. PLANTS

1.1 General Plant Care

[Insert description here about the types of planting areas and species of your project; attach planting plans specifying plant locations as appendix to plan]

1.1.A If irrigation system is installed, do not water plants by hand/hose.

1.1.B Inspect for signs of over watering (yellowing, leaf shriveling, etc.)

1.1.C Inspect plants for signs of underwatering (drooping leaves, etc.)

1.1.D Inspect plants for insect infestations or other signs of decline.

1.1.E Replace dead or severely damaged plants as needed. Refer to planting plan to determine correct container size and species. Install replacement plants per original project plans and specifications.

1.1.F All mulch/wood chips shall be replaced on a regular basis to maintain soil moisture and control weed growth. Refer to plans for minimum distance from base of plant material.

1.1.G Remove dead plant material and leaf litter from hardscape areas and fallen leaves from the tops of understory plantings.

1.1.H Follow the maintenance and irrigation schedules provided with project documents. Should conflict arise between this guide and project documents, the original project documents take precedence in accordance with OSHA and other applicable ordinances and laws.



Source: (<http://www.el-cerrito.org/1335/Green-Infrastructure-Plan>)

1.2 Insects, Pests, and Disease Control

1.2.A Inspection: Inspect plant materials for signs of stress, damage and potential trouble from the following: Presence of insects, moles, gophers, ground squirrels, snails and slugs in planting areas.

1.2.B Remove weeds manually/by hand.

1.2.C Do NOT use “weed eater” or other string trimmer type tools in the planting areas.

1.2.D Do NOT use any herbicides in any of the planting areas at any time and only use pesticides if absolutely necessary and in accordance with OSHA and other applicable ordinances laws.

1.2.D.i - Personnel: Only licensed, qualified, trained personnel shall perform spraying for insect, pest and disease control.

1.2.D.ii - Application: Spray with extreme care to avoid all hazards to any person or pet in the area or adjacent areas.

1.2.E Notification: Submit in writing of evidences of declining vigor immediately upon discerning the problem.



Source: <https://streetsla.lacity.org/image-gallery-ufd/>

1.3 Irrigation

1.3.A Minimum 1x per week: test irrigation systems for any leaks, clogs, or flow issues. This includes inspection of heads, valves, emitters, etc. .

1.3.B Seasonally: Adjust irrigation cycles if smart controller is not used. Confirm operation of smart controllers, rain sensors, and weather systems.

1.3.C Drip Irrigation: All of the above, plus keep strainer clean. Flush lines as required. Inspect emitters for proper flow, and check moisture level at plant rootball monthly.

1.3.D System Failure: Perform all repairs within one (1) operating period. Do not substitute replacement projects without approval of the City.



Photo by Alta Planning + Design

1.4 Trees

[Describe the Tree Species and attach planting plans and details.]

1.4.A General Tree Care

1.4.A.i - Leaf litter shall be removed from all paved areas, site furnishings, plaques, and from the tops of plants underneath trees.

1.4.A.ii - Do NOT use “weed eater” or other string trimmer type tools in planting areas.

1.4.A.iii - Do NOT use any herbicides in any of the planting areas at any time and only use pesticides as necessary and in accordance with OSHA and other local ordinance laws.

1.4.A.iv - If mulch/wood chips are used, replace on a regular basis to maintain soil moisture and control weed growth. Mulch should not extend to be flush with tree trunks, refer to plans for minimum distance specified from tree trunks.

1.4.A.v - If fertilizer is required, use per manufacturer recommendation/guidelines.



Source: Ken Lund via Flickr

1.4.B Tree Irrigation

[Describe the irrigation equipment installed as part of your project; indicate manufacturer, models, and type(s). Attach irrigation plan specifying equipment locations, layout, and irrigation schedule to this Plan.]

1.4.B.i - For new trees: Note watering schedule per specifications or refer to Urban Forestry Division Guidelines.

1.4.B.ii - For transplanted trees: water deeply twice per week for their first two years on-site. OR Note watering schedule per project specifications

1.4.B.iii - Do NOT allow irrigation to overspray on to the trunks of the trees or on to any hardscape.

1.4.B.iv - Do NOT hand water or use hose to water trees if automatic irrigation provided.

1.4.B.v - Minimum 1x per week: test irrigation systems for any leaks, clogs, or flow issues. This includes inspection of heads, valves, emitters, etc.

1.4.B.vi - Confirm tree trunks and hardscape are not in the path of overhead spray.

1.4.B.vii - System Failure: Perform all repairs within one (1) operating period. Do not substitute replacement projects without approval of the City.

1.4.C Pruning

1.4.C.i - Because of the danger and experience required for tree pruning the use of a Certified Arborist is required.

1.4.C.ii - Trees shall be pruned once annually, sprayed, removed, and replaced as needed in a manner satisfactory to the Urban Forestry Division, Bureau of Street Services, and Board of Public Works.

1.4.C.iii - Only prune branches identified by a certified arborist as dead, damaged, or infested, or those causing an immediate threat to public safety.

1.4.C.iv - Pruning of trees should be minimal and mainly consist of removal of dead, weakened, diseased, or dangerous branches.

- Some pruning may be required to remove crossing or rubbing structural branches.
- Some trimming may be necessary to remove twigs and branches in the path of bike/pedestrian travel along the corridors within the project area.

1.4.C.v - Refer to ANSI A300 Pruning Standards and companion “Best Management Practices - Tree Pruning” for acceptable practices (excluding heading cuts, which are not a recommended maintenance practice for the City of LA).

1.4.C.vi - Under no circumstance shall a tree be topped.

1.5 Green Infrastructure (Bioswales and Rain Gardens)

[Describe the green infrastructure elements used as part of your project; indicate manufacturer, models, and type(s) of any subsurface systems. Attach relevant planting and irrigation plans specifying plant and material locations to this Plan.]

1.5.A General Care. Maintenance should include:

1.5.A.i - Regular cleaning of litter and debris both in the green infrastructure and at the inlet and outlet channels.

1.5.A.ii - Inspect all grates and filters for blockage.

1.5.A.iii - Periodic maintenance to avoid overwatering and prevent potential discharges via underdrains.

1.5.A.iv - Replace plants as needed.

1.5.A.v - Inspect system after each rain event.

1.5.B Mulch

1.5.B.i - Replenish mulch regularly to maintain depth specified in project plans.

1.5.B.ii - Use only non-floating mulch in bioretention areas.

1.5.C Subgrade Stormwater Storage Systems (if present)

1.5.C.i - All stormwater pretreatment features incorporated into your site must be inspected regularly. Inspection frequency for the system will be determined by project documents, but should never exceed one year between inspections (six months during the first year of operation).



Photo by Yuka Yoneda (Retrieved Source: <https://inhabitat.com/photos-hunters-point-south-waterfront-park-and-urban-beach-opens-today-in-long-island-city/>)

2. COOL PAVING

[Describe the Cool Paving types used as part of your project; indicate manufacturer. Attach relevant materials plans showing limit of work to this Plan. Attach manufacturer maintenance documentation for specific products used in a given project.]

2.1 General Best Practices for Surface Coating

2.1.A Keep the surface clean

2.1.A.i - Complete regular street sweeping per City schedule to keep surface clean. Buildup of dirt and debris can result in premature wear of the coating.

2.1.A.ii - Refer to manufacturer specifications for detailed cleaning and maintenance practices.

2.1.B Recoating

2.1.B.i - When cleaning is unable to restore the project appearance, the project should be recoated.

2.2 Portland Cement Concrete

2.2.A Follow City-standard sidewalk cleaning and maintenance procedures.



Photo by Streets LA (<https://streetsla.lacity.org/marquerite-street-cool-pavement>)

3. SHADE STRUCTURES

[Describe the shade structure types used as part of your project; indicate manufacturer(s). Attach relevant plans showing location(s). Attach manufacturers maintenance documentation for products used for a given project]

3.1 General Care

3.1.A Shade structures should be inspected on a regular basis to confirm:

3.1.A.i - Operability of any mechanical parts are present, lubricate annually after rainy season.

3.1.A.ii - Condition of materials and parts, including but not limited to posts, fasteners, shade sails, or solar panels.

3.1.B Keep free of stickers, grime and dirt per manufacturer. Clean per manufacturer specifications if vandalized.

3.2 Bus Shelters

3.2.A Bus shelters are typically operated and maintained by city contractors. For outside vendors, contact City.



Photo by Gary Leonard courtesy of LA Metro via Flickr

4. HYDRATION STATION

[Describe the hydration station types used as part of your project; indicate manufacturer(s). Attach relevant plans showing location(s). Attach manufacturers maintenance documentation for products used for a given project]

4.1 General Care

4.1.A Ensuring stations and plumbing are properly maintained can help avoid unsafe drinking water.

4.1.B Refer to guidance from the City of LA's Department of Public Works, Health Department, Bureau of Sanitation, and manufacturer recommendations regarding cleaning protocols, including:

- Cleaning frequency
- Flushing schedule to remove sediments or stagnant water
- Water pressure checks
- Repair protocol



Photo by CIVIQ (Retrieved from:<https://www.civiq.com.au/product/elkay-outdoor-ezh2o-bottle-filling-station-pedestal-non-filtered-non-refrigerated/>)

Appendix F: Community Outreach Documentation

To: Jeff Palmer and Alexander Caiozzo, StreetsLA, City of Los Angeles

From: Bryn Lindblad, Deputy Director, Climate Resolve

Date: May 1, 2019

Re: Workshop #1 Summary | April 13, 2019 Project Open House

Workshop Purpose

To introduce community members to the project, “Addressing Transit Access and Heat in Canoga Park,” and collect valuable feedback to incorporate into the plan for the project.

Project Overview

The project aims to address a number of concerns: improving biking and walking safety, reducing heat and its impacts, capturing and managing water, and providing community amenities. The focus area is a ½ mile radius around the Metro Orange Line Station at Sherman Way.

Workshop Format

The workshop was open house style, with large visual boards and staff at each station. Participants were asked to vote for the strategies that they preferred. Healthy food and a kid’s activity were provided. The workshop took place in a space adjacent to the weekly farmer’s market, where we recruited participants from 10 a.m. to 1 p.m.





Board Content and Attendee Responses

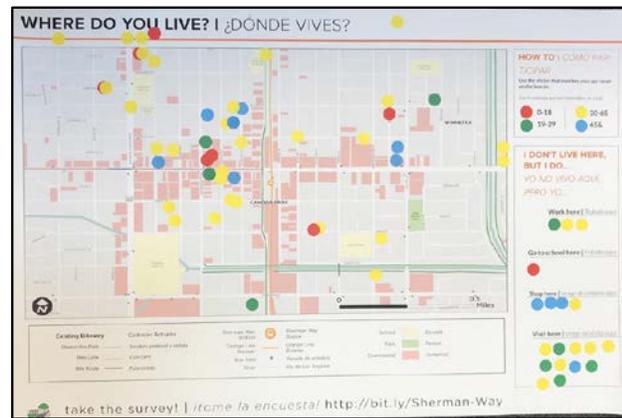
Board 1: Where Do You Live? - Destiny Johnson (Climate Resolve)

Overall, participants were receptive of the project taking place. When asked to stick a dot on the map, they were cooperative in doing so (with the exception of 2 people who refused for personal reasons). Participants often asked the following questions:

- What is the purpose of this?
- Why are you separating us by age?

Answering both questions was not an issue.

The distribution of dots placed throughout the project area is well-spread, and all age groups were represented among participants.



CP Residents	
Age Group	Dot Count
0 - 18	7
19 - 29	4
30 - 65	30
65&	7
Total (on the map): 48	

Non-CP Residents				
I don't live here, but I do...	0-18 dot count	19-29 dot count	30-65 dot count	65& dot count
Work here		1	2	
Go to school here	1			
Shop here			1	3
Visit here		4	6	1
Total (not on the map): 19				

Board 2: Project Overview - Courtney Banker (Alta Planning + Design)

Overall, participants quickly and easily understood the project’s goals. At this board, staff explained that two additional workshops would take place later in the year as the project develops. Few questions were asked.



Board 3: Community Benefits - Bryn Lindblad (Climate Resolve), Marlene Salazar (Alta Planning + Design)

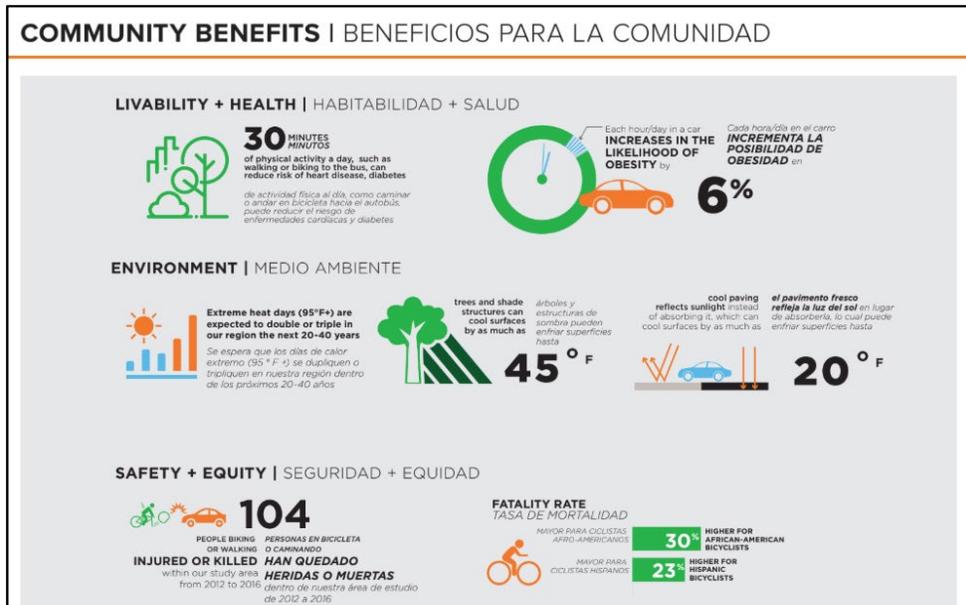
When walking through the infographic-style layout of the board, participants were attentive towards the content that was being shared. They were nodding along and seemed very supportive of the objectives of the project. When guided through the “safety” portion of the board, many people had personal stories about people they know who have gotten hit.

One participant asked if the project is considering any impacts like gentrification after these improvements are done, and the majority of attendees were very interested in and supported the cool pavement design. Another community member, who lives on Jordan Ave, appreciated the cool pavement located there and mentioned that she would like to see this greater implementation throughout the area.

Two questions that came up were:

- What is the cost of cool pavement?
- Would the City be using union labor to put down the cool pavement?

The Community Benefits board was a good warm-up to the project advantages so participants were primed and eager to vote on strategies on the ensuing boards. Overall, everyone seemed interested in learning more about the project and no one showed opposition to the project's goals.



Board 4: Managing Heat and Water - Carlos Moran (Tree People), Linda Emerita (Tree People)

At the Managing Heat and Water board, participants showed a lot of interest in the cool pavement - this could probably be connected to our heat sensor gun activity outside and the extra information board on the technology.

Some community members wanted to know what the cost of the different options for cooling would be, with the interest in making the funding do the most good. Additionally, there was less interest in the stormwater management options.

Notes for future engagement:

- We might want to have interactive displays or information boards regarding more possible solutions, in addition to those for cool pavement, so participants can be more informed and excited about other possibilities.

Heat & Water Board	
Element	Dot Count
Street trees	51
Biofiltration zone	30
Hydration stations	42
Shade structure	42
Green alley/Permeable pavement	21
Misting system	28
Light-colored paving	49
Drought-tolerant planting	22
Total Dot Count: 285	

- The cost for cooling options would be an interesting bit of info to include (ex. investing x amount of dollars would cool the defined area by x amount of degrees). Additional information to include could be how long the benefits would last, along with the effects when the solutions are combined.
 - Ex. the lifespan of a block of well-cared-for trees vs. the lifespan of cool pavement (how often does it need to be repainted) vs a misting system, etc).
- To garner more interest in the stormwater options, staff tried to remind people of the flooding we experienced this past winter and the increased cost of importing water. Ways to make this more appealing should be considered.



Board 5: Livability - Lydia Kenselaar (Alta Planning + Design)

Several participants commented that the community already has transit shelters and benches, and some wayfinding. Community members were enthusiastic about public art and also said there are many places that already have murals.

Although out of our scope, a young woman commented that there are many areas where new housing is planned and will soon be built, but the lots are vacant and fenced off. She shared the great idea of wanting to see ways these could be activated with activities before construction begins - such as food trucks or outdoor movies.

Livability Board	
Element	Dot Count
Art elements	27
Street furniture	34
Parklets	50
Signage & wayfinding	20
Transit shelter	33
Bike fix-it station	25
Total Dot Count: 159	

LIVABILITY | HABITABILIDAD

This project aims to enhance the experience of walking and biking by adding amenities within the study area. This may include elements like bus shelters, benches, art elements, and educational signage. **Which elements would make the experience of walking and biking more enjoyable?**

	ART ELEMENTS ELEMENTOS ARTÍSTICOS		STREET FURNITURE MOBILIARIO PÚBLICO		PARKLETS PARKLETS
	SIGNAGE & WAYFINDING LETTEROS PARA DIRECCIONES		TRANSIT SHELTER REFUGIOS EN PARABUSES		BIKE FIX-IT STATION ESTACION PARA REPARAR BICICLETAS

Este proyecto apunta a mejorar la experiencia de caminar y andar en bicicleta agregando servicios dentro del área de estudio. Esto puede incluir elementos como refugios en parabuses, bancos, elementos artísticos, y señalización educativa. **¿Qué elementos harían más agradable la experiencia de caminar y andar en bicicleta?**

Notes for future engagement:

- We should have a good sense of the quality and locations of these existing amenities.
- In our recommendations for next steps the community can take beyond this project, we should be sure to include a list of existing resources they can tap into to help realize the art elements or any other proposed elements that may not fall under traditional funding streams for active transportation.
 - Does Canoga Park have policies in place that allocate a % of development funds to public art? Is there a neighborhood arts council? Etc.

Board 6: Connections and Safety - Juan Ashton (Alta Planning + Design)

At Board 6, participants were asked to identify their preference for traffic safety interventions including types of bikeways, and pedestrian facilities. Juan Ashton was chosen to facilitate this board because he is an Engineer-In-Training (EIT) and could provide guidance on how engineering requirements guide the decision of where these types of facilities are installed in both English and Spanish.

As with the other boards, the participants were given three dots and asked to select their top three preferences. Crossing improvements, like crosswalks or signalized pedestrian crossings were the highest ranked with 47 dots. Next highest was separated bikeways -- where there was a consistent interest in more physical separation from vehicle traffic. The third highest concern was for additional lighting to improve visibility for people walking from drivers and for personal safety.

CONNECTIONS & SAFETY | CONEXIONES & SEGURIDAD

It is important to address safety concerns through street design that accommodates all users of the road. Improved pedestrian facilities and new bike facilities will provide safe access to the Sherman Way station and will promote public health, support local commercial districts, encourage community connections, and improve quality of life for all. **What design strategies do you want to see used to make walking and biking easier and safer?**

Es importante abordar los problemas de seguridad a través del diseño de la calle que acomode a todos los usuarios. Las instalaciones peatonales y ciclistas brindarán acceso seguro a la estación Sherman Way y promoverán la salud pública, apoyarán a los pequeños comercios locales, fomentarán el tejido social y mejorarán la calidad de vida para todos. **¿Qué estrategias de diseño desea usted que se usen para que caminar y andar en bicicleta sea más fácil y seguro?**

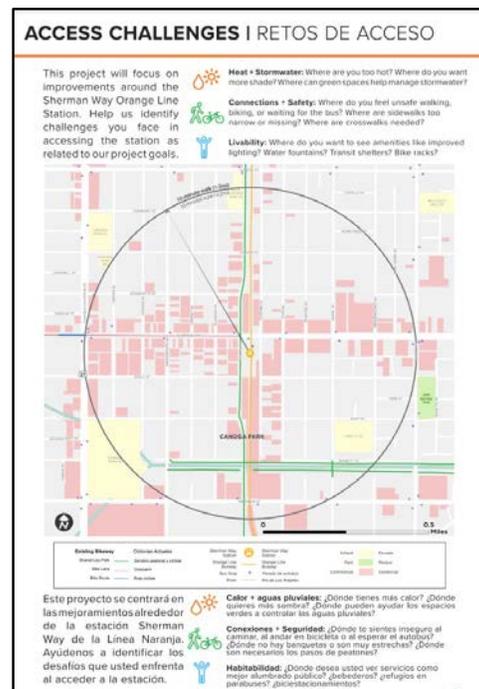
One older man (likely in his 70's) said that he rode his bicycle often on Sherman Way and that while the Class II bike lane west of Canoga Avenue was an improvement over the road configuration to the east, it was still insufficient protection from vehicles. He stated that he regularly rode to and from his home and the Canoga Branch Library on Sherman Way, near De Soto Avenue. When he saw the picture of the Class IV Separated Bikeway he exclaimed, "Yes! That's it! That's exactly what I've been thinking about for Sherman Way!"

Connections & Safety Board	
Element	Dot Count
Separated bikeway	45
Bike lane	20
Neighborhood bikeway	12
Bike racks	9
Curb extensions	15
Traffic calming	31
Crossing improvements	47
Lighting improvements	44
Total Dot Count: 223	

Board 7: Access Challenges - Marc Caswell (Alta Planning + Design)

At the workshop's final board, the participants were asked to identify specific locations where they wanted to see the project focus. In general, the teams asked the community members where they felt there were barriers to their mobility and where they felt unsafe or where it was unpleasant to be. We asked them to elaborate on what made the location unsafe/unpleasant and then asked if specific interventions would address their issues. If so, the staff member wrote symbols on the map for use.

Overall, the most common requests were for **more street lighting** and **improved sidewalks**. Many participants expressed a strong preference for Sherman Way to the west of Canoga Avenue compared to the area to the east. On the east side, there is not an active BID, and many people stated high rates of dumping, litter, and public drunkenness. Requests for more lighting and **water fountains**, especially in this eastern area, were echoed by multiple participants. Lighting was also requested around Hart Street Elementary School and John Quimby Park. One high schooler expressed a desire for more lighting along both the Orange Line bike path, the LA River Path, and Deering Avenue due to concerns around gang activity.



For walking, some members expressed a desire for new and repaired sidewalks in the northwestern quadrant of the study area, specifically along Owensmouth Avenue and Remmet Avenue. One mother identified Variel Avenue south of Sherman Way as a particularly difficult area to walk with a stroller due to damaged sidewalks. More than one group expressed a desire for **safer crossings** at Sherman Way, just east of the Orange Line Station, with a perception that there are frequent collisions at Eaton Avenue and Milwood Avenue. Another parent expressed frustration that drivers routinely ignore the stop signs at Owensmouth Avenue and Valerio Street, especially northbound traffic during the evening commutes. Others expressed a desire for reduced cut-through traffic in the evening, where drivers tend to use residential streets to avoid Canoga Avenue or Topanga Creek Boulevard. One person shared a photo of the corner of Jordan Avenue and Sherman Way with at least 2 feet of water during a storm, requesting the City review **drainage** in the area.

For bicycling, one member requested the existing Class II bikeway be upgraded to a **Class IV bikeway** along Sherman Way west of Canoga Avenue, and others recommended more **shade** and water fountains along the path and at the Sherman Way Station. Additional crossings for bicycle and pedestrian traffic across the LA River was requested, along with improved bicycle crossings at major roadways like Sherman Way.

To: Jeff Palmer and Alexander Caiozzo, StreetsLA, City of Los Angeles
From: Bryn Lindblad, Natalie Hernandez, and Mariana Estrada, Climate Resolve
Date: October 7, 2019
Re: Workshop #2 | September 21, 2019 Project Open House

Workshop Purpose

To introduce community members to recommendations and design renderings for the project “Addressing Transit Access and Heat in Canoga Park” and collect the community’s feedback.

Project Overview

The project aims to address a number of concerns: improving biking and walking safety, reducing heat and its impacts, capturing and managing water, and providing community amenities. The focus area is a ½ mile radius around the Metro Orange Line Station at Sherman Way.

Outreach to Invite Participation

There were outreach efforts conducted on social media and in person. On Facebook, we posted an event for the general public and asked groups with a large Canoga Park following to repost. There was also outreach conducted via phone and emails. In person, we conducted outreach at the August Third Thursday event, where we passed out flyers for the workshop. Additionally, we posted the workshop flyer at 10 local community bulletin boards. On the day of the event, four recent Canoga Park High School graduates helped us recruit participants from the farmer’s market; however, the farmer’s market was light in attendance that day, possibly due to the extreme heat.



Workshop Format

The workshop was open house style, with large visual boards and staff at each station. Participants were walked through the design renderings and were asked for feedback. Aguas frescas, pan dulce and a kid’s activity were provided. The workshop took place in a space adjacent to the weekly farmer’s market, where we recruited participants from 10 a.m. to 1 p.m.



Board Content and Attendee Feedback

Station 1: Project Overview, Timeline and Community Benefits - Natalie Hernandez, Climate Resolve (Spanish), Karina Jimenez / Sandra Muñoz, CSUN interns



The purpose of this station was to inform workshop attendees of the project goals and where we are at in the process. We also gave an overview of the community benefits that this project will result in regards to livability, health, environment, safety, and equity. Attendees were told how previous outreach included surveys and presentations to businesses, schools, local organizations, and transit riders at the Sherman Way Station. The 462 survey results revealed community preferences which informed the renderings presented at this September 2019 workshop. At this Station #1, attendees were also notified of the third workshop to take place at the end of the year. In general, attendees were excited about the project, related to the community benefits, and looked forward to the project being implemented. Many gave their contact information to facilitators to stay up to date on the project.

Station 2: Sherman Way - Lydia Kenselaar, Alta and Courtney Banker, Alta (Spanish)



Community members were shown the existing conditions and benefits of Sherman Way. Attendees noted that it isn't walkable and are glad to see there will be changes. People were especially excited about the proposed **bikeway**. Many people emphasized that having a separate bike path would reduce vehicle collisions and increase safety. Most concerns centered around street safety as several attendees suggested **speed bumps** and many like the idea of having **high visibility pedestrian signs**, one person suggesting for it to be **solar powered**.

Station 3: Orange Line Bike Path- Bryn Lindblad, Climate Resolve and Gabriel Varela, Climate Resolve (Spanish)



Workshop attendees approved overwhelmingly of the designs for Orange Line Bike Path that builds resilience against heat. They liked the **shade trees**, noting that palm trees don't provide enough. Additionally, requests to ensure the longevity and beauty of the new designs were echoed by many attendees. They suggested that the shade sails be raised high enough to avoid any tampering with and want the trail map to be **graffiti proof**.



The **hydration stations** were also praised with one person noting water is important, but **cold water** is an especially big plus, and also expressing the desire for maintenance and upkeep of it. One attendee suggested placing **signs that ban loitering and smoking**. Overall attendees like the aesthetic of the designs, one person predicting it will become the new hangout spot for the community.

Attendees mentioned that the **cool pavement** and **pedestrian lighting** would encourage them to walk more. One person shared that they would like to have **bike share** at the rest area with benches. Attendees also like the **vegetation** and would like it to become a **pollinator habitat**.

Station 4: Owensmouth Ave - Marc Caswell, Alta and Mariene Salazar, Alta (Spanish)



For Owensmouth Avenue, **shade trees** were very popular and palm trees were described as a fire hazard. One attendee said they want **water resilient plants**. Additionally, people were very excited about

cool pavement and enthusiastically supported it. They also expressed a desire to bike to the church. However, one person suggested for there to be a more protected bike path by **removing a travel lane**. A mother mentioned they don't like the current state of Owensmouth Ave because there is no sidewalk making it unsafe for children and would also like to see **speed bumps** added.

Owensmouth Plaza- Marc Caswell, Alta and Marlene Salazar, Alta (Spanish)

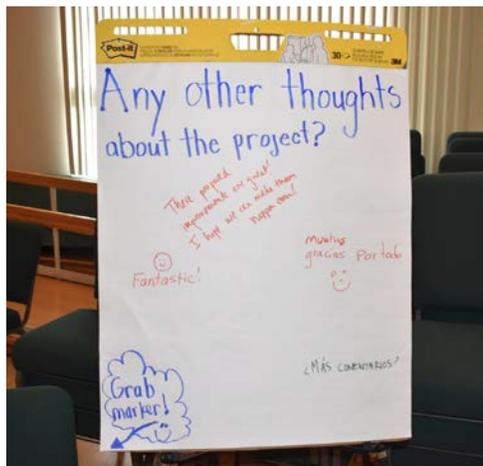


At the Owensmouth Plaza board, many community members talked about how hot Canoga Park is becoming and the need to prepare for a changing climate. The **hydration station** and **shade trees** were once again praised. Attendees also mentioned they would feel more comfortable taking walks with the addition of **pedestrian lighting**. **Planters** were also popular and an attendee suggested lime trees and for **tertiary water** to be used. One attendee, who is the past president of Canoga Park

Neighborhood Council, was excited by the idea, declaring "I love it!"

Though beyond our scope, community members expressed a desire for access to healthy food markets with more fruits and vegetables options. They would also like to see food businesses and cafes at the plaza. A request for more **amenities for children** was also echoed by many attendees with children, one person suggesting a **splash pad** as a fun way to cool off. Overall, attendees predict Owensmouth Plaza will become the new central locus for the community..

Station 5: Departing Comment Easel - "Any other thoughts about the project?"
Jorge Cañez, Alta (Spanish)



At the last station, workshop attendees were asked to share any last thoughts on the project. Overall, attendees expressed gratitude and that they liked the design renderings.

To: Alexander Caiozzo and Jeff Palmer, StreetsLA; Marc Caswell, Alta Planning
From: Mariana Estrada, Natalie Hernandez, and Bryn Lindblad, Climate Resolve
Date: January 16, 2020
Re. Summary of 01/11/2020 outreach at Canoga Park Farmers Market

Summary

Project team staff hosted a booth at the Canoga Park Farmers Market on Saturday, January 11th, 2020 from 9 a.m. until 1 p.m., where we showed attendees video renderings of potential improvements to Sherman Way, Owensmouth Ave., and the Orange Line Bike Path. These three videos were created by Alta Planning + Design (Alta) for the project “Addressing Transit Access and Heat in Canoga Park” and can be found on YouTube here: https://www.youtube.com/results?search_query=alta+urban+cooling.

The event had a continuous flow of participants with approximately a total of 80 people stopping by the booth to see the videos and let us know what they thought about what they were seeing. The booth was set up with two monitors displaying the fly through videos while staff from TreePeople, Climate Resolve and Alta documented feedback. The purpose of the outreach was to show the visuals of the potential designs to Canoga Park’s community members and local residents and gather any last feedback before the project goes to the Board of Public Works.

Workshop Format

The booth was open house style with two computer monitors playing the fly through videos alongside visual boards that displayed information about the project timeline and the community benefits this project could bring to the area. Staff asked participants questions like “What do you think of what you see in the videos; what designs excite you?” and took note of feedback on clipboards. We provided hot chocolate and cookies from a local cafe. We also had a children’s chalk activity available alongside the booth.



Outreach Prior to Workshop

Prior to the workshop open house, there were communication efforts conducted on social media and in person. On Facebook, Climate Resolve created an event for the general public on our Facebook page and got Councilmember Bob Blumenfield’s office to co-host the Facebook

event. We also asked relevant Canoga Park Facebook groups to repost, such as the Canoga Park Women’s Club and Canoga Park Neighborhood Improvement Association. Additionally, we paid to boosted the event to Facebook users living in Canoga Park which resulted in reaching over 1k users. We did this alongside sending out a newsletter to an audience of 180 subscribers consisting of local residents and business owners from past project outreach efforts. As for in person marketing, our CSU Northridge project interns passed out flyers for the open house workshop booth event to local businesses and community buildings. On the day of the event, volunteers from CSU Northridge’s Bridge to the Future program, helped flyer and guide people over to the booth.

Feedback Received

Sherman Way (East of Canoga Ave)

Community members were shown renderings of the proposed design updates for the stretch of Sherman Way east of Canoga Ave. The overwhelming majority were happy to see the **protected bike lane** since it would improve safety for both drivers and cyclists. Both drivers and cyclists approved of the **bike path** and **plant buffer**, with many people describing the current conditions as dangerous for cyclists. Designs addressing heat like the **shade trees** and **cool pavement** were much liked for the shade they provide and the aesthetic improvement they bring. One person mentioned the **floating bus shelter** is a good idea for when waiting for the bus on a hot day. Overall, attendees appreciated the designs improvements for their practicality and beauty; one participant explained the designs would make it a much more “healthy place for the family” and another person claimed the designs looked like “Santa Monica.” One concern that was echoed was if the streets would be maintained properly to ensure that the improvements stay nice looking well-after installation. One person worried that there wouldn’t be enough **parking** for the restaurants in the area.



Owensmouth Avenue Residential and Plaza

For the video rendering of Owensmouth Avenue, many participants like the idea of closing the portion of the street to daily car traffic and turning it into a pedestrian **plaza**. Community members felt that it would help out local businesses including the Farmers Market and museum located on Owensmouth Ave. The plaza would not only integrate well into the existing culture of Canoga Park, but one person said it would “improve the events that go on in the area like the

Third Thursday event that happens in summer.” Designs that improve safety like the **separated bike lanes** and **street bollards** were popular amongst booth goers. One person supported the idea to have **stormwater bioswales**, adding that it looks “nicer and cleaner.” Though, attendees approve of the plaza, a few mentioned concerns that it would attract people experiencing homelessness and that the **cool pavement or plaza surface would still need to be chalk-friendly** because that stretch of Owensmouth Ave is used for art street designs at the annual for the Día de los Muertos celebration, an event widely attended in Canoga Park.



Orange Line Bike Path

When shown the video renderings of the Orange Line Bike Path, workshop attendees liked aspects of the design that improved the safety of the community. The addition of **lighting** was praised by many since the area can get pretty dark with the current conditions, and with the addition of trees would come more dark spaces where predators could be looming. Designs that addressed heat and shade were also highly approved. One person mentioned that **cool pavement** would be great for dogs, explaining that they cannot walk their dog during the day now because the pavement is too hot. Participants liked both the **shade trees** and **stretched canopies**, but do have a preference for trees. Additionally, attendees liked the mural along the wall, one person claiming it “captures the spirit of Canoga Park. The BID’s security manager suggested partnering with local graffiti artists to make the mural so that it would be less susceptible to graffiti damage. Once again, concerns over **maintenance** were brought up. Participants wanted assurance that the trees, mural and cooling rest areas would be well-maintained so that they would stay attractive places for the community to use.



climateresolve.org

213.634.3790

525 S. Hewitt St. Los Angeles, CA 90013

To: Jeff Palmer and Alexander Caiozzo, StreetsLA, City of Los Angeles

From: Natalie Hernandez and Bryn Lindblad, Climate Resolve

Date: June 10, 2019

Re: Survey Analysis for “Addressing Transit Access and Heat in Canoga Park”

1. PURPOSE

The purpose of this memorandum is to give an overview of the survey analysis for “Addressing Transit Access and Heat in Canoga Park”. Responses to each question are provided in Attachment 1: Detailed Survey Responses.

2. METHODOLOGY

- In March 2019, Climate Resolve and Alta Planning + Design worked with StreetsLA staff to create a 10-minute survey using design photos and questions relevant to the project.
- The English/Spanish online survey was available via Survey Monkey’s platform at: bit.ly/Sherman-Way.
- Responses were collected at the Sherman Way Orange Line Station via intercept surveys, during group presentations, through door-to-door business outreach, and via online promotion (newsletters and social media). Most surveys were done on mobile phones or Climate Resolve’s tablets; however, paper surveys were provided if requested.
- **462 survey responses were collected** over the time period of March 19, 2019 - June 2, 2019, approximately 11 weeks. In some cases, not all questions were answered as the participant may have chosen to skip some questions because of disinterest or time.
- The survey information collected came from various stakeholders. Moreover, there was an emphasis on gaining feedback from youth, who are often not prioritized in planning processes, and will arguably benefit the most from long-term project implementation.
- This Survey Analysis Memo is meant to complement what was found in the April 13, 2019 Workshop Summary Memo.

3. FINDINGS

For those respondents that use the Sherman Way Orange Line Station, many of them walk there. However, 58% of respondents said that heat is the largest barrier for people accessing the Sherman Way Station. When it is hot outside, most people do not walk to destinations or feel sick (like headaches and dehydration). Other concerns include fears for personal safety and lack of transit amenities such as signage or benches.

Notably, the survey prompted participants to rank their favorite designs. These designs were categorized as measures that: reduce heat and its impacts, capture and manage water, improve pedestrian infrastructure, improve bicycle infrastructure, and provide community amenities. Weighted scores were calculated using Survey Monkey's analysis where:

w = weight of ranked position
 x = response count for answer choice

$$\frac{x_1w_1 + x_2w_2 + x_3w_3 \dots}{\text{Total response count}}$$

Weights are applied in reverse. In other words, the respondent's most preferred choice (which they rank as #1) has the largest weight, and their least preferred choice (which they rank in the last position) has a weight of 1. Here are the results.

Reduce Heat and its Impacts

1. Free-standing shade structures 3.70
2. Street trees 3.26
3. Cool pavement 2.86
4. Drinking water stations 2.86
5. Misting-cooling systems 2.52

Bike Improvements

1. Separated bikeways 2.95
2. Neighborhood Bikeways 2.60
3. Bike Lanes 2.59
4. Bicycle Racks 1.94

Capture and Manage Water

1. Bioswales 2.29
2. Green Alleys 1.93
3. Drought-tolerant plants 1.81

Community Amenities

1. Wayfinding signage 3.99
2. Street furniture 3.97
3. Art elements 3.91
4. Bus transit shelters 3.40
5. Parklets 3.15
6. Bike fix-it stations 2.99

Pedestrian Improvements

1. Pedestrian-scale lighting 2.69
2. Crossing improvements 2.66
3. Curb extensions 2.53
4. Methods to calm traffic 2.25

Other significant findings from the survey include demographics and comments to improve comfortability of the Sherman Way Station.

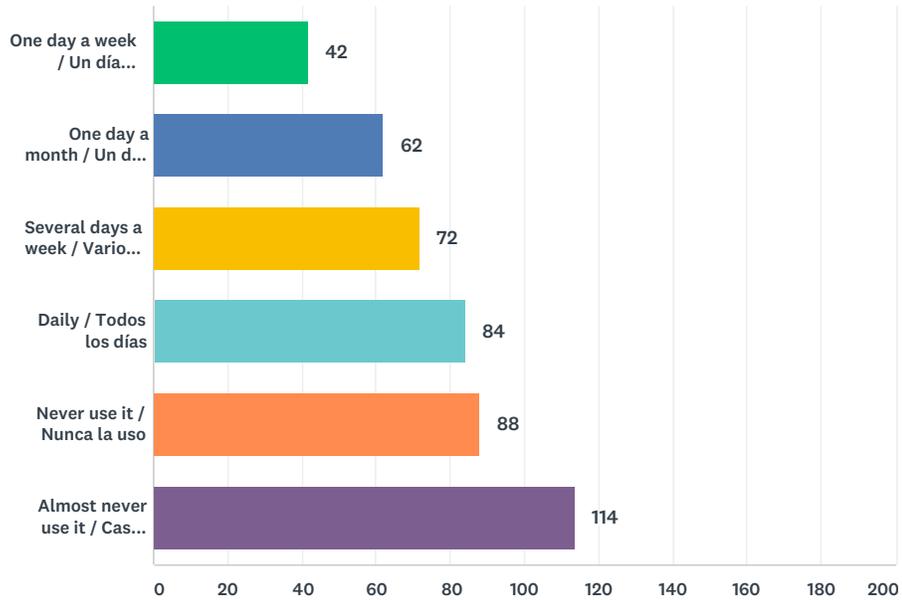
The community is primarily Latino (75% of survey respondents identified as Latino). Moreover, about 1 in 4 survey respondents preferred to take the survey in Spanish. Spoken language was not a question asked during the survey, but this finding was drawn from experiences in the field. Therefore, we should ensure continuing to provide adequate translation in future outreach.

In the comment sections of the survey, many respondents raised concerns related to personal safety and sanitation around the Sherman Way Station. This included feeling fear or crime by the homeless population and needing additional lighting on pedestrian and bike paths. There were also concerns around bike theft and many respondents stated a desire for increased security personnel. Additionally, there were several requests for a bathroom to be installed at the Sherman Way Station.

Overall, the comments reflected a positive sentiment about this project being done in the Canoga Park community.

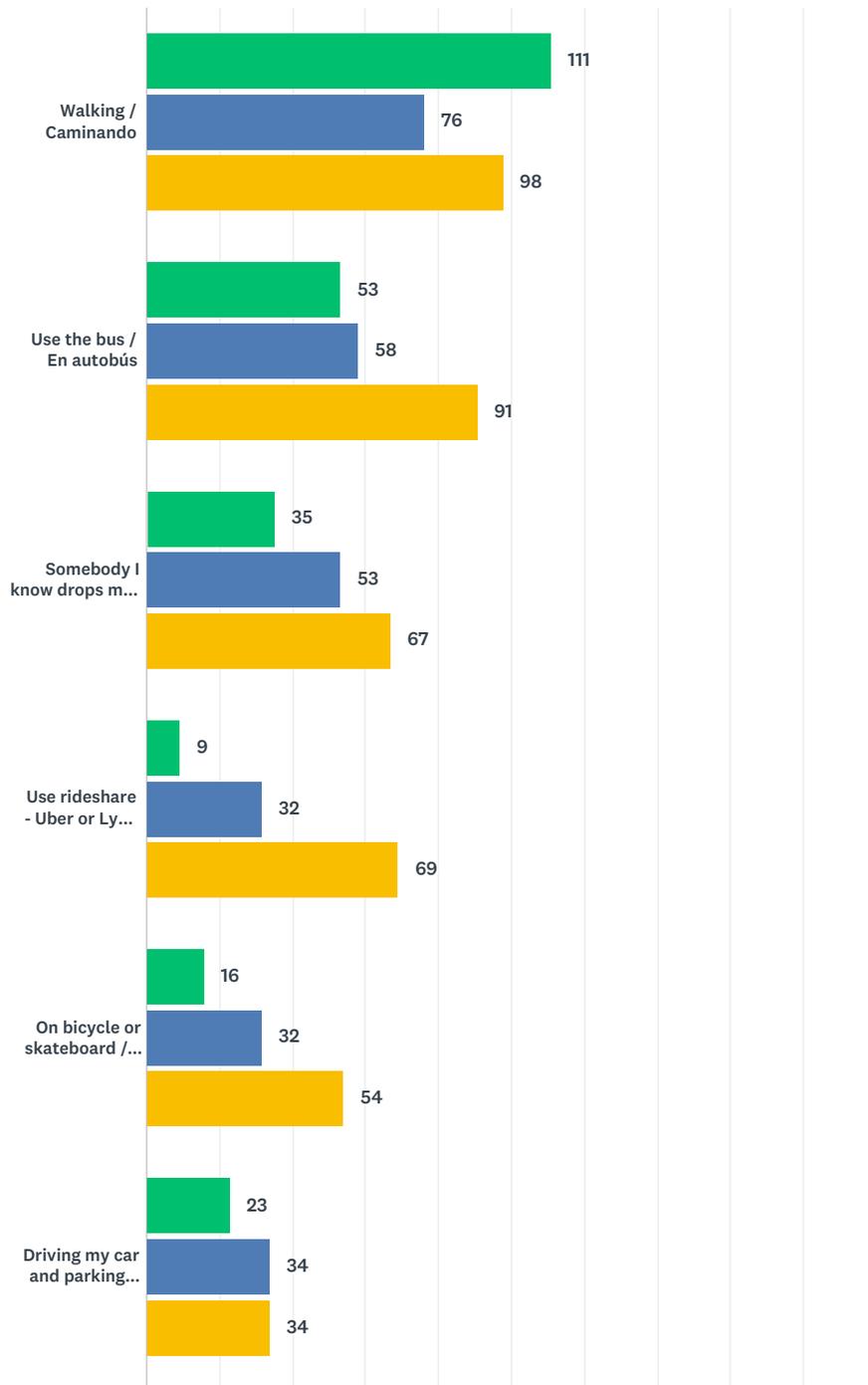
Attachment 1: Detailed Survey Responses

Q1. How often do you ride the Metro Orange Line? / ¿Qué tan frecuente usas el Metro Línea Naranja?

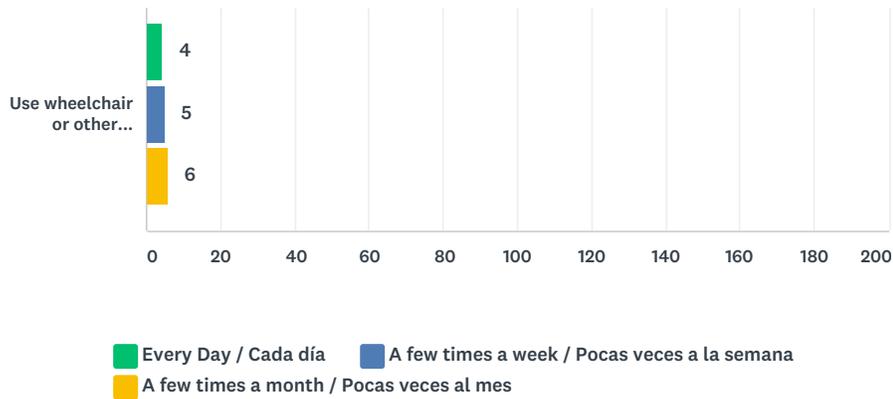


ANSWER CHOICES	RESPONSES	
One day a week / Un día durante la semana	9.09%	42
One day a month / Un día durante el mes	13.42%	62
Several days a week / Varios días durante la semana	15.58%	72
Daily / Todos los días	18.18%	84
Never use it / Nunca la uso	19.05%	88
Almost never use it / Casi no la uso	24.68%	114
TOTAL		462

Q2. How do you get to the Sherman Way Station? / ¿Cómo llegas a la estación Sherman Way?



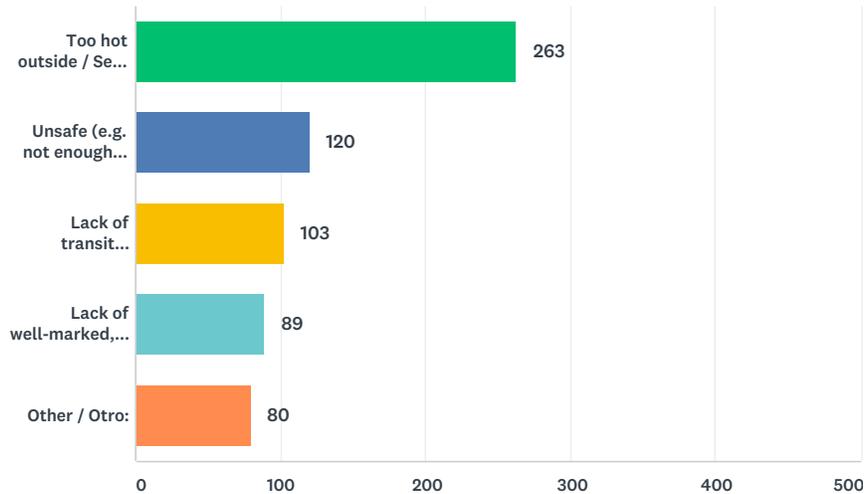
Attachment 1: Detailed Survey Responses



	EVERY DAY / CADA DÍA	A FEW TIMES A WEEK / POCAS VECES A LA SEMANA	A FEW TIMES A MONTH / POCAS VECES AL MES	TOTAL	WEIGHTED AVERAGE
Walking / Caminando	38.95% 111	26.67% 76	34.39% 98	285	1.95
Use the bus / En autobús	26.24% 53	28.71% 58	45.05% 91	202	2.19
Somebody I know drops me off / Alguien que conozco me lleva y deja	22.58% 35	34.19% 53	43.23% 67	155	2.21
Use rideshare - Uber or Lyft / Uso el servicio de Uber o Lyft	8.18% 9	29.09% 32	62.73% 69	110	2.55
On bicycle or skateboard / En bicicleta o monopatín	15.69% 16	31.37% 32	52.94% 54	102	2.37
Driving my car and parking nearby / Manejando mi carro y estacionando cerca	25.27% 23	37.36% 34	37.36% 34	91	2.12
Use wheelchair or other mobility aid / En silla de ruedas u otro modo de ayuda móvil	26.67% 4	33.33% 5	40.00% 6	15	2.13

Attachment 1: Detailed Survey Responses

Q3. What are barriers to accessing the Sherman Way Station? / ¿Qué son obstáculos que te previene usar la estación Sherman Way?



ANSWER CHOICES	RESPONSES
Too hot outside / Se pone muy caliente afuera	58.19% 263
Unsafe (e.g. not enough lighting, there is probability of theft) / No me siento seguro/a (e.g. muy oscuro, hay probabilidad de robo)	26.55% 120
Lack of transit amenities (e.g. benches, signage, bus shelters) / No hay suficientes comodidades de tránsito, (e.g. bancas, letreros, estructuras de sombra para autobuses)	22.79% 103
Lack of well-marked, continuous walking or biking routes / No hay suficientes rutas designadas para caminar o ir en bicicleta sin peligro	19.69% 89
Other / Otro:	17.70% 80
Total Respondents: 452	

OTHER / OTRO:

Lack of locations to get a bus pass	No misters to cool waiting areas
Feels safe and convenient	Not fully familiar with that stop
In the morning, the bus only comes until Warner Center; don't come far enough	Don't really take the bus
Either too lazy or because dont take it	I don't have a reason to go
Just don't go there	I use a boosted board that usually gets me to school faster than a bus and car because of traffic
Cops	Other bus routes take longer so take this route
Homeless is a problem	Evening buses are not punctual
Lack of directional signs	I don't access it
Time management	Northbound Bus schedule

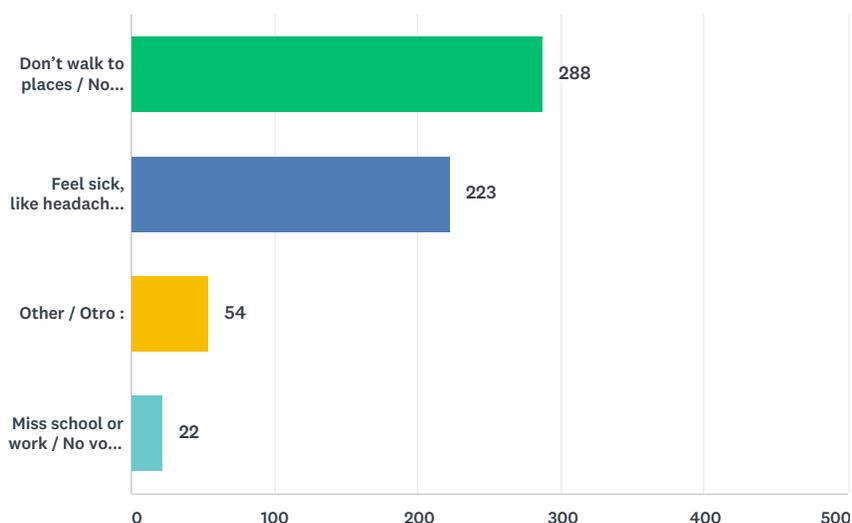
Attachment 1: Detailed Survey Responses

OTHER / OTRO:

Homeless	Everything good
Streets that lead to Canoga Ave not well kept. And there is always traffic because of the schools near by	Punctuality and crowded
Plant large shade trees	I use a personal vehicle and have no need to use the Sherman Way station. If anything I'd might use the bike pathways and probably need to be better marked.
Lack of protection for locked bikes (ie broken chains, stolen wheels, stolen bike seats, other stolen parts) when bike is chained. Lack of security.	No me afecta
Need more shade and water fountain	Distance
Not enough bus stops	It's good
Fast to get here.	Don't feel safe at night
Too many stops. Need more right of way. Bypass	No hay bike routes
Not many stops	Not enough seats

Attachment 1: Detailed Survey Responses

Q4. How has extreme heat (days above 95°F) impacted you? / ¿Cómo te ha afectado el calor extremo (días sobre 95°F)?

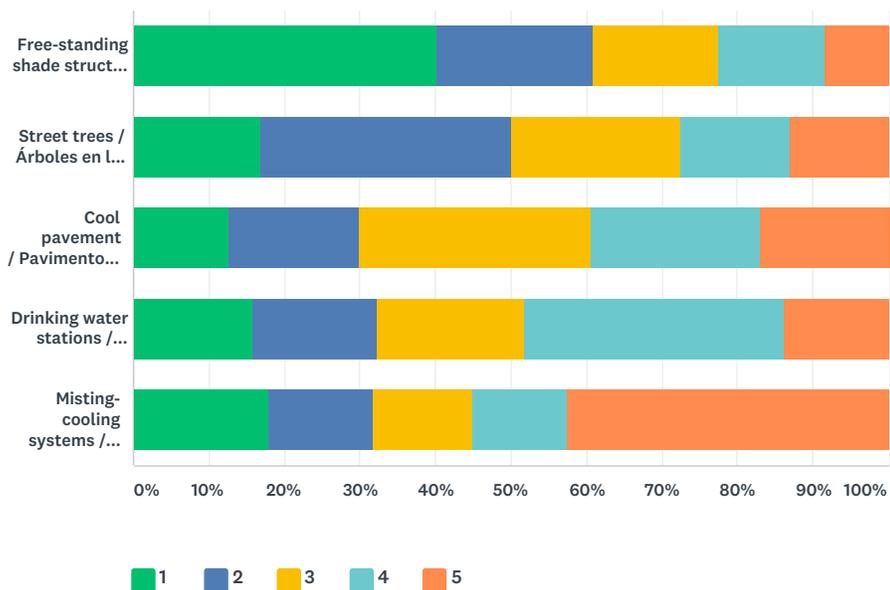


ANSWER CHOICES	RESPONSES
Don't walk to places / No camino a destinos	63.30% 288
Feel sick, like headaches or dehydration / Me siento enfermo como dolor de cabeza o deshidratación	49.01% 223
Other / Otro :	11.87% 54
Miss school or work / No voy a la escuela o el trabajo	4.84% 22
Total Respondents: 455	

OTHER / OTRO :

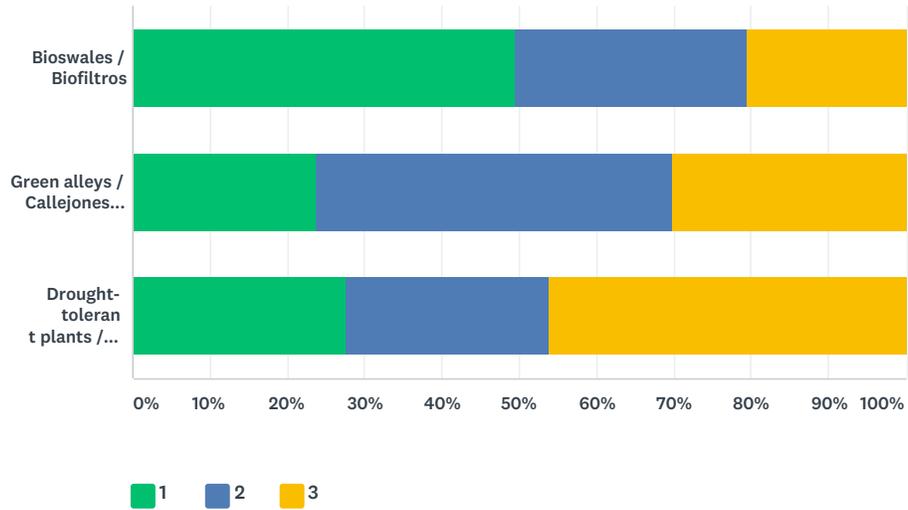
Low energy - remain in the house to avoid going out.	Doesn't affect me at all. I love the heat
Try to travel early in the day	Allergic to sun
Don't bike on hot smoggy days	Trabajar afuera; can't stop
I struggle to gain walking traffic at my new business	It gets me tired faster
Bad smell (body odor) on buses due to lack of AC	Too many people have changed this. Also the cutting down of our
I cant even get in my car as there is no covered parking. I stay inside.	mature trees which is coming from the people who do not
Grumpy and unmotivated	understand that the trees are necessary for our lives. My neighbors
Uncomfortable	refuse to water their trees and bushes where their property extends
Is very hot sometimes and I don't feel safe	to the street above where I live as a result the italian cypress just a
Get super sweaty	few feet from my kitchen window are brown and crispy. I fear a fire
Discouraged from taking transit; no water fountain or restrooms on the way	would cause the loss of my home, but they do not seem to take
	action. And we are very friendly. This is a constant worry.

Q5. Designs to reduce heat and its impacts / Diseños para reducir calor y los impactos



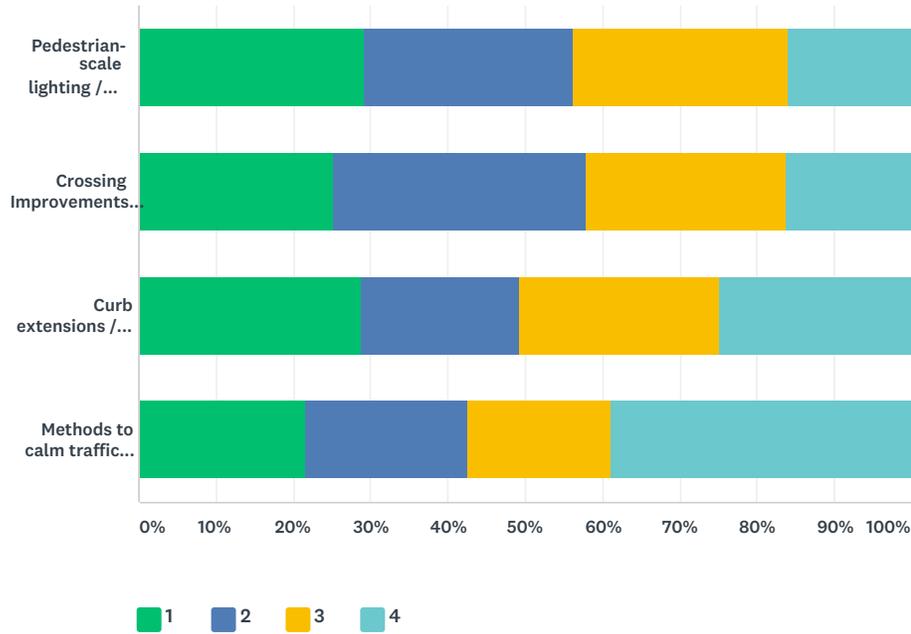
	1	2	3	4	5	WEIGHTED SCORE
 Free-standing shade structures	40.19%	20.58%	16.71%	14.04%	8.47%	3.70
 Street trees	16.91%	33.09%	22.46%	14.49%	13.04%	3.26
 Cool pavement	12.59%	17.28%	30.86%	22.22%	17.04%	2.86
 Drinking water stations	15.89%	16.38%	19.56%	34.23%	13.94%	2.86
 Misting-cooling systems	17.84%	13.85%	13.38%	12.44%	42.49%	2.52

Q6 .Designs to capture and manage water / Diseños para capturar y gestar el agua



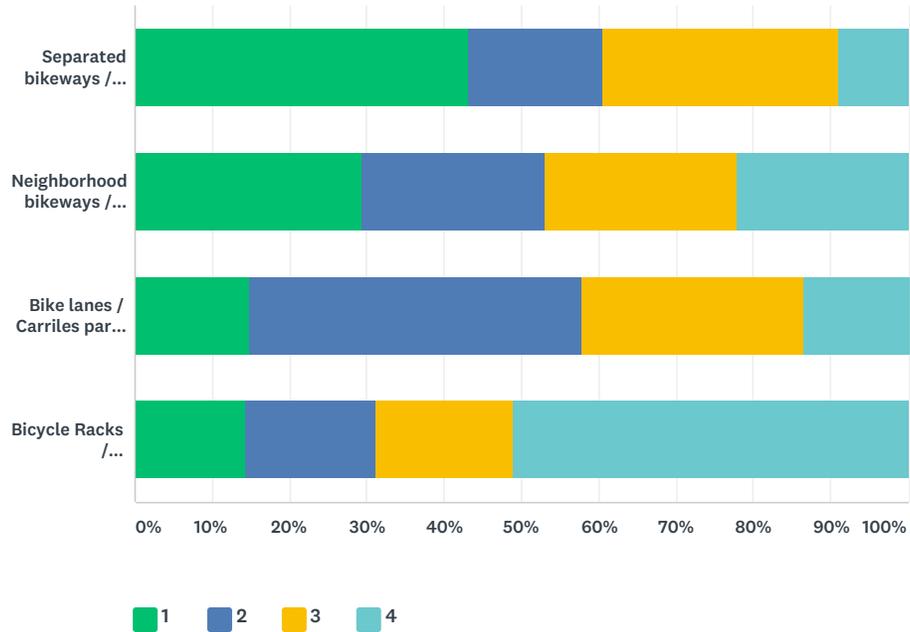
	1	2	3	WEIGHTED SCORE
 Bioswales	49.33%	30.13%	20.53%	2.29
 Green alleys	23.60%	46.19%	30.20%	1.93
 Drought-tolerant plants	27.44%	26.28%	46.28%	1.81

Q7. Pedestrian improvements / Mejoramientos para peatones



	1	2	3	4	WEIGHTED SCORE
 Pedestrian-scale lighting	29.06%	27.23%	27.75%	15.97%	2.69
 Crossing improvements	25.07%	32.70%	25.89%	16.35%	2.66
 Curb extensions	28.65%	20.54%	25.95%	24.86%	2.53
 Methods to calm traffic	21.56%	21.09%	18.48%	38.86%	2.25

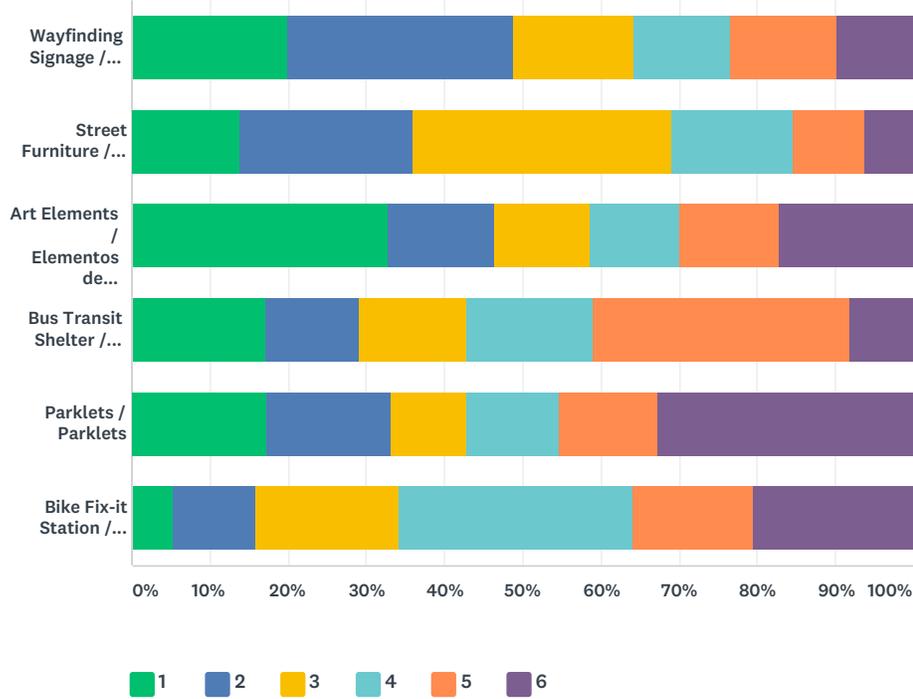
Q8. Bike improvements / Mejoramientos para ciclistas



	1	2	3	4	WEIGHTED SCORE
 Separated bikeways	43.15%	17.31%	30.49%	9.04%	2.95
 Neighborhood bikeways	29.33%	23.74%	24.86%	22.07%	2.60
 Bike lanes	14.86%	42.97%	28.65%	13.51%	2.59
 Bicycle racks	14.18%	16.87%	17.85%	51.10%	1.94

Attachment 1: Detailed Survey Responses

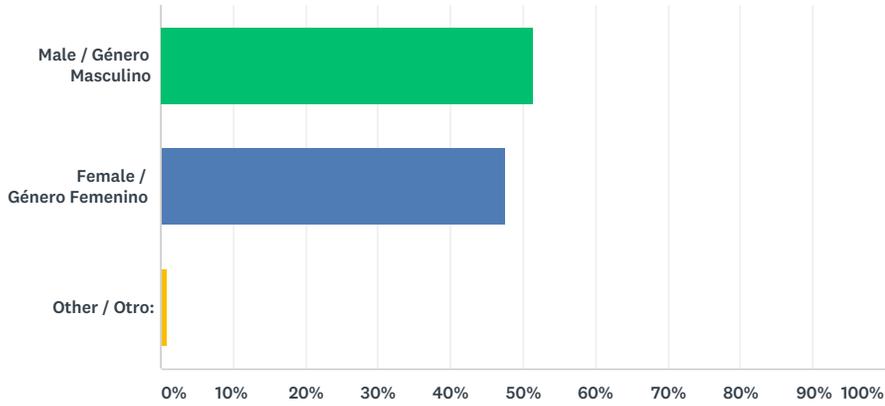
Q9. Community amenities / Comodidades para la comunidad



	1	2	3	4	5	6	WEIGHTED SCORE
 Wayfinding signage	19.84%	28.95%	15.55%	12.06%	13.67%	9.92%	3.99
 Street furniture	13.87%	22.13%	33.07%	15.47%	9.33%	6.13%	3.97
 Art elements	32.80%	13.60%	12.27%	11.47%	12.53%	17.33%	3.91
 Bus transit shelters	17.01%	12.11%	13.66%	16.24%	32.73%	8.25%	3.40
 Parklets	17.18%	15.99%	9.55%	11.93%	12.65%	32.70%	3.15
 Bicycle fix-it stations	5.14%	10.80%	18.25%	29.82%	15.42%	20.57%	2.99

Attachment 1: Detailed Survey Responses

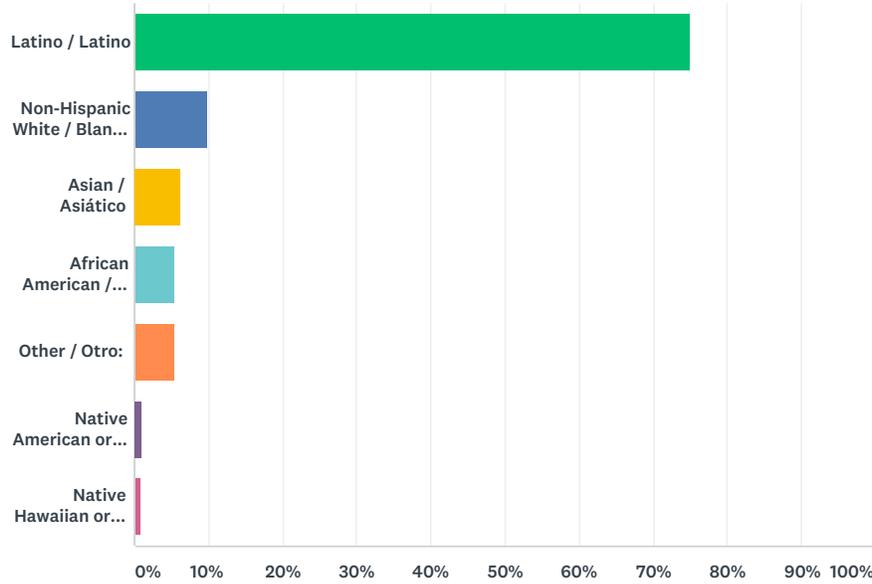
Q11. I Identify as / Yo me identifico como:



ANSWER CHOICES	RESPONSES	
Male / Género Masculino	51.49%	224
Female / Género Femenino	47.59%	207
Other / Otro:	0.92%	4
TOTAL		435

OTHER / OTRO:
Prefer not to answer
Me
N/A

Q12. I identify as / Yo me identifico como:

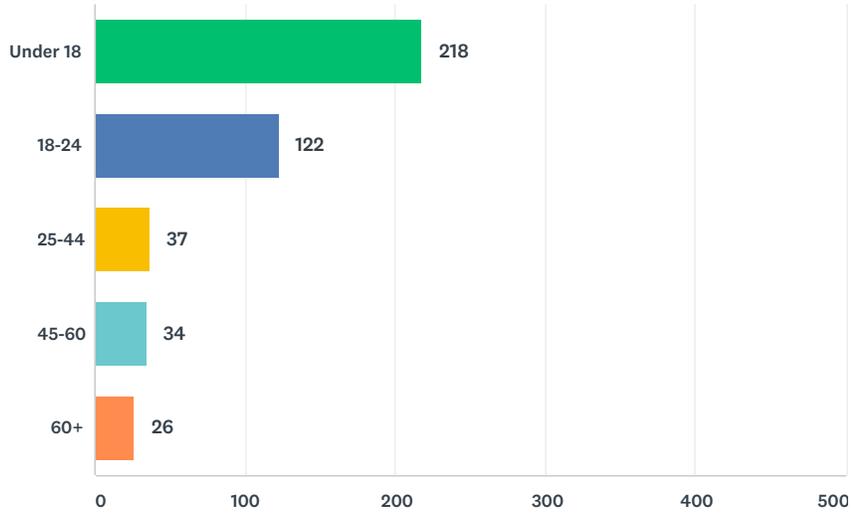


ANSWER CHOICES	RESPONSES	
Latino / Latino	74.83%	327
Non-Hispanic White / Blanco no Hispano	9.84%	43
Asian / Asiático	6.18%	27
African American / Afro-Americano	5.49%	24
Other / Otro:	5.49%	24
Native American or Alaskan Native / Nativo Americano o Nativo de Alaska	1.14%	5
Native Hawaiian or Pacific Islander / Nativo de Hawaii o Isleño del Pacífico	0.92%	4
Total Respondents: 437		

OTHER / OTRO:	
Persian	Mixed
middle-eastern	Mixed
Cherokee Indian and West Indian	WHITE
Middle eastern	Chicano
Middle Easterner	White/Hispanic
Irish and Australian	Mixed
European	
Caucasian	
White European descent	

Attachment 1: Detailed Survey Responses

Q13. Age range / Rango de edad



ANSWER CHOICES	RESPONSES	
Under 18	49.89%	218
18-24	27.92%	122
25-44	8.47%	37
45-60	7.78%	34
60+	5.95%	26
TOTAL		437

Attachment 1: Detailed Survey Responses

Q14. Other comments about this project? / ¿Otros comentarios sobre este proyecto?

RESPONSES

Access roads along flood control should be bike lanes

Good

Hope it is successful and it is replicated to other communities.

Thank you

Increase permeable pavement to offset flood and create more carbon/oxygen transfer + reduce heat.

Keep going. Information is imperative to address the problem of climate change.

Don't live in Van Nuys but a big believer in climate change. Part of Emerson Unitarian Universalist Church.

Cool breezes reduce temperatures; if only a source were available - say within 10 - 20 miles.

Sherman way Blvd.(between Topanga Canyon and Canoga Park Blvd) need a lot of improvements. There are a lot of empty commercial properties . Please help the community.

Shade trees would be best if they are native, drought tolerant and provide edible fruit that is collected and shared with the community food banks.

Don't forget about accessibility for those in wheelchairs, please. accessibility at parks for disabled children, parking, accessible sidewalks, etc.

Canoga park DOES NOT need to have high density construction. Keep it the way it is.

it would change our community in a positive way

n/a

this is cool thanks

This would be cool if it happened to change the community.

this project sounds good

it seems really nice

Keep up the work

None

It's great, to teach out and help the community because a lot of people walk and commute on bike

Very interesting

sounds like a great project that can really help our community

It's quite amazing how people care for the community

No

It's great what y'all are doing

It is really helpful to the community, I hope more and more people will engage in participating in this activity

No

none

It's cool and I like the change

Attachment 1: Detailed Survey Responses

RESPONSES

i'm so happy people are making changes like this

it's good

Was cool and nice for society

helpful

please do good

nope

Fixing the lights

I think what you guys are doing is great for the community!

i think this project will improve the community

I look forward to the changes

Do it asap

Hopefully it goes faster

Make more parks

None

non

Any suggestion that will improve everyday-life in workplace , inside and outside of the community

Seems like a really nice and well planned out project

no comments

None

really great project

I like the ideas

It is a good idea

None

There should be a bit more ways to bring the community together.

No

I like the idea, it would also be good to include regular bus routes, not just the orange line.

Ok

Really good for Canoga Park and people

its amazing

i guess this can help

it is good to make the community better

This is a good idea.

no

No

good project

N/A

Heat control

It's a great idea

More shade during summer with water fountains and light during the night

Make it nice

Attachment 1: Detailed Survey Responses

RESPONSES

- It is a good idea because it's reducing heat
- I think it is great that we are trying to save water.
- it is a good thing they are doing
- I believe everything that's planned is good but everything has consequences
- I love the idea and i think it will make the community way better
- i say this will be a much needed change.
- I think this is really cool maybe they should start other projects on the east side of the valley to make it look nicer too.
- They have great ideas
- Sounds good
- No everything seems nice
- Good program
- Glad to see we're doing something about the heat problems
- It sounds interesting
- I think it's a great idea
- it's going to be very helpful
- Perfect
- It's good for our community
- I believe that this project will benefit the community.
- Its very cool
- It is very nice that a group of people would like to help out the community!
- Sounds cool
- Great job!
- Let's do it!
- I'm glad someone trynna help this community
- like what you guys are doing, keep it up !
- Nice idea
- I think its a great idea
- I think this is a fantastic project and is badly needed in the Canoga Park community
- I like the trees idea
- Keep making improvements for a better living space! :)
- When will we start noticing this process.
- I feel like this project should be implemented since it would make the street of Canoga Park a lot safer and much more hospitable as well.
- No Good job
- Sound like a good plan
- I love how their trying to help the community and the environment
- It's great to see attempts for improvement in our community
- It should be done quicker
- They are all great ideas to make the community a better place

Attachment 1: Detailed Survey Responses

RESPONSES

I think it is great that this project is taking place because it really helps those who don't have the opportunity to have a car and need to use the bus station.

Smart

Is it going to happen this year

It's good people actually care about the community.

I think this is great

i think this is a cool project especially the bike lanes

This is a very good idea this project will be really good for Canoga Park.

I don't think this is where tax dollar should go. We have larger problems at hand than simply being comfortable.

When will this happen?

Is the change for this project pricey?

This seems like a cool change!

It is not related your project, but it is too much traffic around 4pm ~ 6pm on Vanowen St. to intersection of Canoga Ave.

Sounds great

Sounds nice

Wonderful idea

need unity, need to encourage young people to go out and help out

Great ideas

Cleaner roads

It is a great project because we all need some shadow when we walk the streets

Make new property in closed areas, more parks

It's a good idea to make a better change for this community.

I think every idea is great. I would most definitely support and help

Is a smart idea

Seems pretty cool

We need lights around the community

It's non sense. All these parklets will create homes for homeless. The mists is wasting water. The bike lane is dumb.

You guys will add traffic to the streets of Los Angeles for the next 2 years just to make a lane for bikes. Orange line already causes enough traffic

Do not waste water with misters. I will never take public transportation no matter how much of my tax money you waste on this.

I like how you're considering people who actually take the public transit with these surveys. As opposed to just elected officials making decisions

It's great

We need more cooling systems, water dispensers, and better means of emergency preparedness. Another stop station on satcoy

Fruit trees

Great ideas to improve the community!

Good stuff

Good luck

The pedestrian and bike way going north on Canoga from the Canoga station,

Attachment 1: Detailed Survey Responses

RESPONSES

Do the changes quick!

Good project.

More street cleaning

I have a small cafe in this area (Itty Bitty Cafe) and I want to help with heat problems and bike racks. Also beautifying Canoga Park. Let me know how I can help.

How will this address the energy consumption needs of the Canoga Park community?

Needs a security guard or guards

Area is very crowded due to all the apartments, I think there needs to be more lighting in the whole area and more sense of security

More shade trees on Sherman way and on walkways to orange line

Need for security from bike thieves throughout Sherman way. Would be better for businesses and bike commuters. Consider more projects to help the homeless with access to transportation. Have homeless service providers throughout Orange line stops. Increase Bridge Bed shelter access for homeless.

People have no respect, do not follow the law and are destroying the California I once loved and knew

Good ideas

It's good to improve

I really like it

Looks good

Educar la gente no tirar basura. Medio ambiente es importante

Sanitario/bathroom. Sees people pee at station

I would like to see restroom facilities at Orange line stops

Thoughtful

Spanish: mas seguridad more authority present. Need a sanitario (bathroom). Like one in North Hollywood station.

About time

Cleanliness is also an issue.

Lives riding Metro. Only deterrent is homeless ppl shouting.

Help out Canoga Park

I really love the art ideas because it will make the streets look beautiful and seem more attractive.

It was a great way to get some feedback for me personally I believe we need to put more light and a lot of trash

We need a safer environment at the bus stations. We need to improve our streets, keep them clean, so that our Canoga Park looks better.

Some decisions were influenced by considering the homeless problem.

Definitely agree with the amenities development

Bikeway behind Starbucks and Storage center lacks good lighting and I always avoid that part of en would we find out further information

About the process? How would this affect the living conditions of the general population?

More recycling bins

No just that I think to add more technology to the community

I think adding bike paths is the best

I really like how they are willing to change our city because I am afraid to walk outside.

Remove camera lights, those are highly stressful

How will you improve safety?

Better improvement creates a safer environment

I like it!

GLAD ITS HAPPENING

Attachment 1: Detailed Survey Responses

Q15. If you would like to stay informed on this project, please provide your email (optional) / Si quieres saber más sobre el proyecto, escribe tu correo electrónico (opcional):

#	RESPONSES
1	[REDACTED]
2	[REDACTED]
3	[REDACTED]
4	[REDACTED]
5	[REDACTED]
6	[REDACTED]
7	[REDACTED]
8	[REDACTED]
9	[REDACTED]
10	[REDACTED]
11	[REDACTED]
12	[REDACTED]
13	[REDACTED]
14	[REDACTED]
15	[REDACTED]
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20	[REDACTED]
21	[REDACTED]
22	[REDACTED]
23	[REDACTED]
24	[REDACTED]
25	[REDACTED]
26	[REDACTED]
27	[REDACTED]
28	[REDACTED]
29	[REDACTED]
30	[REDACTED]
31	[REDACTED]
32	[REDACTED]
33	[REDACTED]

Attachment 1: Detailed Survey Responses

34	[REDACTED]	
35	[REDACTED]	
36	[REDACTED]	
37	[REDACTED]	
38	[REDACTED]	
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71	[REDACTED]	
72	[REDACTED]	
73	[REDACTED]	
74	[REDACTED]	

To: Alexander Caiozzo and Jeff Palmer, StreetsLA; Marc Caswell, Alta Planning
From: Mariana Estrada and Bryn Lindblad, Climate Resolve
Date: November 18, 2019
Re: Summary of 10/28/19 outreach at Canoga Park BID annual meeting

Summary

Climate Resolve staff attended the Canoga Park BID Annual Meeting on Monday October 28th, 2019 and presented on the concepts and recommendations identified during the planning process of the “Addressing Transit Access and Heat in Canoga Park” project, led by StreetsLA. The event was held at the Canoga Park Community Center with approximately 35-40 attendees. Climate Resolve set up a booth to show the materials from the previous Workshop 2, and discussed the project with approximately 15 people. The purpose of the outreach was to gather feedback on the design renderings from Canoga Park’s local business owners.

Participant Feedback

An overwhelming majority of participants' feedback was positive. They were very pleased with the aesthetic and commercial improvement the project will bring to the neighborhood. The **street furniture** on Owensmouth Plaza was described as “beautiful” by one business owner and praised by many. They were also excited about the **planters** on Owensmouth Plaza and one person said the **planted center median** on Sherman Way “beautifies the area.”

Designs that improve walkability and reduce heat were highly praised by the business owners. The **hydration stations** in both the Orange Line Bike Path and Owensmouth Plaza were supported by many; one person said “wow!” People also really liked the **cool pavement** design on all streets where it was proposed: Sherman Way, Owensmouth Ave., the Orange Line Bike Path and Owensmouth Plaza. One participant stated it was a “great idea” for summer heat. Similarly, the recommendation of **pedestrian lighting** on all the streets was supported by the business owners. The shade **trees** were supported, as long as there was a plan for maintenance. In addition, the **shade sails** on Owensmouth Plaza and Orange Line Bike Path were very popular and described as “very nice” by many.

Designs that change the street were met with mostly approval, but a few concerns were raised. The business owners liked the **bikeways** on Owensmouth Plaza and Sherman Way; one person mentioned that “it was the right way to limit traffic” and deemed the design “attractive.” In addition, closing off Owensmouth Plaza was described as a good idea, but **loss of parking** was a concern for some. People expressed concern that there would not be sufficient parking or curbside access for customers or attendees of the Madrid Theater and the Canoga Park Stage Arts Lab (located at 7242 Owensmouth Ave., on Owensmouth Plaza). Additionally, some people expressed concern about where the **cut-through traffic** that currently uses Owensmouth Avenue would go instead, if Owensmouth Plaza were to become reality. The **traffic circle** on Owensmouth Ave was mostly popular and one person said it is “necessary to slow people down”, but a few people who didn’t like it believed that drivers wouldn’t know how to use it correctly.

Appendix G: Cost Estimates

Urban Cooling Typologies Cost Estimates

WORKING DRAFT February 2020

1-mile Class IV Separated Bikeway (Sherman Way)

DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST	Notes
ROADWAY + SIDEWALK					
Full depth excavation and reconstruction of roadway	396,000	SF	\$5	\$2,098,800	Assumes existing curb-to-curb width of 75'; 6" AC and 8" base
Full depth excavation and reconstruction of sidewalks, curb and gutter	5940	SF	\$30	\$178,200	Assumes 6' sidewalks
Bicycle Signage	18	EA	\$375	\$6,800	Every 600' each direction
Bicycle Pavement Markings	54	EA	\$155	\$8,400	Every 200' each direction
Bike Green Striping & Conflict Striping	1	LS	\$40,000	\$40,000	Assumes 4 signalized intersections
Cool Paving (Bike Lane only)	422,400	SF	\$0.68	\$285,500	Assumes 5' bike lanes
Traffic Signal Modification including Bike Signal Heads and Loops	1	LS	\$325,000	\$325,000	Assumes 4 signalized intersections
Catch basin remodel	13	EA	\$30,000	\$390,000	
Storm drain and manhole relocation	13	EA	\$10,000	\$130,000	
Grated inlet (24" round)	14	EA	\$13,000	\$182,000	
PLANTING + IRRIGATION					
Tree removal	80	EA	\$2,000	\$160,000	Assumes 20 palm trees per block
Bikeway Buffer w/bioswale understory	9,920	LF	\$100	\$992,000	Assumes width of 4', including 6" curbs
Planted center median w/ understory landscape	2480	LF	\$140	\$347,200	Assumes width of 10'
36" Box Trees (Parkway)	330	EA	\$1,560	\$514,800	Assumes all new trees. Planted 30' O.C, both sides of the street in the parkway area. Does not factor in clearances for existing driveways.
36" Box Trees (Bikeway buffer)	330	EA	\$1,560	\$514,800	Planted 30' O.C, includes one buffer each side of street. Does not factor in clearances for existing driveways
36" Box Trees (Planted center median)	100	EA	\$1,560	\$156,000	Assumes 1/2-mile of turn lane, 1/2-mile of planted center median per mile. Trees planted 30' O.C.
Landscape, groundcover, mulch (Parkway)	69440	SF	\$16	\$1,083,300	
Soil (Parkway and Bikeway)	3858	CY	\$65	\$250,800	4' parkway + 3' bikeway buffer (-1' curbs)X3'deep
Soil (Planted Center Median)	2756	CY	\$65	\$179,100	
Tree Root Vault System (Parkway and Bikeway Buffer) + Soil	1	MI	\$3,650,000	\$3,650,000	Assumes 18' wide sub-grade tree root vault zone for each side of street, 2 units deep. Cost includes soil for vaults.
Drainage pipe and junction structure for tree root vault system	1	MI	\$13,200	\$13,200	
Irrigation Equipment	20	EA	\$10,000	\$200,000	Assumes 5 sets of irrigation equipment required per block (one for each parkway planting area (2), one for each bikeway buffer (2), and one for the planted center median)
Shrub and groundcover Irrigation (Parkway and bikeway buffer)	34300	SF	\$16	\$548,800	Assumes 4' wide planted area for parkway, 3'wide planted area for bikeway buffer
Shrub and groundcover Irrigation (Planted center median)	49000	SF	\$16	\$784,000	Assumes 10' wide planting area for median
Tree deepwell irrigation	760	EA	\$1,950	\$1,482,000	
Construction Cost per Mile				\$14,520,700	(Excludes any utility pole relocation, transit shelters, or street furnishings)

Partial Street Closure and Cool Plaza (Owensmouth)

DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST	Notes
ROADWAY + SIDEWALK					
Striping Removal	23,520	LF	\$3	\$71,000	
Intersection Crossing Striping	1	LS	\$20,000	\$20,000	Assumes new striping required for 4 continental crosswalks at one signalized intersection, stop bars (2) + conflict striping for bike facility on two legs
Bi-Directional Curb Ramps	4	EA	\$25,000	\$100,000	Assumes 1 intersection treatment
Cool Paving	23,520	SF	\$0.68	\$16,000	Assumes simple pattern, like People Street Plaza designs or similar is used. Assumes 420' long plaza condition
Bike Lane Pavement Markings	4	EA	\$155	\$600	Assumes 1 block treatment
FURNISHINGS + SIGNAGE					
Bicycle Signage	4	EA	\$375	\$1,500	Every 600' each direction
Shade Sails	2	EA	\$260,000	\$520,000	Assumes 2 shade sails approximately 30x40'
K-71 Bollards	8	EA	\$100	\$800	
Wayfinding or Interpretive Signage/Kiosk	2	EA	\$3,000	\$6,000	
LANDSCAPE + IRRIGATION					
36" Box Street Trees	14		\$1,200	\$16,800	Assumes existing mature trees are to remain in place, fill in street tree gaps able to create 25' O.C. spacing
Self-watering planter pots	10	EA	\$900	\$9,000	
Understory planting	1600	SF	\$16	\$25,600	
Understory irrigation	1600	SF	\$16	\$25,600	
Irrigation equipment	2	EA	\$10,000	\$20,000	
Deepwell irrigatoin	14	EA	\$1,950	\$27,300	
Construction Cost Per Plaza				\$860,200	

Class I Trail Cooling Node (Orange Line Path)

DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST	Notes
Shade structure	1	EA	\$260,000	\$260,000	Approximately 30x40', estimate per USA Shade.
Cool paving Surface paint at trail node	3,960	SF	\$0.68	\$2,693	
Bench	2	EA	\$2,600	\$5,200	
Bike Rack	4	EA	\$1,560	\$6,240	
Trash can	1	EA	\$1,560	\$1,560	
Hydration station	1	EA	\$10,000	\$10,000	
Interpretive signage	1	EA	\$300,000	\$300,000	
Landscape - understory	1,800	SF	\$16	\$29,000	Includes mulch, soil
36" Box Trees	6	EA	\$1,560	\$9,000	
Irrigation	1,800	SF	\$16	\$29,000	
Irrigation equipment	1	EA	\$10,000	\$10,000	
Deepwell irrigation	6	EA	\$1,950	\$12,000	
Striping Removal	350	LF	\$3	\$1,000	Assumes removal of bike/ped striping at cooling node only
Pavement Markings	54	EA	\$155	\$8,400	Every 200' each direction
Wayfinding Signs & Kiosk	2	EA	\$3,000	\$6,000	
Construction Cost per Node				\$690,093	

Miscellaneous Improvements

DESCRIPTION	UNIT	COST ASSUMPTION	Notes
ROW PAVING, SIGNAGE, STRIPING + SIGNALS			
Class I Shared-Use Path	MI	\$1,500,000	
Sidewalk, Curb, Gutter	SF	\$30	Assumes 6' sidewalk and excavation for stormwater/tree root vault system
ADA Curb Ramps	EA	\$25,000	
High Visibility Crosswalk	EA	\$5,000	One leg, cost varies by length and color of crosswalk
Transverse Crosswalk with Advance Stop Bar	EA	\$3,000	One leg, cost varies by length of crosswalk
Full depth excavation and re-paving of AC roadway	MI	\$300,000	Assumes one 11' lane of travel
Full depth excavation and re-paving of sidewalk	MI	\$250,000	Assumes 6' sidewalk
Mini-Roundabout with Planting	EA	\$75,000	
Pedestrian Refuge Island	EA	\$50,000	Depends on length and width of island
Traffic Signal System - HAWK	EA	\$400,000	
Traffic Signal System - RRFB	EA	\$60,000	
Bicycle Loop Detection	EA	\$3,000	
Sign and Post	EA	\$500	
Parking Restrictions	LF	\$60	Assumes painted curb and signs
Advanced Yield/ Stop Lines	EA	\$2,000	
Pedestrian Crosswalk Motion Sensor	EA	\$20,000	Per leg of crosswalk
Traffic and Pedestrian Signal (leading Ped Intervals)	LS	\$500,000	Per intersection. Cost varies by type of change and equipment required
UTILITIES			
Utility pole relocation	EA	\$50,000	
Catch basin remodel	EA	\$30,000	
Stormdrain and manhole relocation	EA	\$10,000	
SITE FURNISHINGS			
Bike Racks	EA	\$1,560	
Bike Lockers	EA	\$2,500	
Bench	EA	\$2,600	
Transit Waiting Area Improvements/ Bus Shelters	EA	\$400,000	Varies by type of improvement
Shade structure (custom)	EA	\$260,000	Approximately 30x40' - Estimate per USA Shade
Hydration Station	EA	\$10,000	Assumes existing water line available to tap into
LANDSCAPE + IRRIGATION			
36" Box Street Trees	EA	\$1,200	
Understory planting	SF	\$16	
Self-watering planter pots	EA	\$900	
Soil (planting areas)	CY	\$65	
Tree root vault cells + soil	EA	\$130	City Green Strata Vault cells used for this estimate. 2'x2' units, a minimum of 2 deep. Recommended minimum 6'x6' vault per tree, can extend beneath sidewalk, bikeway, parking to widen area for root growth, which will improve tree longevity and health.
Irrigation equipment	EA	\$10,000	
Irrigation	SF	\$16	
Deepwell irrigation	EA	\$1,950	

Notes: 20% Contingency, 5% Mobilization and 5% Traffic Control is included in unit costs.

Design, Environmental and Construction Management, costs are not included in this estimate. Additionally, storm drain and utility relocations are not included.



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