CITY OF CARSON

ACTIVE TRANSPORTAION PLAN

PART I: PEDESTRIAN MASTER PLAN

PART II: MASTER PLAN OF BIKEWAYS

CARSON
PEDESTRIAN MASTER PLAN

CITY OF CARSON
701 E Carson Street
Carson, California 90745
310.952.1761

June, 2015

ACKNOWLEDGMENTS

This Plan represents the combined vision and goals of the Community Advisory Board that guided its development, as well as input from key stakeholders, community groups, and community members. Thank you to all for donating your time to this project.

CITY OF CARSON HEALTHY EATING ACTIVE LIVING (HEAL) COMMUNITY ADVISORY BOARD MEMBERS

Jim Dear, City of Carson
Louie Diaz, Planning Commission
Ray Aldridge, Carson Bicycle Coalition
Audrey Echnoz, Carson/Gardena YMCA
Kim Richards, Boys and Girls Club of Carson
Adam Duvendeck, StubHub Center
Katie Pandolfo, StubHub Center
Pilar Hoyos, Economic Development Commission
Chris Childers, Economic Development Commission
Cletis Reed III, Parks and Recreation Commission
Francisco Canche, Los Angeles Unified School District
Sweeney Mae Montinola, South Bay Pavillion
Lori Carter, Resident and business owner

Made possible with funding from the Centers for Disease Control and Prevention through the Los Angeles County Department of Public Health.

Louisa Franco, Department of Public Health
Dr, Paul Chung, University of California, Los Angeles
Dr. Burt Cowgill, University of California, Los Angeles
Lauren Grabowski, University of California, Los Angeles
Jacinta Elijah, University of California, Los Angeles
Lindsey Thompson, University of California, Los Angeles
Richard Garland, City of Carson
Reata Kulcsar, City of Carson
Scott Griffee, City of Carson
Saied Naaseh, City of Carson

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1 INTRODUCTION

A VISION OF ACTIVE TRANSPORTATION IN CARSON

"Active transportation" refers to non-motorized, human-powered transportation—primarily walking and bicycling—but may also include skateboarding, wheelchairs or any non-motorized means of transportation. The City of Carson will support the community's desire for improved health, economic vitality, and quality of life by establishing a complete, safe, and attractive bicycle, pedestrian and transit network that will be accessible to users of all ages, abilities and backgrounds. Carson community members will choose to walk, bike, or ride public transit for routine tasks as part of a healthier lifestyle.

Carson's active transportation network will provide connectivity to key destinations in Carson including all neighborhoods, schools, parks, employment centers, and churches; government offices including Carson City Hall, the Carson Civic Center; commercial shopping centers such as SouthBay Pavilion Mall and the Boulevards at South Bay; regional attractions including California State University Dominguez Hills, and the StubHub Center; and surrounding cities and communities.

PLANNING PROCESS OVERVIEW

In 2013, the Los Angeles County Department of Public Health awarded a Healthy Eating Active Living (HEAL) grant to the UCLA/RAND Prevention Research Center to partner with the City of Carson to develop an Active Transportation Plan. In May 2013, the Carson City Council passed a resolution (Council resolution: 13-054) authorizing work on an Active Transportation Plan and the creation of a community advisory group to guide the process. Work commenced in June 2013.

The Active Transportation Plan is organized into two parts: The Carson Master Plan of Bikeways and the Carson Pedestrian Master Plan.

The Carson Master Plan of Bikeways includes a proposed bicycle network, bicycle programs, design guidelines and an implementation plan.

The Carson Pedestrian Master Plan includes proposed improvements to Carson's streets and sidewalks, education and encouragement programs, design guidelines, and an implementation plan.

The Pedestrian Master Plan is the result of a robust community engagement process that relied on the model of community-based participatory research (CBPR). CBPR is a partnership approach to research that involves equal input and involvement from a cross section of community participants including community members, organizational

Members of the Carson community assist with the planning process at a community event.

representatives, and decision-makers in which all partners contribute expertise and share decision-making and ownership. The goal of CBPR is to increase knowledge and understanding and to integrate the knowledge gained with interventions and policy and social change to improve the health and quality of life of a community.

A HEAL Community Advisory Board with key leaders and stakeholders was assembled to guide the development of the Active Transportation Plan process. The HEAL Project Team convened the advisory board on a quarterly basis to provide project updates and request input during the planning process. The HEAL Project Manager and staff conducted one to two hour interviews with community stakeholders, English and Spanish focus groups, and distributed surveys to over 300 community members to gather feedback. The HEAL Project Manager worked closely with two students groups, the Mayor's Task Force and a Youth Community Advisory Board to conduct walking assessments to expand their knowledge of Carson's pedestrian environment before they provided input in mapping exercises. Additionally, two public workshops were held, and HEAL staff attended three community events to gather public input on the plan. The Active Transportation Plan is the result of this input.

GOALS

The purpose of the Active Transportation Plan is to make Carson's vision a reality. Below is a list of measurable goals that will help support and achieve this vision.

GOAL 1: CONNECTIVITY

Connect neighborhoods, parks, shopping centers, schools, employment centers, bus stops, and regional destinations with a greater number and broader range of pedestrian, bicycle and transit facility options.

GOAL 2: LIVABILITY

Design an active transportation network that is attractive and convenient.

GOAL 3: SAFETY

Improve safety for people walking and bicycling.

GOAL 4: HEALTH

Improve community health through increased opportunities for physical activity and improved air quality.

GOAL 5: ECONOMIC DEVELOPMENT

Increase the number of residents that patronize local businesses by improving biking, walking, and transit accessibility at key commercial areas and business districts.

CHAPTER 2

PUBLIC OUTREACH

OVERVIEW

In order to understand the active transportation needs of the Carson community, the project team conducted a comprehensive community engagement effort that included convening an advisory board of key community leaders on a quarterly basis, monthly meetings with the Mayor's student task force, seven one-hour stakeholder interviews, five two-hour focus groups, outreach at community events and a questionnaire.

The engagement activities took place from August 2013 to May 2014. Approximately 500 people participated.

PUBLIC WORKSHOPS

Two community workshops were held in Carson. The public was notified via flyers distributed in parks and schools, Facebook postings and cable advertisement.

Workshop 1

The first public workshop was held March 5, 2014 at Veterans Sports Complex. It was held in conjunction with the 5,000 lb Weight Loss Challenge Culmination Event to highlight the health focus of the active transportation Plan. Project team members, student volunteers and Councilmember attended. Despite heavy rain, approximately 25 community members participated.

Workshop 2

The second public workshop was held on May 3, 2014 at the Carson Community Center. The Second Annual Tour de Carson was held in conjunction with this workshop to attract more participants interested in active transportation and health. Project team members, student volunteers and Councilmembers attended. Approximately 100 people participated.

Project team staff and volunteers also attended community events such as, Red Ribbon Week, Tri-Carson, and the SouthBay Pavilion Health Fair, to inform the public about the plan and solicit feedback.

OUTREACH RESULTS

Participants were asked to comment on their general travel behaviors and thoughts on the pedestrian and bicycling environment.

Identification and Key Issues

1. Pedestrian: The community provided mixed results about the pedestrian experience. Areas in the City that were identified as "good" to walk in were around certain parks, including Veterans Park, around South Bay Pavilion, and along streets that had greenery, shops, and less traffic. Areas that were identified as "bad" to walk in were areas that were dimly lit or lacked lighting, streets with cracked or narrow sidewalks, and streets without curb ramps. The community also cited concerns about safety from vehicles and crime during the day and night.

2. Bike: Safety was the main biking concern for the community. Participants stated that lack of bike lanes discourages them from biking in the City because of safety issues dealing with motor vehicles. Areas that participants wanted lanes were on major streets, such as Carson Street and Del Amo Boulevard, because they are wide enough to accommodate bicyclists and motor vehicles. Participants were also concerned about safety from bike thefts and agreed that having more bike racks would be beneficial. Areas for suggested bike racks were around malls and grocery stores. Some stated the lack of a bike culture also discouraged them from biking more, and that more bicyclists on the road would provide encouragement.

3. Public Transit: The community identified inconsistency and infrequency of buses as the main reasons why they are not using public transit. Participants stated the lack of frequent buses made public transit inconvenient because too much time was spent traveling to and from destinations, such as the mall, work, grocery stores, and schools. Safety while waiting for the bus and while on the bus was also a concern. Participants identified the hours of operations for buses as an issue because some bus lines end their routes too early. Participants agreed that more knowledge about bus routes, schedules and an easier system to navigate the bus routes would encourage them to use public transit more.

4. Programming: Participants stated that there is a lack of awareness pertaining to public events and workshops. Better awareness is needed to educate the public about walking, biking and public transit opportunities in Carson.

Community Priorities

1. Safety: Safety from vehicles, crime, and harassment is a major priority. The City should enact infrastructure and non-infrastructure programming to increase community safety. Infrastructure should include lighting, fixing sidewalks, widening sidewalks around schools, and adding bike lanes. Non-infrastructure should include crossing guards around school areas, more police surveillance of areas, such as the pedestrian bridge on Figueroa Street, and safety workshops. People of all ages should feel safe to walk, bike, and take public transportation in City of Carson.

2. Access and Destinations: City of Carson should increase access to destinations in order to increase active transportation. Lack of destinations nearby discourages people from walking and biking because it is inconvenient and takes more time than traveling by car. Providing more destinations, such as restaurants and shops, would encourage people to walk more in their neighborhoods and around their work locations. Strategies that make places, such as City Hall, schools, and employment areas, more accessible can promote active transportation to these destinations.

3. Increased Awareness: Increasing community awareness of programs, events, and workshops is a key strategy to promote active transportation. Wider audiences can be met through advertisements in newspapers such as the Daily Breeze and through the city website. Frequent sightings of campaigns, posters, and flyers that promote walking and biking as a safe, fun, and healthy activity can encourage families to participate in active transportation. Program and infrastructure that promote safety, such as bicycle safety workshops or signs alerting drivers to share the road, can also increase awareness.

4. Wellness: Incorporating wellness into daily lives can promote a healthier city. Educating the community, especially the youth, about the benefits of active transportation can help create long-term healthy habits. Also increased active transportation can help alleviate air quality problems and asthma concerns.

Suggested Improvements

1. Lighting: Pedestrian lighting around schools, parks, malls, bus stops, and along residential streets can increase feelings of safety and encourage more walking and biking.

2. Landscaping: More landscaping along streets can promote walking. Plants, shade, and greenery gives people something to look at while walking along major streets. Exteriors of buildings and outdoor landscaping should be maintained to increase walking and help businesses.

3. Monitoring: Visibility encourages people to walk because they feel safer. More police surveillance around parks and the pedestrian bridge on Figueroa Street can promote walking. Activities that bring people to the parks at night, such as sports leagues, can also increase the sense of community safety and encourage more walking and biking.

4. Bicycle Lanes: Bicycle lanes around malls, schools, event venues, and big streets will encourage more biking because people will feel safer. Increased bicyclists on the streets can promote a bike culture in City of Carson.

5. Incentives: Giveaways and contests can encourage active transportation. Giveaways can include pedometers or bicycle helmets. Carpooling and public transportation incentives can also help.

CHAPTER 3

PLANNING CONTEXT

OVERVIEW

All approved planning documents must be consistent with existing City, regional and state plans, policies and regulations. The following section summarizes relevant documents.

CITY OF CARSON GENERAL PLAN

LAND USE ELEMENT

The General Plan Land Use Element plays a central role in correlating all land use issues into a set of coherent development policies. One of the current issues that the land use element addresses is trying to develop a balance of a mixture of facilities in order to meet the needs of the citizens of Carson. The land use plan needs to provide for "Livable Communities" that integrate a development theme, landscaping and buffering, quality design, environmental protection, easy access to public transportation, pedestrian access, and neighborhood safety.

TRANSPORTATION ELEMENT

The General Plan Transportation Element addresses the existing and projected future circulation conditions in the City. It looks at transportation through a multi-modal lens, addressing private automobiles, inter-city and intra-city transit, trucks, bicycles, and pedestrians. Additionally, it provides overviews of street classifications, level of service, bicycle routes, transit facilities, and circulation forecasts for the City of Carson.

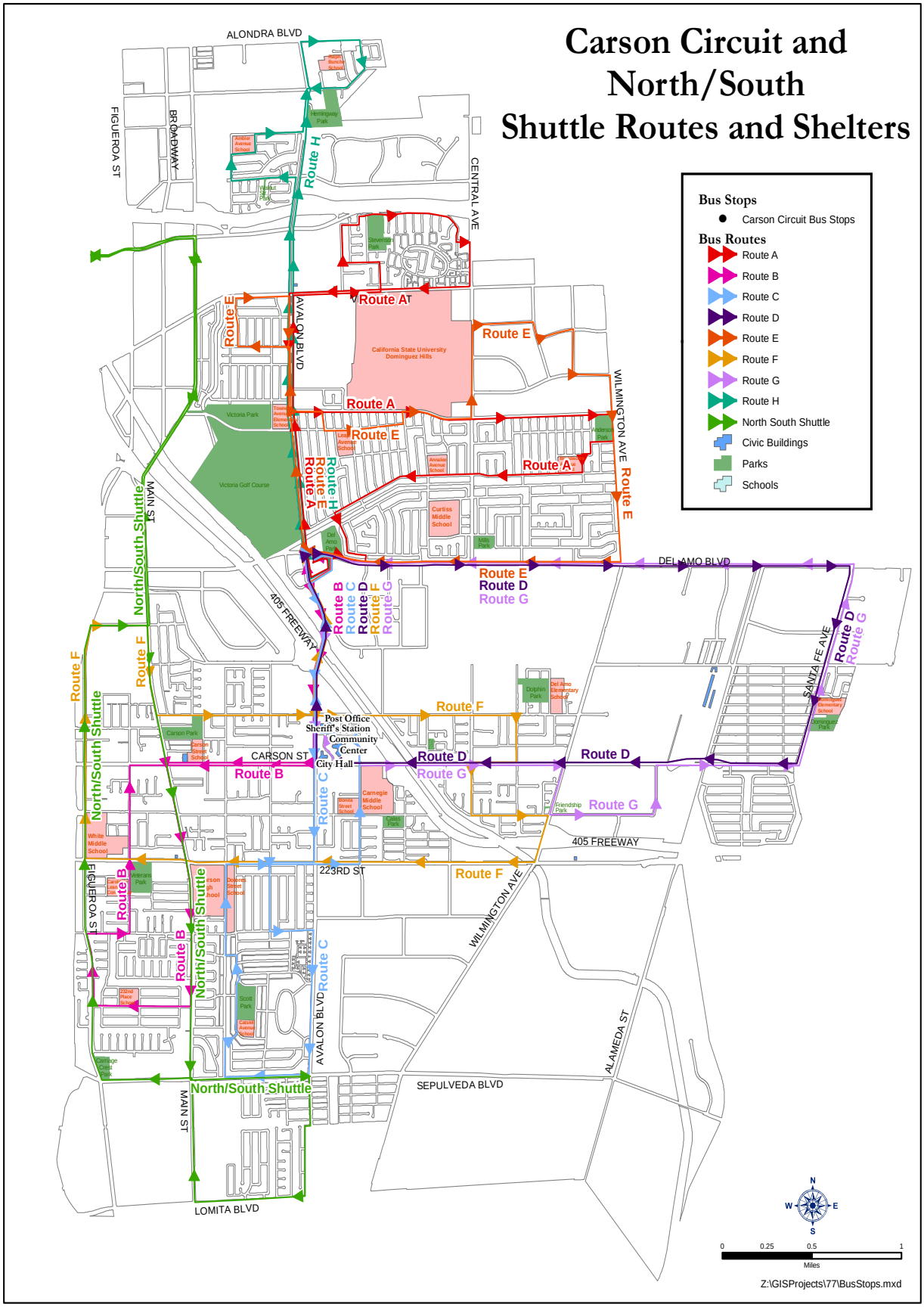


FIGURE 3.1 CITY OF CARSON GENERAL PLAN BUS ROUTES

SAFETY ELEMENT

The General Plan Safety Element is used to identify and understand potential hazards confronting the City of Carson. It includes policies that address pedestrian safety in communities.

OPEN SPACE/CONSERVATION ELEMENT

The General Plan Open Space/Conservation Element provides policies that promote environmental awareness and practices to protect key natural features and resources. Due to scarcity of resources, the economic health and quality of life of Carson residents are of key importance.

AIR QUALITY ELEMENT

The General Plan Air Quality Element is intended to protect the public's health and welfare by implementing measures that allow the South Coast Air Basin to attain Federal and State air quality standards, which will move the City towards a sustainable level of air quality. Air quality conditions in Carson are influenced by many factors, including the topography, climate, and numeral types of pollution producers. Stricter enforcement of emission reduction rules, educating the public on pollution control measures, and promoting the use of alternate fuel vehicles will assist in the improvement of air quality in the region.

TABLE 3.1 CITY OF CARSON GENERAL PLAN ELEMENTS GOALS AND POLICY AND IMPLEMENTATION MEASURES

CITY OF CARSON GENERAL PLAN ELEMENTS	GOALS	POLICY AND IMPLEMENTATION MEASURES
LAND USE	LU-6 LU-8 LU-13 LU-15	LU-6.3 LU-8.3 LU-13.6 LU-15.6
TRANSPORTATION	TI-3 TI-4	TI-3.4 TI-4.1 TI-4.2 TI-4.3
SAFETY	SAF-6	SAF-6.8
OPEN SPACE/CONSERVATION	OSC-3	OSC-3.4
AIR QUALITY	AQ-2 AQ-3	AQ-2.5 AQ-2.6 AQ-3.1 AQ-3.2

CITY OF CARSON MUNICIPAL CODE

The City of Carson Municipal Code provides development standards for the city. Included in the code are requirements for the following:

- **Crosswalks:** Crosswalks are maintained by the Public Works Department and are placed where there is a particular need to guide pedestrians in crossing the roadway.
- **Businesses:** Establishments, in which the public is invited, located on the ground floor are not to obstruct the visibility of entrances with any screen, partition, or barrier. Vendors, such as mobile food truck vendors, shall not encroach onto a public sidewalk and must

provide waste receptacles in the vicinity of the business.

- Public right-of-way: Litter, debris, and/or rubbish must be kept out of sight in the public-right-of-way, including, but not limited to: wrecked motor vehicles or equipment, trash, abandoned/broken machinery. Structures that are visible from the public-right-of-way must be properly maintained, such as removal of weeds and graffiti, and repairing of broken porches and windows, as to not depreciate aesthetic value.
- Sidewalks: Sidewalks are to remain clear of items that unreasonably interfere with or impede the flow of pedestrian traffic. This includes: news racks, landscaping, trash, and residential waste receptacles. Concrete sidewalks shall not be less than five (5) feet wide for residential developments along all frontages where residential lots are adjacent to street right-of-way. Wheelchair ramps shall be provided at every new corner where curbs and gutter are to be. Furthermore, the Advisory Agency has the right to waive the construction of sidewalks if they will not benefit the area.
- Trip Reduction Measures: Nonresidential development of fifty thousand (50,000) square feet or more shall provide bike racks and other secure bicycle parking, safe and convenient loading zones for vanpool and carpool riders, designated pathways for external pedestrian and bicyclist circulation to and from the site, and convenient access to nearby transit station/stops where appropriate.
- Zoning: Special requirements for commercial and mixed-use zones provide landscaping, circulation, signage, and pedestrian-lighting protocols.

Also included in the code are Design Guidelines and Sustainable Standards. The guidelines are intended to promote a more sustainable built environment through specific design and construction techniques. The following guidelines are recommended for all projects within the Mixed-Use – Carson Street Corridor District and Sepulveda Corridor District:

- Creation of outdoor spaces to promote community, a sense of place, pedestrian-friendly environments, and reduced automobile usage.
- Enhanced paving at all driveways.

- Pedestrian access connecting rear parking lots to street when possible.
- Fountains and/or civic art, centrally located, in designated open space areas for visual attraction, screening of traffic noise and cooling effect.
- Primary ground floor building entrances placed in the front for public right-of-way, where the main entrance is clearly identified and directly accessible

SPECIFIC PLANS

There are eight specific plan areas within Carson. The Carson Street Master Plan includes design guidelines and recommendations for pedestrian realm amenities including textured crosswalks, benches, landscaping, and wide sidewalks. Chapter 10 of the Pedestrian Master Plan includes additional design guidelines for pedestrian amenities.

MOBILITY PLANS OF NEIGHBORING COMMUNITIES

CITY OF LONG BEACH MOBILITY ELEMENT

The City of Long Beach prepared its Mobility Element of the General Plan in July 2013 to establish the vision, goals, policies, and implementation measures to improve the city's local and regional transportation networks. As a major population and employment hub and maritime port, Long Beach's Mobility Element plans for livable communities with safe and attractive streets, increased access through active transportation and multi-modal connectivity, compact transit-oriented development, and dynamic neighborhoods and business communities.

The City of Carson borders the western portion of Long Beach. Some of the City of Long Beach's Mobility Element's recommendations affecting Carson City reflect regional plans for proposed bus rail transit (BRT), improving pedestrian safety along Carson Street, and street redesign to better accommodate pedestrians, bicyclists, and transit riders.

CITY OF LONG BEACH METRO BLUE LINE AND PEDESTRIAN ACCESS IMPROVEMENT PLAN

In March 2011, the City of Long Beach released a Metro Blue Line and Pedestrian Access Improvement Plan that evaluated the safety of pedestrians and bicyclists and physical infrastructure at the Blue Line Stations in the city. The Plan examined areas within a one-half mile radius

of the stations for pedestrian access, and more than one-half mile radius for bicycle access.

The station that concerns the City of Carson is the Del Amo Station located on the most eastern part of Carson bordering northern Long Beach (E Del Amo Boulevard and S Santa Fe Avenue). The Plan found that the major issue near that station was the lack of a bicycle lane and an obstructed/fragmented sidewalk on Del Amo Boulevard. Recommended improvements include:

- Constructing a bicycle and pedestrian bridge over the Los Angeles River.
- Striping a bicycle lane on Del Amo Boulevard.
- Improving sidewalk conditions.
- Installing high-visibility crosswalks and pedestrian-scale lighting.

CHAPTER 4 GOALS, POLICIES, AND ACTIONS

GOALS, POLICIES, AND ACTIONS

GOAL 1: CONNECTIVITY

Connect neighborhoods, parks, shopping centers, schools, employment centers, bus stops, and regional destinations with a greater number and broader range of pedestrian, bicycle and transit options.

Policy 1.1: Create and maintain a citywide pedestrian network.

- Construct the sidewalk, crosswalks, and pedestrian signals recommended in the plan.
  - » Responsible parties: Planning Division, Public Works
  - » How to measure: Number of crosswalks, sidewalks and signals completed per year.
- Coordinate with community members and local and regional groups to increase stewardship of pedestrian facilities in terms of regular maintenance.
  - » Responsible parties: Planning Division, Public Works
- Pursue a diverse array of funding sources for pedestrian improvements, including federal, state, and local sources, development agreements, and private funding.
  - » Responsible parties: Planning Division, Public Works
  - » How to measure: Number of grants applied for and number of dollars received.

Policy 1.2: Assist neighborhoods that desire to improve pedestrian access to and from the neighborhood.

- Identify potential easements and entryways and present to homeowners' associations.
  - » Responsible parties: Planning Division, Public Works

Policy 1.3: Where it is not feasible to provide a continuous pedestrian route due to topography, preexisting barriers, or other factors, there should be a safe alternate route that minimizes the distance a pedestrian has to go out of their way to reach his or her destination.

- The City shall work to increase pedestrian access in areas impacted by freeways including the 405 freeways and 110 freeway.

GOALS AT A GLANCE

1. Connect neighborhoods, parks, shopping centers, schools, employment centers, bus stops, and regional destinations with a greater number and broader range of pedestrian, bicycle and transit facility options.
2. Design an active transportation network that is attractive and convenient to all users.
3. Improve safety for pedestrians and all users.
4. Improve community health through increased opportunity for physical activity and improved air quality.

- » Responsible parties: Planning Division, Public Works

Policy 1.4: Improve and expand the multi-use trail system to increase walking for transportation and recreation.

- Secure funding and construct the Dominguez Channel and Los Angeles Department of Water and Power utility corridor multi-use trails.
  - » Responsible parties: Planning Division, Public Works
  - » How to measure: Miles of multi-use trail constructed.

GOAL 2: LIVABILITY

Design an active transportation network that is attractive and convenient to all users.

Policy 2.1 Expand the use of pedestrian-scale lighting.

- Construct the prioritized pedestrian-scale lighting identified in the plan
  - » Responsible party: Public Works
  - » How to measure: Number of pedestrian street lights installed.
- Apply for Safe Routes To School funding for both infrastructure improvements and non-infrastructure programs
  - » Responsible parties: Planning Division, Public Works
  - » Timeline: The City will aim to submit at least one application each funding cycle for the next 10 years
  - » How to measure: Grant dollars obtained per year

Policy 2.2: Improve pedestrian access for the disabled community.

- Ensure all sidewalks are compliant with the Americans with Disabilities Act.
  - » Responsible party: Planning Division
- Create and maintain a walkable zone on all streets to enable a clear pedestrian path of travel.
  - » Responsible parties: Planning Division, Public Works

Policy 2.3: Establish and implement pedestrian design guidelines.

- Adopt the pedestrian design guidelines in Chapter 10 as part of the Active Transportation Plan.
  - » Responsible parties: Planning Division, Public Works

- Include pedestrian design guidelines as part of new development and new specific plans.
  - » Responsible party: Planning Division

Policy 2.4: Support the dual benefits of green infrastructure (ie. trees and landscaping) and walkability

- Develop standard practices that support tree planting and sidewalk maintenance.
  - » Responsible parties: Public Works, Landscape & Building Maintenance
- Define street-level landscaped areas that encourage walking and minimize sidewalk obstruction.
  - » Responsible parties: Public Works, Landscape and Building Maintenance

Policy 2.5: Conduct regular monitoring of pedestrian activity.

- Conduct annual pedestrian counts by using volunteers and/or electronic counters.
  - » Responsible parties: Planning Division, Public Works
  - » How to measure: Number of counts each year.

GOAL 3: SAFETY

Improve safety for pedestrians and all users.

Policy 3.1: Improve dangerous intersections.

- Construct intersection improvements recommended in the Pedestrian Master Plan: curb ramps, pedestrian countdown signals, high visibility (continental) crosswalk markings with advance yield lines, speed reduction measures.
  - » Responsible party: Public Works
  - » How to measure: Number of improvements implemented.
- Develop a Complete Streets Policy.
  - » Responsible parties: Planning Division, Public Works

Policy 3.2: Reduce vehicle speeding in neighborhoods.

- Develop Neighborhood Traffic Management Plan of guidelines for traffic control devices. Possible tools to address specific neighborhood complaints include: speed humps (policy attached), stop signs (policy per California MUTCD), radar speed feed-back signs, warning signs, pavement markings, enforcement etc.

- Implement speed-reduction enforcement programs including signage and speed-trailers.
  - » Responsible party: Public Works
  - » How to measure: Number of programs implemented.

Policy 3.4: Promote education and enforcement to improve pedestrian safety across the city.

- Implement education and enforcement programs recommended in the Active Transportation Plan.
  - » Responsible parties: Planning Division, Public Works
  - » How to measure: Number of programs implemented.

GOAL 4: HEALTH

Improve community health through increased opportunities for physical activity and improved air quality

- Update School Travel Plans.
  - » Responsible parties: Public Works, Planning Division
  - » How to measure: Number of School Travel Plans updated.
- Implement encouragement programs recommended in the Active Transportation Plan to create sustainable behavioral change.
  - » Responsible parties: Parks and Recreation, Planning Division

CHAPTER 5

EXISTING CONDITIONS

EXISTING

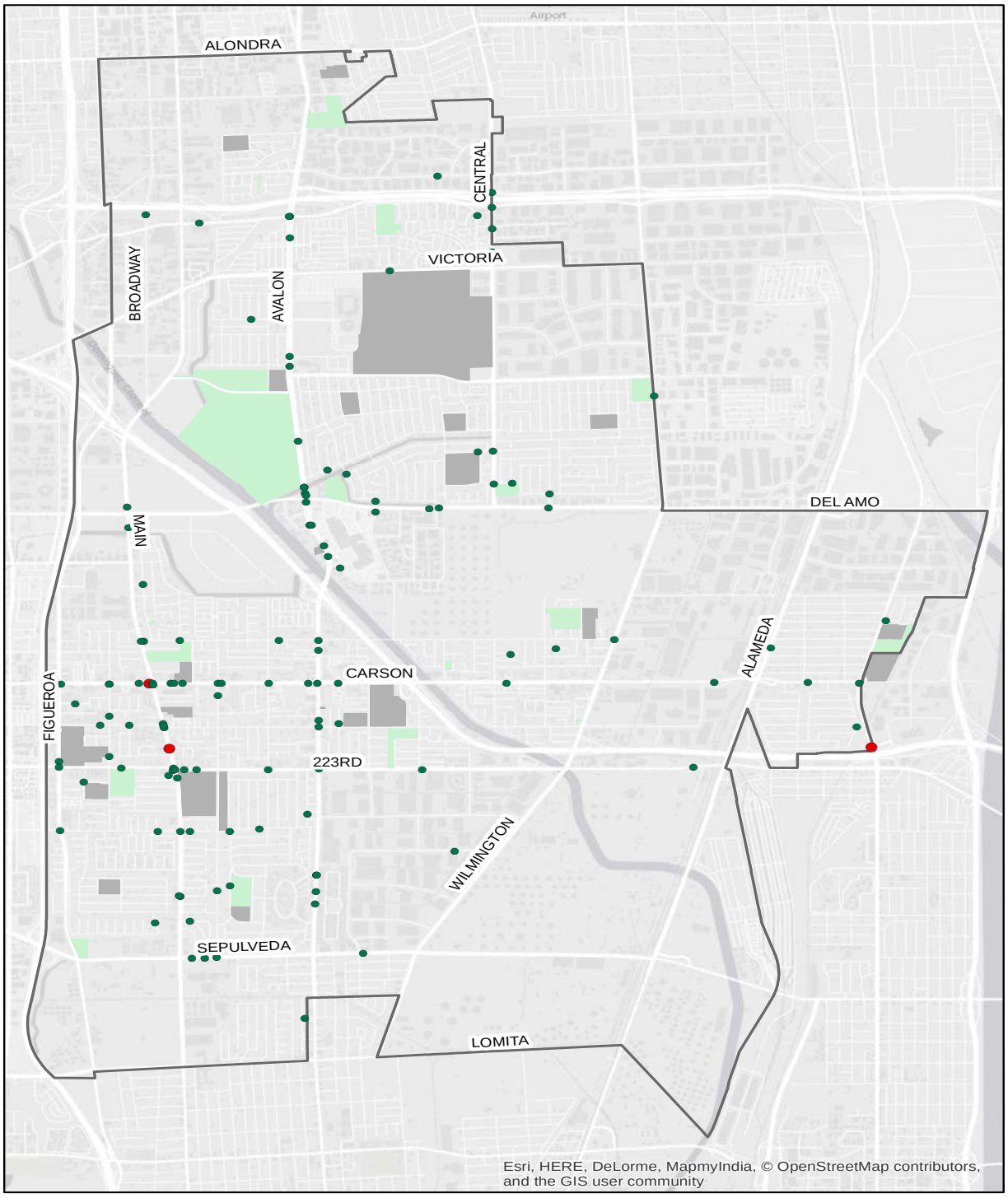
The City of Carson has a strong foundation for the development of a safe and complete active transportation network. A Master Plan of Bikeways that identifies a complete bicycle network and bicycle amenities was approved by City Council on August 6, 2014 (see Appendix A). The City of Carson has numerous sidewalks and pedestrian amenities, as well as its own local bus service and access to other local and regional transit services. These existing bicycle, pedestrian, and public transit investments can be developed into a complete active transportation network that is safe and convenient for all users. The following section details the existing pedestrian and transit conditions in Carson.

VEHICLE-PEDESTRIAN COLLISION DATA

Figure 5.1, identifies the locations of vehicle-pedestrian collision in Carson from 2010-2013. During this time period, 128 vehicle-pedestrian collisions occurred, resulting in 3 fatalities.

While vehicle-pedestrian collisions occur throughout Carson, a significant number of collisions occurred on Central Avenue near the 91 freeway, on Avalon Boulevard, at the intersection of Avalon Boulevard and Del Amo Street, on Carson Street between Avalon Boulevard and Figueroa Street, and 223rd Street between Main Street and Figueroa Street.

PEDESTRIAN COLLISIONS, 2010-2013



Legend

- Vehicle-Pedestrian Collisions
- Vehicle-Pedestian Collisions (Fatal)

FIGURE 5.1 CITY OF CARSON, PEDESTRIAN COLLISIONS, 2010-2013

PUBLIC TRANSIT

CARSON CIRCUIT

The Carson Circuit is a local bus service, operated by the city of Carson, which runs Monday through Saturday. The local transit line allows riders to connect with neighboring transit lines such as, Los Angeles Metro, Long Beach Transit along with a few others.

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY (METRO)

Metro is the primary transit provider throughout Los Angeles County. Metro operates two regional transit lines adjacent to Carson: the Silver Line (Bus Rapid Transit), with stops at the Artesia Transit Center and the Carson Street Station, and the Del Amo Blue Line Station. All three stations include park and ride lots and bicycle racks or lockers. These transit lines connect Carson with the greater Los Angeles region.

Metro operates local bus service on a number of streets throughout Carson. These routes include Line 45 traveling north and south on Avalon Blvd, Lines 52/352 traveling east and west on Victoria St, Line 53 Traveling north and south on Central Ave with a transit stop located at Cal State University Dominguez Hills, Line 130 traveling east and west on Victoria St, 205 traveling north and south on Wilmington Ave and east and west on Del Amo Blvd with transit stops located on Wilminton Ave and Del Amo Blvd and Del Amo Blvd and Avalon Blvd and Line 246 traveling north and south on Avalon Blvd with a transit stop located on Avalon Blvd and Carson St.

OTHER TRANSIT SERVICES

Additional transit services are available in Carson. These services include:

- Gardena Municipal Bus Lines: Line 3 traveling east and west to and from the South Bay Galleria and Compton Blue Line MLK Transit Station with a transit stop located at Alondra Blvd and Avalon Blvd
- Long Beach Transit: Line 191 traveling North and South to and from Downtown Long Beach and South and Bellflower with a transit stop located at Santa Fe Ave And Del Amo Blvd (Del Amo Station); and Line 192 traveling North and South to and from Downtown Long Beach and Los Cerritos Center with a transit stop located at Santa Fe Ave And Del Amo Blvd (Del Amo Station)

- Torrance Transit: Line 3 traveling east and west to andfrom Redondo Beach Pier and Downtown Long Beach with transit stops located at Carson St and Avalon Blvd and Main St and Sepulveda; Rapid 3 traveling east and west to and from South Bay Galleria and Downtown Long Beach Station with transit stops located at Carson St and Main St, Carson St and Avalon Blvd, Avalon Blvd and 223rd and Avalon and Sepulveda; Line 6 traveling east and west to and from Carson / Hawthorne Hub and Artesia Station with a transit stop at Victoria St and Avalon Blvd; line 7 traveling east and west to and from Redondo Beach Pier and Sepulveda Blvd with a transit stop located at Sepulveda Blvd and Avalon Blvd; and line 9 traveling east and west to and from Del Amo Mall and Sepulveda Blvd and Avalon Blvd with a transit stop located at Sepulveda Blvd and Avalon Blvd

CHAPTER 6

PROPOSED PEDESTRIAN IMPROVEMENTS

OVERVIEW

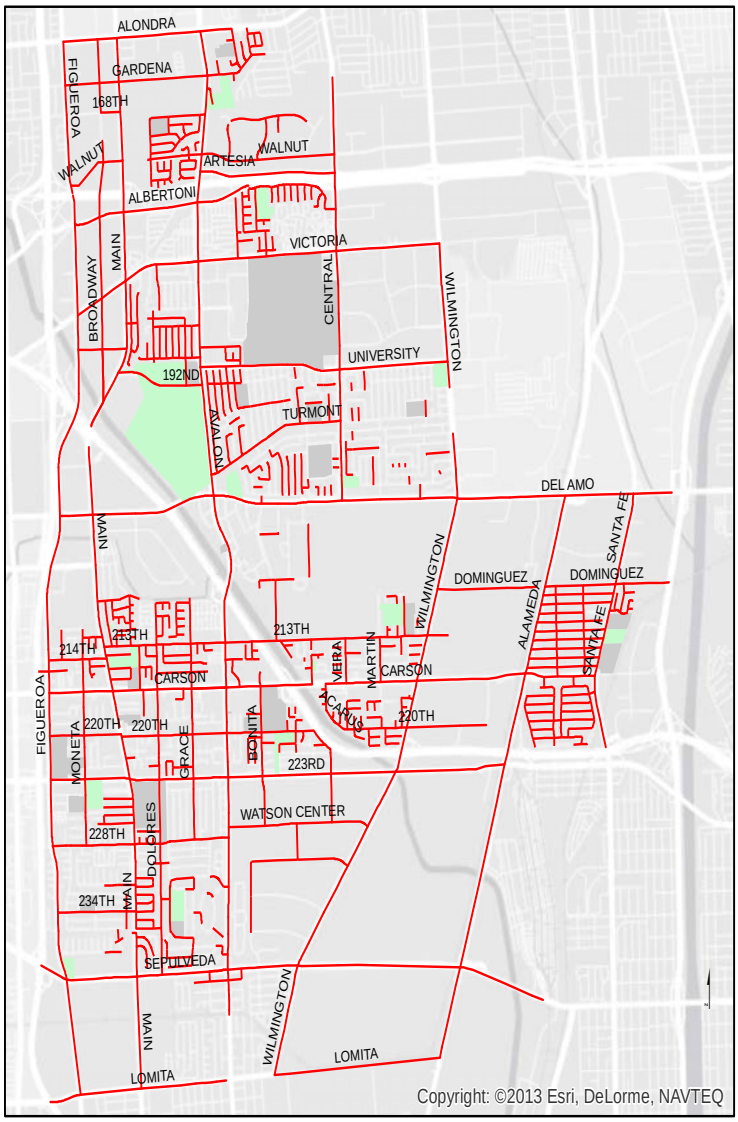
Based on existing conditions data and community feedback, the following pedestrian improvements are proposed to create a complete, safe, and attractive pedestrian network.

PEDESTRIAN-SCALE LIGHTING

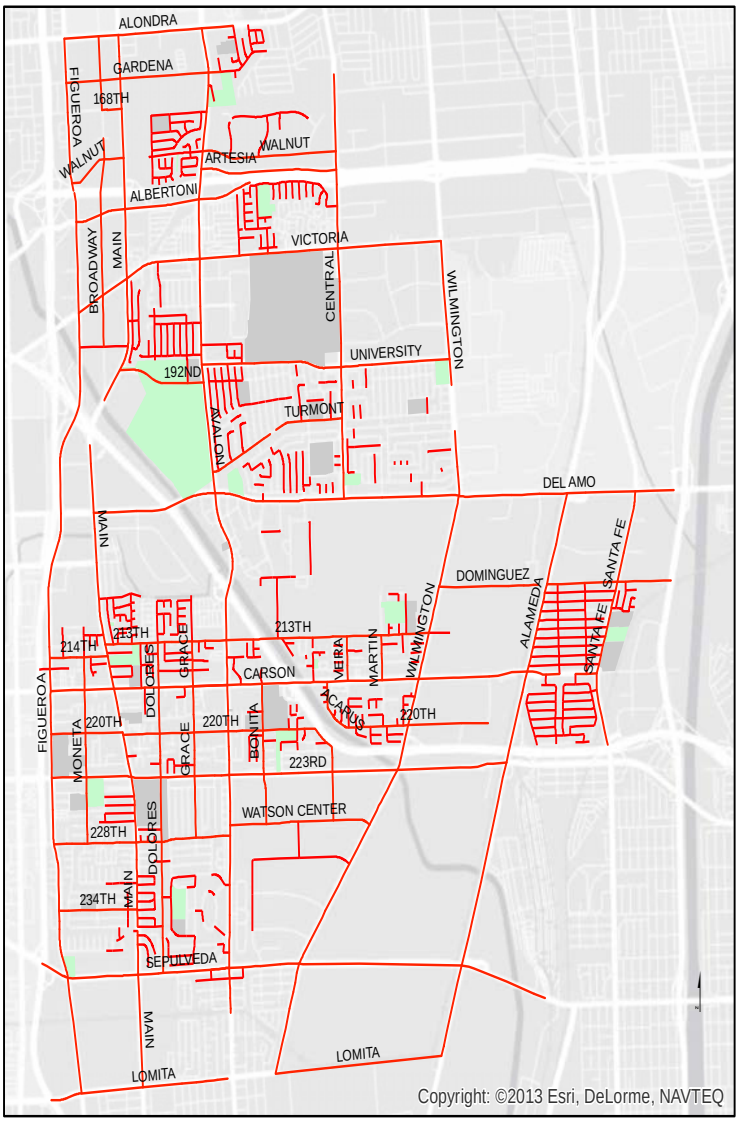
Carson currently lacks any pedestrian scale lighting. The City is currently working on creating a plan for installing pedestrian-scale lighting. This Plan recommends prioritizing the installation of lighting near parks and schools. See Figure 6.1 for Pedestrian - Scale Lighting

Pedestrian-scale Lighting*

South and West Side of Street Segments



North and East Side of Street Segments



Legend

None

0 1 2 4

Miles

*Carson currently lacks pedestrian-scale lighting.

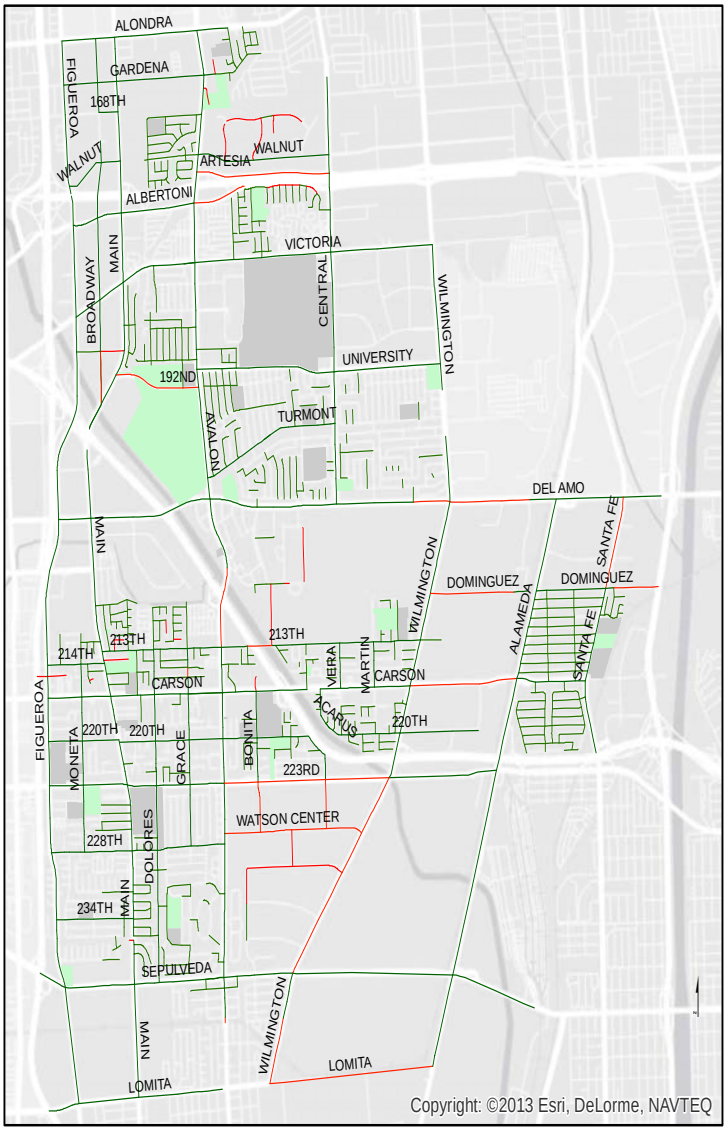
FIGURE 6.1 Pedestrian - Scale Lighting

SIDEWALKS

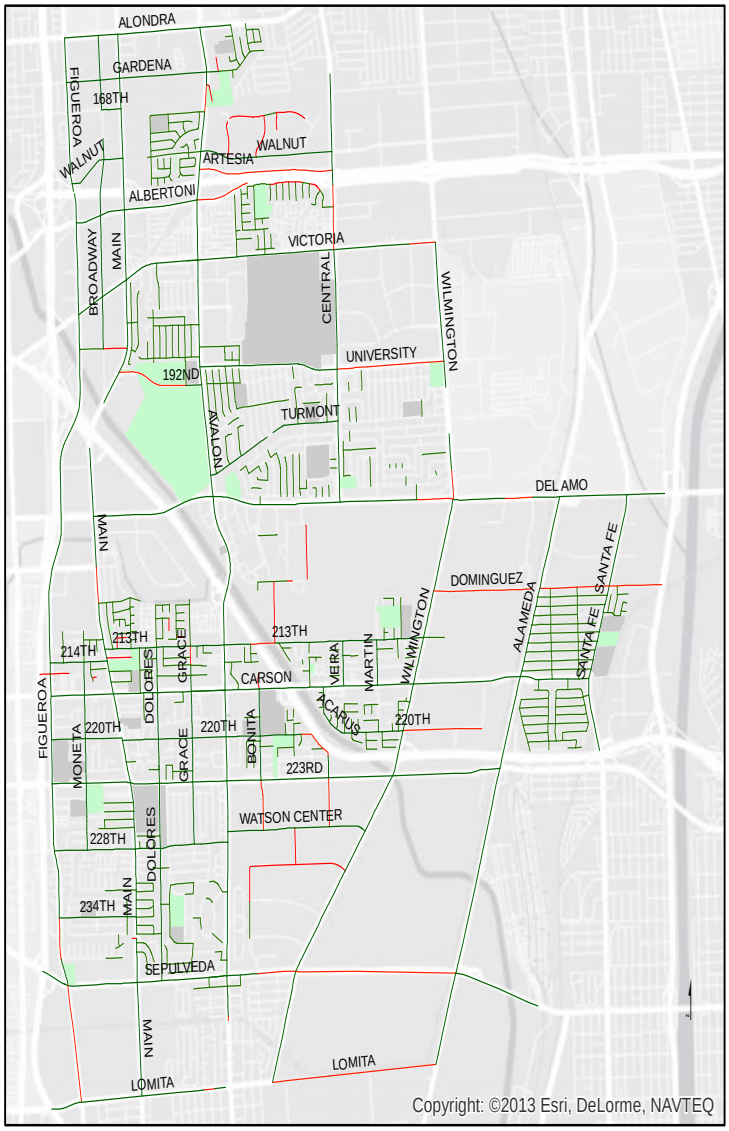
The City has developed an extensive system of high quality sidewalks along the majority of Carson's main streets, commercial areas and neighborhoods. The following areas should be prioritized for improving sidewalk gaps. See Figure 6.2 Sidewalk Gaps.

Continuous Sidewalk

South and West side of street segments



North and East side of street segments



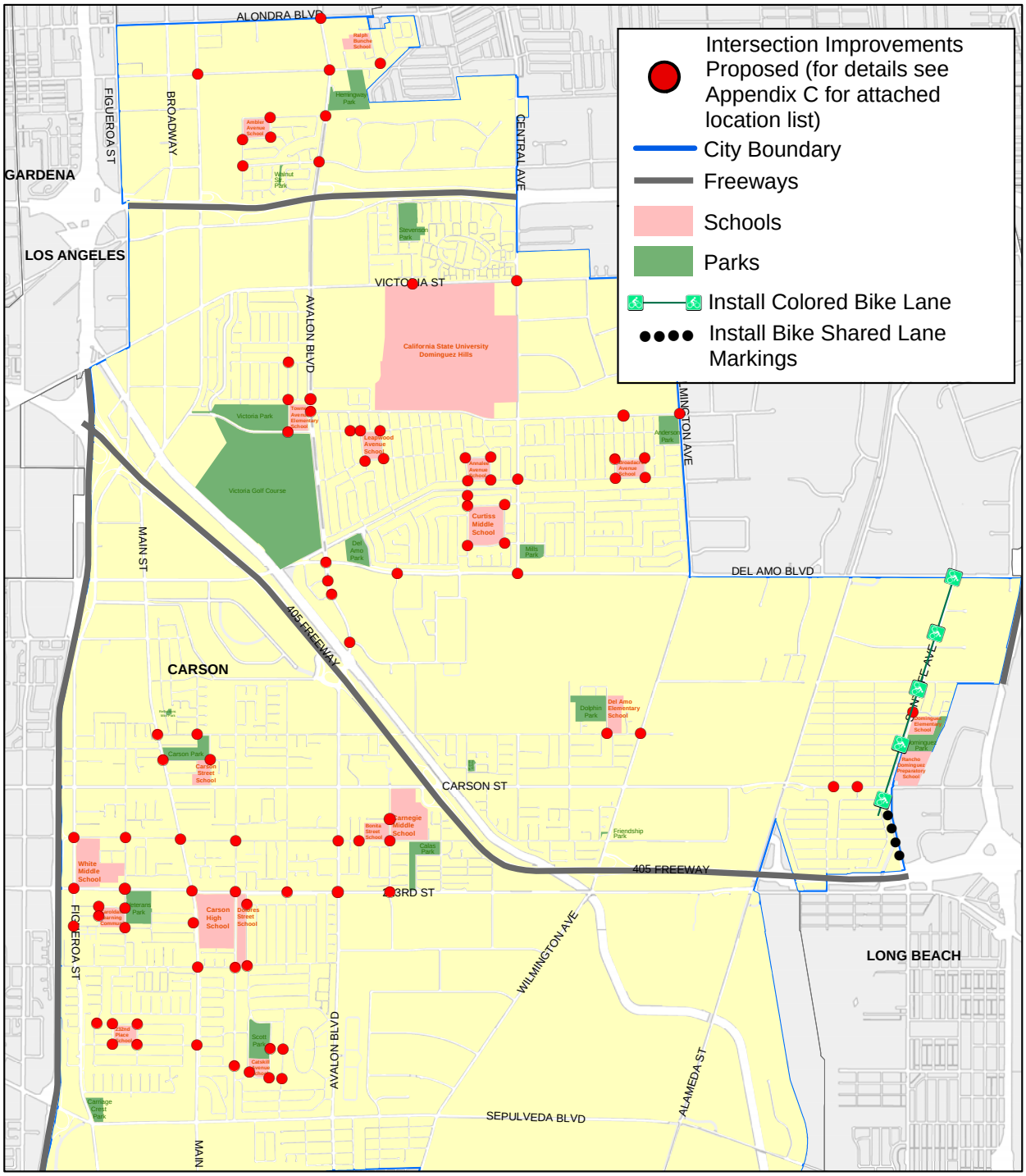
Legend

Continous Sidewalk — Non-continuous Sidewalk

FIGURE 6.2 Sidewalk Gaps

INTERSECTION IMPROVEMENTS

Approximately 80% of pedestrian collisions in Carson occur at intersections. High-visibility crosswalks and pedestrian count-down signals are proposed at all of Carson's intersections with high collision rates, high levels of pedestrian traffic, and near parks and schools. See Figure 6.3 Proposed Improvements.



City of Carson

Location Map of Proposed Improvements

Not to Scale
Source: Carson GIS Database

FIGURE 6.3 PROPOSED IMPROVEMENTS

URBAN CANOPY

Trees and landscaping not only create a more attractive pedestrian environment by providing shade and ornamentation, but also serve as traffic-calming features on busy streets. Carson currently has a Master Tree Plan and thousands of trees planted on main streets and neighborhoods; however, there are currently hundreds of vacant tree wells in Carson. These tree wells should be prioritized for new tree plantings and maintenance. See Figure 6.4 Vacant tree wells.

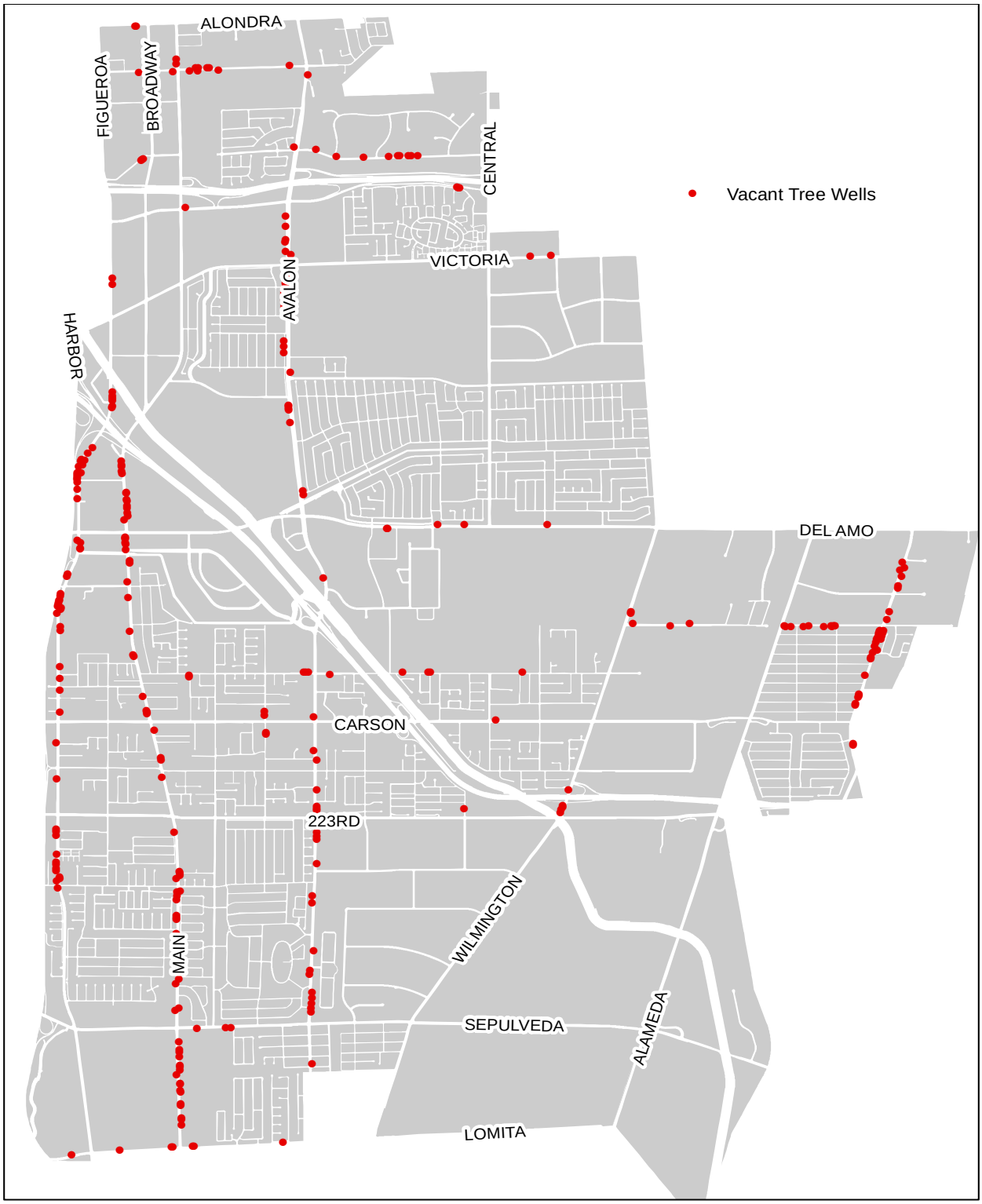


FIGURE 6.4 VACANT TREE-WELLS

NEIGHBORHOOD ACCESS

Culs-de-sac, fences, gates and walls can make walking and biking trips significantly longer by removing through access. The City may assist neighborhoods and homeowners that wish to identify easements or open gates to provide greater access and connectivity. Potential connections are identified in Figure 6.5 and 6.6 Culs-de-sac locations.

FIGURE 6.5 CULS-DE-SAC LOCATIONS (NORTH)

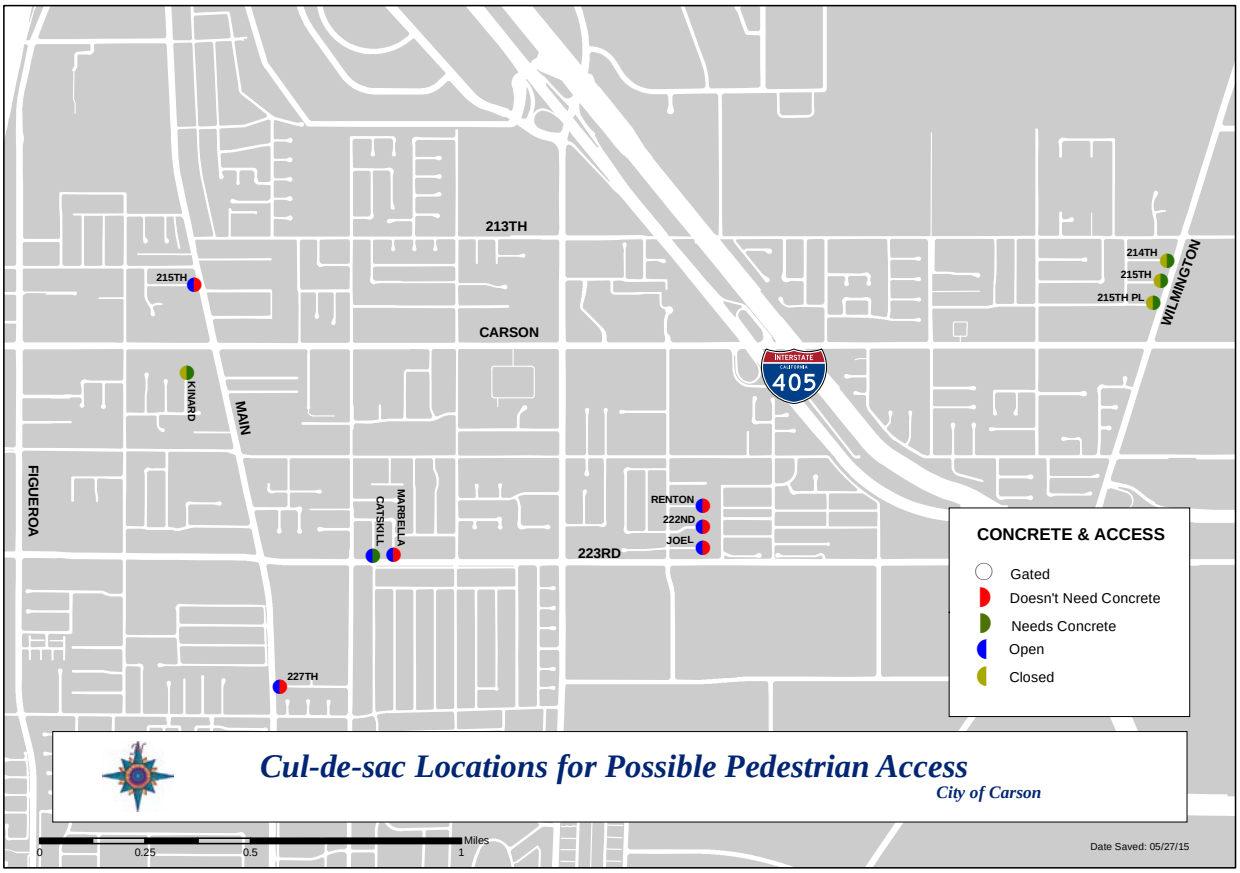


FIGURE 6.6 CULS-DE-SAC LOCATIONS (SOUTH)

CHAPTER 7 PEDESTRIAN PROGRAMS

THE FIVE E'S

In order to encourage active transportation, the city should take a comprehensive 5 E approach (Engineering, Enforcement, Education, Encouragement, and Evaluation). Engineering (ie. new infrastructure and design) should be paired with a non-infrastructure programs in order to ensure that all users—pedestrians, cyclists, and motorists—understand and are motivated to utilize new active transportation networks safely and frequently.

The City will consider enacting the following programs.

COMMUNITY SUPPORT

The City should consider establishing an Active Transportation Coordinator or assigning those duties to a staff person. A person can collaborate with Carson organizations to implement programming in order to create long-term sustainable change.

The following community members and organizations should be engaged to support implementation of active transportation programs.

- HEAL Community Advisory Board members
- Carson Bicycle Coalition
- Parks and Recreation Volunteers
- Kaiser Permanente staff
- California State University Dominguez Hills students
- Students
- Teachers
- Principals

The Carson Master Plan of Bikeways provides an additional comprehensive list of programs.

CHAPTER 8 FUNDING

OVERVIEW

STATE FUNDING PROGRAMS

In addition to the funding sources identified in the Master Plan of Bikeways, the following funding sources should also be considered:

ACTIVE TRANSPORTATION PROGRAM

The Active Transportation Program (ATP) was created by Senate Bill 99 (Chapter 359, Statutes of 2013) and Assembly Bill 101 (Chapter 354, Statutes of 2013) to encourage increased use of active modes of transportation, such as biking and walking. Funding from the Active Transportation Program may be used to fund the development of bike, pedestrian, safe routes to schools, or active transportation plans, as well as implementation of bike and pedestrian infrastructure.

The ATP consolidates various transportation programs, including the federal Transportation Alternatives Program, state Bicycle Transportation Account, and federal and state Safe Routes to School programs into this single program.

The goals of the program are:

- Increase the proportion of biking and walking trips,
- Increase safety for non-motorized users,
- Increase mobility for non-motorized users,
- Advance the efforts of regional agencies to achieve greenhouse gas reduction goals,
- Enhance public health, including the reduction of childhood obesity through the use of projects eligible for Safe Routes to Schools Program funding,
- Ensure disadvantaged communities fully share in program benefits (25% of program), and
- Provide a broad spectrum of projects to benefit many types of active transportation users.

More info can be found at: http://www.catc.ca.gov/programs/ATP.htm

STRATEGIC GROWTH COUNCIL SUSTAINABLE COMMUNITIES GRANT

In September 2008, SB 732 was signed into law, creating the Strategic Growth Council.

On behalf of the Strategic Growth Council (SGC), the Department of Conservation manages competitive grants to cities, counties, and designated regional agencies to develop and implement plans that reduce greenhouse gas emissions and achieve other sustainability objectives.

CHAPTER 9 IMPLEMENTATION

OVERVIEW

This chapter provides planning-level cost estimates for the proposed pedestrian improvements including:

- Pedestrian Countdown Signals
- Crosswalks
- Curb Ramps
- Sidewalks
- Trees/tree planting

COST ESTIMATES

The following cost estimates are for the highest priority pedestrian improvements are included in the following table. The total estimated cost is $476,080.

TABLE 9.1 COSTS FOR CONSTRUCTION ITEMS				
DESCRIPTION	QUANTITY	UNITS	UNIT COST	TOTAL
GENERAL REQUIREMENTS				
Mobilization/Demobilization	1	LS	$5,000.00	$5,000
Traffic Control	1	LS	$10,000.00	$10,000
TRAFFIC SIGNAL, SIGNING AND STRIPING				
Furnish and Install Countdown Pedestrian Signal (LED Modules Only - See Apendix C for Attached Location List)	265	EA	$600.00	$159,000
High Visibility Crosswalk	108	EA	$600.00	$64,800
Install Pedestrian Push Button System	1	EA	$2,500.00	$2,500
ROAD AND CONCRETE WORKS				
Construct New ADA compliant PCC Curb Ramp including Detectable Warning Device (See Appendix C for Attached Location List)	41	EA	$4,000.00	$164,000
Relocate signal and/or lighting systems, trees, grating and other affected utilities	1	LS	$17,000.00	$17,000
Median Nose Cut	7	EA	$1,500.00	$10,500
SUB-TOTAL				$432,800
CONTINGENCIES (10%)				$43,280
			TOTAL	$476,080

Note: Table excludes side walk cost estimate.

CHAPTER 10

DESIGN GUIDELINES

OVERVIEW

Identified in this chapter are the general design guidelines for pedestrian ways, street furnishings, lighting, green infrastructure, and signage. The City may have to amend its own street design guidelines in order to implement certain facilities. Carson should take precaution and research the newest street design guidelines and engineering treatments prior to constructing a facility.

PEDESTRIAN WAYS

This section presents best practices for creating pedestrian ways.

SIDEWALK ZONE SYSTEM

The Sidewalk Zone System is widely used to create clear walking areas. Each zone is a distinct sidewalk area; the four zones are:

Curb Zone

Curbed area between the sidewalk and vehicle ways; usually includes drain inlets.

Furniture Zone

Area of the sidewalk where refuse receptacles, benches, utilities and other objects are best placed.

Pedestrian Zone

Area of the sidewalk that should be clear for walking.

Frontage Zone

Area of the sidewalk that transitions to adjacent land uses; commonly used for quasi-public activities, such as outdoor cafes and sidewalk sales.

Each zone has a specific, important function; omitting any zone compromises the quality of the walking experience.

FIGURE 10.1 PEDESTRIAN FRIENDLY SIDEWALK ZONE

Using the Sidewalk Zone System makes it easier to meet basic ADA requirements for a continuous, smooth and level sidewalk, free of obstructions. Under the system, it is easier to place ramps correctly and keep the sidewalk level across driveways. Following the system also keeps all potential obstructions, such as utility poles, signs, trees, drinking fountains and benches, in the furniture or frontage zones. The system also places pedestrians further from traffic, increasing comfort and security. The Pedestrian Right-Of-Way Accessibility Guidelines (PROWAG) offers guidance on selecting the the right tools to increase accessibility.

RESIDENTIAL SIDEWALK CONTEXT

Sidewalks should be standard practice in residential neighborhoods. A well-designed residential sidewalk suggests a minimum 5-foot unobstructed width where feasible, allowing two people to walk comfortably side-by-side. A residential sidewalk should also provide separation from the street. if possible, a width of 6 to 8 feet is preferable.

Curb Zone

The curb zone in residential areas can vary between1 to 2 feet. Residential areas with open drainage do not have curb zones. Where there is urban drainage, the shoulder is often considered part of the curb zone.

Furniture Zone

The furniture zone is the area between the sidewalk and the curb or vehicle way. It provides separation from traffic and improves the pedestrian experience. In residential areas, this zone is often a planting strip for trees or grass. Most trees require at least 6 feet of open space around the trunk to reach maturity and maintain health. Utilities and other structures can be located in the furniture zone when equipment cannot be set back.

Pedestrian Zone

The pedestrian zone is the unobstructed area for walking, usually 5 to 6 feet wide in residential areas.

COMMERCIAL SIDEWALK CONTEXT

Commercial sidewalks typically are used by many more people than residential sidewalks, so the widest possible walkway should be provided to create areas of social exchange and interaction.

Curb Zone

The curb zone in commercial areas can vary from 1 to 2 feet.

Furniture Zone

FIGURE 10.2 PUBLIC SEATING IN FURNITURE ZONE

In commercial areas, the furniture zone is typically part of the paved walkway. Any potential obstacles, such as benches, transit shelters, trash cans, utilities, parking meters, and vending machines, should be placed in the furniture zone. This zone should be at least 2 feet wide to provide separation between pedestrians and vehicle traffic; widths of at least 5 to 6 feet are preferable to allow for tree placement and other uses. Tree growth requires a minimum of 36 square feet around the base of the tree.

Pedestrian Zone

In commercial areas, the pedestrian zone should be a continuous, unobstructed area for walking, at least 8 to 10 feet wide.

Frontage Zone

The minimum frontage zone in commercial areas is 1 to 2 feet. However, a 5 to 10 foot frontage zone provides improved access to buildings and allows space for sidewalk sales, café seating and other uses.

Commercial Tree Grate Placement

FIGURE 10.3 TREE GRATE

Tree grates should be placed immediately adjacent to the curb; spacing will depend on the mature size of the selected tree species. Tree grates should be at least 5 feet wide; 6-foot widths are preferable for most trees. In extremely limited spaces where tree grates extend into the pedestrian zone, they should be designed to prevent tripping hazards.

GOING THE DISTANCE

These practices build on the tools detailed above, offering tested strategies to create more attractive, sustainable, user-friendly pedestrian ways that promote walking and social interaction. Facility descriptions and resources are provided.

SOCIAL STREET/HOME ZONES

Social streets and home zones are shared-use streets that encourage pedestrian use of the entire travel way. Social streets in commercial areas are not "pedestrian malls" because vehicular traffic is allowed; significant traffic calming interventions and very low speed limits are used to allow safe shared use by pedestrians and motorists. In many residential areas, the natural street character lends itself to creation of a home zone. in these areas, sidewalks are not needed because the roadway accommodates all modes of traffic. In both social streets and home zones, speeds limits are so low that walkers and cyclists can rely on eye contact to communicate with drivers.

GREEN STREETS

Green streets incorporate environmentally-friendly infrastructure, such as stormwater processing methods, rain gardens and drainage swales.

PARKLETS/PAVEMENT-TO-PARKS

There are a number of low-cost ways to improve pedestrian environments and create pedestrian park spaces without major infrastructure investment in curb replacement and drainage systems. Paved areas of the street can be set off by bollards or planters and painted to mark pedestrian park areas. "Parklets" also can be created by removing vehicle lanes, repurposing parking spaces and tightening intersections.

FIGURE 10.4 PARKLET

FURNISHINGS

Street furnishings add comfort, vitality and usefulness to the streetscape environment, prioritizing the needs of pedestrians and encouraging recreation and social interaction in the public space. Street furnishings serve as important tools in urban design, establishing and strengthening neighborhood character and providing visual consistency across the streetscape. Furnishings should be placed in the sidewalk furniture and/or frontage zones, and should be ADA accessible. Although utilities serve different functions than traditional furnishings, they are commingled with furnishings in the streetscape and are discussed in this section, as well.

PUBLIC SEATING

FIGURE 10.5 PUBLIC SEATING

Benches and other seating areas are essential elements of the walking environment, providing comfortable places for people to rest, eat, socialize, or read in a public space. A properly sited bench creates a sense of place for the immediate surrounding area. Some considerations for the design and placement of benches include:

- Seating should be located under trees or other shaded areas, with adequate lighting nearby.
- Seating should be oriented toward points of interest, such as adjacent buildings, open spaces, or the street itself. Where sidewalk width permits, seating can be perpendicular to the curb
- Informal seating areas, such as low planter walls, wide stairways or other architectural elements, may be used as alternatives to freestanding benches. Benches and other seating should be made of durable, high-quality materials and designed in a style that integrates with other streetscape elements and visually complements and reinforces the streetscape design.

REFUSE RECEPTACLES

FIGURE 10.6 REFUSE RECEPTACLE

Refuse receptacles should accept both trash and recyclables. Where there is a demand, separate receptacles should be provided for recyclable materials. Some considerations for the location of refuse receptacles include:

- Near high-activity generators, such as major civic institutions, commercial destinations and transit stops.

- Near street corners but outside of the sidewalk pedestrian zone and curb ramps.
- No less than 200 feet apart along commercial streets

BOLLARDS

FIGURE 10.7 BOLLARDS

Bollards are short vertical posts primarily used as safety elements to control access and separate pedestrians and/or bicyclists from motor vehicles. Thoughtful design and location of bollards can add visual interest, strengthen street character, and define pedestrian spaces. Bollards can be 4 to 24 inches wide and 3 to 4 feet high, with articulated sides and tops to provide distinct design details and coordinate with other street design elements. Bollards can be permanent or removable; if removable, they should be designed to appear permanent. Some bollards are equipped with electric mechanisms that retract the post completely into the pavement to allow occasional vehicle access to otherwise closed areas.

Bollards are commonly placed in the furniture zone.

NEWSRACKS

Most municipalities set out guidelines for newsrack placement. Multiple newsracks can be consolidated into a standard decorative stand so they visually blend with their surroundings and complement the architectural character. Some additional considerations include:

- When news rack doors are open, racks located within the sidewalk furniture or frontage zones should not encroach into the pedestrian zone.
- News racks should be placed no closer than 2 feet from adjacent street signs and 4 feet from bike racks.

TRANSIT SHELTERS

Transit shelters should be provided in any area prioritized for transit, especially in districts that are major regional destinations. Transit shelters should be designed to fully shield waiting passengers from inclement weather; prevailing winds and storm directions. While custom designs can be developed, all designs should meet the specifications of the servicing transit agencies. Generally, shelters should be at least 5 feet deep and long enough to provide space for a minimum of three seats, plus wheelchair accessibility. Bus transit shelters typically are placed in the furniture zone, so patrons can board more readily; if the furniture zone is not wide enough, the frontage zone may be used.

FIGURE 10.8 TRANSIT SHELTER

BIKE PARKING

This section discusses the three primary types of bike parking: on-street, on-sidewalk, and off- street. (A fourth type, covered bike parking, is discussed in the "Going the Distance" section.)

On-Street

On-street bike parking, sometimes called a "bike corral," uses an on-street parking space for bike racks. Up to 12 bike racks can be placed in a single motor vehicle space, maximizing the effective customer parking area in business and office districts. On-street bike parking can be considered

FIGURE 10.9 SIDEWALK BIKE PARKING

in areas where sidewalk space is limited or in spaces unusable by motor vehicles, including areas near intersections and crosswalks.

Sidewalk

The best choices for sidewalk bike parking are inverted-U or ring designs, which maximize the potential locking area and can stand alone or be grouped together. Sidewalk bike parking structure designs can be integrated with the design aesthetic of other street furnishings and public art. Sidewalk bike racks should be placed in the frontage or furniture zones, so bicyclists using them do not interfere unduly with building access or the pedestrian zone. Sidewalk bike parking structures can do double duty by substituting for bollards.

FIGURE 10.10 OFF-STREET BIKE PARKING

Off-Street

Off-street racks should be located within clear view of a destination's entranceway, preferably no further than the closest motor vehicle parking space and usually no more than 50 feet from the entrance. Multiple racks in a visible, signed location can be placed up to 100 feet from the entrance. When off-street racks are placed far from entranceways, cyclists tend to ignore them and find closer places to secure their bikes.

UTILITIES

Telecommunications, electric, street lighting, traffic signal and fiber optic conduits are often located under the sidewalk, with lateral lines extending from utility mains in the public right-of-way to serve adjacent properties. When utilities are being newly installed or retrofitted, care should be taken to improve pedestrian safety, reduce clutter in the streetscape, minimize maintenance conflicts, and maintain – or preferably, expand – adequate planting areas to support tree growth and stormwater infiltration. When placing utilities within the furniture zone, consider the following:

- Wherever possible, small utility boxes (such as residential water vaults and meters, gas vaults and valves, and street lighting access,) should be aligned or clustered at the back of the curb to minimize conflicts with existing or potential landscaped areas and tree locations.
- Generally, utility boxes are sited in the direction of the pipe. Where

possible, utility boxes sited parallel with the curb should be in the sidewalk furniture zone; vaults perpendicular to the curb should be placed between existing or potential street trees or sidewalk landscape locations, such as walkways to parking areas.

- Wherever possible, utility lateral lines should not run directly under landscaped areas; instead, they should be placed under driveways and walkways.

If necessary, utility access can be placed in the pedestrian realm under slip-resistant covers that are flush with the pavement.

GOING THE DISTANCE

SURVEILLANCE CAMERAS AND CRIME PREVENTION

In areas with high incidences of crime, it may be appropriate to consider use of cameras to deter crime and maintain "eyes on the street." Cameras should be placed in a prominent, visible location to maximize video capture, but should not become a visual nuisance. Surveillance cameras can be attached to utility poles. Intersections with red-light cameras visible from side.

This section presents practices for street furnishings that go beyond the tools discussed above. These practices are typically be used in special districts, such as civic centers, entertainment districts, transit areas, shopping centers, or other areas deemed appropriate.

CUSTOM DESIGNED FURNISHINGS

Custom designs using high-quality materials and uniform aesthetics can transform chairs, interpretive signage, bike racks and other furnishings into functional art, maximizing their placemaking effects, especially in special districts. Business groups and other private interests may serve as partners in creating and installing distinctive custom-designed furnishings. Custom furnishings can be used in addition to public art to establish, reflect and promote district and neighborhood character.

SIDEWALK DINING

Outdoor café and restaurant seating adjacent to the sidewalk adds vitality to the street environment and encourages economic development. Ideally, tables and chairs should be placed in the sidewalk frontage or furniture zones directly in front of the restaurant; if those spaces are not adequate, dining areas can be slightly offset. Sidewalk dining areas should not encroach into the pedestrian way. Since the public purpose of allowing restaurants to have dining on the sidewalk is to stimulate activity on the street, the city should consider prohibiting restaurants from fully enclosing the dining area. Parklet cafes also can be used as sidewalk dining. If sidewalk space is limited, parking spaces sometimes can be transformed into outdoor dining areas.

FIGURE 10.11 SIDEWALK DINING

COVERED BIKE PARKING

Covered bike parking addresses the long-term parking needs of bicyclists who frequently park for eight or more hours, such as daily commuters and bicycle tourists, and should be considered in transit-oriented areas and other special districts. Covered bike parking options include bike lockers, vertical bike parking, and bike parking structures.

BIKE SHARE STATION

Bike share systems connect high-use destinations, such as transit stations, public parks, tourism sites and job centers, and can be deployed with bikeways to integrate transit, land use and economic development goals. Stations can be located off-street where public access is provided; where adequate space is available for a clear pedestrian way, bike share stations also can be placed in the sidewalk furniture or frontage zones.

FIGURE 10.12 BIKE SHARE STATION

LIGHTING

GETTING STARTED

Lighting creates safe and desirable streetscapes at night and during daytime. Lighting selection can add value and aesthetic character to neighborhoods and commercial districts.

Well-designed street lighting enhances the public realm, creates a more hospitable environment, and provides safety and security on roadways, paths, and alleys. Adequate street lighting promotes active transportation options after dark, especially during the winter months. Lighting design also can help to define neighborhoods or add to historic significance.

Some considerations for street lighting include:

FIGURE 10.13 PEDESTRIAN-SCALE LIGHTING (TOP) STREET LIGHTING (BOTTOM)

Location and Spacing

Street and pedestrian lighting should be installed in the sidewalk furniture zone. Light fixtures should not be located next to tree canopies that may block the light. Lighting should be spaced to minimally assure complete coverage of the pedestrian realm.

Light Emitting Diode Lighting

LED lighting should be used to save energy and reduce maintenance costs.

Light Poles and Fixtures

Design should be coordinated with the design of other streetscape elements and should reflect the history and character of the surrounding neighborhood.

Dark-sky Compliant Lighting

Where appropriate, dark sky- compliant lighting should be selected to maximize light cast onto the ground and minimize light pollution cast into the sky.

FIGURE 10.14 LIGHT FIXTURE FOR PARK AREAS

Lighting for Safety

Lighting placement should prioritize illumination of public gathering areas and public spaces, as well as areas with high incidences of index crimes.

Carson currently lacks any pedestrian scale lighting. The City is currently working on creating a plan for installing pedestrian-scale lighting. This plan recommends prioritizing the installation of lighting installation near parks and schools. (Fig. 10.15 Pedestrian-Scale Lighting).

PEDESTRIAN-SCALE LIGHTING

Pedestrian-scale lighting is essential for creating safe street environments. Conventional street lighting, designed primarily to light the vehicle way, often is inadequate for pedestrian needs, leaving unlit areas and dark shadows on walkways. Pedestrian-scale lighting is especially important during long winter nights. Pedestrian-scale lighting, approximately 12 to 17 feet in height, illuminates potential tripping hazards, helps to deter crime, and makes pedestrians more visible to drivers. Pedestrian-scale lighting also can illuminate bikeways near walking areas. Retrofits of existing streetlights and new installations should provide lighting on sidewalks and multi-use paths. Pedestrian-scale lighting should be coordinated with building and property owners to include building-mounted lighting for sidewalks, alleys, and paths where poles would obstruct the pedestrian zone. Land use context should be considered to achieve optimum lighting levels in pedestrian areas, and care must be taken to avoid light trespass into the windows of nearby residential units. Common examples of pedestrian- scale lighting include acorn, globe, and lantern lamps.

FIGURE 10.15 PEDSTRIAN-SCALE LIGHTING

VEHICLE-SCALE LIGHTING

Vehicle-scale lighting is an important element in streetscapes. In certain contexts, pedestrian-scale lighting is sufficient to provide adequate lighting for safe and secure walking, bicycling and driving. On major roadways, however, vehicle-scale lighting is needed to illuminate the travel way. Vehicle-scale lighting should be located in the furnishing zone and should never block the pedestrian way.

COMBINATION PEDESTRIAN & VEHICLE-SCALE LIGHTING

In many settings, vehicle-scale lighting is sufficient to light the pedestrian way. In some cases, however, street lighting can be supplemented with pedestrian-scale lighting to create a better multimodal environment. Where feasible, conventional streetlights can be retrofitted by hanging a pedestrian-scale lighting arm from the existing pole at a height of 12 feet to 17 feet. If streetlight spacing is not adequate for pedestrian needs, pedestrian-scale lights can be added between existing streetlight poles.

GOING THE DISTANCE

This section presents practices for lighting design that go beyond the widely accepted tools listed above. Standards for using these new technologies are in development and need further testing, but limited applications are currently in use.

SOLAR/LED LIGHT FIXTURES

FIGURE 10.16 SOLAR LIGHT FIXTURE

Solar and LED (light-emitting diode) fixtures are now readily available in most street lamp designs. While the initial investment for these fixtures is usually higher than for traditional technologies, total life-cycle cost should be considered. For example, solar lighting may reduce the need to lay costly new utility conduit. Wherever possible, solar light fixtures should be used for new installations and retrofit projects. If solar is not feasible, LED or other energy-efficient lighting technologies should be used.

IN-PAVEMENT LIGHTING

In-pavement lighting is one of many new technologies that can be used to illuminate the streetscape. In-street lighting can include simple solar-lamp bricks installed in walkways or crossings, as well as lights placed in the travel way to further delineate bikeways, crosswalks, or vehicle lanes. Examples of in-street lighting include flashing yellow in-roadway lights used to supplement crosswalk markings, and internally illuminated yellow, white, blue or red raised-pavement markers. Although in-street lighting can increase safety in travel ways, they can be difficult to see in daylight and should supplement, not replace, traditional pavement markings.

FIGURE 10.17 CUSTOM-DESIGNED LIGHTING

CUSTOM-DESIGNED LIGHTING

Custom lighting can be a unifying element of urban design, helping to define a place and give it a unique identity. In districts with distinctive characters, custom lighting designs should be considered to assure a cohesive streetscape design aesthetic.

CATENARY LIGHTING

Catenary lighting is suspended from wires affixed to poles or buildings. This lighting technique can reduce infrastructure costs, such as installation of utility poles or underground conduit. Catenary lighting can be useful in pedestrian priority areas and other areas designed for place making, giving a ceiling to the “outdoor room” and reducing the need for light poles that can clutter or obstruct the pedestrian way.

FIGURE 10.18 CATENARY LIGHTING

GREEN INFRASTRUCTURE

Green infrastructure includes all trees, shrubs, and other understory plantings on both public and private lands. Street trees and landscaping are essential parts of the urbanized ecosystem, enhancing the comfort and safety of people who live and travel along the street.

A healthy urban forest also is a powerful tool for streetwater management and climate control. Leaves and branches catch and slow rain as it falls, allowing it to soak into the ground instead of flowing into storm drains. The plants themselves take up and store large quantities of water that would otherwise further contribute to surface runoff. Part of this moisture then returns to the air through evaporation to help cool the city.

TREE ROWS & PLANTINGS

FIGURE 10.19 TREE PLANTINGS

Trees and other plantings are important elements along sidewalks. In many urbanized settings, however, trees are planted in constricted, unhealthy locations that limit their lifespan and usefulness. To thrive, street trees must have adequate uncompacted soil, water, and air. The location of underground and above ground utilities also must be considered when planting trees and other landscape elements. This section provides guidance for appropriate selecting, siting, planting, and care of street trees.

Tree Selection Criteria

Tree selection for streetscapes should be based on climate, roadway conditions and land use context, and should consider the mature tree's need for light, water, canopy space and root extension. Carson's Municipal Code Chapter 9: City Tree Preservation and Protection and Carson's Parkway Tree Master Plan contain guidelines detailing criteria for tree selection and maintenance.

For streetscape design purposes, tree species can generally be grouped by size to allow for initial roadway design placement. Standards for distance between trees should be tied to the tree variety.

Design Requirements for Tree Selection:

- SMALL TREES can thrive in planters and tree wells. They require a

FIGURE 10.20 SMALL TREE IN PLANTER

FIGURE 10.21 SEDUM PLANT

well or furnishing zone at least 4 feet wide, and can thrive with a tree grate on a commercial/mixed-use sidewalk.

- MEDIUM TREES generally require a planting area at least 5 to 7 feet wide; they may thrive in large tree wells. Medium trees also thrive in residential tree lawns.
- LARGE TREES generally require a tree lawn but can thrive in a planting area at least 7 to 10 feet wide. Large trees are a great choice for residential areas with wide frontage zones and for landscaped medians on roadways. Large trees include: Sycamore and Oak.
- PLANTINGS Native grasses and other plants can help to protect and restore soil conditions in urban environments. Native plants generally have longer root systems and can help process stormwater onsite. Native plantings can be a suitable alternative to traditional lawns. Groundcover choices can include: Bluegrass, Sedum, and other succulents.

In all cases, trees can be planted in oblong instead of square shaped wells to fit them into fairly narrow furniture zones. Medians offer the opportunity for the city to incorporate trees outside of the Street Tree list.

Additional Principles for Tree Selection and Placement:

- Seek and reclaim space for trees. A surprising number of residual spaces suitable for planting can be found on streets between areas required for travel lanes and parking, such as traffic circles, medians, channelization islands and curb extensions.
- Select the right tree for the space. In choosing a street tree, consider what canopy, form, and height will maximize benefits over the course of its life. Mature tree height should allow necessary clearances below overhead electrical transmission lines and prevent limbs from overhanging potentially sensitive structures, such as flat roofs. In commercial areas where the visibility of façade-mounted signs is a concern, choose species whose lowest branches are at least 12 to 14 feet above the ground. Select trees with non-aggressive root systems to avoid damaging paving and sidewalks.
- Start with good nursery stock and train it well. When installing plant material, choose well-formed plants with complete single leaders and check that boxed trees are not root-bound. Proper watering and pruning every three to four years will allow trees to mature and thrive for many years of service. For young trees, watering and pruning should happen every year for the first three

years.

- Create optimum conditions for growth. Trees will require space for growing branches and for root extension underground. For optimal growth, a typical medium sized street tree requires a clear sidewalk parkway zone at least 6 to 7 feet wide, with uncompacted soil at least 3 feet deep.
- Do not subject plants to concentrated levels of pollutants. Trees and other plants should be integrated within streetwater management practices wherever possible, but filtering pollutants from "first flush" rainfalls and street runoff will extend tree life and prevent toxic buildup of street pollutants in tree wells.

Tree Spacing

FIGURE 10.22 TREE SPACING IN PEDESTRAIN-FRIENDLY ZONE

Trees should be placed every 20 to 40 feet and intermingled with street lighting and utilities, but spacing between trees will vary with species and site conditions. Trees should not conflict with light fixtures. In general, tree spacing should be 10% less than mature canopy spread; closer spacing of large trees is encouraged to create an interlaced canopy. Trees planted in groups and groves create a microclimate more favorable for growth, as isolated trees are exposed to heat and desiccation from all sides. On residential streets where lots are 40 or 50 feet wide, at least one tree should be planted on each lot between driveways. Where constraints prevent even spacing of trees, it is preferable to place a tree slightly off the desired rhythm than to leave a gap in the pattern. Trees should not be eliminated to create a uniform pattern.

Parkway or Tree Lawn

FIGURE 10.23 PARKWAY IN RESIDENTIAL STREET

In a parkway or park strip, (also known as a planting strip, boulevard, or terrace), the entire furniture zone is dedicated to trees and plantings, creating an optimal environment for a healthy tree row. Parkways are most suited to residential streets but also can be found in commercial areas.

Trees and Vehicles

Trees have been shown to reduce driving speeds on roadways because they enclose the space and reduce sight distances. Generally, street trees have a positive effect on roadway safety; however, special consideration should be given to sight lines and sight distances for trees placed near intersections and roadway curves, to avoid creating obstructions or blind spots.

Tree Wells

Wells can be submerged into the sidewalk and used to create a tree row where the entire length of the furniture zone cannot be dedicated to green infrastructure. Wells should be at least 6 feet by 6 feet to allow room for medium-sized trees to mature; larger wells that extend 20 feet to 40 feet in length can support larger tree varieties. Although wells may be the best option to increase biomass and canopy cover in urbanized areas, they provide a confined, compromised environment for trees, so extra care must be taken to promote tree health. Tree grates and guards should be used along streets with heavy pedestrian traffic. Hinged tree grates can be used in parking lots. Tree grates must be chosen with adjustable openings to allow for trunk growth. In less urban areas with lighter foot traffic, mulch can be used instead of tree grates to protect tree bases, especially in planters that range from 3 feet by 3 feet to 3 feet by 5 feet.

FIGURE 10.24 TREE WELLS

Landscape medians offer an opportunity to replace a non-functional paved area with green space and expand the green infrastructure in urbanized areas, increasing stormwater retention and CO2 absorption on heavily trafficked corridors and mitigating some of the adverse environmental effects of motor vehicle travel. Many medians 10 to 14 feet wide are suitable for large trees. Other than trees, plantings should not exceed 2 to 3 feet high. Landscape medians should not disrupt pedestrian connectivity and must be designed to maintain pedestrian access to both sides of the street with minimal pedestrian crossing delay.

GOING THE DISTANCE

This section presents practices for green infrastructure that go beyond the tools listed above. These represent only a few of the many examples of green infrastructure currently in use in urbanized settings to enhance walkability, manage streetwater, create and extend green spaces and promote placemaking. All these tools can be used in special districts.

BIOSWALES

By filtering and harvesting streetwater, sustainable management practices such as bio-swales capture the benefits of stormwater and other streetwater instead of treating it as a liability. A bio-swales is a wide, shallow, relatively flat vegetated, or lined with river rock, ditch that capture and filter rainfall and runoff from adjacent areas. As the captured water moves slowly through the swale, particulates settle out and contaminants are removed by vegetation. Swales can be located adjacent to roadways, sidewalks, or parking areas and should be designed to work in conjunction with the street slope to maximize slowing and filtration of stormwater. Swale systems can be integrated into traffic calming devices, such as chicanes and curb extensions, and also can be placed in landscape medians. Roadway runoff can be directed into swales through flush curbsor small, evenly spaced cuts in raised curbs. Vegetated swales can be landscaped with native plants, or plants from similar climates.

FIGURE 10.25 BIOSWALE

URBAN RAIN GARDENS

Rain gardens are made of native plants and shrubs planted in highly absorbent soil, sited in depressions with flat bottoms and gently sloping sides. Unlike bio- swales, which slowly move water away from the street area, rain gardens reduce or eliminate runoff by holding water in place, filtering out pollutants and recharging the surrounding ground. Rain gardens may have a footprint of any shape. Rain gardens are not ponds or wetlands; runoff captured in a rain garden should drain into the ground within 48 hours. Rain gardens may include overflow systems using pipes or swales to carry away stormwater after very heavy rainfall. Rain gardens may also be designed as dry stream beds.

FIGURE 10.26 RAIN GARDEN IN PARKING LOT

SIGNS

Streetscape/wayfinding signs provide direction, destination, and/or location information. Signage can range from standard roadway network signs to custom identity signing plans for neighborhoods and districts. Streetscape signs are most appropriate for downtown, commercial, or tourist-oriented locations, or around large institutions. Best practices for wayfinding signs include street signs (for motorists, pedestrians, and bicyclists) and transit signs.

STREET SIGNS

Required practices for certain street signs are included in the Manual of Uniform Traffic Control Devices (MUTCD). When placing signs for multimodal transportation corridors, the following principles should be considered:

- Signs for motor vehicles should also be visible and usable by bicyclists and pedestrians, where appropriate; for example, street name signs should face both directions at intersections of one- way streets, for pedestrian use.

Pedestrian warning signs are important at unsignalized crossings, to caution drivers to look for people crossing the street.

- Bicycle signs can be used for wayfinding and regulatory purposes, and also help to raise motorists' awareness of bicyclists. Bicycle wayfinding signs should include the destination, distance, and direction. Regulatory signs inform bicyclists, pedestrians and motorists about rules and regulations for safe cycling and shared use. The MUTCD includes specifications for bicycle wayfinding, regulatory, and warning signs

FIGURE 10.27 STREET SIGNS FOR ALL ROADWAY USERS

TRANSIT SIGNS

Transit system signs are needed to fully integrate transit into the roadway network and to connect bicyclists, pedestrians and drivers into the system. Signs are necessary to identify transfer points between service lines and other types of transportation. Transit signs generally fall into three categories: Station/Stop Identification, Service Information, and Wayfinding.

STATION/STOP IDENTIFICATION

Transit stations and stops need to be clearly marked to show passengers where to wait for service. Pedestrian crossing signs should always be considered at transit stations and stops.

SERVICE INFORMATION

Transit stops and stations should include signs and maps showing routes, schedules, and places served by the line. Newer technologies for transportation demand management (TDM) include "bus-tracker," "next bus," and "train-tracker" applications integrated into stations and bus shelters.

WAYFINDING

Transit agencies should provide wayfinding signs inside the station, to ease connections, as well as within a half-mile of each station. Transit agencies can use wayfinding signs to increase connections to pedestrian and bicycle networks.

Bicycle wayfinding signs should include major transit stations as prominent destinations.

FIGURE 10.28 TRANSIT SERVICE INFORMATION

INTERPRETIVE SIGNS

Interpretive signs are designed to promote interaction and engagement between people and streetscape environments. Interpretive signs can identify a neighborhood's name and gateways, announce important events, or display environmental or historical information. Some useful tools for interpretive signing include kiosks, sign stands, historical markers, installations, and banners.

- Kiosks in public areas, often combined with gateway signs, can be attractive, useful street features. Kiosks can be used to display maps, bulletin boards, community announcements, and other important information.
- Sign stands can be used for temporary purposes or in permanent installations, such as neighborhood maps and informative displays. Signs can be placed in vertical, poster-style stands or on floating tables.
- Historical markers provide information about people, places, events, or resources of local or national significance. Historical markers can be placed on freestanding signs, wall plaques, or even boulders.
- Installations of public art can include creatively designed interpretive signs that can be informative elements of the streetscape.
- Banners can be displayed on or hang from light poles. Banners can be used as permanent neighborhood markers or rotated to note seasons or significant events.

APPENDIX A PUBLIC OUTREACH

OUTREACH RESULTS

RESULTS OF PRIORITIZATION ACTIVITIES

Prioritization Voting

People were given one token to vote for their top priority for making Carson a safer and friendlier place to walk. The categories were: crossings and intersections, sidewalks, lighting, motorist behavior, and beautiful space. A total of 336 people voted. The public's highest priority was motorist behavior. Table A.1 shows the results of these polls.

TABLE A.1 PRIORITIZATION EXERCISE

	Rideshare	Red Ribbon	Tri-Carson	health Fair	Workshop 1	Workshop 2	Total
Sidewalks	25	5	3	5	3	5	46
Crossings	37	2	2	5	5	2	53
Motorist behavior	44	12	7	12	7	17	99
beautiful Space	21	14	0	9	5	15	64
Lighting	28	9	5	18	5	9	74

Policy Voting

People were given the option to vote for a policy that would best facilitate active transportation, or to leave a comment. Table A.2 lists the summaries of the policies and votes.

TABLE A.2: POLICY VOTING

Policy	Count
Complete Streets	2
Encouraging Transit-Oriented Development	2
Prohibiting Parking in Bike Lanes	0
New Developments to Accommodate Pedestrians and Bicyclists	4
Enforcement of Low Speed Limits Around Parks	0
Require Bike Parking at New Developments	3
Street Connectivity	3

RESULTS OF WALKABILITY ACTIVITIES

At the different events, attendees were asked to draw and label on large scale maps where they would like to see improvements in Carson's walkability, and where they like or would like to walk in Carson. The results of the maps were synthesized into topics and geographic locations, and are shown in the tables provided below.

TABLE A.3 WALKABILITY MAP EXERCISE BY GEOGRAPHIC LOCATION/ DESTINATION

Location	Count
California State University Dominguez Hills	4
Central Avenue	3
Lomita Boulevard	2
Victoria Park	2
Annalee Avenue	1
Avalon Boulevard	1
Carson Center	1
Carson High School	1
Figueroa Street	1
Main Street	1
Moneta	1
Moneta Avenue	1
Vera Street	1
Victoria Street	1

TABLE A.4 WALKABILITY MAP EXERCISE by TOPIC

Topic	Count
Uneven Sidewalk	5
Motorist Behavior	3
Connectivity	2
Crosswalk	2
No Sidewalk	2
Crossing Guard	1
Landscaping	1
Pedestrian Bridge	1
Safety	1
School Patrol	1
Traffic Calming	1
Wider Sidewalk	1

RESULTS OF STREET LIGHTING ACTIVITIES

At each event, large poster boards were displayed with maps asking attendees to mark where they would like street lighting in Carson. Attendees indicated where they would like to see more pedestrian lighting in the City by drawing the locations on the map and writing their concerns about lighting in those locations. The results are summarized and provided in Table A.5.

TABLE A.5 LIGHTING MAP EXERCISE by GEOGRAPHIC LOCATION/ DESTINATION

Topic	Count
Parks	5
Schools	5
223rd Street and Figueroa Street	4
228th Street	3
213th Street	2
Del Amo Boulevard	2
Dominguez Channel	2
182nd Street	1
185th Street	1
220th Street	1
Avalon Boulevard	1
Carson Street	1
Central Avenue	1
Jefferson Street	1
Pedestrian Bridge	1
Residential Neighborhoods	1
Sepulveda Boulevard	1

STAKEHOLDER INTERVIEWS AND FOCUS GROUPS

In-depth one to two hour stakeholder interviews and focus groups were held to understand the active transportation needs of a diverse cross section of key community members. Participants included school administrators, small and large business owners and leaders, students, parents, those with physical disabilities and people of all ages and backgrounds.

APPENDIX B

PEDESTRIAN ENVIORNMENTAL QUALITY INDEX

PEDESTRIAN ENVIRONMENTAL QUALITY INDEX (PEQI)

PEQI OVERVIEW AND INDICATORS

The Pedestrian Environmental Quality Index (PEQI) version 2.0 was selected as an appropriate walkability assessment tool for the Carson Active Transportation Plan due to its focus on public health and its robust set of indicators.

The San Francisco Department of Public Health (SFDPH) developed the Pedestrian Environmental Quality Index (PEQI) as a tool to prioritize improvements in pedestrian infrastructure during the planning process. The PEQI draws on published research and work from numerous cities to assess how the physical environment impacts whether people walk in a neighborhood.

The PEQI is an observational survey that quantifies street and intersection factors empirically known to affect people's travel behaviors and is organized into five categories: intersection safety, traffic volume, street design, land use and perceived safety. Within these categories are 31 indicators that reflect the quality of the built environment for pedestrians and comprise the survey used for data collection. SFDPH has aggregated these indicators to create a weighted summary index, which can be reported as an overall index. Table A.1 indicates how the PEQI 2.0 indicators fit into the broader domains of pedestrian comfort and security.

SFDPH consulted national experts including city planners, independent planning consultants, and pedestrian advocates to develop the indicator weights and scores for each indicator category, based on survey responses. The PEQI has been utilized by numerous agencies and community groups in San Francisco and adapted for use in other cities nationwide.

TABLE A.1 PEQI 2.0 INDICATORS BY DOMAIN				
I. INTERSECTION SAFETY	II. TRAFFIC VOLUME	III. STREET DESIGN	IV. LAND USE	V. PERCEIVED SAFETY
Crosswalks High visibility crosswalks Intersection lighting Traffic control Pedestrian/ Countdown signal Wait time Crossing speed Pedestrian refuge island Curb ramps Intersection traffic calming features Pedestrian engineering countermeasures	Number of vehicle lanes Posted speed limit Traffic volume Street traffic calming features	Continuous sidewalk Width of sidewalk Width of throughway Large sidewalk obstructions Sidewalk impediments Trees Driveway cuts Presence of a buffer Planters/gardens	Public seating Public art/ historic sites Retail use and public places	Pedestrian scale lighting Illegal graffiti Litter Empty space

PEQI ASSESSMENT PROCEDURES

As part of the planning process for the Active Transportation Plan, a team of trained interns collected PEQI data on survey sheets for Carson's pedestrian environment in August and September 2013. Primary streets and neighborhoods within a quarter-mile radius of parks and schools were prioritized for analysis.

APPENDIX C LOCATION LIST

City of Carson
List of Existing and Proposed Intersection Improvements

Location		Pedestiran Signals		Crosswalk				Curb Ramp		Median Nose Cut	Additonal Utility Work Needed
		Existing Pedestrian Signals	New Count Down Pedestrian Module	Existing Crosswalk			New High Visibility Crosswalk	Existing Ramp	Construct New Ramp		
				Quantity	Color	Traffic Control					
Alondra Blvd	Avalon Blvd	8	8	4	White	Signal	0	4	0		
Amantha Ave	Dimondale Dr	0	0	1	Yellow	1-way Stop	2	2	1		
Ambler Ave	169th St	0	0	2	Yellow	All-way Stop (3-way)	2	2	1		
Ambler Ave	Sherman Dr	0	0	2	Yellow	All-way Stop (3-way)	2	2	2		Relocate water meter, fire hydrant, stop sign and post
Annalee Ave	Turmont St	0	0	4	Yellow	All-way Stop (4-way)	4	4	0		
Annalee Ave	Kramer Dr	0	0	2	Yellow	1-way Stop	2	2	2		Relocate fire hydrant and rebuild residential
Annalee Ave	Helmick St	0	0	2	Yellow	1-way Stop	2	2	1		
Annalee Ave	Dimondale Dr	0	0	0	NA	1-way Stop	2	2	1		Need to Add Slow School Xing Markings and Signs
Annalee Ave	Gladwick St	0	0	1	White	2-way Stop	1	2	0		
Archibald Ave	234th St	0	0	2	Yellow	All-way Stop (3-way)	2	2	1		
Archibald Ave	232nd Pl	0	0	2	Yellow	All-way Stop (3-way)	2	2	2		
Avalon Blvd	Gardena Blvd	8	8	4	White	Signal	0	4	0		

City of Carson
List of Existing and Proposed Intersection Improvements

Location		Pedestiran Signals		Crosswalk				Curb Ramp		Median Nose Cut	Additonal Utility Work Needed
		Existing Pedestrian Signals	New Count Down Pedestrian Module	Existing Crosswalk			New High Visibility Crosswalk	Existing Ramp	Construct New Ramp		
				Quantity	Color	Traffic Control					
Avalon Blvd	Walnut St	6	6	3	White	Signal	0	4	0		
Avalon Blvd	169th St	6	6	3	White	Signal	0	3	0		
Avalon Blvd	University Blvd / 189th St	8	8	3	Yellow	Signal	0	6	1	1	Remove and replace signal standard
Avalon Blvd	220th St	8	8	4	Yellow	Signal	0	4	0		
Avalon Blvd	223rd St	8	8	4	White	Signal	0	4	0		
Avalon Blvd	Dominguez	6	6	2	White	Signal	0	2	1		
Avalon Blvd	Southbay Pav	8	8	2	White	Signal	0	2	4	2	Install additional Pedestrian Push Botton
Avalon Blvd	Carson Plaza	8	8	3	White	Signal	0	2	2	2	
Billings Dr	Sherman Dr	0	0	2	Yellow	1-way Stop	2	2	2		Remove tree, replant new tree, relocated street light pole
Billings Dr	Walnut St	0	0	2	Yellow	All-way Stop (4-way)	2	4	0		
Bolsa St	213th St	0	0	2	Yellow	All-way Stop (3-way)	2	4	0		
Bonita St	Calbas St	0	0	1	Yellow	All-way Stop (3-way)	1	2	1		
Bonita St	220th St	0	0	3	Yellow	All-way Stop (4-way)	3	4	0		

City of Carson
List of Existing and Proposed Intersection Improvements

Location		Pedestiran Signals		Crosswalk				Curb Ramp		Median Nose Cut	Additonal Utility Work Needed
		Existing Pedestrian Signals	New Count Down Pedestrian Module	Existing Crosswalk			New High Visibility Crosswalk	Existing Ramp	Construct New Ramp		
				Quantity	Color	Traffic Control					
Bonita St	223rd St	8	8	4	White	Signal	0	2	2		
Brenner Dr	Wadely Ave	0	0	2	Yellow	2-way Stop	2	4	0		
Brenner Dr	Leapwood Ave	0	0	3	Yellow	All-way Stop (4-way)	3	4	0		
Brenner Dr	Eddington Dr	0	0	3	Yellow	All-way Stop (4-way)	3	4	0		
Broadacres Ave	Kramer Dr	0	0	3	Yellow	All-way Stop (3-way)	2	2	1		
Broadacres Ave	Turmont St	0	0	1	Yellow	All-way Stop (3-way)	2	2	1		Relocate street light
Caroldale Ave	224th St	0	0	2	Yellow	All-way Stop (3-way)	2	2	1		
Caroldale Ave	224th Pl	0	0	1	Yellow	1-way Stop	1	2	1		
Caroldale Ave	232nd Pl	0	0	1	Yellow	1-way Stop	1	2	1		
Carson St	Harbor View A	4	4	2	White	Signal	0	3	0		
Carson St	Evonda Ave	6	6	2	White	Signal	0	3	0		
Cashdan St	Wilmington	0	0	0	NA	1-way Stop	0	4	0		
Catskill Ave	224th St	0	0	2	Yellow	1-way Stop	2	3	0		
Catskill Ave	228th St	0	0	3	Yellow	All-way Stop (4-way)	3	4	0		
Catskill Ave	236th St	0	0	3	Yellow	All-way Stop (3-way)	3	2	2		
Central Ave	Del Amo Blvd	4	4	2	White	Signal	0	3	0		

City of Carson
List of Existing and Proposed Intersection Improvements

Location		Pedestiran Signals		Crosswalk				Curb Ramp		Median Nose Cut	Additonal Utility Work Needed
		Existing Pedestrian Signals	New Count Down Pedestrian Module	Existing Crosswalk			New High Visibility Crosswalk	Existing Ramp	Construct New Ramp		
				Quantity	Color	Traffic Control					
Central Ave	Victoria St	8	8	4	White	Signal	0	4	0		
Central Ave	Turmont St	6	4	3	Yellow	Signal	0	4	0		One crosswalk already features
Claude St	Haskins Ln	0	0	2	Yellow	All-way Stop (3-way)	2	2	1		
Coslin Ave	Kramer Dr	0	0	2	Yellow	All-way Stop (3-way)	2	2	1		Relocate street light
Coslin Ave	Turmont St	0	0	2	Yellow	1-way Stop	2	2	1		Relocate water value
Del Amo Blvd	Leapwood Ave	8	8	4	White	Signal	0	4	0		
Del Amo Blvd	Avalon Blvd	8	8	4	White	Signal	0	4	0	2	
Del Amo Blvd	Santa Fe Ave	8	8	3	White	Signal	0	4	0		
Dolores St	220th St	8	8	4	White	Signal	0	4	0		
Dolores St	228th St	0	0	3	Yellow	All-way Stop (4-way)	3	4	0		
Dolores St	223rd St	8	8	4	Yellow	Signal	0	4	0		
Dolores St	235th St	0	0	1	White	All-way Stop (3-way)	0	2	1		
Eddington Dr	Elsmere Dr	0	0	3	Yellow	All-way Stop (4-way)	3	4	0		

City of Carson
List of Existing and Proposed Intersection Improvements

Location		Pedestiran Signals		Crosswalk				Curb Ramp		Median Nose Cut	Additonal Utility Work Needed
		Existing Pedestrian Signals	New Count Down Pedestrian Module	Existing Crosswalk			New High Visibility Crosswalk	Existing Ramp	Construct New Ramp		
				Quantity	Color	Traffic Control					
Elsmere Dr	Leapwood Ave	0	0	3	Yellow	All-way Stop (4-way)	3	4	0		
Figueroa St	Shadwell St	0	6	2	Yellow	Signal	0	3	0		
Figueroa St	223rd St	8	8	4	Yellow	Signal	0	4	0		
Figueroa St	220th St	8	8	4	Yellow	Signal	0	5	0		
Gardena Blvd	Main Street	8	8	4	White	Signal	0	4	0		
Grace Ave	223rd St	6	6	3	White	Signal	0	5	0		
Grandee Ave	University	0	0	0	NA	1-way Stop	0	2	0		
Grandee Ave	Millmont St	0	0	0	NA	2-way Stop	0	4	0		
Gunlock Ave	Kramer Dr	0	0	4	Yellow	All-way Stop (4-way)	4	4	0		
Gunlock Ave	Turmont St	0	0	3	Yellow	All-way Stop (4-way)	3	4	0		
Helmick St	Amantha Ave	0	0	1	Yellow	1-way Stop	2	2	1		
Main St	213th St	4	4	2	White	Signal	0	3	0		
Main St	215th St	4	4	2	Yellow	Signal	0	3	0		
Main St	218th St	0	0	0	NA	1-way Stop	0	2	0		
Main St	218th Pl	0	0	0	NA	1-way Stop	0	2	0		
Main St	220th St	8	8	4	White	Signal	0	5	0		

City of Carson
List of Existing and Proposed Intersection Improvements

Location		Pedestiran Signals		Crosswalk				Curb Ramp		Median Nose Cut	Additonal Utility Work Needed
		Existing Pedestrian Signals	New Count Down Pedestrian Module	Existing Crosswalk			New High Visibility Crosswalk	Existing Ramp	Construct New Ramp		
				Quantity	Color	Traffic Control					
Main St	228th St	8	8	4	Yellow	Signal	0	4	0		
Main St	225th St	4	4	1	Yellow	Signal	0	3	0		
Main St	234th St	6	6	3	White	Signal	0	3	2		
Main St	223rd St	8	8	4	Yellow	Signal	0	4	0		
Moneta	223rd St	8	8	4	Yellow	Signal	0	4	0		
Moneta	224th St	0	0	2	Yellow	All-way Stop (4-way)	2	3	0		
Moneta	Shadwell St	0	0	1	Yellow	All-way Stop (3-way)	1	1	1		Relocate water meter
Moneta Ave	220th St	0	0	1	Yellow	All-way Stop (4-way)	1	4	0		
Moneta Ave	234th St	0	0	3	Yellow	All-way Stop (4-way)	3	4	0		
Moneta Ave	232nd Pl	0	0	2	Yellow	All-way Stop (3-way)	2	2	2		
Newkirk Ave	220th St	0	0	1	Yellow	All-way Stop (4-way)	2	4	0		
Orrick Ave	215th St	0	0	2	Yellow	All-way Stop (3-way)	2	4	0		
Panama Ave	234th St	0	0	1	Yellow	All-way Stop (4-way)	1	4	0		
Panama Ave	236th st	0	0	1	Yellow	All-way Stop (3-way)	1	3	0		
Ravenna Ave	234th St	0	0	2	Yellow	All-way Stop (3-way)	2	3	0		
Ravenna Ave	236th St	0	0	2	Yellow	All-way Stop (3-way)	2	3	0		

City of Carson
List of Existing and Proposed Intersection Improvements

Location		Pedestiran Signals		Crosswalk				Curb Ramp		Median Nose Cut	Additonal Utility Work Needed
		Existing Pedestrian Signals	New Count Down Pedestrian Module	Existing Crosswalk			New High Visibility Crosswalk	Existing Ramp	Construct New Ramp		
				Quantity	Color	Traffic Control					
Santa Fe Ave	Van Buren St	7	7	4	Yellow	Signal	0	6	0		
Tamcliff Ave	Victoria St	8	8	4	White	Signal	0	4	0		
Towne Ave	192nd St	0	0	1	Yellow	1-way Stop	1	2	0		
Towne Ave	189th St	0	0	4	Yellow	All-way Stop (4-way)	4	4	0		
Towne Ave	186th St	0	0	2	Yellow	All-way Stop (4-way)	2	4	0		Remove a N/S Crosswalk and replace with E/W Crosswalk
University	Wilmington	8	8	4	White	Signal	0	4	0		
Water St	213th St	0	0	3	Yellow	All-way Stop (3-way)	3	5	0		
Wilmington Ave	213th St	8	8	4	White	Signal	0	4	0		
Total		275	**265**				**108**	325	**41**	**7**	

7 of 7