Re:Imagine Garden Grove

Garden Grove ACTIVE STREETS

October 2018

GARDEN GROVE ACTIVE STREETS MASTER PLAN

Transforming Transportation for a Healthy and Vibrant Future

Prepared for: GARDEN GROVE

Prepared By: alta PLANNING + DESIGN

ACKNOWLEDGEMENTS

City of Garden Grove

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Community Advisory Committee

The City would like to thank the members of the Community Advisory Committee as well as the many Garden Grove residents who participated in the outreach events and helped shaped this plan. The Community Advisory Committee is comprised of:

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The Plan was funded by a Sustainability Planning Grant from the Southern California Association of Governments (SCAG).

GARDEN GROVE

CITY OF GARDEN GROVE

Dear Stakeholder,

After years of setting the various pieces in motion towards becoming a more active, safer, healthier, revitalized and better connected community, the City of Garden Grove is thrilled to be rolling out its very first ever bicycle and pedestrian master plan.

From the application of mixed use zoning overlays, to the programming of community events geared to get people out of their cars, to interactions with regional transportation agencies about cleaning up blighted and underutilized rail corridors, it has been a truly collaborative exercise getting to this point. Many hands have touched the crafting of this plan, which will be used to promote the city's ongoing desire to Re:Imagine itself and carve out a fresh new identity within Orange County.

The Garden Grove Active Streets Plan will serve as a working document to help foster shared vision for planning purposes. It will also become a valuable tool in our continued pursuit of grant funding opportunities to help implement the construction of bikeway and pedestrian improvements over the next two decades.

Thank you for taking the time to peruse the following pages and I encourage you to be active involved in reshaping our City's future!

Sincerely,

Steve Jones

Mayor Steve Jones

11222 Acacia Parkway • P.O.Box 3070 • Garden Grove, CA 92842
www.ci.garden-grove.ca.us

Pedestrians and bicyclists are an "indicator species" of healthy communities. Their presence helps to enliven streets and make communities more viable.

EXECUTIVE SUMMARY

In 2015, the City released *Re:Imagine Garden Grove*, a program focused on active transportation, open space, and revitalization in Garden Grove. The Active Streets Plan continues to build upon these efforts to transform Garden Grove into a city known for its walk and bike-friendliness and as an active, healthy, and prosperous place to live, work, and play.

The plan summarizes the planning process and describes the biking and walking conditions in Garden Grove today. It recommends policy's and tools for the City and its partners to use in implementing programs and infrastructure improvements, and provides implementation strategies to create better connectivity throughout Garden Grove and to the surrounding region.

BIKING & WALKING IN GARDEN GROVE TODAY

Chapter I:
INTRODUCTION & GOALS

Chapter II:
EXISTING CONDITIONS

Chapter III:
NEEDS ANALYSIS

RECOMMENDATIONS TO IMPROVE BIKING & WALKING

Chapter IV:
POLICY RECOMMENDATIONS

Chapter V:
NETWORK RECOMMENDATIONS

Chapter VI:
POLICY RECOMMENDATIONS

IMPLEMENTATION

Chapter VII:
IMPLEMENTATION PLAN

Chapter VIII:
PE ROW TRAIL & BIKEWAY IDENTITY

THE PLAN'S VISION

The City of Garden Grove is a community where people of all ages and abilities easily, comfortably, and safely walk, ride a bicycle, or use other non-motorized wheeled devices to access jobs, schools, public transit, recreation facilities, shopping, and other destinations as a part of daily life.

THE PLAN'S GOALS

Goal 1: MOBILITY AND ACCESS Increase and improve pedestrian and bicycle access to employment centers, schools, transit, recreation facilities, and other community destinations across the City of Garden Grove for people of all ages and abilities.

Goal 2: SAFETY Improve safety for active transportation users through the design and maintenance of sidewalks, streets, intersections, and other roadway improvements such as signage, lighting, and landscaping, as well as best practice non-infrastructure programs to enhance and improve the overall safety of people walking and bicycling.

Goal 3: INFRASTRUCTURE AND SUPPORT FACILITIES Maintain and improve the quality, operation, and integrity of the pedestrian and bicycle network infrastructure that allows for convenient and direct connections throughout Garden Grove. Increase the number of high quality support facilities to complement the network, and create public pedestrian and bicycle environments that are attractive, functional, and accessible to all people.

Goal 4: NON-INFRASTRUCTURE PROGRAMS Increase awareness of the value of pedestrian and bicycle travel for commute and non-commute trips through encouragement, education, enforcement, and evaluation programs that support walking and bicycling.

Goal 5: EQUITY Improve accessibility for all people walking and bicycling through equity in public engagement, service delivery, and capital investments.

Goal 6: IMPLEMENTATION Implement the Active Streets Master Plan over the next 20 years.

See Chapter I: Introduction & Goals and Chapter IV: Policy Recommendations for objectives and policies to achieve the plan's goals.

KEY PROJECT THEMES AND PLAN PRIORITIES

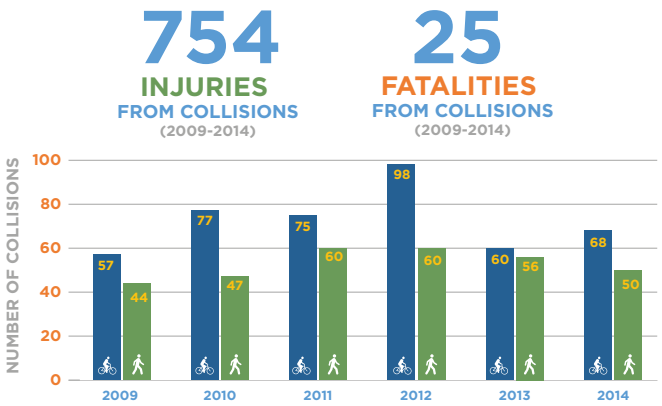
Based on the evaluation of Garden Grove's safety, infrastructure, and user needs, six key project themes and plan priorities have been developed and are highlighted in this executive summary.

IMPROVE CYCLING AND PEDESTRIAN SAFETY

Garden Grove's collision history reveals a need to improve safety for people riding bicycles and people walking. The plan recommends policy updates, infrastructure improvements and programs that can work together to improve safety.

COLLISIONS

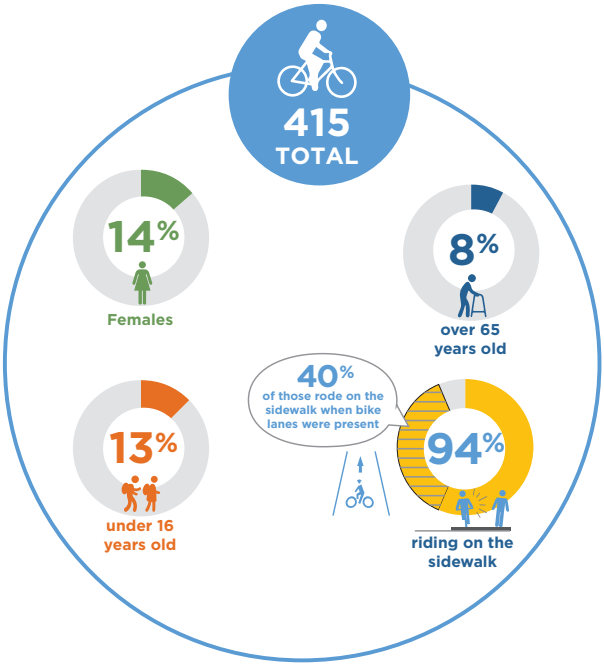
The *Active Streets Master Plan* reviews collision data to identify safety concerns. Between 2009 and 2014, 754 collisions were reported in Garden Grove that involved a bicyclist or a pedestrian. Of these, 20 pedestrians and five bicyclists died as a result of a collision. These results indicate a need to improve safety for people riding bicycles or walking.



COUNTS

Bicycle and pedestrian counts were conducted at nine locations across the city to document how many people are biking and walking today or on an average day. Of the 415 bicyclists counted, 389 were traveling on the sidewalk, against the flow of traffic. Forty percent of the persons riding on the sidewalk were traveling along a roadway with bike lanes present. 1,652 pedestrians, skateboarders, and persons using a scooter or mobility device were counted during the specified periods.

Riding a bicycle on a sidewalk is a relatively common (and generally unsafe) activity in Garden Grove. Making safer spaces for bicyclists on the road can reduce the incidents of sidewalk-bicycle riding and create safer conditions for all users.



See Chapter II: Existing Conditions

CONSIDER BROADER BENEFITS OF ACTIVE TRANSPORTATION

There is strong interest in investing in active transportation as a community development tool (targeting under-served areas), as a means of promoting health and wellness, and as an economic development tool (better connecting people to commercial and retail destinations and increasing quality of life and tourism opportunities).

COMMUNITY ENGAGEMENT

The public outreach process included five major components including an Open Streets event, two community workshops, a Community Advisory Committee, and a project website with interactive online map and online survey. The major themes and community priorities identified through these outreach processes support the broader benefits of active transportation including:

- Provide sustainable, alternative transportation options for the City
- Enhance the regional bikeway network
- Promote quality pedestrian facilities for transportation and recreation

DEMAND & EQUITY

A demand analysis was conducted to help define citywide variation in bicycle and pedestrian demand. An equity analysis examined the existing distribution of bicycle facilities compared to the distribution of underserved populations. Demand and equity were used to help develop an active streets network that serves all areas of Garden Grove. These factors were also considered during project prioritization to help address needs in high-demand, underserved areas of Garden Grove.

See Chapter III: Needs Analysis

WHY WALK & BIKE?

for ***HEALTH***

Nearly **1 in 4** Adults in the Orange County are **OBESE.**[2]

for ***THE ENVIRONMENT***

38% of California's greenhouse gas emissions come from transportation.[5]

for ***EQUITY***

30%

of BUDGET SPENT on TRANSPORTATION

Families with incomes under $50,000 per year spend an average of 30% of their budget on transportation.[7]

ENHANCE EXISTING BIKEWAYS

Garden Grove has an opportunity to leverage its overall biking network and better connect city residents, visitors, and commuters by closing gaps and enhancing its existing bikeways.

BICYCLE NETWORK RECOMMENDATIONS

The recommended bicycle network is made up of off-road shared-use paths, bicycle lanes (including buffered and separated facilities), signed bicycle routes, and neighborhood greenways. A variety of on- and off-street bicycle facilities are recommended to accomodate 1) the range of abilities and comfort levels of bicyclists; 2) the range of conditions for bicycling on different roadway environments; and 3) local preferences identified through the public input process.

In total, the plan recommends 55.3 miles of new bicycle facilities, as well as 9.3 miles of updated existing facilities. The plan also recommends 20.4 miles of Complete Streets and Separated Bikeway study corridors. The estimated construction costs for new bikeways and trails is approximately $18.2 Million.

See Chapter V: Network Recommendations

55 MILES
of new bicycle facilities

10 MILES
of updated existing bicycle facilities

20 MILES
of Complete Streets and Separated Bikeway study corridors

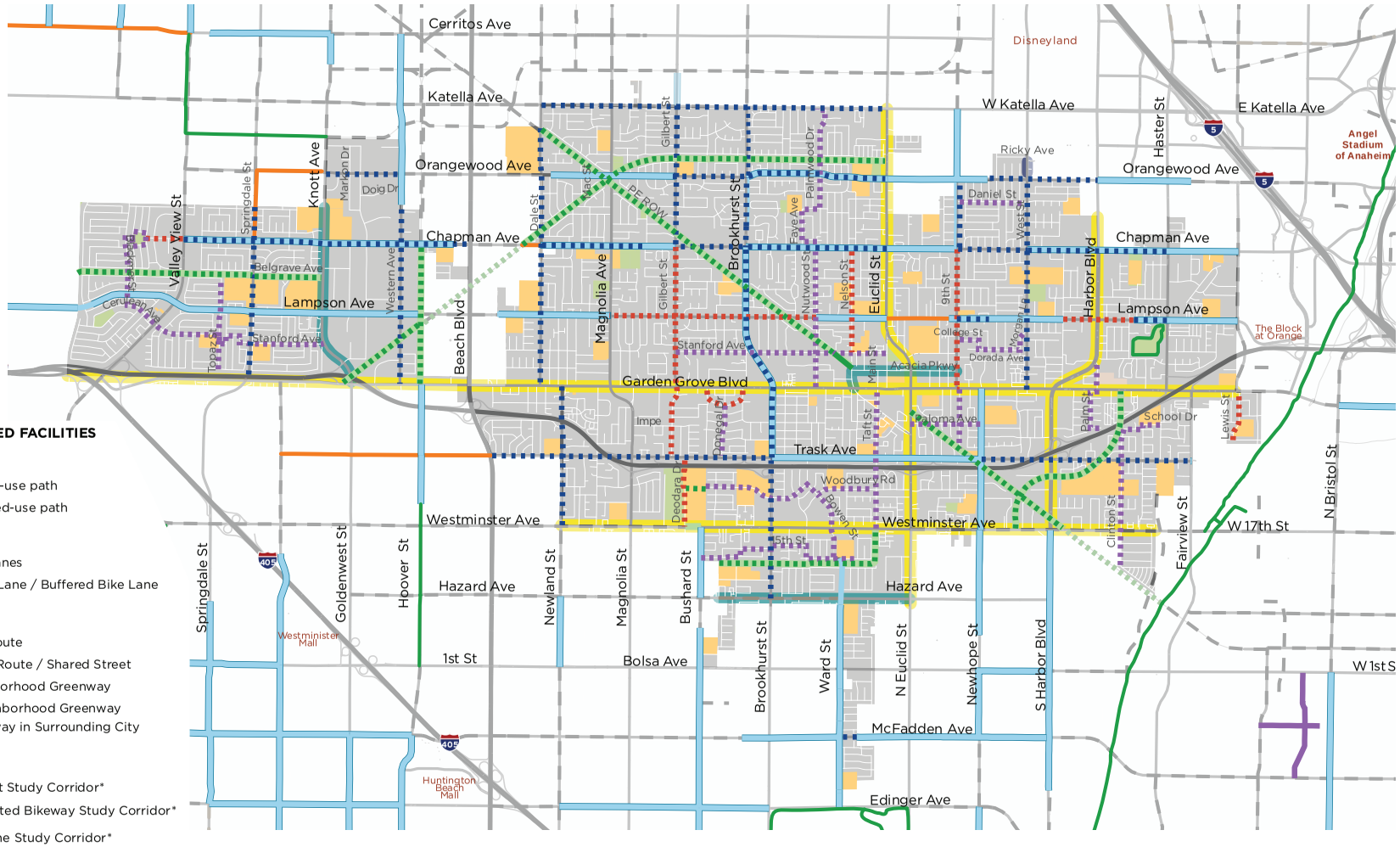
IMPLEMENTATION

Recommended projects were prioritized using feedback from City staff and the Community Advisory Comittee as well as input from the community. Outreach at public events, like Garden Grove's 60th Anniversary Diamond Jubilee, supports the results of the prioritized projects. Priority projects are listed to the right.

See Chapter VII: Implementation

PRIORITY PROJECTS

- Pacific Electric Right-of-Way (PE ROW) Trail
- Early Action Projects including West Street Road Rebalancing
- Westside Neighborhood Greenway
- Garden Grove Boulevard Complete Street Study
- Downtown Active transportation Improvements
- Safe Routes to School plan



EXISTING & PROPOSED FACILITIES

Class I
- Existing Shared-use path
- Proposed Shared-use path

Class II
- Existing Bike Lanes
- Proposed Bike Lane / Buffered Bike Lane

Class III
- Existing Bike Route
- Proposed Bike Route / Shared Street
- Existing Neighborhood Greenway
- Proposed Neighborhood Greenway
- Proposed Bikeway in Surrounding City

STUDY CORRIDORS
- Complete Street Study Corridor*
- Class IV Separated Bikeway Study Corridor*
- Class II Bike Lane Study Corridor*

LAND USE
- Schools

* Additional study needed to determine feasibility and design.

PROPOSED BIKE FACILITY NETWORK

Garden Grove Active Streets Master Plan

IMPROVE PEDESTRIAN CROSSINGS

Many existing pedestrian crossings do not convey information on when and where to cross or have deficient signal timing that leads to long wait times for pedestrians. Wide crossings also leave pedestrians at higher risk for crashes.

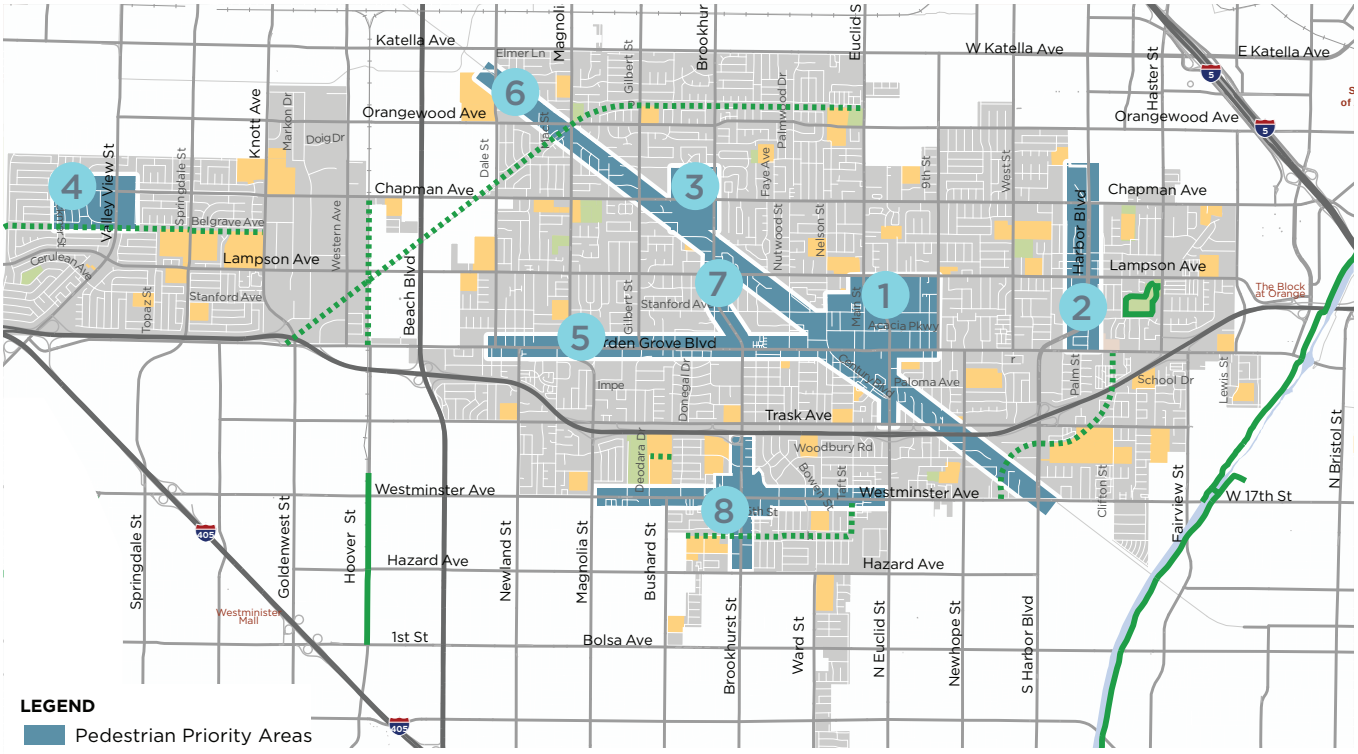
PEDESTRIAN RECOMMENDATIONS

The pedestrian network should accommodate people with a variety of needs, abilities, and possible impairments. The recommendations in this plan will help improve pedestrian access and comfort and fall into three categories: sidewalks, crossings and intersections, and traffic signals and warning beacons. *See Chapter V: Network Recommendations*

The top implementation priorities for pedestrian facilities are shown to the right. The plan also identifies pedestrian priority areas and corridors, as shown below. *See Chapter VII: Implementation*

PEDESTRIAN PRIORITIES

- Close sidewalk gaps in school zones
- Improve uncontrolled crossings
- Improve pedestrian signal timing
- Improve pedestrian lighting
- Plant shade trees



PROPOSED PEDESETRIAN PRIORITY AREAS

Garden Grove Active Streets Master Plan

LEVERAGE SUPPORT AND MOTIVATION FROM PROJECT CHAMPIONS

Support for safe and active transportation options is a concept that everyone can get behind, but it will take the actions of a few key community champions to lead the way. Those with active interests in making safe connections for walking and biking within Garden Grove, such as the Parent Teacher Association, local advocates, and high school students, can help maintain project momentum and advance community conversations recognizing the benefits to the economy, safety, and physical and mental health that is associated with increased walking and biking.

COMMUNITY ENGAGEMENT

The public outreach process included five major components:

- Community Advisory Committee meetings
- Community workshop #1 and Open Street event (October 2015)
- Project website and social media presence
- Interactive online map (hosted on project website) and online survey
- Community workshop #2 at the Garden Grove Diamond Jubilee to present the Draft Plan and collect input on priority projects (June 2016)

See Chapter III: Needs Analysis

The plan was well supported by the Garden Grove community

PROGRAMS

Programs, such as Open Street events, are a great way to keep community members engaged. The plan recommends continuing existing programs and implementing new programs related to bicycling and walking. Further, it offers a plan for how to prioritize programs, which are broken out into Education, Encouragement, Enforcement, and Evaluation.

See Chapter VI: Program Recommendations

Adults and children enjoying Garden Grove's Open Streets event (2015)

CREATE AN URBAN GREENWAY ALONG THE PACIFIC ELECTRIC RIGHT-OF-WAY (PE ROW)

Garden Grove is already working to create a brand that builds upon the City's desire to be a community that is healthy and active. Improving the PE ROW trail infrastructure can directly support this effort and change how people experience the city on bike and on foot, while increasing demand for similar facilities that more effectively connect residents and visitors.

PACIFIC ELECTRIC RIGHT-OF-WAY TRAIL

Rail service along the PE ROW has been discontinued since 1950. Development of an urban greenway along this 100 foot wide corridor will be catalytic project in Garden Grove, creating a diagonal active transportation, recreational and ecological spine through the heart of the city. The City installed a pilot trail segment of the PE ROW trail between Nelson and Nutwood Streets and is actively pursuing the next steps of trail development.

Conceptual rendering of the PE ROW Trail crossing at Gilbert Street

IDENTITY

In keeping with the City of Garden Grove's goal of becoming a community that is healthy, engaged, economically vibrant, family-oriented, and safe, the bikeway and trails vision seeks to keep this identity throughout, with attention to the character of individual neighborhoods.

Two themes to articulate the "Gardens and Groves" identity have been developed based on public outreach and feedback from City Staff. The two themes are natural (left) and vivid (right). These themes serve as options for the City to finalize an identity for the trail and bikeway system.

See Chapter VIII: PE ROW Trail and Bikeways Identity

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APPENDICES

Garden Grove's street network provides connectivity for pedestrians and transit users.

I. INTRODUCTION & GOALS

The Garden Grove lifestyle is all about the culture, character, and communities that thrive in our city. The open streets event amplifies those elements to achieve a downtown 'urban cool' using creative alternatives, such as biking and walking, to feel better, live better, and enjoy what we love about Garden Grove.

-- Mayor (2014-2016) Bao Nguyen

Introduction

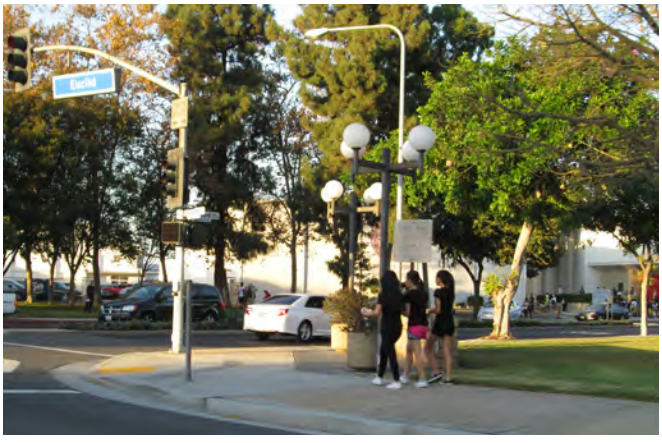
The City of Garden Grove developed this Active Streets Master Plan to propel its overarching goal of becoming **a community that is healthy, engaged, economically vibrant, family-oriented, and safe**. The Plan is to be used as a tool for implementing infrastructure improvements for better connectivity throughout Garden Grove to surrounding cities and the region that will provide safe and comfortable walking and biking linkages. These linkages will create better connectivity throughout Garden Grove and to the surrounding region.

The project team, consisting of city representatives, implementation partners such as the Southern California Association of Governments (SCAG), and consultants Alta Planning + Design, Community Arts Resources (CARS), and Iteris, began the planning process in Summer 2015. Building off of the momentum and data received from the City's previous planning effort *Re:Imagine Garden Grove: Community in Motion,* the project team familiarized themselves with local factors influencing biking and walking conditions. The project team utilized these findings in developing a long-term vision for biking in Garden Grove and setting priorities to help the city in achieving this vision. **This document summarizes the planning process and findings from this effort, and provides tools for the city and its partners to use in implementing the long-term vision presented herein.**

Project Purpose

The *Active Streets Master Plan* will engage residents and visitors of Garden Grove toward **healthier and more sustainable living** through the development of a comprehensive pedestrian and biking network that provides **safe and comfortable access** to local parks, schools, workplaces, shopping, and dining, as well as to destinations in other Orange County communities.

Garden Grove, however, faces some barriers to active transportation that can be addressed, such as wide roadways with fast-moving traffic, freeway interchanges, and busy arterials. Many roadways in the city are classified as major, primary, or secondary highways with high traffic volumes and speeds. Garden Grove's existing bicycle network helps to integrate biking into the roadway system but opportunities exist for enhancing the user's experience. Many of the bicycle lanes are narrow or are not well-delineated. Research suggests that this can greatly affect people's perception of the safety and comfort of a facility, which in turn contributes to their travel behavior and mode choices. Additionally, when collisions occur, people who walk or bike are much more likely to suffer severe or fatal injuries when speeds are higher. Streets with higher speeds also tend to be wider and accommodate more lanes, thereby increasing the time, distance, and conflicts encountered by pedestrians crossing the street. Long distances between signalized crossings can also be a challenge for pedestrians, by limiting their visibility and opportunities to cross the street at locations that feel comfortable. These barriers must be overcome to make Garden Grove a community where biking and walking are inviting, safe, and attractive transportation choices for people of all ages and abilities.



Pedestrians going for a leisurely stroll along Euclid Street

Garden Grove's residents and visitors, even those who choose not to walk or bicycle, could greatly benefit from the improvements recommended within this plan. **California and Orange County are some of the lowest-ranking areas in the nation in-terms of public health** (in 2013, the Orange County Health Profile determined that one in four adults in Orange County are obese). Lower ranking public health leads to higher health care costs and poorer workforce productivity, placing this added burden directly on taxpayers. One of the leading contributors to poor public health is adult obesity and physical inactivity. **A key strategy to fighting obesity and inactivity is to create a better physical environment that encourages walking and biking.** This has been shown to have substantial impacts with relatively limited public investment.

In addition, the City of Garden Grove has some deeply impoverished areas. Some census block groups in Garden Grove are characterized by having over 40 percent of its residents living below the poverty line, and over 30 percent of households without access to a motor vehicle. **Improving the public realm for walking and biking are proven, cost-effective ways to help those with financial difficulties** become financially independent and access essential services, good jobs, and healthy food sources. Providing people the opportunity for financial independence benefits the well-being and prosperity of not only those in need, but the entire community. The City sought funding through

the Southern California Council of Governments (SCAG) as a tool to help "make our city healthier and more attractive for people of all ages, especially young people." The City realizes the substantial, positive impact that reduced reliance on personal automobiles would have citywide.

This plan continues to build upon recent efforts to transform Garden Grove into a city known for its walk and bicycle-friendliness and as an active, healthy, and prosperous place to live, work, and play. The *Community in Motion* plan developed by the California State Polytechnic Institute 606 Studio and the Re:Imagine Downtown Open Streets event are two catalytic projects that engaged the community and gathered support and momentum to improve the city's active transportation network. Additionally, the pilot segment of the Pacific Electric Right-of-Way (PE ROW) Trail has been well-received, and residents are asking for it to be extended as soon as possible. Building upon this momentum, the City is looking to develop an innovative, thoughtful and inspiring Active Streets Master Plan.

Through engaging the community in a multi-faceted, interactive outreach approach, including a second Open Streets event, this project is an opportunity to educate the community on possible improvements to biking and walking. These outreach strategies will also help gauge the community's commitment level to active transportation facilities, increase awareness and promote mutual respect between road users, and identify current bicycle and pedestrian network deficiencies and safety issues. The resulting plan will reflect the community's input and recommend a comprehensive active transportation network and safety improvements, as well as establish policies and programs to help implement the plan.

Cover of the Mobility Plan and Citywide Non-Motorized Network developed by Cal Poly's 606 Studio

View of the Pacific Electric Right-of-Way Trail in Garden Grove

Benefits of Active Transportation

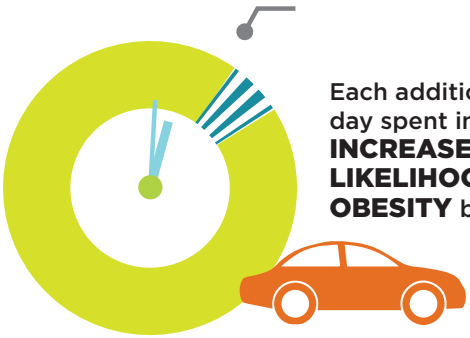
Improved active transportation and recreation can have a positive impact on the acute health, safety, and economic issues that many cities like Garden Grove face today. The following section summarizes the estimated, quantified benefits that would result from increasing walking and biking rates and safety in Garden Grove. These benefits offer a powerful statement regarding Garden Grove's return on investment for implementing the recommendations in this plan.

HEALTH

60 MINUTES

Children and adolescents should have 60 minutes (1 hour) or more of physical activity daily.[1]

Nearly **1 in 4** Adults in the Orange County are **OBESE.**[2]



Each additional hour per[3] day spent in the car **INCREASES IN THE LIKELIHOOD OF OBESITY** by **6%**

ENVIRONMENT

In 2011, 56 billion gallons of CO_2 were produced during congestion in U.S. urban areas.[4]

38% of California's greenhouse gas emissions come from transportation.[5]

Increasing a neighborhood's walkability by 5% can result in:

5.5% fewer grams of volatile organic compounds (VOCs)

5.6% fewer grams of Nitrogen oxide (NOx)[6]

EQUITY

30% of BUDGET SPENT on TRANSPORTATION

Families with incomes under $50,000 per year spend an average of 30% of their budget on transportation.[7]

FATALITY RATE

30% HIGHER FOR HISPANIC BICYCLISTS

23% HIGHER FOR AFRICAN-AMERICAN BICYCLISTS

The fatality rate for bicyclists is 23% higher for Hispanic than white bicyclists and 30% higher for African American than white bicyclists. [8]

1. Centers for Disease Control. www.cdc.gov/healthyyouth/physicalactivity/guidelines.htm.

2. Orange County Health Profile (2013). https://www.cdph.ca.gov/data/informatics/Documents/OC%20Health%20Profile%20FINAL%202013-12-12.pdf

3. Southern California Association of Governments (SCAG), 2012. Regional Transportation Plan Sustainable Communities Strategy (p.30)

4. Schrank, D., Eisele, B., and Lomax, T. (2012). 2012 TTI's Urban Mobility Report.

5. http://www.arb.ca.gov/cc/inventory/data/graph/graph.htm

6. Frank et al., 2006. Many Pathways from Land Use to Health: Associations between Neighborhood Walkability and Active Transportation, Body Mass Index, and Air Quality. Journal of the American Planning Association #3.

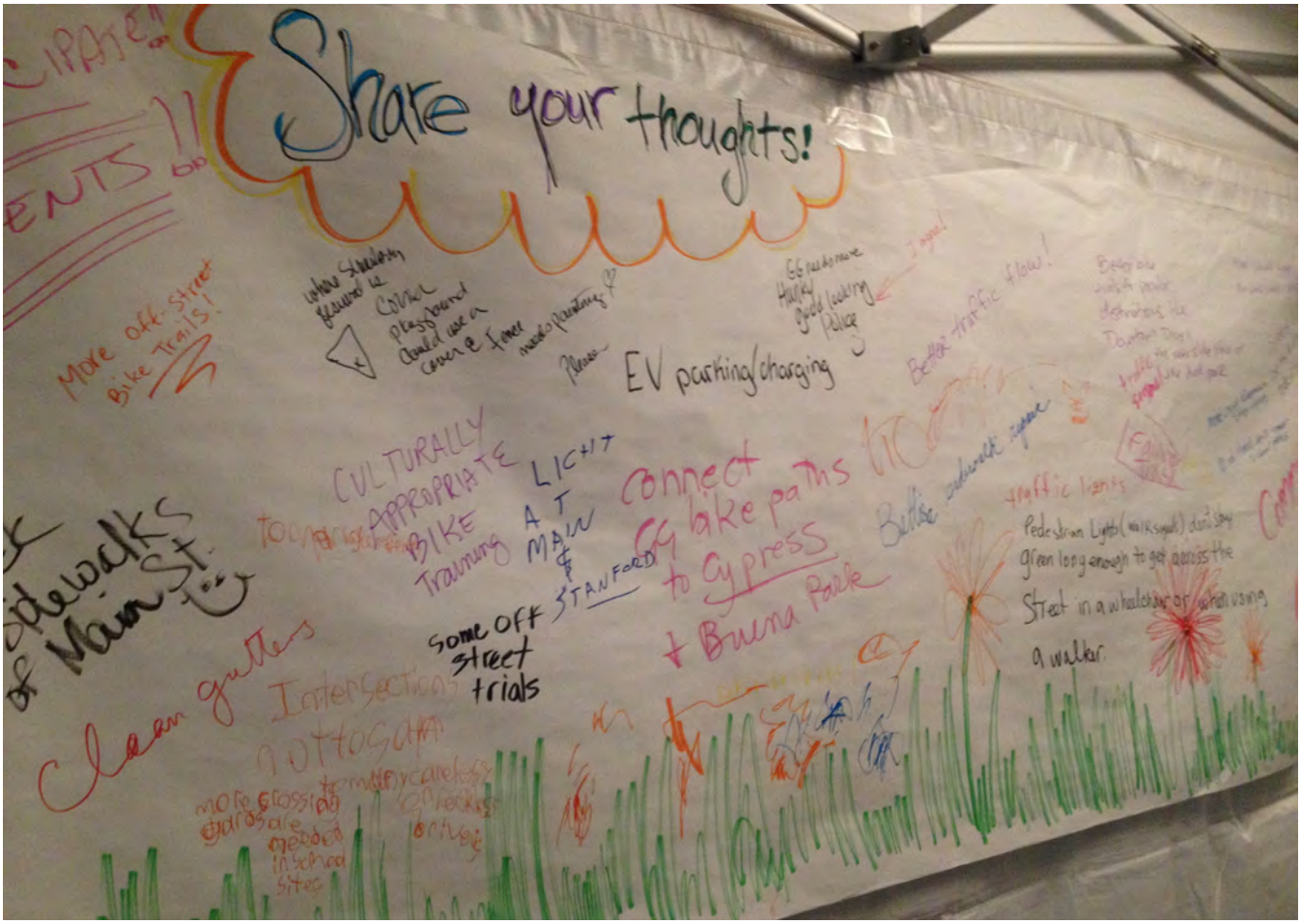
7. League of American Bicyclists. "The New Majority: Pedaling Towards Equity." http://bikeleague.org/sites/default/files/equity_report.pdf

8. Center for Disease Control. http://safety.fhwa.do

Vision

The City of Garden Grove is a community where people of all ages and abilities easily, comfortably, and safely walk, ride a bicycle, or use other non-motorized wheeled devices to access jobs, schools, public transit, recreation facilities, shopping, and other destinations as a part of daily life.

The City of Garden Grove will provide and promote pedestrian- and bicycle- friendly environments including streets, sidewalks, and pathways that are attractive, convenient, and safe for active transportation modes. The City will also implement policies and programs to educate and encourage residents and visitors to use a variety of transportation choices as they travel throughout Garden Grove.



Word cloud of thoughts shared by attendees during the Garden Grove Open Streets event

Goals

This plan has a number of goals that reflect the plan's vision and guide the policy recommendations outlined in Chapter IV, network recommendations in Chapter V, and program recommendations outlined in Chapter VI. The following goals are consistent with and support the Garden Grove General Plan 2030.

GOAL 01 MOBILITY & ACCESS

Increase and improve pedestrian and bicycle access to employment centers, schools, transit, recreation facilities, and other community destinations across the City of Garden Grove for people of all ages and abilities.

GOAL 02 SAFETY

Improve safety for active transportation users through the design and maintenance of sidewalks, streets, intersections, and other roadway improvements such as signage, lighting, and landscaping; as well as best practice non-infrastructure programs to enhance and improve the overall safety of people walking and biking.

GOAL 03 INFRASTRUCTURE AND SUPPORT FACILITIES

Maintain and improve the quality, operation, and integrity of the pedestrian and bicycle network infrastructure that allows for convenient and direct connections throughout Garden Grove. Increase the number of high quality support facilities to complement the network, and create public pedestrian and bicycle environments that are attractive, functional, and accessible to all people.

GOAL 04 NON-INFRASTRUCTURE PROGRAMS

Increase awareness of the value of pedestrian and bicycle travel for commute and non-commute trips through encouragement, education, enforcement, and evaluation programs that support walking and biking.

GOAL 05 EQUITY

Improve accessibility for all people walking and biking through equity in public engagement, service delivery, and capital investments.

GOAL 06 IMPLEMENTATION

Implement the Active Streets Master Plan over the next 20 years.

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Downtown Garden Grove is a commercially-rich district with opportunities to enhance facilities for people walking and biking.

II. EXISTING CONDITIONS

Open streets events are a great way to show the potential of bicycles as an avid form of transportation. The concept fits right into the vision of OCTA to advance transportation and grow interconnecting bikeways county wide.

-- Janet Nguyen, Orange County Supervisor and OCTA Board of Directors

This chapter provides an overview of the major components of the City of Garden Grove's existing environment for walking and biking. **It includes an assessment of the primary opportunities and constraints that exist for development of a safe and connected bicycle and pedestrian network.** The assessment is based on the project team's review of existing plans, field observations, and GIS-based mapping analysis.

This chapter includes:

- Plan Review
- Results of Data Collection
- Analysis of Opportunities and Constraints

Plan Review

The goals and recommendations presented in this plan are intended to affirm the objectives established in the Garden Grove General Plan - the city's 2030 comprehensive plan adopted in 2008. The plan states, "Garden Grove will be a community that is safe, economically sound, family-oriented, diverse, well-maintained, informed, and well-administered, and offers a high quality-of-life."

A number of recent planning efforts in Garden Grove have provided the blueprint for the Active Streets Master Plan. As part of the plan, the project team performed a thorough review of bicycle and pedestrian planning-related efforts in the City of Garden Grove, as well as relevant regional, state, and federal plans. The 11 planning documents reviewed for this plan are listed in Table 2-1 and described in more detail in Appendix A.

The City and other local and regional agencies are aware of the importance of bicycle and pedestrian facilities, as shown in the many goals, policies, implementation programs, and recommendations in the following planning documents. Key recommendations include providing sustainable, alternative transportation options for the city and region; enhancing the regional bikeway network; and promoting quality pedestrian facilities for transportation and recreation.

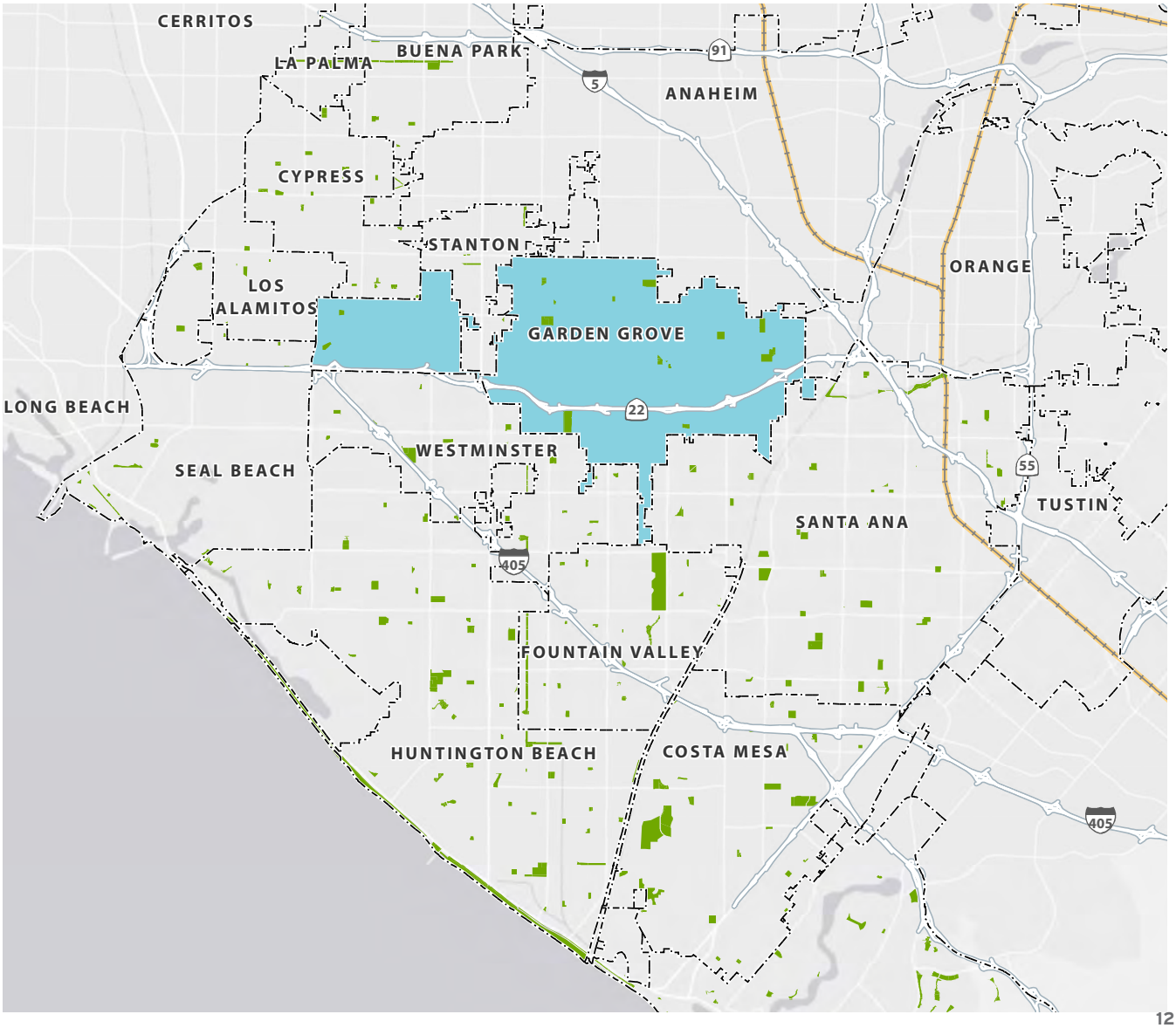
Table 2-1: Relevant Bicycle and Pedestrian Planning Documents Reviewed

Plan	Agency	Year
Harbor Corridor Specific Plan	City of Garden Grove	1985
Community Center Specific Plan	City of Garden Grove	1985
Brookhurst/Chapman Specific Plan	City of Garden Grove	1988
City of Garden Grove General Plan 2030	City of Garden Grove	2008
OCTA Commuter Bikeways Strategic Plan	Orange County Transportation Authority (OCTA)	2009
Outlook 2035: OCTA Long Range Transportation Plan	Orange County Transportation Authority (OCTA)	2010
Nonmotorized Metrolink Accessibility Strategy	Orange County Transportation Authority (OCTA)	2013
SCAG Regional Transportation Plan/ Sustainable Communities Strategy	Southern California Association of Governments (SCAG)	2012
OCTA Districts 1 and 2 Bikeways Strategy	Orange County Transportation Authority (OCTA)	2013
OCTA Streetcar	Orange County Transportation Authority (OCTA)	2015
Community in Motion study	California State Polytechnic University, Pomona Department of Landscape Architecture Studio 606	2015

Project Context

The City of Garden Grove is located south of Los Angeles in the northwest portion of Orange County, California. This diverse, residential community is home to approximately 175,078 residents (ACS, 2014), making it the fifth largest city in Orange County. The city's linear layout is in a grid-system that runs north to south (approximately 5.86 miles) and east to west (approximately 10.25 miles). Its proximity to local and regional attractors such as Disneyland, Knotts Berry Farm, and local beaches make it an ideal tourist destination. The city can be easily accessed by Interstate 405, Interstate 5, and State Highway 22 (also known as Garden Grove Freeway) - all of which provide local and regional connections to the surrounding communites of Anaheim, Orange, Santa Ana, Westminster, and Cypress. While rail service can only be accessed from the neighboring cities of Anaheim or Santa Ana, bus service is provided throughout Garden Grove by the Orange County Transit Authority (OCTA).

Figure 2-1: Garden Grove context map in Orange County



EXISTING BICYCLE INFRASTRUCTURE

A first step in evaluating the city's bicycling environment was mapping the existing facilities as noted in the map in Figure 2-2.

The City of Garden Grove's bicycle network has approximately 21.3 miles of existing bikeway facilities as noted in Table 2-2. This includes 0.9 miles of off-road bicycle facilities (shared-use paths), 19.3 miles of designated on-road bicycle lanes, and 1.1 miles of designated bicycle routes. Gaps within the existing bike lane network are highlighted in red in Figure 2-2. Spot gaps occur along existing segments where the bike lane striping is intermittant and not continuous. Segment gaps occur between blocks.

Table 2-2: Existing Bikeway Facilities

Facility Type	Miles
Class III Bicycle Routes	1.1
Class II Bicycle Lanes	19.3
Class I Shared-Use Path	0.9
Total Mileage	**21.3**

Bicycle parking can be found in select locations throughout the city's downtown.

REGIONAL ACTIVE TRANSPORTATION EFFORTS

There are a number of regional bikeway corridors, as identified in the OCTA Districts 1 & 2 Bikeways Strategy, that run through Garden Grove (see Figure 2-33). Out of the eleven priority corridors identified, five of these fall within Garden Grove. If these corridors were to be implemented, the bikeways could provide vital connections for Garden Grove residents to major activity areas such as employment centers, transit stations, colleges, and universities.

LOCAL ACTIVITY CENTERS

The Active Streets Plan aims to connect people to activity centers, such as commercial corridors. Major commercial areas that people want to get to in Garden Grove include; Garden Grove Boulevard, Harbor Boulevard, (south of Garden Grove Boulevard), Brookhurst Street, Valley View Street, and Westminster Boulevard.

Figure 2-2: Network gaps along existing bikeways in Garden Grove

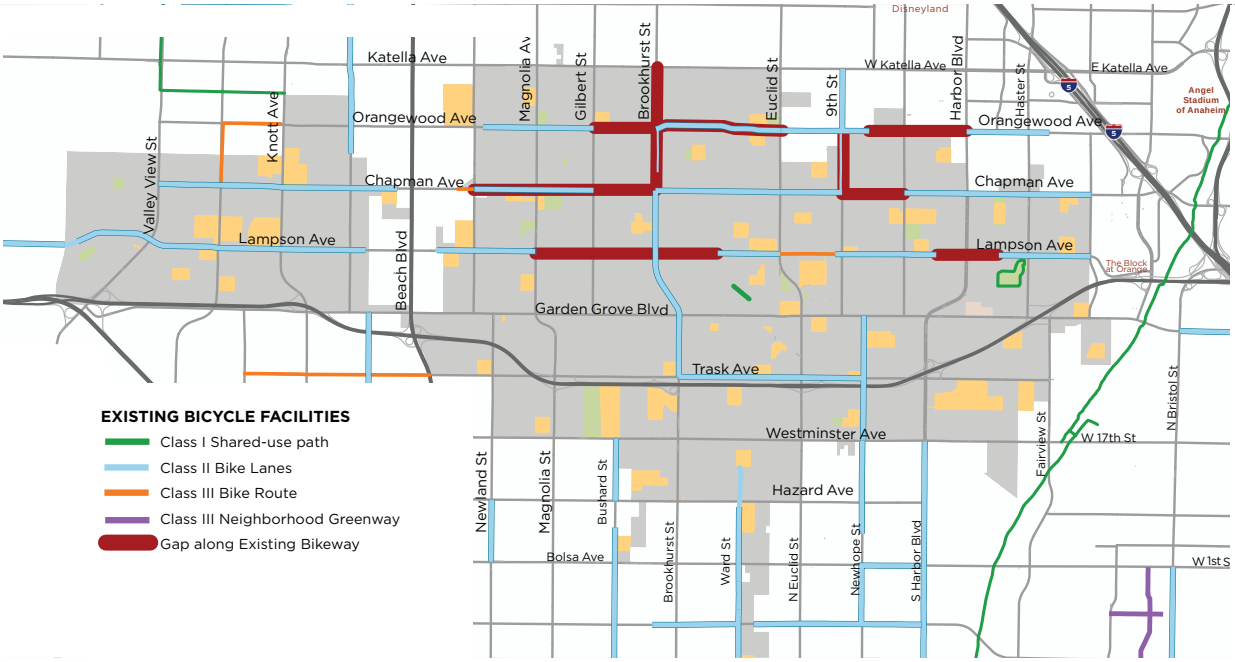
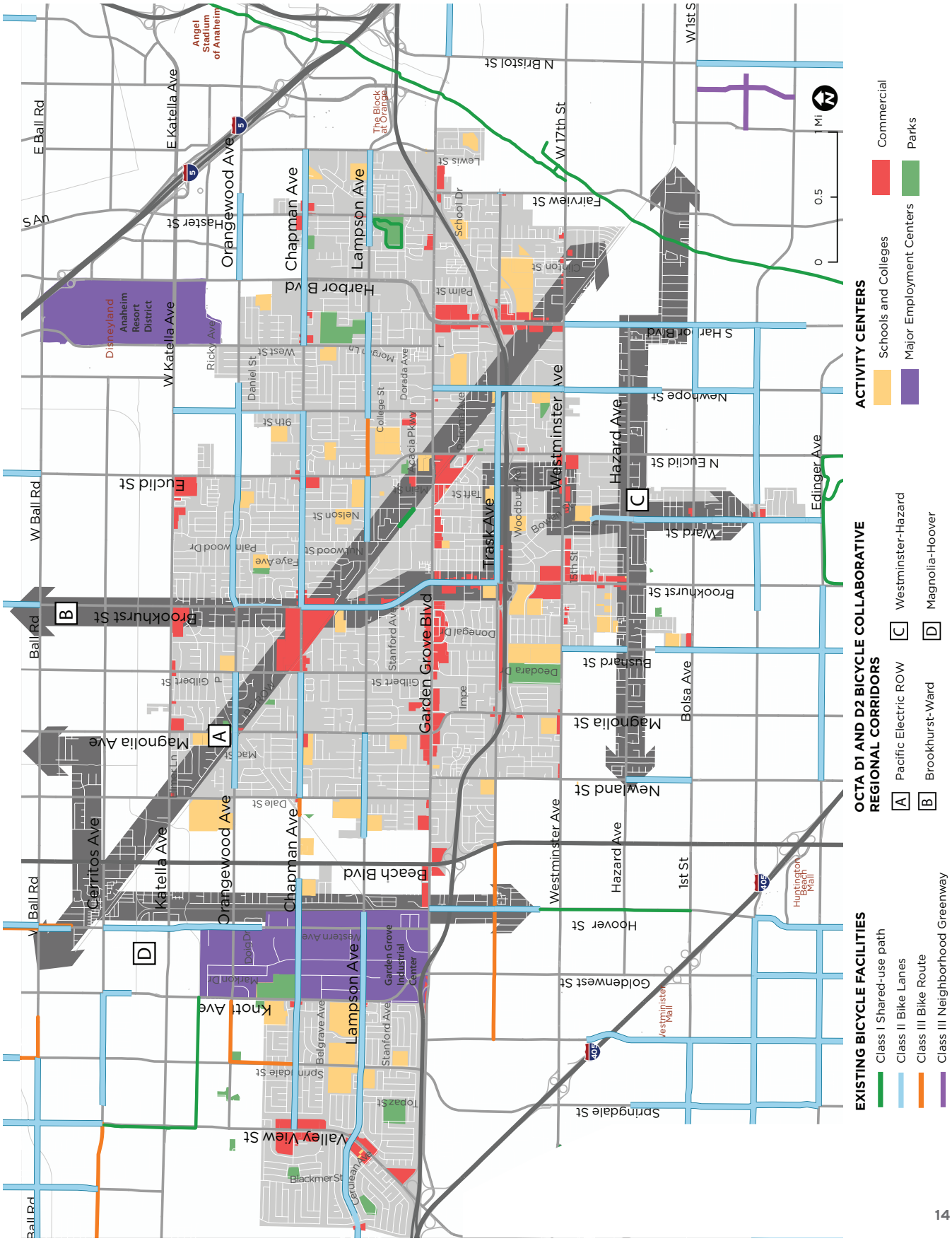


Figure 2-3: OCTA Districts 1 and 2 Bikeways Regional Bikeway Corridors and activity centers



EXISTING PEDESTRIAN INFRASTRUCTURE

Sidewalks are the most fundamental element of the walking network, they provide a place to interact as well as a means to access or connect to other transportation networks. The sidewalk network in Garden Grove is thorough, particularly along major roads. However, gaps in the City's sidewalk network exist along local and residential streets. The City does not have a comprehensive digital inventory of sidewalk conditions. As pedestrian facilities are added, repaired, removed or planned for in the long-term network, keeping an inventory is essential.

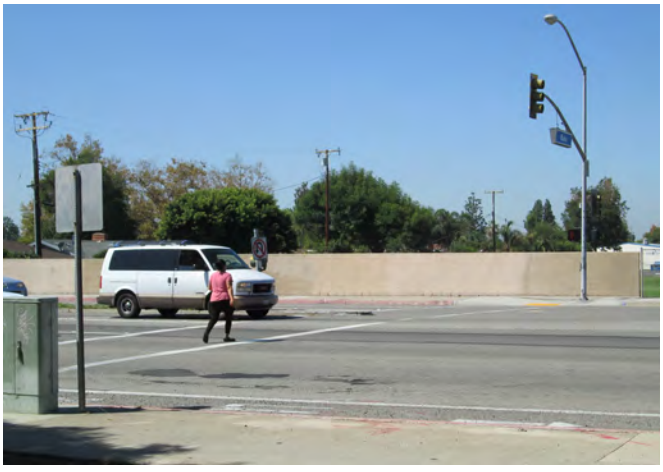
The conditions of crosswalks vary throughout the City. The majority of signalized intersections have transverse crosswalk markings, which are a lower visibility design. Pedestrian crossing major signalized intersections often incur delays because most pedestrian signals are not on automatic recall. Pedestrian phases must be activated by pushing the crossing button.

MULTI-MODAL CONNECTIVITY

Transit locations close to Garden Grove include the Santa Ana and Angel Stadium of Anaheim Amtrak Station stops, and future transit coming to the area includes the nearby Santa Ana Station Street Car (which will run northwest towards Downtown Garden Grove); as well as the Harbor Boulevard BRT, the new bus rapid transit service that will augment local bus service along Harbor Boulevard and Westminster Avenue/17th Street.

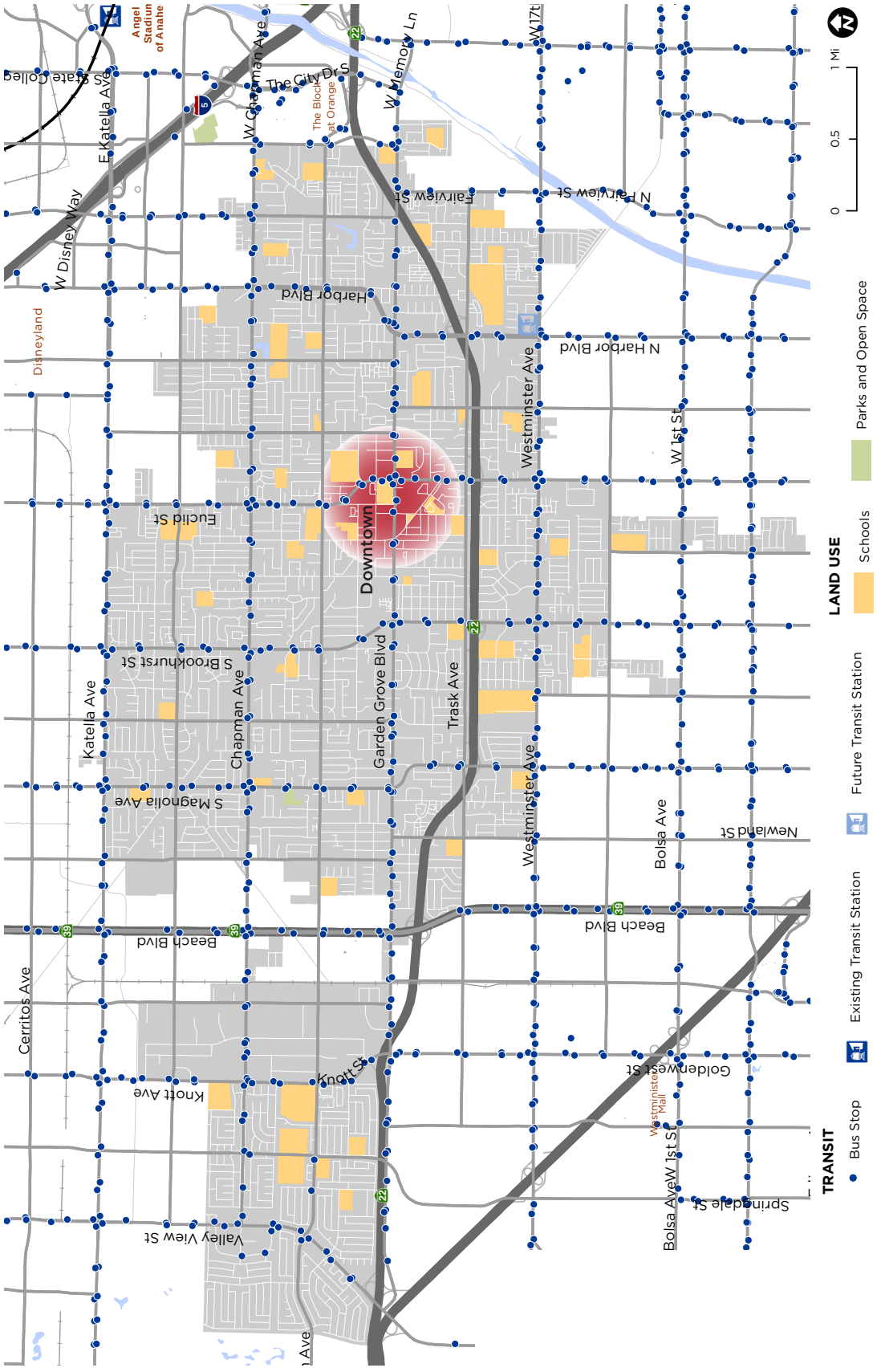
Bus routes are located on all major roads in Garden Grove, which characterize major roads in the city as transit corridors (see Figure 2-4). Stops throughout the City are identified in Fig 2-4 as small blue dots. Pedestrian and bicycle connections to/from transit stops are critical in efforts to develop a robust multi-modal network. OCTA buses have racks available for up to two bikes on the front of every bus, and riders are allowed to bring a folding bike onto the bus. The limited number of bike accommodation on outside bus racks does limit bicycle riders during peak hours; increasing space allocation for riders with bikes within busses is encouraged to aid multi-modal trips.

People walking along Brookhurst Street, a major thoroughfare in Garden Grove



Woman crossing Bixby Avenue. This intersection uses transverse crosswalk striping.

Figure 2-4: OCTA Bus Stop Locations (dots) in Garden Grove



Data Collection

BICYCLE AND PEDESTRIAN COLLISIONS

The Active Streets Master Plan reviewed the existing conditions of the bicycle network and identified safety concerns. Table 2-3 shows collisions involving a bicyclist or a pedestrian occurring within the City of Garden Grove between January 2009 and December 2014. In that time period, 752 collisions were reported in Garden Grove that involved a bicyclist or a pedestrian and 20 pedestrians and five bicyclists died as a result of the collision. In 2012, nearly twice as many people were killed in traffic collisions than in the previous year in Garden Grove, several of which involved pedestrians and bicyclists. You can see this spike in pedestrian and bicycle collisions in Table 2-3 and Figure 2-7.

Table 2-3: Pedestrian- and bicycle-involved collisions between 2009 and 2014

Time Period	Total Number of Bicycle Collisions	Bicycle Collision Percentage of Total Collisions	Total Number of Pedestrian Collisions	Pedestrian Collision Percentage of Total Collisions	Injuries	Fatalities
January 2009-December 2009	57	1.3	44	1.0	100	6
January 2010 - December 2010	77	1.8	47	1.1	123	3
January 2011 - December 2011	75	1.7	60	1.3	137	4
January 2012 - December 2012	98	2.3	60	1.3	158	6
January 2013 - December 2013	60	1.3	56	1.2	118	2
January 2014 - December 2014	68	1.5	50	1.1	118	4
Total	**435**		**317**		**754**	**25**

Statewide Integrated Traffic Records System (SWITRS), 2009-2014.

According to the Garden Grove Police Department (GGPD), several fatalities occurred because of distracted, speeding, or intoxicated drivers. In response to these collision rates, GGPD launched a Fatality Reduction Campaign that focuses on reaching out to diverse audiences through various media outlets, as well as through group presentations, neighborhood meetings, and safety equipment giveaways. The campaign was launched in 2013 to address the safety needs of all road users, and since then collisions have declined (see Table 2-3 and Figure 2-7).

Figure 2-5: Bicyclist-involved collisions aggregated to nearest intersection

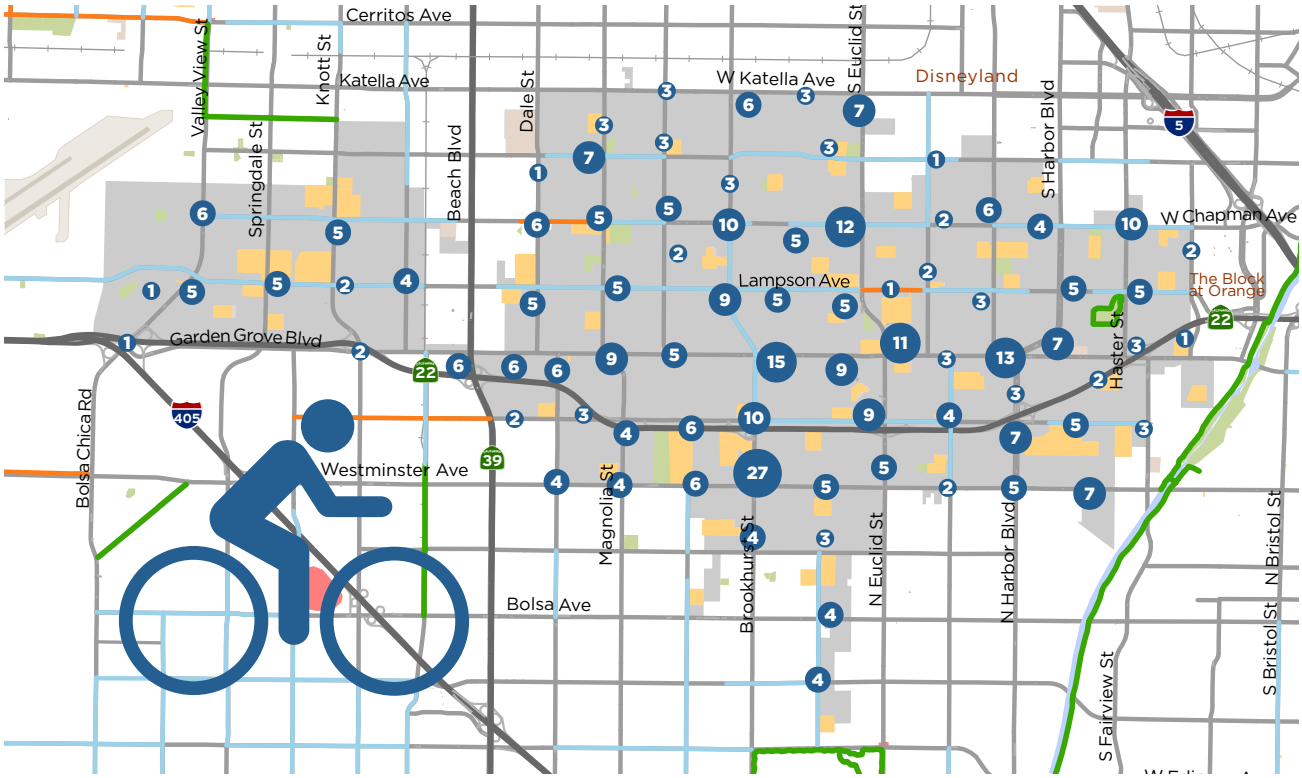


Figure 2-6: Pedestrian-involved collisions aggregated to nearest intersection

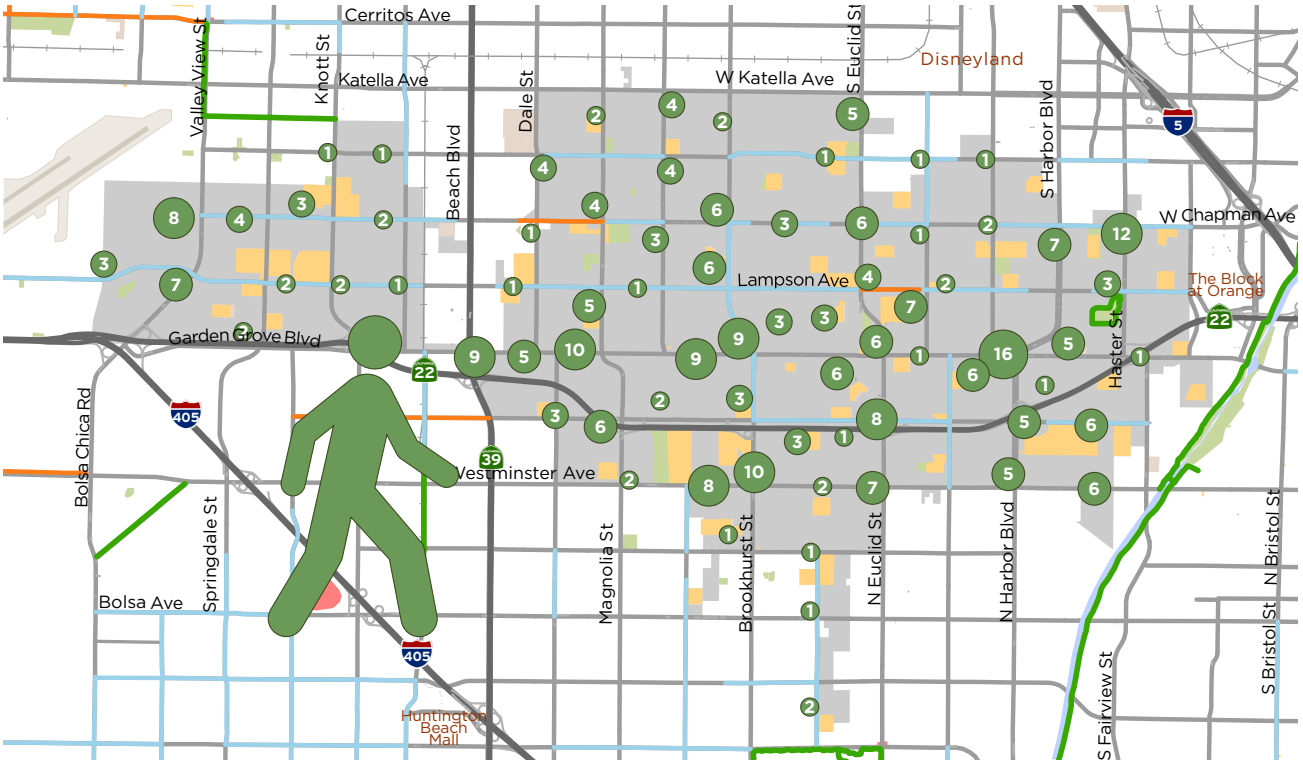
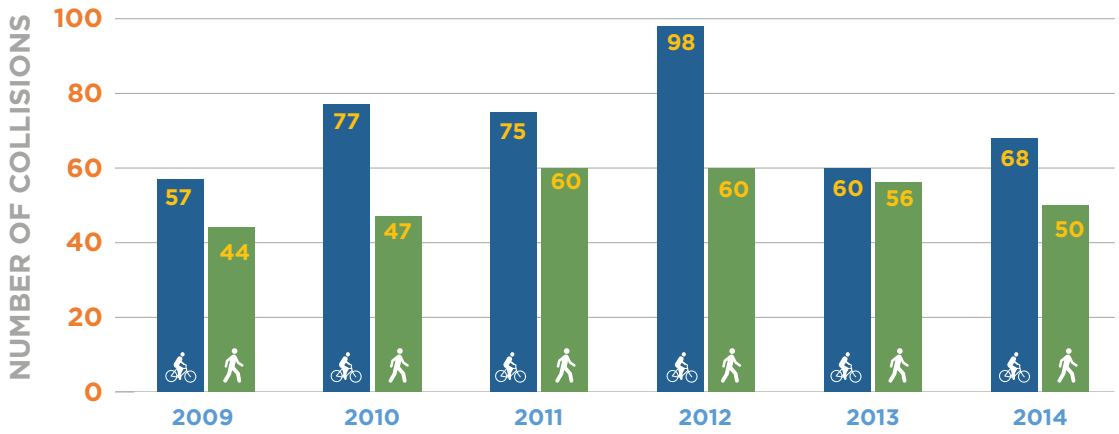


Figure 2-7: Number of collisions involving bicyclists or pedestrians



754
INJURIES
FROM COLLISIONS
(2009-2014)

25
FATALITIES
FROM COLLISIONS
(2009-2014)

By far, the most common types of collisions were "vehicle-pedestrian" and broadside collisions (see Figure 2-7 and Table 2-4). In broadside collisions, the auto and bicyclist/pedestrian are often traveling at 90 degree angles to each other. This type of collision typically occurs at intersections, driveways, or within parking lots, and often occurs when bicyclists are riding against the normal flow of traffic. Rear end collisions are generally caused by excessive speed and/or lack of awareness of vehicles or bicycles slowing or stopping. Sideswipes generally occur when a car or bicycle fails to yield while changing lanes.

Table 2-4: Number of collisions by type

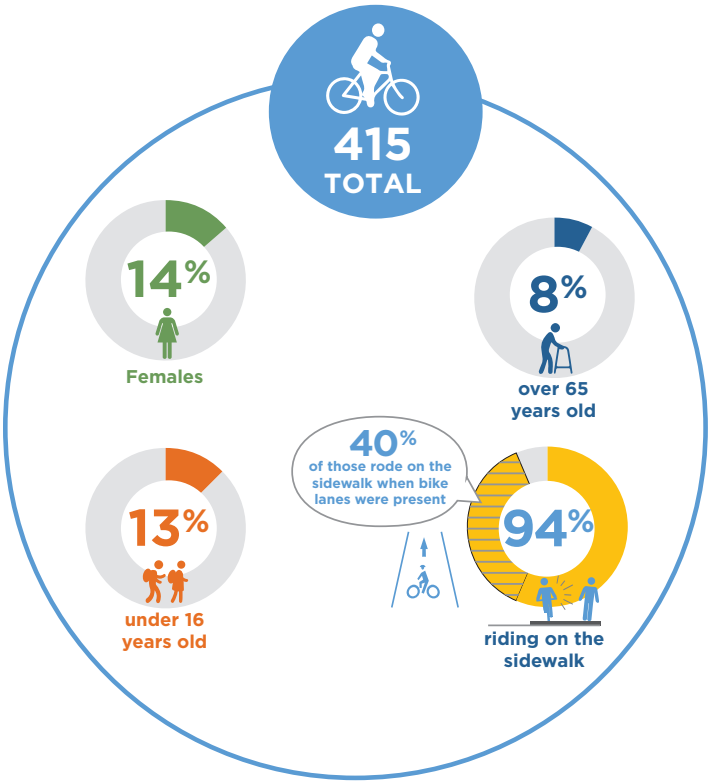
Type of Collision	Number of Collisions
Broadside	256
Sideswipe	43
Head On	54
Rear End	25
Vehicle-Pedestrian	268
Other	69
Not Stated	43
Total	**749**

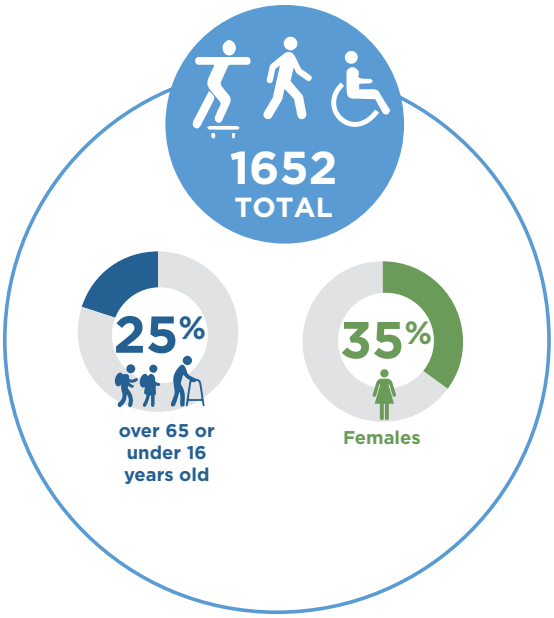
BICYCLE AND PEDESTRIAN COUNTS

For the Bicycle and Pedestrian Master Plan, bicycle and pedestrian counts were conducted at nine locations across the city (see Figure 2-7 and Figure 2-8). Counts were held from 7-9AM and 4-6PM on Thursday September 17, 2015 and on Saturday September 19, 2015 from 11AM-1PM. The majority of the counts were done by members of the Garden Grove Active Streets Master Plan Team, though some volunteers were used. Counts were taken in 15-minute intervals. For bicycle counts, direction of travel, lack of helmet, wrong way riding, age, and sex was noted. For pedestrian counts, age, sex, direction of travel, use of mobility device, and whether the pedestrian was on a skateboard or scooter was marked.

Over 400 bicyclists were counted during the specific times. Fifty-seven bicyclists were female, 52 were under 16 years of age, and only 33 were over the age of 65. Of the bicyclists counted, 389 were traveling on the sidewalk, against the flow of traffic, or both. Over 150 of the persons riding on the sidewalk were traveling along a roadway with bicycle lanes present.

1,652 pedestrians, skateboarders, and persons using a scooter or mobility device were counted during the specified time periods. 330 (nearly 20 percent) of those counted were either under 16 or over 65 years of age. Only 35 percent of those counted were female.





The infographics above depicts some of the demograhic data collected during the bicycle and pedestrian counts.

Figure 2-8: Bicyclist count location and numbers

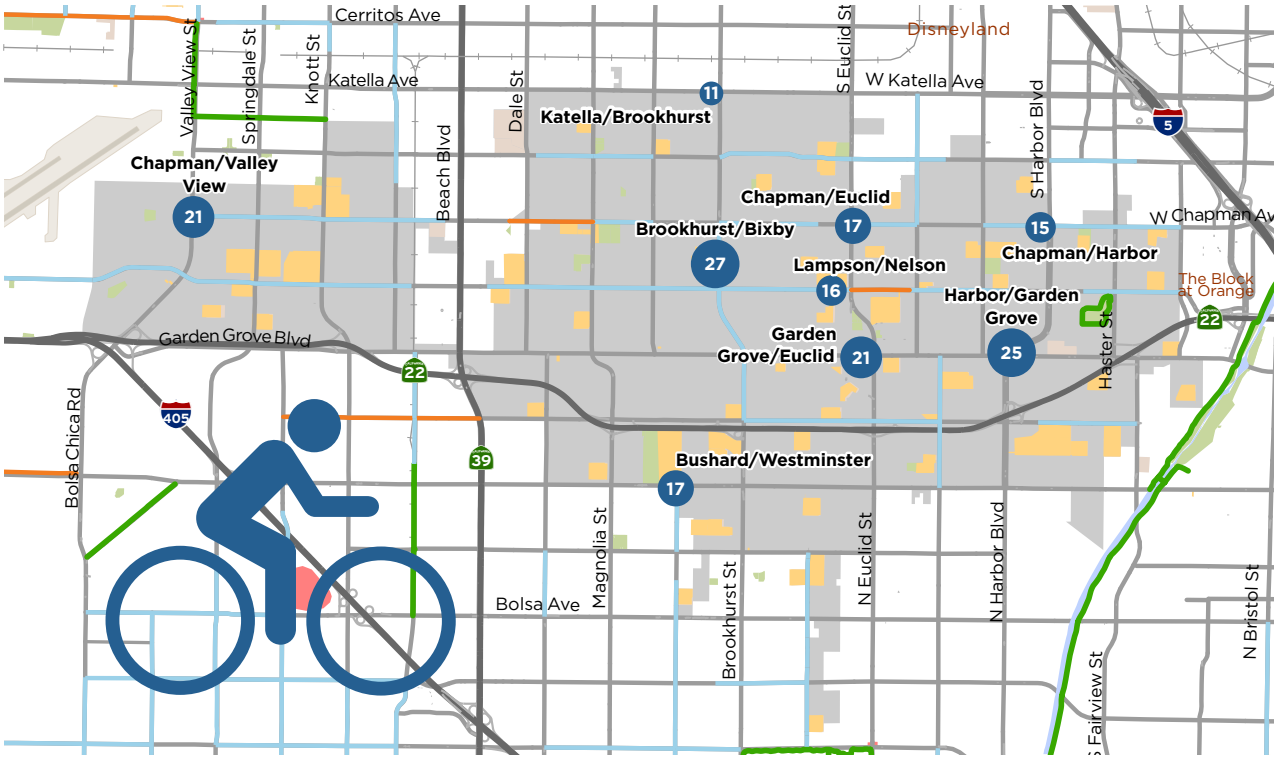


Figure 2-9: Pedestrian count location and numbers

Opportunities and Constraints

OVERVIEW

The City of Garden Grove has the foundation to become a renowned bicycle and pedestrian-friendly city. **The relatively mild climate year-round, off-road opportunity corridors such as the PE ROW trail, the concentration of commercial and workplace locations, and the well-connected street grid in the downtown area are all characteristics that will push Garden Grove towards its biking and walking goals.**

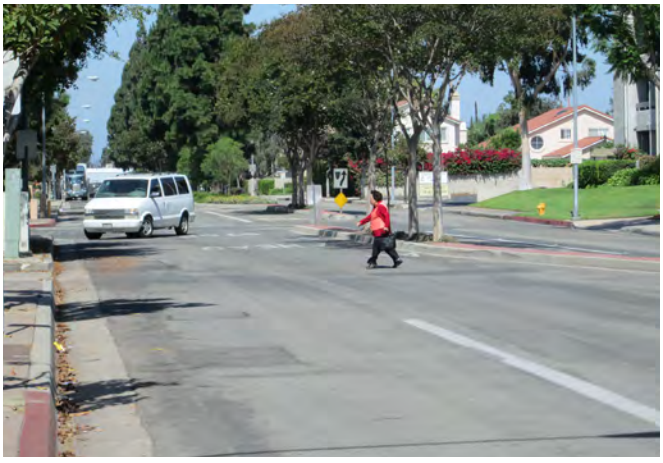
However, as indicated during public outreach, fieldwork, and in feedback from key stakeholders, biking and walking in Garden Grove does not occur without challenges. There are significant safety concerns, physical barriers, and gaps in network connectivity that must be addressed in order to reach the goals identified for this plan. Closing gaps in the existing active transportation network, as shown in Figure 2-2, will increase connectivity and allow for seamless travel by bicycle and on foot throughout Garden Grove and the surrounding region.

From the evaluation of the current active transportation network, the following key themes emerged:

- Enhance existing bicycle lanes
- Improve pedestrian crossings
- Improve cycling and pedestrian safety
- Leverage support and motivation from project champions
- Improve bikeability and walkability of the Pacific Electric ROW trail
- Consider broader impacts of active transportation

The following sections discuss the current bicycle and pedestrian network, as well as examples of many opportunities that exist as starting points for improvement and constraints that the city must address to become a more bicycle and walk-friendly city (see Figure 2-10).

Overcoming network gaps, such as on Magolia Avenue at the PE ROW, are crucial to the success of the plan



Mid-block crossings are common due to long distances between marked crosswalks

CONSTRAINTS

The numbered photos below show examples of opportunities and constraints for bicycle and pedestrian facilities across Garden Grove. They reference locations mapped in Figure 2-10.

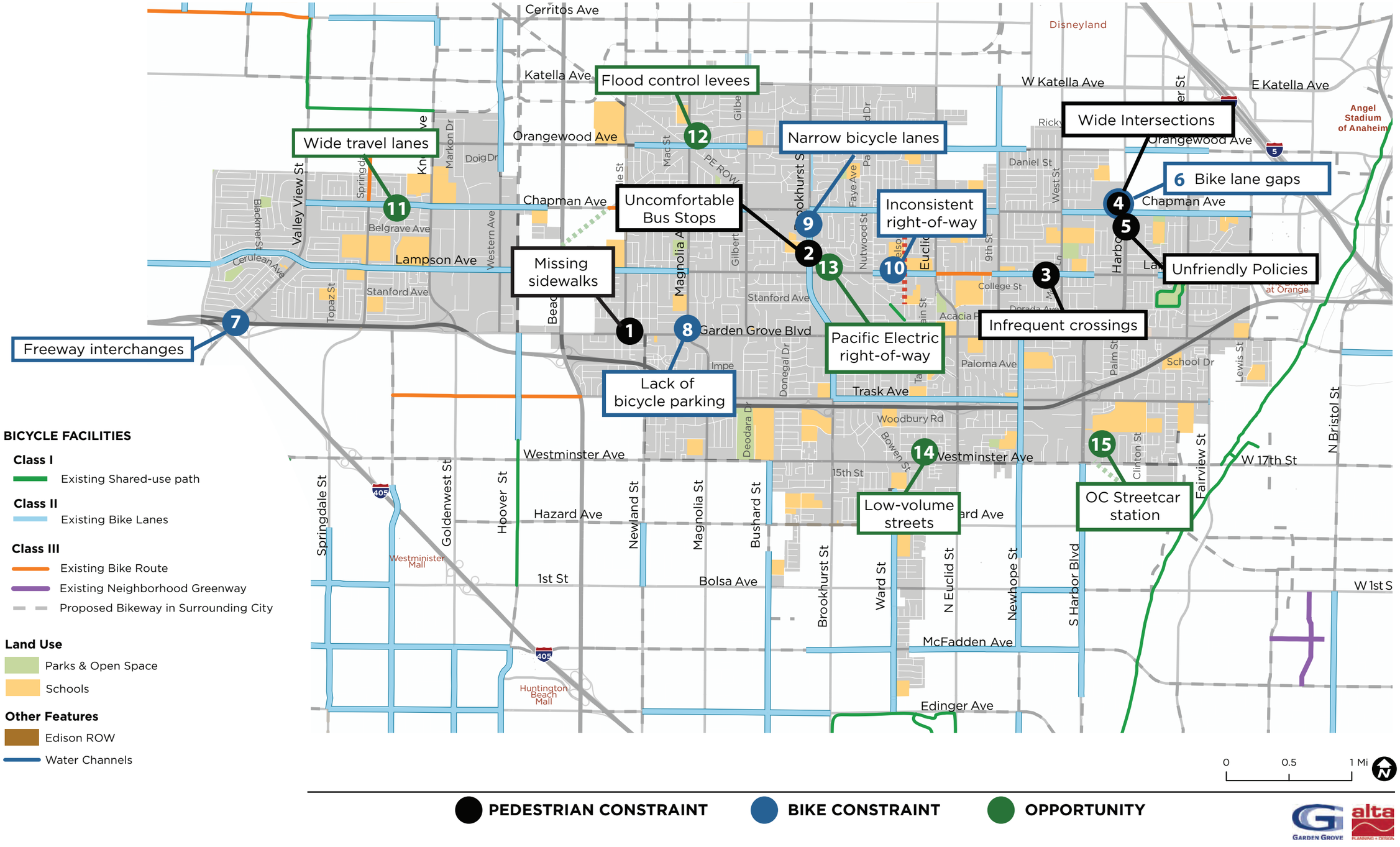
PEDESTRIAN CONSTRAINTS

Missing Sidewalks. A lack of sidewalks presents issues for pedestrian access throughout the city, as seen at Dale Street and Garden Grove Boulevard.

Uncomfortable Bus Stops. Bus stops lacking shade, like the one shown at Brookhurst Street and Bixby Avenue, or appropriate benches and seating are less desirable and can possibly deter from transit use in the area. Shade structures and updated furnishings should be incorporated.

Infrequent Marked Crosswalks. This area of Lampson Avenue has a lack of marked crosswalks at local intersections. Along major corridors, high visibility crosswalks and warning signs and beacons to alert drivers of pedestrians can create a safer environment and reduce collisions.

Figure 2-10: Examples of Bicycle and Pedestrian Opportunities and Constraints in Garden Grove



BICYCLE FACILITIES

Class I
- Existing Shared-use path

Class II
- Existing Bike Lanes

Class III
- Existing Bike Route
- Existing Neighborhood Greenway
- Proposed Bikeway in Surrounding City

Land Use
- Parks & Open Space
- Schools

Other Features
- Edison ROW
- Water Channels

PEDESTRIAN CONSTRAINT **BIKE CONSTRAINT** **OPPORTUNITY**

Fold Out for 11x17 Map

Wide Intersections. The large intersection seen at Harbor Boulevard and Chapman Avenue presents an unpleasant travel path for both pedestrians and bicyclists. Decreasing street width can reduce the length of crossing.

Non-Supportive Policies. Policies that dissuade modes of transportation other than vehicles should be revised to incorporate multi-modal transportation throughout the City of Garden Grove.

BICYCLE CONSTRAINTS

Bicycle Lane Gaps. Providing a continuous network of bike lanes or other separated bikeways throughout the city will encourage bicyclists to ride on the road and avoid potential conflicts with pedestrians on the sidewalk.

Freeway Interchanges. Areas like the one shown at SR-22 and Valley View Street create multiple conflict zones in on- and off-ramps to freeways.

Lack of Bicycle Parking. A major deterrence to bicycle transportation is a lack of end of trip parking facilities. Providing more bicycle racks and large capacity bicycle corrals for secure bicycle parking can motivate more people to switch to bicycle transport from car use. One example location in need of bicycle parking is the shopping center at Garden Grove Boulevard and Magnolia Avenue.

Narrow Bicycle Lanes. A narrow lane, like the one seen here on Brookhurst Street, creates an uncomfortable environment for bicyclists.

Inconsistent Right-of-Way. The crossing at Lampson Avenue and Nelson Street is an example of inconsistent right-of-way width and bicycle facilities.

OPPORTUNITIES

Wide Travel Lanes. A wide lane like the one at Chapman Avenue and Springdale Street can be narrowed to create buffered bicycle lanes with barriers to create a safer biking environment.

Flood Control Levees. The creek at Magnolia Street and Orangewood Avenue creates an opportunity for shared-use paths along the levees and on similar flood control channels.

Pacific Electric Right-of-Way. The area along the PE ROW at Brookhurst Street could be transformed into a high quality shared-use path.

Low Volume Streets. The Taft undercrossing shown here could serve as a neighborhood greenway or "bicycle boulevard" due to its lack of heavy traffic.

OC Streetcar Station. The planned terminus of the OC Streetcar and multi-modal transportation hub will be located at the intersection of Westminster Avenue and Harbor Boulevard.

PACIFIC ELECTRIC RIGHT-OF-WAY AND STORM CHANNELS

Opportunities for trail corridors can be found along the PE ROW and storm channels. Figure 2-11 and Table 2-5 and Table 2-6 identify the opportunities and challenges for developing multi-use paths along these corridors within the City of Garden Grove.

Figure 2-11: Map of Opportunities and Constraints along PE ROW and storm channels

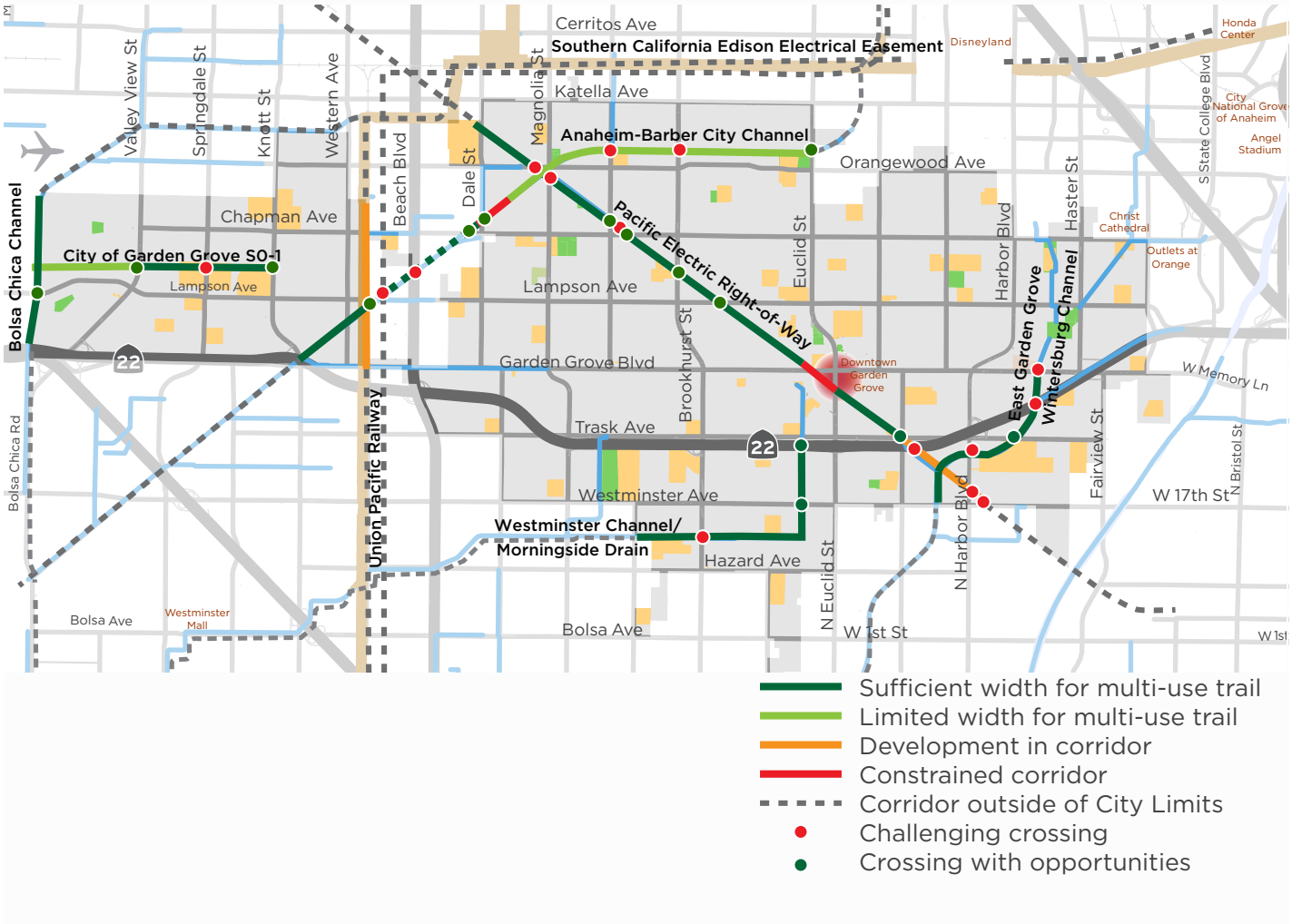


Table 2-5: List of opportunities and constraints along storm channels

Channel Name / Extents	Width of top of channel		Opportunities	Constraints
	North or West Side	South or East Side		
Anaheim-Barber City Channel				
SR-22 to Western Ave	25’	16’-20’	Western Ave has a center turn lane	
Western Ave to Lampson Ave	26’	21’	Lampson Ave has a center turn lane	UP Railroad crossing
Lampson Ave to Beach Blvd	25’-27’	16’		Beach Blvd
Beach Blvd to Chapman Ave	12’-20’	14’-17’	Chapman Ave has center turn lane	
Chapman Ave to Macduff St	< 5’	< 5’	Dale St has center turn lane	Trapezoidal channel behind residental houses, no existing channel bench
Macduff St to Gilbert St	< 5’	13’-14’		Magnolia St at Orangewood Ave intersection
Biscayne Ct to Brookhurst St	< 5’	10.5-12’		Brookhurst St crossing
Brookhurst St to Euclid St	<5’	12-13’	Connection to Louis Lake Intermediate School, Euclid has a center turn lane	
Bolsa Chica Channel				
Garden Grove Blvd to Lampson Ave	20-23	10’-25’	Lampson Ave has a center turn lane	
Lampson Ave to City of GG SO-1	< 5’	26-28’		
GG SO-1 to Santa Catalina Ave	< 5’	14-20’		Dead ends into golf course
City of GG SO-1				
Bolsa Chica Channel to Blackmer St	11-12’	6’ Max		Narrow right-of-way
Blackmer St to Valley View St	9-11’	< 5’		Narrow right-of-way
Valley View St to Springdale St	12’-15’	< 5’		Narrow right-of-way
Springdale St to Lamplighter St	0-6’	14’16’	Connects to Pacifica High School and Enders Elementary	Narrow right-of-way, no entry on north side
Lamplighter to Knott	< 5’	10-17’		
Westminster Channel/Morningside Drain				
Bushard St to Kerry St	18-19’	12’-25’	Direct connection to Hill Elementary	
Kerry St to Brookhurst St	11-16’	16’-23		Brookhurst St crossing
Brookhurst St to Ward St	15-21’ (51’ area)	6’-11’	Morningside Elementary off of Ward St	
Ward St to Taft St (end of E-W)	16’-18’	< 5’		
Taft St to Westminster Ave (begin N-S)	16’-20’	< 5’	Existing crossing at Westminster Ave could be improved	
Westminster Ave to SR-22	< 5’	< 5’	Undercrossing at SR-22, opportunity to transition to a bicycle blvd	

East Garden Grove-Wintersburg Channel				
Westminster Ave to PE ROW	< 5’	10’-16	Crossing Parking lot-like area at PE ROW	
PE ROW to Harbor Blvd	14’-16’	< 5’		Harbor Blvd crossing
Harbor to Trask Ave	12-15’	< 5’	Santiago High School, Trask Ave has center turn lane	
Trask Ave to Pearce St	12-14’	< 5’		
Pearce St to SR-22	15-16’	< 5’		SR-22 undercrossing
SR22- Garden Grove Blvd	12-17’	< 5’		Garden Grove Blvd crossing

Table 2-6: List of Opportunities and Constraints along PE ROW

	Width of ROW	Opportunities	Constraints
PE Right-of-Way			
Dale St to Orangewood Ave	97’-100’		
Orangewood Ave to Magnolia St	100’-192’ (triangle)	Anaheim Channel crossing	Channel breaks across ROW
Magnolia St to Gilbert St	100’-80’	Gutosky Park	
Gilbert St to Chapman Ave	62’-100’		Cinema driveway in ROW
Chapman Ave to Brookhurst St	52’-92’-8’-100’	Chapman has planted median	Parking lot
Brookhurst St to Lampson Ave	100’	Signalized intersection at Brookhurst St, Connection to Brookhurst Elementary	
Lampson Ave to Stanford Ave	80’-97’	Lampson Ave has center turn lane, Playground	Vehicles parked in ROW at Nutwood St
Stanford Ave to Nelson St	82’	Existing 10’ walking path and 12’ bicycle path	
Nelson St to Euclid St			Development in previous ROW
Euclid St to Paloma Ave	90’ Approx		Currently used as a plant nursery
Paloma Ave, east of Euclid St to Trask Ave	100’	Trask Ave has center turn lane	
Trask Ave to Newhope St	5-12’ Path in 100’ ROW		
Newhope St to Harbor Blvd	82’-100’	Connects to OCTA property	SR22 undercrossing

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Public input coupled with fieldwork and community outreach shaped the plan's network recommendations to reflect community desires and balance desirability with feasibility.

III. NEEDS ANALYSIS

"There is no logic that can be superimposed on the city; people make it, and it is to them, not buildings, that we must fit our plans."
- Jane Jacobs

A number of factors help the city understand why improvements are needed. **This chapter assesses the needs for walking and biking.** The assessment is based on insights gained from the public and key stakeholders, as well as GIS-based mapping analysis.

This chapter includes:

- Community-Identified Needs
- Demand Analysis
- Equity Analysis

Community Identified Needs

OVERVIEW

The community needs were identified by aggregating feedback received from the public on their views toward walking and biking conditions in Garden Grove. The public outreach process included comprehensive outreach that included six major components:

- Stakeholder Meetings
- Community Workshops
- Project Website and Social Media Presence
- Interactive Online Map (part of project website)
- Online Survey
- Previous community outreach through the 2015 *Community in Motion* plan

The results of each forum for public input are described in the following sections. The major themes and community priorities identified through these outreach processes include:

- Provide sustainable, alternative transportation options for the city
- Enhance the regional bikeway network. Create a bikeway to the beach and to the Santa Ana River Path
- Promote quality pedestrian facilities for transportation and recreation

STAKEHOLDER MEETINGS

COMMUNITY ADVISORY COMMITTEE

The project team hosted a total of three Community Advisory Committee (CAC) meetings. The CAC was established to provide detailed input and feedback on plan components. The Committee is composed of individuals interested in active transportation, biking and trails and represented various groups including local residents, the Garden Grove Parent Teacher Association (PTA), high school students, city staff, and a planning comissioner.

PUBLIC WORKSHOPS

PUBLIC WORKSHOP #1: OPEN STREETS EVENT

As part of the "Re:Imagine Garden Grove By Day and By Night" Open Streets event, the project team hosted a fun, interactive planning workshop on Historic Main Street for attendees to provide input on walking and biking conditions throughout Garden Grove. In total, the planning workshop attracted over 100 participants. The project team actively engaged 75 of these participants using large-format maps and boards to get their thoughts, concerns and dreams for biking and walking in Garden Grove. Their ideas were tallied and the top responses are noted as followed.

FEEDBACK FROM WORKSHOP #1 OPEN STREETS EVENT

TOP 5 MAIN MOTIVATION TO BICYCLE (VOTES)

1. Off-Street Trails (60)
2. On-Street Separated Bikeways (48)
3. Bicycle Safety Training & Fun Activities (29)
4. Slower or Less Traffic (29)
5. Neighborhood Bikeway (23)

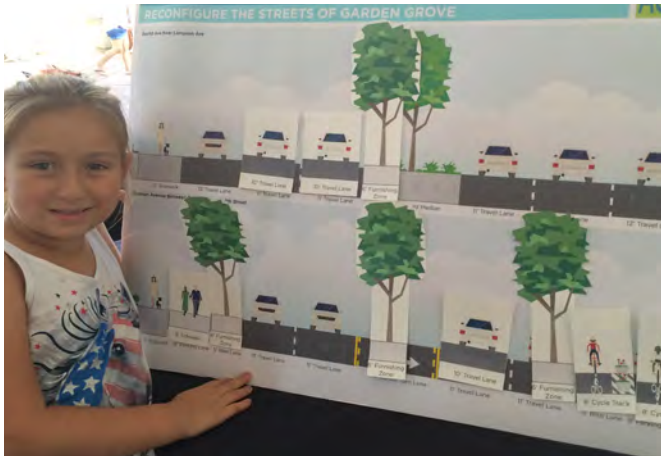
TOP 5 MAIN MOTIVATION TO WALK (VOTES)

1. Shade Trees and Landscaping (62)
2. Safer Crossings (56)
3. Sidewalks & Path Improvements (56)
4. Better Lighting (35)
5. Benches, Drinking Fountains & Trash Cans (28)

TOP 5 PREFERRED AMENITIES (VOTES)

1. Landscaping (21)
2. Lighting (13)
3. Playgrounds (12)
4. Fitness Equipment (11)
5. Art Installations (10)

In addition to the workshop booth, Alta Planning + Design installed a temporary pedestrian crossing and green sharedlane markings so that the public could test these treatments in a comfortable, car-free environment.



Top and Middle: Residents share ideas with the project team at the stakeholder meeting and Open Streets event. Bottom: demonstration treatment installed during Open street event.

PUBLIC WORKSHOP #2: GARDEN GROVE DIAMOND JUBILEE CELEBRATION

On June 18, 2016, The City of Garden Grove celebrated their 60th Anniversary – Diamond Jubilee Celebration. Following the release of the Draft Plan, a second community workshop was held at a booth at this event. Over 230 people participated in the Garden Grove Active Streets booth, which featured interactive display boards showing the project team's bicycle and pedestrian recommendations.

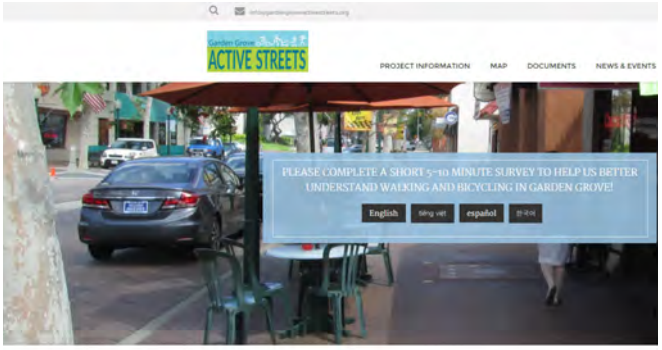
Community members were encouraged to give feedback on bicycle and pedestrian recommendations by sharing their experiences with the current bicycle and pedestrian network, adding comments to the proposed recommendations, and showing support or providing criticism to the proposed priority projects.

Community members provided input at Garden Grove's 60th Anniversary Diamond Jubilee

PROJECT WEBSITE AND SOCIAL MEDIA PRESENCE

The project website (*www.gardengroveactivestreets.org*) was an important tool for sharing information about the *Garden Grove Active Streets Master Plan* and providing a consistent source for project updates to the general public. This site also provided a direct link to the city's existing Open Streets website (*www.ggopenstreets.com*) which captured the excitement of the Open Streets event and was utilized to share information as well as recruiting volunteers.

In addition to these sites, the project team spread word about the project and Open Streets event through other social media outlets such as Facebook, Twitter, and Instagram.



Snapshot of the Garden Grove Active Streets project website

Screenshot of the interactive Garden Grove Open Streets website

ONLINE INTERACTIVE MAP

From September 28th through November 18th, 2015, residents, commuters, and visitors to Garden Grove were invited to suggest specific improvements for Garden Grove's bicycle and trail network using an online interactive mapping tool. **Over 220 suggestions were mapped** (see image below). Of these suggestions, participants identified over 37 gaps and barriers to biking or walking.

GAPS AND BARRIERS

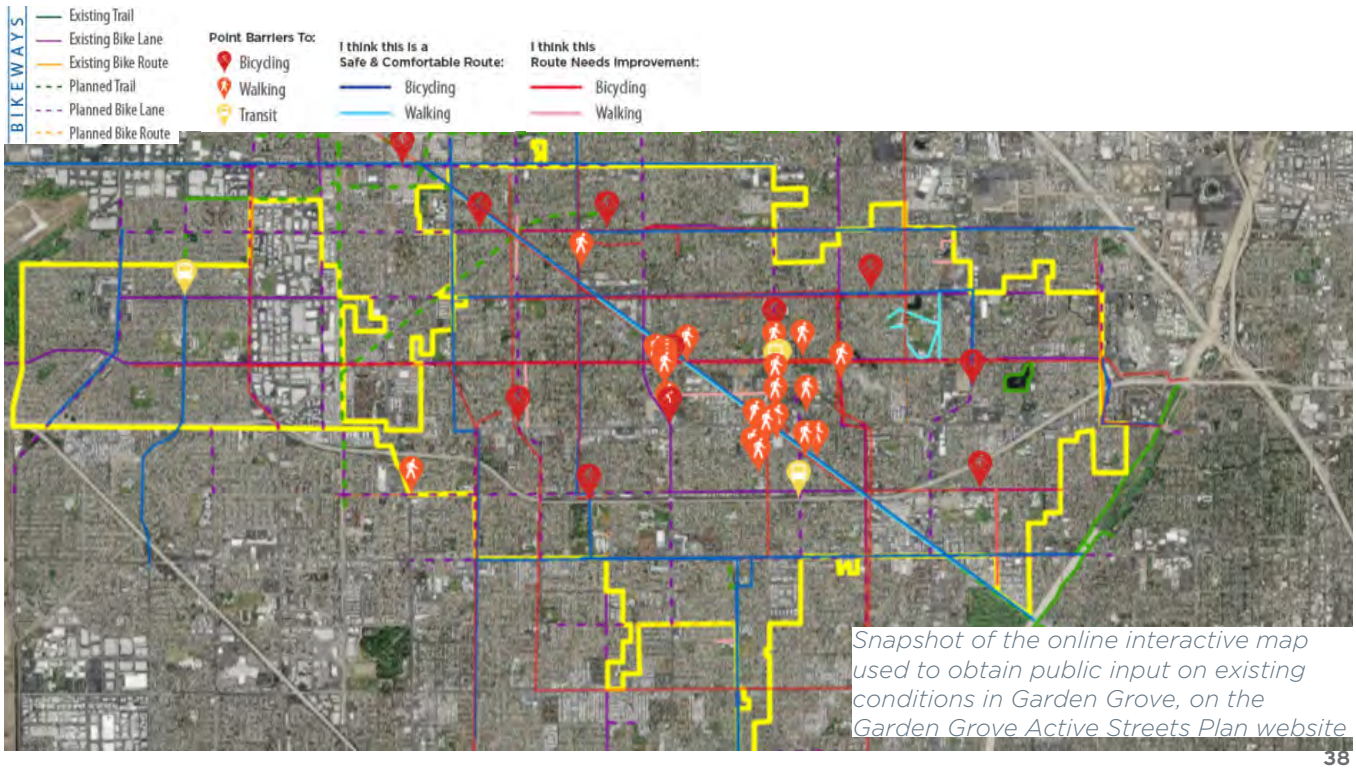
Of the identified barriers to biking, a common theme was to connect existing bikeways along the city's east-west corridors and to create new bikeways on north-south corridors**.**

Barriers to walking were generally dispersed throughout Garden Grove, though one noticeable **cluster of barriers emerged at Brookhurst Street to the west, Euclid Street to the east, Garden Grove Freeway to the south and Lampson Avenue to the north**. The barriers identified here were too narrow of a space for adequate pedestrian passing, lack of pedestrian lighting, lack of traffic calming elements and lack of safe pedestrian crosswalks.

PRIORITY ROUTES

Participant feedback also indicated that the implementation of a multi-use path on the Pacific Electric Rail Line would be a great way to increase access throughout the city and to create a regional connection. Other priority routes for bicycle riding identified were Gilbert Street, Lampson Avenue, and Dale Avenue.

Detailed comments and suggestions can be found in Appendix B.



Snapshot of the online interactive map used to obtain public input on existing conditions in Garden Grove, on the Garden Grove Active Streets Plan website

ONLINE SURVEY

An online survey to gather information related to the *Garden Grove Active Streets Master Plan* was available from October 2015 through January 2016. The survey was available in English, Spanish, Korean, and Vietnamese. Garden Grove residents submitted a total of 200 completed surveys. A summary of the results are discussed below, and a sample of these results are shown in Figure 3-1.

RESPONDENT CHARACTERISTICS

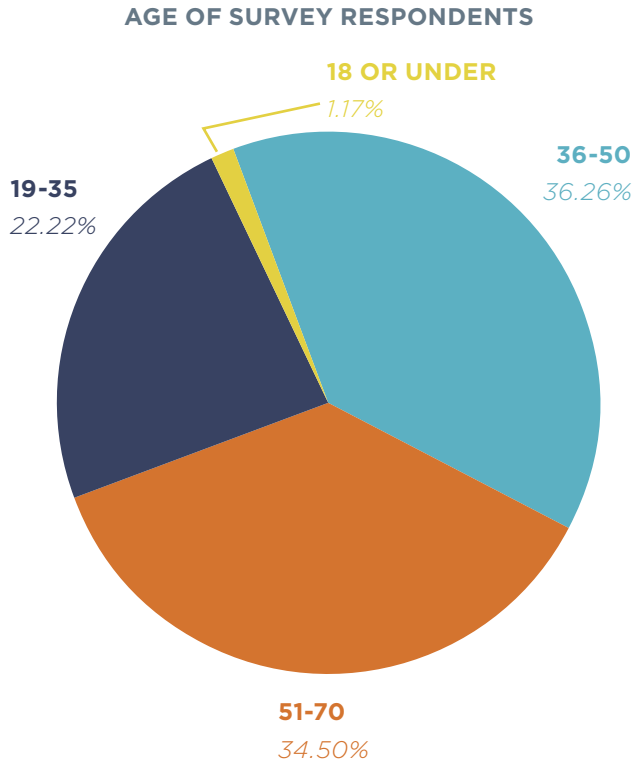
Of the 200 survey respondents:

- 45 percent identify as male
- 54 percent identify as female
- 84 percent live in Garden Grove
- 30 percent work in Garden Grove

The 36-50 age group respondents made up the largest percentage of survey takers at 36 percent, followed closely by the age group of 51-70, at 35 percent of respondents. Twenty two percent of respondents were between the ages of 19 and 35 and six percent were over 70 years. Only one percent of survey takers were 18 or under.

WALKING AND BIKING CONDITIONS AND PREFERENCES

The survey found that 41 percent of the 200 respondents consider walking conditions in Garden Grove as good and 36 percent defined them as fair. Only 16 percent consider walking conditions as poor. The survey also found that only 1 percent of respondents consider biking conditions in Garden Grove as excellent, while 45 percent and 36 percent describe them as fair and poor, respectively.



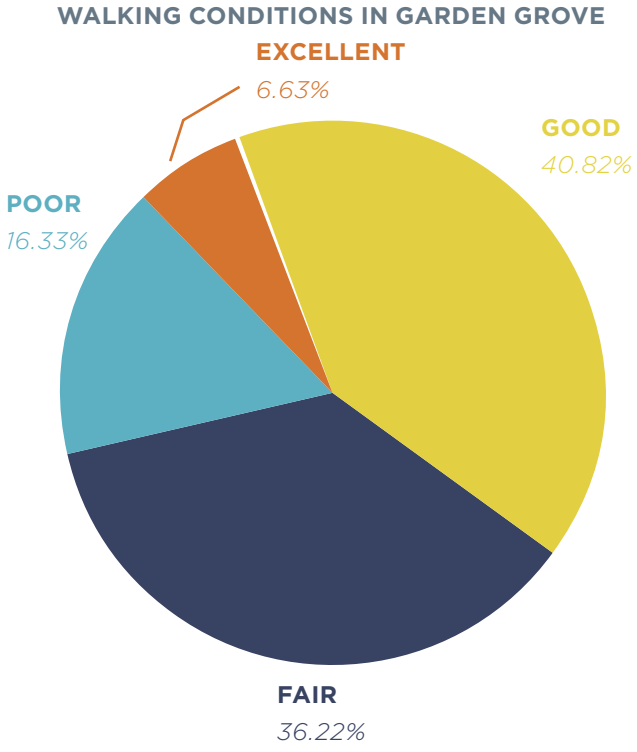
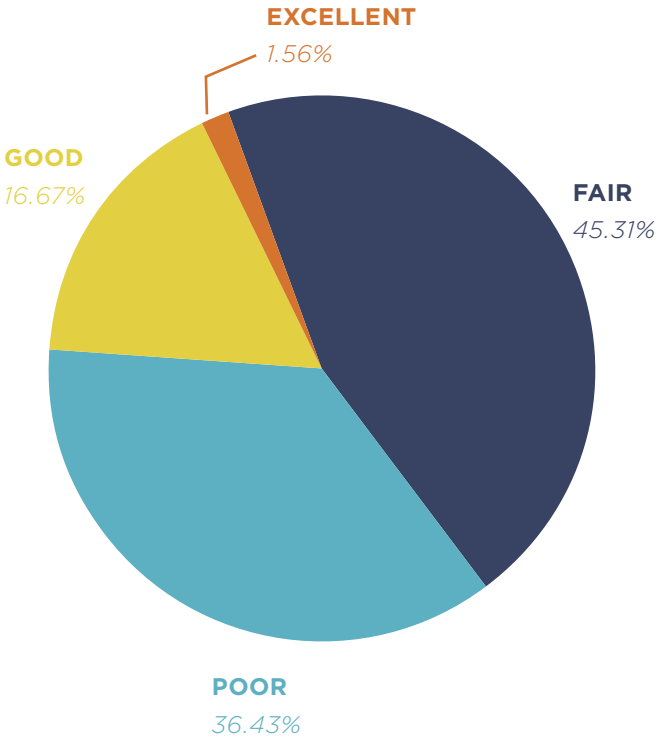


Figure 3-1: A sampling of survey results (continued on next page)

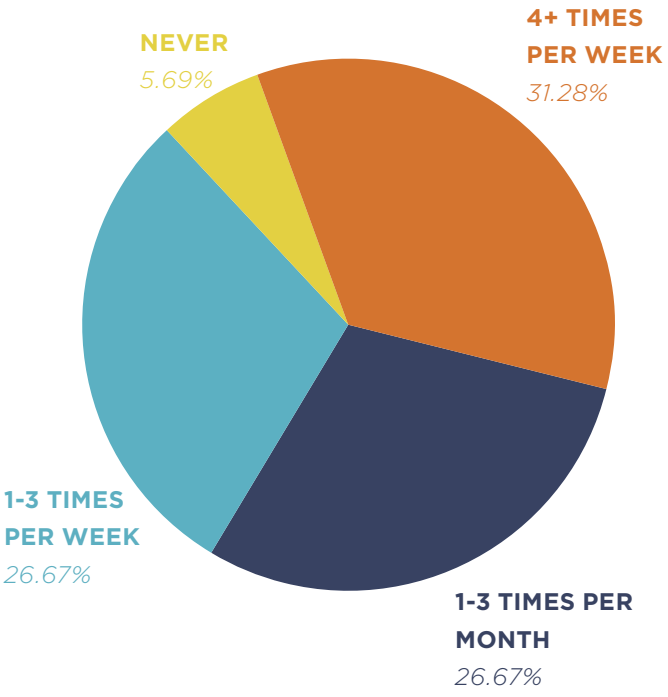
BIKING CONDITIONS IN GARDEN GROVE



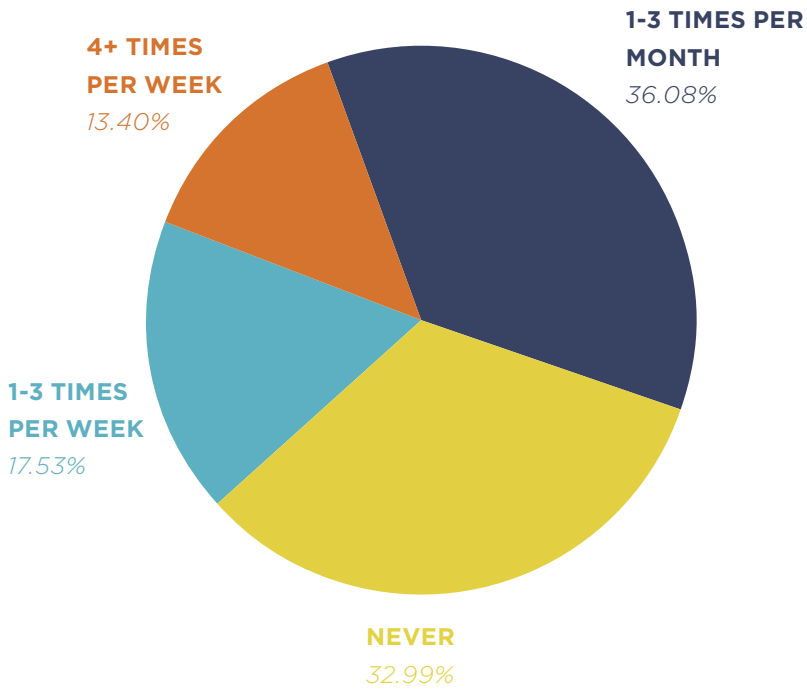
Only 31 percent of the 200 respondents walk for a significant distance four times or more per week, and 15 percent never do it. Twenty seven percent walk a significant distance one to three times per week and another 27 percent do it one to three times per month. Almost 33 percent of the 200 respondents never ride a bicycle, 36 percent do it one to three times per month, and 31 percent of the respondents ride their bicycle at least once a week. More than half of the respondents ride their bicycle with their children.

When asked what destination in Garden Grove respondents would like to get to by biking or walking, **the most common response was "No Particular Destination." They want to do it for fitness or leisure.** Shopping, park, swimming pool, recreation area, friends' houses, and unpaved, off-street paths/trails were other popular responses. The chart on the next page illustrates the percentage of respondents who chose each type of destination.

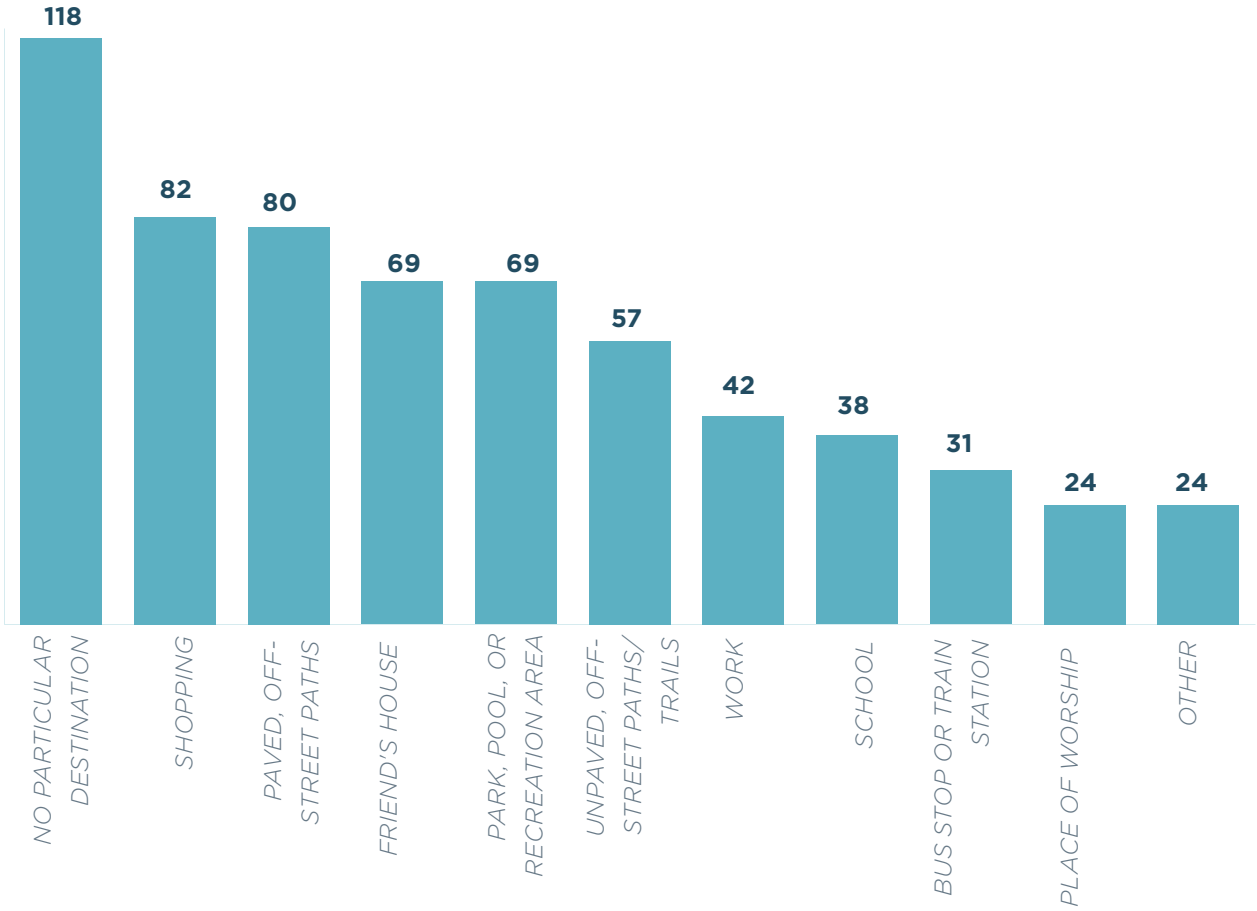
FREQUENCY OF WALKING A SIGNIFICANT DISTANCE



FREQUENCY OF BIKING



PREFERRED DESTINATIONS BY BICYCLE OR WALKING (NUMBERS INDICATE VOTES)



PUBLIC COMMENT SECTION

Respondents submitted 69 general comments and suggestions through the survey. The following provides highlights from those submissions.

"Our current street conditions were designed to accommodate traffic needs. What you're doing is great to encourage walking and biking in our city, hence more community engagement, healthier bodies, healthier environment."

"I love that the City of Garden Grove is taking an interest in creating a Bicycle Master Plan and that they are asking me what I think."

"We need to be able to connect to other existing city bicycle paths. Having safe bicycle paths and other alternative transportation paths would help improve the quality of life in Garden Grove which is what our city lacks."

"My children love to ride their bicycles and be outdoors, I am concerned for their safety whenever I take them out to ride. There is very limited accessibility to safe areas within the parks for them to ride (not on the grass) and for them to get to the park without being too close to traffic. I prefer driving over to Long Beach where they can ride safely, but I would prefer to be able to do this in the city we live in."

COMMUNITY IN MOTION PUBLIC INPUT THEMES

The *Community in Motion* study, part of Re:Imagine Garden Grove, involved using various public outreach methods to gather input on active transportation needs. These methods included small focus group, questionnaires, and other non-traditional methods such as a Participation Urban Assessment (PUA). The PUA enables participants to share and analyze their personal experiences; 149 people identified their most popular destinations and routes (Figure 3-2). As noted from the plan, these routes include:

Existing

- Santa Ana River Trail
- San Gabriel River Trail
- Coyote Creek Trail
- Pacific Coast Highway Trail and Lanes

Non-existing

- OCTA / PE ROW (selected across demographics and group types)
- Anaheim-Barber City Channel

Local streets that are currently used, should be included, and/or completed

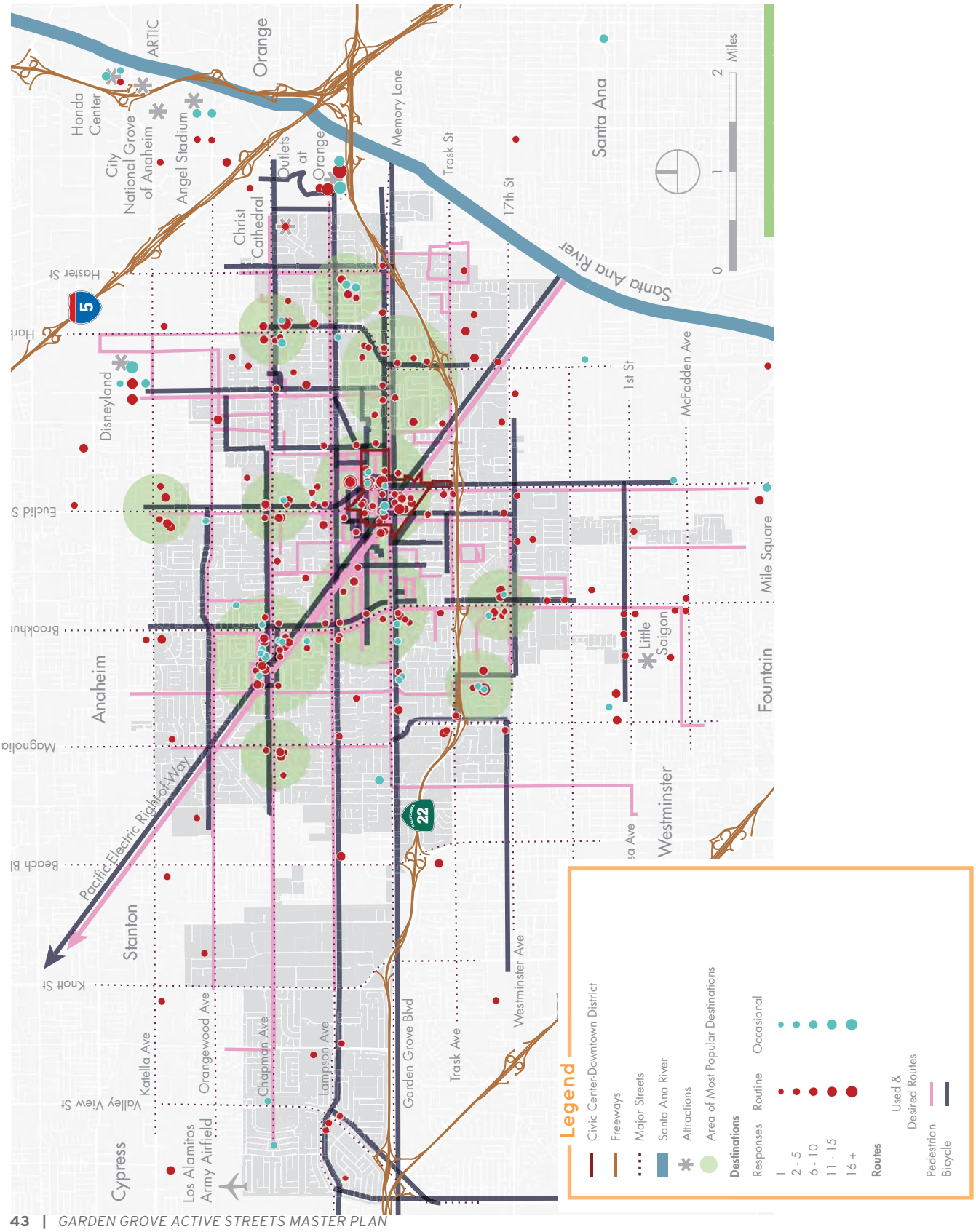
- Garden Grove Boulevard
- Harbor Boulevard
- Brookhurst Street
- Euclid Street
- Chapman Avenue
- Lampson Avenue
- Magnolia Street
- Haster Street
- Westminster Avenue

In general, the community would also like to see:

- Promenades incorporated into existing and future commercial developments
- Wider pedestrian paths and sidewalks
- Improved lighting for those using nonmotorized forms of transportation

High school students participating in a mapping exercise for Community in Motion.

Figure 3-2: Map of public participants' popular destinations and routes as identified in the Community in Motion Study.



Live, Work, Play, Learn Analysis

INTRODUCTION

The consultant team conducted a Live, Work, Play, Learn (LWPL) Analysis for the City of *Garden Grove Active Streets Master Plan*. LWPL identifies expected demand for bicycle and pedestrian facilities by overlaying the locations where people live, work, play, and go to school into a composite sketch of regional demand for biking and walking activity. When combined with the results of the "supply analysis" included within the overall bicycle suitability methodology, the composite results can be used to help identify areas in need of improvement and where there is high demand for bicycle and pedestrian facilities

This section summarizes the method and results of the LWPL Analysis for the project study area. Each analysis incorporates recent research on factors that impact bicycle and pedestrian comfort and safety, and was tailored to the City of Garden Grove using the data available from the City of Garden Grove and the U.S. Census.

METHODOLOGY

DATA SOURCES

The data inputs incorporated into the Live, Work, Play, Learn demand model can be found in Table 3-1, which displays each variable, its source, and notes on limitations of the available data and assumptions that were made.

OVERVIEW

The Live, Work, Play, Learn Analysis is an objective, data-driven process to identify the demand for bicycle and pedestrian facilities. The demand potential was measured based on the proximity and density of trip generators (such as homes and workplaces) and trip attractors (such as shopping centers, parks, and trails) to establish potential for walking and biking trips. The resulting models represent "heat maps" that displays hot spots based on the Live, Work, Play, and Learn factors. The heat map shows a composite of all the factors.

Table 3-1: Sources of the Live, Work, Play, Learn Model Inputs

Model Input	Source	Notes
Total Population	2010 U.S. Census	Summarized by census block
Total Employment	2010 U.S. Census	Summarized by census block
School Location	City of Garden Grove	Includes elementary, middle, and high schools; Colleges and Universities
Existing bicycle, pedestrian, and trail facilities	City of Garden Grove	N/A
Commercial Destinations	2010 U.S. Census	Commercial destinations are approximated by service sector jobs (Retail trade; arts, entertainment, recreation; accommodation and food services; other services)

DEMAND ANALYSIS

Demand analysis helps define citywide variation in bicycle and pedestrian demand. The analysis serves as the basis for understanding and visualizing suitability and is an integral part of the Garden Grove planning process.

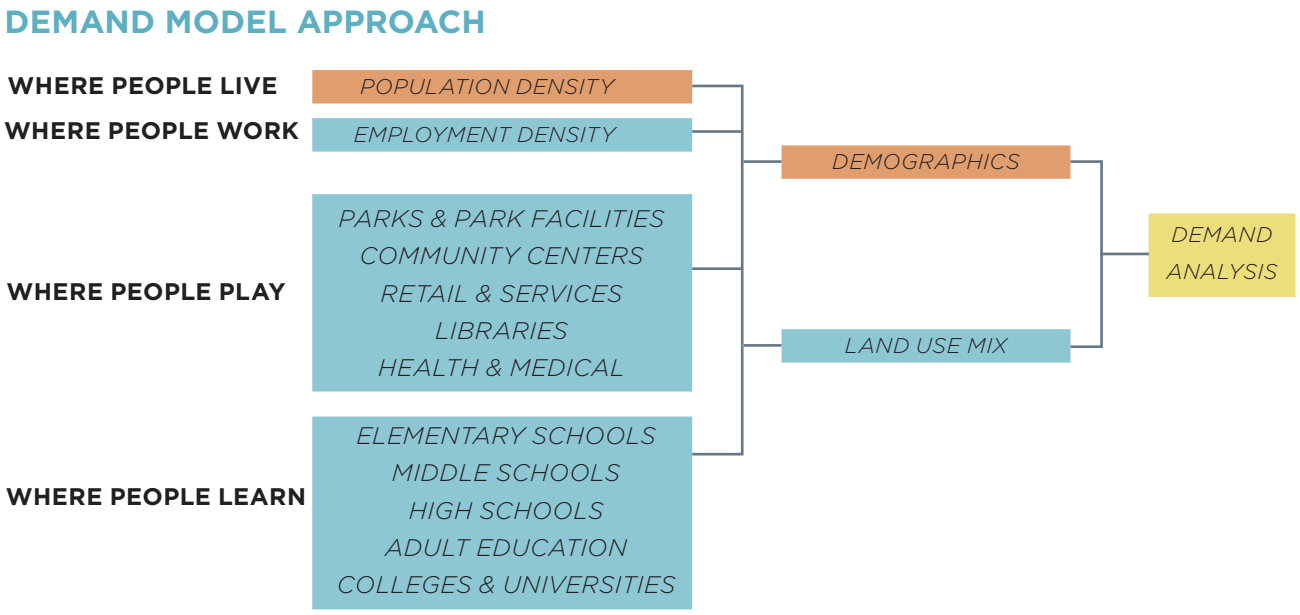
Demand analysis provides the following benefits

- Quantify factors that impact pedestrian activity, objectively identifying areas where pedestrians and bicyclists are most likely to want to be
- Provide for a geographically informed project list
- Guide community leaders and the public on one aspect of the project prioritization process

BACKGROUND AND OVERVIEW OF PEDESTRIAN SUITABILITY INDEX (PSI)

Demand analysis has its basis in a technique devised by prominent landscape architect, Ian McHarg. His influential book *Design With Nature* (1969) accentuated the importance of considering the natural environment when introducing new development and infrastructure. McHarg was an early pioneer of GIS analysis and established innovative techniques for route planning using photographic map overlays. McHarg asserted that to find the most suitable route, one must determine the least social cost, meaning factors that would impact social values would have to be considered. Once identified, each factor was mapped on individual transparent sheets using three different color shades to represent the level of social cost. The sheets were overlaid into a single stack revealing the most suitable route location. McHarg's photographic map overlay analysis paved the way for the foundation of modern day GIS models.

Figure 3-3: Demand model approach showing what factors were used to analyze demand



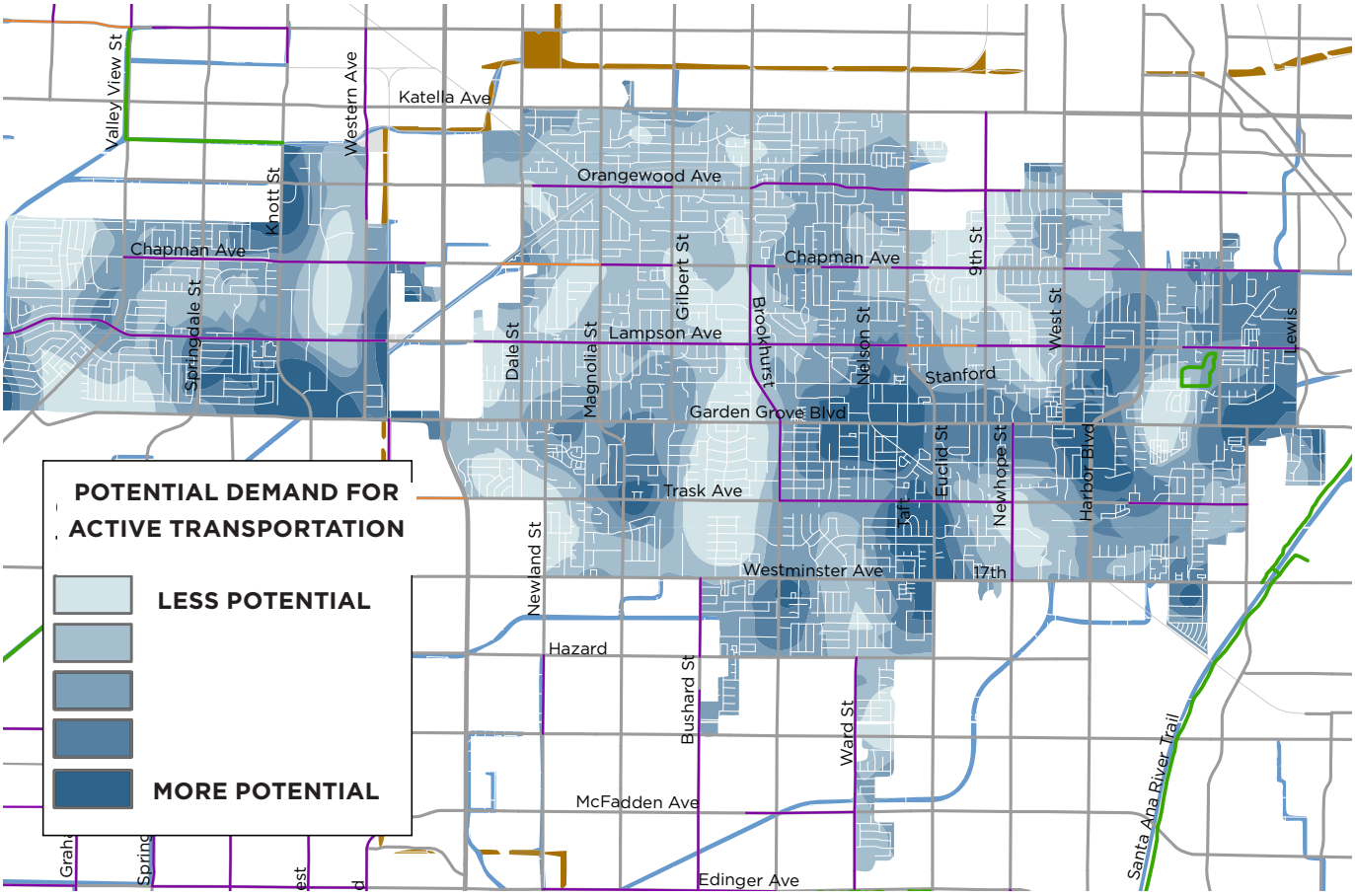
SCALE OF ANALYSIS

The demand model relies on spatial consistency to generate logical distance and density patterns. It is for this reason that all scores are aggregated to a central location at the census block level and then the census block corner. Census blocks closely represent the street network and therefore census block corners closely represent street corners, where foot and bicycle traffic is prevalent. This method is based on the Low-Stress Biking and Network Connectivity report (Mineta Transportation Institute, May 2012). The report discusses the benefits of using a smaller geographic setting for pedestrian and bicycle demand analyses rather than using more traditional traffic model features such as census block groups, census tracts, or traffic analysis zones. Due to the low speed of pedestrian movement, a much smaller geographic unit of analysis is needed.

SCORING METHOD

The demand model's scoring method is a function of density and proximity. Scores are a result of two complementing forces: **distance decay** – the effect of distance on spatial interactions yields lower scores for features farther away from other features; and **spatial density** – the effect of closely clustered features yields higher scores. Scores will increase in high feature density areas and if those features are close together. Scores will decrease in low feature density areas and if features are further apart.

Figure 3-4: Composite Demand Map



COMPOSITE DEMAND ANALYSIS RESULTS

After independently processing the features, the composite model is created and grouped into five demand classes using breaks in the data values. Areas that yielded highest demand include the confluence of high employment, high bus ridership, retail land uses, Downtown, and multi-family housing. Areas largely dominated by single-family homes, in spite of representing potential trip generators, represent the lowest demand areas. Moderate demand is seen between high demand areas, representing movement between destinations in these areas.

Figure 3-3 displays the demand analysis for the Live, Work, Play, and Learn factors. The areas shaded more deeply in blue represent areas with the highest potential for supporting active transportation relative to other colors on the ramp. This composite demand map (Figure 3-4) reveals the **greatest demand exists around Downtown Garden Grove.** This area extends further south toward Westminster Avenue and further east toward Harbor Boulevard. Additional areas of demand are found near Garden Grove Boulevard and Orangewood Avenue.

Maps by individual category for each factor can be found in Appendix D.

EQUITY ANALYSIS

This plan develops a connected bicycle and pedestrian network that serves all areas of Garden Grove, including areas that have a high density of historically underserved populations and relatively low levels of bicycle facilities. An equity analysis examined the existing distribution of bicycle facilities compared to the distribution of these populations.

For purposes of analysis, the following socio-economic indicators define underserved populations:

- Percentage of population that are people of color
- Percentage of households below 200 percent of poverty level (defined by the U.S. Census Bureau)
- Percentage of households within the census tract with no automobile available for daily use
- Population of people under 18 years of age
- Population of people over 64 years of age

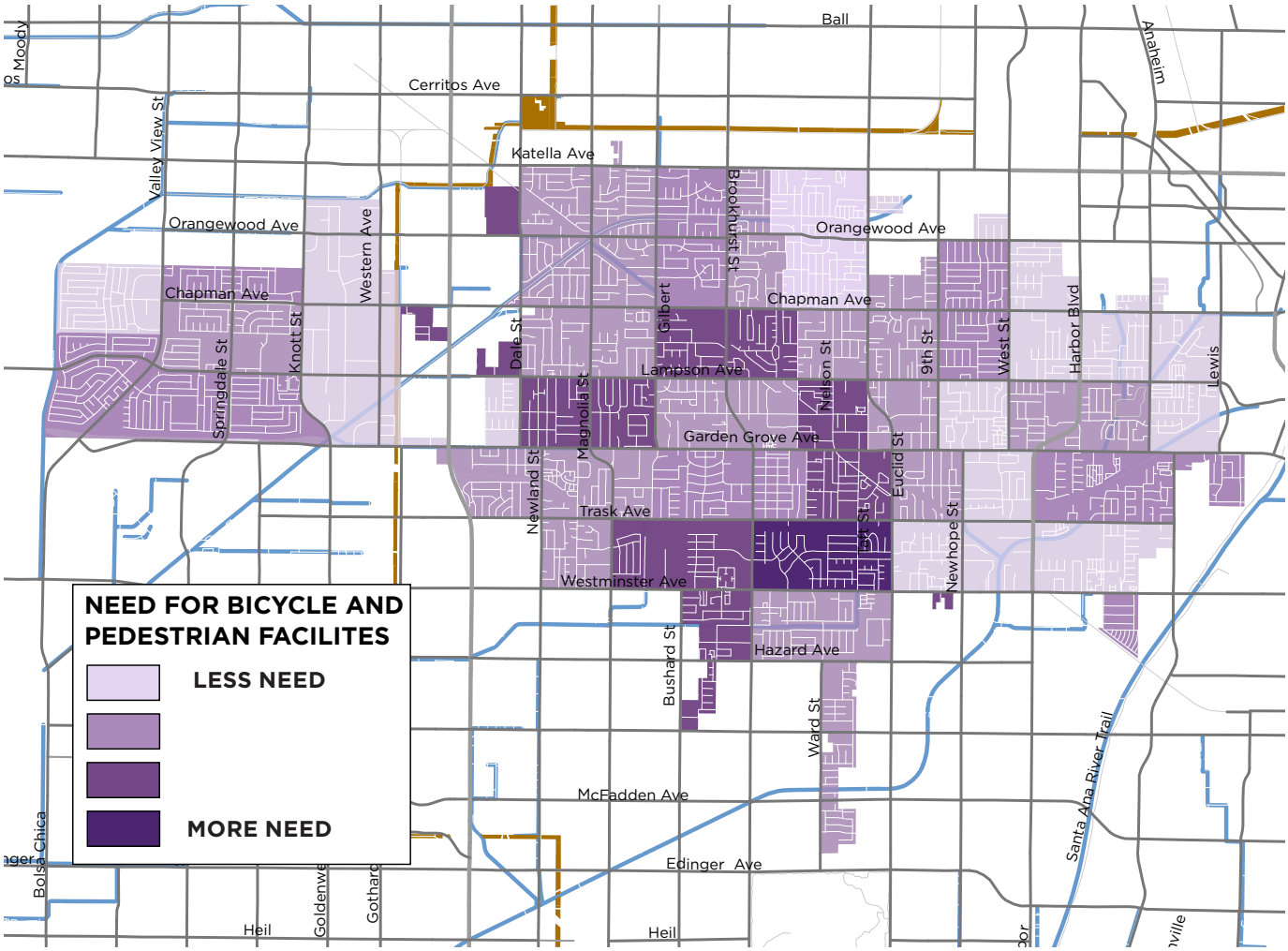
The analysis used a threshold for each of the above indicators, so that those census tracts that had a greater value than the mean value for any given indicator was given a score of one. For example, if a census tract had an above average number of people of color and an above average number of people 65 years of age or older, the census tract was given a score of two.The high equity score has a maximum possible score of five and a low equity score has a minimum possible score of zero.

A series of maps by individual category for each factor can be found in Appendix D.

EQUITY ANALYSIS RESULTS

The map on the following page (Figure 3-5) displays the equity analysis for the Live, Work, Play, and Learn factors. The areas shaded more deeply in purple represent areas with the highest level of need for bicycle and pedestrian facilities relative to other colors on the ramp. This composite equity map reveals that the **greatest concentration of need is the area enclosed by Westminster and Trask Avenues and Brookhurst and Euclid Streets**. This location scored greater than the city average on all indicators. The least need is in the area around Orangewood Avenue and Nelson Street. This area scored lower than the city average on all indicators. In general, the furthest east and west extents of the city have lower levels of need than the central part of the city.

Figure 3-5: Composite Equity Map



Though Garden Grove has an existing network of bicycle infrastructure, some cyclists don't currently feel comfortable riding on the street.

IV. POLICY RECOMMENDATIONS

"By far the greatest and most admirable form of wisdom is that needed to plan and beautify cities and human communities."
- Socrates

This chapter is the heart of the *Active Streets Plan*. **It outlines the specific policy recommendations towards making Garden Grove a more pedestrian and bicycle friendly community.** The recommended policies were developed with consideration for the needs identified in Chapter III and this plan's goals.

The City of Garden Grove aims to increase the use of active transportation (e.g., walking, biking, and using other non-motorized devices) by residents and visitors of all ages and abilities. A comprehensive evaluation of existing planning efforts, in addition to input received from stakeholders, guided the project team in crafting the vision related biking and walking that is noted herein this section.

Goals, objectives, and policies direct the way public improvements are made, where resources are allocated, and how programs are operated. They should support the city's vision and describe the most important aspects of the city's priorities.

This chapter includes the plan's

- Goals
- Objectives
- Policy recommendations

Goals, Objectives, and Policies

The following goals, objectives, and policies are consistent with and support the *Garden Grove General Plan 2030*.

GOAL 01 MOBILITY & ACCESS

Increase and improve pedestrian and bicycle access to employment centers, schools, transit, recreation facilities, and other community destinations across the City of Garden Grove for people of all ages and abilities.

Objective 1.A: Increase the mode share of pedestrian and bicycle travel to 15 percent for trips of one mile or less by 2020.

- Policy 1.A.1: Accommodate the need for pedestrian and bicycle mobility, accessibility, and safety when planning, designing, and developing transportation improvements. Such accommodations could include:
  - a. Reviewing capital improvement projects to make sure that needs of non-motorized travelers are considered in planning, programming, design, reconstruction, retrofit, maintenance, construction, operations, and project development activities and products,
  - b. Creating and implementing an Americans with Disabilities Act (ADA) Transition Plan that includes actions such as retrofitting street corners, crossings, and transit stops that do not meet current accessibility standards.

Objective 1.B: Eliminate barriers to pedestrian and bicycle travel.

- Policy 1.B.1: Identify opportunities to improve or add pedestrian and bicycle crossings of State Route 22 (Garden Grove Freeway), State Route 39 (Beach Boulevard), and major arterials.
- Policy 1.B.2: Identify gaps in the pedestrian and bicycle facilities network and needed improvements to and within key activity centers and community areas, and define priorities for eliminating these gaps by making needed improvements.

Objective 1.C: Work with transit providers to develop high quality pedestrian and bicycle accessible transit stops, stations, and lines.

- Policy 1.C.1: Coordinate with OCTA to establish appropriate designs for transit stops and station accessways.

Objective 1.D: Regularly evaluate pedestrian and bicycle activity levels, facilities, and programs.

- Policy 1.D.1: Develop and implement an annual evaluation program to count non-motorized roadway users and survey the community on pedestrian and bicycle facilities and programs.

GOAL 02 SAFETY

Improve safety for active transportation users through the design and maintenance of sidewalks, streets, intersections, and other roadway improvements such as signage, lighting, and landscaping; as well as best practice non-infrastructure programs to enhance and improve the overall safety of people walking and biking.

Objective 2.A: Eliminate fatalaties and serious injuries in collisions involving walking and biking.

- Policy 2.A.1: Annually review reported collisions involving people walking and people biking to inform ongoing planning efforts, track effectiveness of new projects, and prioritize improvements at locations throughout the city.
- Policy 2.A.2: Identify opportunities to reduce traffic exposure for people walking by reducing crossing distances and/or providing safe and convenient pedestrian facilities.
- Policy 2.A.3: Identify opportunities to reduce traffic exposure for people on bicycles by removing conflict zones, providing barriers between modes of roadway users, redesigning intersections to accommodate bicycle travel, and/or providing other dedicated facilities.

Objective 2B: Work to improve walking and biking conditions at intersections with the highest rates of collisions.

- Policy 2.B.1: Coordinate with Caltrans to provide median refuge islands along Beach Boulevard (State Route 39) and to enhance the pedestrian and bicycle crossings at State Route 22's on- and off-ramps.

GOAL 03 INFRASTRUCTURE AND SUPPORT FACILITIES

Maintain and improve the quality, operation, and integrity of the pedestrian and bicycle network infrastructure that allows for convenient and direct connections throughout Garden Grove. Increase the number of high quality support facilities to complement the network, and create public pedestrian and bicycle environments that are attractive, functional, and accessible to all people.

Objective 3.A: Incorporate pedestrian and bicycle facilities and amenities into private and public development projects.

- Policy 3.A.1: Support and encourage local efforts to require the construction of pedestrian and bicycle facilities and amenities, where warranted, as a condition of approval of new development and major redevelopment projects.
- Policy 3.A.2: Facilitate pedestrian and bicycle travel during development projects through public and private construction zones.
- Policy 3.A.3: Adopt, establish, and implement roadway and streetscape design guidelines that address topics such as bikeways, sidewalk zones, street corners, and street crossings, (e.g. National Association of City Transportation Officials (NACTO) Urban Street Design Guide).

Objective 3.B: Adopt a citywide Complete Streets Policy that facilitates design and construction of streets that accommodate the needs of all people.

- Policy 3.B.1: Provide citywide guidance that requires all roadway construction projects to include adequate facilities for people biking, walking and using wheelchairs unless the project has specific extenuating circumstances that prevent such facilities from installation.
- Policy 3.B.2: Facilitate the creation of street designs and public realm projects that enhance and beautify the surrounding areas, provide

welcoming spaces for people traveling on foot and on bicycle, and support sustainable development practices like native drought-tolerant plants, water infiltration, and context-sensitive designs.

Objective 3.C: Provide maintained walkways and bikeways that are clean, safe, and attractive.

- Policy 3.C.1: Provide routine maintenance of pedestrian and bicycle network facilities, as funding and priorities allow. Programs to support these maintenance efforts could include:
  - a. Sidewalk repair programs, including incentives to property owners to improve adjoining sidewalks beyond any required maintenance,
  - b. Bicycle rack installation programs, including city-funded installation of bicycle racks in commercial corridors, schools, and other public buildings and/or incentives to property owners to install bicycle parking on private property,
  - c. A web-based or phone-based program that allows the general public to request maintenance and improvements for the public right of way, and
  - d. "Adopt a Trail" programs that involve volunteers for trail clean-up and other maintenance.
- Policy 3.C.2 Work with property owners of vacant land adjacent to public walkways to identify and implement beautification opportunities on the vacant property, such as landscaping, fencing, and/or art installations.
- Policy 3.C.3: Develop, establish, and enforce policies that maintain safe, convenient travel by foot and bicycle. Programs to support these efforts could include:
  - a. A set of standard plans and policies for private construction companies that maintain safe, convenient pedestrian and bicycle travel,
  - b. A program for city agencies and contractors to ensure the installation of proper temporary signage, detours, and closure notices that maintain the safety of the walking and biking public, and
  - c. An enforcement program for city construction inspectors to ensure construction companies comply citywide.

GOAL 04 NON-INFRASTRUCTURE PROGRAMS

Increase awareness of the value of pedestrian and bicycle travel for commute and non-commute trips through encouragement, education, enforcement, and evaluation programs that support walking and biking.

Objective 4.A: Establish and enhance safe routes to and from schools that will enable and encourage more students to walk or ride a bicycle or skateboard to/from school.

- Policy 4.A.1: Identify and develop education and encouragement projects working with the school community through the Safe Routes to School program. This program could include:
  - a. Identifying Capital Improvement Programs (CIPs), working with the school community,
  - b. Applying for state and federal Safe Routes to School funding and other grants to construct capital improvements and implement educational and encouragement programs, and
  - c. Developing and distributing maps that identify the most appropriate routes for students to walk or ride a bicycle to/from school.

Objective 4.B: Establish and enhance a Safe Routes for Seniors program that will enable and encourage more elderly residents and visitors to walk and ride a bicycle to services, access

transit, and complete other active trips safely and conveniently.

- Policy 4.B.1: Work with the senior community to identify and address barriers to increased walking, biking, and transit use.
- Policy 4.B.2:Identify and develop education and encouragement programs working with seniors through the Safe Routes for Seniors program. This program could include:
  - a. Identifying Capital Improvement Programs (CIPs) working with the senior community, prioritizing access to key senior origin and destination points, and
  - b. Developing senior pedestrian and bicycle mobility and safety trainings in conjunction with senior centers and senior organizations.

Objective 4.C: Introduce and promote education, encouragement, and outreach for pedestrian and bicycle programs.

- Policy 4.C.1: Support programs that encourage and promote pedestrian and bicycle travel. These programs could include:
  - a. Creation of a social marketing campaign to promote the benefits of active lifestyles, active transportation, walking, biking, and focusing on the role of walking or biking in promoting health and lowering obesity,
  - b. Development and implementation of effective safety programs for adults and youths to educate people driving, walking, and biking of their rights and responsibilities, and
  - c. Informing interested agencies and organizations about available education materials and assistance such as those programs administered by the National Safe Routes to School Partnership.

Objective 4.D: Establish a Safe Routes to Transit program that will facilitate walking and biking to transit.

- Policy 4.D.1: Identify and implement Safe Routes to Transit projects.

Objective 4.E: Create a community-identified brand for the Pacific Electric Right-of-Way Trail.

- Policy 4.E.1: Identify and implement a brand and marketing campaign/identity for the Pacific Electric Right-of-Way Trail.

GOAL 05 EQUITY

Improve accessibility for all people walking and biking through equity in public engagement, service delivery, and capital investments.

Objective 5.A: Assist neighborhoods that desire to improve pedestrian access to, from, and within their neighborhood.

- Policy 5.A.1: Develop programs that empower and enable neighborhoods and groups of residents to identify, prioritize, and move forward with pedestrian or bicycle safety improvements in their area, including neighborhood traffic calming.

Objective 5.B: Identify low-income and transit dependent communities that require pedestrian or bicycle access to, from, and within their neighborhood.

- Policy 5.B.1: Implement pedestrian and bicycle projects that provide access to local services, schools, recreation centers, shopping, and transit identified in the Community in Motion study.
- Policy 5.B.2: Improve pedestrian and bicycle access to facilities that serve low-income and transit dependent community members.
- Policy 5.B.3: Improve pedestrian and bicycle connections between the eastern and western parts of the city.

GOAL 06 IMPLEMENTATION

Implement the *Active Streets Master Plan* over the next 20 years.

Objective 6.A: Determine funding needs for expanding and improving pedestrian and bicycle facilities and programs, and seek funding for those needs.

- Policy 6.A.1: Develop and update a 20-year Financial Plan on a five year basis.
- Policy 6.A.2: Apply for local, State, and Federal grants for major pedestrian and/or bicycle projects and programs, including the Active Transportation Program and Safe Routes to School.
- Policy 6.A.3: Develop requirements and incentives for private property owners to incorporate pedestrian- and bicycle-friendly features into new projects.
- Policy 6.A.4: Explore partnerships with private and public organizations (e.g., the Orange County Health Care Agency) to fund incentive programs and events that encourage walking and biking.

Objective 6.B: Make every effort to consider pedestrian and bicycle projects into the City's Capital Improvement Program (CIP) that will create a more walkable and bikeable environment in Garden Grove.

- Policy 6.B.1: Identify the projects that were reviewed and implemented in the CIP annual report.
- Policy 6.B.2:Prioritize the top ten projects in this plan for inclusion in the CIP.
- Policy 6.B.3: Identify dedicated pedestrian and bicycle project funding by 2021.

Objective 6.C: Ensure pedestrian and bicycle transportation is coordinated within the city and externally.

- Policy 6.C.1: Designate a City Active Transportation Coordinator responsible for coordinating pedestrian and bicycle transportation within the city and externally. The Active Transportation Coordinator will be a regular participant on technical review committees and attend meetings with decision-making bodies. They will also have the authority to comment on private and public development projects as it relates to implementation of the *Active Streets Master Plan*'s visions, goals, objectives, and policies.

Objective 6.D: Review the *Active Streets Master Plan* recommendations at regular intervals to ensure it reflects the most current priorities, needs, and opportunities.

- Policy 6.D.1: Update the *Active Streets Master Plan* every five years to identify new facility improvements and programmatic opportunities as the pedestrian and bicycle networks develop, assess their feasibility, gauge public support, identify funding sources, and develop implementation strategies.

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Garden Grove residents and visitors experience riding on the pilot segment of the PE ROW Trail at the Garden Grove Open Streets event.

V. NETWORK RECOMMENDATIONS

Planning of the automobile city focuses on saving time. Planning for the accessible city, on the other hand, focuses on time well spent.

-- Robert Cervero, Chair of City & Regional Planning, UC Berkeley

This chapter details the infrastructure improvements recommended to create a safe, accessible, and connected pedestrian and bicycle network in Garden Grove. **A diverse mix of facilities are recommended to create comprehensive network, including sidewalks, crossing improvements, on-road bicycle facilities, and shared-use paths.**

The recommendations directly reflect the information collected and presented in the *Existing Conditions* and *Needs Analysis* related to existing planning efforts, safety, public input, best practices, demand, equity, and the City of Garden Grove's high aspirations for becoming a premiere bike-friendly community.

This chapter contains:

- Bikeway Recommendations
- Pedestrian Recommendations

Infrastructure Recommendations

Streets are an integral part of everyday life and public space. The term "Complete Streets" refers to designing streets for people of all ages and abilities using various travel modes such as walking, bicycling, transit, and driving. This chapter is organized into bicycle network recommendations and pedestrian recommendations.

BIKEWAY NETWORK RECOMMENDATIONS

A variety of on and off-street bicycle facilities are recommended to accommodate 1) the range of abilities and comfort levels of bicyclists; 2) the range of conditions for bicycling on different roadway environments; and 3) local preferences identified through the public input process. The recommended bicycle network is made up of the following core types of facilities:

- Shared-use Paths
- Bicycle Lanes
- Buffered Bicycle Lanes / Separated Bikeway
- Signed Bicycle Routes
- Neighborhood Greenways

PEDESTRIAN RECOMMENDATIONS

The pedestrian network should accommodate people with a variety of needs, abilities, and possible impairments. The recommendations in this chapter will help improve pedestrian access and comfort and fall into three categories:

- Crossings and intersections
- Traffic Signals and Warning Beacons

Cyclists crossing the street in garden grove

Main Street in Downtown Garden Grove has a comfortable and inviting pedestrian environment

Bicycle Facility Types

The following bikeway recommendations include a number of treatments which are described below in greater detail. As shown in the description, Class III Bicycle Routes with signage and pavement markings or Class II Bicycle Lanes, could be implemented and in the future improved to a neighborhood greenway or Class IV Separated Bikeway, respectively.

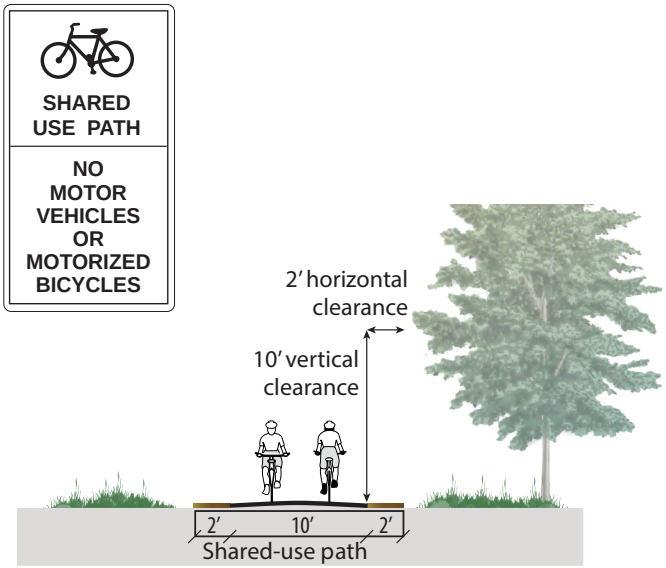
SHARED-USE PATH (CLASS I)

A shared use path allows for two-way, off-street bicycle use and also may be used by pedestrians, skaters, wheelchair users, joggers and other non-motorized users. In Garden Grove, opportunities for shared-use paths can be found along rail corridors, stormwater channels, utility corridors, and in parks where there are few conflicts with motorized vehicles. Path facilities can also include amenities such as lighting, signage, and fencing (where appropriate). Key features of shared use paths include:

- Frequent access points from the local road network
- Directional signs to direct users to and from the path
- A limited number of at-grade crossings with streets or driveways
- Terminating the path where it is easily accessible to and from the street system
- Separate treads for pedestrians and bicyclists when heavy use is expected

Shared-use path in Garden Grove makes for more relaxed cycling

CLASS I
Shared-Use Path
Provides a completely separated right of way for the exclusive use of bicycles and pedestrians with crossflow minimized.



14′min. total width recommended/preferred
(10′ paved width, 2′ clear shoulders)
8′ min. paved width required
2′ gravel shoulders required
12′ min. total width required

Caltrans Class I Shared-use Path design guidelines

Standard Class II bicycle lane

Class II buffered bicycle lane

BICYCLE LANES (Class II)

A bicycle lane is a portion of the roadway that has been designated by striping, signing, and pavement markings for the preferential and exclusive use of bicyclists. Bicycle lanes are always located on both sides of the road (except one way streets), and carry bicyclists in the same direction as adjacent motor vehicle traffic.

BUFFERED BICYCLE LANES (Class II)

Bicycle Lanes can be enhanced by adding buffer stripping. Buffered bicycle lanes are bicycle lanes paired with a designated buffer space, separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane.

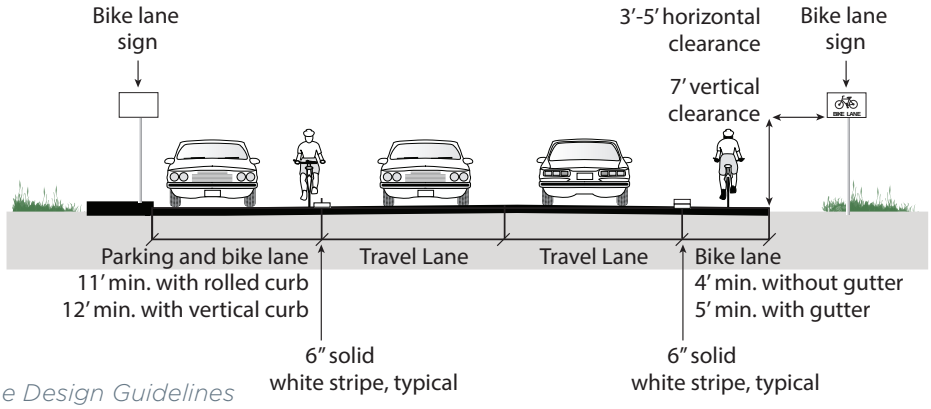
Buffered bicycle lanes follow general guidance for buffered preferential vehicle lanes as per CA MUTCD guidelines.

Buffered bicycle lanes are designed to increase the space between the bicycle lane and the travel lane and/or parked cars, with a goal of providing more comfortable conditions for bicyclists. This treatment is appropriate for bicycle lanes on roadways with high motor vehicle traffic volumes and speed, adjacent to parking lanes, or a high volume of truck or oversized vehicle traffic.

BICYCLE ROUTES (Class III)

Bicycle routes generally employ bikeway signage, and may also use pavement markings, to guide bicyclists to popular destinations on low-volume, bike-friendly roadways. Bicycle routes serve as an alternative to roads that are less comfortable for cycling due to higher motor vehicle volumes and/or speeds. They were chosen as part of the network because of the importance of overall system

CLASS II
Bike Lane
Provides a striped lane for one-way bike travel on a street or highway.



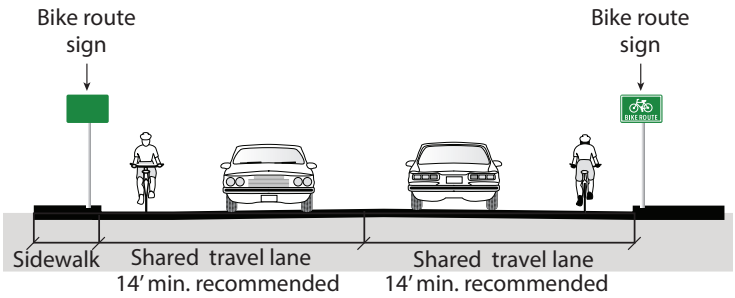
Caltrans Class II Bicycle Lane Design Guidelines

connectivity and connectivity to destinations such as parks, neighborhoods, and schools.

A shared lane marking (SLM), or "bicycles on pavement," can be used to encourage bicycle travel and proper positioning within a shared travel lane. Placed in a linear pattern along a corridor (typically every 100-250 feet), shared lane markings make motorists more aware of the potential presence of cyclists; direct cyclists to ride in the proper direction; and remind cyclists to ride further from parked cars to avoid “dooring” collisions. The Garden Grove Police Department (GGPD) has expressed support for SLMs - claiming it is easier to enforce traffic laws when bicycle infrastructure is more visible (see Appendix F for more comments from GGPD) in addition to bike route signs. In constrained conditions, the SLMs are placed in the middle of the lane. On a wide outside lane, the SLMs can be used to promote bicycle travel to the right of motor vehicles. In all conditions, SLMs should be placed outside of the door zone of parked cars and used on roadways with speed limits of 35 mph or less (below 30 mph preferred).

CLASS III
Bike Route

Provides for shared use with pedestrian or motor vehicle traffic, typically on lower volume roadways.



Caltrans Class III Bicycle Route Design Guidelines

NEIGHBORHOOD GREENWAYS (Class III)

Neighborhood greenways, are generally low-volume, low-speed neighborhood streets around core areas of the city modified to enhance bicyclist comfort and safety by using treatments such as signage, pavement markings, traffic calming and/or traffic reduction. Pedestrian and bicycle cut-throughs can also be integrated into the neighborhood greenway network to allow for continuous bicycle travel off of major corridors. These treatments allow through bicycle movements while discouraging motorized through-traffic.

Jurisdictions throughout the country use a wide variety of strategies to determine where specific treatments are applied. While no federal guidelines exist, several best practices have emerged. At a minimum, neighborhood greenways should include distinctive pavement markings and wayfinding signs.

Traffic conditions on neighborhood greenways should be monitored to provide guidance on when and where treatments should be implemented. When motor vehicle speeds and volumes or bicyclist delay exceed the preferred limits, additional treatments should be considered. Effective traffic calming measures to consider are curb extensions, chicanes, and lane narrowing.

Examples of neighborhood greenways, Berkeley

A separated bikeway provides a physical separation from motor vehicles.

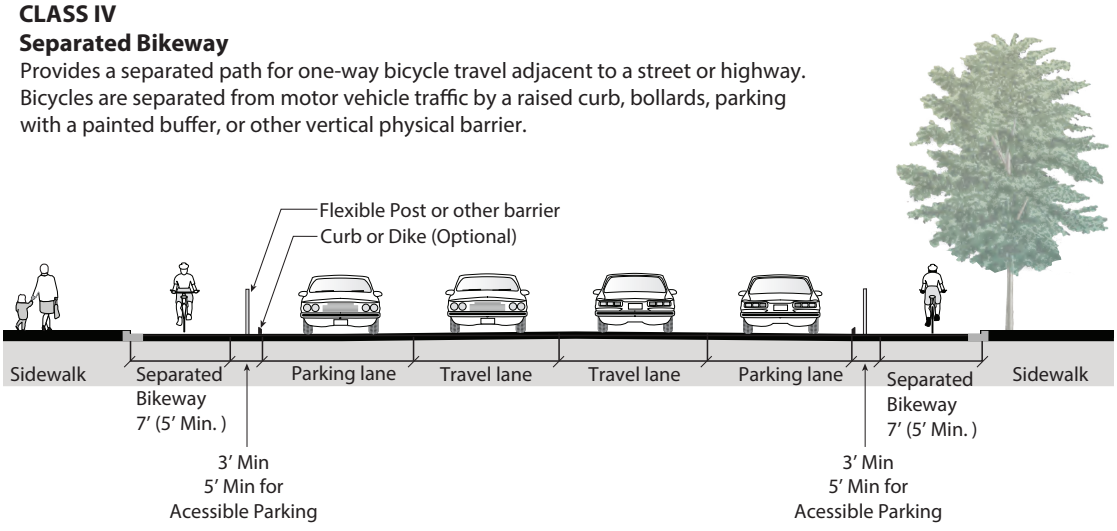
SEPARATED BIKEWAY (CLASS IV)

A separated bikeway or cycle track is an exclusive bicycle facility that combines the user experience of a separated path with the on-street infrastructure of a conventional bicycle lane. A separated bikeway is physically separated from motor traffic and distinct from the sidewalk. Separated bikeways have different forms but all share common elements—they provide space that is intended to be exclusively or primarily used by bicycles, and are separated from motor vehicle travel lanes, parking lanes, and sidewalks. In situations where on-street parking is allowed, separated bikeways are located to the curb-side of the parking (in contrast to bicycle lanes).

Separated bikeways may be one-way or two-way, and may be at street level, intermediate level, or sidewalk level. If at sidewalk level a curb or median separates them from motor traffic, while different pavement color/texture separates the separated bikeway from the sidewalk. In the intermediate level a curb or median on both sides separates cyclists from motor traffic and from the sidewalk. If at street level, they can be separated from motor traffic by raised medians, on-street parking or bollards.

By separating bicyclists from motor traffic, separated bikeway can offer a higher level of comfort than bicycle lanes and are attractive to a wider spectrum of the public. Intersections and approaches must be carefully designed to promote safety and facilitate left-turns from the right side of the street.

In December 2015, Caltrans published a design information bulletin providing design guidance for separated bikeways. Incorporation into the Highway Design Manual is ongoing.



Caltrans Class IV Separated Bikeway design adjacent to on-street parking. Additional design guidance provided in Caltrans Design Information Bulletin Number 89, December 30, 2015.

INTERSECTION TREATMENTS

There are a variety of intersection treatments that can be applied to make a safer and more comfortable crossing environment for bicyclists. First, bicycle lanes should be extented up to and potentialy through an intersection. At constrained intersections, green paint can be used to identify conflict areas where right-turning traffic needs to merge through a bicycle lane. As seen in the example below, green paint can also be used

Bicycle-friendly intersection treatments including paint, bicycle signals, and bicycle boxes

to delineate the preferred path of travel for the bicyclist through an intersection. Image on the upper right corner shows a bicycle box, which help bicyclists on a safe way to get ahead of traffic during the red signal phase.

WAYFINDING

Successful wayfinding orients people to their surroundings and informs them on how to best navigate to their destination along preferred bicycle routes. Apart from serving as a guide to destinations, wayfinding increases users' comfort and accessibility to the bikeway network. It can offer a sense of safety – familiarizing users with the

Wayfinding signage examples: Bicycle wayfinding is not only an important for navigating the bicycle network, but also as an encouragement tool that makes people aware of how easy it can be to bicycle to popular destinations.

network and overcoming "barriers to entry" for people who are not frequent bicyclists.

Basic elements to include in wayfinding signs include destinations, distances, and “riding time”. Often the inclusion of riding times dispels common overestimations of time and distance thus encouraging walking or cycling instead of defaulting to the car. Signs should be placed at decision points (where the navigator must choose whether to continue their route or change direction) along bike routes and bicycle boulevards or neighborhood greenways.

BICYCLE PARKING

Bicycle parking can be categorized into short-term and long-term parking. Bicycle racks are the preferred device for short-term bike parking. Though they may have a variety of designs, racks must have two points of connection between the bicycle and rack. These racks serve people who leave their bicycles for relatively short periods of time - typically for shopping, errands, eating or recreation. Bicycle racks provide a high level of convenience and moderate level of security.

Long-term bike parking includes bike lockers and bike rooms and serve people who intend to leave their bicycles for longer periods of time. Long-term parking is typically found in public transit stations and commercial buildings. These facilities provide a high level of security but are less convenient than bicycle racks.

For specific bicycle parking design specifications and placement recommendations, see the Association of Pedestrian and Bicycle Professionals (APBP) Essentials of Bike Parking: Selecting and Installing Bike Parking that Works (2015).

APBP Essentials of Bike Parking: Selecting and Installing Bike Parking that Works (2015)

Short-term parking: Long Beach's art racks are more noticable than standard bike racks, and add a cultural element to bike parking

COMPLETE STREETS

A Complete Street is a transportation facility that is planned, designed, operated, and maintained to provide safe mobility for all users, including bicyclists, pedestrians, transit vehicles, freight, and motorists, appropriate to the function and context of the facility.

In addition to general purpose vehicular travel lanes and sidewalks, a Complete Street may include items such as bicycle lanes or shoulders, bus lanes, transit stops, crosswalks, median refuges, curb extensions, appropriate landscaping, and other features that add to the usability of the street.

A Complete Street in Boston, Massachusetts

COMPLETE STREET STUDY CORRIDOR

Not all Complete Streets look or function alike. Complete Streets in Garden Grove will serve to balance land use, mobility, modal priority, relationships to other streets in the network and land limitations. As such, there is considerable flexibility in determining the appropriate amenities and cross sections.

In general, as speeds and volumes on a roadway increase, so does the need for separation of non-motorized users from motor vehicles. This plan has identifed four Complete Street corridors to be further evaluated and studied: Garden Grove Boulevard, Westminster Avenue, Euclid Street (between Lampson and Trask Avenues) and Harbor Boulevard.

Example of a typical Complete Streets corridor

Bikeway Network

Recommended facilities for bicyclists strive to create a safe and comfortable biking environment for users of all ages and abilities and reflect national best practices in considering conditions such as traffic volumes, traffic speeds, and available roadway rights-of-way.

Bikeway network development utilized a number of different analyses, described in the *Existing Conditions* section of this plan, and planning judgment to determine what project types are warranted along roadways throughout Garden Grove. The ultimate goal of the bikeway network is to provide connectivity to destinations such as retail centers, job centers, schools, and recreation opportunities for all residents.

Recommendations are considered planning-level, meaning that they should be used as a guide when implementing recommendations. In many cases, more detailed design studies will be required to examine specific site conditions and develop specific designs that reflect local conditions and constraints.

These maps in this plan reflect the long-term vision for the network—implementation will not happen overnight. However, the plan also contains an Implementation Chapter which provides a roadmap for executing recommendations in a logical manner.

Prior to implementing any infrastructure recommendations, current best practices should be reviewed to assure the most up-to-date design standards are used.

NETWORK RECOMMENDATIONS

In total, 55.3 miles of new bikeway facilities, 9.3 miles of updated bikeway facilities, and 20.4 miles of study corridors are recommended to improve biking conditions across Garden Grove. Tables 5-1 and 5-2 on this page provide a summary of bicycle facility improvements by linear miles shown on the map in Figure 5.1.

Table 5-3 provides additional details for the proposed Class I Path facilities. Tables 5-4 through 5-8 provide a summary by roadway segment for the proposed on-street bikeway facilities and study cooridors. In addition to the location and length of new or updated facility the tables provide notes and a rationale if a proposed bikeway was identified in a previous plan.

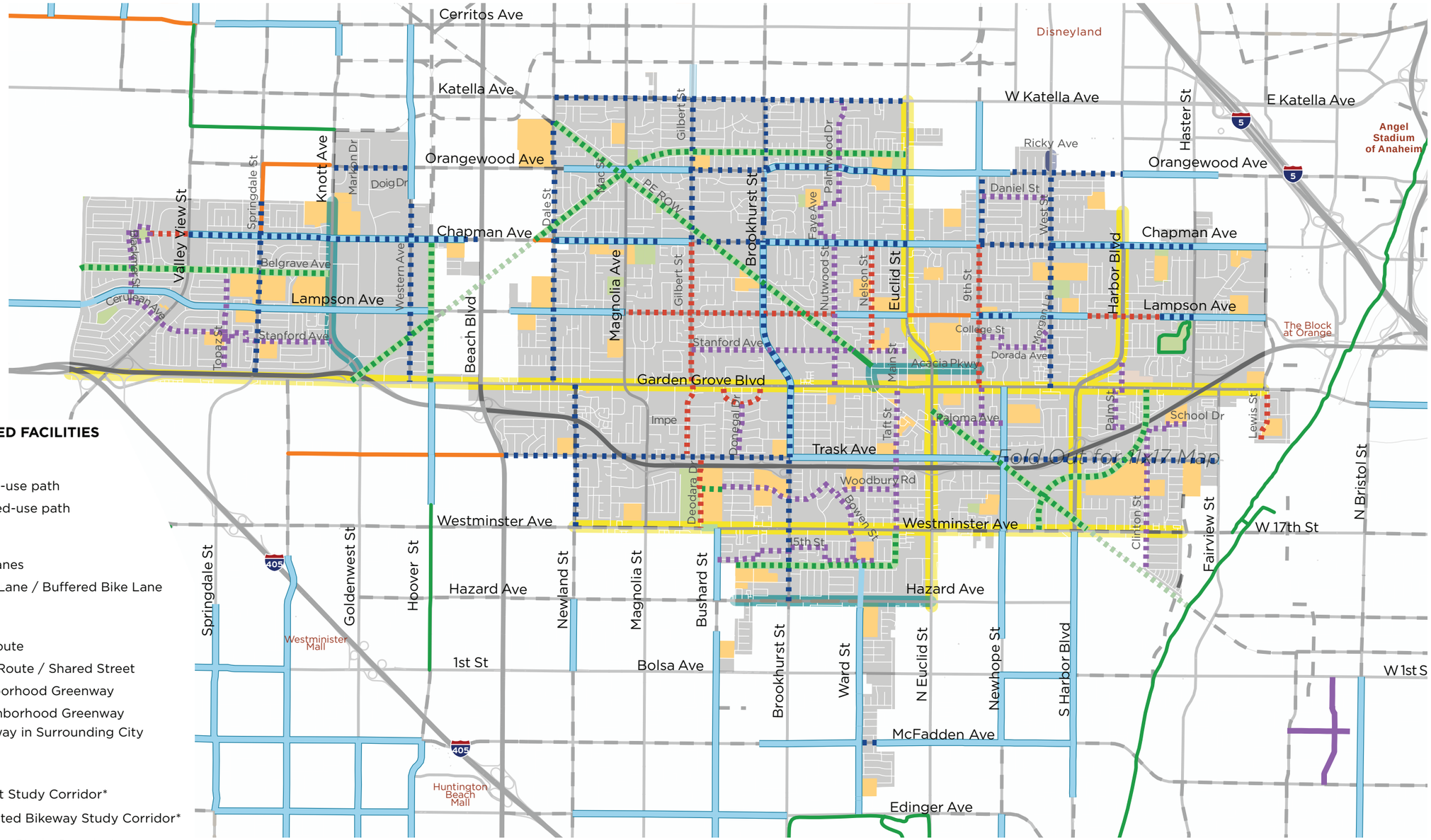
Table 5-1: Study Corridor Summary

TYPE	MILES
Complete Street Study Corridor	16.2
Separated Bikeway Study Corridor	4.2
TOTAL MILEAGE	**20.4**

Table 5-2: Mileage Summary of Recommended Bikeway Facilities

Class	Facility Type	New Miles	Updated Miles
I	Shared-Use Path	14.7	
II	Bicycle Lane	20.3	5.8
III	Neighborhood Greenway	15.0	
III	Bicycle Route	5.3	3.5
	Total Mileage	**55.3**	**9.3**

Figure 5-1: Proposed Bicycle Facilities for Garden Grove



EXISTING & PROPOSED FACILITIES

Class I

- Existing Shared-use path
- Proposed Shared-use path

Class II

- Existing Bike Lanes
- Proposed Bike Lane / Buffered Bike Lane

Class III

- Existing Bike Route
- Proposed Bike Route / Shared Street
- Existing Neighborhood Greenway
- Proposed Neighborhood Greenway
- Proposed Bikeway in Surrounding City

STUDY CORRIDORS

- Complete Street Study Corridor*
- Class IV Separated Bikeway Study Corridor*
- Class II Bike Lane Study Corridor*

LAND USE

- Schools

* Additional study needed to determine feasibility and design.

PROPOSED BIKE FACILITY NETWORK

Garden Grove Active Streets Master Plan

0 0.5 1 Mi

Fold Out for 11x17 Map

Pedestrian Recommendations

Most trips begin and end as walking trips even when a car, bicycle, bus, or train is involved. A high quality pedestrian network will support all aspects of the transportation system and enhance mobility in Garden Grove. Every street in the city should be designed for pedestrians.

Similar to bicyclists, pedestrians have a variety of characteristics and the transportation network should accommodate a variety of needs, abilities, and possible impairments. Age is one major factor that affects pedestrians' physical abilities, walking speed, and environmental perception. Children have low eye height and walk at slower speeds than adults. They also perceive the environment differently at various stages of their cognitive development. Older adults walk more slowly and may require assistive devices for walking stability, sight, and hearing.

The following section provides recommendations to improve pedestrian access and comfort based on the major barriers identified by the community. Pedestrian facilities fall under two main designations, linear facilities (sidewalks and paths) and intersections.

Sidewalks are the most fundamental element of the pedestrian network and should provide the following tenets:

- Accessibility for all users
- Continuity
- Street lighting
- Street tree shade
- Separation from traffic by landscaped park strips and/or parking
- Proper water drainage
- Social space for standing, sitting, and visiting

Pedestrian-friendly intersections will include:

- Areas for pedestrians to congregate
- Appropriate accessibility to (and maintenance of) all corner pedestrian features
- Corner and intersection design for pedestrian safety and comfort
- Minimization of pedestrian crossing distances
- Lighting that promotes visibility, legibility, and accessibility
- Transit stops where appropriate

Providing safe connections to neighborhood amenities such as parks is important

Crossing guards at a crosswalk near a school

SIDEWALKS

Sidewalks are the most fundamental element of the walking network, as they provide an area for pedestrian travel separated from vehicle traffic. A variety of considerations are important in sidewalk design. Providing adequate and accessible facilities can lead to increased numbers of people walking, improved safety, and the creation of social space.

Sidewalks should be more than areas to travel; they should provide places for people to interact. There should be spaces for standing, visiting, and sitting. Sidewalks should contribute to the character of neighborhoods and business districts, strengthen their identity, and be an area where adults and children can safely participate in public life.

In downtown and commercial areas, they should provide for higher volumes and engagement at varying activity levels. In residential areas they should be designed for comfort, recreation and socialization.

Generally, Garden Grove has a comprehensive walking network but there are local streets where walking facilities are not available. The identification of gaps in the city's sidewalk network is a fine-grained exercise. Sidewalks are missing on some corridors, such as Gilbert Street and Groveview Street. These sidewalks should be filled in as redevelopment allows.

SIDEWALK WIDTH

The width and design of sidewalks will vary depending on street context, functional classification, and pedestrian demand. Below are preferred widths of each sidewalk zone according to general street type. Standardizing sidewalk guidelines for different areas of the city, dependent on the above listed factors, ensures a minimum level of quality for all sidewalks.

It is important to provide adequate width along a sidewalk corridor. Two people should be able to walk side-by-side and pass a third comfortably. In areas of high demand, sidewalks should contain adequate width to accommodate the high volumes and different walking speeds of pedestrians. The Americans with Disabilities Act requires a four-foot

Figure 5-2: Sidewalk Zones

Classification	Parking Lane / Enhancement Zone	Furnishing Zone	Pedestrian Through Zone	Frontage Zone	Total
Local Streets	Varies	2 - 5 feet	5-6 feet	N/A	7 - 11 feet
Commercial Areas	Varies	2-6 feet	5-8 feet	3-5 feet	10-19 feet
Arterials and Collectors	Varies	6-8 feet	6-12 feet	3-5 feet	15-25 feet

clear width in the pedestrian zone plus five-foot passing areas every 200 feet.

SIDEWALK OBSTRUCTIONS

Obstructions to pedestrian travel in the sidewalk corridor typically include driveway ramps, curb ramps, sign posts, utility and signal cabinets and poles, mailboxes, fire hydrants and street furniture. Obstructions such as utility boxes, pull boxes and traffic signal cabinetry should be placed in the furnishing or utility zone between the sidewalk and the roadway to create a buffer for increased pedestrian comfort.

LANDSCAPING AND STREET FURNITURE

Landscaping, street trees, and street furniture can have a profound effect on improving the pedestrian feel of a corridor. The City should include the following in appropriate streetscape designs:

- Landscaping and street trees
- Planters
- Benches, tables, and chairs

Landscaping and tree maintenance enhances the pedestrian environment by creating a visual buffer from the roadway. Trees also offer welcome shade on warmer days.

Sidewalks can become inaccessible due to overgrown vegetation, so landscaping needs to be designed and maintained to ensure compatibility with the use of pedestrian facilities. Curbs around landscaped areas should be flush with the adjacent sidewalk to prevent a trip hazard.

Landscaping can also include bioswales, which capture stormwater runoff at intersections, and share many of the benefits of curb extensions.

LIGHTING

Pedestrian scale lighting improves visibility for both pedestrians and motorists - particularly at intersections and in areas where personal safety is a concern.

Pedestrian scale lighting is characterized by short light poles (around 15 feet high), close spacing, low levels of illumination (except at crossings), and the use of LED lamps to produce good color rendition, long service life and high energy efficiency. Lighting should be oriented downward to illuminate the pedestrian environment.

Both street and pedestrian lighting levels should be considered for the same street corridor, especially in areas with tree canopy. “Dark Sky” lighting should be pursued to reduce light pollution. Pedestrian scale lighting should be used in areas of high pedestrian activity and along pedestrian corridors connecting destinations, including transit hubs and access points, and multi-family neighborhoods.

Street trees create shade and improve walking conditions in sunny Southern California communities

Pedestrian lighting improves visibility of pedestrians

Pedestrian scale lighting fixtures should be consistent with surrounding architectural and streetscape design elements and can be used to incorporate local art, or other cultural or historical relevance.

TRANSIT STOP AMENITIES

At transit stops, a variety of streetscape elements can define the pedestrian realm, offer protection from moving vehicles, and enhance the walking experience. These elements include public kiosks and signage, lighting, seating, and shelters.

Public Information Kiosks and Signage at bus stops are an important element of good transit service. Signs serve as a source of information to patrons and operators regarding the location of the bus stop and are excellent marketing tools to promote transit use. Basic signs with a route maps and applicable ADA information should be provided at all stops**.**

Lighting is important for safety and security. A brightly lit bus stop makes it easier for the bus driver to observe waiting passengers and allows motorists to see pedestrians around the bus stop.

Seating provides comfort and convenience at bus stops and are usually installed on the basis of existing or projected ridership figures. Seats may be installed by themselves or as part of a shelter.

Shelters protect pedestrians from the sun and rain; increase comfort for patrons waiting for rides.; and may encourage more people to ride transit.

Transit stop with seating, shelter, and lighting

PARKLETS & STREETDECKS

A parklet is an outdoor space typically the size of an on-street parking space. These mini-parks are often designed for passive recreation and may include planters, and benches. Additionally, parklets can be designed to include bicycle corrals, fitness equipment, chess boards and other activities. Streetdecks create usable commercial space from existing parking spaces and may include dining areas, café tables and chairs, umbrellas, and planters. Outreach to adjacent property owners and businesses is recommended when the removal of an on-street parking space is required for the parklet or streetdeck .

Parklets and streetdecks can enhance neighborhood vitality, especially in areas currently lacking public space or in locations where sidewalk space is constrained. The nature of a parklet will vary based on factors such as size, location, surrounding land uses and the duration of the installation. Parking availability should be considered when determining the overall benefit of parklet installation against parking loss. Parklets do not impede motor vehicle or bicycle travel because they are generally located adjacent to on-street parking.

Parklet in Long Beach provides outside seating area

CROSSINGS AND INTERSECTIONS

Every intersection in Garden Grove should be designed for pedestrian safety and comfort, with pedestrian enhancements appropriate to traffic speed, traffic volume, pedestrian crossing distance, and other similar factors. This section describes the primary palette of options that should be considered for crossing and intersections improvements. As streets are repaved and reconstructed, pedestrian crossing ramps should be added.

ACCESSIBLE CURB RAMPS

Curb ramps are the design elements that allow all users to make the transition from the street to the sidewalk. There are a number of factors to be considered in the design and placement of curb ramps at corners. Properly designed curb ramps ensure that the sidewalk is accessible from the roadway. A sidewalk without a curb ramp can be useless to someone in a wheelchair, forcing them back to a driveway and out into the street for access. A perpendicular ramp is aligned so that the ramp is perpendicular to the centerline of the roadway. This design directs pedestrians to travel perpendicular to traffic when they enter the street and crosswalk. Although diagonal curb ramps might save money, they create potential safety and mobility problems for pedestrians, including reduced maneuverability and increased interaction with turning vehicles, particularly in areas with high traffic volumes. Perpendicular is the preferred option. When reconstruction projects allow, additional improvements should be considered as part of those projects.

CROSSWALKS

Crosswalks exist everywhere that sidewalks and streets intersect, and may be marked or unmarked. Marked crosswalks encourages pedestrians to cross at designated locations and indicates to motorists that they must yield for pedestrians. Installing marked crosswalks alone will not necessarily make crossings safer, especially on multi-lane roadways. At mid-block locations, crosswalks can be marked where there is a demand for crossing and there are no nearby marked crosswalks.

ENHANCED CROSSWALKS

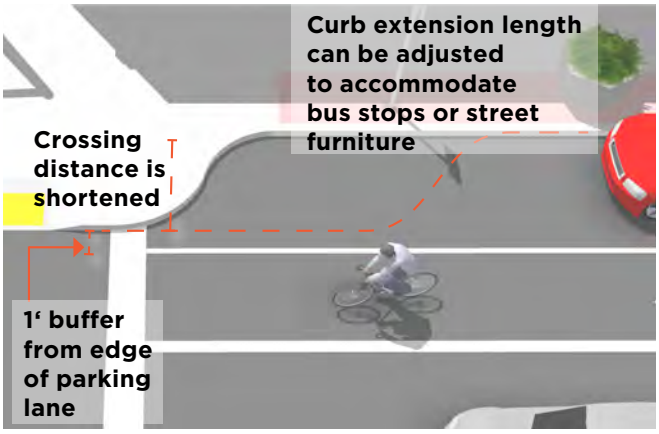
Across California, neighborhoods have been installing stamped and painted designs to reinforce the historic and current populations in neighborhoods. While some crosswalks may have small patterns such as bricks, other cities have been creating much bolder artistic visions for crosswalks, which could help inform the possibilities of designs in Downtown Garden Grove. Modeled after New York City's Street Design Manual, the City of Santa Monica is currently developing a 'Creative Crosswalks' pilot program to install creative designs in crosswalks in their downtown. The City of Garden could create guidelines on design features and request local artists to create site-specific designs which can be installed by either City staff or by contractors – giving Downtown Garden Grove a greater sense of place while also improving the safety of people walking.

CURB EXTENSIONS

Curb extensions, or bulbouts, shorten the crossing distance at intersections or midblock crossings, helping to minimize pedestrian exposure and increasing visibility for pedestrians and motorists.

Miami, Florida's Wynwood Arts District hired artist Carlos Cruz-Diez to design a vibrant enhanced crosswalk

Figure 5-3: Best Practice Design Guide for Curb Extensions



They are appropriate at crossings where it is desirable to shorten the crossing distance and there is a parking lane adjacent to the curb. Because they are generally located adjacent to on-street parking, they do not impede motor vehicle through travel.

Curb extensions are best suited where parking lanes already exist to eliminate the need to merge from the curb lane, and to create a suitable turn radius for larger vehicles. Curb extensions should be considered at all intersections marked by high pedestrian activity.

MEDIAN REFUGE ISLANDS

Refuge islands enable pedestrians to focus on one direction of vehicle traffic at a time when crossing.

They are typically used to enhance marked crosswalks, especially on multi-lane roadways.

RECTANGULAR RAPID FLASH BEACONS (RRFB)

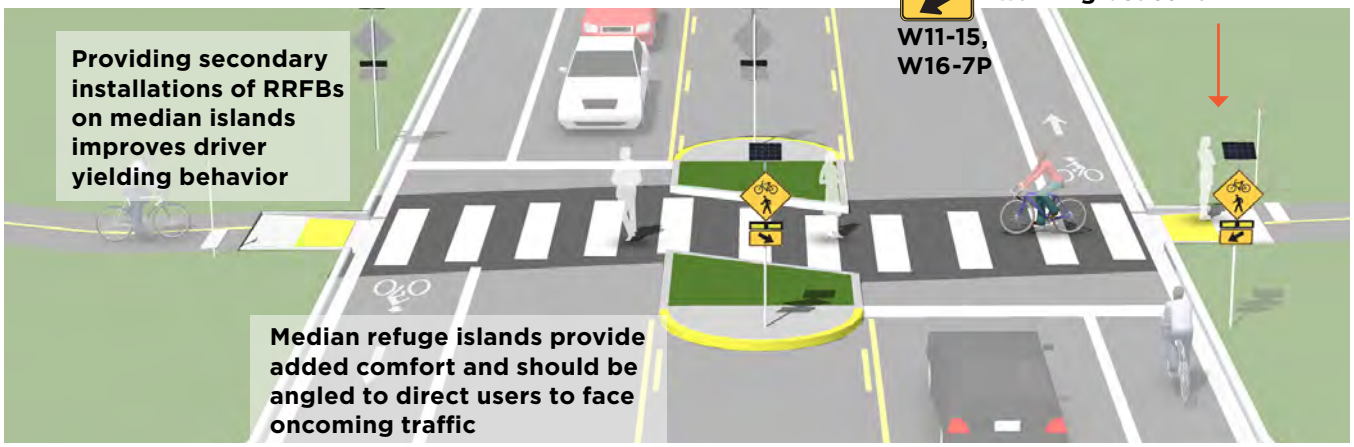
Rectangular Rapid Flash Beacons (RRFB) are a type of active warning beacon used at unsignalized crossings. They are designed to increase motor vehicle yielding compliance on multi-lane or high volume roadways. They are typically activated by pedestrians manually with a push button, or can be actuated automatically with passive detection systems.

Rectangular rapid flash beacons elicit the highest increase in compliance of all the warning beacon enhancement options. A study of the effectiveness of going from a no-beacon arrangement to a two-beacon RRFB installation increased yielding from 18 percent to 81 percent. A four-beacon arrangement raised compliance to 88%. Additional studies of long term installations show little to no decrease in yielding behavior over time.

PEDESTRIAN HYBRID BEACON

Pedestrian hybrid beacons provide a high level of comfort for crossing users through the use of a red-signal indication to stop conflicting motor vehicle traffic. Hybrid beacon installation faces

Figure 5-4: Best Practice Design Guide for Median Refuge Islands



only cross motor vehicle traffic, stays dark when inactive, and uses a unique 'wig-wag' signal phase to indicate activation. Vehicles have the option to proceed after stopping during the final flashing red phase, which can reduce motor vehicle delay when compared to a full signal installation.

TRAFFIC SIGNALS

Pedestrian signal indicators demonstrate to pedestrians when to cross at a signalized crosswalk. All traffic signals should be equipped with pedestrian signal indications except where pedestrian crossing is prohibited by signage.

Typical concerns that pedestrians experience at signalized crossings in Garden Grove include:

- Delays caused by long signal cycles
- Lack of understanding of WALK and flashing DON'T WALK indications
- Uncertainty about whether the button must be pressed to activate a pedestrian signal,
- Lack of confirmation that someone has already pressed a push button
- Conflicts with turning vehicles at intersections

ACTUATED PEDESTRIAN SIGNAL

Manual activation of pedestrian signals is performed with a pedestrian push button. This requires the pedestrian to locate and press the push button to actuate the pedestrian signal phase. For this reason, push buttons should be easy to identify and access, and ideally, be user-responsive.

A favorable alternative to manual actuation is passive detection possible with a variety of automated detection equipment, including microwave and infrared detectors. The automatic detection allows the pedestrian to engage the signal without having to locate the push button. Passive detection can also contribute to the efficiency of signal operations by allowing for walk time extensions, and/or not dedicating walk time in the absence of pedestrians.

PEDESTRIAN RECALL

Pedestrian recall is a traffic signal controller setting that automatically provides a pedestrian walk phase during every cycle. Since pedestrian recall does not require detection or actuation, it eliminates the need for push buttons or other costly detection equipment.

This makes pedestrian crossings predictable, minimizes unnecessary pedestrian delay, and does not leave pedestrians wondering whether they have been detected or not. The most appropriate use of pedestrian recall is in locations and/or times of day with high pedestrian volumes.

Activated pedestrian signals require pedestrians to push a button for signal recall

Pedestrian countdown provide timing information to pedestrians crossing the street

PEDESTRIAN COUNTDOWN TIMERS

Pedestrian signal head that only display a flashing don't walk indication, can make it difficult for pedestrians to judge whether they have enough time to cross an intersection safely. Countdown indicators on pedestrian signals solve this by providing pedestrians with the exact amount of time they have to clear the intersection. The California MUTCD requires the use of countdown indicators for all signalized crossings with a change interval (flashing don't walk) greater than 7 seconds.

LEADING PEDESTRIAN INTERVALS

Leading Pedestrian Intervals (LPI) give pedestrians a WALK indication before vehicles are given a green light (typically three to seven seconds). The advantage of LPI is that it puts pedestrians in the crosswalk in advance of cars and makes them more visible to turning motorists. The LPI can be omitted if no pedestrians press the pushbutton.

AUDIBLE PEDESTRIAN SIGNALS

Audible pedestrian signals are designed to be accessible by individuals with visual disabilities. They provide audible tones or verbal messages to convey when it is appropriate to walk, when they must wait, and feedback when the signal has been actuated via pushbutton. This eliminates the need for pedestrians to rely entirely on the audible cues provided by moving cars, which may can be deceiving depending on the complexity of traffic signal operations at the intersection.

EXCLUSIVE PEDESTRIAN PHASES & SCRAMBLES

Exclusive pedestrian phases allow pedestrians to cross the street in both directions simultaneously.

"Scrambles" permit pedestrians to cross all four legs of an intersection or to cross diagonally while all motor vehicle traffic is stopped. This benefits car traffic by reducing turning conflicts and allowing cars to clear intersections more efficiently during their signal phase.

Scrambles are not widely used in the U.S., but when used they are typically found at downtown intersections with high volumes of pedestrians relative to motor vehicles. While they provide the convenience of a diagonal crossing, they have also have disadvantages including longer pedestrian crossings times, complications to coordination with other nearby signals, and delay to pedestrians that only need to cross one leg of the intersection. Garden Grove has not implemented any scrambles to date. Euclid Street at Acacia Parkway could be a potential candidate for a scramble during peak pedestrian hours.

Pedestrian scramble in Carlsbad, CA

Table 5-3: Recommended Class I Shared-Use Paths

Location	Start	End	Length (miles)	Recommendation Details	Previous Plan	Rationale
Anaheim – Barber City Channel (North)	Euclid St	Chapman Ave	2.8	Multi-use Path	OCTA Commuter Bikeway Strategic Plan	0
Anaheim – Barber City Channel (South)	Union Pacific Railway	Garden Grove Blvd	2.8	Multi-use Path		
Bolsa Grande HS Connector Path	Deodara Dr	Woodbury Ave	0.2	Multi-use Path		
City of Garden Grove SO-1	Knott St	West City Limits	1.3	Multi-use Path		
Pacific Electric Right of Way 1	Nelson St	Dale St	2.8	Multi-use Path	OCTA D1 & D2	0
Pacific Electric Right of Way 2	Westminster Ave	Euclid St	1.4	Multi-use Path		
Union Pacific Railway	Chapman Ave	Garden Grove Blvd	0.7	Multi-use Path	OCTA D1 & D2	0
Westminster Channel	Westminster Ave	Kerry St	1.3	Multi-use Path		
Wintersburg Channel	Garden Grove Blvd	Westminster Ave	1.4	Multi-use Path		
		Total	**14.7**			

0 - Proposed facility same as previous plan

Table 5-4: Recommended Class II Bicycle Lane Facilities

Location	Start	End	New Miles	Updated (E) Miles	Recommendation Details	Garden Grove 2030 Bikeway Facility Map	Rationale
Brookhurst St	Katella Ave	Chapman Ave	1.0*		Create continuous bikeway by filling gaps where no striped bicycle lane exists. Existing NB bike lane from Orangewood Ave to Melody Park Dr.	E	0, 3
Brookhurst St	Chapman Ave	Trask Ave		1.6*	Existing bike lane to become a buffered bike lane.	E	0
Brookhurst St	Trask Ave	Hazard Ave	1.0		Stripe bike lane. Parking or lane removal may be needed.	P	0
Chapman Ave	Valley View St	Beach Blvd		2.0*	Existing bike lane to become a buffered bike lane.	E	0
Chapman Ave	Dale St	Magnolia St	0.5		Create continuous bikeway by filling gaps where no striped bicycle lane exists. EB from Dale to Lorna St, and MacMurray St to Magnolia Ave. WB to MacNab to MacMurray St.	E - Class III	1
Chapman Ave (EB)	Magnolia St	Loraleen St	0.25		Create continuous bikeway by filling gaps where no striped bicycle lane exists.	E	0, 3
Chapman Ave	Gilbert St	Brookhurst St	0.5		Stripe bike lane. Parking or lane removal may be needed.	E	0, 3
Chapman Ave	Brookhurst St	Euclid St	1.1		Create continuous bikeway by filling gaps where no striped bicycle lane exists. EB from Brookhaven to Melody Park and Nelson to Euclid. WB from Brookhurst to Brookhaven and Melody Park to Nutwood.	E	0, 3
Chapman Ave	9th St	West St	0.5		Stripe bike lane. Parking or lane removal may be needed.	P	0

The "Garden Grove 2030 Bikeway Facility Map" column indicates whether projects were identified in the City's General Plan, and if so, whether they were mapped as existing (E) or proposed (P) bikeways.

** Early Action Project, see Chapter VII Implementation Plan for more information*
0 - Proposed facility same as General Plan
1 - Reclassified from Class III bicycle route to Class II bicycle lane
2 - Reclassified to Class IV separated bicycle lanes
3 - General plan maps existing bike lanes not currently striped. Active Streets Plan adds Class II in compliance with the general plan.
4 - Removed Class II bicycle lane proposed by General Plan due to high traffic volumes and speed
5 - Reclassified as Complete Street Study
6 - Reclassified Class II bicycle lane to Class III bicycle route

Location	Start	End	New Miles	Updated (E) Miles	Recommendation Details	Garden Grove 2030 Bikeway Facility Map	Rationale
Chapman Ave	West St	Haster St		1.0	Existing bike lane to become a buffered bike lane	E	0
Dale St	PE ROW	Garden Grove Blvd	1.8		Stripe bike lane. Parking or lane removal may be needed.	P	1
Gilbert St	Katella Ave	Chapman Ave	1.0*		Stripe bike lane through 4 to 3 Road Rebalancing.	P	1
Katella	Dale St	Euclid St	2.5		Stripe bike lane.	P	0
Lampson Ave	9th St	Glen St		0.2*	Existing bike lane to become a buffered bike lane	E	0
Lampson Ave	Oertly Dr	Haster St		0.2*	Existing bike lane to become a buffered bike lane	P	0
McFadden Ave	Ward St	City Limit	0.2		Stripe bike lane.		New
Newhope St	Garden Grove Blvd	Westminster Ave		1.0	Existing bike lane upgraded to match City of Santa Ana's buffered bike lanes with green conflict striping	E	0
Newland St	Garden Grove Blvd	Westminster Ave	1.0		Stripe bike lane through 4 to 3 Road Rebalancing.	P	0
Orangewood Ave	Knott Ave	Western Ave	0.5		Stripe bike lane.	P	0
Orangewood Ave	Yana Dr	Gilbert St		0.9	Existing bike lane to be improved with buffer and/or intersection treatments.	E	0
Orangewood Ave	Gilbert St	Brookhurst St	0.5		Stripe bike lane.	P	0

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3 - General plan maps existing bike lanes not currently striped. Active Streets Plan adds Class II in compliance with the general plan.
4 - Removed Class II bicycle lane proposed by General Plan due to high traffic volumes and speed
5 - Reclassified as Complete Street Study
6 - Reclassified Class II bicycle lane to Class III bicycle route

Location	Start	End	New Miles	Updated (E) Miles	Recommendation Details	Garden Grove 2030 Bikeway Facility Map	Rationale
Orangewood Ave	Brookhurst St	Euclid St		0.5*	Existing bike lane to become a buffered bike lane.	E	0
Orangewood Ave	Harbor Blvd	Janette Ln	0.8		Stripe bike lane.	P	0
Springdale St	North City Limits	Garden Grove Freeway	1.2		Stripe bike lane. Parking or lane removal may be needed.	P	1
Trask Ave	Beach Blvd	Brookhurst St	2.0		Stripe bike lane. Parking or lane removal may be needed.	P	0
Trask Ave	Newhope St	Fairview St	1.5		Stripe bike lane. Parking or lane removal may be needed.	E	0, 3
West St	Orangewood Ave	Garden Grove Blvd	1.5*		Stripe bike lane through 4 to 3 Road Rebalancing.	P	1
West St	Ricky Ave	Orangewood	0.2		Bike Lane Study Corridor		New
Western Ave	North City Limits	Garden Grove Blvd	1.3		Stripe bike lane. Parking or lane removal may be needed.	P	0
9th Street (NB)	Orangewood Ave	Chapman Ave	0.5		Stripe NB bike lane.	P	0
		Total	**20.3**	**5.8**			

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1 - Reclassified from Class III bicycle route to Class II bicycle lane
2 - Reclassified to Class IV separated bicycle lanes
3 - General plan maps existing bike lanes not currently striped. Active Streets Plan adds Class II in compliance with the general plan.
4 - Removed Class II bicycle lane proposed by General Plan due to high traffic volumes and speed
5 - Reclassified as Complete Street Study
6 - Reclassified Class II bicycle lane to Class III bicycle route

Table 5-5: Recommended Class III Neighborhood Greenway Facilities

Location	Start	End	New Miles	Neighborhood Greenway Name	Garden Grove 2030 Bikeway Facility Map	Rationale
College St	9th St	George St	0.2	9th-West Neighborhood Greenway		New
George St	College St	Dorada Ave	0.1	9th-West Neighborhood Greenway		New
Dorada Ave	George St	Morgan Ln	0.3	9th-West Neighborhood Greenway		New
Morgan Ln	Dorada Ave	West St	0.2	9th-West Neighborhood Greenway		New
Daniel Ave	9th St	West St	0.4	9th-West Neighborhood Greenway		New
Donegal Dr	Belfast Dr	Trask Ave	0.4	Belfast – Donegal Neighborhood Greenway		New
Clinton St	Gloria St	Morningside Ave	1.0	Clinton – Palm Neighborhood Greenway		New
Gloria St	Clinton St	Roxey Dr	0.1	Clinton – Palm Neighborhood Greenway		New
Palm St	Harbor Blvd	Flagstone Pl	0.6	Clinton – Palm Neighborhood Greenway		New
School Dr	Roxey Dr	Lilly St	0.1	Clinton – Palm Neighborhood Greenway		New
Faye Ave	Patricia Dr	Chapman Ave	0.5	Nutwood – Palmwood Neighborhood Greenway		New
Nutwood St	Chapman Ave	Garden Grove Blvd	1.0	Nutwood – Palmwood Neighborhood Greenway		New
Patricia Dr	Faye Ave	Palmwood Dr	0.1	Nutwood – Palmwood Neighborhood Greenway		New
Palmwood Dr	Patricia Dr	Katella Ave	0.8	Nutwood – Palmwood Neighborhood Greenway		New
Stanford Ave	Gilbert St	Main St	1.5	Nutwood – Palmwood Neighborhood Greenway		New
Paloma Ave	Euclid St	Newhope St	0.5	Paloma Neighborhood Greenway		New
Nina Pl	Garden Grove Blvd	PE ROW	0.4	Paloma Neighborhood Greenway		New
Bowen St	Traylor Way	Morningside Dr	0.6	South Garden Grove Neighborhood Greenway	P	0
Morningside Dr	Hope St	Lake St	0.4	South Garden Grove Neighborhood Greenway		New

The "Garden Grove 2030 Bikeway Facility Map" column indicates whether projects were identified in the City's General Plan, and if so, whether they were mapped as existing (E) or proposed (P) bikeways.

** Early Action Project, see Chapter VII Implementation Plan for more information*
0 - Proposed facility same as General Plan
1 - Reclassified from Class III bicycle route to Class II bicycle lane
2 - Reclassified to Class IV separated bicycle lanes
3 - General plan maps existing bike lanes not currently striped. Active Streets Plan adds Class II in compliance with the general plan.
4 - Removed Class II bicycle lane proposed by General Plan due to high traffic volumes and speed
5 - Reclassified as Complete Street Study
6 - Reclassified Class II bicycle lane to Class III bicycle route

Class III Neighborhood Greenway Facilities Continued

Location	Start	End	New Miles	Neighborhood Greenway Name	Garden Grove 2030 Bikeway Facility Map	Rationale
Oasis Ave	Bushard St	Kerry St	0.3	South Garden Grove Neighborhood Greenway		New
Kerry St	Reading Ave	Oasis Ave	0.1	South Garden Grove Neighborhood Greenway		New
Reading Ave	Kerry St	Brookhurst St	0.2	South Garden Grove Neighborhood Greenway		New
Taft St	Garden Grove Blvd	Westminster Ave	1.0	South Garden Grove Neighborhood Greenway	P	0
Traylor Way	Brookhurst St	Bowen St	0.3	South Garden Grove Neighborhood Greenway		New
Woodbury Ave	Erin St	Brookhurst St	0.5	South Garden Grove Neighborhood Greenway		New
Woodbury Rd	Bowen St	Taft St	0.4	South Garden Grove Neighborhood Greenway		New
15th Street	Brookhurst St	Hope St	0.3	South Garden Grove Neighborhood Greenway		New
Blackmer St	Chapman Ave	Cerulean Ave	0.5	West Garden Grove Neighborhood Greenway		New
Cerulean Ave	Blackmer St	Topaz St	0.7	West Garden Grove Neighborhood Greenway		New
Stanford Ave	Topaz St	Knott St	0.9	West Garden Grove Neighborhood Greenway		New
Topaz St	Huntly Ave	Anthony Ave	0.6	West Garden Grove Neighborhood Greenway		New
		Total	**15.0**			

The "Garden Grove 2030 Bikeway Facility Map" column indicates whether projects were identified in the City's General Plan, and if so, whether they were mapped as existing (E) or proposed (P) bikeways.

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0 - Proposed facility same as General Plan
1 - Reclassified from Class III bicycle route to Class II bicycle lane
2 - Reclassified to Class IV separated bicycle lanes
3 - General plan maps existing bike lanes not currently striped. Active Streets Plan adds Class II in compliance with the general plan.
4 - Removed Class II bicycle lane proposed by General Plan due to high traffic volumes and speed
5 - Reclassified as Complete Street Study
6 - Reclassified Class II bicycle lane to Class III bicycle route

Table 5-6: Recommended Class III Route Facilities

Location	Start	End	New Miles	Updated (E) Miles	Recommendation Details	Garden Grove 2030 Bikeway Facility Map	Rationale
Deodara Dr	Trask Ave	Westminster Ave	0.5		Gilbert- Deodara Bicycle Route	P	0
Gilbert St	Chapman Ave	Trask Ave	1.5*		Gilbert- Deodara Bicycle Route	P	0
Lampson Ave	Buaro St	Volkwood St	0.5*		Bicycle Route	P	3
Chapman Ave	Valley View St	St Mark St	0.3		Stanford – Cerulean Bicycle Route		New
Nelson St	Chapman Ave	Stanford Ave	0.7		Bicycle Route / Shared Street	E	0
9th Street	Chapman Ave	Garden Grove Blvd	1.0		Bicycle Route	P	6
Belfast Dr	Garden Grove Blvd	Garden Grove Blvd	0.4		Belfast – Donegal Bicycle Route		New
Lampson Ave	Magnolia St	Nutwood St		1.5*	Existing Route - add striped curb extensions to narrow inconsistent ROW	P	3
Lampson Ave	Glen St	Oertly Dr		1.0*	Existing Route - add striped curb extensions to narrow inconsistent ROW	E	3
Orangewood Ave	Gilbert St	Brookhurst St		0.5	Existing Route - add wayfinding		New
Lampson Ave	Euclid St	9th St		0.5*	Existing Route - add striped curb extensions to narrow inconsistent ROW	E	0
Lewis St	Garden Grove Blvd	Marty Ln	0.4		Bicycle Route	P	0
		Total	**5.3**	**3.5**			

The "Garden Grove 2030 Bikeway Facility Map" column indicates whether projects were identified in the City's General Plan, and if so, whether they were mapped as existing (E) or proposed (P) bikeways.

** Early Action Project, see Chapter VII Implementation Plan for more information*
0 - Proposed facility same as General Plan
1 - Reclassified from Class III bicycle route to Class II bicycle lane
2 - Reclassified to Class IV separated bicycle lanes
3 - General plan maps existing bike lanes not currently striped. Active Streets Plan adds Class II in compliance with the general plan.
4 - Removed Class II bicycle lane proposed by General Plan due to high traffic volumes and speed
5 - Reclassified as Complete Street Study
6 - Reclassified Class II bicycle lane to Class III bicycle route

Table 5-7: Recommended Class IV Separated Bikeway Facilities

Location	Start	End	Length (miles)	Recommendation Details	Garden Grove 2030 Bikeway Facilities Map	Rationale
Acacia St	9th St	Nelson St	0.8	Separated Bike Lane Study		New
Hazard Ave	Euclid St	Christy St	1.4	Separated Bike Lane Study	P	2
Knott Ave	North City Limits	Garden Grove Blvd	1.8	Separated Bike Lane Study		New
Nelson St	PE ROW	Garden Grove Blvd	0.2	Separated Bike Lane Study		New
		Total	**4.2**			

Table 5-8: Recommended Complete Streets Studies

Location	Start	End	Length (miles)	Recommendation Details	Garden Grove 2030 Bikeway Facilities Map	Rationale
Euclid St	Lampson Ave	Trask Ave	1.1	Complete Street Study		New
Garden Grove Blvd	Lewis St	Valley View St	8.4	Complete Street Study		New
Harbor Blvd	North City Limits	Westminster Ave	2.4	Complete Street Study	P	5
Westminster Ave	East City Limits	Newland St	4.3	Complete Street Study		New
		Total	**16.2**			

The "Garden Grove 2030 Bikeway Facility Map" column indicates whether projects were identified in the City's General Plan, and if so, whether they were mapped as existing (E) or proposed (P) bikeways.

** Early Action Project, see Chapter VII Implementation Plan for more information*
0 - Proposed facility same as General Plan
1 - Reclassified from Class III bicycle route to Class II bicycle lane
2 - Reclassified to Class IV separated bicycle lanes
3 - General plan maps existing bike lanes not currently striped. Active Streets Plan adds Class II in compliance with the general plan.
4 - Removed Class II bicycle lane proposed by General Plan due to high traffic volumes and speed
5 - Reclassified as Complete Street Study
6 - Reclassified Class II bicycle lane to Class III bicycle route

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Garden Grove residents and visitors walked, bicycled, and played in the streets during Garden Grove's Open Streets program.

VI. PROGRAM RECOMMENDATIONS

We want to provide our residents with convenient and safe transportation choices that are good for the environment. Biking and walking are inexpensive, healthy alternatives to driving.

-- Lori Donchak, Chair of Orange County Transportation Authority

This section details existing and proposed programs in Garden Grove and/or Orange County that help encourage bicycle, pedestrian, and transit use in the city. The first pages of this chapter summarize each existing and recommended program. Existing programs, marked with black dots (●), should be continued, and expanded upon when possible. Programs are categorized by the five "E's" (i.e., education, encouragement, engineering, enforcement, and evaluation), explained in detail below.

More detail about the City's role, partnerships, target audiences, and expected outcomes is listed in tables later in the section. These tables also prioritize programs by high-, medium-, and low-priority to help guide the City in program implementation.

This chapter includes:

- Existing and recommended program descriptions
- Recommendations for prioritizing programs

Education

Education programs are important for teaching safety rules and laws as well as increasing awareness regarding biking opportunities and existing facilities. Education programs may need to be designed to reach different types of audiences or groups at varying levels of knowledge and there may be many different audiences such as pre-school age children, elementary school students, teenage and college students, workers and commuters, families, retirees, the elderly, new immigrants, and non-English speakers.

ADULT BICYCLE SKILLS CLASSES

Most people biking do not receive training on safe biking practices, the rules of the road, and bicycle handling skills. Bicycle skills classes can address this education gap; this plan recommends the City support such classes. The League of American Bicyclists offers classes taught by certified instructors. Information can be found at: *www.bikeleague.org/*

BICYCLE-RELATED TICKET DIVERSION CLASS

Diversion classes are offered to bicycle riders who have been cited for certain traffic violations, such as running a stoplight. This type of program was favored by members of the public, and is a good way to educate bicycle riders about rights and responsibilities.

California Assembly Bill 209, signed by Governor Brown on September 21, 2015, allows for such programs for violations not committed by a driver of a motor vehicle. This plan recommends the City consider offering bicycle rider diversion classes.

Similar programs exist throughout California and examples can be found by visiting:

www.marinbike.org/Campaigns/ShareTheRoad/Index.shtml#StreetSkills

www.cityoflivermore.net/citygov/police/traffic/bikesafety/diversion.htm

NEIGHBORHOOD TRAFFIC UNIT

The Neighborhood Traffic Unit (NTU) is a program though the Garden Grove Police Department. The mission of the NTU is to improve the quality of life by providing the safest and most efficient flow of vehicle and pedestrian traffic throughout Garden Grove. In an effort to accomplish their mission, the NTU enforces traffic laws and educates the community about various traffic-related topics, in an effort to accomplish their mission. Traffic issues at schools are a priority for the NTU, who conducted several school safety presentations

Wrong Way Riding campaign infographic

during 2014. The group teaches students about impaired driving and bicycle and pedestrian safety.

OCTA "HOW TO RIDE THE BUS" PROGRAM

OCTA offers a free program for kids and teens on "How to Ride the Bus" for both schools and youth organizations. A professional from OCTA will come to their location to teach youth groups and teens how to travel by bus. At the end of the presentation, participants receive a one-day bus passes so they can try the bus first-hand with a friend or parent.

OCTA WRONG WAY RIDING CAMPAIGN

OCTA launched a Wrong Way Riding Campaign to educate cyclists to the dangers of riding against the flow of traffic. YouTube videos and infographics were created to show persons on bicycles why riding against the flow of traffic is so dangerous.

PUBLIC AWARENESS CAMPAIGN

On a citywide scale, Garden Grove could expand the OCTA Wrong Way Riding Campaign to a public awareness media campaign. StreetSmarts, for example, was developed by the City of San Jose, uses print media, radio spots and television spots to educate people about safe driving, biking, skateboarding, and walking behavior. More information about StreetSmarts can be found at *www.getstreetsmarts.org*.

Local resources for conducting a StreetSmarts campaign can be maximized by assembling a group of local experts, law enforcement officers, business owners, civic leaders, and dedicated community volunteers. These allies could assist with a successful safety campaign goals based on the local concerns and issues. It may be necessary to develop creative strategies for successful media placement in order to achieve campaign goals.

This plan recommends the City consider implementation of a public awareness program such as StreetSmarts.

STUDENT BICYCLE TRAFFIC SAFETY EDUCATION

Student education programs are an essential component of bicycle education. Students are taught traffic safety skills that help them understand basic traffic laws and safety rules. Garden Grove currently does not have a formal Safe Routes to School program, but its implementation could help to improve easy and safe access to schools.

Bicycle education curriculum typically includes two parts: knowledge and skills. Knowledge lessons are typically in-class, while skills are practiced on a bicycle. Lessons can include helmet and bicycle fit, hand signals, and riding safely with traffic.

Student bicycle traffic safety education can benefit Garden Grove by:

- Improving safety by teaching children about lifelong safety skills
- Create awareness with students and parents
- Encourage families to consider biking to school on a more frequent basis

This plan recommends the Garden Grove Unified School District implement a pilot education program and to expand it to include all city schools over time.

Encouragement

Everyone from young children to elderly residents can be encouraged to increase their rates of biking and walking or to try biking and walking instead of driving for short trips.

REGIONAL/COUNTY PROGRAMS

DUMP THE PUMP WEEK

Every June, OCTA joins the national Dump the Pump Week to encourage Orange County residents to leave their cars at home and use public transportation while commuting or running errands. As an added incentive, participants could submit photos of themselves riding the bus to enter to win prizes such as bus passes, Disneyland tickets, Los Angeles Angels tickets, Knott's Berry Farm tickets, and/or a shopping spree.

OCTA Dump the Pump promotion

OCTA ACCESS PROGRAM

OCTA provides ACCESS bus service for senior citizens and people with disabilities. ACCESS is a shared-ride service for people who are unable to use the regular, fixed-route bus service because of functional limitations caused by a disability. These passengers must be certified by OCTA to use the ACCESS system by meeting the Americans with Disabilities Act (ADA) eligibility criteria. OCTA's Ridematch program helps registered users find a carpool partner to ride with, based on both the commuters schedules. OCTA also has vanpool services. Commuters can form groups and can apply for the vanpool service through OCTA. Commuters obtain subsidies from OCTA or their employers.

OCTA RIDESHARE WEEK

OCTA hosts several ridesharing events each year in an effort to bring higher visibility to ridesharing and to gain support for these initiatives from Orange County residents. In 2014, an entire week was dedicated to ridesharing where nearly 2,500 people pledged to "not drive alone." As an added incentive, prizes were given out to random participants including an Apple iPad, Target gift cards, bicycle lights, and Metrolink tickets.

OCTA TRANSIT APPS

While OCTA does not endorse, guarantee, sell or license mobile applications, several third-party developers have created apps using OCTA's open data and are featured on the OCTA website (*octa.gov*). Apps create a convenient way for people to access transit alerts, directions to destinations via walking, and rerouting information for drivers.

OCTA YOUTH PASSES

OCTA offers discounted bus passes for kids ages 6-18 to allow them to get around the county in a clean and safe way. 3-day passes are $40 a month for unlimited use on all fixed-route buses. During the summer months (June – August), a 30-Day Summer Youth Bus Pass is only $20.

CITY/LOCAL PROGRAMS

BICYCLE FRIENDLY COMMUNITY

The League of American Bicyclists (LAB) recognizes communities that improve biking conditions through education, encouragement, enforcement, and evaluation programs. Communities can achieve diamond, platinum, gold, silver, or bronze status, or an honorary mention. Bicycle friendliness can indicate that a community is healthy and vibrant. Like good schools and attractive downtowns, bicycle friendliness can

increase property values, spur business growth, and increase tourism.

This plan recommends the City pursue Bicycle Friendly Community status after implementation of the priority projects identified in this plan. This plan is a valuable resource for completing the LAB application efficiently. More information and application steps: *www.bikeleague.org/community*

BICYCLE FRIENDLY BUSINESS DISTRICTS

Bicycle Friendly Business Districts (BFBDs) provide end-of-trip bicycle infrastructure such as water bottle filling stations and bicycle parking in localized retail areas of a community. Providing infrastructure encourages the local community to buy local more often. This would help address the lack of bicycle parking, particularly in the downtown area, identified as a community need in the Existing Conditions chapter.

The City of Long Beach began a BFBD program by adding bicycle racks and corrals, bicycle lanes, and signage along major corridors. Participating bicycle friendly businesses receive a listing and map location on the Bike Long Beach website, as well as additional exposure through the website's Bike Saturdays discount program which offers bicycle riders a discount or deal every Saturday at more than 150 businesses within the six districts. More information can be found at *www.bikelongbeach.org/bike-friendly-businesses*

It is recommended the City declare a BFBD, provide additional end-of-trip facilities within the Business District, and encourage shop owners to offer discounts to patrons who arrive by bicycle.

BIKE TO WORK WEEK

May is National Bike to Work month and OCTA helped encourage cycling by promoting some new events such as Explore Jeffrey Open Space Trail, the Huntington Beach Bike Festival, and a Bike Rally. Participants could pledge to bike to work for the month and receive a coupon from a local bicycle shop, as well as be entered to win a raffle for a new bicycle.

Though Bike to Work Week exists on the county level, this plan recommends that the City of Garden Grove host citywide Bike to Work Week activities.

EMPLOYER-BASED ENCOURAGEMENT PROGRAMS

Though the City cannot host these programs, it can work with or provide information to employers about commuting by bicycle. Popular employer-based encouragement programs include hosting a bicycle user group to share information about how to bicycle to work and to connect experienced bicycle riders with novice bicycle riders. Employers can host bicycle classes and participate in Bike Week.

This plan recommends the City collaborate with employers to implement bicycle-related programs.

GARDEN GROVE ACTIVE STREETS USER MAP

The most recent bikeways map for Garden Grove is from 2008 and was developed as a part of its General Plan. As a part of this plan development process, an updated bikeways map will be released.

OPEN STREETS EVENTS

The Re:Imagine Garden Grove campaign has brought two open streets events through Downtown Garden Grove, with a third event planned for March 2017. The last event, held in October 2015, activated one mile of car-free streets and included a nighttime component which includes live music, dancing in the streets, a pop-up arcade, art workshops, outdoor dining, and more. Thousands of people participated in the event.

SCHOOL PROGRAMS

All school programs can be implemented in conjunction with a Safe Routes to School program.

BACK-TO-SCHOOL MARKETING

Families set transportation habits during the first few weeks of the school year and are often not aware of the multiple transportation options and routes available to them. Many families will often develop the habit of driving to school using the same congested route as everyone else.

Back-to-school encouragement marketing can promote bus, carpool, walking, and biking to school. The marketing campaign can include suggested route maps, safety education materials, volunteer opportunities, event calendars, and traffic safety enforcement notices. It can also include an illustrative guide that includes the Suggested Walking and Biking to School maps.

The event's objectives are to:

- Encourage families to plan out their routes at the beginning of the school year to consider alternatives to driving alone as a family.
- Encourage families to try walking, biking, and carpooling to school as well as participating in community activities and events that promote walking and biking to school.

This plan recommends expanding back-to-school marketing to include all Garden Grove schools over time.

BICYCLE TRAINS

Bicycle Trains are an organized group of students who bicycle to school under the supervision of a parent/adult volunteer. Parent champions take turns biking along a set route to and from school, collecting children from designated "train stops" along the way.

Schools and parent champions can encourage parents to form Bicycle Trains at back-to-school orientation or other fall events. The School District can provide safety vests to indicate the leader(s). Incentives for the parent volunteers can include coffee at the school or gift cards for local shops.

Bicycle trains benefit the Garden Grove community by:

- Improving safety - Children are more visible biking in groups, when accompanied by an adult
- Saving parents' money by not using a car
- Saving parents' time when they are not leading the train
- Reducing traffic congestion around the school

This plan recommends the City and School District work with schools and parent champions to develop a bicycle train program.

Example outreach materials:

- Sonoma Safe Routes to School's Bicycle Train Guide for Volunteers: *http://sonomasaferoutes.org/resources/bike-train-guide-for-volunteers.pdf/view*
- Marin County Safe Routes to Schools' SchoolPool Marin materials: *www.schoolpoolmarin.org/*

GOLDEN SNEAKER CONTEST

In the Golden Sneaker Contest, classrooms compete to see which class has the highest rate of students walking, biking, or carpooling to and from school. The class tracks how many students commute by these modes and calculates the percent of total trips by each mode. The winner of the contest receives a "golden sneaker" trophy, along with other incentive prizes.

A Golden Sneaker Contest can be expanded from classroom competitions to intra-school

competitions or district-wide competitions. Some schools hold celebrations for winning classrooms.

Participation in the Golden Sneaker Contest can benefit the Garden Grove community by:

- Increasing awareness of walking and biking to school
- Increasing the number of students who walk or bicycle to school

This plan recommends the School District work with the schools and parent champions to hold the Golden Sneaker Contest.

MONTHLY WALK AND ROLL DAYS

Walk and Roll to School Days are events to encourage students to try walking or biking to school. The most popular events of this type are International Walk to School Day (held in early October) and Bike to School Day (held in early May). Many communities have expanded on this once a year event and hold monthly or weekly events such as Walk and Roll the First Friday (of every month) or Walk and Roll Wednesdays (held every Wednesday).

Holding weekly or monthly Walk and Roll to School Day promotes regular use of active transportation and helps establish good habits. Volunteers can set up a welcome table for people walking and biking. The welcome table could provide refreshments, incentive prizes, and an interactive poster letting students document their mode to school. Walking School Buses, Bicycle Trains, and Golden Sneaker Contests can be organized and promoted on these days.

Participation in monthly Walk and Roll Days can benefit the Garden Grove community by:

- Building community
- Saving parents' money by not using a car
- Reducing traffic congestion around the school

This plan recommends that the Garden Grove Unified School District, schools, PTAs, and parent champions work together to promote Walk and Bike to School days to be held on a monthly or weekly basis.

STUDENT INCENTIVE PROGRAMS

Contests and incentive programs reward students by tracking the number of times they walk, bicycle, carpool, or take transit to school. Contests can be individual, classroom, school-wide, or interschool competitions, and can be integrated with other programs like Walk 'n' Roll to School Days. Types of incentive programs are listed below:

- Pollution Punch Card is a year-round program designed to encourage students and families to consider their options for getting to school. Every time a student walks, bicycles, carpools, or takes transit a school representative records the activity. After a certain number of points are reached, the student received a prize or incentive.
- Walk or Bike across California/America is a year-round program designed to encourage walking and biking by tracking the miles they travel throughout the year. Students are taught how to track their mileage and will also learn about places along their way.

Participation in incentive programs can benefit the Garden Grove community by:

- Increasing awareness of walking and biking to school
- Increasing the number of students who walk or bicycle to school

This plan recommends the School District work with the schools and parent champions to sponsor a number of incentive programs.

SUGGESTED WALKING AND BIKING ROUTES TO SCHOOL MAPS

Suggested Walking and Biking Routes to School Maps can help parents overcome fears related to traffic and/or lack of knowledge of family friendly routes to school. These types of maps show stop signs, traffic signals, crosswalks, paths, overcrossings, crossing guard locations, and similar elements that can help parents make decisions about choosing the route that best fits their family's walking and biking needs.

This plan recommends Garden Grove partner with the School District and OCTA, that already provides Bikeways Maps, to create Walking and Biking Routes to School Maps.

Enforcement

Enforcement programs enforce legal and respectful use of the transportation network. These programs will help educate motorists, bicycle riders, and pedestrians about the rules and responsibilities of the road.

GARDEN GROVE POLICE DEPARTMENT PROGRAMS

SUCCESS STORY: FATALITY REDUCTION CAMPAIGN

As part of the Garden Grove Police Department's Fatality Reduction Campaign, GGPD has started cracking down on drivers who do not yield to pedestrians in crosswalks. According to the news segment featured on the program website (*www.ci.garden-grove.ca.us/police/2013FatalityReduction*), over 70 drivers received citations for crosswalk violations in the three hours of enforcement conducted for the video. As shown in Chapter II Figure 2-7, collisions have decreased since 2012 after this campaign was launched in 2013.

BICYCLE HELMET AND LIGHT GIVEAWAYS

The California Office of Traffic Safety (OTS) grant program can fund bicycle helmets or lights for giveaways to children at schools or children observed biking without wearing helmets or residents riding without lights. Bicycle lights are required for nighttime riding in California (CVC21201) and can help increase the safety of a person riding a bicycle. Typically this type of program is conducted in partnership with the Police Department.

This plan recommends the City seek an OTS grant and conduct helmet and light giveaways for children and residents who do not own bicycle lights.

NATIONAL PROGRAMS

- #### NATIONAL BIKE REGISTRY & BICYCLE LICENSES

The National Bike Registry helps identify and return stolen bicycles (and scooters) to their rightful owners. Citizens of the City of Garden Grove can obtain a bicycle license by registering their bicycles with the National Bike Registry. Upon registration, owners receive a Certificate of Registration and a tamper-resistant NBR label to identify their bicycle. In the event registered bicycles are stolen and recovered, bicycles can be returned to their owners regardless of where in the nation it was recovered.

Engineering

Engineering programs create safe and convenient places to walk and ride. Survey after survey shows that the physical environment is a key determinant in whether people will get on a bicycle and ride, or choose to walk to destinations. These programs improve the physical walking and biking environment.

NEIGHBORHOOD TRAFFIC MANAGEMENT

This City program allows for traffic control devices to be installed in neighborhoods to prevent regional cut-through traffic such as traffic circles, neighborhood entrance treatments, curb extensions, diverters, and speed humps. Neighborhoods must request treatments to be installed (with at least 80 percent of residents showing their support) and the City will determine the best treatments needed.

NEIGHBORHOOD TRAFFIC SAFETY PROGRAM

The Neighborhood Traffic Safety Program is a three phase program that identifies and contacts offending drivers, addresses neighborhood traffic concerns by taking minor measures such as the installation of signs, striping, and/or pavement marking and addresses longer-term traffic concerns with more restrictive physical measures.

The City has also adopted the program with the goals of:

- Reducing the number of car crashes, deaths, and injuries on our streets
- Reducing the number of motorists who drive at excessive speeds
- Reducing speeding by providing a hotline number
- Improving the use of safety belts and enforce the State's Child Passenger Safety Law
- Developing community support for this program
- Reducing cut-through traffic

Evaluation

Evaluation programs help the City measure how well it is meeting the goals of this plan and the General Plan, and evaluation is a key component of any engineering or programmatic investment. It is also a useful way to communicate success with elected officials as well as local residents.

ANNUAL COLLISION DATA REVIEW

Reviewing bicycle rider-involved collisions and near-misses on an annual basis can help the City identify challenging intersections or corridors. This review should include an assessment of the existing infrastructure to determine whether improvements can be made to reduce the number of collisions in the community.

This plan recommends the City and Police Department review bicycle-involved collision data on an annual basis to identify needed improvements.

PARENT SURVEYS

The National Center for Safe Routes to School provides a standard parent survey, collecting information on modes of travel, interest in walking or biking to school, and challenges to walking and biking to school. The information gathered from the parent surveys can help Garden Grove and the School District provide programs that are attractive to parents. Parent surveys can also help measure parent attitudes and changes in attitude towards walking and biking to school.

It is recommended that the City and School District work together to conduct parent surveys every two to three years.

STUDENT WALKING AND BIKING COUNTS

Student hand tallies are one way to count the number of students who walk, bicycle, take transit or carpool to school. The National Center for Safe Routes to School provides the standard tally form online at *www.saferoutesinfo.org/program-tools/evaluation-student-class-travel-tally.*

It is recommended the Unified School District conduct student tallies on a biannual basis.

Program Prioritization

Table 6-1 summarizes key information for each of the existing and recommended programs. The table contains brief information about expected outcomes, likely partners, and prioritization. The column for priority weighs factors such as costs, potential impacts and outcomes, feasibility, and whether the program is already in place.

Table 6-1: Programs Prioritization

Program	City Role	Likely Partners	Target Audiences	Expected Outcomes							Priority
				Increased Biking	Increased Walking	Increased Biking Safety Behavior	Increased Walking Safety Behavior	Increased Driving Safety Behavior	Economic / Cultural Benefits	Enhanced Sense of Community	
Education											
County / Regional Programs											
Public awareness campaign	Lead/Partner	OCTA, Advocates	All road users, may be more targeted for specific campaigns	✓	✓	✓	✓	✓	✓	✓	●●●
● **OCTA Wrong Way Riding campaign**	Partner	OCTA	Current and potential bicyclists			✓		✓			●●
● **OCTA "How to Ride the Bus"**	Partner	OCTA, School District	Current and potential youth public transportation users							✓	●
City / Local Programs											
Adult bicycle skills classes	Partner	League of American Bicyclists, OCTA, Advocates	Current and potential adult bicyclists	✓		✓				✓	●●●
Bicycle-related ticket diversion class	Lead/Partner	GGPD, OCTA	Bicyclists, especially those who commit offenses known to endanger other road users (e.g. running stoplights)			✓			✓		●●
● **Neighborhood Traffic Unit**	Lead	GGPD	All road users	✓	✓			✓	✓		●●
School Programs											
Student bicycle traffic safety	Lead	School District, After School Programs, GGPD, Bike Organizations	Elementary, middle, and high school students	✓		✓				✓	●●●
Encouragement											
County / Regional Programs											
● **OCTA mobile apps**	Partner	OCTA	All users of the road, especially pedestrians and transit users				✓		✓		●●
● **Dump the Pump Week**	Lead/Partner	OCTA, Advocates	Private vehicle users, transit users					✓	✓	✓	●
● **OCTA Access**	Partner	OCTA	Senior citizens and people with disabilities						✓		●

● Existing program, to be continued

Lead = City instigates and carries out

Lead/Partner = City instigates but partners help out with doing a lot of the work

Partner = someone else instigates and the City helps in a lesser, supporting role

✓ Outcome of program

●●● High Priority ●● Medium Priority ● Low Priority

Table 6-1 continued

Program	City Role	Likely Partners	Target Audiences	Expected Outcomes							Priority
				Increased Biking	Increased Walking	Increased Biking Safety Behavior	Increased Walking Safety Behavior	Increased Driving Safety Behavior	Economic / Cultural Benefits	Enhanced Sense of Community	
● **OCTA Rideshare Week**	Lead/Partner	OCTA, Businesses, Schools, Advocates	Private vehicle users					✓	✓		●
● **OCTA youth passes**	Lead/Partner	OCTA	Youth transit riders		✓				✓		●
City / Local Programs											
Garden Grove active transportation user map	Lead		Current and potential bicyclists, visitors	✓		✓			✓		●●●
● **Open Streets events**	Lead/Partner	GGPD, GG Health Department, Community Orgs like CARS, Volunteers	General public	✓	✓	✓	✓		✓	✓	●●●
Bicycle-Friendly Business District	Lead / Partner	Business groups, Advocates	Current and potential bicyclists, local businesses	✓					✓	✓	●●
Bicycle-Friendly Community	Lead/Partner	League of American Bicyclists	Current and potential bicyclists	✓		✓			✓	✓	●●
● **Bike-to-Work Week**	Lead / Partner	OCTA, Employers, Advocates	Current and potential bicyclists	✓		✓				✓	●●
Employer-based encouragement programs	Partner	Employers	Current and potential bicyclists, pedestrians, and tranist users	✓	✓	✓	✓		✓	✓	●●
School Programs											
Back-to-school encouragement marketing	Lead/Partner	School District, OCTA, PTA groups	Elementary, middle, and high school students; parents of students	✓	✓	✓	✓	✓	✓	✓	●●●
Golden Sneaker Contest	Lead	School District, PTA groups	Elementary, middle, and high school students	✓	✓	✓	✓			✓	●●●
Monthly Walk and Roll Day	Lead/Partner	School District, OCTA, PTA groups	Elementary, middle, and high school students	✓	✓	✓	✓		✓	✓	●●●
Student incentives	Lead/Partner	School District, OCTA, PTA groups	Elementary, middle, and high school students	✓	✓	✓	✓			✓	●●●

● Existing program, to be continued

Lead = City instigates and carries out

Lead/Partner = City instigates but partners help out with doing a lot of the work

Partner = someone else instigates and the City helps in a lesser, supporting role

✓ Outcome of program

●●● High Priority

●● Medium Priority

● Low Priority

Table 6-1 continued

Program	City Role	Likely Partners	Target Audiences	Expected Outcomes							Priority
				Increased Biking	Increased Walking	Increased Biking Safety Behavior	Increased Walking Safety Behavior	Increased Driving Safety Behavior	Economic / Cultural Benefits	Enhanced Sense of Community	
Suggested walking and biking routes to school maps	Lead/Partner	School District, OCTA	Elementary, middle, and high school students; parents of students	✓	✓	✓	✓				●●●
Bicycle trains	Lead/Partner	School District, OCTA, PTA groups	Elementary and middle school students	✓		✓				✓	●●
Enforcement											
GGPD Programs											
● **Fatality Reduction campaign**	Lead	GGPD	All users of the road				✓	✓			●●●
Bicycle helmet and light giveaways	Lead/Partner	GGPD, School District	Current and potential bicyclists	✓		✓				✓	●●
National Programs											
● **National Bike Registry / bike licenses**	Lead/Partner	GGPD, National Bike Reistrry	Current and potential bicyclists			✓					●●
Engineering											
City / Local Programs											
● **Neighborhood Traffic Management**	Lead/Partner	Neighborhood councils / committees, Advocates	All users of the road			✓	✓	✓	✓	✓	●●●
● **Neighborhood Traffic Safety**	Lead		All users of the road			✓	✓	✓	✓		●●
Evaluation											
City / Local Programs											
Annual collision data review	Lead	GGPD, Advocates	**All road users**	✓	✓	✓	✓		✓		●●●
School Programs											
Student walking and biking counts	Lead	School District, Safe Routes to School	**Students, advocates, City staff (analysts)**			✓	✓		✓		●●●
Parent surveys	Lead	School District, Safe Routes to School	**Parents of students**			✓	✓				●●

● Existing program, to be continued

Lead = City instigates and carries out

Lead/Partner = City instigates but partners help out with doing a lot of the work

Partner = someone else instigates and the City helps in a lesser, supporting role

✓ Outcome of program

●●● High Priority ●● Medium Priority ● Low Priority

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A team of volunteers help install temporary crosswalks and shared bicycle routes in preparation for an Open Streets event.

VII. IMPLEMENTATION PLAN

It requires really hard work to get beyond the dashboard view of our streets...The new blueprint is not anti-car. It is pro-choice.

-- Janette Sadik-Khan, Former NYC DOT Commissioner

The long-term vision for active transportation in Garden Grove has been set. Now the City must begin to implement the vision - *but where do we start?*

The following section answers this question and **presents the project prioritization strategy and project cost estimates**. Also, **select top-priority projects are discussed in more detail**.

The City should use this section as a guide for achieving the vision and goals established in the beginning of the plan. As a general strategy, the City should regularly evaluate how well recommendations are being met and whether these recommendations still meet the needs of Garden Grove's residents and visitors. The plan's goals also serve with specific benchmarks defined for infrastructure and non-infrastructure improvements. Implementation progress should be regularly tracked on at least an annual basis. An annual "State of Active Transportation" report is a good means of accomplishing this in a format that can be easily shared with the public to inform them on plan progress. In addition, best practices in bicycle and pedestrian accommodation is a rapidly-evolving field, the recommendations in this plan should be re-evaluated at least every five years to ensure that these still constitute best-practices and still reflect Garden Grove's long-term vision for creating and maintaining active streets.

This chapter contains:

- Bikeway Prioritization
- Project Cost Estimates
- Pedestrian Priorities

Bikeways Project Prioritization

The intent of evaluating projects is to create a prioritized list of projects for implementation. As projects are implemented, lower ranked projects move up the list. The project list and individual projects included in this plan are flexible concepts that serve as a guideline. The high-priority project list, and perhaps the overall project list, may change over time as a result of changing biking and walking patterns, land use patterns, implementation constraints and opportunities and the development of other transportation improvements.

PRIORITIZATION METHODOLOGY

Project prioritization was developed through feedback the project team received from City staff and the Community Advisory Committee as well as input from the community. Outreach at public events, like Garden Grove's 60th Anniversary Diamond Jubilee, support the results of the prioritization process. More information regarding community input and outreach events can be found in Appendix B.

Prioritization looked at a number of factors such as retail and job centers, schools and recreation opportunities, and collisions to determine the need, feasibility, and benefit of implementing recommendations. The project team developed prioritization criteria and collectively determined the importance of each consideration by assigning each category an appropriate weight. The criteria can be seen in Table 7-1.

The top priority projects found in the following tables and figures are the most important projects to be implemented over the next five years. The bicycle network is classified into three categories - Early Action Projects, Study Corridors, and Network Build out. Detailed results of the prioritization of all proposed bikeways can be found in Appendix E.

At Garden Grove's 60th Anniversary Diamond Jubiliee, the community was aksed to rank network recommendations. Results were then used to help prioritize routes.

Table 7-1: Criteria for Project Prioritization

Criteria	Description	Max Score
Community Support	The Project or area is directly identified for improvement during the community input phase (20 pts) or... The project or area is indirectly identified for improvement during the community input phase (10 pts)	**20**
Proximity to school	The project directly connects to a school (20 pts) or... The project connects to an existing facility that connects to school (10 pts) or... The project does not connects to a school (0 pts)	**20**
Proximity to Retail	The project directly connects to retail/commercial land-use (15 pts) or... The project connects to an existing facility that connects to retail/ commercial land-use (7 pts) or... The project does not connect to retail/commercial land-use (0 pts)	**15**
Proximity to Recreation	The project directly connects to a recreational opportunity (15 pts) or... Project connects to an existing facility that connects a recreational opportunity (7 pts) or... Project does not connects to a recreational opportunity (0 pts)	**15**
Safety	The project addresses a location with a history of bicycle- and pedestrian-involved collisions (10 pts) or... The project is parallel to a corridor with a history of bike/ped collisions (5 pts)	**10**
Demand	Projects in locations that fall within areas of estimated high demand will be awarded 10 points	**10**
Access to Open Space	The Project creates new open space providing ecological, environmental and aesthetic benefits (Score / No Score)	**10**
	TOTAL POSSIBLE SCORE	**100**

BICYCLE PRIORITIZATION RESULTS

Implementation of the bicycle network is classified into three Tiers.

Tier 1 projects are the Early Action Projects (EAP). The EAPs were identified as an easy first step to improve and expand the existing bicycle network. The EAPs were selected through community input and professional evaluation early in the planning process. Garden Grove applied for and was awarded construction funding through the 2016 OCTA Bicycle Corridor Improvement Program (BCIP). This successful grant application shows the commitment of the City to seek funding to implement the recommendations identified in the Active Streets Plan. Table 7-2 provides a list of the Tier 1 corridors.

Tier 2 projects are the top 10 corridors based on the evaluation criteria. Table 7-3 provides a list of the 23 Tier 2 corridors. Tier 3 projects are the remaining corridors in the bicycle network.

Study corridors that require additional design and/or environmental evaluation are identified in Table 7-4. Studies can be conducted at any time and allow the City to develop design recommendations to assess feasibility of proposed facilities.

Figure 7-1 shows the 3 project Tiers and Study Corridors. Tables containing all routes ranked by priority and class can be found in Appendix E.

Table 7-2: Tier 1: Early Action Bikeway Projects

Corridor	From	To	Recommendations	Miles
Brookhurst St	Katella Ave	Chapman Ave	Class II bicycle lane	1.0
Brookhurst St	Chapman Ave	Trask Ave	Class II buffered bicycle lane	1.6
Chapman Ave	Valley View St	Beach Blvd	Class II buffered bicycle lane	2.0
Gilbert St	Katella Ave	Chapman Ave	Class II bicycle lane	1.0
Gilbert St	Chapman Ave	Trask Ave	Class III bicycle route	1.5
Lampson Ave	Oertly Dr	Haster St	Class II buffered bicycle lane	0.2
Lampson Ave	9th St	Glen St	Class II buffered bicycle lane	0.2
Lampson Ave	Volkwood St	Buaro St	Class III bicycle route	0.5
Lampson Ave	Magnolia St	Nutwood St	Class III bicycle route	1.5
Lampson Ave	Glen St	Oertly Dr	Class III bicycle route	1.0
West St	Orangewood Ave	Garden Grove Blvd	Class II bicycle lane	1.5
			Total	**12.8**

Figure 7-1: Bicycle Network Phasing

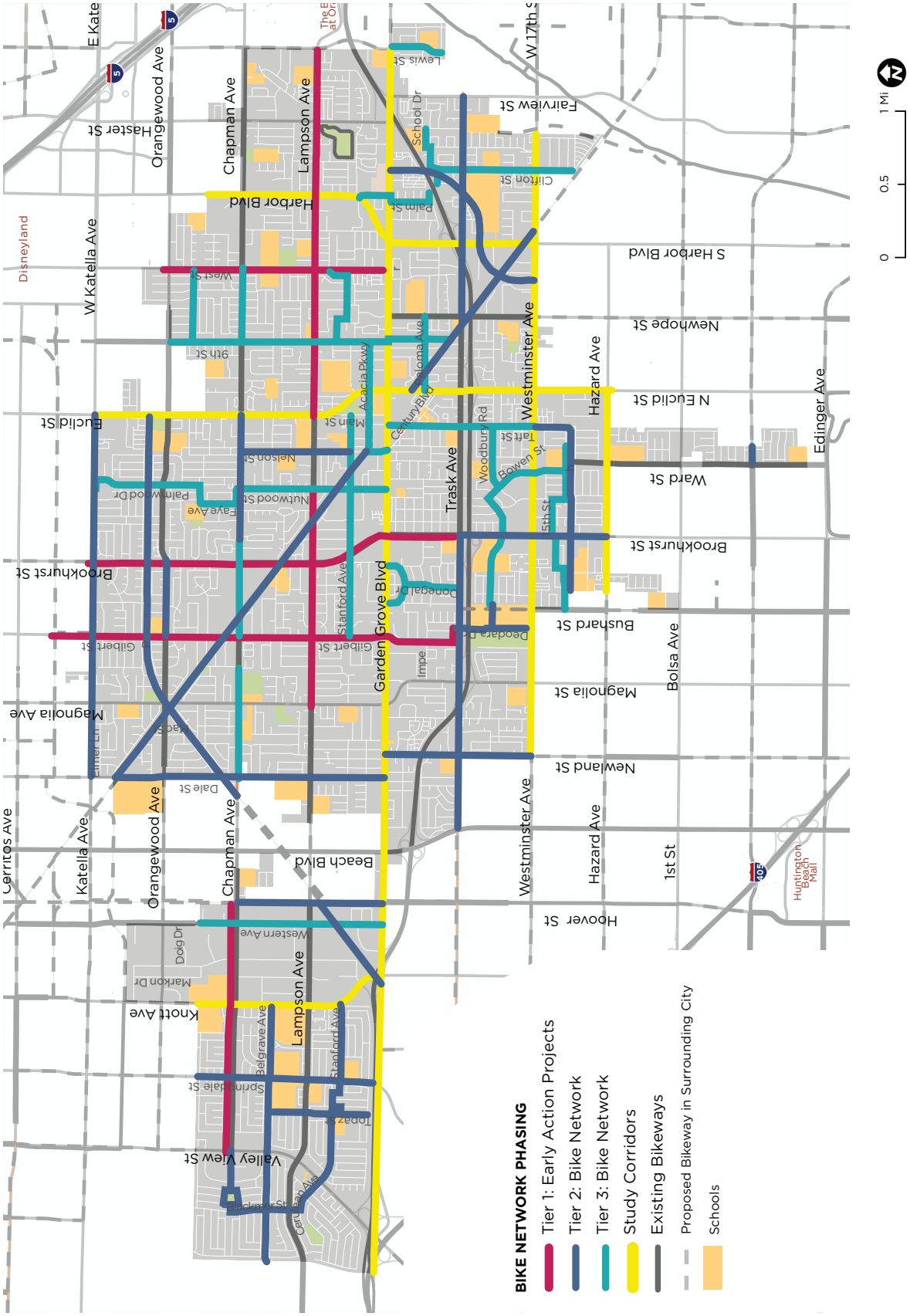


Table 7-3: Tier 2: Bicycle Facility Projects

Rank*	Corridor	From	To	Bike Facility	Miles
1	Anaheim – Barber City Channel (North)	Euclid St	Chapman Ave	Class I	2.8
1	City of Garden Grove SO-1	Knott St	West City Limits	Class I	1.3
1	Pacific Electric Right of Way 1	Nelson St	Dale St	Class I	2.8
2	Bolsa Grande HS Connector Path	Deodara Dr	Woodbury Ave	Class I	0.2
2	Deodara Dr	Trask Ave	Westminster Ave	Class III Bike Route	0.5
3	Pacific Electric Right of Way 2	Westminster Ave	Euclid St	Class I	1.4
3	Westminster Channel	Westminster Ave	Kerry St	Class I	1.3
3	Wintersburg Channel	Garden Grove Blvd	Westminster Ave	Class I	1.4
4	Dale St	PE ROW	Garden Grove Blvd	Class II	1.8
5	McFadden Ave	Ward St	City Limit	Class II	0.2
6	Katella	Dale St	Euclid St	Class II	2.5
6	West Garden Grove Neighborhood Greenway Blackmer St (Chapman Ave to Cerulean Ave), Cerulean Ave (Topaz to Blackmer St), Standord Ave (Knott St to Topaz St), Topaz St (Huntly to Anthony Ave)	Chapman Ave	Knott St	Class III Neighborhood Greenway	2.7
6	West Garden Grove Neighborhood Greenway	St. Mark St`	Valley View Ave	Class III Bike Route	0.3
7	Union Pacific Railway	City limits	Garden Grove Blvd	Class I	0.7
8	Brookhurst St	Trask Ave	Hazard Ave	Class II	1.0
8	Newland St	Garden Grove Blvd	Westminster Ave	Class II	1.0
8	Springdale St	North City Limits	Garden Grove Freeway	Class II	1.2
8	Trask Ave	Beach Blvd	Brookhurst St	Class II	2.0
8	Trask Ave	Newhope St	Fairview St	Class II	1.5
9	Chapman Ave	Brookhurst St	Euclid St	Class II	1.1
9	Orangewood Ave	Gilbert St	Brookhurst St	Class II	0.5
10	Anaheim – Barber City Channel (South)	Union Pacific Railway	Garden Grove Blvd	Class I	2.8
10	Nelson St	Chapman Ave	Stanford Ave	Class III Bike Route	0.7
			Total Miles		**31.6**

**Projects with the same rank number received the same prioritization score (see Appendix E).*

Table 7-4: Study Corridors shown in priority ranking

Corridor	From	To	Recommendations	Miles
Garden Grove Blvd	Lewis St	Valley View St	Complete Street Study	8.4
Westminster Ave	East City Limits	Newland St	Complete Street Study	4.3
Euclid St	Lampson Ave	Trask Ave	Complete Street Study	1.1
Acacia St	9th St	Nelson St	Separated Bicycle Lane Study	0.8
Hazard Ave	Euclid St	Christy St	Separated Bicycle Lane Study	1.4
Knott St	North City Limits	Garden Grove Blvd	Separated Bicycle Lane Study	1.8
Harbor Blvd	North City Limits	Westminster Ave	Complete Street Study	2.4
Nelson St	PE ROW	Garden Grove Blvd	Separated Bicycle Lane Study	0.2
West St	Ricky Ave	Orangewood	Class II Bicycle Lane Study	0.2
			Total	**20.6**

Project Cost Estimates

COST ESTIMATE METHODOLOGY

A summary of potential costs for the recommended bikeway network is presented in Table 7-5. Bikeway network costs were estimated by applying distance-based cost factors (by mile) to projects in each proposed facility class. The combined cost for the proposed bikeways within the City of Garden Grove is estimated $18.2 million. Cost estimates for study corridors and upgrades to existing bikeways (e.g. wayfinding signage and buffers) were not included in this estimate.

It is important to note the following general assumptions about the cost estimates. First, all cost estimates are conceptual, since there is no feasibility or preliminary design completed, and second, the design and administration costs included in these estimates may not be sufficient to fund environmental clearance studies. Costs do not include environmental remediation or right-of-way aquisition. Finally, costs estimates are a moving target over time as construction costs escalate quickly, and as such, the costs presented should be considered as rough order of magnitude only.

Table 7-6 presents the planning level cost assumptions used to determine project cost estimates for new bikeways. Unit costs are typical or average costs informed by Alta Planning + Design's experience working with California communities. While they reflect typical costs, unit costs do not consider project-specific factors such as intensive grading, landscaping, or other location-specific factors that may increase actual costs. For some segments, project costs may be significantly greater. The cost estimates do not include updates to existing bikeways or study corridors.

A detailed list of funding sources can be found in Appendix C.

Table 7-5: Unit Cost Assumptions

Item	Unit	Costs
Class I Shared-Use Path	MI	$900,000
Class II Bicycle Lanes (two sides)	MI	$85,000
Class II Bicycle Lanes through 4- to 3- lane road rebalancing	MI	$200,000
Class III Bicycle Route with Signs	MI	$30,000
Class III Neighborhood Greenway	MI	$180,000
Class IV Separated Bikeway (two sides)	MI	$300,000

Table 7-6: Estimated Cost Summary by Project Type (New Bikeways)

Project type	Costs
Class I Shared-Use Path	$13,185,000
Class II Bicycle Lanes	$1,471,050
Class II Bicycle Lanes through 4- to 3-lane road rebalancing	$700,000
Class III Bicycle Route With Shared-Lane Markings	$159,000
Class III Neighborhood Greenway	$2,700,000
Total	**$18,215,050**

BEST FUNDING SOURCES

GRANTS	APPLICATION SCHEDULE
Active Transportation Program (ATP)	April - June
SCAG Sustainability Program	September - November
Bicycle Corridor Improvement Program (BCIP)	May - June

On-Street Bikeway Implementation Strategies

The following section provides an overview of selected strategies that can be employed to update urban roadways to improve existing bikeways and create new bicycle lanes.

DEMONSTRATION & PILOT PROJECTS

Temporary demonstration and pilot projects are one way to implement projects while testing the impacts to the transportation system. These projects enable the City to test the efficacy of particular treatments and applications on a temporary basis, often at a relatively modest cost due to the short-term materials used. The temporary projects are monitored to understand benefits and trade-offs. Additionally, they can be adjusted before converting a project to a permanent improvement.

Short-term demonstration projects, sometimes called tactical urbanism or temporary installations, are installed for one or two days in order to quickly evaluate a project and to gather feedback from the public. Demonstration projects usually use cones, spray chalk, and other temporary materials that can be easily transported to the site and moved during the demonstration, if needed.

Longer-term pilot projects can be installed for up to two years prior to long-term implementation. This allows for extensive data collection and public input, especially for contentious projects. Materials such as paint and flexible delineators are often used during pilot projects then upgraded to higher-quality treatments such as thermoplastic, cement, and bollards for long-term implementation.

PILOT PROJECT FOR GARDEN GROVE

Possible pilot projects identified include:

- **Green conflict striping**
  - » Suggested location: intersection of Brookhurst Street and Westminster Avenue
- **Green shared lane markings**
  - » Suggested location: Lampson Avenue bicycle route and Gilbert Street south of Chapman

IMPROVE EXISTING BICYCLE LANES THROUGH LANE NARROWING

Lane narrowing utilizes roadway space that exceeds minimum standards to provide the needed space for bicycle lanes. Many roadways have existing travel lanes that are wider than those prescribed in local and national roadway design standards, or which are not marked. Most standards allow for the use of 11 foot and 10 foot wide travel lanes to improve existing bicycle lanes.

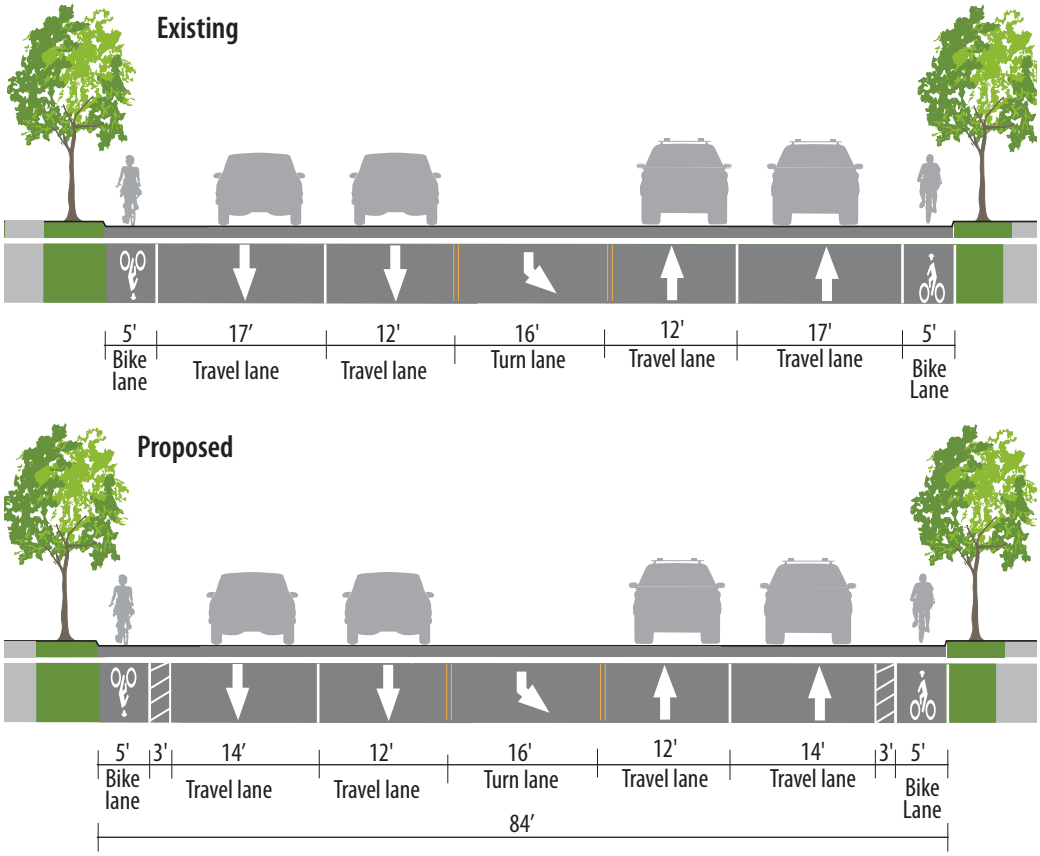
Both Brookhurst Street and Chapman Street have a posted speed limit of 45 mph with existing but discontinuous bicycle lanes. There is an opportunity to add a 3 foot buffer to the wide outside vehicle lane. Adding a buffer will create more comfortable condition for bicyclists and help to reduce incidence of sidewalk-bicycle riding. Figure 7-22 shows an example of how the Chapman Avenue bicycle lanes could be improved by striping a buffer.

TRAFFIC CALMING ALONG BICYCLE ROUTES AND NEIGHBORHOOD GREENWAYS

Traffic calming can slow and deter motorists from driving on a street that has been prioritized for biking and walking. There is a large suite of physical design measures that can be placed on roads to slow traffic an improve safety. Two traffic calming meaures that could be easily implemented in Garden Grove are narrowing travel lanes through striping improvements and installing neighborhood traffic circles.

Lampson Avenue is the only continuous east/west corridor central in Garden Grove that is not a truck route. The width of the ROW through the Lampson corridor varies widely and has intermittant bicycle lanes. Where the ROW widens, narrowing travel lanes through striping and installing curb extensions at selected intersections will help slow speeding vehicles.

Figure 7-2: Typical cross section along Chapman Avenue between Valley View and the city limit shows an example of adding a buffer to an existing bicycle lane by narrowing a wide outside travel lane.



Examples of traffic calming through painted shoulder markings (left) or painted center median (right)

ROAD REBALANCING

Streets with excess vehicle capacity provide opportunities for bicycle lane retrofit projects. The repurposing of a single travel lane will generally provide sufficient space for bicycle lanes on both sides of a street.

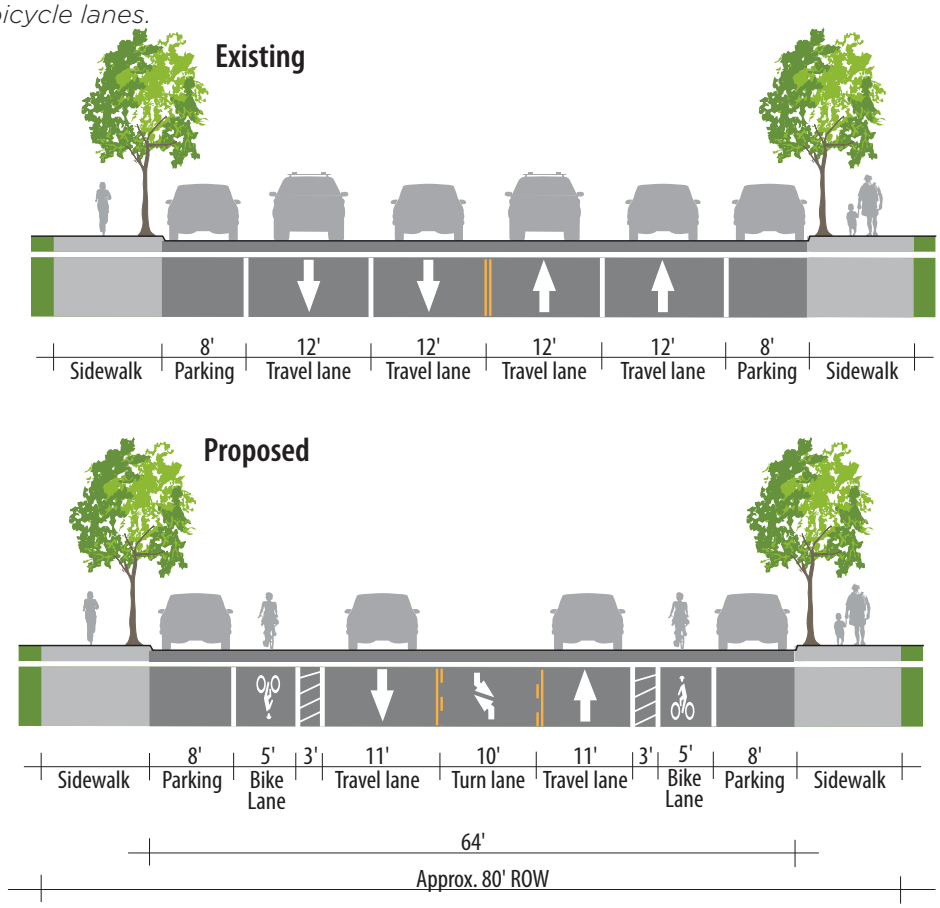
Four potential road rebalancing canidates have been identified on Gilbert Street, West Street, Hazard Avenue and Newland Street. Land use analysis and preliminary traffic engineering evaluation of the existing average daily traffic (ADT) and planned ADT buildouts (per the Garden Grove 2030 General Plan) indicates that these four corridors are good candidates for roadway rebalancing. A buffered bicycle lane could be added to the roads through rebalancing four lanes to three lanes. Figure 7-33 shows an example cross section on West Street.

The Federal Highway Administration (FHWA) advises roadways with ADT of 20,000 or less make good candidates for road rebalancing studies. Additional research and case studies can be found at *http://safety.fhwa.dot.gov/road_diets/info_guide/ch3.cfm.*

PARKING REDUCTION

Bicycle lanes can replace one or more on-street parking lanes on streets where excess parking exists and/or the importance of bicycle lanes outweighs parking needs. For example, parking may be needed on only one side of a street. Eliminating or reducing on-street parking also improves sight distance for bicyclists in bicycle lanes and for motorists on approaching side streets and driveways.

Figure 7-3: Typical cross section along West Street shows an example of 4 to 3 lane road rebalancing to add buffered bicycle lanes.



Pedestrian Priorities

PEDESTRIAN PRIORITIES

A suite of pedestrian infrastrucutre recommendations was presented in Chapter V. Table 7-7 provides the five most important priorities to improve the pedestrian environment in Garden Grove.

Improvements should focus on closing sidewalk gaps in school zones, improving crossings through shortening crossing distances, and improving pedestrian signal timing. Furthermore, improving lighting and creating shade through street tree planting were identifed by the community as the two main factors that would make it easier and more desirable to walk in Garden Grove.

Table 7-7: Pedestrian Priorities

Pedestrian Priorities	
1	Sidewalk gap closure in school zones
2	Improve uncontrolled crossings
3	Improve pedestrian signal timing
4	Improve pedestrian lighting
5	Plant shade trees

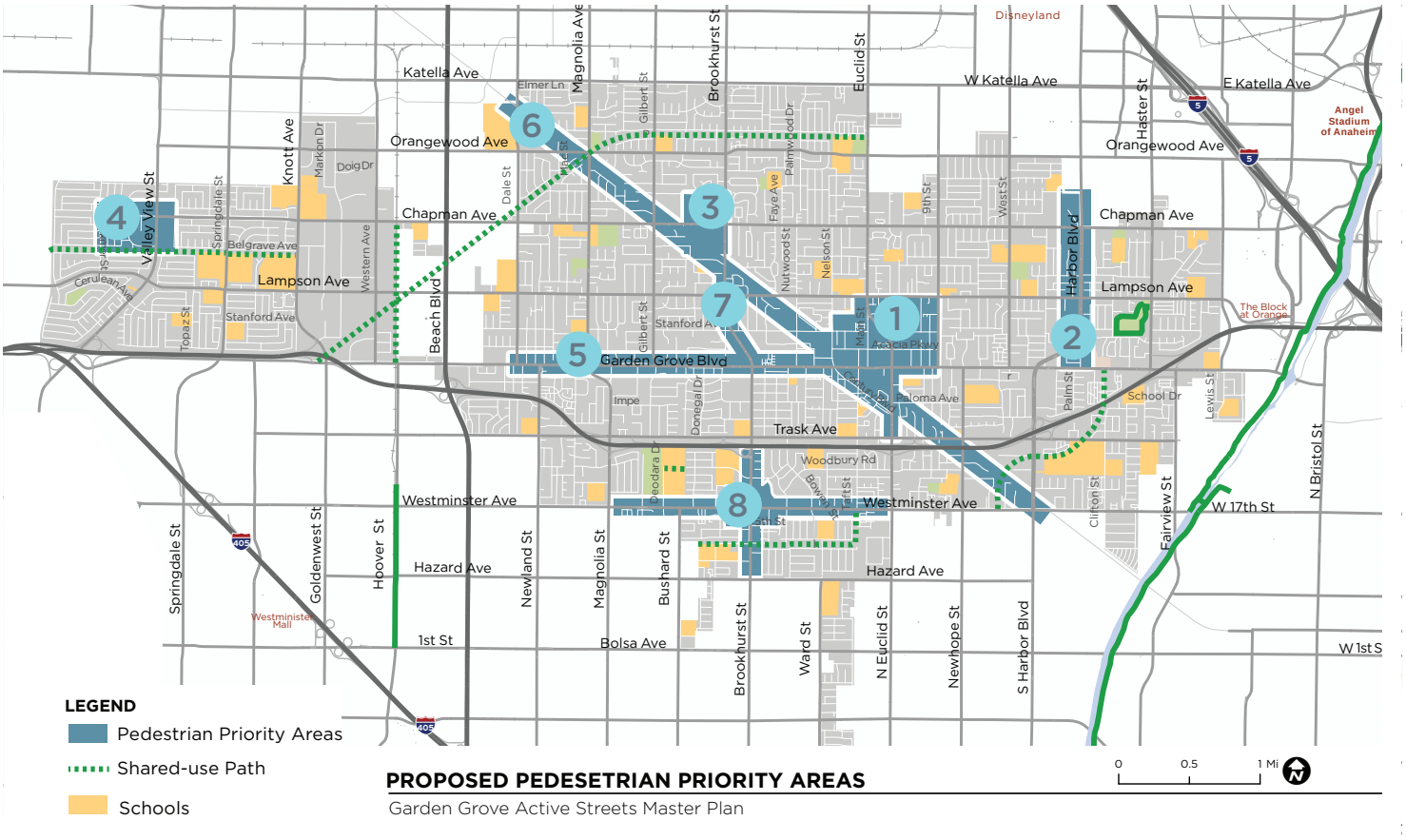
A creative crosswalk in Long Beach, CA provides more visibility and enjoyability for pedestrians

A midblock crossing in West Hollywood, CA features a high-visibility crosswalks, bollards, and flashing beacons for a safe, convenient walking environment

Pedestrian countdown signals provide timing information to pedestrians crossing the street and communicate pedestrian right of way to drivers

Street trees provide shade for a more comfortable walking experience

Figure 7-4: Pedestrian Priority Areas



PROPOSED PEDESETRIAN PRIORITY AREAS
Garden Grove Active Streets Master Plan

PEDESTRIAN PRIORITY AREAS

This plan has identified eight priority areas and corridors for infrastructure improvements (see Table 7-8 and Figure 7-4). The areas were selected because they have high pedestrian activity, such as around civic or commercial areas and have a history of pedestrian involved collisions. The two priority corridors were selected because they have been identifed in previous plans as future corridors for active transportation use.

Table 7-8: Pedestrian Priority Areas

Area	
1	Downtown and Garden Grove High School
2	Harbor Boulevard - Resort District
3	Brookhurst and Chapman Shopping Centers
4	Chapman and Valley View
Corridor	
5	Garden Grove Boulevard
6	Pacific Electric Right-of-Way
7	Garden Grove Boulevard / Brookhurst Street / PE ROW Triangle
8	Westminster / Brookhurst Corridor

Priority Project Details

As a part of this planning effort, the project team developed project cutsheets for selected projects within Garden Grove. The cutsheets can be utilized for a variety of uses, such as to convey what improvements will potentially look like to residents and stakeholders, as well as assist in applying for grant money to fund implementation.

PE ROW URBAN GREENWAY

One of the top priority projects is to develop an urban greenway with a shared-use path along the Pacific Electric Right-of-Way (PE ROW). The next chapter provides details for coordination, phasing and concept designs for the PE ROW Trail.

EARLY ACTION PROJECTS

Implementation details including cross sections, detailed segment improvement descriptions, and costs, were developed for the Early Action Projects as part of the OCTA BCIP grant application. This information can be found in Appendix G. A cutsheet was developed for the West Street Road Rebalancing project.

NEIGHBORHOOD GREENWAYS

Throughout the public outreach process, residents in Garden Grove were supportive of creating neighborhood greenways to help create safe routes to school. Quiet, residential streets provide low-stress, convenient routes for neighborhood travel on foot and by bicycle. A cut sheet to implement the Westside Neighborhood Greenway was developed because it was ranked as the top priority neighborhood greenway.

STUDIES

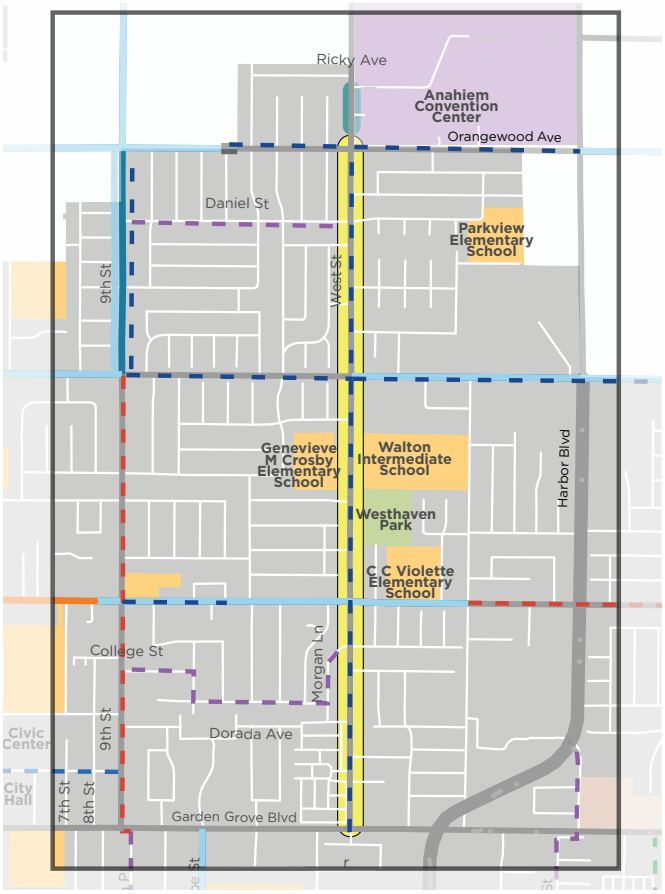
Cutsheets were developed for the Garden Grove Boulevard Complete Street Study, Downtown Active Transportation Improvement Plan, and Safe Routes to School Plan. These projects are key to developing a robust active transportation network in Garden Grove. Additional outreach, planning and design work is needed to assess feasibility of active transportation improvements and to conduct further environmental evaluation.

WEST STREET ROAD REBALANCING

GOALS MET

GOAL 01 GOAL 02 GOAL 03

PROJECT SITE



Class I
- Existing Shared-use path
- Proposed Shared-use path

Class II
- Existing Bike Lanes
- Proposed Bike Lane / Buffered Bike Lane

Class III
- Existing Bike Route
- Proposed Bike Route / Shared Street
- Proposed Neighborhood Greenway

- Study Corridors
- Intersection Improvements

LAND USE
- Schools

PROJECT DESCRIPTION

CONTEXT

West Street is a north/south corridor on the east side of the city. Within the project area West Street between Orangewood Avenue and Garden Grove Boulevard is approximately 64 feet wide and has 2 driving lanes in each direction, with no median, no bicycle lanes, and parking on both sides. The current average daily traffic (ADT) volumes are 12,900 cars and the 2030 General Plan build out volumes do not exceed 20,000 cars. Though the street currently has no bicycle facilities, it does have continuous sidewalks but limited pedestrian crossings. Primarily lined with single family homes, West Street will benefit from traffic calming and safety improvements. to provide safe, pleasant, and convenient travel for all modes.

IMPROVEMENTS

Buffered bicycle lanes will be installed to West Street through rebalancing four vehicle lanes to three vehicle lanes. Through restriping, West Street will be rebalanced by converting a four-lane undivided road (two lanes in each direction) into three lanes (one lane in each direction with a center turn lane). Excess space is used for the creation of a Class II bicycle lane. The project will include:

- Traffic striping plans, specifications and estimates (PS&E)
- Street resurfacing
- Traffic signing and striping
- Traffic signal upgrades

BENEFITS

Benefits of the West Street Road Diet study will include:

- Reduced crossing distance for pedestrians
- New bicycle lanes, creating a north/south bikeway

WEST STREET ROAD REBALANCING

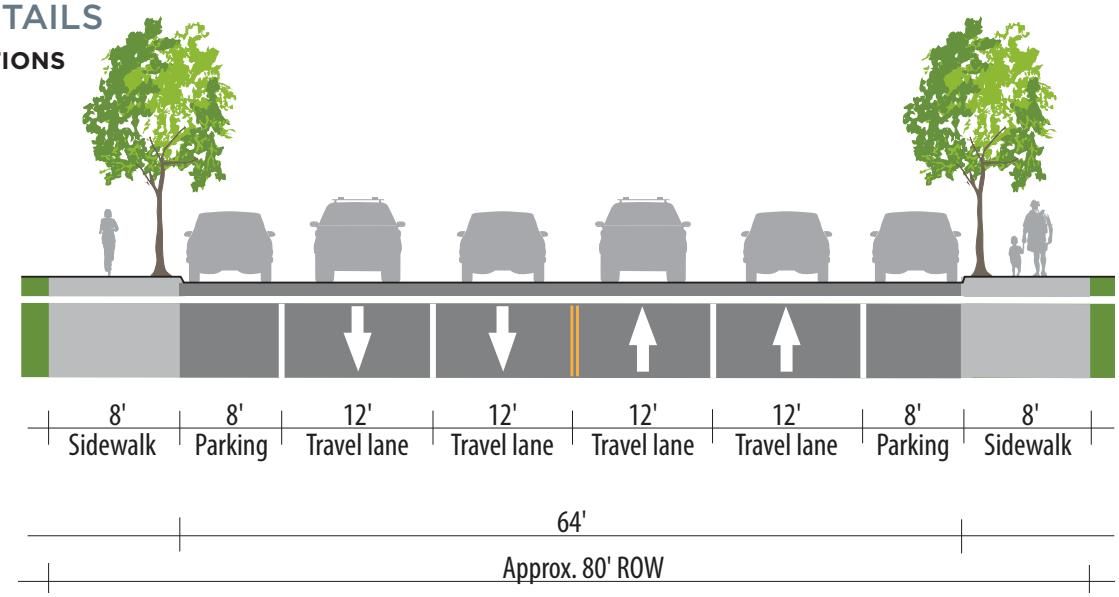
- Left turn lanes for drivers
- Reduced vehicle speeds and improved traffic flow
- Safer connections for the nearby Crosby Elementary School and Westhaven Park

ESTIMATED COST
$650,000

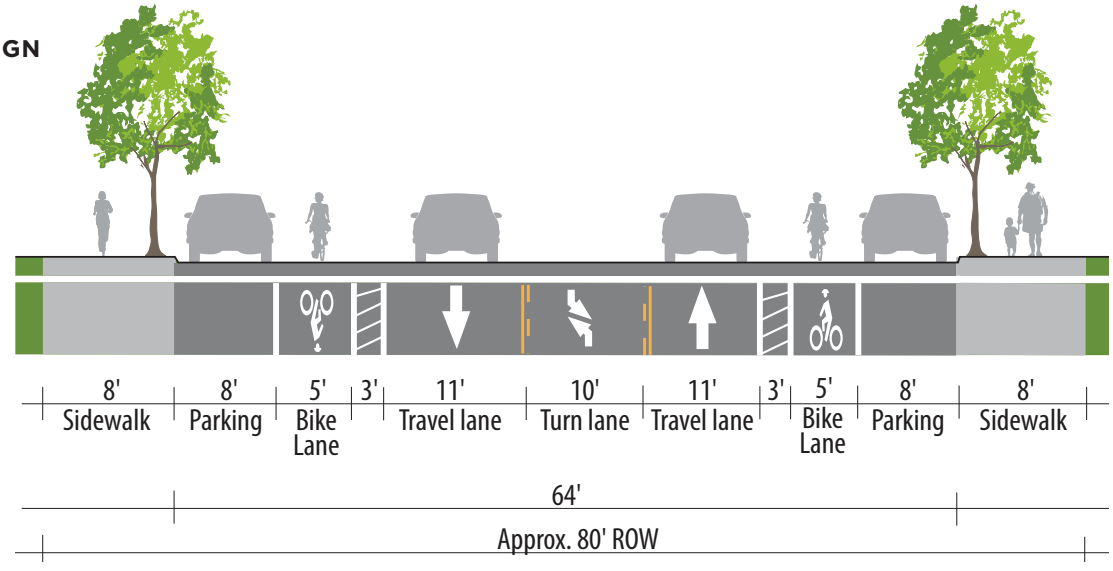
Above: West Street's width, low traffic volumes and mostly residential use makes it ideal for pedestrian and bicycle improvements

PROJECT DETAILS

EXISTING CONDITIONS



PROPROSED DESIGN



WESTSIDE NEIGHBORHOOD GREENWAY

GOALS MET

GOAL 01 GOAL 03

PROJECT SITE: WESTSIDE NEIGHBORHOOD GREENWAY

PROJECT DESCRIPTION

CONTEXT

Quiet, residential streets throughout Garden Grove already provide low-stress, convenient routes for neighborhood travel on foot and by bicycle. While conventional Class II bicycle lanes on busier streets provide connections for skilled cyclists, quieter neighborhood streets can provide alternative routes, especially those who would like to travel at a more leisurely pace with limited vehicle traffic. Neighborhood Greenways, like Cerulean Avenue or Blackmer Street (see map above) can connect residents to public parks, schools, and local destinations.

IMPROVEMENTS

Neighborhood Greenway Networks can be a combination of a variety of traffic facilities. This includes traffic calming measures like curb extensions and chicanes, which can discourage motor vehicle traffic on neighborhood streets. This can improve the safety and peacefulness of streets for residents, while accommodating walking and biking. Cities like Berkeley, California and Portland, Oregon have created extensive networks of neighborhood greenways and provide simple signage to facilitate easy access for bicycle traffic to use the network and avoid busier arterials.

A neighborhood greenway in Santa Monica, California with a roundabout to calm traffic

WESTSIDE NEIGHBORHOOD GREENWAY

BENEFITS

Neighborhood Greenways can provide networks of low-stress bicycle facilities with minimal costs, and help to beautify neighborhoods. Specific benefits include:

- Reduced cut-through vehicular traffic
- Opportunities to add landscaping to streets
- Improved safety for residents, pedestrians, and bicyclists
- Low-cost, high reward

ESTIMATED COST

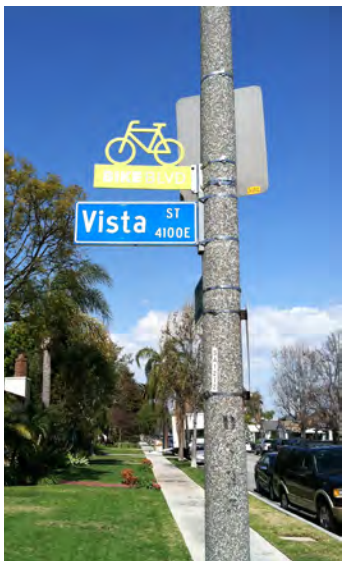
$550,000

EXAMPLES

Above: Custom signage for a neighborhood greenway in Berkeley, CA

Left: A neighborhood greenway, traffic circle, and signage in Berkeley, CA creates safer and more convenient environments for biking and walking

Right: Long Beach's custom signage. A neighborhood greenway, traffic circle, and signage in Long Beach, CA. Yield signs and traffic circles caution drivers to slow down, pedestrian crossing signage creates a safer walking environment, and bicycle signage and pavement markings make a safer and more convenient bicycle environment



GARDEN GROVE BLVD COMPLETE STREET STUDY

GOALS MET

GOAL 01 GOAL 02 GOAL 04 GOAL 05

PROJECT DESCRIPTION

CONTEXT

Garden Grove Boulevard is a key east/west connection running the entire length of the city. Approximately 100 feet wide, Garden Grove Boulevard has ample room for safe, pleasant, and convenient travel options for all. The street currently has no bicycle facilities, limited pedestrian crossings, and the segment between Goldenwest Street and Valley View Street do not have continous sidewalks on both sides of the street. Primarily lined with commercial buildings and zoned to allow mixed use development, this corridor is used by many residents and visitors. When people live close to retail, there is a greater demand for walking and biking, so the corridor will benefit from enhanced bicycle and pedestrian facilities.

PROJECT SITE

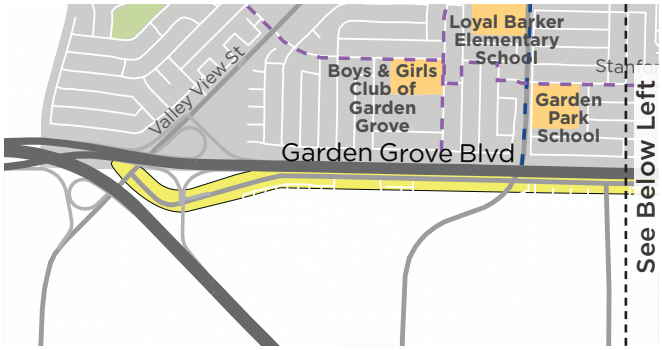
Class I
- Existing Shared-use path
- Proposed Shared-use path

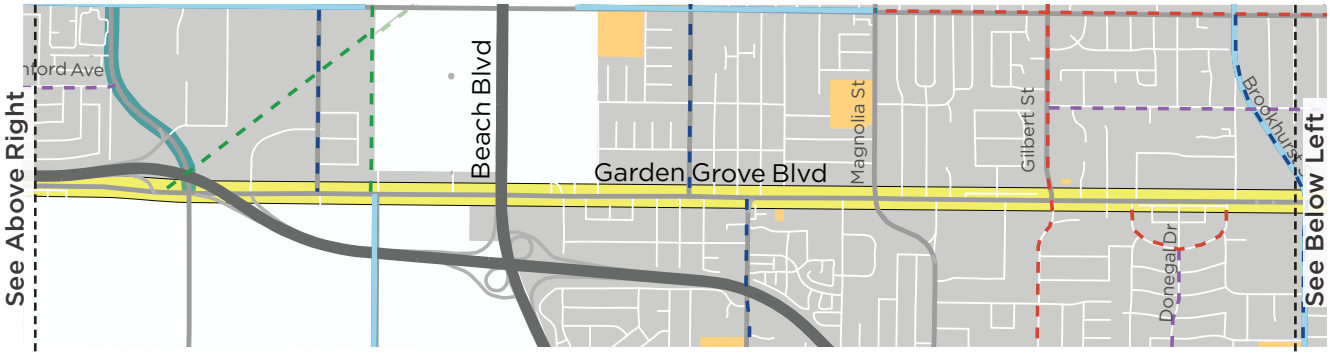
Class II
- Existing Bike Lanes
- Proposed Bike Lane / Buffered Bike Lane

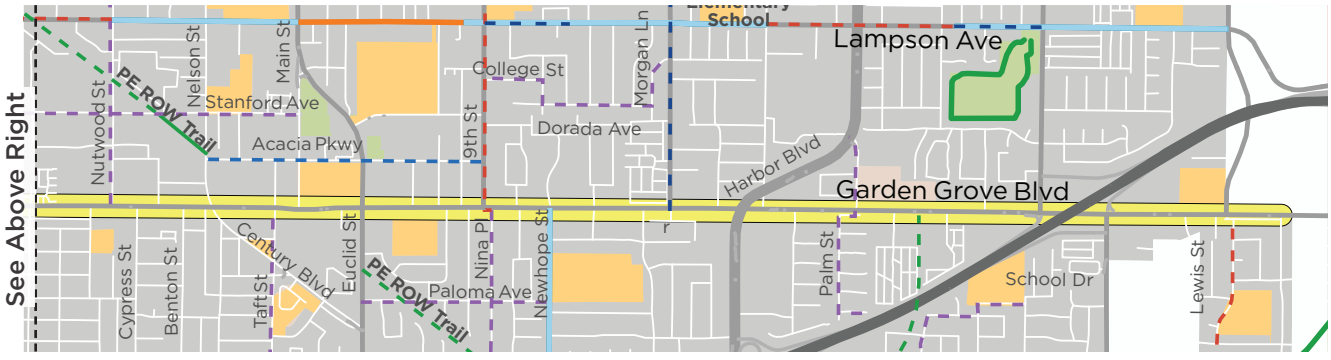
Class III
- Existing Bike Route
- Proposed Bike Route / Shared Street
- Proposed Neighborhood Greenway

- Study Corridors
- Intersection Improvements

LAND USE
- Schools







GARDEN GROVE BLVD COMPLETE STREET STUDY

IMPROVEMENTS

The goal of the complete streets study is to develop a community-supported vision for Garden Grove Boulevard and bring the corridor planning up to a level to determine California Environmental Quality Act (CEQA) evaluation and funding for design and construction. The study will include; outreach, traffic analysis, prelimary design to allow for CEQA determiniation and cost estimates.

BENEFITS

The Complete Street Study will allow Garden Grove to compare the potential benefits and costs of reconfiguring a street that can accommodate the needs of all users of the road. Additional benefits include:

- Evaluation of economic and safety impacts
- Understanding of traffic impacts
- When implemented, complete streets can increase the economic vitality of corridors and reduce public health costs associated with traffic injuries / fatalities, and sedentary lifestyles

ESTIMATED COST

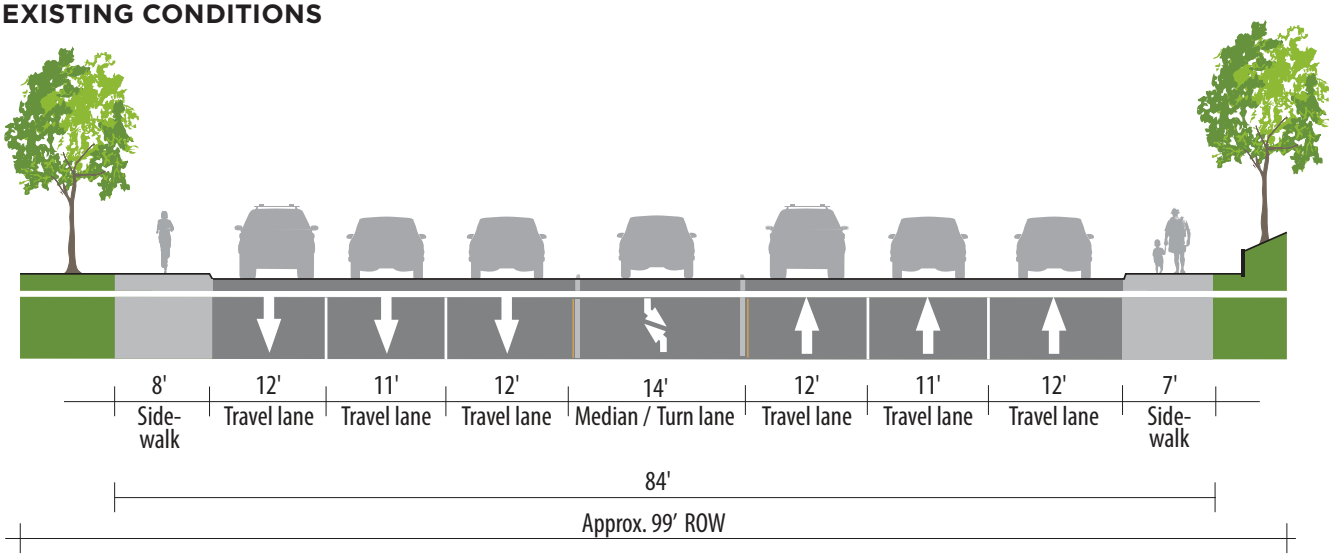
$300,000 - $450,000 based on level of public engagement activities, traffic analysis and modeling and CEQA effort.

Garden Grove Boulevard

GARDEN GROVE BLVD COMPLETE STREET STUDY

PROJECT DETAILS

EXISTING CONDITIONS

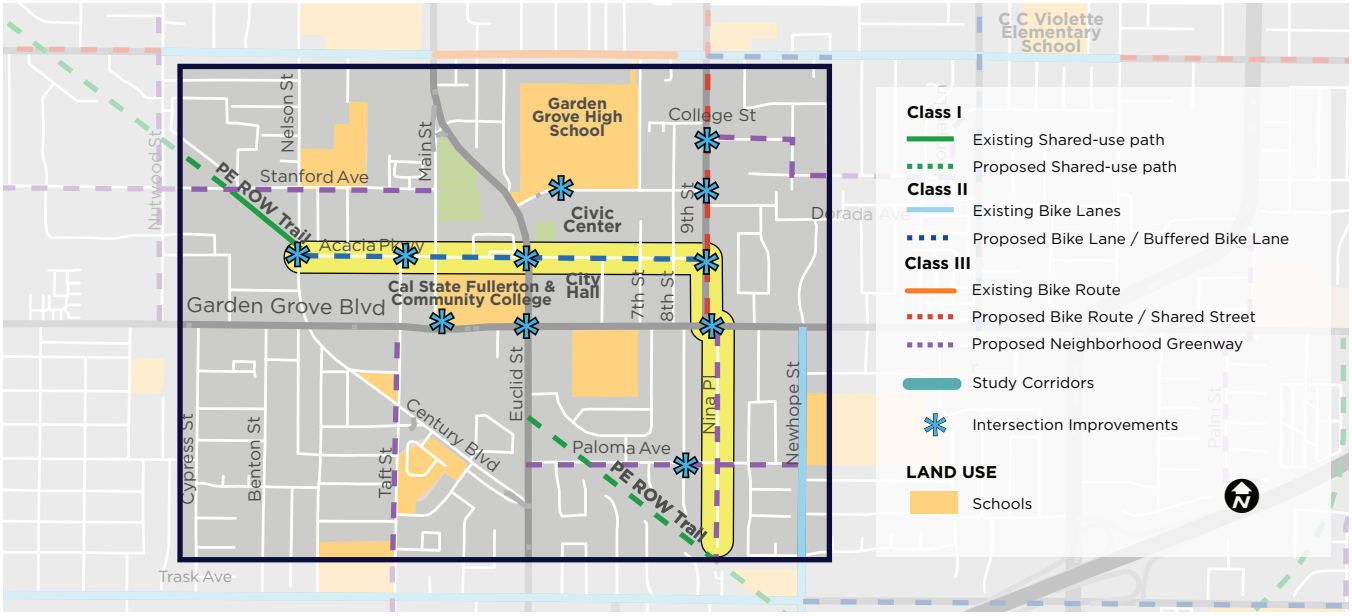


DOWNTOWN ACTIVE TRANSPORTATION CONNECTIONS

GOALS MET

GOAL 01 GOAL 02 GOAL 04 GOAL 05

PROJECT SITE



PROJECT DESCRIPTION

CONTEXT

Downtown Garden Grove has the potential to be a great place to walk and bicycle, while supporting the local economy. While many of the intersections throughout downtown have crosswalks, wide streets make it difficult for pedestrians to cross easily – especially for people who have limited mobility or travel slower than the average pedestrian. Downtown Garden Grove also lacks a 'sense of place' with few notable public areas designed for leisure. There are intermittent bicycle lanes along Lampson Avenue in downtown, but other connections are lacking.

IMPROVEMENTS

The Downtown Active Transportation Connections will create bicycle and pedestrian connections to and from downtown Garden Grove. This project will help identify locations that could be improved based on economic and safety factors. It will also allow staff to identify a variety of designs and interventions that can be used throughout the project area.

This project includes:

- Outreach
- Traffic analysis
- Identification of areas for improvement
- Set up project for design, construction, and funding

DOWNTOWN ACTIVE TRANSPORTATION CONNECTIONS

Possible future interventions include:

- Class IV separated bicycle lanes on Acacia Parkway
- Class III neighborhood greenway on 9th and Nina
- Creative placemaking (e.g. painted intersections)
- Pedestrian safety improvements (e.g. bulb outs)

BENEFITS

Improvements to active transportation connections throughout downtown Garden Grove will help improve the safety of people who are walking and biking – including individuals walking to and from their motor vehicles. Additional benefits will include:

- Bicycle/pedestrian access to schools and universities, local businesses, and Civic Center
- Improved regional bicycle and pedestrian connections
- Reduced traffic-related injuries
- Strengthened economy
- Sense of place and community

ESTIMATED COST

$200,000

Left: The intersection of 7th & H Streets in Washington DC has been adorned with art symbolizing the Chinese Lunar Calendar and other art. This intersection also included designs in the diagonal crosswalks, which can improve traffic flow and pedestrian safety through as scramble crossing. (source: https://frenchtwistdc.com/2016/06/29/barnesdancedc/)

Right: Downtown Garden Grove already contains some key features that make good environments for walking and biking, but will benefit from additional improvements.

SAFE ROUTES TO SCHOOL PLAN

GOALS MET

GOAL 01 GOAL 02 GOAL 04 GOAL 05

PROJECT DESCRIPTION

CONTEXT

Garden Grove Unified School District educates nearly 48,000 students across Garden Grove and surrounding cities. There are 66 schools over a 28 square miles area. Schools can be the 'centers' of neighborhoods and complement the work of the other policies throughout this plan. Continued community engagement of students, parents, and faculty can also provide a key component to help inform and improve any planning efforts for the city. proposed.

IMPROVEMENTS

The creation and implementation of a Safe Routes to School (SRTS) program can provide Garden Grove with many ways to improve the safety and convenience of walking and biking for all. SRTS program components include:

- Walk audits / surveys to identify areas for improvement
- Infrastructure improvements
- Education and encouragement programs

BENEFITS

Benefits of a Safe Routes to School program include:

- Improved safety of students
- Reduced traffic-related injuries
- Reduced pollution and congestion, leading to increased public health
- Equitable safety benefits across all neighborhoods

ESTIMATED COST

$200,000 -$600,000 based upon the number of schools involved and the level of engineering recommendations provided.

The goal of a Safe Routes to School program is to educates and encourage students to walk and bike to school (picture from LAUSD Walk to School day).

Fun events help educate student pedestrians and bicyclists while encouraging them to use these commute modes to school.

Tracking students' commute mode to school helps reward this behavior and encourages other students to participate.

SAFE ROUTES TO SCHOOL PLAN

EXAMPLE SCHOOL AUDIT

Los Feliz STEMM Magnet - 1740 N New Hampshire Ave, Los Angeles

Metro

Existing Conditions
- Transit Routes
- Transit Stops
- Existing Traffic Signal
- School Entrance
- Existing Bike Lane

Recommended Improvements
- New Curb Extension
- New Landscaping
- New / Upgraded Curb Ramp with Detectable Warning Surface
- No U-Turn Sign
- New School Speed Limit Assembly C and Speed Feedback Signage
- Proposed Bike Lane
- High-Visibility School Crosswalk (new, refreshed, or upgraded)
- High-Visibility Crosswalk (new, refreshed, or upgraded)
- Proposed Neighborhood Friendly Street

Above: an example school audit from the Los Angeles Safe Routes to School program showing existing conditions and recommendations for improving pedestrian and bicycle safety near schools.

Right: Physical improvements, such as these high-visibility continental crosswalks in front of a high school in Los Angeles, CA, improve safety for all users of the road.

The PE ROW Trail will be a catalytic project creating an active transportation, recreational and ecological spine through the heart of Garden Grove.

VIII. PE ROW TRAIL AND BIKEWAY IDENTITY

"Saving old railroad corridors as trails is not only good recreation policy, it is good railroad policy. They [abandoned rail corridors] may be appropriate for rail use in the future. If they are destroyed now, we will never be able to reassemble them again. "

–DREW LEWIS, former Secretary of Transportation and a former Chief Executive Officer for Union Pacific Railroad

Development of an urban greenway along the Pacific Electric Right-of-Way **(PE ROW) will be catalytic project in Garden Grove, creating a diagonal active transportation, recreational and ecological spine through the heart of the city**.

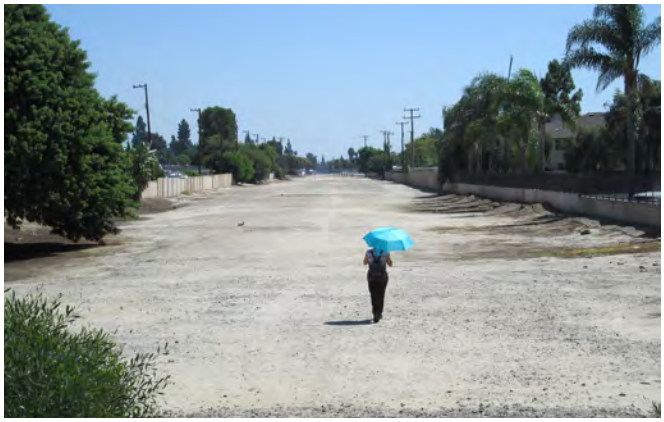
In keeping with the City of Garden Grove's goal of becoming a community that is healthy, engaged, economically vibrant, family-oriented, and safe, the bikeway and trails vision seeks to keep this identity throughout with attention to the character of individual neighborhoods.

Building from the "Gardens and Groves" identity developed through previous plans and supported by the community, the overall theme of the trails and bikeways system will seek to develop a natural atmosphere that plays off the rich history of agriculture in the city as well as create green spaces which are so desired and needed.

Pacific Electric Right-of-Way

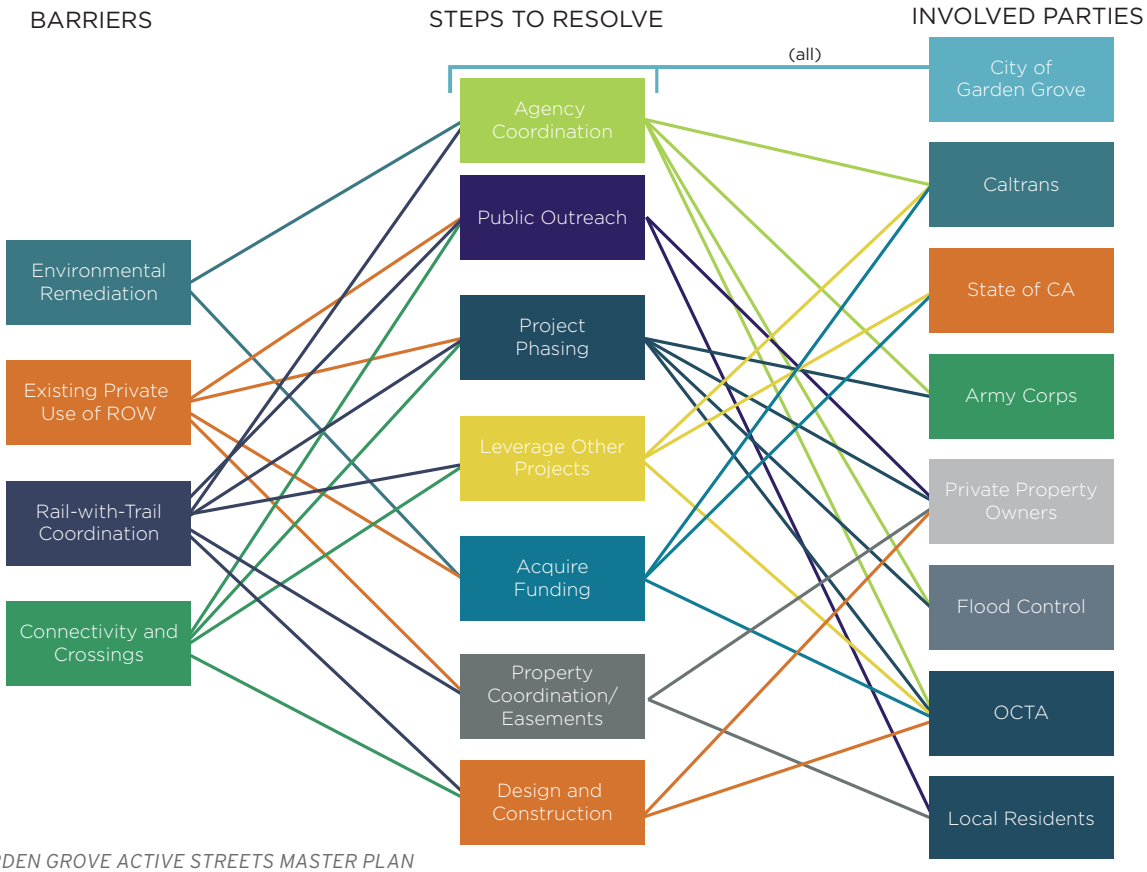
Rail service along the PE ROW has been discontinued since 1950. Development of an urban greenway along this 100 foot wide corridor will be catalytic project in Garden Grove, creating a diagonal active transportation, recreational and ecological spine through the heart of the city. The City installed a pilot trail segment of the PE ROW trail between Nelson and Nutwood Streets and is actively pursuing funding for remediation which is the next step of trail development in this corridor.

Figure 8-1 reflects the complexity needed to implement the PE ROW trail. The key barriers to overcome include environmental remediation, existing private uses of the ROW such as parking lots and local business uses, rail-with-trail coordination and connectivity and major road crossings.



The PE ROW presents a great opportunity to develop a pedestrian and bicycle corridor. Currently, it is not open to public access, even though is used by community members. It is barren and does not offer comfortable conditions for walking and biking.

Figure 8-1: Implementation network graph



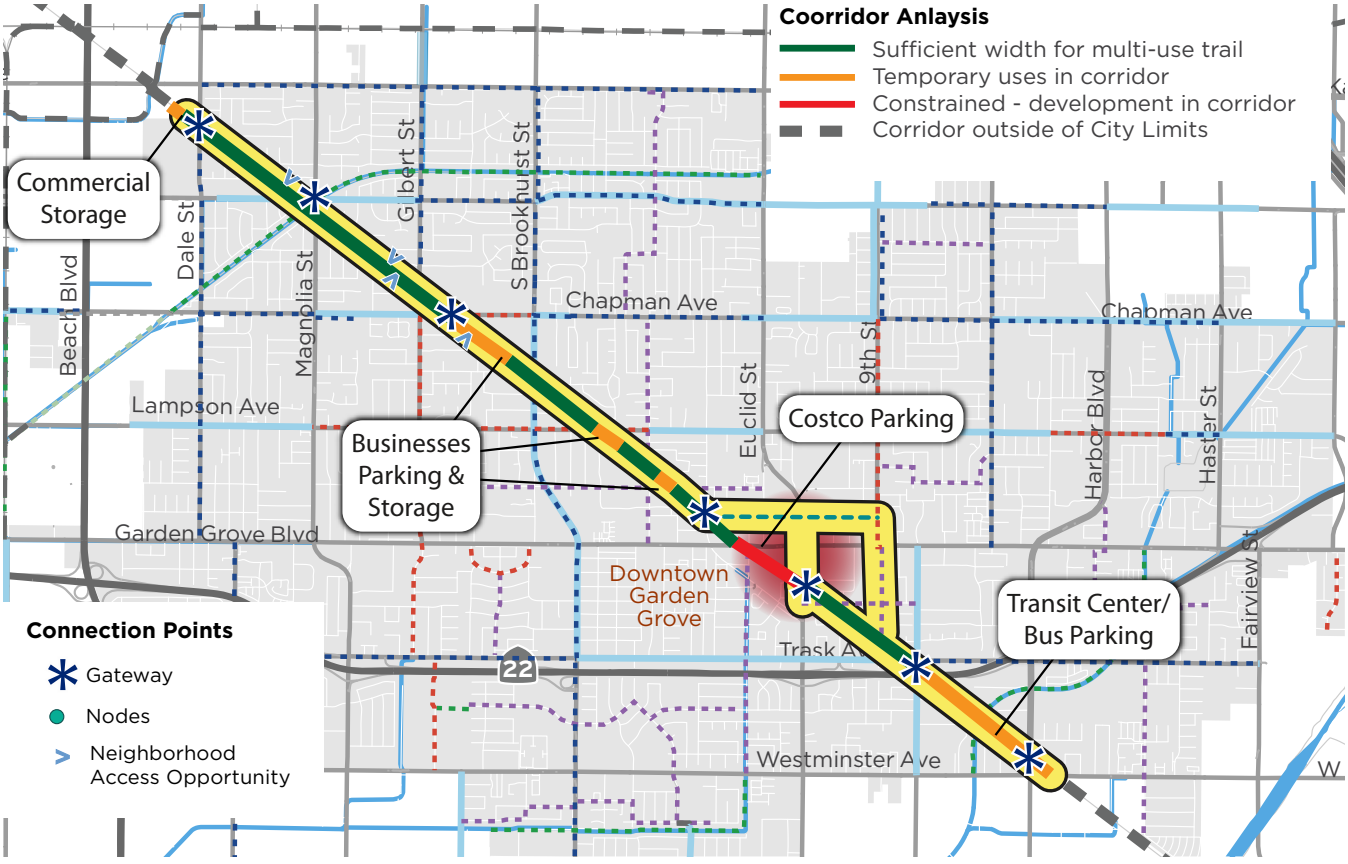
URBAN GREENWAY OPPORTUNITIES

Figure 8-2 provides an overview of the physical opportunities and constraints along the PE ROW in Garden Grove. The width of the corridor presents the biggest opportunity; 100 feet provides plenty of space to accomodate an urban greenway, along with a future commuter rail line. The greenway can help achieve the City's goals, which extend beyond transportation, including creating new parks, restoring open space to improve ecological function and water quality, and creating cleaner air through trees and other vegetation. The largest physical constraint is the retail development (Costco) in downtown. The plan proposes two alignments around this parcel through Downtown. A separated bikeway along Acacia Parkway brings trail users through the downtown activity centers including historic Main Street and the Civic area and connects to a bicycle route on 9th Street and neighborhood greenway along Nina Place. Euclid Street provides a more direct connection for pedestrians. A longer-term alignment should be explored on Garden Grove Boulevard when it is transformed into a complete street with high quality bicycling and pedestrian accommodations.

GATEWAYS AND ACCESS POINTS

Creating welcoming gateways and access points provide opportunities for trail amenities such as wayfinding, public art, public gardens, and more. A gateway is the most developed access point and should be placed at major road crossings. Nodes are located at minor road crossings and at intersections along the on-street portion through downtown. At minimum, wayfinding signs should be placed at nodes. Neighborhood access points provide local connections to parks and schools along the corridor.

Figure 8-2: Pacific Electric Right-of-Way in Garden Grove



RAILS-WITH-TRAILS DESIGN GUIDELINES

Plans for a regional light-rail line along the PE ROW exist. This section explains the underlying railroad operating and engineering principles that influence the formulation of rails-with-trail (RWT) guidelines.

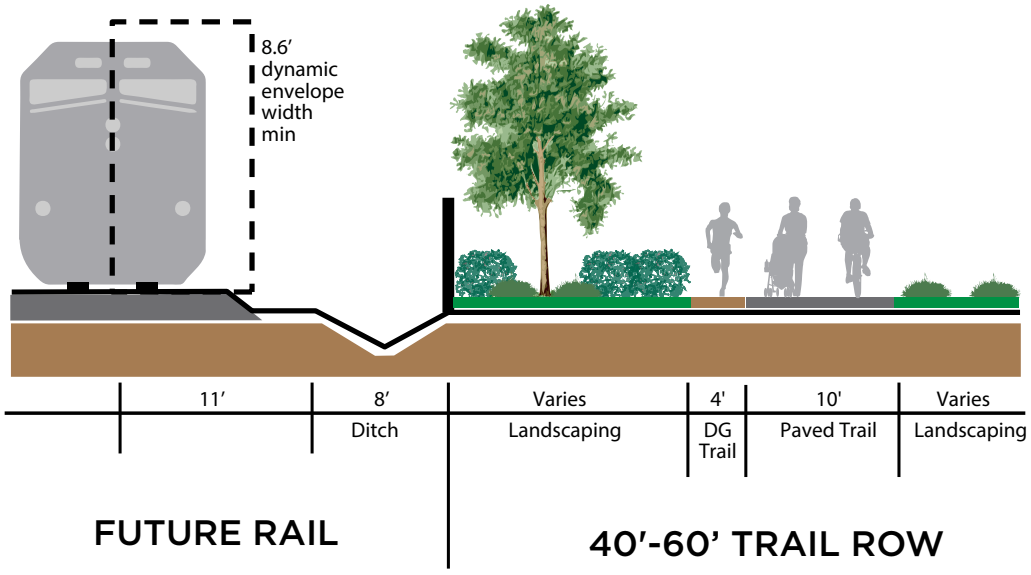
For safety reasons, and the convenience of the operators, the general public is typically excluded from rail rights-of-way through physical barriers, such as fencing, or legally through trespass laws and right-of-way signing. In RWT situations, public access to the right-of-way is allowed with the development of special design features and management and operational practices to maintain a safe operating environment. Each segment of these shared corridors must be planned and designed in detail to anticipate the specific operational and safety requirements of each situation encountered. The following design guidelines will define considerations that will help avoid exposing users, owners and operator of the railroad to risks that can reasonably be avoided.

Although rails-with-trails currently are operating along train corridors of varying types, speeds, and frequencies, there simply is no consensus on an appropriate setback recommendations. In 2002, Alta Planning + Design, produced a study for the Federal Highway Administration (FHWA) titled: "Rails-with-Trails: Lessons Learned." The study recommended that analysis of technical factors relating to the setback distance be incorporated into a rail with trail feasibility study, and that the feasibilty study be flexible rather than prescriptive. The term "setback" refers to the distance between the paved edge of an RWT and the centerline of the closest active railroad track. The setback distance should be determined on a case-by-case basis after engineering analysis and liability assumption discussions, because every case is different.

SETBACK

The minimum distance between the operating railroad and obstructions such as utility and signal poles, bridges, retaining wall structures and fences, is governed by the dynamic envelope of rail operations and measured in feet from the centerline of the track. These dimensions are recognized nationally to provide consistent clearances and to

Figure 8-3: Desirable PE ROW Trail cross section



facilitate safe operation of trains throughout the interconnected rail network. The FHWA report found that the range of minimum setback between edge of trail and track centerline in RWTs varies from less than seven feet to as high as 100 feet. The average setback was almost 33 feet from the centerline of the nearest track to the edge of trail. A comparison of RWT setback distances to train speed and frequency reveals little correlation; over half (33 of 61) of the existing RWTs have 25 feet or less separation, even alongside high-speed trains. Many of the trails with little separation have been established for many years. The trail managers for these well-established trails report few problems. However, interviews with train engineers in several areas indicate that they observe trespassing in areas with little setback and no physical barrier.

There is no consensus on either appropriate setback requirements or a method of determining the requirement. Some trail planners consider it analogous use the AASHTO Bike Guide for guidance: bicycle lanes are set back five to seven feet from the centerline of the outside travel lane of even the busiest roadway. Others use their state public utilities commission's minimum setback standards (also known as 'clearance standards') for adjacent walkways (for railroad switchmen).

This segment of the Springwater-OMSI Trail on the Willamette River in Portland,OR is a rail with trail. The trail parallels a track used for daily freight and occasional excursion train traffic.

The appropriate distance must be determined on a case-by-case basis because of the lack of consensus on acceptable setback distances.

Trail planners should incorporate into the feasibility study an analysis of technical factors, including:

- type, speed, and frequency of trains in the corridor,
- separation technique,
- topography,
- sight distance,
- maintenance requirements, and
- historical problems.

SEPARATION

To provide separation and discourage trespassing and undesired informal paths from forming, trails within the right-of-way may require fencing. The desirable PE ROW cross-section (Figure 8-3) shows the generally accepted practice for aligning trails within active rail corridors and includes accommodation for maintenance access and drainage of the right-of-way. Variance from the standard to accommodate narrow right-of-way or obstructions will require the development of special designs and approval by the owner(s) and operator, and may require approval by regulatory agencies.

CONNECTIVITY

TRAIL ACCESS AND CROSSINGS

Providing a seamless experience for people traveling along the PE ROW Trail can be challenging due to the number of major road crossings. It is important to provide a crossing as close to the path as possible rather than trying to detour people walking or biking to a more distant location where there is an existing signalized intersection.

At-grade roadway crossings can create potential conflicts between path users and motorists, however, well-designed crossings can mitigate many operational issues and provide a higher degree of safety and comfort for path users. In most cases, at-grade path crossings can be properly designed to provide a reasonable degree of safety and can meet existing traffic and safety standards. Figure 8-4 shows a matrix that provides guidance for selecting crossing facilities based on roadway speed and number of lanes of traffic.

Crossings for paths that cater to bicyclists can require additional considerations due to the higher travel speed of bicyclists versus pedestrians. An example of a mid-block trail crossing is shown in Figure 8-5. The crossing at Gilbert Street shows a proposed road rebalancing to include a buffered Class II bicycle lane. A two-stage midblock pedestrian refuge island helps align the diagonal geometry and allows trail users to cross one lane of traffic at a time.

A crossing beacon such as a Rectangular Rapid Flashing Beacon (RRFB) or Pedestrian Hybrid Beacon (HAWK) is recommended (for more information on crossing beacons see Chapter V Pedestrian Recommendations). Figure 8-6 shows a photograph of the current condition of the PE ROW at Gilbert Street (top) as well as a photo simulation of a proposed trail concept (bottom). Figure 8-7 shows a crosssection of Gilbert Street's existing condition and proposed rebalancing.

Figure 8-4: Unsignalized Crossing Guidance

CROSSING CONTEXTUAL GUIDANCE At unsignalized locations	Local Streets 15-25 mph		Collector Streets 25-30 mph			Arterial Streets 30-45 mph							
FACILITY TYPE	2 lane	3 lane	2 lane	2 lane with median refuge	3 lane	2 lane	2 lane with median refuge	3 lane	4 lane	4 lane with median refuge	5 lane	6 lane	6 lane with median refuge
1 Crosswalk Only (high visibility)	✓	✓	EJ	EJ	X	EJ	EJ	X	X	X	X	X	X
2 Crosswalk with warning signage and yield lines	EJ	✓	✓	✓	✓	EJ	EJ	EJ	X	X	X	X	X
3 Active Warning Beacon (RRFB)	X	EJ	✓	✓	✓	✓	✓	✓	X	✓	X	X	X
4 Hybrid Beacon	X	X	EJ	EJ	EJ	EJ	✓	✓	✓	✓	✓	✓	✓
5 Full Traffic Signal	X	X	EJ	EJ	EJ	EJ	EJ	EJ	✓	✓	✓	✓	✓
6 Grade separation	X	X	EJ	EJ	EJ	X	EJ	EJ	✓	✓	✓	✓	✓

LEGEND	
Most Desirable	✓
Engineering Judgement	EJ
Not Recommended	X

Figure 8-5: Proposed Concept of PE ROW Trail alignment and crossing at Gilbert Street.

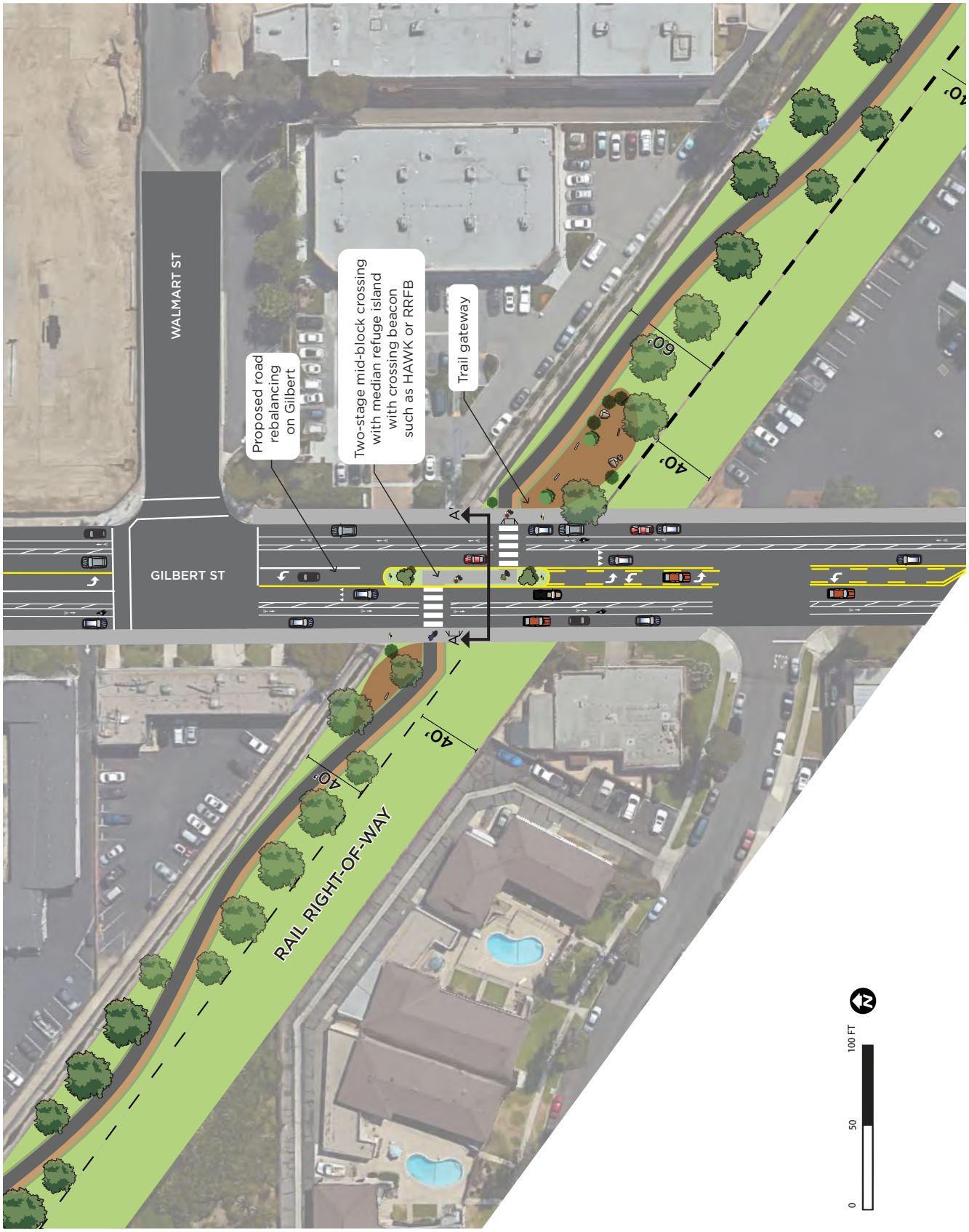
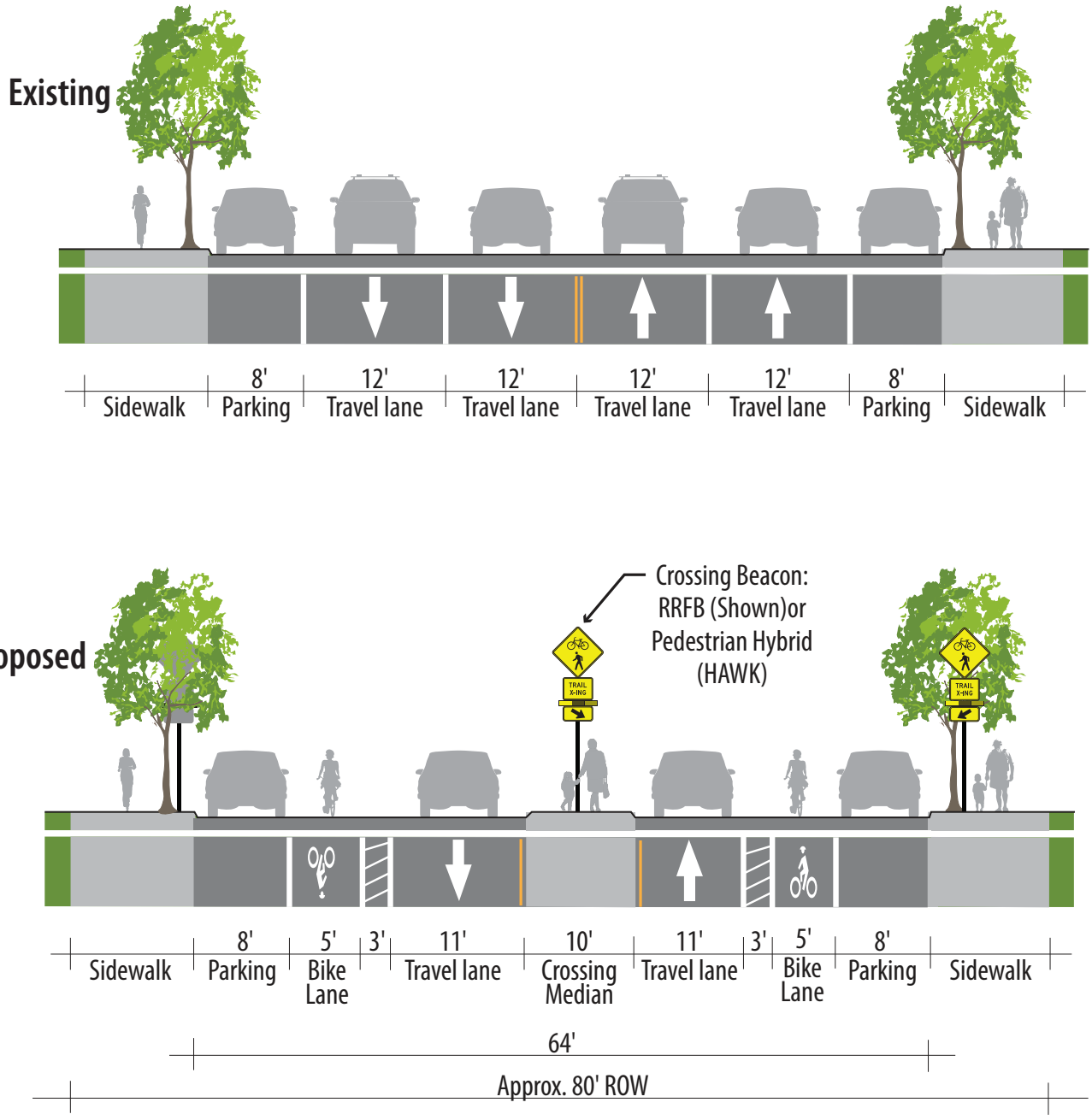


Figure 8-6: Existing condition and conceptual rendering of the PE ROW Trail crossing at Gilbert Street

EXISTING CONDITION

CONCEPTUAL RENDERING

Figure 8-7: Road rebalancing on Gilbert Street would improve the crossing for trail users by reducing the number of lanes of traffic and providing a refuge median. The sectons below show the existing and proposed section view of Gilbert Street at the PE ROW Trail mid-block crossing.



Gardens and Groves Identity

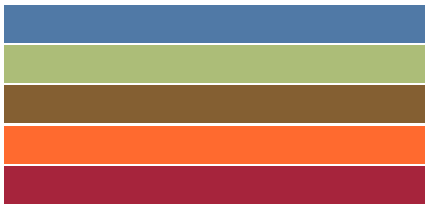
Two themes to articulate the Gardens and Groves identity have been developed based on public outreach development during the Garden Groves Open Streets Event. The two themes are **natural** and **vivid**. These themes serve as options for the City to finalize an identity for the trail and bikeway system.

NATURAL

The Natural theme of the Gardens and Groves identity would provide an identity deeply routed in agricultural history and native planting with a color palette and material choices reflecting this. Amenity choices would seek to maintain a naturalistic environment using boulders, wood and metal, for example.

VIVID

The Vivid theme would provide a more vibrant color palette, exploring the rich cultural variety within the community. The colors and amenities would reflect the lively communities within the city, drawing attention to the space not just as a trail but linear park for community involvement and interaction.



Natural planting Imagery

Vibrant Colors at the Garden Grove Strawberry Festival

LOGO DESIGN OPTIONS

A logo is used for identification via the use of a mark or icon. It is intended to become familiar and provide a cue of the trail and bikeway network. Three concepts have been developed, each concept provides two options, an abstracted, lower level and detailed higher level concept. The logo could be used on trail and bikeway wayfinding signs, maps, and other collateral to bring awareness and promote the active transportation network.

CONCEPT 1

ABSTRACT CONCEPT

REFINED CONCEPT

Concept 1 depicts a standard trail design without any notice of what type of users would be on the trail. This is best for a trail system that includes mixture of multi-use, bicycle only, pedestrian only trails.

CONCEPT 2

ABSTRACT CONCEPT

REFINED CONCEPT

Concept 2 is derived from the Iconic Pacific Electric Rail logo. The logo provides a straightforward design contained in a circle for use as a medallion.

CONCEPT 3

ABSTRACT CONCEPT

REFINED CONCEPT

Concept 3 showcases the spectrum of active transportation users. This logo would easily accommodate a trail or local identification plaque below.

TRAIL/COMMUNITY IDENTIFICATION

To assist with future trail branding development, a trail name or community name plaque may be incorporated into the sign design.

**All logo concepts are shown in grayscale. Once a color palette is chosen, full color logos can be developed.*

Trail Amenities

Amenities enhance the trail experience, reinforce the Gardens and Groves identity, encourage trail usage and make trails more comfortable for the user. Basic amenities include: drinking fountains, seating, trash receptacles, bicycle parking, fencing and gates. Enhanced amenities include: gateway and entrances, trail and bikeway wayfinding signs, shade structures, play structures, and art installations or creative applications to reinforce a "sense of place".

Trail elements should be constructed of durable, low maintenance materials when possible and design of amenities should reflect the context of the Identity chosen. Amenities and trail support features should be placed a minimum of two feet from the edge of the trail.

SHADE STRUCTURES

PLAY STRUCTURES

SEATING

Amenities that conform to the natural style of the "Gardens and Groves" theme exhibit the qualities seen in nature, wood, natural or decomposed granite paths, boulders, and metal. Those that conform to the vivid style of the "Gardens and Groves" theme exhibit more lively qualities as compared to the natural style. Quirky public art, bright colors and modern style furnishings create an emphasis on a more vibrant environment.

PUBLIC ART






SIGNS




OTHER

Additional amenities on trails and bikeways should include:

- Trash, recycling and dog waste receptacles
- Water fountains
- Fencing and gates
- Secure bicycle parking
- Lighting