Get Around ONTARIO

ONTARIO ACTIVE TRANSPORTATION MASTER PLAN

CITY OF ONTARIO

March 2021

Prepared For:

Prepared By:

City of Ontario
303 E B St
Ontario, CA 91764

(909) 395-2000
https://www.ontarioca.gov/

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acknowledgments

ONTARIO CITY COUNCIL

Paul S. Leon, Mayor
Alan Wapner, Mayor Pro Tem
Ruben Valencia
Jim W. Bownman
Debra Dorst- Porada

ONTARIO STAFF

Jay Bautista
Perry Chavez
Melanie Mullis

CALTRANS

Reyna Baeza-Oregel

CONSULTING TEAM

KOA Corporation
Min Zhou
Walter Okitsu
Roger Pelayo
Jenny Yu
Gregory Garces
Harold Arzate
Trevor Lien
Sean Reseigh
Sarai Osorio
Stephanie Lopez
Valerie Tan
Zachary Popp

Leslie Scott Consulting
Leslie Scott

COMMUNITY PARTNERS

Anna Jaiswal
Beverly Beemer
Cade Maldonado
Candice Smith
Elizabeth Garcia
James Hammond
Janet Tempkin
Jeremey Currier
Josh Lee
Karen Thompson
Manuel Bonilla
Mark Friis
Martin Willis
Nancy Bumstead
Rick Wiersma
Roger Argomaniz
Rosario Santillan
Tony Coleman
Sonia Alvarado
Yvette Miranda
Ken Dean
Marven Norman
Marilyn Mejia

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STOP
ALL WAY
STOP
CROSSING GUARD
Sultana

Chapter I

INTRODUCTION

1.1 Purpose of the Plan

The Ontario Active Transportation Master Plan (the Plan) is a comprehensive roadmap that lays the foundation for active transportation improvements within the public right-of-way in the City of Ontario, California. Active transportation is defined as any mode of transportation that uses human power to move around. Common examples of active transportation include walking and biking.

The Plan provides strategies and recommendations that aim to address four overarching priorities:

- Create safer streets for active transportation activities to occur
- Develop new routes for Ontario community members to walk, bike, and take other forms of active transportation to local and regional destinations which include 31 schools and transit nodes
- Improve public health
- Improve community equity

The Plan also serves as an important tool for the City to seek funding for active transportation improvements. To assist with this goal, the Plan also includes components that are commonly needed in the pursuit of grant funding. This includes documentation of the community engagement efforts that were undertaken as a part of the planning process, summaries of existing conditions analyses, and strategies to fund proposed recommendations.

Young participants worked on surveys at the Reindeer Run

Participant shared comments at the Amgen Tour of California Event

1.2 About Ontario

The City of Ontario is the fourth most populous city in San Bernardino County with a population of 171,041, according to the 2017 American Community Survey (ACS) 5-year estimates. It is located approximately 35 miles east of Downtown Los Angeles. The City is surrounded by Montclair to west, Upland and Rancho Cucamonga to the north, Fontana to the east, Eastvale to the east and south, and Chino to the south and west. The Metrolink commuter rail, Interstate 10, Interstate 15, and State Route 60 freeways, along with the Pacific Electric Trail (P.E. Trail) near the northern border of Ontario in Rancho Cucamonga, provide Ontario community members with transit, automobile, and pedestrian and bicycle access to regional destinations.

Event attendees filled out the survey at the Ontario Festival of the Arts

1.3 Benefits of Active Transportation

HEALTH: Active transportation activities can help people live healthier lives through increased physical activity.

ENVIRONMENT: Pedestrian and bike-friendly places help reduce the need to drive, and the pollution that comes with it.

EQUITY: Not everyone can afford or has access to a car. Having a city that supports walking and biking helps provide opportunities for everyone to get around and enjoy their community.

ECONOMY: Active transportation activities help reduce costs associated with driving. The activities can boost local economies and help small businesses grow by attracting more people and contributing to a vibrant atmosphere.

1.4 Priorities & Strategies

PRIORITY 1: CONNECTIVITY

Create a seamless and connected active transportation network that improves accessibility and mobility via active transportation to local and regional destinations.

Strategy 1.1	Incorporate active transportation infrastructure into new land use and transportation projects, including new transit hubs and regional facilities.
Strategy 1.2	Utilize the Design Guidelines to establish design conformity for active transportation improvements.
Strategy 1.3	Seek opportunities within the City's existing public works and planning efforts to incorporate proposed improvements from Chapter 4: Recommendations whenever feasible.

PRIORITY 2: SAFETY

Reduce injuries and fatalities from active transportation activities with a coordinated, citywide approach.

Strategy 2.1	Develop an internal system to regularly analyze vehicle, pedestrian, and bicycle collisions and identify collision hotspots.
Strategy 2.2	Identify and install the appropriate active transportation countermeasures at roadway locations that have high pedestrian and bicycle collisions.
Strategy 2.3	Develop a citywide traffic safety program, and collaborate with school districts, schools, and community partners to engage with and educate different community groups about traffic safety.
Strategy 2.4	Collaborate with enforcement officers to improve upon current methods for recording pedestrian and bicycle collisions.

PRIORITY 3: EQUITY

Improve access to equitable transportation for Ontario community members.

Strategy 3.1	Prioritize improvements that serve communities with the highest needs.
Strategy 3.2	Develop a citywide forum such as a new community group and/or Active Transportation Commission for community members to continually engage with the City's active transportation efforts and share concerns related to active transportation topics.
Strategy 3.3	Conduct outreach regularly with the school districts, schools, and other community organizations that work with marginalized groups to discuss active transportation topics.

PRIORITY 4: PUBLIC HEALTH

Develop safe and convenient active transportation facilities to be used by residents of all ages and abilities.

Strategy 4.1	Integrate active transportation programming and community improvements into Healthy Ontario and other city initiatives.
Strategy 4.2	Target active transportation improvements in areas where residents suffer from conditions such as obesity and diabetes.
Strategy 4.3	Invest in active transportation facilities that will provide opportunities for exercise, recreation, and everyday travel needs.

PRIORITY 5: FUNDING EFFICIENCY

Leverage community, state, local, and regional resources to plan, design, and install active transportation improvements.

Strategy 5.1	Develop a financial strategy and timeline to efficiently and competitively secure grant funding for projects.
Strategy 5.2	Coordinate with neighboring municipalities to identify shared resources and network improvements.
Strategy 5.3	Increase collaboration among city, county, and other regional agencies to identify projects that could be incorporated into existing funding and/or grant funding opportunities.
Strategy 5.4	Work with community organizations, stakeholders, developers, and other groups or entities to identify potential areas for collaborations.

1.5 Plan Development Process

The Ontario Active Transportation Master Plan is a culmination of more than two years of project planning, community engagement, research and analysis, recommendations development, and report preparation. The project team, also known as the Get Around Ontario Team, collaborated closely with community stakeholders, school districts, local businesses, and local and regional agencies to develop a plan that is reflective of the Ontario community's vision to address their active transportation needs.

1.6 Existing Plans, Policies, and Programs

Many influential municipal, regional, and statewide planning efforts and initiatives helped shape the City's active transportation efforts. The Ontario Active Transportation Master Plan builds upon many of these efforts, and seeks to advance the active transportation goals and objectives identified in the planning documents and studies.

MUNICIPAL PLANNING EFFORTS

Over the last few years, the City has been actively engaged in planning efforts that promote active transportation activities. Documents and studies that support active transportation include the Complete Streets Safety Assessment (2018), Community Climate Action Plan (2014), and Systemic Safety Analysis Report Program for Euclid Avenue (Ongoing). Meanwhile, recommendations from this Plan will be included in the forthcoming General Plan update.

MUNICIPAL INITIATIVES AND PROGRAMS

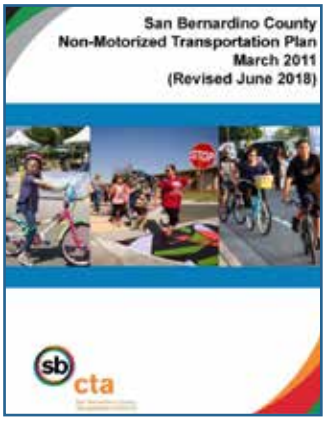
The City has also embarked on many initiatives that would enhance active transportation activities. For example, as a part of the Transformative Climate Communities program, the City is planning to make active transportation improvements along Mission Boulevard and Grove Avenue. The West Valley Connector Rapid Bus Project, a joint collaboration with the Omnitrans, would provide bus rapid transit along Holt Boulevard. Through the project, community members would have more transit hubs to walk and bike to for regional travels.

REGIONAL AND STATEWIDE PLANNING EFFORTS

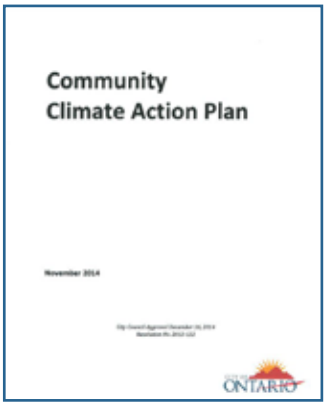
Active transportation is also an important part of many planning efforts across the region and the state. Examples of such efforts include the San Bernardino County Non-Motorized Transportation Plan (2018), SBCTA Safe Routes to School Strategy: Phase I & II (2017), Connect SoCal: The 2020-2045 Regional Transportation Plan/Sustainable Community Strategies (2020), and Complete Streets Act of 2008.

Table 1.1 provides a summary of the plans, policies, and programs that the project team reviewed in support of this Plan. Appendix A: Existing Plans, Policies, and Programs provides the full summaries of each document.

Connect SoCal: The 2020-2045 Regional Transportation Plan/ Sustainable Community Strategies (2020)



San Bernardino County Non-Motorized Transportation Plan (2018)



Community Climate Action Plan (2014)

CATEGORY	CURRENT AND ONGOING PLANNING-RELATED EFFORTS
Municipal Planning Efforts	• The Ontario Plan (2010) – Pending update • Complete Streets Safety Assessment (2018) • Community Climate Action Plan (2014) • Systemic Safety Analysis Report Program for Euclid Avenue (Ongoing)
Municipal Initiatives and Programs	• Transformative Climate Communities Program (Ongoing) • West Valley Connector Rapid Bus Project (Ongoing) • Other Existing Ontario Municipal Programs
Regional and Statewide Planning Efforts	• San Bernardino County Non-Motorized Transportation Plan (2018) - SBCTA • SBCTA Point of Interest Pedestrian Plan – SBCTA • SBCTA - Safe Routes to School Strategy: Phase I & II (2017) – SBCTA • San Bernardino Countywide Vision (2011) - San Bernardino County • San Bernardino County Community Transformation Plan 2015 - 2020 (2015) • Comprehensive Pedestrian Sidewalk Inventory Plan (Ongoing) – SBCTA • Connect SoCal- The 2020-2045 Regional Transportation Plan/Sustainable Community Strategies (2020) – SCAG • Measure I • Complete Streets Act of 2008

Table 1.1 Summary of Plans, Policies, and Programs Reviewed

1.7 Safe Routes to School

As a part of the Plan, the project team engaged 31 schools for the Ontario Safe Routes to School effort. The effort builds upon the international Safe Routes to School (SRTS) movement. According to the Safe Routes Partnership, the movement "aims to make it safer and easier for students to walk and bike to school." The movement rests upon six pillars, often known as the six E's of Safe Routes to School. They are: engagement, equity, education, encouragement, engineering, and evaluation. The Plan focuses on the infrastructure improvements (engineering) aspect of the movement.

EQUITY *Equity is a lens that is used to ensure that equitable outcomes for low-income communities, communities of color, and beyond are incorporated into the other E's.*

NON-INFRASTRUCTURE

ENGAGEMENT

Engagement strategies strive to bring different stakeholders together and collaborate on SRTS initiatives.

ENCOURAGEMENT

Encouragement efforts seek to generate enthusiasm and interest in walking and biking through programs, events, and activities.

EDUCATION

Education programs equip students and community members with the knowledge to walk and bike safely and understand the benefits of walking, biking, and other active modes of transportation.

INFRASTRUCTURE

ENGINEERING

Physical improvements on roadways create a safer and more comfortable walking and biking environment to school.

EVALUATION

Evaluation programs monitor the progress of any implemented non-infrastructure programs and engineering improvements to ensure they are supporting the Safe Routes to School goals.

This Plan serves as the first comprehensive step in evaluating the need of the school communities. Future evaluation efforts could use the analyses and findings from this Plan as a baseline to evaluate the success of SRTS infrastructure and non-infrastructure efforts.

1.8 Organization of the Plan

The Plan has a total of five chapters, including the introductory chapter. Additionally, 17 appendices provide supplemental information in the form of event summaries, in-depth discussions, existing conditions analyses, infrastructure recommendations and concept plans, cost estimates, and much more. The structure of the Plan is summarized in Table 1.2 Organization of the Plan.

CHAPTER IN REPORT	CORRESPONDING APPENDIX
Chapter 1 Introduction	• Appendix A: Existing Plans, Policies, and Programs
Chapter 2 Community Needs Assessment: Assessments and findings from existing conditions analyses. This include discussions on demographic characteristics, active transportation infrastructure, community health, and roadway safety.	• Appendix B: Setting • Appendix C: Collision Analysis • Appendix D: Police Citation Analysis • Appendix E: Bicycle LTS/ Pedestrian LOC Analyses • Appendix F: Streetlight Data Analysis & Factsheets
Chapter 3 Community Engagement: Summary of the community engagement efforts that were undertaken to develop this Plan.	• Appendix G: Outreach and Engagement Plan • Appendix H: Outreach Event Summaries • Appendix I: Walking Safety Assessment Summaries • Appendix J: Project Survey Results • Appendix K: School Survey Results • Appendix L: Outreach to Businesses
Chapter 4 Recommendations: Proposed active transportation improvements for the City of Ontario which includes the Active Transportation Network, Bicycle Network, Design Guidelines, and an overview of planning-level recommendations for selected priority corridors and 31 schools, along with planning-level cost estimates.	• Appendix M: ATN High Priority Corridor Factsheets • Appendix N: Safe Routes to School Factsheets • Appendix O: Design Guidelines Factsheets • Appendix P: Cost Estimates: Bike Network Assumptions • Appendix Q: Cost Estimates: Safe Routes to School
Chapter 5 Implementation Strategy: Discussion of different strategies to fund and implement the recommendations identified in Chapter 4 Recommendations.	

Table 1.2 Organization of the Plan

Chapter 2

COMMUNITY NEEDS ASSESSMENT

2.1 Introduction

The need for active transportation facilities in Ontario today was defined by the city's existing conditions, as much as the planning efforts that continually seek to transform the city's future. The Ontario community could benefit immensely from additional investments in active transportation facilities. However, physical roadway characteristics, as well as existing land use conditions present many challenges for active transportation improvements to occur.

Many types of analyses were conducted to understand the existing conditions for active transportation needs in Ontario. These included:

- Demographic, travel, and community health characteristics
- Land use and transportation attributes
- Roadway safety for pedestrians and bicyclists
- Pedestrian and bicycle network comfort and connectivity
- Analysis of selected focus areas
- Community preferences (through surveys)

This chapter provides a summary of the findings from individual analyses that were conducted. Full reports for the analyses is available in the following appendices:

- Appendix B: Setting
- Appendix C: Collision Analysis
- Appendix D: Police Citation Analysis
- Appendix E: Bicycle LTS/ Pedestrian LOC Analyses
- Appendix F: Streetlight Data Analysis & Factsheets

This chapter also contains a selected set of maps that visualizes and supports the findings. Note 1: The maps are on the pages that follow the description. Note 2: The base maps divide the city into Active Transportation Network (ATN) Planning Areas. This concept is described in Chapter 4: Recommendations.

2.2 Demographic, Travel, and Community Health Characteristics

The Plan strives to improve active transportation opportunities for Ontario community members. An examination of the demographic, travel, and community health characteristics gives a snapshot of the people that live, work, and play in the city. Data gathered from the 2017 American Community Survey (ACS) 5-year estimates was used to aid in this effort.

POPULATION

The City of Ontario has a population of 171,041. Of the population, the racial and ethnic makeup of Ontario is 70% Hispanic or Latino, 16.1% White, 5.7% African American, and 5.7% Asian.

AGE-VULNERABLE POPULATION

Age-vulnerable population is defined as the population that is less than 18 years of age or more than 65 years of age. This population group may have an increased reliance on modes of transportation other than personal vehicles such as walking, biking, or taking transit.

In Ontario, nearly 32% of the population is considered vulnerable due to their low or high age. Additionally, the largest age group in the city is comprised of youths. At 27%, the City's population that is 18-year-old and under population occupies the largest population portion share of any age group.

MEDIAN HOUSEHOLD INCOME

Ontario has a median household income of $57,544. This is slightly higher than the County's median of $57,156. However, nearly 43% of Ontario households have a median household income less than $50,000.

LIMITED ENGLISH HOUSEHOLDS

With 70% of Ontario's population being Hispanic or Latino, there are many households in the City with limited English capabilities. Approximately 40.1% are English-speaking only, 42.8% are Spanish-only speaking, 10.1% are limited English-speaking, and 8.6% are Spanish-speaking with limited English. The share of Ontario households with limited English is higher than the County's average of 6.9%.

COMMUTE CHARACTERISTICS

The average commute for workers that live in Ontario is approximately 31 minutes. It is identical to the San Bernardino County average. Additionally, nearly 35% of commuter trips take less than 20 minutes. Commute by public transportation, walking, and biking accounts for a very small share of all commuter trips at 4%.

DISADVANTAGED COMMUNITIES

A high percentage of Ontario residents live in areas considered a "Disadvantaged Community." The disadvantaged communities designation is an important tool in advancing environmental justice in California. The level of disadvantage in census tracts is quantified through the CalEnviroScreen 3.0 tool. Census tracts that score above the 75th percentile are designated as California's disadvantaged communities.

Many Census tracts within the City rank at the 85th percentile, making them some of the most disadvantaged communities in California. Census tracts that are located adjacent to the airport and encompass Downtown Ontario score at the 95th percentile or higher.

HOUSEHOLD VEHICLE ACCESS

One in five households within Ontario are low-vehicle households. Low-vehicle households have either no vehicle or only one vehicle available.

OBESITY AND PHYSICAL ACTIVITY

According to the SCAG 2019 Local Profiles, the City has an adult obesity rate of 39.9% and physical activity rate of 30.4%. The adult obesity rate is much higher than the County's rate (29.2%) while the physical activity rate is lower than the county average (33.3%). In comparison to adjacent cities, Ontario ranks second in obesity rate behind Montclair and second in physical activity behind Chino.

DIABETES

The diagnosed diabetes score measures the number of adults over the age of 18 who reported having been told by a medical professional that they have diabetes. The census tracts that make up Ontario rank among the 46th percentile for the prevalence of adult diabetes when compared with the rest of the state.

CARDIOVASCULAR DISEASE AND ASTHMA

The City of Ontario ranks at the 81st percentile among all census tracts in California for the average rate of hospital visits related to cardiovascular disease. It also ranks at the 62nd percentile for asthma rates, which is slightly lower than San Bernardino County (64th percentile).

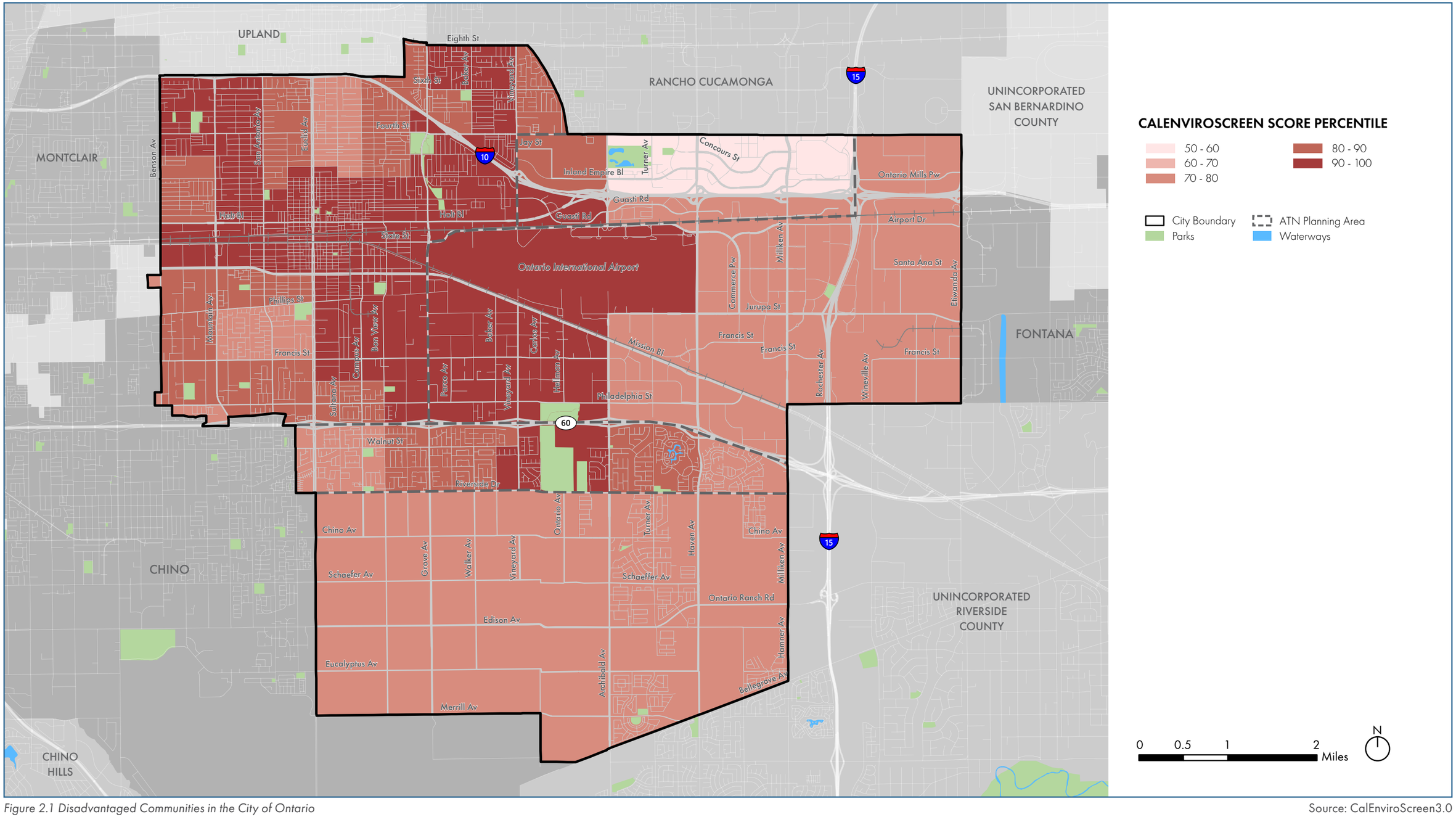


Figure 2.1 Disadvantaged Communities in the City of Ontario

Source: CalEnviroScreen3.0

2.3 Land Use and Transportation Attributes

Land use and transportation elements work in tandem to influence how places are planned, designed, and built. A review of Ontario's land use and roadway attributes highlights many challenges and opportunities towards implementing active transportation infrastructure in the city.

LAND USE AND ROADWAY CHARACTERISTICS

Existing land use patterns and roadway characteristics in Ontario loosely divide the City into five areas. (These areas formed the basis for the Active Transportation Network (ATN) Planning Areas which are discussed further in Chapter 4 Recommendations).

Northwestern area: Low-density residential and commercial land uses are the primary land uses in the area. Compared to other parts of the city, the roadway network is denser and provides connectivity to many local and regional destinations such as Downtown Ontario, Ontario City Hall, Ovitt Family Community Library, and Ontario Museum of History and Art.

North Ontario area: North of the Ontario International Airport, the area is comprised of a mixture of land uses. Ontario Mills, a regional shopping destination is located in the area. The area is also home to the City's hospitality sector, as well as business parks, residential apartments, and industrial land uses. Unlike the Northwestern area, the roadways are characterized by wide, multi-lane roads with high traffic volumes.

Central Ontario area: Located to the south and east of the airport, the area is primarily comprised of industrial, manufacturing, and warehousing land uses. Arterial roadways are typically multi-lane, and many are designated truck routes.

Mid-South Ontario area: The area is located between State Route 60 to the north and Riverside Drive to the south. It is characterized by low-density residential housing and neighborhood amenities.

South Ontario: South of Riverside Drive, new planned residential developments exist side by side next to agricultural land. Also known as Ontario Ranch, the area is a part of a large master-planned effort to convert existing agricultural land into residential and commercial land uses.

The City has four large physical barriers that present challenges and opportunities for improving active transportation connectivity in the City. The barriers include:

- Ontario International Airport which lies in the center of the city
- Railroad tracts that traverse across the city in the east-west direction
- Interstate 10 and State Route 60 that runs in the east-west direction
- Cucamonga Creek that runs in the north-south direction

LAND USE MIX ANALYSIS

The Land Use Mix Analysis analyzed the diversity of land uses within a given area. The analysis calculated the number of different land uses within a quarter-mile of any given area of the City of Ontario. Areas with a high land use mix tend to have shorter distances between destinations and fewer barriers for community members to partake in active transportation. On the other hand, areas with a lower intensity land use mix, such as large low-density residential neighborhoods, multi-use agriculture uses, and industrial areas, tend to be less accessible by walking, biking, and transit, due to their segregated nature.

Findings from the analysis suggest that areas with higher intensity land uses are concentrated near the Downtown area in the western region of Ontario, particularly around Euclid Avenue between Holt Boulevard and Mission Boulevard.

ATTRACTORS

A City's bicycle and pedestrian network should enhance connections between activity centers, both within the City and at adjacent municipalities. Major activity centers in Ontario include the Ontario Mills Mall – one of the largest attractors in San Bernardino County, Downtown Ontario along Euclid Avenue, Ontario International Airport, and various shopping centers and homestays embedded in the residential areas. Sub-regional destinations include, Victoria Gardens, the Pacific Electric Trail (P.E. Trail), and Amazon Fulfillment Centers.

EXISTING PEDESTRIAN INFRASTRUCTURE

Sidewalks and crosswalks are two of the most fundamental components in a pedestrian infrastructure network. The City has a relatively expansive network of sidewalks. However, many areas and long corridors still have gaps in the sidewalk infrastructure. For instance, Mission Boulevard and State Street lack sidewalk coverage along long segments of each corridor. Other areas that have missing sidewalk coverage include corridors within the southern portion of Ontario which has agricultural land uses, and the industrial area that lies to the south and east of the Ontario International Airport.

Crosswalks are present at most major intersections within the City. However, high vehicle speeds, missing sidewalks, and wide roadways can present challenges to the current pedestrian environment. In recent years, the City has installed high visibility crosswalks at 20 different intersections, most of which located near schools to help promote safer crossings.

EXISTING BICYCLE INFRASTRUCTURE

The existing bicycle network in Ontario is comprised of bicycle lanes (34%), bicycle routes (22%), and off-street multi-use paths (44%), totaling 17.6 miles. The existing bicycle infrastructure is scattered throughout the city with a small concentration along Haven Avenue in the southern area.

TRANSIT INFRASTRUCTURE

Omnitrans, Riverside Transit Agency (RTA), and Metrolink provide transportation services to the Ontario community. Omnitrans is the primary bus transit service provider, while RTA operates one route that goes through the City. Metrolink offers opportunities for commuter rail travel via the Riverside Route at the Ontario East Station.

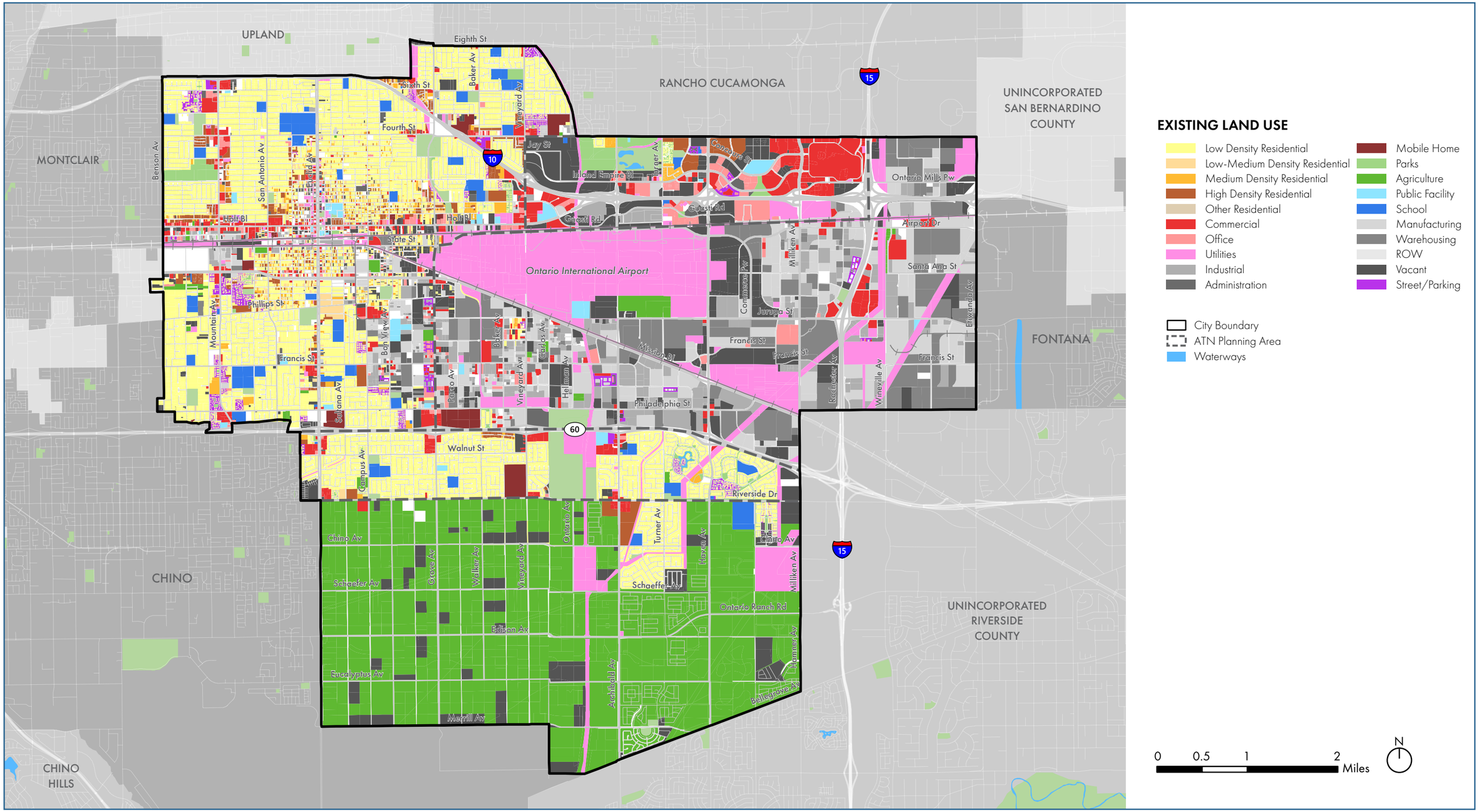


Figure 2.2 Land Use in the City of Ontario

Source: City of Ontario- The Ontario Plan

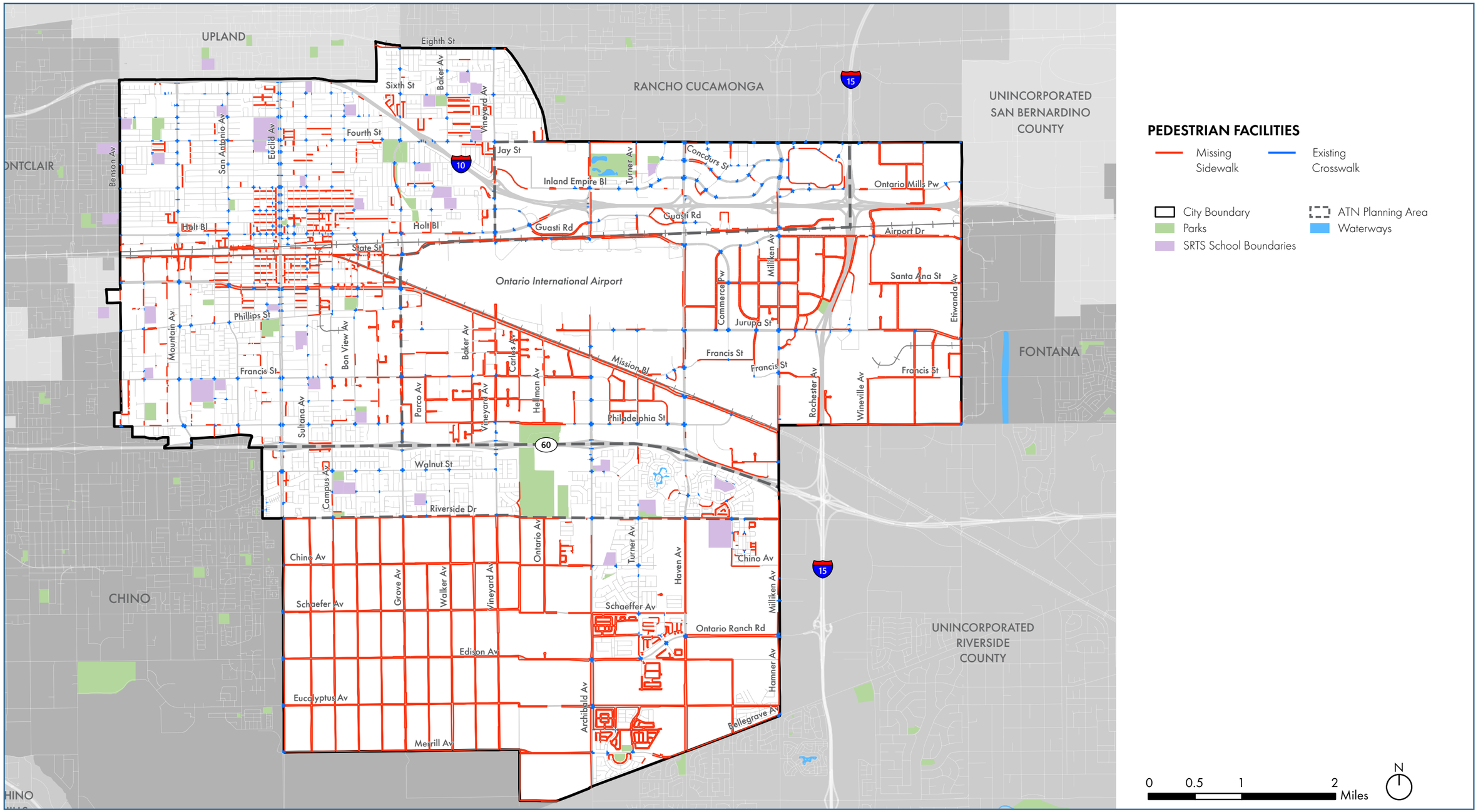


Figure 2.3 Missing Sidewalks and Availability of Crosswalks

Source: SBCTA Comprehensive Pedestrian Connectivity Plan Phase I

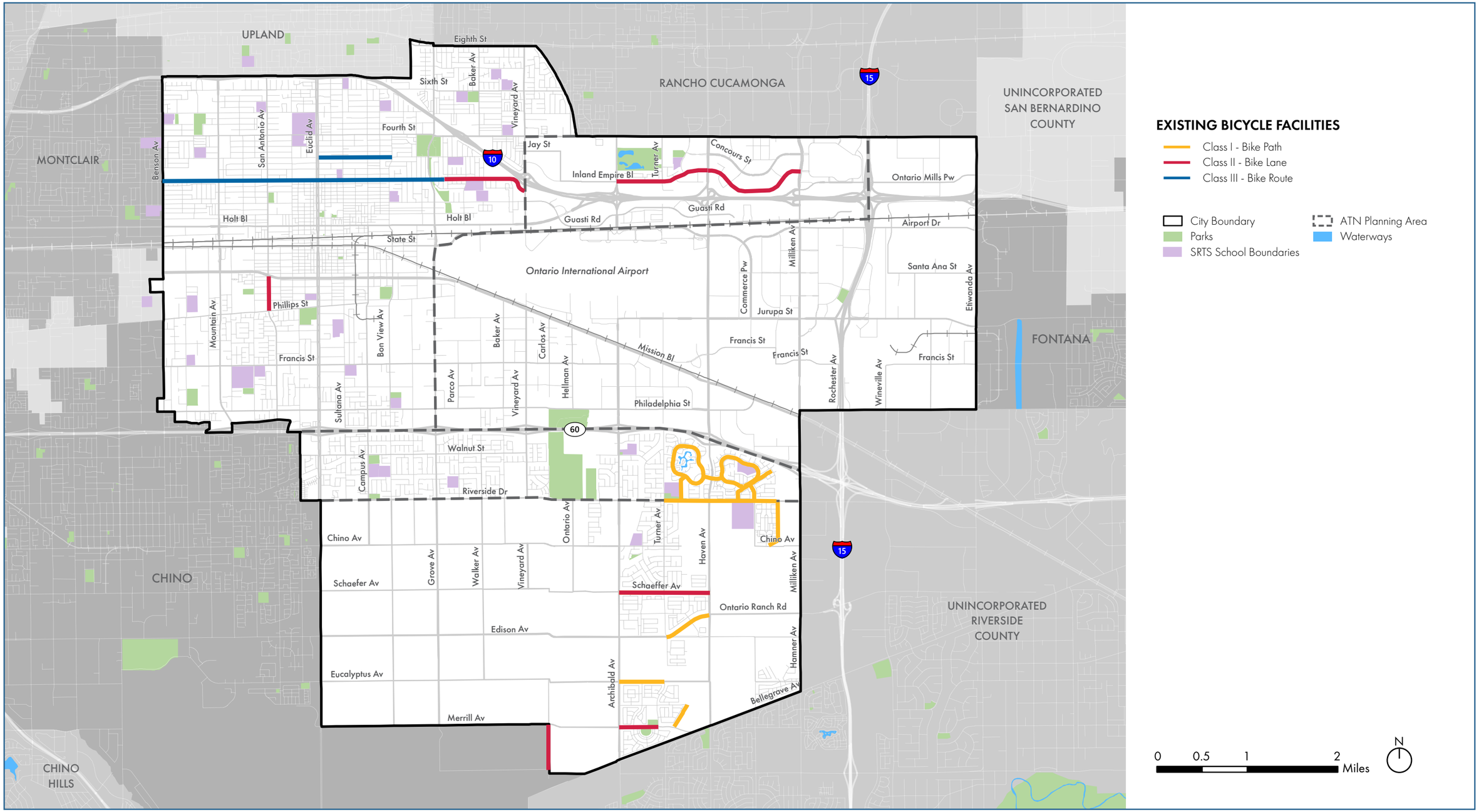


Figure 2.4 Existing Bicycle Facilities

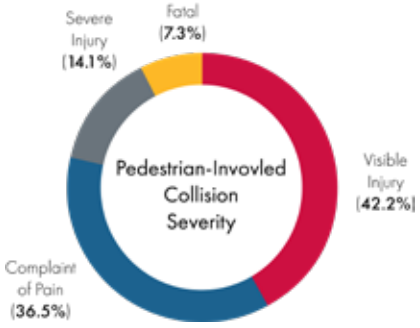
Source: City of Ontario / Field Review

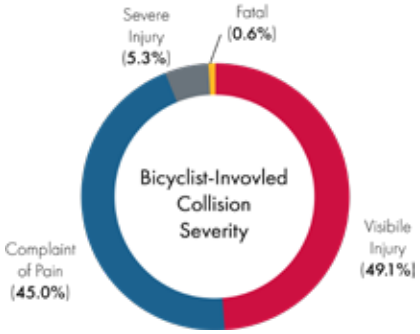
2.4 Roadway Safety for Pedestrians and Bicyclists

One of the main priorities of the Plan is to develop an active transportation network that allows for safe travels. Two analyses were conducted to understand roadway safety: pedestrian and bicycle collisions analysis and police citation analysis. The analyses helped answer important questions such as which roadways were the most unsafe for pedestrians and bicyclists and what were some leading causes for adverse behaviors. Data for these analyses were retrieved from Transportation Injury Mapping System (TIMS) for 2014 to 2018 and the Ontario Police Department for 2013 to 2017.

PEDESTRIAN AND BICYCLE COLLISIONS ANALYSIS - SUMMARY OF FINDINGS

In the five-year period between 2014 and 2018, 361 collisions that involved pedestrians and bicyclists occurred in the city. Of the collisions, 192 involved pedestrians, or an average of approximately 38 collisions per year. During the same period, 169 bicyclist-involved collisions occurred in Ontario, an average of roughly 34 collisions per year. Pedestrian and bicycle-involved collisions represented 12% of all collisions.





The California Office of Traffic Safety (OTS) develops rankings for comparison of traffic safety statistics between cities with similar-sized populations. The City of Ontario is ranked in a 58-city group (OTS Group D) classified by populations between 100,001 and 250,000. According to the 2017 OTS report, of the 58 California cities, Ontario ranked 52nd based on average population for both bicyclist- and pedestrian-involved collisions. Most notably, Ontario ranks 53rd in Group D for total fatal and injury collisions of all modes. The City fared better than 51 cities in the group for the average population of bicyclists and pedestrian-involved collisions.

Pedestrian-Involved Collision Hotspots

Of the 192 pedestrian-involved collisions, approximately 34% occurred on five different corridors. The top five pedestrian-involved collision corridors are as followed:

1. Holt Boulevard – 20 collisions
2. Fourth Street – 14 collisions
3. Mountain Avenue – 13 collisions
4. D Street – 12 collisions
5. Euclid Avenue – 7 collisions

Bicyclist-Involved Collision Hotspots

Of the 169 bicyclist-involved collisions, 30% occurred on five different corridors. The top five bicyclist-involved collision corridors are as followed:

1. Mission Boulevard – 11 collisions
2. Fourth Street – 10 collisions
3. G Street – 10 collisions
4. Holt Boulevard – 9 collisions
5. Haven Avenue - 9 collisions

Collisions by Primary Collision Factor (PCF Violation Category)

The Primary Collision Factor (PCF) is known as the violation of a transportation law that likely caused a collision to occur. Tables 2.1and 2.2 shows the distribution of the top pedestrian and bicycle-involved collisions.

PRIMARY COLLISION FACTOR (PCF)	TOTAL	% OF TOTAL*
Pedestrian Violation	76	39.8%
Pedestrian Right-of-Way	73	38.2%
Improper Turning	10	5.2%
Traffic Signals & Signs	8	4.2%
Automobile Right-of-Way	6	3.1%
Other factors (less than 3% each)	19	9.8%

Table 2.1 Primary Collision Factors (PCF) for Pedestrian-Involved Collisions

PRIMARY COLLISION FACTOR (PCF)	TOTAL	% OF TOTAL*
Wrong Side of Road	69	41.1%
Automobile Right-of-Way	39	23.2%
Traffic Signals & Signs	22	13.1%
Improper Turning	22	13.1%
Unsafe Speed	7	4.2%
Other factors (less than 2%)	10	6.0%

Table 2.2 Primary Collision Factors (PCF) for Bicycle-Involved Collisions

** Percentages may not total 100 due to rounding*

POLICE CITATION ANALYSIS - SUMMARY OF FINDINGS

Between 2013 and 2017, the Ontario Police Department gave 14,073 citations that pertained to the movement of bicyclists and pedestrians, or poor motorist driving behavior that may infringe on bicycle and pedestrian mobility. The citations act as a proxy for "near miss" collisions, which are assumed to have been avoided due to intervention from the police enforcement officers. The top five citations are available in Table 2.3.

CVC CODE	DESCRIPTION	CITYWIDE VIOLATIONS	CITYWIDE %
22350	Speeding (speed greater than in reasonable)	7808	55.5%
22450(A)	Failure to stop at stop sign limit line, crosswalk, or entrance of intersection	2993	21.3%
21453(A)	Failure to stop at red traffic signal	1668	11.9%
21461(A)	Failure to obey MUTCD/regulatory sign/signal	900	6.4%
22107	Unsafe turning/lane change	455	3.2%

Table 2.3 Citation California Vehicle Code Definitions and Total Citations Given

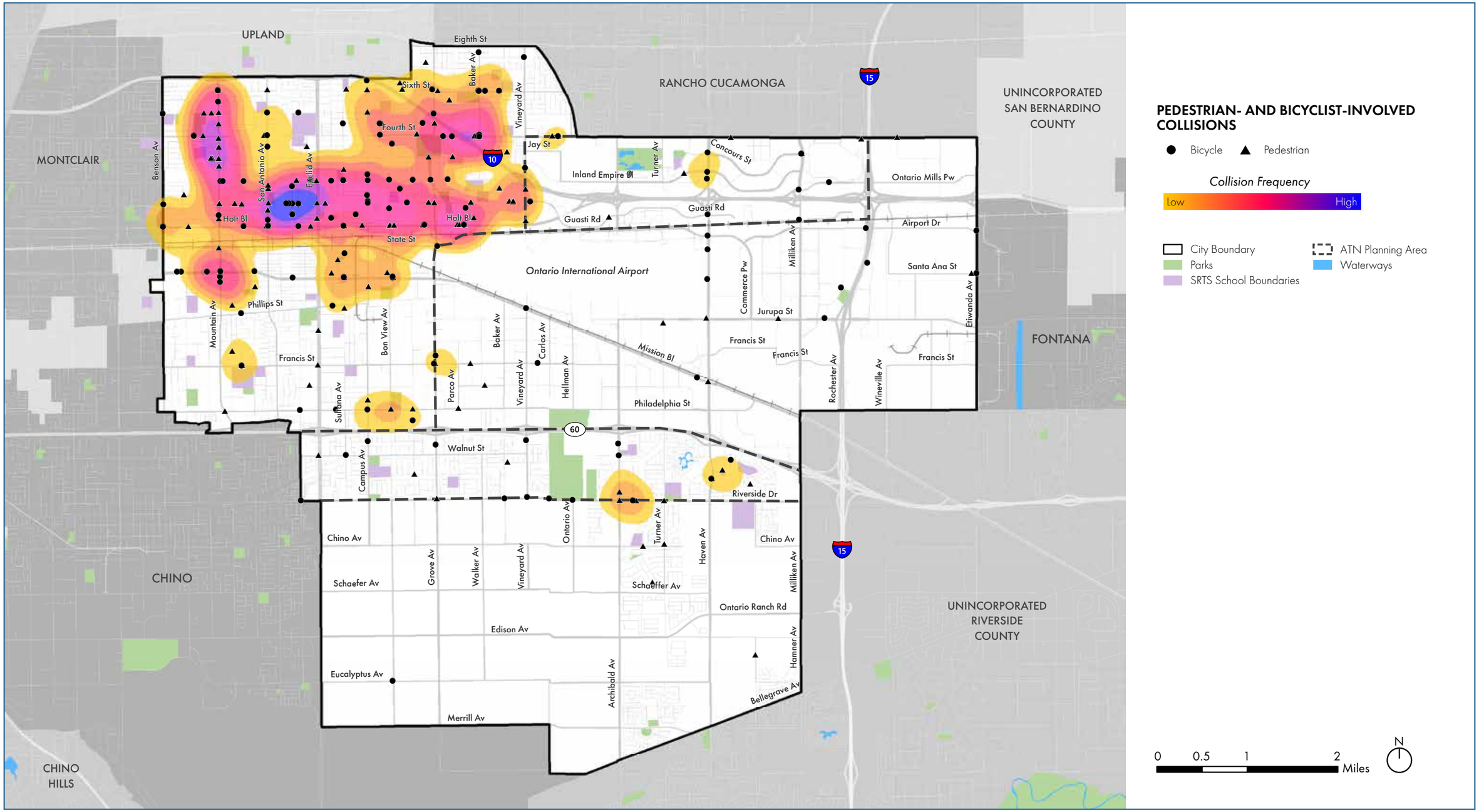


Figure 2.5 Hotspot Analysis of Pedestrian and Bicyclists - Involved Collisions

Source: Transportation Injury Mapping System (TIMS) for 2014 to 2018

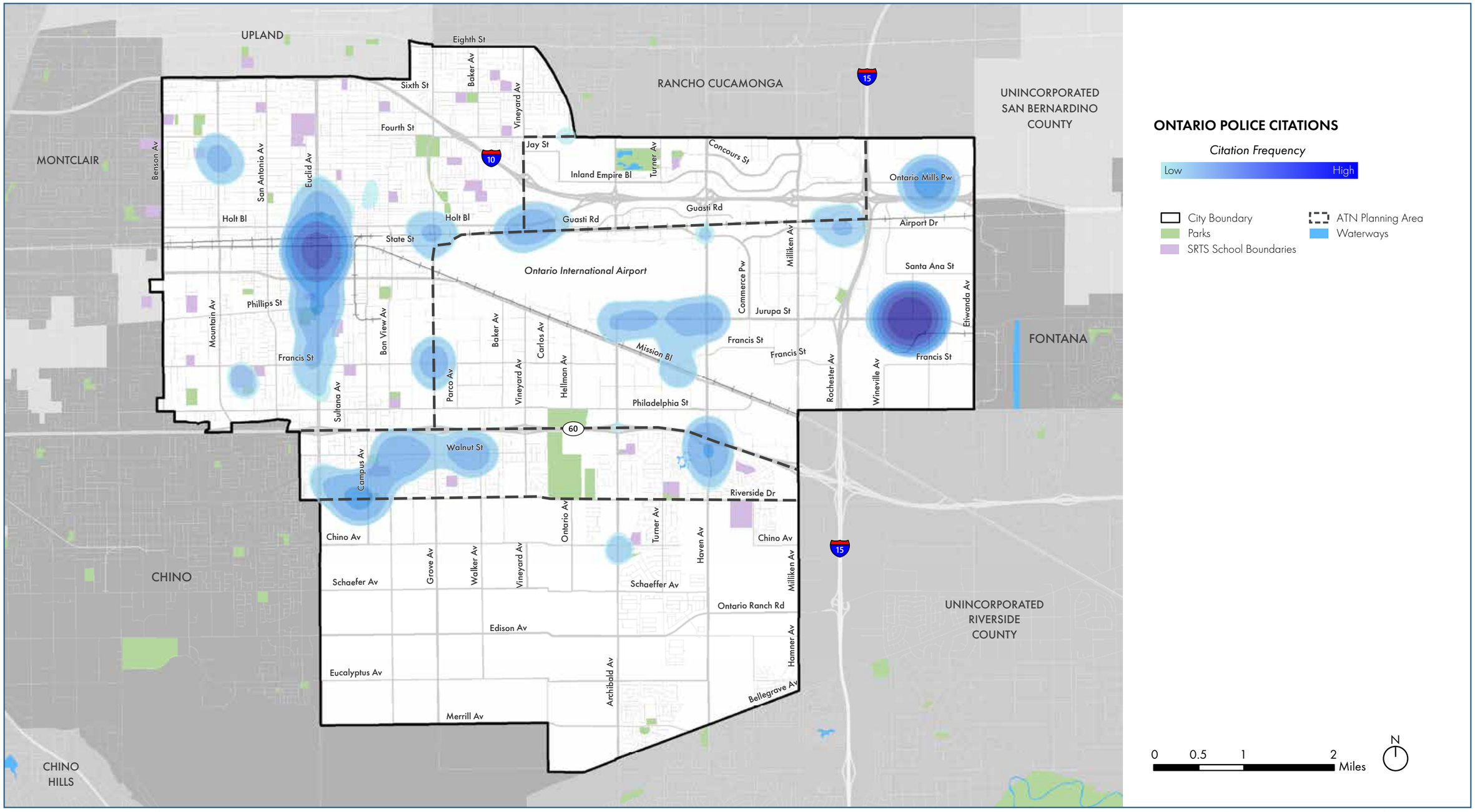


Figure 2.6 Hotspot Analysis of Ontario Police Citations

Source: the Ontario Police Department for 2013 to 2017

2.5 Pedestrian and Bicycle Network Comfort and Connectivity

Four separate yet inter-related analyses were conducted that built upon the spatial extent of the pedestrian and bicycle networks to gain a better understanding of the overall functionality of the networks. Rooted in data-driven approaches, the analyses included the following:

- Bicycle Level of Traffic Stress (LTS)
- Analysis Pedestrian Level of Comfort (LOC) Analysis
- Intersection Level of Comfort (LOC) Analysis for Pedestrians
- Pedestrian and Bicycle Connectivity Analysis

Data for the analyses was collected from existing city and county data collection efforts, studies, and planning documents.

UNDERSTANDING LOC AND LTS RANKINGS

From the analyses, each roadway segment were assigned a rank, with higher values representing a higher level of stress and providing the least comfort. While Pedestrian LOC and Bicycle LTS Analyses are independent from one another, they are analyzed in conjunction to represent the overall functionality of a network.

A traditional Bicycle Level of Traffic Stress Analysis ranks roadways segments based on the "Four Types of Cyclists", originally structured by Roger Geller at the City of Portland:

1. **No Way, No How:** People unwilling to bicycle even if high-quality bicycle infrastructure is in place

2. **Interested but Concerned:** People willing to bicycle if high-quality bicycle infrastructure is in place

3. **Enthused and Confident:** People willing to bicycle if some bicycle-specific infrastructure is in place

4. **Strong and Fearless:** People willing to bicycle with limited or no bicycle-specific infrastructure

Using the traditional analysis as a starting point, Bicycle Level of Traffic Stress and Pedestrian Level of Comfort ranking schemes that were unique to the City of Ontario were developed. The ranking schemes are identified in Tables 2.4 Pedestrian LOC Ranking Scheme and 2.5 Bicycle LTS Ranking Schemes.

LEVEL OF COMFORT	DESCRIPTION
LOC 1	Suitable for almost all pedestrians, including children that are trained to safely cross intersections
LOC 2	Suitable for most adult pedestrians, but demand more attention for children
LOC 3	Suitable for most adult pedestrians and older children with little or no supervision
LOC 4	May be suitable for adults and children with parental supervision

Table 2.4 Pedestrian LOC Ranking Scheme

LEVEL OF TRAFFIC STRESS	DESCRIPTION
LTS 1	Suitable for almost all ages and bicycling abilities
LTS 2	Suitable for most adults
LTS 3	Suitable for more skilled and confident bicyclists
LTS 4	Not suitable for most bicyclists

Table 2.5 Bicycle LTS Ranking Scheme

BICYCLE LTS ANALYSIS FINDINGS

According to the Bicycle LTS Analysis, all four types of stress levels are present in the studied corridors. Examples of corridors that are more stressful for bicyclists include:

- Mountain Avenue
- Euclid Avenue
- Grove Avenue
- Vineyard Avenue
- Archibald Avenue
- Haven Avenue
- Milliken Avenue
- Holt Boulevard
- Mission Boulevard
- Philadelphia Street
- Riverside Drive
- Schaefer Avenue (West of Vineyard Avenue)

These corridors received high LTS scores due to a lack of existing bicycle facilities, high vehicle average daily traffic (ADT) volumes, and high posted speed limits.

The presence of an existing on-street bicycle facility or an adjacent off-street bicycle facility did significantly decrease the stress level of certain segments. These segments include:

- I Street (East of Euclid Avenue)
- Inland Empire Boulevard (East of Archibald Avenue)
- G Street (between Benson Avenue and Vineyard Avenue)
- San Antonio Avenue (between Mission Boulevard and Phillips Street)
- Schaefer Avenue (between Archibald Avenue and Haven Avenue)

Nearly all segments not included in the Functional Roadway Classification Plan received low LTS scores. This is primarily due to low vehicle volumes, low speed limit, and few travel lanes.

PEDESTRIAN LOC ANALYSIS FINDINGS

The Pedestrian LOC Analysis identified corridors of all comfort levels. Examples of less comfortable corridors for pedestrians include:

- Mission Boulevard
- Airport Drive (East of Grove Avenue)
- Haven Avenue
- Jurupa Street (East of Milliken Avenue)
- Philadelphia Street (East of Milliken Avenue)
- Most segments in the Southwest region of the City

Approximately 88% of all LOC 4 segments had missing sidewalk. The remaining 12% of LOC 4 segments had partial sidewalk coverage with no sidewalk separation and high vehicle average daily traffic (ADT) volumes. High comfort segments are aggregated within residential areas, as seen in the Northwest area of the City. Roughly 96% of LOC 1 segments had full sidewalk coverage. The remaining 4% of LOC 1 segments had partial sidewalk coverage with low vehicle ADT volumes which contributed to their high pedestrian comfort level.

INTERSECTION LOC FOR PEDESTRIANS ANALYSIS FINDINGS

The Intersection Level of Comfort (LOC) for Pedestrians Analysis is similar to the Pedestrian LOC Analysis; however, it is a point-based model of pedestrian and user experience within and along formal crosswalks or crossing designations. The Intersection LOC Analysis for Pedestrians analyzed 43 intersections.

Of the 43 intersections, 27 were signalized, 13 were all-way controlled unsignalized, and 3 were two-way stop controlled and unsignalized. None of the intersections received a LOC 1 score. This finding is due in part to the lack of studied intersections that had widths and/or speeds that fall below the thresholds used in the analysis.

Ten intersections received a LOC 4 score. Of the intersections, nine were signalized. Additionally, all LOC 4 intersections were intersected by an "Other Principal Arterial" classification, which is the highest roadway classification, where high vehicle volumes, high speed limits, and long crossing distances exist. Table 2.6 shows the intersections that received a LOC 4.

PEDESTRIAN AND BICYCLE CONNECTIVITY ANALYSIS FINDINGS

The Pedestrian and Bicycle Connectivity Analysis assessed the connectivity of bicycle LTS and pedestrian LOC within the City. The analysis builds upon the linear LTS and LOC networks by giving a broader representation of where high stress and low comfort gaps exist across the city. Tables 2.7 and 2.8 show the Pedestrian LOC and Bicycle LTS area coverage by census blocks.

INTERSECTION	INTERSECTION CONTROL	CROSSING DISTANCE (FT)	POSTED SPEED LIMIT (MPH)
Mission Blvd & Mountain Ave	Signalized	139	40
Euclid Ave & Belmont St	Signalized	158	40
Euclid Ave & Francis St	Signalized	153	40
Grove Ave & Francis St	Signalized	109	50
Ontario Ranch Rd & Archibald Ave	Signalized	137	55
Riverside Dr & Archiblad Ave	Signalized	97	50
Airport Dr & Etiwanda Ave	Signalized	106	50
Haven Ave & Airport Dr	Signalized	142	55
Haven Ave & Jurupa St	Signalized	138	55
Holt Blvd & Laurel Ave	Uncontrolled (two way)	60	45

Table 2.6 Studied Intersections with LOC 4 Scores

PEDESTRIAN LOC SCORE	SQUARE MILES	PERCENTAGE OF SHARE
LOC 1	22.26	47.36%
LOC 2	10.27	21.85%
LOC 3	6.17	13.13%
LOC 4	8.30	17.66%

Table 2.7 Pedestrian LOC Area Coverage by Census Block

BICYCLE LTS SCORE	SQUARE MILES	PERCENTAGE OF SHARE
LTS 1	7.14	15.19%
LTS 2	30.05	63.92%
LTS 3	6.21	13.21%
LTS 4	3.61	7.68%

Table 2.8 Bicycle LTS Area Coverage by Census Block

Due to the limitations of the model, the findings from the analysis might not be a true reflection of the experiences felt by pedestrians and bicyclists that use the roadway infrastructure in the city. The majority of segments within the linear network have low vehicle volumes, which in turn lowers the stress level of the segment. Additionally, the pedestrian LOC linear network is weighted heavily by the presence of sidewalks. Since a majority of segments have full or partial coverage, specifically in the north region of the City, low-stress connectivity is enhanced.

However, many of the corridors that offer connectivity from one part of the city to another have high Bicycle LTS and/or high Pedestrian LOC; as such, the corridors limit the opportunities for pedestrians and bicyclists to safely and comfortably use the existing roadway infrastructure to reach their destinations. Appendix E: Bicycle LTS/ Pedestrian LOC Analyses provides additional discussion on the limitations of the findings.

Note: The analysis sets a perimeter of 200' from a roadway that is a part of the analysis. As a result, certain areas from the city that are further than 200' show up as blank on figures 2-10 and 2-11.

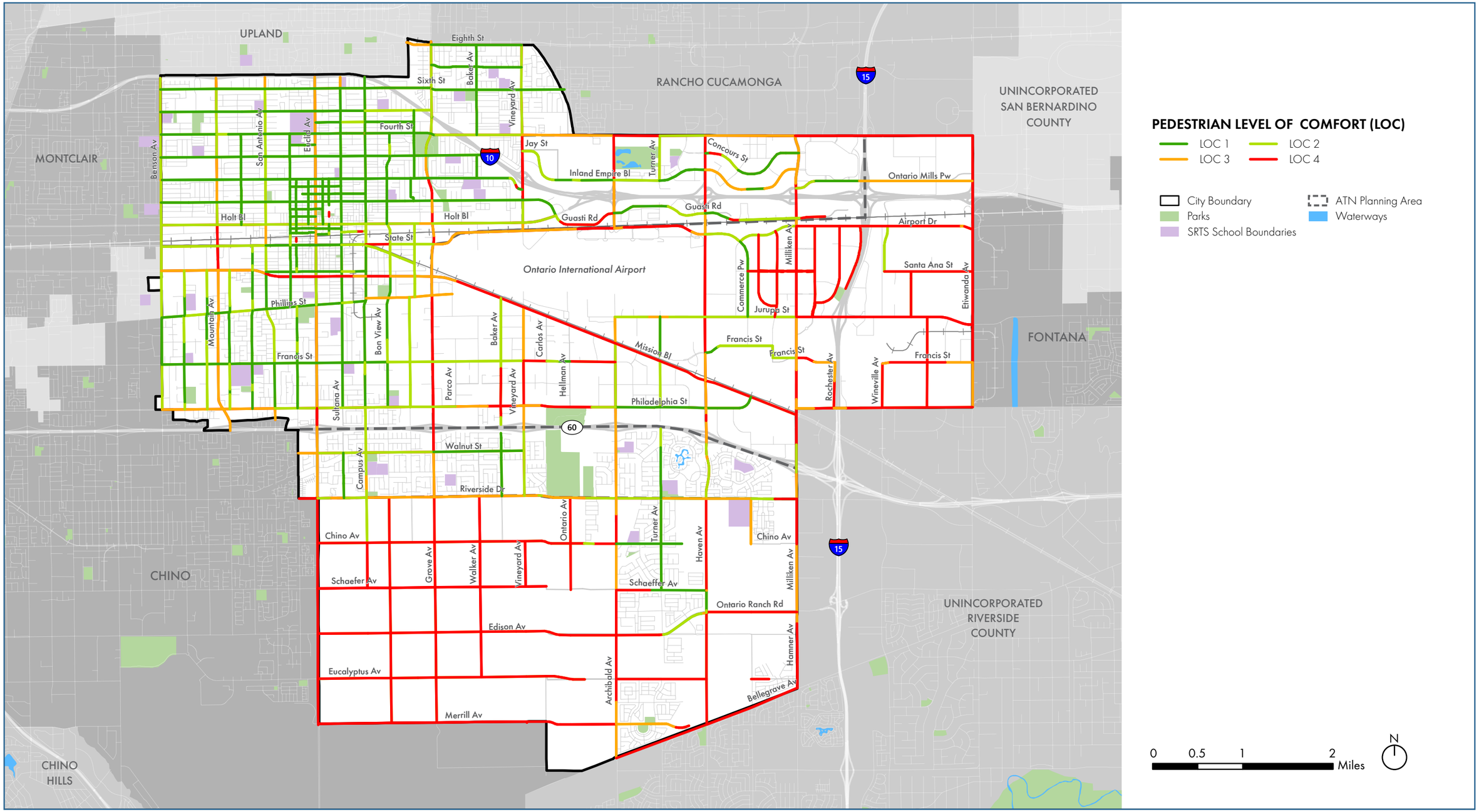


Figure 2.7 Pedestrian Level of Comfort (LOC)

Source: Multiple Datasets

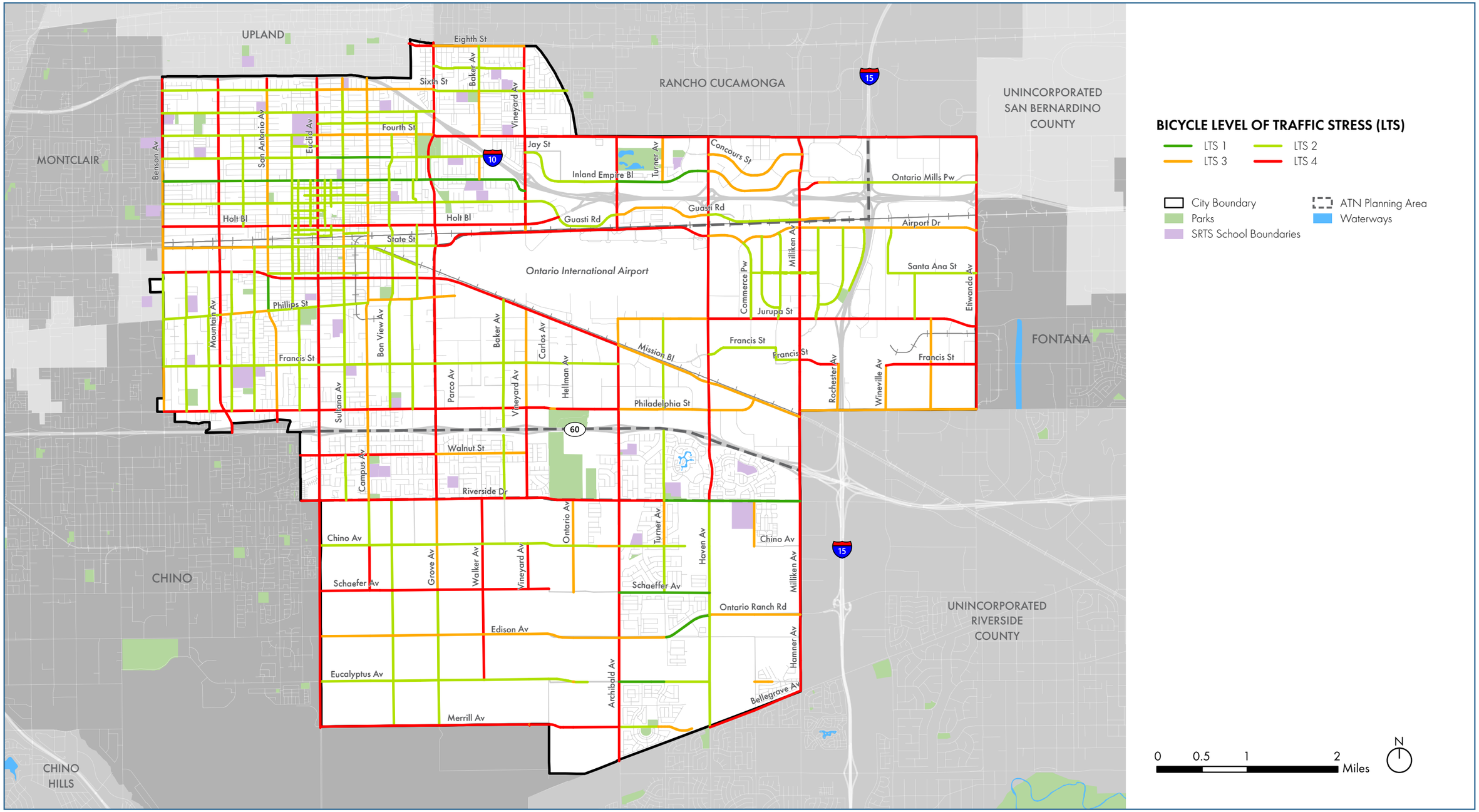


Figure 2.8 Bicycle Level of Traffic Stress (LTS)

Source: Multiple Datasets

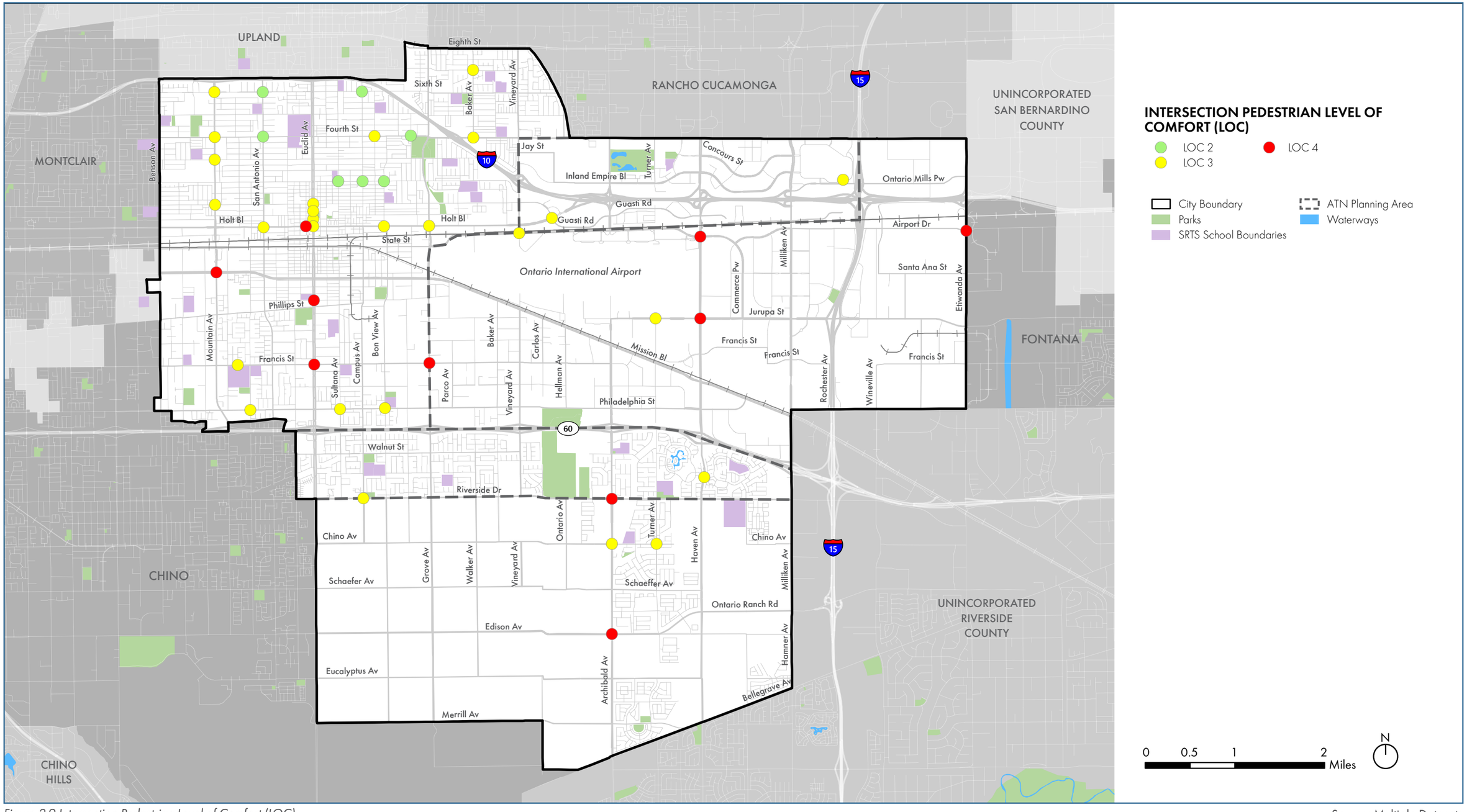


Figure 2.9 Intersection Pedestrian Level of Comfort (LOC)

Source: Multiple Datasets

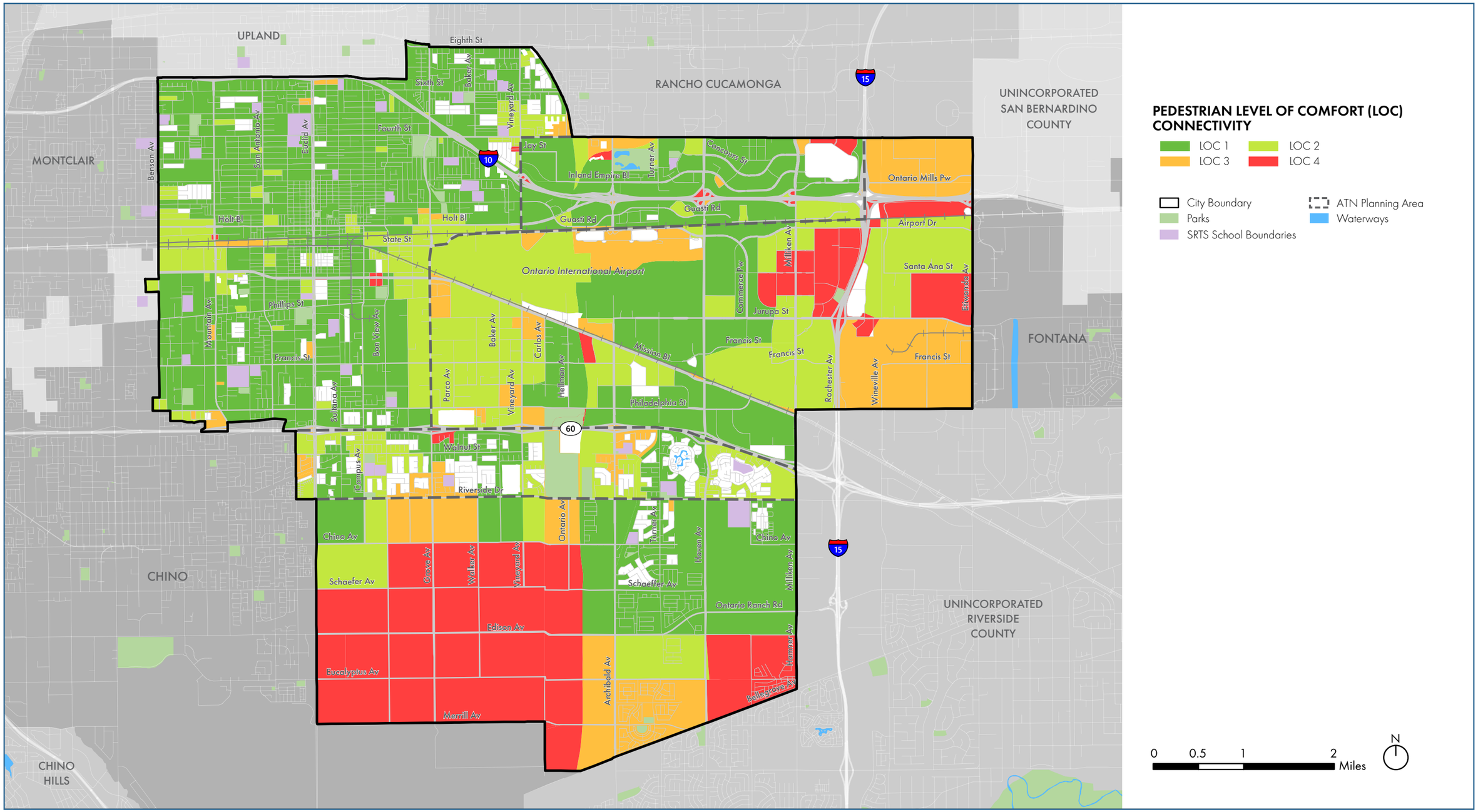


Figure 2.10 Pedestrian Level of Comfort Connectivity

Source: Multiple Datasets

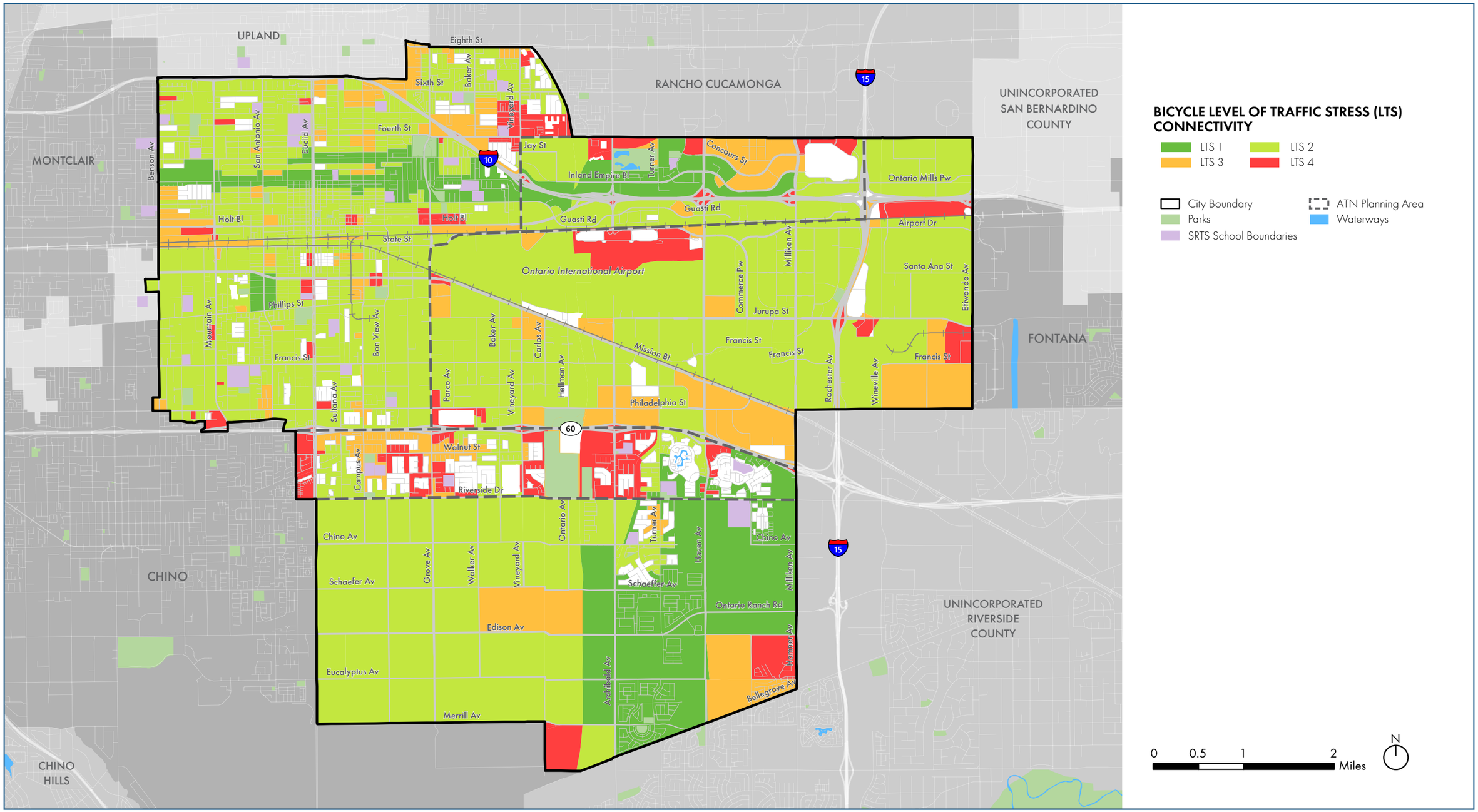


Figure 2.11 Bicycle Level of Traffic Stress Connectivity

Source: Multiple Datasets

2.6 Focus Areas Analysis

SCHOOLS

As a part of the Ontario Active Transportation Master Plan, 31 schools in the City were selected to be a part of the Safe Routes to School effort. The selected schools include 4 high schools, 5 intermediate/middle/junior high schools, and 22 elementary schools. The schools are in five school districts that are present in the City: Ontario-Montclair School District (OMSD), Mountain View School District (MVSD), Cucamonga School District (CSD), Chino Valley Unified School District (CVUSD), and Chaffey Joint Union High School District (CJUHSD).

According to the California Department of Education, the schools enrolled 26,054 students in the 2017-2018 school year. Of the student population, 79.7% (20,775 students) participated in the Free and Reduced-Price Meal Program (FRPM). Of the selected schools, Ray Wiltsey Middle School had the largest percentage of students enrolled in the program (90.5%).

SCHOOL	DISTRICT	ADDRESS (STREET)	ENROLLMENT	PARTICIPATION IN FRPM
Arroyo Elementary	OMSD	1700 East Seventh Street	392	78.06%
Berlyn Elementary	OMSD	1320 North Berlyn Avenue	764	90.45%
Bon View Elementary	OMSD	2121 South Bon View Avenue	694	83.00%
Central Language Academy	OMSD	415 East G Street	706	70.82%
Chaffey High	CJUHSD	1245 North Euclid Avenue	3268	84.79%
Colony High	CJUHSD	3850 East Riverside Drive	2090	71.05%
Corona Elementary	OMSD	1140 North Corona Avenue	552	86.78%
Creek View Elementary	MVSD	3742 Lytle Creek North Loop	614	54.89%
De Anza Middle	OMSD	1450 South Sultana Avenue	589	83.70%
Del Norte Elementary	OMSD	850 Del Norte Avenue	515	85.63%
Edison Elementary	OMSD	515 East Sixth Street	767	69.62%
El Camino Elementary	OMSD	1525 West Fifth Street	447	87.25%
Euclid Elementary	OMSD	1120 South Euclid Avenue	725	89.93%
Grace Yokley Middle	MVSD	2947 South Turner Avenue	892	61.10%
Hawthorne Elementary	OMSD	705 West Hawthorne Street	762	80.31%

Table 2.9 Schools Selected for Ontario Safe Routes to School

SCHOOL	DISTRICT	ADDRESS (STREET)	ENROLLMENT	PARTICIPATION IN FRPM
Levi H. Dickey Elementary	CVUSD	2840 Parco Avenue	506	81.23%
Liberty Elementary	CVUSD	2730 South Bon View Avenue	642	64.80%
Mariposa Elementary	OMSD	1605 East D Street	679	84.68%
Mission Elementary	OMSD	5555 Howard Street	711	88.33%
Mountain View Elementary	MVSD	2825 Walnut Street	485	69.28%
Oaks Middle	OMSD	1221 South Oaks Avenue	876	82.42%
Ontario High	CJUHSD	901 West Francis Street	2385	85.20%
Ranch View Elementary	MVSD	3300 Old Archibald Road	564	60.28%
Ray Wiltsey Middle	OMSD	1450 East G Street	1096	90.51%
Richard Haynes Elementary	OMSD	715 West Francis Street	806	84.24%
Sultana Elementary	OMSD	1845 South Sultana Avenue	769	86.61%
The Ontario Center	CSD	835 North Center Avenue	662	64.95%
Valley View High (Continuation)	CJUHSD	1801 East Sixth Street	446	85.65%
Vineyard Elementary	OMSD	1500 East Sixth Street	786	88.17%
Vista Grande Elementary	OMSD	1390 West Francis Street	456	78.73%
Woodcrest Junior High	CVUSD	2725 South Campus Avenue	408	74.02%

Table 2.9 Schools Selected for Ontario Safe Routes to School (Cont.)

OTHER FOCUS AREAS

The project team conducted a Streetlight Data Analysis for ten focus areas in the city. Each zone was classified as either an "Origin" (where residents of Ontario likely travel from), or a "Destination" (a typical activity center such as a mall or shopping center that attracts both residents and non-residents).

The analysis used data from Streetlight Data, a web platform that collects geospatial data points for transportation analyses. StreetLight Data was used to analyze mobility trends for the vehicular, bicycle, and pedestrian modes in ten zones.

ZONE	DESCRIPTION	CLASSIFICATION
Ontario Mountain Village	A popular attractor with a variety of corporate retail stores, various eateries, and cinema complex.	Destination
Residential North	A dense residential neighborhood that shares the northern city border.	Origin
Ontario Mills	A large shopping and outlet mall that attracts both residents and visitors to Ontario.	Destination
Downtown Area	A popular and diverse attractor with a variety of eateries and commercial and retail stores.	Destination
Airport Terminals	Serves as the gateway for residents and visitors to fly to national and international destinations.	Destination
East Airport	Large industrial area that provides jobs to many Ontario residents.	Destination
Ontario High Area	A dense residential neighborhood with Ontario High School as its focal point.	Origin
South Airport	Large industrial area that provides jobs to many Ontario residents.	Destination
Grove Center Residential	An array of land uses, comprised primarily of residential area.	Origin
Residential South	A dense residential neighborhood that shares the southern City border.	Origin

Table 2.10 Streetlight Data Analysis Zones

Summary of Findings

The following is a summary of the key findings from the analysis across the ten focus areas.

- Each origin zone had consistent pedestrian activity on weekdays and a substantial volume decrease on weekend days.
- Unlike the origin zones, the destination zones had variability in pedestrian volumes across the week. Of the six destinations, only Ontario Mills exhibited an increase in pedestrian trip volumes on weekend days.
- Pedestrian trip volumes from each of the origin zones was highest during school pickup and drop off – between 7:00 a.m. to 9:00 a.m., and between 1:00 p.m. to 3:00 p.m. Pedestrian activity decreased at 5:00 p.m. and was negligible between midnight and 5:00 a.m.
- Pedestrian activity within each destination zone was highest between noon and 7:00 p.m.
- Pedestrian trip volumes by duration were relatively consistent across each origin and destination zone. Three out of four pedestrian trips to or from a zone had a duration of 40 minutes or less, with the majority of trips lasting between 10 to 30 minutes. Further analysis reveals that nearly 80% of trips were less than one mile.
- Across each of the origin zones, bicycle activity was higher and more consistent on weekdays than the

weekend.

- Bicycle trip volumes had more variability across the six destination zones. Of the six destinations, only Ontario Mills exhibited an increase in bicycle trip volumes on weekend days, with a peak on Saturdays.
- Bicycle trip volumes from each of the origin zones was highest during pick-up and drop-off school times – between 7:00 a.m. to 9:00 a.m., and between 1:00 p.m. to 3:00 p.m. Bicycle activity decreased at 5pm and was negligible between midnight and 5a.m.
- Bicycle activity within each destination zone was highest between noon and 7:00 p.m. Bicycle trips ending in each of the destination zones plateaued during this timeframe, but showed a sudden decrease in activity between 4:00 p.m. and 5:00 p.m. Bicycle activity decreased dramatically after 7:00 p.m.
- Bicycle trip volumes by duration were relatively consistent across each origin and destination zone. About half of all bicycle trips traveling to or from a zone had a duration of 10 minutes or less, and more than 90% of trips were 30 minutes or less. Additional analysis shows that nearly 75% of trips were less than one mile, and the data shows that the trips originate and terminate in areas within close proximity to each zone.

2.7 Community Preferences Through Surveys

In support of the Plan, three types of surveys were implemented. Between May 2019 and December 2020, a survey was administered to the Ontario community-at-large to gather data on existing conditions, travel behaviors, and preferences for specific pedestrian and bicycle treatments. The surveys were collected at outreach events and school sites. They were also made available electronically on-line.

As a part of the Safe Routes to School component for the Plan, surveys were also collected at all school sites involved in the Plan. The survey effort aimed to understand student characteristics and travel behavior and identify areas for interventions. Two types of surveys were conducted at the school sites: a parent survey at the elementary and middle schools, and a student survey at the high schools. The surveys reflected the differences in needs between students at different grade levels.

The parent surveys were collected between August and October 2020, while surveys to high school students were conducted in February 2020. The parent survey was available in both English and Spanish, while the survey for high school students was solely available in English. All surveys were conducted electronically, in part due to the COVID-19 pandemic.

The parent surveys built upon a previous survey collection effort. As a part of that effort, the City collected 285 surveys.

Collectively, the project team collected 1,369 surveys. This included:

- 977 community surveys
- 562 parent surveys (277 from the Ontario ATMP and 285 from previous efforts)
- 115 high school student surveys

COMMUNITY SURVEY RESULTS

# of surveys collected: 977*

ATTITUDE TOWARDS ACTIVE TRANSPORTATION

WALKING		BIKING	
Would walk for exercise or to go to local destinations	**56.60%**	*Would bike for exercise or to go to local destinations*	**23.13%**
Would walk due to the lack of alternative transportation options	**10.34%**	*Would bike due to the lack of alternative transportation options*	**4.09%**
Would walk if streets were safer and more comfortable	**23.13%**	*Would bike if streets were safer and more comfortable*	**46.37%**
Not interested in walking	**6.35%**	*Not interested in biking*	**15.46%**
		Interested in biking, but don't know how to ride a bike	**6.35%**

THE DETAILS

SAFETY & COMFORT

Question: I think it's safe & comfortable to walk and bike in my neighborhood

	Walking	Biking
Agree	**43.71%**	**39.10%**
Neutral	**22.93%**	**23.23%**
Disagree	**32.24%**	**33.57%**

ACCESSIBILITY

Question: I think it's easy for me to walk and bike to my destinations

	Walking	Biking
Agree	**42.48%**	**35.11%**
Neutral	**23.85%**	**25.69%**
Disagree	**31.32%**	**33.98%**

INFRASTRUCTURE

Question: I think there is adequate pedestrian and bicycle infrastructure in my neighborhood

	Walking	Biking
Agree	**43.60%**	**37.46%**
Neutral	**21.49%**	**24.56%**
Disagree	**32.75%**	**32.75%**

ACCESS TO TRANSIT

Question: I think it's safe & comfortable to walk and bike to transit stops

	Walking	Biking
Agree	**37.26%**	**33.06%**
Neutral	**27.43%**	**28.76%**
Disagree	**31.42%**	**32.75%**

** Percentages may not total to 100 due to rounding and/or lack of participation with certain questions*

ENCOURAGEMENTS TO WALK

	Likely	Neutral	Unlikely
Construction of missing sidewalks	50.87%	19.96%	18.63%
More shade trees on walking route	57.11%	11.98%	23.34%
Repair broken sidewalk	56.60%	13.92%	20.98%
Construction of ADA Ramps	47.70%	22.31%	21.49%
Better street lighting	59.98%	12.49%	22.11%
Improved street crossings	59.06%	13.00%	21.29%
More pedestrian-oriented signage	54.25%	15.15%	22.42%
Quicker response to push button	54.25%	15.15%	22.42%

ENCOURAGEMENTS TO BIKE

	Likely	Neutral	Unlikely
More bike lanes & facilities	58.44%	15.25%	19.45%
Better maintenance of bike facilities	50.15%	20.16%	17.20%
Bike detection at signalized intersections	51.69%	17.60%	16.99%
More on-road bike signage	51.59%	16.79%	19.04%
More bike amenities	49.23%	17.09%	20.47%
Better street lighting	55.27%	11.57%	20.88%
Creation of a bikeshare program	41.56%	20.37%	23.44%

ACTIVITIES INTERESTED IN

Fitness classes, walking clubs, group 5Ks and runs, or bike buddy programs **60.85%**

Bike skills or repair courses **20.32%**

Other **3.96%**

Open streets events (closing down a portion of the roadway to motorists and hosting activities) **35.48%**

Guaranteed Ride Home program (City provides free rides home for emergency situations) **24.98%**

PARENT SURVEY FINDINGS

Survey respondents represented 25 of the 27 schools involved in the Plan. Approximately half (50.5%) of respondents had children in the 4th to 8th grade, and 42% of all respondents reported they have more than one child in Kindergarten to 12th grade. Of the total student population represented, 48.2% are male and 46.7% are female.*

Travel Behavior

As reported by the respondents, 29.2% of students live less than 1/4th of a mile to their respective schools. Approximately 2/3rd (61.3%) of students represented live within a mile from their schools, while another third (33.5%) live more than a mile from their respective schools.

The primary mode of transportation for students going to school is driving (60.3%), while walking is the second most popular mode (32.1%). In the afternoon, 5.8% fewer students are driven home (54.2%) while 4% more students walk home in the afternoon (36.1%).

In the morning, 69% of students arrive to school in less than 10 minutes, while in the afternoon 64.2% of students arrive home in that same time frame. Similarly, 30% of students arrive to school in 10 minutes or more in the morning, while 34.3% of students arrive home in that same time frame.

Interest in Walking and Biking

Survey respondents expressed a positive attitude towards walking and biking activities. Of all respondents, 47.8% said its fun or very fun to walk and bike to school, while 45% were neutral and only 6.5% said it is boring or very boring to walk or bike to school. Despite positive attitudes toward walking and biking to school, 56.4% of respondents reported that their child had not asked for permission to walk or bike to school within the last year.

Respondents expressed a reluctance towards allowing their children to walk alone when they are young or at any age. Most respondents (48.5%) reported that they would feel comfortable allowing their children to walk to school when the child is in middle school or high school, while over a third of respondents (35.1%) would not feel comfortable letting their child walk to school at any age.

Factors that Influence the Decision to Walk or Bike to School

Conditions that influence the perception of safety – such as traffic, speed, violence, and safety of intersections and crossings - were top concerns that affected parents' decision to let their child walk or bike to school. The top concerns for parents were the safety of intersections and crossing (52%) and violence or crime (47.3%).

Encouragement Interventions

Survey respondents reported a mixture of infrastructure and non-infrastructure interventions that would encourage them to let their children walk and bike to school. These include having more crossing guards (69.3%), safer intersections and crossings (70.3%), improved sidewalks or pathways (66%), reduction of traffic along the route (61.8%), and lower speeds along the route (62.2%). While violence or crime was a top concern for parents, 46.4% of parents said they would allow their children to walk or bike to and from school if the issue was improved.

**Percentages may not total to 100 due to rounding and/or lack of participation with certain questions*

HIGH SCHOOL STUDENT SURVEY FINDINGS

Survey respondents represented all grade levels at four local high schools—Chaffey High School, Ontario High School, Colony High School, and Valley View High School. The majority of respondents were in the 11th grade (27%), while 23.5% were in the 12th grade and 21.7% were in the 10th grade. More than half (61.7%) of the student populations represented in the surveys were female with males making up the remaining 36.5%. *

Travel Behavior

Approximately half of the students (52.2%) live more than a 1 mile from their school, and they took multiple modes of transportation to reach to and from the school. The most popular modes were getting dropped off via vehicle (63.5%), but 40.9% of the respondents also walked to and from their school. Other modes of transportation taken by students included driving alone (20%), biking (7%), and public transit (6.1%). (Respondents could select multiple choices).

Students took a moderate amount of time to travel to and from school. For the vast majority (73%), it took less than 20 minutes while 26% of respondents said it took them more than 20 minutes to get to and from school.

Interest in Walking and Biking to School

Survey respondents had neutral views towards walking to and from the school; however, they expressed less interest in biking. Approximately 1/3rd (31.3%) of the respondents said they were not interested in walking, while another 11.3% said they needed to walk out of necessity. The remaining respondents (57.4%) expressed a positive interest in walking. Approximately 1/3rd (28.7%) of participants said they would walk if streets were safer and more comfortable, and 28.7% indicated their enjoyment for walking. In contrast, half of the participants (52.7%) expressed no interest in biking, while very few (8%) enjoyed biking to school. The remaining 1/3rd (38.4%) said they would be interested if the streets were safer and more comfortable or if they knew how to bike.

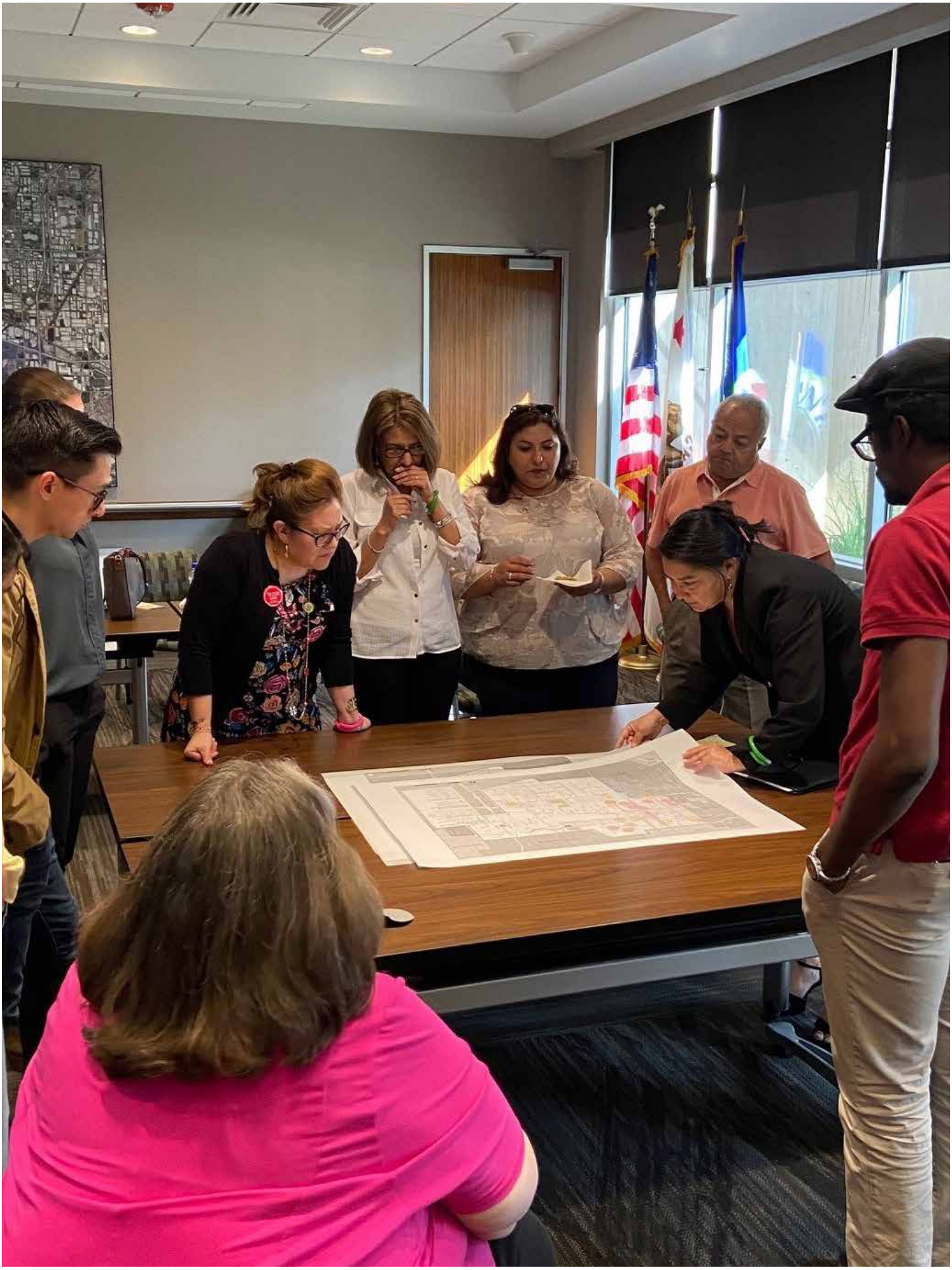
Factors that Influence the Decision to Walk or Bike to School

Survey participants noted distance (64.3%) and time of travel (40%) as the top conditions that influenced their decision to walk or bike to school. Other factors included before or after school activities (32.2%), safety of intersections and crossing (32.2%), and convenience of driving (27.8%).

Encouragement Interventions

Respondents reported a mixture of improvements that would encourage them to walk and bike to and from school. The top improvements reported were: safer intersections and crossings (79.1%), shorter travel time to and from school (75.7%), shorter distance to and from school (74.6%), less traffic on walking/biking route (71.1%), less crime and violence (67.8%), more pedestrian/bicycle infrastructure (66.1%), more crossing guards available (62.6%), better protection from the weather (62.6%), and lower speed of traffic along the walking/biking route (62.3%). These improvements do not directly correlate with the key factors that influence their decision to walk or bike to school, mainly time and distance. These findings suggest when the environment is safer and more comfortable for students to walk and bike, they would be willing to take more time to use those modes to travel to and from the school.

**Percentages may not total to 100 due to rounding and/or lack of participation with certain questions*



Chapter 3

COMMUNITY ENGAGEMENT

3.1 Introduction

Community Engagement formed the foundation of the development of the Ontario Active Transportation Master Plan. The comments received through the Community Engagement process helped shape project priorities and strategies, as well as recommendations. Furthermore, community support for the Plan will be instrumental in assisting the City with obtaining the necessary funding to construct the projects identified.

The Get Around Ontario Team utilized a broad set of strategies to connect with the City's multi-ethnic and diverse community. In addition to providing input through surveys, community members had opportunities to collaborate with the Get Around Ontario Team and provide direct feedback at in-person workshops and community events. Meanwhile, Online Engagement activities afforded the Ontario community the flexibility and capability to share their comments from anywhere and at any time. A central tenant of the strategy is the importance of gathering input in both English and Spanish given the prevalence of the Spanish-speaking population in the city.

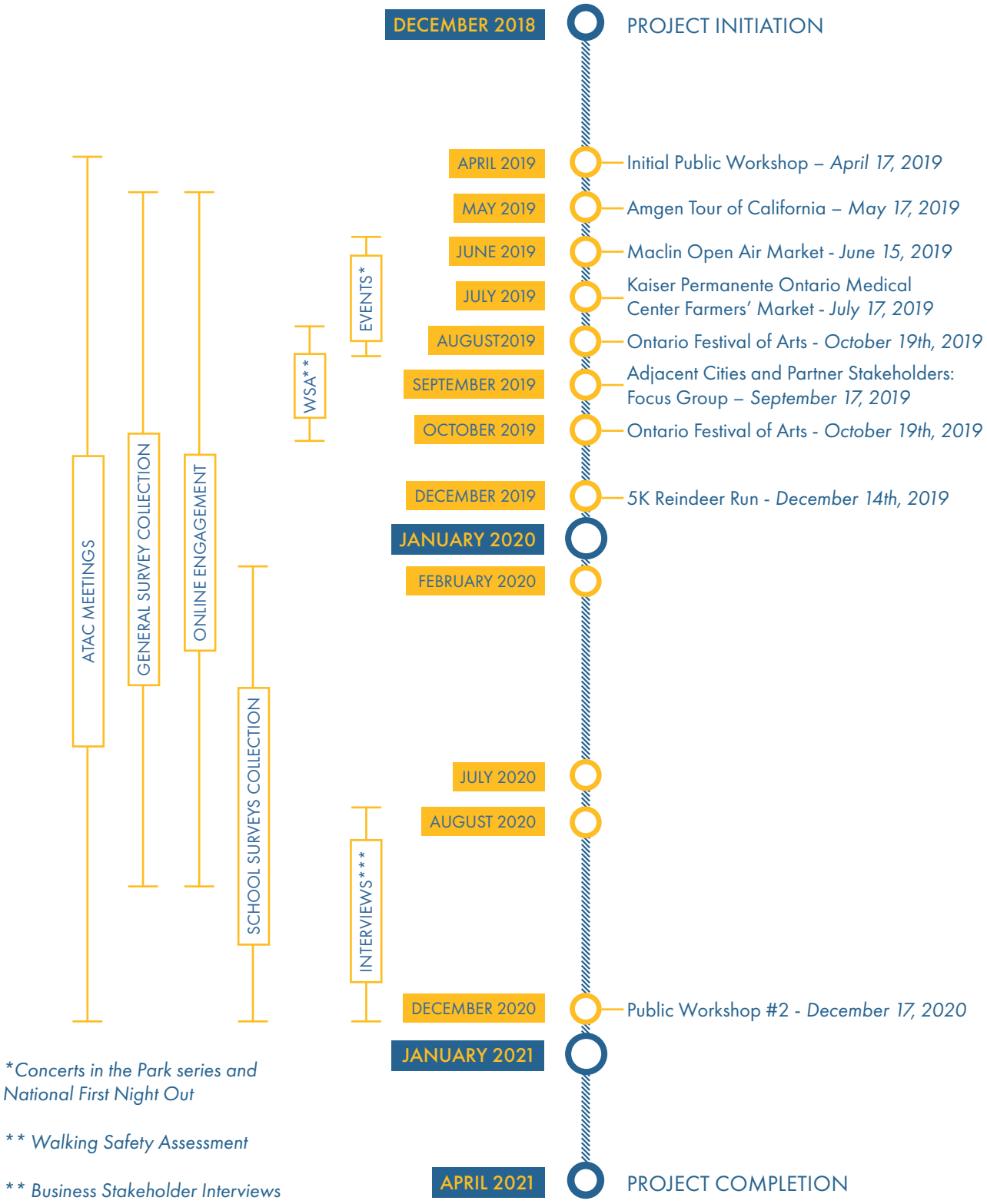
The strategy also built upon the work of several past efforts. In 2018, the City administered a survey and collected feedback from community members in support of a grant application to fund pedestrian and bicycle infrastructure. A few years prior, the City had community workshops at three elementary schools as a part of the SBCTA Safe Routes to School project. Feedback and comments gathered from the activities also helped inform the Plan.

Appendix G: Outreach and Engagement Plan offers a closer look at the community engagement strategies that the Get Around Ontario Team used as a roadmap for this project.

3.2 Active Transportation Advisory Committee

The Active Transportation Advisory Committee (ATAC) is comprised of local residents, representatives from community organizations, school districts, and regional agencies, and city and county staff. Participation in the ATAC allowed interested community members to provide their expertise for the Ontario Active Transportation Master Plan. The ATAC met on a quarterly basis throughout the course of the project where members reviewed and provided feedback on project milestones.

TIMELINE OF OUTREACH ACTIVITIES



*Concerts in the Park series and National First Night Out

** Walking Safety Assessment

** Business Stakeholder Interviews

3.3 Community Engagement with Targeted Groups

An important component of the Plan rested upon working with specific stakeholders to ensure that their voices were heard and their needs were addressed. These stakeholders included members from the business community, adjacent cities and partner agencies, and the school community.

Participants at a Walking Safety Assessment at Corona Elementary School

Ontario High School students were asked to help identify their concerns as part of a walking safety assessment activity

School Community: Walking Safety Assessments (WSA) – *August to October 2019*

Between August and October 2019, the Get Around Ontario Team hosted Walking Safety Assessments (WSA), also known as walk audits, at 30 schools around the city to understand the school communities' needs. At each event, participants and the Get Around Ontario Team walked around the periphery of the school, and helped identify barriers to walking and biking at specific intersections and corridors. Following the walk, the group had a debrief discussion to summarize their observations and brainstorm potential solutions. The summary report for each event is available in Appendix I: Walking Safety Assessment (WSA) Summaries.

Adjacent Cities and Partner Stakeholders: Focus Group – *September 17, 2019*

Representatives from cities adjacent to Ontario and other agencies were invited to a focus group to discuss ideas for collaboration to improve active transportation and transit connectivity in the sub-region. A total of 12 members participated in the focus group meeting. Attendees included representatives from the Cities of Fontana, Rancho Cucamonga, Fontana, and Montclair and local jurisdictions, Caltrans and Omnitrans.

Business Stakeholder: Individual Interviews – *August to December 2020*

The Get Around Ontario Team conducted seven individual interviews with representatives from various businesses in Ontario. Businesses were selected based on their geographic location, number of employees, sector, and willingness to participate in the interviews. A full summary report for the interviews is available in Appendix L: Outreach to Businesses.

3.4 Public Workshops

The Get Around Ontario team also hosted two public workshops to offer community members an opportunity to share their input. Unlike community events, public workshops focused on capturing input at different stages of the project. The input received helped inform the next steps of the project. The summary report for each event can be found in Appendix H: Outreach Event Summaries.

Initial Public Workshop – *April 17, 2019*

The Initial Public Workshop kicked off the Community Engagement effort. The workshop featured four stations, each with a specific focus to gather input on different aspects of the project. At the Walking and Safe Routes to School Station, workshop attendees provided comments that were primarily focused on pedestrian infrastructure at specific locations, pedestrian comfort and crossings, driving behaviors, and traffic speed. At the Bicycling Station, attendees discussed the need to develop bicycle infrastructure to enhance bicycle connectivity to local and regional destinations, as well as jobs in East Ontario. Lastly, at the Transit Station, participants discussed issues related to safety, pedestrian crossing, connectivity, bus service, and homelessness.

Public Workshop #2 – *December 17, 2020*

The Get Around Ontario Team hosted an Online workshop due to the COVID-19 pandemic. At the event, the team presented draft recommendations for the Ontario Active Transportation Master Plan to the Ontario community and gather feedback. The event had 15 attendees which were comprised of Ontario residents, business owners, community stakeholders, city staff, and project team members.

Participant shared comments at the Initial Public Workshop

Participant looked at an exhibit at the Initial Public Workshop

Discussion held at Public Workshop #2

3.5 Community Events

Between the months of May and December 2019, the Get Around Ontario Team participated at eight community events to solicit input and gather feedback from the Ontario Community. The events were chosen due to their geographic location and anticipated audience in order to capture input from many different groups. In total, the project team received input from more than 500 community members. The summary reports for each event are also available in Appendix H: Outreach Event Summaries.

Amgen Tour of California – *May 17, 2019*

The Amgen Tour of California was the first community event that the Get Around Team participated in. It is an annual professional cycling race that spans across multiple cities throughout California. For the 2019 Tour, the City of Ontario co-hosted the sixth leg of the race. The event attracted bicycle enthusiasts from across the Inland Empire and beyond.

Maclin Open Air Market – *June 15, 2019*

The Maclin Open Air Market is located in the southern portion of Ontario. Established in 1936, the air market had its roots in selling agricultural products, and it is one of the largest open air markets in Southern California. It is a local attraction, but it also attracts visitors across the region. The event also provided a chance for the Get Around Ontario team to solicit input from community members that live in the southern portion of the city.

Kaiser Permanente Ontario Medical Center Farmers' Market – *July 17, 2019*

Since 2013, the Kaiser Permanente Ontario Medical Center Farmers' Market has served as weekly destination for many locals. The event also offered an opportunity for the Get Around Ontario team to gather input from the health community.

Concert in the Park Series and National Night Out – *June to August 2019*

The Concert in the Park series, along with the National First Night Out event, are staple summer events in Ontario. The events consistently attracted large crowds to Downtown Ontario. For the Concert in the Park series, the audience varies depending on performances.

Ontario Festival of th Arts – *October 19th, 2019*

The Festival of the Arts is an annual event hosted by the City to promote visual and performing arts. As a part of the festival, the Get Around Ontario Team installed a tactical urbanism demonstration to educate community members about four types of pedestrian/traffic calming infrastructure: curb extensions, artistic crosswalks, parklets, and creative on-street artwork.

5K Reindeer Run – *December 14th, 2019*

The 5K Reindeer Run is a popular annual family event that offers activities for participants of multiple age groups. In 2019, the event was held at Downtown Ontario on Euclid Avenue. Ontario families that were interested in walking as a form of recreation shared their input for the project.

Neighborhood Fair – *February 29th, 2020*

The Neighborhood Fair is a local Ontario community event that promotes resources that are available to the community. It featured nearly 100 community booths and numerous activities during the event.

3.6 Walking Safety Assessments

A Walking Safety Assessment (WSA), also known as a walk audit, is an event that offers community members an opportunity to take a walk at a focus location, and identify and discuss barriers to arriving or departing from the location by foot, bicycle, transit, or other modes of active transportation.

As a part of the community engagement and data collection efforts, the project team held 31 Walking Safety Assessments, one at each school. Of these, 4 events were conducted in a seminar- style for high school students and 1 was modified due to the COVID-19 pandemic.

The project team collaborated with school and school district staff to organize and promote the events. All events were conducted in both English and Spanish.

3.7 Online Engagement

The Get Around Ontario team also developed Online communication tools to allow the larger Ontario community to participate in the community engagement process.

Project Website

The project website (GetAroundOntario.com) was the main portal for the Online communication efforts. It included content for many of the project components, and it connected users to other Online activities.

Interactive Mapping Tool

The interactive mapping tool allowed individuals to pinpoint specific locations of concern and record a comment and/or photo. Multiple comments from the public were logged through the application over the project duration. The geospatially-linked feedback provided specific locations for the evaluation and development of appropriate mitigation measures.

Booth at the Kaiser Permanente Ontario Medical Farmers' Market

Team members at the National First Night Out event

Community members and team members at the Reindeer Run

Chapter 4

RECOMMENDATIONS

4.1 Introduction

The Plan consists of five recommendations components that range from citywide (macro-level) to specific infrastructure treatments (micro-level). The recommendations reflect the concerns and feedback gathered from the community engagement efforts, community needs assessment, fieldwork, and discussions with project stakeholders.

This chapter provides the discussions for the citywide (macro-level) recommendations components, summaries of micro-level components, and planning-level cost estimates. Recommendations for the micro-level components are available in Appendices M-O, while Appendices P-R provide breakdowns of the costs used for the cost estimates. Table 4.1 provides a short description of each chapter component, along with their respective appendix (if applicable).

CHAPTER COMPONENTS	DESCRIPTION	CORRESPONDING APPENDIX
Active Transportation Network (ATN)	Citywide approach that prioritized key corridors for active transportation improvements.	
Bicycle Network	Citywide approach that identified different bikeway infrastructure classifications along corridors in the ATN.	
Priority Corridor Recommendations	Planning-level infrastructure recommendations for seven priority corridors.	Appendix M: ATN Corridor Factsheets
Safe Routes to School Infrastructure Recommendations	Planning-level infrastructure recommendations for roadways adjacent to 31 schools.	Appendix N: Safe Routes to School Factsheets
Design Guidelines	Guidelines for active transportation infrastructure in Ontario.	Appendix O: Design Guidelines Factsheets
Planning-level Cost Estimates	Breakdown of the cost estimates by high priority corridors, remaining corridors, and schools.	Appendix P: Cost Estimates-Bike Network Assumptions Appendix Q: Cost Estimates-Safe Routes to School

Table 4.1 Summary of Recommendations Components

4.2 Active Transportation Network

The Active Transportation Network (ATN) is a citywide approach that identifies and prioritizes roadway corridors for active transportation improvements. Corridors along the ATN allow users to reach destinations across the City and regionally by foot and bike, with assistance from transit, through enhanced active transportation and traffic calming infrastructure improvements.

ACTIVE TRANSPORTATION NETWORK DEVELOPMENT PROCESS

A four-step process was used to develop the Active Transportation Network. The steps were:

1. Identification of the Active Transportation Network (ATN) Planning Areas
2. Corridor Selection
3. Corridor Prioritization
4. ATN Development

Active Transportation Network Planning Areas (ATN Planning Areas)

The city was geographically separated into five areas that had distinct roadway and land use characteristics. ATN Planning Areas allow prioritized corridors to be evenly distributed across the city, which could improve active transportation connectivity across the city.

PLANNING AREA	PREDOMINATE LAND USE CHARACTERISTICS	Boundaries
1. Northwestern Area	Low Density Residential with commercial corridors and civic institutions	West: Western city boundary North: Northern city boundary East: Vineyard Ave, Ontario Airport, and Grove Ave South: SR-60
2. North Ontario Area	Industrial, administration, commercial, office	West: Vineyard Ave North: 4th St East: I-15 South: Airport Dr
3. Central Ontario Area	Utilities (including Ontario Airport), industrial/manufacturing/warehousing	West: Grove Ave North: Ontario Airport, Northern city boundary East: Etiwanda Ave South: SR-60
4. Mid-South Ontario Area	Low Density Residential with commercial pockets	West: Western city boundary North: SR-60 East: Milliken Ave South: Riverside Dr
5. South Ontario	Existing and planned: residential, commercial	West: Western city boundary North: Riverside Dr East: Milliken Ave South: Eastern city boundary

Table 4.2 Active Transportation Planning Areas

Corridor Selection

Using a series of metrics, the project team identified key corridors that could help achieve Plan priorities. Then the following factors were selected to evaluate each corridor: roadway characteristics, land use, connectivity, health and safety, demographic characteristics, input received, and planned and proposed improvements for change.

Corridor Prioritization

All selected corridors were evaluated and ranked using a data-driven Corridor Prioritization modeling process. The model used datasets that served as indicators for six project groups that corresponded to project priorities. Table 4.3 shows the corridor prioritization criteria used for the process.

GROUP	FACTOR	WEIGHTED SCORE	GROUP WEIGHT
Need and Equity	Serves children and youth	3.57	25%
	Serves people with disabilities	3.57	
	Serves Older Adults	3.57	
	Low Vehicle Access	3.57	
	Disadvantaged Community (DAC)	7.14	
	Median Household Income (MHHI)	3.57	
Health	Prevalence of Obesity	3.75	15%
	Prevalence of Cardiovascular Disease	3.75	
	Prevalence of Diabetes	3.75	
	Prevalence of Asthma	3.75	
Safety	Bicycle and Pedestrian Collisions	13.33	20%
	Vehicle Citations	6.67	
Community & Resource Support	Community Support	5.00	10%
	Resource Synergy	5.00	
Comfort	Bicycle Level of Traffic Stress (LTS)	5.00	10%
	Pedestrian Segment Level of Comfort (PLOC)	5.00	
Network Connectivity	Transit Accessibility	2.50	5%
	Connects to existing or planned bike facility	2.50	
Activity Generators	Connects to priority destinations	5.00	15%
	Serves areas with significant business registrations	5.00	
	Transit Demand	5.00	
	TOTAL	**1.00**	**100%**

Table 4.3 Corridor Prioritization Factors and Weights

ATN Development

Once ranked, corridors were compared within each ATN Planning Area and categorized them into three tiers that collectively form the Ontario Active Transportation Network.

TIER	DESCRIPTION
Tier I Corridors	Tier I Corridors form the backbone of an ATN that allows Ontario community members to reach local and regional destinations.
Tier II Corridors	Tier II Corridors support and supplement the Tier I Corridors by expanding opportunities for community members to gain access to high quality pedestrian and bicycle infrastructure for their everyday travel needs.
Alternatives to Tier I Corridors	Roadways classified as Alternatives to Tier I Corridors run parallel to Tier I Corridors, and allow users to reach similar destinations. However, in contrast to Tier I Corridors, the roadways have less vehicular traffic and more opportunities for pedestrian and bicycle treatments.

Table 4.4 Description of ATN Tiers

ONTARIO ACTIVE TRANSPORTATION NETWORK

The Active Transportation Network is comprised of 62 corridors. Of the 62 corridors, 23 corridors are Tier I Corridors, 36 are Tier II Corridors, and 3 are Alternatives to Tier I Corridors. A total of 30 corridors run in the North/South direction, while 32 run in the East/West direction.

Of the corridors in the Ontario ATN, 9 corridors are identified as "Forthcoming Priority Corridors". These corridors are located in the southern portion of Ontario, and they are not fully constructed yet. However, these roadways have been identified in planning documents including the General Plan, New Model Colony Streetscape Plan, and the San Bernardino County Non-Motorized Transportation Plan.

DIRECTION	# OF TIER I CORRIDOR	# OF TIER II CORRIDOR	# OF ALT. TO TIER I CORRIDOR	TOTAL
North - South	11	17	2	30
East- West	12	19	1	32
Total	23	36	3	62

Table 4.5 ATN Corridors by Tier and Direction

DIRECTION	# OF TIER I CORRIDOR	# OF TIER II CORRIDOR	# OF ALT. TO TIER I CORRIDOR	TOTAL
North - South	1	3	0	4
East- West	2	3	0	5
Total	3	6	0	9

Table 4.6 Forthcoming ATN Corridors by Tier and Direction

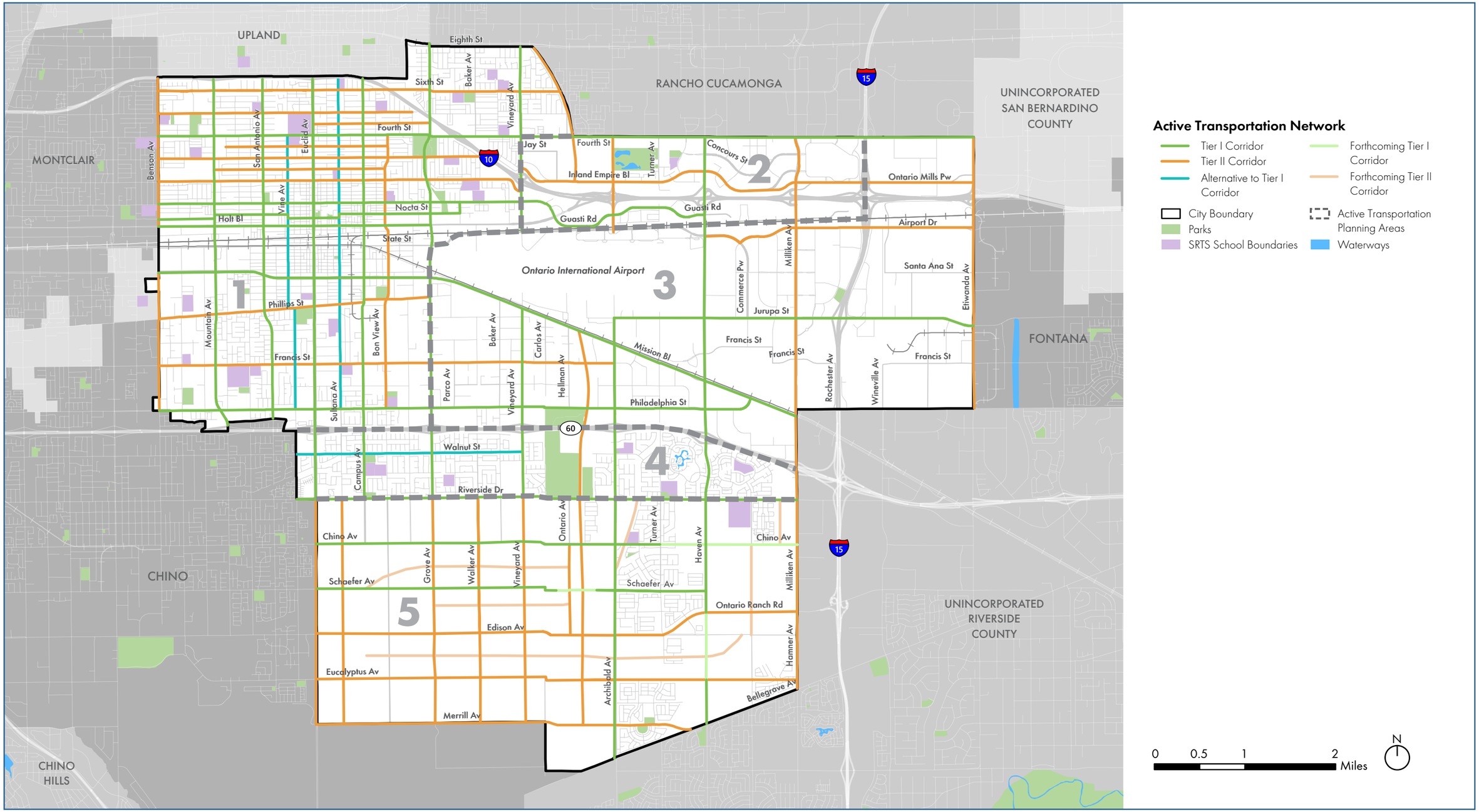


Figure 4.1 Active Transportation Network

RANK	CORRIDOR	FROM	TO	LENGTH (MILES)	TIER	DIRECTION	QUADRANT
1	D St -Convention Center Way - Guasti Rd	Benson Ave	Haven Ave	6.22	I	E/W	I/II
2	Holt Blvd	Benson Ave	Vineyard Ave	3.01	I	E/W	I
3	Euclid Ave - North	I-10	Riverside Dr	4.67	I	N/S	I, IV
4	Mountain Ave	I-10	SR-60	3.87	I	N/S	I
5	Nocta Corridor	Benson Ave	D St	3.58	I	E/W	I, III
6	Grove Ave - North	8th St	Riverside Dr	5.07	I	N/S	I,II, IV
7	4th Street - West	Benson Ave	Vineyard Ave	3.99	I	E/W	I
8	Mission Blvd	Benson Ave	Milliken Ave	7.33	I	E/W	I,III
9	G Street	Benson Ave	Vineyard Ave	4.07	II	E/W	I
10	Campus Ave	I-10	Riverside Dr	5.06	I	N/S	I, IV
11	San Antonio Ave	I-10	Holly Pl	3.78	I	N/S	I
12	4th Street-East	Vineyard Ave	Etiwanda Ave	5.00	I	E/W	II
13	Allyn Ave & Bon View Ave	4th St	Philadelphia St	3.07	II	N/S	I
14	Sultana Ave	I-10	Philadelphia Ave	3.67	III	N/S	I
15	I St	Benson Ave	Fresno St	3.53	II	E/W	I
16	Riverside Drive	Fern Ave	Hamner Ave	5.54	I	E/W	IV, V
17	Philadelphia St - West	Benson Ave	Grove Ave	3.00	I	E/W	I
18	Vine Ave	4th St	Philadelphia St via Fern Ave	3.11	III	N/S	I
19	Vineyard Ave - North	8th St	Airport Dr	2.04	I	N/S	I,II
20	Inland Empire Blvd - Ontario Mills Parkway	Vineyard Ave	Etiwanda Ave	5.17	II	E/W	II
21	6th Street, East	Euclid Ave	Cucamonga Creek Channel	2.75	II	E/W	I
22	Francis Street - West	Benson Ave	Grove Ave	3.00	II	E/W	I
23	Philips St - Belmont St	Benson Ave	Grove Ave	3.01	II	E/W	I
24	Vineyard Ave - South A	Mission Blvd	Riverside Dr	2.26	I	N/S	III
25	Milliken Ave - North	4th St	SR-60	3.67	II	N/S	II, III
26	Francis Street - East	Grove Ave	Mission Blvd	2.03	II	E/W	III
27	Haven Ave - North	4th St	SR-60	3.34	I	N/S	II, III
28	Jurupa St	Archibald Ave	Etiwanda Ave	3.98	I	E/W	III
29	Philadelphia St- East	Grove Ave	Mission Blvd	3.60	I	E/W	III
30	5th Street	Benson Ave	Cucamonga Ave	2.80	II	E/W	I
31	Benson Ave - North	I-10	Holt Blvd	1.64	II	N/S	I

Table 4.7 Corridors in the Active Transportation Network

RANK	CORRIDOR	FROM	TO	LENGTH (MILES)	TIER	DIRECTION	QUADRANT
32	Walnut Street	Fern Ave	Vineyard Ave	2.50	III	E/W	IV
33	Archibald Ave - South B	SR-60	Remington Ave	3.69	I	N/S	IV, V
34	Cucamonga Creek Channel	8th St	Merrill Ave	5.97	II	N/S	II, III, IV, V
35	6th Street - West	Benson Ave	Euclid Ave	2.36	II	E/W	I
36	H St	Mountain Ave	Allyn Ave	1.88	II	E/W	I
37	Etiwanda Ave	4th St	Philadelphia Ave	3.01	II	N/S	II, III
38	Princeton St	Euclid Ave	Grove Ave	1.29	II	E/W	I
39	J St	Palmetto Ave	Allyn Ave	1.79	II	E/W	I
40	Benson Ave - South	Mission Blvd	Philadelphia St	1.53	II	N/S	I
41	Archibald Ave - South A	Jurupa St	SR-60	1.23	I	N/S	III
42	Archibald Ave - North	4th St	Airport Dr	1.04	II	N/S	II
43	Airport Dr	Haven Ave	Etiwanda Ave	3.03	II	E/W	III
44	Chino Ave	Euclid Ave	Milliken Ave/ Hamner Ave	5.32	I	E/W	V
45	Haven Ave - South	SR-60	Bellegrave Ave	3.20	I	N/S	IV, V
46	Schaefer Ave	Euclid Ave	Haven Ave	5.33	I	E/W	V
47	Edison Ave - Ontario Ranch Rd	Euclid Ave	Milliken Ave/ Hamner Ave	5.35	II	E/W	V
48	Euclid Ave - South	Riverside Dr	Merrill Ave	2.50	II	N/S	V
49	Vineyard Ave	Riverside Dr	Merrill Ave	2.51	II	N/S	V
50	Milliken Ave/ Hamner Ave - South	SR-60	Bellegrave Ave	2.46	II	N/S	IV, V
51	New Road 1	Campus Ave	Ontario Ave	2.30	II	E/W	V
52	Merrill Ave	Euclid Ave	Eastern Terminus	4.33	II	E/W	V
53	New Road 4	Riverside Dr	Archibald Ave	0.82	II	N/S	V
54	Eucalyptus Ave	Euclid Ave	Milliken Ave/ Hamner Ave	5.33	II	E/W	V
55	Grove Ave - South	Riverside Dr	Merrill Ave	2.50	II	N/S	V
56	Walker Ave	Riverside Dr	Merrill Ave	4.01	II	N/S	V
57	Campus Ave	Riverside Dr	Merrill Ave	2.50	II	N/S	V
58	New Road 3	Campus Ave	Edison Ave	4.23	II	E/W	V
59	New Road 2	Grove Ave	Ontario Ave	1.49	II	E/W	V
60	Ontario Ave	Chino Ave	Edison Ave	1.01	II	N/S	V
61	New Road 5	Riverside Dr	Chino Ave	0.50	II	N/S	V
62	New Road 6	Chino Ave	Edison Ave	1.00	II	N/S	V

Table 4.7 Corridors in the Active Transportation Network (Cont.)

4.3 Bicycle Network

The Bicycle Network is a citywide approach that identifies proposed bikeway infrastructure classifications along corridors in the Active Transportation Network. The proposed Bicycle Network would add 186.79 miles of new bicycle facilities in the city.

BICYCLE FACILITY	# of Miles
Shared-Use Path (Class I)	52.46
Buffered Bike Lane (Class II)	15.33
Bike Lane (Class II)	37.30
Bike Boulevard (Class III)	29.20
Bike Route (Class III)	9.98
Bike Lane (Class II)/ Bike Route (Class III)	8.50
Additional Studies Required	34.00
TOTAL	**186.79**

Table 4.8 Summary of Proposed Bicycle Infrastructure Classifications

Section 4.6 Design Guidelines offers a description of the different classifications of bicycle facilities. It also provides discussions of the placement for each facility, as well as guidance for the City.

Certain segments are classified as "additional studies required". Should the City express interest in providing bicycle facilities along these segments, due to the complexity of these segments, it is recommended that additional studies are conducted to explore the most appropriate design alternative.

Shared-Use Path (Class I)

Separated Bikeway (Class IV)

Buffered Bike Lane (Class II)

Bike Lane (Class II)

Bike Boulevard (Class III)

Bike Route (Class III)

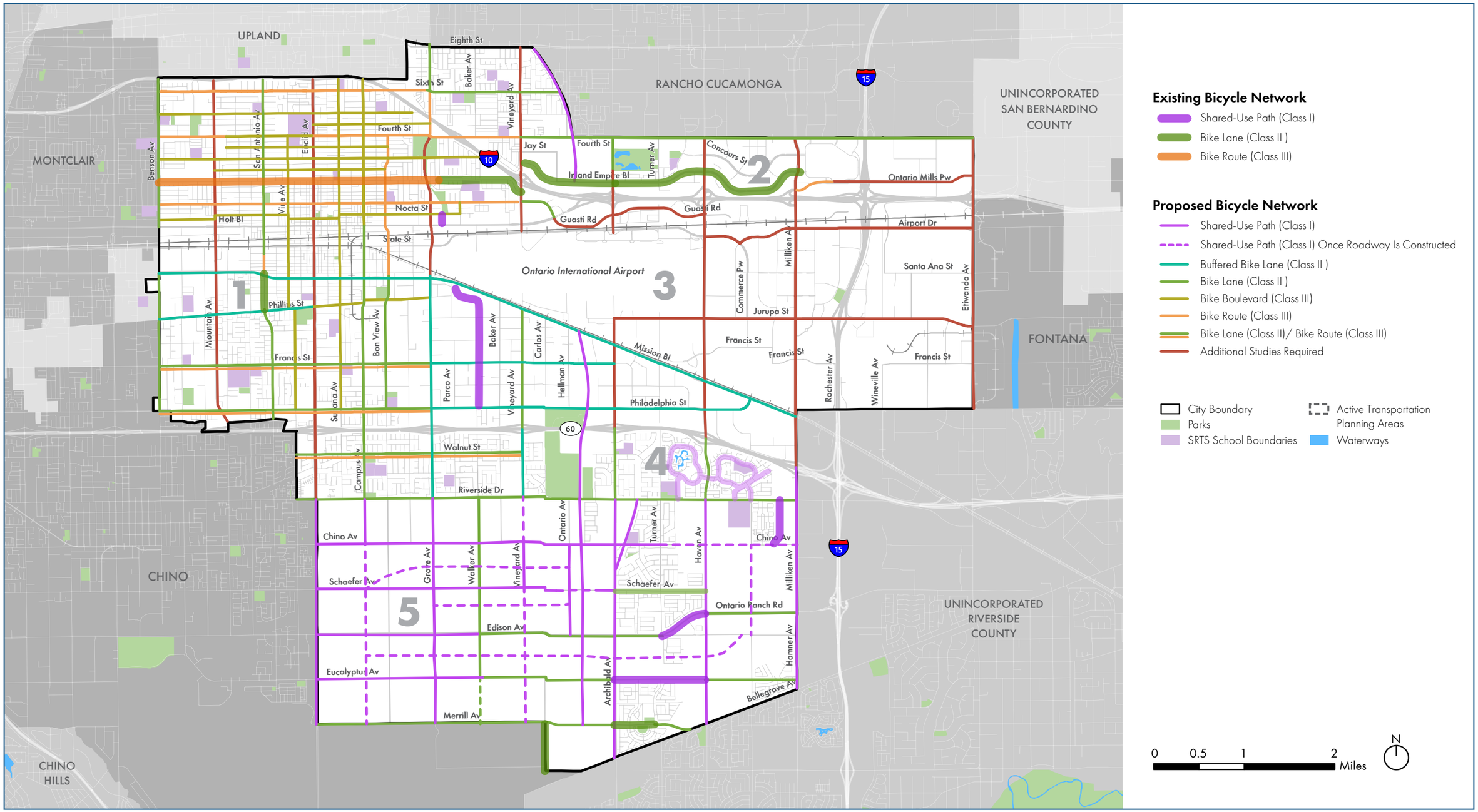


Figure 4.2 Bicycle Network

CORRIDOR	FROM	TO	LENGTH (MILES)	RECOMMENDATION	OPPORTUNITIES & CONSIDERATIONS
D St -Convention Center Way - Guasti Rd	Benson Ave	Haven Ave	6.22	Class III Bike Route (Benson Ave to Vineyard Ave) Class II Bike Lane (Vineyard Ave to Holt Blvd) Additional Studies Needed (Holt Blvd to Guasti Rd)	Class III Bike Route (Benson Ave to Vineyard Ave): The segment has low traffic volumes and runs through residential neighborhoods. Class II Bike Lane (Vineyard Ave to Holt Blvd): The existing curb-to-curb width is insufficient to provide a Class II Bike Lane in each direction. The City is recommended to remove on-street parking on both sides of the segment to provide adequate space for the bikeway facility. Need Additional Studies (Holt Blvd to Guasti Rd): The segment provides access to vacant lots that are planned for development in the near future. As a result, future roadway conditions would change. Thus, this segment is recommended for additional evaluations to complement future land use developments.
Euclid Ave, North	I-10	Riverside Dr	4.67	Additional Studies Needed	The City currently has many plans for the corridor. Bikeway improvements along Euclid Avenue should align with other planning efforts.
Mountain Ave	I-10	SR-60	3.87	Additional Studies Needed	Additional studies are needed to determine the most suitable bicycle facility for this corridor.
Nocta Corridor	Benson Ave	D St	3.58	Class III Bike Boulevard	The corridor is located in a predominately residential neighborhood and has low traffic volume; these characteristics create a good environment for a Class III Bike Boulevard.
Grove Ave - North	8th St	Riverside Dr	5.07	Class II Bike Lane (8th St to 6th St) Class III Bike Route (6th St to 4th St) Additional Studies Required (4th St to Mission Blvd) Class II Buffered Bike Lane (Mission Blvd to SR-60) Class II Buffered Bike Lane (SR-60 to Riverside Dr)	Class II Bike Lane (8th St to 6th St): Remove on-street parking on each side of the roadway and reduce the width of the travel lanes to accommodate the bicycle facility on each side. Additional Studies Required (4th St to Mission Blvd): This segment has a planned expansion. Additional studies are needed to determine the most suitable bicycle facility for this segment after the expansion. Alternative routes could include developing a Class I Bike Path through Veterans Memorial Park and Jams Glanis Park, as well as through Bon View Ave/ Allyn Ave. Class II Buffered Bike Lane (Mission Blvd to SR-60): The segment has sufficient space to accomodate a Class II Buffered Bike Lane after certain modifications to the roadway. The existing curb-to-curb width is 95', and the roadway has three travel lanes in each direction with a Two Way Left Turn Lane/ center median. The City is recommended to restrict on-street parking on both sides of the roadway and reduce the width of the travel lanes. The parking restrictions would have minimal impact to users since this segment goes through an industrial area where businesses have their own parking lots. Class II Buffered Bike Lane (SR-60 to Riverside Dr): The segment has sufficient space to accomodate a Class II Buffered Bike Lane. The existing curb-to-curb width is 75', and the roadway has two travel lanes in each direction with a Two Way Left Turn Lane. Along certain segments, parking is restricted. On segments where there is insuffiicent width, the City is recommended to place restrictions on on-street parking. The restrictions would have minimal impact on residents considering that residential units are separated from the roadway by walls.
4th Street - West	Benson Ave	Vineyard Ave	3.99	Class III Bike Route (Benson Ave to Palmetto Ave) Class III Bike Boulevard (Palmetto Ave to Euclid Ave) Class III Bike Route (Euclid Ave to Vineyard Ave)	Class III Bike Boulevard (Palmetto Ave to Euclid Ave): The corridor is located in a predominately residential neighborhood and has low traffic volume; these characteristics create a good environment for a Class III Bike Boulevard.

Table 4.9 Proposed Bicycle Network Infrastructure Classifications

CORRIDOR	FROM	TO	LENGTH (MILES)	RECOMMENDATION	OPPORTUNITIES & CONSIDERATIONS
Mission Blvd	Benson Ave	Milliken Ave	7.33	Class II Buffered Bike Lane	Class II Buffered Bike Lane (Benson Ave to Bon View Ave): The City has developed engineering plans for a Class II Buffered Bike Lane between Benson Ave and Bonview Ave. Class II Buffered Bike Lane (Bon View Ave to Milliken Ave): The corridor has sufficient width for a Class II Buffered Bike Lane on each direction for the majority of the way. At certain segments, existing edge line striping is present on both sides of the roadway to narrow down the rightmost lane; this presents opportunities to be converted into the Class II facility. Additionally, the center median on many segments of the corridor are unpaved; this presents opportunity to expand the roadway to accommodate the facility.
Campus Ave	I-10	Riverside Dr	5.06	Class III Bike Boulevard (8t St to Holt Blvd) Class II Bike Lane(Holt Blvd to Riverside Dr)	Class III Bike Boulevard (8t St to Holt Blvd): The corridor is located in a predominately residential neighborhood. While a Class II Bike Lane would be more suitable, the curb-to-curb width is not sufficient to accommodate the bikeway facility. Class II Bike Lane(Holt Blvd to Cedar St): The existing curb-to-curb width is not sufficient to accommodate a Class II Bike Lane in each direction. Industrial land uses are located on the eastern side of the majority of the segment; this presents opportunities to reduce on-street parking on the eastern side of the segment and create adequate width to accommodate a 5' Class II Bike Lane in each direction. Class II Bike Lane(Cedar St to SR-60): The curb-to-curb width is not sufficient to accommodate a Class II Bike Lane in each direction. To construct the bikeway facilities, the City could reduce on-street parking on both sides of the segment, reduce one side of the on-street parking and reduce interior travel lanes to 11', reduce a travel lane in each direction, or pursue a combination of strategies. Class II Bike Lane(SR-60 to Riverside Dr): The existing curb-to-curb width is sufficient to accommodate a Class II Bike Lane in either direction. At certain segments, there is also adequate space to accommodate a Class II Buffered Bike Lane.
San Antonio Ave	I-10	Holly Pl	3.78	Class II Bike Lane (I-10 (Northern border) to Park St) Class III Bike Route (Park St to Mission Blvd) Class II Bike Lane (Phillips St to SR-60 (Southern border)	Class II Bike Lane (I-10 (Northern border) to Park St): The existing right-of-way is insufficient to accommodate the bike facilities. The City is recommended to reduce the width of travel lanes to provide sufficient space. Where needed, the City is recommended to continue parking restrictions on one side of the roadway. Class III Bike Route (Park St to Mission Blvd): The corridor is more narrow at this segment. The curb-to-curb width is sufficient to accommodate a Class III Bike Route. Class II Bike Lane (Phillips St to SR-60 (Southern border)): The existing curb-to-curb width is 64', and the roadway has two travel lanes in each direction along with on-street parking. The City is recommended to reduce the width of the travel lanes to accommodate the bicycle facility in each direction.

Table 4.9 Proposed Bicycle Network Infrastructure Classifications (Cont.)

CORRIDOR	FROM	TO	LENGTH (MILES)	RECOMMENDATION	OPPORTUNITIES & CONSIDERATIONS
4th Street - East	Vineyard Ave	Etiwanda Ave	5.00	Class II Bike Lane	The City of Rancho Cucamonga installed a Class II Bike Lane on the north side of the roadway. Where space is available and after consideration for reducing the width of existing travel lanes, the City is recommended to install a Class II Bike Lane.
Allyn Ave & Bon View Ave	4th St	Philadelphia St	3.07	Class III Bike Route (4th St to Mission Blvd) Class II Bike Lane (Mission Blvd to Philadelphia St)	Class III Bike Route (4th St to Holt Blvd): The segment is located in a predominately residential neighborhood and has low traffic volume; these characteristics create a good environment for a Class III Bike Boulevard. Class III Bike Route (Holt Blvd to Mission Blvd): The curb-to-curb width is not sufficient to accommodate a Class II Bike Lane in each direction. Class II Bike Lane (Mission Blvd to Philadelphia St): The roadway geometry varies throughout the segment; however, the curb-to-curb width is sufficient to accommodate a Class II Bike Lane in each direction on the majority of the segment.
Sultana Ave	I-10	Philadelphia Ave	3.67	Class III Bike Boulevard	The corridor is located in a predominately residential neighborhood and has low traffic volume; these characteristics create a good environment for a Class III Bike Boulevard.
I St	Benson Ave	Fresno St	3.53	Class III Bike Boulevard	The corridor is located in a predominately residential neighborhood and has low traffic volume; these characteristics create a good environment for a Class III Bike Boulevard. A segment between Euclid Ave and Bon View Ave is a Class III Bike Route; it is recommended to be upgraded to a Class III Bike Boulevard.
Riverside Dr	Fern Ave	Hamner Ave	5.54	Class II Bike Lane	For majority of the corridor, the existing curb-to-curb width is sufficient to accommodate a Class II Bike Lane in each direction.
Philadelphia St - West	Benson Ave	Grove Ave	3.00	Class II Bike Lane/ Class III Bike Route	The roadway geometry alternates throughout the segment. Thus, the City is recommended to provide a Class II Bike Lane in each direction where there is sufficient width to accommodate the facility. At other segments where there is insufficient width for a Class II Bike Lane, a Class III Bike Route is recommended.
Vine Ave	4th St	Philadelphia St via Fern Ave	3.11	Class III Bike Boulevard	The corridor is located in a predominately residential neighborhood and has low traffic volume; these characteristics create a good environment for a Class III Bike Boulevard.
Vineyard Ave - North	8th St	Airport Dr	2.04	Additional Studies Needed	Additional studies are needed to determine the most suitable bicycle facility for this corridor.
Inland Empire Blvd-Ontario Mills Parkway	Vineyard Ave	Etiwanda Ave	1.85	Class III Bike Route (Milliken Ave to Ontario Mills) Additional Studies Needed (Ontario Mills to Etiwanda Ave)	Class III Bike Route (Milliken Ave to Ontario Mills): The segment is a short stretch which motorists take to reach the Ontario Mills Mall. Additional Studies Needed (Ontario Mills to Etiwanda Ave): Additional studies are needed to determine the most suitable bicycle facility for this segment

Table 4.9 Proposed Bicycle Network Infrastructure Classifications (Cont.)

CORRIDOR	FROM	TO	LENGTH (MILES)	RECOMMENDATION	OPPORTUNITIES & CONSIDERATIONS
6th Street - East	Euclid Ave	Cucamonga Creek Channel	2.75	Class III Bike Boulevard (Euclid Ave to Grove Ave) Class II Bike Lane (Grove Ave to Cucamonga Creek Channel (Eastern boundary)	Class III Bike Boulevard (Euclid Ave to Grove Ave): The corridor is located in a predominately residential neighborhood and has low traffic volume; these characteristics could create a good environment for a Class III Bike Boulevard. Class II Bike Lane (Grove Ave to Cucamonga Creek Channel (Eastern boundary)): For the majority of the segment, the curb-to-curb width can accommodate a 4' Class II Bike Lane in each direction. Edge line striping is present at the majority of the segment, and it presents opportunities to be converted into a Class II Bike Lane.
Francis Street - West	Benson Ave	Grove Ave	3.00	Class II Bike Lane/ Class III Bike Route	The roadway geometry varies throughout the corridor. On segments where width is available, the City is recommended to install a Class II Bike Lane. Where roadway space is not available, the City is recommended to install a Class III Bike Route.
Philips St - Belmont St	Benson Ave	Grove Ave	3.01	Class II Buffered Bike Lane (Benson Ave to Euclid Ave) Class III Bike Boulevard (Euclid Ave to Grove Ave)	Class II Buffered Bike Lane (Benson Ave to Euclid Ave): The roadway geometry varies along the segment; however, despite the variation, there is still adequate width to accommodate a Class II Buffered Bike Lane in each direction. Class III Bike Boulevard (Euclid Ave to Grove Ave): The corridor is located in a predominately residential neighborhood and has low traffic volume; these characteristics create a good environment for a Class III Bike Boulevard.
Vineyard Ave - South A	Mission Blvd	Riverside Dr	2.26	Class II Bike Lane (Mission Blvd to SR-60) Class II Buffered Bike Lane (SR-60 to Riverside Dr)	Class II Bike Lane (Mission Blvd to SR-60): The typical cross-section for the segment is 70' from curb-to-curb. With a typical profile of two travel lanes in each direction with a two-way left turn lane, the majority of the segments along the roadway have sufficient space for a Class II Bike Lane in each direction. Class II Buffered Bike Lane (SR-60 to Riverside Dr): The roadway has sufficient space for a Class II Buffered Bike Lane in each direction. Currently, the curb-to-curb width is 73' for two travel lanes in each direction with a two-way left turn lane. At certain locations, edge line striping is present to narrow down the lanes; it offers opportunities to be converted into a Class II Buffered Bike Lane.
Milliken Ave - North	4th St	SR-60	3.67	Additional Studies Needed	Additional studies are needed to determine the most suitable bicycle facility for this corridor.
Francis Street - East	Grove Ave	Mission Blvd	2.03	Class II Buffered Bike Lane	The existing roadway has the width to accommodate a 6' Class II Buffered Bike Lane in each direction. The existing curb-to-curb width for the majority of the corridor is 72', and it currently accommodates two 12' travel lanes in each direction with an 11' two-way left turn lane.
Haven Ave - North	4th St	SR-60	3.34	Additional Studies Needed	Additional studies are needed to determine the most suitable bicycle facility for this corridor.
Jurupa St	Archibald Ave	Etiwanda Ave	3.98	Additional Studies Needed	Additional studies are needed to determine the most suitable bicycle facility for this corridor.
Philadelphia St - East	Grove Ave	Mission Blvd	3.60	Class II Buffered Bike Lane	The corridor has sufficient width for a 7' Class II Bike Lane with a small buffer in each direction. The typical curb-to-curb width on the corridor is 74' for two travel lanes in each direction with a two-way left turn lane.
5th Street	Benson Ave	Cucamonga Ave	2.80	Class III Bike Boulevard	A segment of the corridor has traffic calming treatments that make a good Class III Bike Boulevard. The remainder of the corridor is also in a predominately residential neighborhood and has low traffic volumes which could contribute to a good environment for a Class III Bike Boulevard.
Benson Ave - North	I-10	Holt Blvd	1.64	Class II Bike Lane	The City shares the roadway with the City of Montclair which has a planned Class II Bike Lane for this corridor. The City is recommended to coordinate with Montclair on this effort.
Walnut St	Fern Ave	Vineyard Ave	2.50	Class II Bike Lane/ Class III Bike Route	The existing right-of-way for the majority of the corridor is 64'. To accommodate the bikeway facility, the City could prevent on-street parking on both sides of the street and reduce the roadway width for the existing travel lanes. For segments where there is insufficient width for the bikeway facility, the City is recommended to install a Class III Bike Route.

Table 4.9 Proposed Bicycle Network Infrastructure Classifications (Cont.)

CORRIDOR	FROM	TO	LENGTH (MILES)	RECOMMENDATION	OPPORTUNITIES & CONSIDERATIONS
Archibald Ave - South B	SR-60	Remington Ave	3.69	Class II Bike Lane (SR-60 to Riverside Dr) Class I Shared Use Path (Riverside Dr to Remington Ave/ Southern city border)	Class II Bike Lane (SR-60 to Riverside Dr): The existing curb-to-curb width can accommodate a 4' Class II Bike Lane in each direction. To create space for a wider Class II Bike Lane, the City can reduce the interior travel lanes to 11'. Class I Shared Use Path (Riverside Dr to Remington Ave (Southern city border)): The segment is undergoing many developments. Under the San Bernardino County Non-Motorized Transportation Plan, the corridor is planned to be a Class I Shared Use Path. Thus, the segment is recommended to be a Class I Share Use Path.
Cucamonga Creek Channel	8th St	Merrill Ave	5.97	Class I Shared Use Path	The utility path along the creek presents opportunities to be converted into a shared-use path that provides connectivity in the north-south direction. A separate in-depth study is recommended to evaluate the feasibility of this proposed recommendation.
6th Street - West	Benson Ave	Euclid Ave	2.36	Class III Bike Boulevard	A segment of the corridor has traffic calming treatments that make this segment a good Class III Bike Boulevard. The remainder of the corridor is also in a predominately residential neighborhood and has low traffic volumes. These characteristics also create a good environment for a Class III Bike Boulevard.
H St	Mountain Ave	Allyn Ave	1.88	Class III Bike Boulevard	The corridor is located in a predominately residential neighborhood and has low traffic volume; these characteristics create a good environment for a Class III Bike Boulevard.
Etiwanda Ave	4th St	Philadelphia Ave	3.01	Additional Studies Needed	Additional studies are needed to determine the most suitable bicycle facility for this corridor.
Princeton St	Euclid Ave	Grove Ave	1.29	Class III Bike Boulevard	The corridor is located in a predominately residential neighborhood and has low traffic volume; these characteristics are a good environment for a Class III Bike Boulevard.
J St	Palmetto Ave	Allyn Ave	1.79	Class III Bike Boulevard	The corridor is located in a predominately residential neighborhood and has low traffic volume; these characteristics are a good environment for a Class III Bike Boulevard.
Benson Ave - South	Mission Blvd	Philadelphia St	1.53	Class II Bike Lane	The roadway has sufficient width to accommodate a Class II Bike Lane in each direction. Segments along the corridor have a curb-to-curb width of 48' to 65' for one travel lane in each direction. Furthermore, several segments have a Class II Bike Lane in the northbound or southbound direction. Between Philadelphia Avenue and the southern city boundary, a Class II Bike Lane is available in each direction.
Archibald Ave - South A	Jurupa St	SR-60	1.23	Additional Studies Needed	Additional studies are needed to determine the most suitable bicycle facility for this corridor.
Archibald Ave - North	4th St	Airport Dr	1.04	Class II Bike Lane (Fourth St to Cucamonga-Gausti Regional Park Entrance) Additional Studies Needed (Cucamonga- Gausti Regional Park Entrance to Ontario Airport)	Class II Bike Lane (Fourth St to Cucamonga-Guasti Regional Park Entrance): For the majority of the segment, the curb-to-curb width is 70' for two travel lanes and one two way left turn lane, so there is sufficient width to accommodate a Class II Bike Lane in each direction. Additional Studies Needed (Cucamonga- Guasti Regional Park Entrance to Ontario Airport): Additional studies are needed to determine the most suitable bicycle facility for this segment.
Airport Dr	Haven Ave	Etiwanda Ave	3.03	Additional Studies Needed	Additional studies are needed to determine the most suitable bicycle facility for this corridor.
Chino Ave	Euclid Ave	Milliken Ave/ Hamner Ave	5.32	Class I Shared Use Path	The corridor is recommended to have a Class I Shared-Use Path to align with planned effort under the San Bernardino County Non-Motorized Transportation Plan.

Table 4.9 Proposed Bicycle Network Infrastructure Classifications (Cont.)

CORRIDOR	FROM	TO	LENGTH (MILES)	RECOMMENDATION	OPPORTUNITIES & CONSIDERATIONS
Haven Ave - South	SR-60	Bellegrave Ave	3.20	Class II Bike Lane (SR-60 to Riverside Dr) Class I Shared Use Path (Riverside Dr to Bellegrave Ave)	Class II Bike Lane (SR-60 to Riverside Dr): Between SR-60 and Creekside Drive, edge line striping is present to narrow the rightmost travel lanes. It offers opportunities to be converted into a Class II Bike Lane in each direction. Between Creekside Drive and Riverside Drive, along with segments without left-turn pockets, there is sufficient space for a Class II Bike Lane in each direction. Class I Shared Use Path (Riverside Dr to Bellegrave Ave): Dirt shoulder on either side of the segment presents opportunities for a Class I Shared Use Path. The segment also lacks sidewalks which further supports the need for the facility. As development comes in further study will be necessary to evaluate.
Schaefer Ave	Euclid Ave	Haven Ave	4.34	Class I Shared Use Path	The corridor is recommended to have a Class I Shared-Use Path to align with planned effort under the San Bernardino County Non-Motorized Transportation Plan. However, the segment between Archibald Ave and Haven Ave has a Class II Bike Lane in each direction.
Edison Ave-Ontario Ranch Rd	Euclid Ave	Milliken Ave/ Hamner Ave	4.83	Class I Shared Use Path	The corridor is recommended to have a Class I Shared-Use Path to align with planned effort under the San Bernardino County Non-Motorized Transportation Plan. A segment between Turner Ave and Haven Ave has an existing Class I Shared Use Path.
Euclid Ave - South	Riverside Dr	Merrill Ave	2.50	Class I Shared Use Path	The corridor is recommended to have a Class I Shared-Use Path to align with planned effort under the San Bernardino County Non-Motorized Transportation Plan. Along the majority of the corridor, the curb-to-curb width is 100' for two travel lanes in each direction; this presents sufficient width to accomodate the bicycle facility. However, in the short term, the City could install a Class II Bike Lane w/ Buffer in each direction. Edge line striping at 10' wide is present in each direction, and it presents opportunities to be converted into the bicycle facility.
Vineyard Ave	Riverside Dr	Merrill Ave	2.51	Class I Shared Use Path	The corridor is recommended to have a Class I Shared-Use Path to align with planned effort under the San Bernardino County Non-Motorized Transportation Plan.
Milliken Ave/ Hamner Ave - South	SR-60	Bellegrave Ave	2.46	Class I Shared Use Path	The corridor is recommended to have a Class I Shared-Use Path to align with planned effort under the San Bernardino County Non-Motorized Transportation Plan. However, in the short term, the corridor could be converted into a Class II Bike Lane. In the southbound direction, edge line striping is available to narrow the rightmost lane. Between Ontario Ranch Road and SR-60, the northbound direction has a Class II Bike Lane.
New Road 1	Campus Ave	Ontario Ave	2.30	Class I Shared Use Path	The corridor is currently not built out yet; however, the corridor is recommended to have a Class I Shared-Use Path to align with planned effort under the San Bernardino County Non-Motorized Transportation Plan.
Merrill Ave	Euclid Ave	Eastern Terminus	3.32	Class II Bike Lane	The corridor is recommended to have a Class II Bike Lane to align with planned effort under the San Bernardino County Non-Motorized Transportation Plan. A segment between Archibald Ave and Celebration Ave has an existing Class II Bike Lane in each direction.
New Road 4	Riverside Dr	Archibald Ave	0.82	Class I Shared Use Path	The corridor is currently not built out yet; however, the corridor is recommended to have a Class I Shared-Use Path to align with planned effort under the San Bernardino County Non-Motorized Transportation Plan.
Eucalyptus Ave	Euclid Ave	Milliken Ave/ Hamner Ave	4.33	Class I Shared Use Path (Euclid Ave to Walker Ave) Class II Bike Lane (Walker Ave to Hamner Ave)	The corridor is recommended to have a Class I Shared-Use Path from Euclid Ave to Walker Ave and Class II Bike Lane from Walker Ave to Hamner Ave to align with planned effort under the San Bernardino County Non-Motorized Transportation Plan.
Grove Ave - South	Riverside Dr	Merrill Ave	2.50	Class I Shared Use Path	The corridor is recommended to have a Class I Shared-Use Path to align with planned effort under the San Bernardino County Non-Motorized Transportation Plan.

Table 4.9 Proposed Bicycle Network Infrastructure Classifications (Cont.)

CORRIDOR	FROM	TO	LENGTH (MILES)	RECOMMENDATION	OPPORTUNITIES & CONSIDERATIONS
Walker Ave	Riverside Dr	Merrill Ave	4.01	Class II Bike Lane	The corridor is recommended to have a Class II Bike Lane to align with planned effort under the San Bernardino County Non-Motorized Transportation Plan.
Campus Ave	Riverside Dr	Merrill Ave	2.50	Class I Shared Use Path	The corridor is recommended to have a Class I Shared-Use Path to align with planned effort under the San Bernardino County Non-Motorized Transportation Plan.
New Road 3	Campus Ave	Edison Ave	4.23	Class I Shared Use Path	The corridor is currently not built out yet; however, the corridor is recommended to have a Class I Shared-Use Path to align with planned effort under the San Bernardino County Non-Motorized Transportation Plan.
New Road 2	Grove Ave	Ontario Ave	1.49	Class I Shared Use Path	The corridor is currently not built out yet; however, the corridor is recommended to have a Class I Shared-Use Path to align with planned effort under the San Bernardino County Non-Motorized Transportation Plan.
Ontario Ave	Chino Ave	Edison Ave	1.01	Class I Shared Use Path	The corridor is recommended to have a Class I Shared-Use Path to align with planned effort under the San Bernardino County Non-Motorized Transportation Plan.
New Road 5	Riverside Dr	Chino Ave	0.50	Class I Shared Use Path	The corridor is currently not built out yet; however, the corridor is recommended to have a Class I Shared-Use Path to align with planned effort under the San Bernardino County Non-Motorized Transportation Plan.
New Road 6	Chino Ave	Edison Ave	1.00	Class I Shared Use Path	The corridor is currently not built out yet; however, the corridor is recommended to have a Class I Shared-Use Path to align with planned effort under the San Bernardino County Non-Motorized Transportation Plan.

Table 4.9 Proposed Bicycle Network Infrastructure Classifications (Cont.)

4.4 Priority Corridor Recommendations

Planning-level infrastructure recommendations were developed for seven priority corridors. The corridors were selected using two criteria: 1) ranking in the Active Transportation Network Planning Area, and 2) input from the Project Management Team. Collectively, the selected corridors would create safer, more accessible, and more connected active transportation routes for Ontario community members to traverse through the city in the East/West, North/South direction. Figure 4.3 Priority Corridor Factsheet provides an example of the format for a priority corridor factsheet. The factsheets are available in Appendix M: ATN Corridor Factsheets.

Recommendations were derived from planning-level analyses combined with high-level engineering judgment. Thus, additional studies would be needed to determine the actual feasibility of the recommendations. These studies include but are not limited to the following:

- Drainage Study
- Warrant Study and Volume Review
- In-Depth Collision Analysis
- Pedestrian and Bike Activity/ Volume Review
- Truck Turning Templates

The context surrounding the corridors may change over time (e.g. new development, changes in land uses, vehicle volumes, etc.) As such, it is important to continually evaluate the existing conditions to identify the best design alternative.

4.5 Safe Routes to School Infrastructure Recommendations

Planning-level infrastructure recommendations were also developed for 31 schools that are a part of the Ontario Safe Routes to School effort. At locations where two or more schools are located in close proximity to each other, recommendations were bundled into one set for multiple schools.

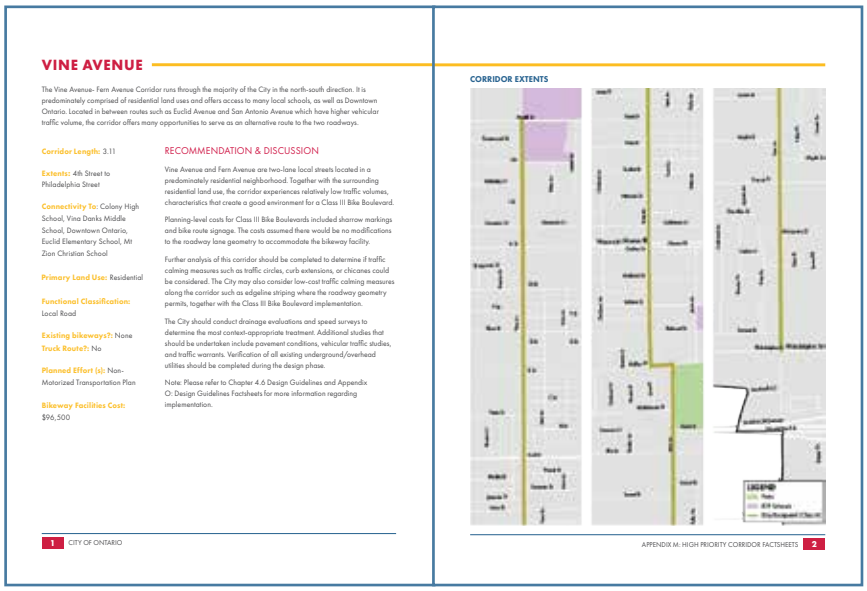
The recommendations seek to address the concerns that participants shared at the Walking Safety Assessments, as well as issues that were identified through research and field work. They are concentrated along roadways that are located within a ¼ mile from each school. However, they mirrored those for the seven priority corridors in scope and depth.

Figure 4.4 Safe Routes to School Factsheet Overview gives an example of the format used for each school recommendations factsheet. The factsheets could be found in Appendix N: Safe Routes to School Factsheets.

FIGURE 4.3 EXAMPLE OF A HIGH PRIORITY CORRIDOR

Page 1

Contains a description of the corridor, selected corridor characteristics, recommendations, and a discussion of the recommendations.



VINE AVENUE

The Vine Avenue- Fern Avenue Corridor runs through the majority of the City in the north-south direction. It is predominately comprised of residential land uses and offers access to many local schools, as well as Downtown Ontario. Located in between routes such as Euclid Avenue and San Antonio Avenue which have higher vehicular traffic volume, the corridor offers many opportunities to serve as an alternative route to the two roadways.

Corridor Length: 3.11

Extents: 4th Street to Philadelphia Street

Connectivity To: Colony High School, Vina Danks Middle School, Downtown Ontario, Euclid Elementary School, Mt Zion Christian School

Primary Land Use: Residential

Functional Classification: Local Road

Existing bikeways?: None
Truck Route?: No

Planned Effort (s): Non-Motorized Transportation Plan

Bikeway Facilities Cost: $96,500

RECOMMENDATION & DISCUSSION

Vine Avenue and Fern Avenue are two-lane local streets located in a predominately residential neighborhood. Together with the surrounding residential land use, the corridor experiences relatively low traffic volumes, characteristics that create a good environment for a Class III Bike Boulevard.

Planning-level costs for Class III Bike Boulevards included sharrow markings and bike route signage. The costs assumed there would be no modifications to the roadway lane geometry to accommodate the bikeway facility.

Further analysis of this corridor should be completed to determine if traffic calming measures such as traffic circles, curb extensions, or chicanes could be considered. The City may also consider low-cost traffic calming measures along the corridor such as edgeline striping where the roadway geometry permits, together with the Class III Bike Boulevard implementation.

The City should conduct drainage evaluations and speed surveys to determine the most context-appropriate treatment. Additional studies that should be undertaken include pavement conditions, vehicular traffic studies, and traffic warrants. Verification of all existing underground/overhead utilities should be completed during the design phase.

Note: Please refer to Chapter 4.6 Design Guidelines and Appendix O: Design Guidelines Factsheets for more information regarding implementation.

1 CITY OF ONTARIO

CORRIDOR EXTENTS

APPENDIX M: HIGH PRIORITY CORRIDOR FACTSHEETS 2

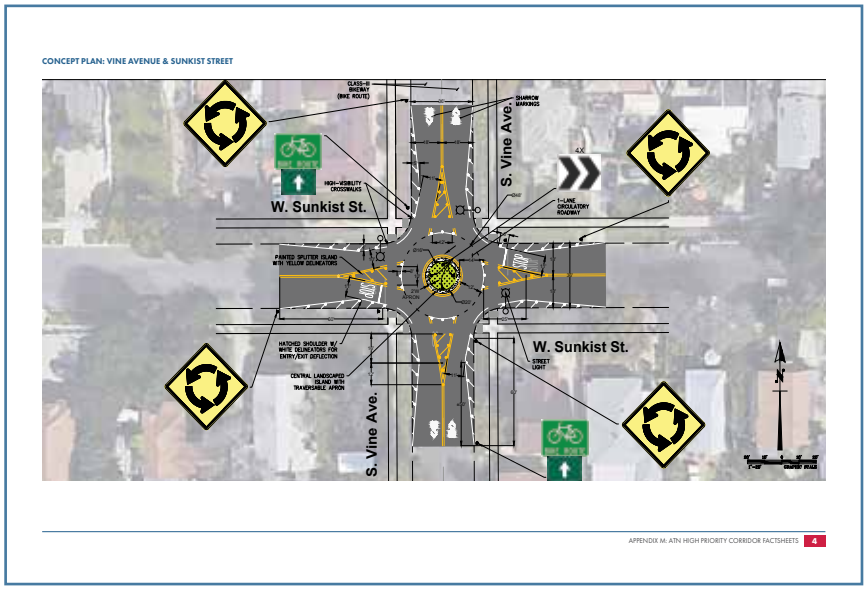
Page 2

Offers a map of the corridor extents

Page 3

Provides a concept plan of a selected location along the corridor.

If additional concepts are provided, they are available in the following pages.



CONCEPT PLAN: VINE AVENUE & SUNKIST STREET

APPENDIX M: ATN HIGH PRIORITY CORRIDOR FACTSHEETS 4

Page 4

Has cross sections of existing and proposed conditions along a segment of the corridor.

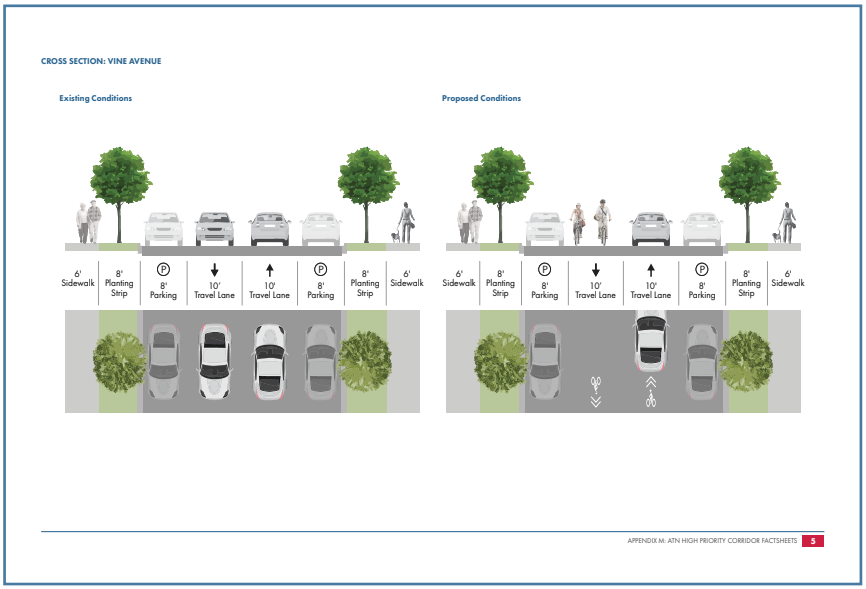
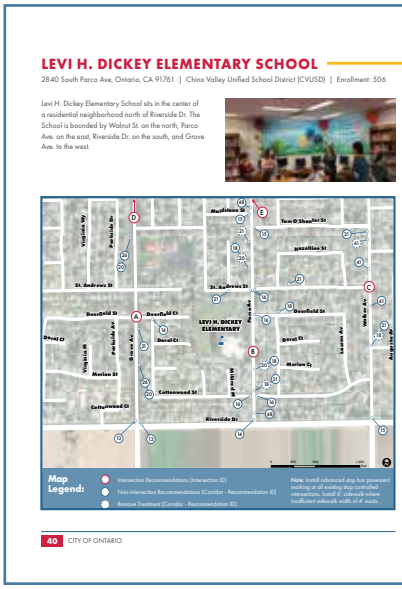
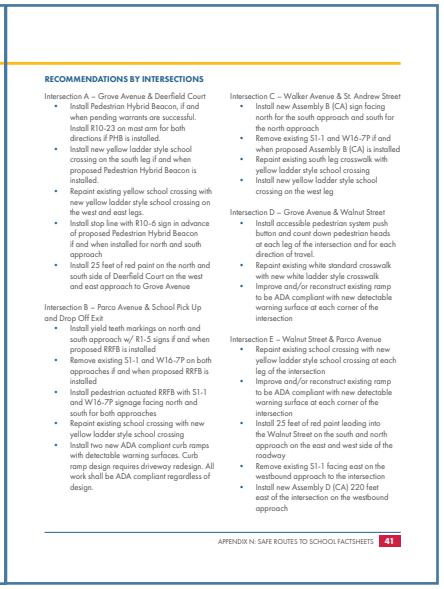


FIGURE 4.4 EXAMPLE OF A SAFE ROUTES TO SCHOOL FACTSHEET

Page 1

Provides a description of the school along with a map of treatments. See notes.





Page 2+

Lists the recommendations in more depth.

If applicable, the list of recommendations continues on additional pages.

4.6 Design Guidelines

The Design Guidelines is a guide for identifying the locations for and installing commonly used pedestrian and bicycle infrastructure. The menu of infrastructure treatments addresses pedestrian, bicycles, traffic calming, transit usage, and goods movement.

The guide consolidates information from various local, state, national, and well-recognized institution design standards. These include, but are not limited to California Manual on Uniform Traffic Control Devices (CA MUTCD), Caltrans Design Standards and Specifications, Caltrans Highway Design Manual, and City of Ontario Design Standards. Additionally, many standards from the following organizations were referenced: Federal Highway Administration (FHWA), National Association of City Transportation Officials (NACTO), and American Association of State Highway and Transportation Officials (AASHTO).

The Design Guidelines do not contain discussions of additional infrastructure that may be needed to fully install the infrastructure. Examples of such infrastructure include signage, striping, and traffic signal modifications. Guidelines for Transit treatments could be referenced in the Omnitrans Transit Design Guidelines.

This section provides the full set of Design Guidelines. Appendix O: Design Guidelines Factsheets contains factsheets that have additional information for selected infrastructure treatments.

FACILITY	PEDESTRIAN	BICYCLE	TRANSIT	GOODS MOVEMENT	TRAFFIC CALMING
BIKEWAYS					
Class I: Off-Street Bike Path*	X	X			
Class I: Path in Active Rail Corridor	X	X			
Class II: Bike Lane*		X			
Class II: Buffered Bike Lane*		X			
Class III: Signed Shared Roadway		X			
Class III: Marked Shared Lane		X			
Class III: Bike Boulevard*		X			
Class IV: On-Street Separated Bikeway*		X			
Class IV: Raised Separated Bikeway*		X			
INTERSECTIONS & CROSSINGS					
High Visibility Crosswalk	X	X	X	X	X

Table 4.10 Summary of Infrastructure Treatments in the Design Guidelines

**Has factsheet in Appendix O*

FACILITY	PEDESTRIAN	BICYCLE	TRANSIT	GOODS MOVEMENT	TRAFFIC CALMING
INTERSECTIONS & CROSSINGS					
Mid-block Crosswalk	X	X	X		
Curb Extension / Bulb-out	X			X	X
Raised Crosswalk	X		X	X	X
Advanced Yield Marking	X	X		X	
Scramble Crosswalk	X				
Curb Ramp	X				
Pedestrian Refuge Island	X	X		X	X
Raised Intersection	X	X	X	X	X
Bike Box		X			
Two-Stage Bicycle Turn Box		X			
Bike Jughandle		X			
Bike Lanes In Right Turn Only Lanes		X			
Combined Bicycle Lane and Turn Lane		X			
Intersection Crossing Markings		X			
Green-Colored Pavement		X			
Traffic Diverter		X	X	X	X
Traffic Circle*	X	X	X	X	X
Roundabout*	X	X	X	X	X
Protected Intersection*	X	X			X
Bike Lane at Channelized Turn Lane		X			
Freeway Interchange Design	X	X			
Rail Crossing	X	X			
ROADWAY					
Lane Narrowing		X	X	X	X
Roadway Reconfiguration*	X	X			X
Landscape Medians (Refuge)*	X				X
Chokers / Pinchers	X	X	X	X	X

Table 4.10 Summary of Infrastructure Treatments in the Design Guidelines (Cont.)

**Has factsheet in Appendix O*

FACILITY	PEDESTRIAN	BICYCLE	TRANSIT	GOODS MOVEMENT	TRAFFIC CALMING
TRAFFIC CONTROL, SIGNAGE, AND MARKINGS					
Leading Pedestrian Interval	X				X
Accessible Pedestrian Signal	X				
Pedestrian Hybrid Beacon*	X			X	X
Rectangular Rapid Flashing Beacon*	X			X	X
Speed Feedback Sign	X			X	X
Bicycle Detection & Push Buttons/ Actuation		X			
Bicycle Signal		X			
Pedestrian Safety and Warning Signs	X				
Embedded LED's in Traffic Signs				X	X
Bicycle Safety and Warning Signs		X			

Table 4.10 Summary of Infrastructure Treatments in the Design Guidelines (Cont.)

Curb Extension (Bulb-Out)

Pedestrian Refuge Island

**Has factsheet in Appendix O*

Rectangular Rapid Flashing Beacon (RRFB)

Accessible Pedestrian Signal

Two-Stage Turn Box

Bike Lane At Channelize Turn Lane

Roundabout

Off-Street Bike Path

DESCRIPTION	MINIMUMS	MAXIMUMS	OTHER	SOURCES	IMPLEMENTATION	KEY CONCERNS	ADDITIONAL NOTES
BIKEWAYS: CLASS I OFF - STREET BIKE PATH*							
A Class I Off-Street Bike Path is a completely separated facility for the exclusive use of bicycles and pedestrians with crossflow by motor vehicles minimized. It can be used as a recreational route or as a high-speed commute route when motor vehicle and pedestrian conflicts are minimized.	Two-way: 12′ (10' if between railings on structure) • 8' traveled-way + 2' left shoulder + 2' right shoulder Vertical clearance: • 8' over path, 7' over shoulders Cross slope: 1%	Super elevation/Cross slope: 2% Grade: 5%	Preferred width: • Two-way: 16′ (8' traveled way + 3' left shoulder + 3' right shoulder), 18′+ if possible (12' traveled way + 3' left shoulder + 3' right shoulder)	• Caltrans HDM • FHWA Bikeway Selection Guide, Feb. 2019 • AASHTO Guide for the Development of Bicycle Facilities	Bike paths immediately adjacent to streets/highways are not recommended, due to introducing major conflicts at intersections with vehicles, transit passengers at stops, and vehicle occupants crossing the path	• Transitions to/from/ across vehicle roadways and intersections • Sight distance and maintaining STOP/ YIELD controls where the bikeway crosses other paths of travel	*See Appendix O Design Guidelines Factsheets for the complete design guidelines
BIKEWAYS: CLASS I PATH IN ACTIVE RAIL CORRIDOR							
A Class I Path in Active Rail Corridor is a path along an active rail corridor is a form of a Rails-with-Trails corridor.	Setback minimum starts 25'	Setback maximum: 45'	Fencing shall be a minimum of 6'	CA MUTCD section 9B IATP-D-47 HDM Chapter 1000	-	-	-
BIKEWAYS: CLASS II BIKE LANE*							
A Class II Bike Lane is a portion of the roadway that is designated by striping, signaling, and/ or pavement markings for the exclusive use of bicyclists. They are established along streets and corridors where there is significant demand, and where there are distinct needs that can be served by them.	• Adjacent to curb face or on-street parking lane: 5′ (includes gutter pan width) or adjacent parking lane • Adjacent to right-turn only lane: 4′ (≤40 MPH posted speed) or 6′ (>40 MPH), with right-hand stripe 8" wide per Caltrans Detail 38A • Adjacent to roadside with no parking or curb: 4′	Cross slope: 3% (resurfacing/widening to match the ex. cross slope)	Guidance at intersections: • Terminate the solid stripe between 50′ (short blocks <400′) and 200′ (long blocks, or speeds >35 MPH) prior to the intersection where right turns are permitted from the outer through travel lane, and use a dashed line carried to or near the intersection	• Caltrans Highway Design Manual (HDM) • California MUTCD	• Can be appropriate on roads with moderate traffic volumes and moderate vehicle speeds • Can be appropriate on higher speed roadways if increased width is provided for the bike lane	• Reducing travel lane width to add/widen bike lanes- need to consider factors such as vehicle speeds, truck volumes, alignment, bike lane width, sight distance, presence of on-street parking	*See Appendix O Design Guidelines Factsheets for the complete design guidelines

DESCRIPTION	MINIMUMS	MAXIMUMS	OTHER	SOURCES	IMPLEMENTATION	KEY CONCERNS	ADDITIONAL NOTES
BIKEWAYS: CLASS II BUFFERED BIKE LANE*							
A Class II Buffered Bike Lanes is a conventional bicycle lane (i.e., Class II Bike Lane) paired with a designated buffer space composed of painted stripes and pavement markings adjacent to the bike lane.	• 1.5′ (bound by two solid lines without interior markings) • Buffer with interior markings (chevron or diagonal): 4′ or greater	No specified maximum geometric requirements new to Class II bikeway facilities	• Requires additional maintenance when compared to a conventional bicycle lane, such as keeping the facility free of potholes, broken glass, and other debris • Requires additional right-of-way or roadway space to accommodate buffer alongside bike lane	California MUTCD Figure 9C-104(CA)	• Can be appropriate on roads with moderate traffic volumes and moderate vehicle speeds • Can be appropriate on higher speed roadways if increased width is provided for the bike lane or buffer	• Striping configuration to allow vehicles to cross buffer zone to enter/exit driveways	*See Appendix O Design Guidelines Factsheets for the complete design guidelines
BIKEWAYS: CLASS III BIKE ROUTE - MARKED SHARED LANE							
A marked shared roadway uses shared lane markings or "sharrows" to guide bicyclists to the most appropriate path to ride along. Sharrows can aid with having more predictable bicycle movements by informing motorists to share the roadway, showing bicyclists the direction and location of travel, and discouraging riders from traveling too close to the "door zone".	(For Pavement Marking):The lateral positioning of shared lane markings should be such that the center of the marking within the lane is at least X feet from the face of the curb (or edge of pavement without curb), under the following conditions: Streets with On-Street Parking: • Effective lane width <14′; X = at the center of the effective lane width • Effective lane width =14′ or greater ; X = 13′ or greater Streets without On-Street Parking: • Outside travel lane <14′ to the curb face or edge of pavement without curb; X = at the center of the travel lane	Street Width 14' or more: 13' from lateral reference point (Curb or Edgeline)	• Spacing: place immediately after the intersection and space no greater than 250′ thereafter • Closer spacing can be used to navigate low sight distance environments or busy intersections	California MUTCD Figure 9C-108(CA)	• Can be appropriate on roads with low traffic volumes and low vehicle speeds • Shared lane markings should be used on roads with posted speed limits of 35 MPH or less	• Maintaining safety for bicyclists sharing the roadway with motorized traffic • Travel speeds • Unsafe vehicle overtaking where there is minimal roadway width • Dooring hazards adjacent to on-street parked cars • Considering the impact of bicycles opting to ride on the sidewalk	Minimums (Cont.) • Outside travel lane =14′ or greater; X = 4′ or greater from the curb face or edge of pavement without curb Note: The "effective lane width" is the width of the pavement available after subtracting the width of the parking vehicle and door zone (typically 10′) from the distance of the lane/ centerline to the face of the curb/edge of the pavement. See CAMUTCD Figure 9C-108(CA) for more details.

DESCRIPTION	MINIMUMS	MAXIMUMS	OTHER	SOURCES	IMPLEMENTATION	KEY CONCERNS	ADDITIONAL NOTES
BIKEWAYS: CLASS II BIKE BOULEVARD*							
A Class III Bike Boulevard is a special type of bike route where a street is designed to accommodate bicyclists with a wide variety of skill levels.	Shared-lane element of bike boulevards (pavement markings): Street width 14' or more: 13' from lateral reference point (Curb or Edgeline) Street width less than 14': Center of the effective lane width	No specified maximum geometric requirements new to Class III bikeway facilities	• Mainly applied on Collector, Downtown Street, Other Pedestrian Priority Areas, and Local/Neighborhood Street roadways • Increases comfort for bicyclists by reducing motorist speeds and volumes, if diverters or roundabouts are included	• California MUTCD Figure 9C-108(CA)	• Can be appropriate on roads with low traffic volumes and low vehicle speeds. • If combined with other features such as traffic calming features, implementation for such items may impact where bicycle boulevards may be implemented	• Common issue of resident/business push back where on-street parking is removed • Continuity of bike boulevard elements at major/busy/built-out intersections	*See Appendix O Design Guidelines Factsheets for the complete design guidelines
BIKEWAYS: CLASS IV ON-STREET SEPARATED BIKEWAY*							
A Class IV Separated Bikeway, also known as a cycle track or protected bike lane, is a one- or two-way bikeway for the exclusive use of bicycles that includes a physical, vertical barrier between bicyclists and motor vehicle traffic within the roadway.	Clear bike lane width (one-way): 5′ (4′ when located at accessible parking or a bus stop) Clear Bikeway Width (2-way): Use Class I standards	No maximum geometrics specified	Preferred geometrics: Clear bike lane width (one-way): 7′ Clear bikeway width (2-way): Use Class1 standards Separation Width or Buffer: 3′	• Caltrans Class IV Bikeway Guidance Design Info Bulletin #89 • Caltrans HDM Chapter 1000 • Protected Bikeways Act of 2014 • FHWA Separated Bike Lane Planning and Design Guide • Public Rights-of-Way Accessibility Guidelines	• Can be appropriate on roads with higher traffic volumes and higher vehicle speed • Local jurisdictions must be involved when analyzing these impacts	• Crossing points at intersections, alleys and driveways • Unloading and loading zones, transit stops, and valet parking areas	*See Appendix O Design Guidelines Factsheets for the complete design guidelines
BIKEWAYS: CLASS IV RAISED SEPARATED BIKEWAY*							
A Class IV Raised Separated Bikeway is a separated bikeway is typically designed to be either at the same grade as the adjacent sidewalk or set at an intermediate level mountable curb between the roadway and sidewalk.	Clear bike lane width (one-way): 5′ (4′ when located at accessible parking or a bus stop) Clear Bikeway Width (2-way): Use Class I standards	No maximum geometrics specified	Preferred geometrics: Clear bike lane width (one-way): 7′ Clear bikeway width (2-way): Use Class I standards Separation width or buffer: 3′	• Caltrans Class IV Bikeway Guidance Design Info Bulletin #89 • Caltrans HDM Chapter 1000 • Protected Bikeways Act of 201 • FHWA Separated Bike Lane Planning and Design Guide (FHWA Guide) • HDM Topical 105	The separated bikeways may be raised vertically to an elevation higher than the finished grade of the roadway, but should not be raised at intersections, alleys and driveways	• Ensuring adequate ADA clearance for pedestrians on walkable portions of the sidewalk • Designing for sidewalk and above-grade treatments at driveways and intersections	*See Appendix O Design Guidelines Factsheets for the complete design guidelines

DESCRIPTION	MINIMUMS	MAXIMUMS	OTHER	SOURCES	IMPLEMENTATION	KEY CONCERNS	ADDITIONAL NOTES
INTERSECTIONS & CROSSINGS: HIGH VISIBILITY CROSSWALK							
Predictable pedestrian actions at intersections can be aided with the installation of marked crosswalks, which indicate to motorists where pedestrian crossings take place as well as indicate to pedestrians the right-of-way they should cross within.	Crosswalk Line Width: 12″ Crosswalk Width: 6'	Crosswalk Line Width: 24"	• Typical crosswalk line width: 12″ • Typical crosswalk width: 11' • Curb ramps (not including flared sides) shall be contained wholly within the width of the marked crosswalk	• Caltrans Std. Plan A24F • California MUTCD Section 3B.18 • City of Ontario Standard Drawing Number 1307	Should be prioritized in areas with high pedestrian activity or where roadway conditions may require increased awareness of possible pedestrian traffic including near schools, commercial areas, recreation areas, at mid-block marked crossings, and at marked uncontrolled crossings	High visibility crosswalk should be provided at all mid-block crossings, and should be considered at uncontrolled intersections	Engineering judgment may be required to assess need
INTERSECTIONS & CROSSINGS: MID-BLOCK CROSSWALK							
A mid-block crosswalk facilitates crossings to places that people want to go, but that are not well served by existing infrastructure.	Crosswalk Line Width: 12″ Crosswalk Width: 6′	Crosswalk Line Width: 24" Crosswalk Width: not stated (some agencies have implemented crosswalks as wide as 80' for high pedestrian crossings at mid-block, ex: Green St. & Garfield Ave., Pasadena, CA)	• Should follow high visibility crosswalk design • Often includes advance stop bars (if signal controlled) or yield lines (if uncontrolled or flashing beacon installed)	• NACTO Urban Street Design Guide • Caltrans Std. Plan A24F • California MUTCD Section 3B.18 • City of Ontario Standard Drawing Number 1307 • CVC 21106(a)	• Mid-block crosswalks should be implemented at locations with high pedestrian activity and where an engineering study and judgment supports the implementation • Mid-block crosswalks should be used in conjunction with other safety improvements such as bulb-outs, where feasible, and/or features that may reduce conflicts with vehicular traffic including traffic control devices (Pedestrian Hybrid Beacons, Rectangular Rapid Flashing Beacons, etc.) and traffic calming features (curb extensions, median refuge islands, etc.)	Uncontrolled mid-block crosswalks should generally be discouraged for traffic safety reasons. However, if it is decided to be used, it should be justified by high pedestrian volumes, average daily traffic (ADT), approach speed, roadway configuration and designed according to FHWA's "Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations" (Jan. 2018)	CAMUTCD says its up to the engineer pending review. (Key Concerns Cont.): • If uncontrolled, must ensure minimum stopping sight distance (SSD) per AASHTO guidelines • Conduct traffic signal control warrant studies to determine potential need for signalization • Consider need for supplemental traffic control devices to enhance safety (e.g., yield lines, flashing warning beacons, additional signage, lighting, curb extensions, refuge islands)

DESCRIPTION	MINIMUMS	MAXIMUMS	OTHER	SOURCES	IMPLEMENTATION	KEY CONCERNS	ADDITIONAL NOTES
INTERSECTIONS & CROSSINGS: CURB EXTENSION (BULB-OUT)							
A curb extension, also known as a bulb-out, provides pedestrians with decreased crossing distances and time spent within the vehicle right-of-way by extending the sidewalk into the roadway. A curb extension also increases the visibility for pedestrians as they wait to cross and increases pedestrian visibility for motorists as they approach a crossing.	Typical minimum width: 5' Minimum approaching/ departure curve radii should accommodate street sweeping equipment	Curb extension shall allow a minimum lane width and shoulder width Should not extend beyond the parking lane or leave less than 10' for the travel lane, 11-12′ for the transit lane, and 5' for a bicycle lane	• Typical width should be 6′ to 8′ • Typical offset of 2' from edge of pavement to edge of bikeway or travel lane • Should be used at crosswalks in heavy pedestrian areas where on-street parking may limit the driver's view of pedestrians • Should extend into the street for the width of parking lane • Street must have on-street parking • Should be applied only on streets with posted speed limits of 35 MPH or less	• HDM Topic 303.4 Figures 303.4A-4B https://safety.fhwa.dot.gov/speedmgt/ePrimer_modules/module3pt3.cfm#mod320	• Appropriate at mid-block and intersection locations of arterial, collector, or local roads in urban and suburban settings with one-way or two-way streets • Can be applied on a street with, and can protect, on-street parking • Can be appropriate for any speed limits provided adequate distance between the features, but most appropriate on streets with posted speed limits of 35 MPH or less • Can be appropriate at all levels of traffic volume	• May be inappropriate for use on corners where frequent right turns are made by trucks or buses, which require a larger turning radius and thus preclude curb return radius reductions • Curb extensions must not intervene with the adjacent drive lanes, bicycle lanes, or roadway shoulders	(Implementation Cont.): • Can be appropriate along a primary emergency route and on streets that provide access to emergency medical services • May not be appropriate along bus transit routes and along primary access routes to commercial or industrial sites if an adequate turning radius cannot be provided (The Stop bar on the opposite travel lane on the receiving leg of the intersection may need to be moved back)
INTERSECTIONS & CROSSINGS: RAISED CROSSWALK							
Raised crosswalks are elevated crosswalks that enable pedestrians to cross an intersection at the same level as the sidewalk, increasing their visibility while crossing. They are typically installed as part of a raised intersection, which are designed to reduce speeds of approaching vehicles, enhance pedestrian connectivity, and improve safety.	Crosswalk width: 10′ Minimum horizontal curve radius of 300′	Crosswalk width: 12′ long and 3" in height	• Average daily traffic (ADT) should be less than 9,000 • Should be applied on 2-3 lane roads	• FHWA Pedestrian Safety Guide and Countermeasures Selection System • ITE Guidelines for the Design and Application of Speed Humps https://safety.fhwa.dot.gov/speedmgt/ePrimer_modules/module3pt2.cfm#mod312	• Implementation should follow typical crosswalk placement requirements/ warrants as well as restrictions for Speed Humps or Speed Tables	• Not to be applied to streets with steep slopes and short sight distances • The design of the raised crosswalk must accommodate emergency vehicles, trucks, and buses • May impact existing drainage facilities, depending on location	-

DESCRIPTION	MINIMUMS	MAXIMUMS	OTHER	SOURCES	IMPLEMENTATION	KEY CONCERNS	ADDITIONAL NOTES
INTERSECTIONS & CROSSINGS: ADVANCED YIELD MARKING							
Advanced yield markings are pavement markings that are installed to warn motorists of possible pedestrian crossings further along the roadway.	Placement: 4′ minimum before a crosswalk at controlled intersections. At unmarked crosswalks, 4′ - 30′ prior to the intersection edge. At uncontrolled multi-lane approach, 20′ – 50′ prior to the crosswalk.	• 30′ in advance of an unmarked crosswalk • 50′ in advance of a marked crosswalk	Dimensions of the triangles that comprise the yield marking include a width of 12″ to 24″, a height equal to 1.5 times the base, and should be spaced 3″ to 12″ apart	California MUTCD Section 3B.16 and Figure 3B-14	Yield lines may be used to indicate the point behind which vehicles are required to yield in compliance with a YIELD (R1-2) sign or a Yield Here To Pedestrians (R1-5 or R1-5a) sign	Depending on the location, the advanced yield marking and appropriate signage should be placed adjacent to each other	-
INTERSECTIONS & CROSSINGS: SCRAMBLE CROSSWALK							
Scramble crosswalks grant full pedestrian right-of-way in any direction, including diagonally.	Crosswalk should not be less than 6' wide	-	Should follow typical crosswalk designs	California MUTCD Section 3B.18. Figure 3B-20	• Only appropriate at signalized intersections • Should be prioritized in areas with high pedestrian activity such as commercial areas	Vehicle and pedestrian volumes should be considered prior to design	(Implementation Cont.) • They are often used in conjunction with an exclusive pedestrian phasing which restricts all vehicular movements
INTERSECTIONS & CROSSINGS: CURB RAMP							
A curb ramp is a ramp cutting through a curb or built up to it to provide a route to safely transition from a roadway to a curbed sidewalk.	Refer to source(s) for curb ramp geometric minimum design values	Refer to source(s) for curb ramp geometric maximum design values	-	• City of Ontario Standard Drawing 1213 • Caltrans HDM Section 105.5 and Section 275 of California Vehicle Code • Caltrans Standard Plan A88A	• Curb ramps should be placed at the transition between sidewalks and other pedestrian facilities (i.e. sidewalks and refuge islands) and the roadway • Existing curb ramps may be updated to meet ADA designs when sidewalks are installed or repaired	• Must meet specific standards for width, slope, cross slope, placement, and other features in order to be compliant with the Title II of the ADA • Additional detectable warnings are required	-
INTERSECTIONS & CROSSINGS: PEDESTRIAN REFUGE ISLAND							
A pedestrian refuge island serves as an aid to pedestrian movement by providing a protected space while they cross streets.	Minimum width: 6′, 8′ preferred Area should be at least 50 square feet in area, preferably 75 square feet Curbed, elongated divisional median islands should not be less than 4′ wide and 20′ long	N/A	• Pedestrian crossing points must be accessible (Design Information Bulletin [DIB] 82-06) • May also reference City of Ontario Standards 1109 and 1215	• Caltrans HDM Topic 405.4. Figure 405.4	Recommended consideration in areas with mixtures of significant pedestrian and vehicle traffic (more than 12,000 average daily traffic) and moderate or high travel speeds	-	-

DESCRIPTION	MINIMUMS	MAXIMUMS	OTHER	SOURCES	IMPLEMENTATION	KEY CONCERNS	ADDITIONAL NOTES
INTERSECTIONS & CROSSINGS: RAISED INTERSECTION							
Raised intersections are vertical elements that are places at intersections. They are similar to speed humps, speed tables, and other devices. Raised intersections create a slight obstruction to vehicles approaching an intersection, which force motorists to slow down and yield to pedestrians.	Refer to source(s) for design guidance	Maximum grade of 8% recommended in ITE Guidelines for the Design and Application of Speed Humps Refer to source(s) for design guidance	-	NACTO Urban Street Design Guide	• Appropriate at intersections with marked crosswalks at all four intersection legs and where crosswalks are warranted • Appropriate along collector and local roads in residential and commercial business district settings with one-way or two-way street • Can be appropriate along bus transit routes. Typically not appropriate along a primary access route to a commercial or industrial site	-	(Implementation Cont.): • Can include on-street parking at the approach legs • Maximum speed limit of 30 MPH based on ITE Guidelines for the Design and Application of Speed Humps • Appropriate if the daily traffic volume on each intersection approach is relatively low (some agencies use 10,000 vehicles total and other use 4,000 vehicles at each leg)
INTERSECTIONS & CROSSINGS: BIKE BOX							
A bicycle box is an exclusive bicycle space at the head of a traffic lane at a signalized intersection. They allow for increased visibility, priority bicycle movement, and potential conflict reduction between vehicles and bicyclists.	Minimum box depth of 10' typical depths as great as 16' At least 50' of bicycle ingress lane should be provided on the approach to the bike box	Refer to Caltrans/FHWA bike box design info bulletin	Where bike box crosses more than one lane, a pedestrian signal with countdown display is required Stop line standards from California MUTCD Section 3B.16	NACTO Urban Street Design Guide.	Only permitted at signalized intersections. Should be prioritized at intersections with high vehicular and bicycle traffic and where there may be turning conflicts between motorists and bicyclists	• Limited to signalized intersections • Applied at intersections where vehicle traffic flows right and bicycle traffic continues through	-

DESCRIPTION	MINIMUMS	MAXIMUMS	OTHER	SOURCES	IMPLEMENTATION	KEY CONCERNS	ADDITIONAL NOTES
INTERSECTIONS & CROSSINGS: TWO-STAGE BIKE TURN BOX							
A two-stage bicycle turn box is an area designated for bicyclists waiting to proceed in a different direction that formalizes two-stage turn maneuvers in a predictable pattern.	Dimensions are recommended as follows depending on anticipated queuing capacity: minimum 4′ deep and 8′ wide	Dimensions are recommended as follows depending on anticipated queuing capacity: maximum 9′ deep and 10′ wide	At the location where the box conflicts with turning movements, install NO TURN ON RED (R10-11) sign for prohibition of turning vehicle traffic	California MUTCD Section 2B.54 and NACTO Urban Bikeway Design Guide	Only permitted at signalized intersections. Should be prioritized at intersections with high vehicular and bicycle traffic, multi-lane roadways, high vehicle speeds, a significant volume of bicyclsts turning, or where there may be turning conflicts between motorists and bicyclists	• Should be placed in a location downstream of the cross street intersection stop line and downstream of the crosswalk across the cross street • Multiple positions are available for queuing boxes • Request for FHWA Interim Approval required	-
INTERSECTIONS & CROSSINGS: BIKE LANES IN RIGHT TURN ONLY LANES							
Bicycle lanes leading into an intersection, depending on roadway and intersection characteristics, can be carried through the conflict zone using dotted line transition pavement markings to the left of the right turn only lane.	Dotted white lines should be 6″ wide and 2′ long with 2′ to 6′ gap between dashes	Maintain bicycle lane width of 5′ to 6′ or 4′ in areas impacted by roadway constraints	• Minimize length of merge area as much as feasible: 60′ when less than or equal to 30 MPH or 90′ when greater than or equal to 30 MPH • Dashed lines should begin a minimum of 50′ before the intersection or 100′ if before a high traffic roadway	• California MUTCD, Part 9 • HDM Section 400 Topic 404.2 • AASHTO Guide for the Development of Bicycle Facilities • NACTO Urban Bikeway Design Guide	• Can be applied at the approach to an intersection where a turn lane can present a challenge for bicyclists • Typically applied at auxiliary turn lanes and where parking lanes transition into vehicular turn lanes	-	-
INTERSECTIONS & CROSSINGS: COMBINED BIKE LANE AND TURN LANE							
A combined bike lane and turn lane merges both the bike lane and right-turn lane into one lane. It is an option available in scenarios where the right-of-way at intersections is constrained.	Combined lane should be 9′ minimum (note a through bike lane can be accommodated if combined lane width is 14′ or greater)	Combined lane should be 13′ maximum	-	• NACTO Urban Bikeway Design Guide • California MUTCD Section 4E	• Can be applied where the approach to intersections is constrained by right-of-way and may not have space to provide a separate bike lane and turning lane • The prevalence of high vehicular volumes and speeds should be considered prior to implementation	-	-

DESCRIPTION	MINIMUMS	MAXIMUMS	OTHER	SOURCES	IMPLEMENTATION	KEY CONCERNS	ADDITIONAL NOTES
INTERSECTIONS & CROSSINGS: INTERSECTION CROSSING MARKINGS							
Intersection crossing markings are pavement markings that are used to indicate the intended path that bicyclists should take through an intersection.	Minimum striping width should be 6" adjacent to motor vehicle	Dotted line should be 2' long and 2' to 6' of spacing	-	• California MUTCD Section 3B.08 • AASHTO Guide for the Development of Bicycle Facilities • NACTO Urban Bikeway Design Guide	Can be implemented where improved awareness of bicycle crossings is desired for conflict avoidance	In cases where traditional intersection striping width is not sufficient and demands higher visibility, "Elephant's Feet' (14"x20") markings can be used as alternatives to dotted lines	-
INTERSECTIONS & CROSSINGS: GREEN-COLORED PAVEMENT							
Green colored pavement markings are used to increase the visibility of bikeways, particularly at areas with high potential for motor vehicle/ bicycle conflicts.	9' minimum	13' maximum	Guidance on reflective paint and surface traction Paragraph 4 of Section 3A.04 of CA MUTCD	FHWA Interim Approval for Optional Use of Green Colored Pavement for Bike Lanes (IA-14)	• Can be implemented where improved awareness of bicyclists is desired • Commonly used in conflict areas at the approach and within an intersection	A through bike lane can be accommodated if combined lane width is 14' or greater	-
INTERSECTIONS & CROSSINGS: TRAFFIC DIVERTER							
Traffic diverters are implemented for the purpose of volume control and managing non-local residential traffic. They are designed as islands that guide through and/or turning movements.	To allow for emergency and large vehicle access, the minimum clear space between the traffic diverter features is 10'	It should be wide enough for emergency vehicles and single unit trucks to make turns without encroaching on opposing travel lanes	-	FHWA and NACTO Urban Bikeway Design Guide.	• Appropriate on all types of roads in urban and suburban settings with one-way or two-way streets with a typical maximum posted speed limit of 25 MPH • Can be appropriate at all levels of traffic volumes • Not appropriate along a primary emergency route and on streets that provide access to emergency medical services	-	(Implementation Cont.): • Not appropriate along bus transit routes unless the route can be altered • Not appropriate along a primary access route to a commercial or industrial site if access is blocked

DESCRIPTION	MINIMUMS	MAXIMUMS	OTHER	SOURCES	IMPLEMENTATION	KEY CONCERNS	ADDITIONAL NOTES
INTERSECTIONS & CROSSINGS: TRAFFIC CIRCLE*							
Traffic circles, also known as mini roundabouts, feature a circular island in the center of an intersection. They are typically used at un-signalized intersections to help lower speeds, while still promoting a continuous flow of traffic.	Diagonal Corner Clearance: 15′ Need to follow design minimums of (1) the design vehicle using the roundabout (passenger cars, SU/MU trucks, emergency vehicles, etc.); and (2) the individual components of the traffic circle	Entry speed (MPH): 15-20 Approach lanes: 1 Inscribed Circle Diameter: 45′ - 90′	If space is available, the planting of trees and shrubs within the traffic circle can heighten the traffic calming effect, but must be maintained to keep sight distance at a maximum	NACTO Urban Street Design Guide https://safety.fhwa.dot.gov/speedmgt/ePrimer_modules/module3.cfm	• Appropriate at the intersection of two local roads in urban and suburban settings with one-way or two-way streets • Appropriate for relatively low speed streets (Some jurisdictions have limits at 30 MPH)	Lane width and turning radius should be highly considered	*See Appendix O Design Guidelines Factsheets for the complete design guidelines
INTERSECTIONS & CROSSINGS: ROUNDABOUT (MINI [MRAB], SINGLE-LANE [SLRAB], MULTI-LANE [MLRAB])*							
A roundabout directs motorists into the intersection and guides counterclockwise travel around the circular island.	Need to follow design minimums of (1) the design vehicle using the roundabout (passenger cars, SU/MU trucks, emergency vehicles, etc.); and (2) the individual components of the roundabout	Entry speed (MPH): • Single-lane RAB = 20-25 • Multi-lane RAB = 25-30 Approach lanes: • Single-lane RAB = 1 • Multi-lane RAB = 3 Inscribed Circle Diameter: • Single-lane RAB: 90′-180′ • Multi-lane RAB: 150′-300′	Splitter islands with crosswalks preferred length is 45' (15' first islands, 10' wide crosswalk, 20' second island) Preferred crosswalk location should be 20'-25' upstream of the entrance line.	• FHWA-SA-10-007 - Mini Roundabouts technical summary • NCHRP 762: FHWA Roundabouts Information Guide (FHWARD-00-067) • California MUTCD, Chapter 3C - Roundabout Markings • Highway Design Manual Topic 405.10	Appropriate at the intersection of two local roads in urban and suburban settings with one-way or two-way streets	• Roadway space requirements • Right-of-way requirements • Traffic operations assessment • Geometric Design	*See Appendix O Design Guidelines Factsheets for the complete design guidelines
INTERSECTIONS & CROSSINGS: PROTECTED INTERSECTION*							
A protected intersection redesigns the traditional mixing zone that persists where a bicycle lane ends and the right turn lane begins.	Corner safety island should have radius of 15′ to 20′ Pedestrian refuge island should be a minimum of 8′ Pedestrian island width is typically 6.5′ to 14′ Crossing setback should be around 19′	Crossing setback are typically 19′ Pedestrian island, if 6' or wider put detectable warning surface placed both the side	Setbacks: Setback larger than 20' may increase turn speed Larger than 25' treated as separate intersection. Typically 14-20' setback preferred	• NACTO Urban Bikeway Design Guide and Global Street Design Guide	• Most commonly found on streets with parking-protected bike lanes or buffered bike lanes • Can be implemented on most streets where improved bike comfort is desired with modifications to the typical design	-	*See Appendix O Design Guidelines Factsheets for the complete design guidelines

DESCRIPTION	MINIMUMS	MAXIMUMS	OTHER	SOURCES	IMPLEMENTATION	KEY CONCERNS	ADDITIONAL NOTES
INTERSECTIONS & CROSSINGS: BIKE LANE AT CHANNELIZED TURN LANE							
Channelized turn lanes or free right turn lanes can promote higher speeds through conflict zones, making navigation for through bicycle movements less comfortable.	4' wide for bicycle lane	-	6' wide bicycle lane when speed is >40 MPH R4-4 marking should be minimum of 50' at the end of the bike lane	• NACTO Urban Bikeway Design Guide • MUTCD section 9C.04	Can be appropriate where bikeways intersect with channelized turn lanes	Where speeds are high consider advanced treatments to increase advanced notice of facility and safe weave scenarios – i.e. yield or stop signs, or alter the angle of approach to be within 15 to 30 degrees	-
INTERSECTIONS & CROSSINGS: FREEWAY INTERCHANGE DESIGN							
Design for active transportation facilities at freeway interchanges can be very challenging. Freeway interchanges are typically characterized by higher speed and higher volumes of vehicular traffic. Consequently, bicycle levels of traffic stress and the potential for conflict can both increase.	Solid and dashed white lines should be 6" wide	8" solid white line where bicycle lane and on ramp lane intersect	-	• MUTCD 3B.08 • MUTCD Figure 9C-103 (CA)	Can be appropriate where bikeways intersect with freeway interchanges	• The design speed of entry and exit should impact through bike travel scenarios • For low speeds – allow bikes to move through the conflict zone with priority • For higher speeds – bikes should be encouraged to yield to motor vehicles along a dedicated lane	-
INTERSECTIONS & CROSSINGS: RAIL CROSSING (FOR BIKES)							
Rail crossings that form a skew angle to the bike facility present steering difficulties for bicyclists across rails. Designs can accommodate single direction bikeways and bi-directional bikeways to provide for preferential crossing angle and widths.	45 degree approach angle	Preferred 60 - 90 degree approach angle	• Approach angle should be close to 90 degrees • May widen the shoulder to help facilitate this	HDM Section 400 – Figure 403.3.B; Topic 1003.5(3), and Figure 1003.5	Generally appropriate along at-grade rail crossings with adequate space	• Wherever possible the bike facility crossing over a rail line should be straight and at a right angle to the rails • The preferential angle is between 60 and 90 degrees; the minimum angle is 45 degrees	-

DESCRIPTION	MINIMUMS	MAXIMUMS	OTHER	SOURCES	IMPLEMENTATION	KEY CONCERNS	ADDITIONAL NOTES
ROADWAY: LANE NARROWING							
Lane narrowing narrows the existing travel lanes so the roadway can better accommodate multiple types of users. The treatment is intended to improve the overall safety and traffic flow of the roadway and potentially accommodate the addition of a bikeway facility.	Caltrans: • 12' on State Highways (hwy) >45MPH; all State Highways connecting to a freeway interchange (2-lane hwy = all lanes; multi-lane hwy = outermost lane in each direction) • 11' on State Highways ≤40MPH	Refer to Caltrans HDM for lane width minimum design values	• Normal lane width = 12' • Where unequal-width lanes are used, locate the wider lane on the outside (right) to provide more space for large vehicles and bicycles, right turns, and a larger buffer from the curb	• Caltrans HDM Index 301.1 - Lane Width • AASHTO Greenbook • NACTO's Urban Street Design Guide. • FHWA's PEDSAFE: Lane Narrowing • City of Ontario Design Standards 1051 - 1061"	Can be applied where lane widths exceed the needs of the types of vehicles traveling along the roadway, where a reduction of vehicular travels speeds are desired, or where improvements to bikeways and pedestrian facilities are desired	-	Maintaining adequate lane width for large vehicles such as: • Trucks and semi/trailer units • Buses • RVs; and • Fire trucks and articulated emergency vehicles
ROADWAY: ROADWAY RECONFIGURATION*							
Also known as a road diet, roadway reconfigurations typically involve reducing the number of lanes to better accommodate other roadway users.	Caltrans: • 12’ on State Highways (hwy) >45MPH; all State Highways connecting to a freeway interchange (2-lane hwy = all lanes; multi-lane hwy = outermost lane in each direction) • 11’ on State Highways ≤40MPH	Refer to Caltrans HDM for lane width minimum design values (see "Lane Narrowing" design guidelines)	Should follow recommended widths for all lanes including travel lanes, bikeways, and parking	• FHWA's Road Diet Information Guide • FHWA's Traffic Calming ePrimer - Module 3 • A Policy on Geometric Design of Highways and Streets • City of Ontario Design Standards 1051 - 1061"	Appropriate on all types of roads in urban and suburban settings	-	*See Appendix O Design Guidelines Factsheets for the complete design guidelines
ROADWAY: LANDSCAPE MEDIANS (REFUGE)*							
Landscaped medians, or raised medians, are raised barriers in the center of the roadway that are typically filled with various types of foliage. They can serve as a place of refuge for pedestrians crossing at an intersection or at the midblock.	Minimum width: 6’, 8’ preferred Area should be at least 50 square feet in area, preferably 75 square feet Curbed, elongated divisional median islands should not be less than 4’ wide and 20’ long	12' maximum width	Cross slopes in medians greater than 65’ should be treated as separate roadways	• May also reference City of Ontario Standards 1109 and 1215 • Caltrans HDM index 305.2 - Median Cross Slope	Appropriate only on two-way streets	-	*See Appendix O Design Guidelines Factsheets for the complete design guidelines

DESCRIPTION	MINIMUMS	MAXIMUMS	OTHER	SOURCES	IMPLEMENTATION	KEY CONCERNS	ADDITIONAL NOTES
ROADWAY: CHOKERS/ PINCHERS							
Chokers or pinchers are curb extensions that narrow a segment of the roadway by widening the sidewalk or planting strip, creating a pinch point along the roadway. These pinch points can increase visibility of pedestrians looking to cross the roadway.	Single Lane Chokepoint Width: 12'	-	-	• Caltrans HDM Topic 303.4. https://safety.fhwa.dot.gov/speedmgt/ePrimer_modules/module3pt3.cfm#mod320	• Appropriate at mid-block locations of arterial, collector, or local roads in urban and suburban settings with one-way or two-way streets • Can be applied on a street with, and can protect, on-street parking • Can be appropriate for any speed limits provided adequate distance between the features	-	(Implementation Cont.) • Can be appropriate at all levels of traffic volume • Can be appropriate along a primary emergency route and on streets that provide access to emergency medical services • Can be appropriate at along bus transit route • Can be appropriate along a primary access route to a commercial or industrial site
TRAFFIC CONTROL, SIGNAGE, AND MARKINGS: LEADING PEDESTRIAN (BICYCLE) INTERVAL							
A leading pedestrian interval (LPI), also known as a "pedestrian head start" and "delayed vehicle green", gives pedestrians the opportunity to enter an intersection before motorists are given a green indication.	3 to 7 seconds minimum	10 seconds at longer crossings	In addition to the LPI, if a bikeway exists at the intersection, and the through movement conflicts with vehicle traffic, install a leading bicycle interval along with the LPI	CA MUTCD Section4E.06(19)	Should be implemented at intersections with high pedestrian volumes or high conflicting turning vehicle volumes	• The use of accessible pedestrian signals should be considered • Requires signal timing adjustments	LPI allows for pedestrians to better establish their presence within the intersection, lessening the chances of a vehicle to pedestrian conflict
TRAFFIC CONTROL, SIGNAGE, AND MARKINGS: ACCESSIBLE PEDESTRIAN SIGNAL							
An Accessible Pedestrian Signal (APS) unlike a conventional pedestrian push button, is more than a detection device, but also serves as a signal for visually-impaired pedestrians who rely on tactile or audio indications to determine when it is safe to enter a crosswalk.	Two APS on a corner should be at least 10' apart in order for pedestrians to accurately identify the correct direction of the sound source, and which crosswalk is activated by the APS signals	-	For crosswalks where the pedestrian enters the crosswalk more than 100 feet from the pedestrian signal head indications, the symbols should be at least 9 inches high	CA MUTCD section 4E	APS should be installed at new traffic signals and where signal poles with existing pedestrian push buttons will be modified	In retrofit situations, need to ensure that: • There is sufficient vertical space on the pole for the APS housing unit, given the existing pole-mounted equipment, signs and mountings	(Implementation Cont.) • Since many old pushbutton units are 2-wire configurations, may need to review the existing pole wiring to determine whether or not 3-CSCs are currently in use/available since Caltrans approved APS units are 3-wire

DESCRIPTION	MINIMUMS	MAXIMUMS	OTHER	SOURCES	IMPLEMENTATION	KEY CONCERNS	ADDITIONAL NOTES
TRAFFIC CONTROL, SIGNAGE, AND MARKINGS: PEDESTRIAN HYBRID BEACON*							
A pedestrian hybrid beacon (PHB) is a traffic control device used to increase motorists' awareness of pedestrian crossings at an uncontrolled marked crosswalk location.	• Install 2 pedestrian hybrid beacons facing major street • PHB should be installed at least 100' from side street	Design maximums should follow those for signalized traffic control devices in the CAMUTCD and the Caltrans HDM	Adequate site distance should be provided at least 100' in advance of the crossing and 20' after the crossing.	CA MUTCD Chapter 4F	• May be appropriate at locations where a traffic signal does not meet warrants • Marked crosswalks must be installed or otherwise already in place for any new pedestrian hybrid beacon crossing	• On each approach of the crosswalk, a stop line is required • Advance stop lines should be used on multi-lane crossings to reduce the potential for second threat collisions	*See Appendix O Design Guidelines Factsheets for the complete design guidelines
TRAFFIC CONTROL, SIGNAGE, AND MARKINGS: RECTANGULAR RAPID FLASHING BEACON*							
Rectangular Rapid Flashing Beacons (RRFBs) are a type of active warning beacon that combines a pedestrian warning sign with user-activated light emitting diodes (LEDs).	The illuminated period of each flash shall be minimum 1/2 of total cycle	The illuminated period of each flash shall a maximum 2/3 of total cycle	Beacons shall be flashed at a rate of not less than 50 or more than 60 times per minute	FHWA Interim Approval 21 (IA-21)	Appropriate at uncontrolled marked crosswalks with the exception of roundabout crossings controlled by YIELD signs	• Use in combination with a crosswalk, wheelchair ramps, advance warning signs or pavement markings, and overheard lighting • Usually implemented at high volume pedestrian crossings	*See Appendix O Design Guidelines Factsheets for the complete design guidelines
TRAFFIC CONTROL, SIGNAGE, AND MARKINGS: SPEED FEEDBACK SIGN							
Speed feedback signs are dynamic traffic calming devices that alert approaching motorists of their travel speeds. If motorists are speeding, the feedback sign will flash an LED display of the motorists' speed which is in excess of the posted speed limit, underneath the static portion of the sign which reads, 'YOUR SPEED'.	Min. Static Letter Height • 4" for posted speeds 20-25MPH • 6" for posted speeds 30MPH and above Min. LED Letter Height • 12" for posted speeds 20-40MPH • 18" for posted speeds 45MPH and above	Sight distance is dependent on design speed and type of road	Different static sign colors are to be applied at specific locations: • White - Not FHWA standard • Yellow - Applied to any location • Fluorescent Yellow/ Green - School zones • Orange - Work zones	CA MUTCD Chapter 4F	• Can be installed in conjunction with a Speed Limit (R2-1) sign or an Assembly C (CA) (SR4-1) school sign where vehicular speeding or changes in posted speed limits are a concern • Signs may be placed on the same support as an R2-1 sign or Assembly C (CA) sign or on a separate support	• Effective placement of speed feedback signs is important • The engineer should coordinate with local law enforcement officials on placement • The CAMUTCD advises that changeable message signs such as the speed feedback sign, should not be positioned at locations where the information load on drivers is already high because of guide signs and other types of information	(Implementation Cont.) • The signs should not be located in areas where drivers frequently perform lane-changing maneuvers, merging or weaving conditions

DESCRIPTION	MINIMUMS	MAXIMUMS	OTHER	SOURCES	IMPLEMENTATION	KEY CONCERNS	ADDITIONAL NOTES
TRAFFIC CONTROL, SIGNAGE, AND MARKINGS: BICYCLE DETECTION & PUSH BUTTONS/ ACTUATION							
Bicycle detection and push buttons are designed to alert the signal controller of a bicyclist on approach of and at the intersection. Actuation can be installed as push buttons or by automated means that include in-pavement loops, video detection, and microwave.	Detection zone can be narrower than 6'	Consider maximum mounting height in accordance with ADA requirements and push button standards	In conjunction with the push button, install optional R62 (CA) faceplate sign that faces the bicyclist's approach to increase visibility	CA MUTCD Section 9	• Should be applied at all newly-installed traffic signals • May be implemented with other detection or actuation devices such as bicycle push buttons or bike detection devices	-	-
TRAFFIC CONTROL, SIGNAGE, AND MARKINGS: BICYCLE SIGNAL							
Bicycle signals facilitate safe bicyclist intersection crossings by restricting conflicting vehicle movements. Bicycle signal heads are standard three lens signal heads with green-yellow and red lenses that can be applied to signalized intersections and hybrid signal crossings.	Where limit line detection zones that detect the Reference Bicycle-Rider are provided, minimum bicycle timing should be provided (i.e., min. green interval, Yellow clearance interval and Red clearance interval) as a function of the crossing speed (14.7 ft/sec) distance from the limit line to the far side of the last conflicting lane	-	The Bicycle Signal Actuation (R10-22) sign may be installed at signalized intersections where markings are used to indicate the location where a bicyclist is to be positioned to actuate the signal	• CA MUTCD section 4D.104(CA), 4D-105(CA • Table 1A-101(CA) on FHWA's Interim Approval for Optional Use of a Bicycle Signal Face (IA-16)	• Separates bicycle movements from conflicting movements with other modes • Gives priority to bicycle movements at the intersection • Improves bicycle operation	To prohibit right turn on red while the bicycle signal is active, the installation of a traffic signal with red, yellow, and green arrow displays is necessary	(Sources Cont.) • FHWA memo, "INFORMATION: MUTCD – Official Ruling 9(09)-47(I) – Clarification of the Interim Approval for the Optional Use of a Bicycle Signal Face (IA-16)" • CVC 21450 and 21456.3
TRAFFIC CONTROL, SIGNAGE, AND MARKINGS: PEDESTRIAN SAFETY AND WARNING SIGNS							
Pedestrian signage serves to warn and advise vehicular, bicycle, and other traffic of oncoming pedestrian movement. Signage implementation is often used in conjunction with pavement markings and pedestrian features that enhance awareness of pedestrian crossings or areas.	-	-	-	CA MUTCD Part 2	Non-vehicular warning signs (W11-2 Pedestrian or W11-15 or W11-15P) are used to alert road users in advance of locations where unexpected entries in the roadway might occur	Specific signage types and locations of signage are governed by the California MUTCD and shall be adhered to when designing for minimum requirements for establishing pedestrian friendly areas or crossings	-

DESCRIPTION	MINIMUMS	MAXIMUMS	OTHER	SOURCES	IMPLEMENTATION	KEY CONCERNS	ADDITIONAL NOTES
TRAFFIC CONTROL, SIGNAGE, AND MARKINGS: EMBEDDED LED'S IN TRAFFIC SIGNS							
Embedded Light Emitting Diodes (LEDs) enhanced traffic signs are similar to typical advisory and warning signs, but are intended to increase motorist awareness of signage. Low-light or low-visibility settings can benefit from added signage visibility per the LED enhancements along the fringe of the sign. Sign illumination can operate 24-hours a day, by time of day, or by pedestrian activation.	LED installation shall flash at the rate of 50 times per minute	LED installation shall flash at the rate of 60 times per minute	Sign illumination can operate 24-hours a day, by time of day, or by pedestrian activation	CA MUTCD Section 2A.07	Can be appropriate where increased motorist awareness is desired	LED enhanced signs require a low amount of power, which can be sourced from a stand-alone solar panel	-
TRAFFIC CONTROL, SIGNAGE, AND MARKINGS: BICYCLE SAFETY AND WARNING SIGNS							
Bicycle signage serves to regulate and warn vehicular traffic of the presence or movement of bicyclists within the roadway or traveling across the roadway.	Where unexpected bicycle conflicts may occur across the traveled way, install bicycle crossing/advance warning signage in advance of the point of crossing	-	Confirmation signs should be implemented every 1/4- to 1/2-mile along off-street facilities, and every 2 to 3 blocks along on-street facilities	CA MUTCD Part 9	Signage should be implemented in conjunction with pavement markings	Ensuring minimization of sign clutter, sufficient advance warning with respect to travel speeds and bicycle crossing conflicts, and ensuring adequate sight and compliance of signs	-

4.7 Cost Estimates

Planning-level cost estimates were developed for the Bicycle Network and Safe Routes to School (SRTS) recommendations. The estimated costs to design, construct, and install the Bike Network and Safe Routes to School recommendations are $121,623,100 and $35,705,820, respectively.

Cost estimates for the Bicycle Network exclude the cost for corridors that require additional studies. In situations where there are multiple bikeway classifications for the same corridor, the cost estimates were based on the higher cost bikeway facility. This results in a more conservative total cost estimate.

The total cost estimates for the Safe Routes to School recommendations are the sum of the cost for recommendations at each individual school.

Tables 4.11 Summary of Bicycle Network Cost Estimates and 4.12 Summary of Cost Estimates – Safe Routes to School provide summaries of the total estimated cost to construct the bicycle network and Safe Routes to School recommendations.

Appendix P: Cost Estimates: Bike Network Assumptions offers a breakdown of the assumptions for the bicycle infrastructure cost estimates.

Appendix Q: Cost Estimates – Safe Routes to School contains the cost estimates for each school in the Safe Routes to School component of the Plan.

GENERAL COST ESTIMATES ASSUMPTIONS

Many assumptions were made for the planning-level cost estimates. The assumptions were derived from similar recent projects across Southern California.

Assumptions include the following factors:

- Design
- Environmental
- Construction management
- Mobilization
- Traffic control
- Construction
- Contingency (to ensure that cost estimates cover the full financial expectations of each project, and to account for unknown or undeveloped scope that may arise during the design and construction phases)

BICYCLE NETWORK COST ASSUMPTIONS

Cost estimates for the bicycle network involved more specific assumptions made for each classifications of bicycle facilities.

Class I: Off-Street Bike Path

For this Plan, an average of $2,233,000 per mile cost was used for the Class I: Off-Street Bike Path cost. The cost per mile includes cost for a two-way shared-use paved path adjacent to the sidewalk. The actual cost for this type of facility will vary based on local conditions.

Class II: Bike Lane and Class II: Buffered Bike Lane

Implementation of Class II Bike Facilities includes bike lane signage, pavement markings, and striping, and can vary from location to location depending on the existing conditions and potential need for modifications to the existing roadway lane geometry. For this Plan, an average cost per mile of $87,400 (bidirectional roadway assumed) was used for standard bicycle lanes and an average cost per mile of $92,500 was used for buffered bike lanes.

Class III: Bike Route and Class III: Bike Boulevard

Class III Bike Facilities cost include sharrow markings and bike route signage. For this plan, an average cost per mile of $31,000 was used for a Class III Bike Routes. Further analyses should be conducted to determine if and where the existing roadway can be improved with traffic calming measures or other modifications that would allow for Class III Bike Boulevard treatments.

CORRIDOR	FROM	TO	TOTAL LENGTH (MILES)	TOTAL COST	PROPOSED BIKE RECOMMENDATION	LENGTH (MILES)	COST	NOTES
D St - Convention Center Way - Guasti Rd	Benson Ave	Haven Ave	6.22	$163,400	Class III Bike Route	4	$124,000	The total length accounts for additional studies segment, but the total cost does not account for the additional studies segment.
					Class II Bike Lane	0.45	$39,400	
					Additional Studies Needed	1.77	-	
Euclid Ave - North	I-10	Riverside Dr	4.67	-	Additional Studies Needed	4.67	-	
Mountain Ave			3.87	-	Additional Studies Needed	3.87	-	
Nocta Corridor	Benson Ave	D St	3.58	$110,900	Class III Bike Boulevard	3.58	$110,900	
Grove Ave - North	8th St	Riverside Dr	5.07	$286,900	Class II Bike Lane	0.49	$42,900	The total length accounts for additional studies segment, but the total cost does not account for the additional studies segment.
					Class III Bike Route	0.50	$15,500	
					Additional Studies Needed	1.61	-	
					Class II Buffered Bike Lane	2.47	$228,500	
4th Street - West	Benson Ave	Vineyard Ave	3.99	$123,800	Class III Bike Route	0.74	$23,000	
					Class III Bike Boulevard	0.97	$30,100	
					Class III Bike Route	2.28	$70,700	
Mission Blvd	Benson Ave	Milliken Ave	7.33	$486,400	Class II Buffered Bike Lane	4.78	$486,400	The total cost doesn't include the segment with existing PS&E plans (Benson Ave to Bon View Ave).
Campus Ave	I-10	Riverside Dr	4.67	$316,900	Class III Bike Boulevard	1.62	$50,300	
					Class II Bike Lane	3.05	$266,600	
San Antonio Ave	I-10	Holly Pl	3.58	$298,900	Class II Bike Lane	1.97	$172,200	
					Class III Bike Route	0.25	$7,800	
					Class II Bike Lane	1.36	$118,900	
4th Street - East	Vineyard Ave	Etiwanda Ave	5.00	$437,000	Class II Bike Lane	5	$437,000	
Allyn Ave & Bon View Ave	4th St	Philadelphia St	3.07	$177,700	Class III Bike Route	1.61	$50,000	
					Class II Bike Lane	1.46	$127,700	
Sultana Ave	I-10	Philadelphia Ave	3.67	$113,700	Class III Bike Boulevard	3.67	$113,700	
I St	Benson Ave	Fresno St	3.53	$109,600	Class III Bike Boulevard	3.53	$109,600	
Riverside Dr	Fern Ave	Hamner Ave	5.54	$484,300	Class II Bike Lane	5.54	$484,300	
Philadelphia St - West	Benson Ave	Grove Ave	3.00	$262,200	Class II Bike Lane/ Class III Bike Route	3.00	$262,200	The cost is based on the cost for the Class II facilities which results in a more conservative estimate.
Vine Ave	4th St	Philadelphia St via Fern Ave	3.11	$96,500	Class III Bike Boulevard	3.11	$96,500	

Table 4.11 Summary of Bicycle Network Cost Estimates

CORRIDOR	FROM	TO	TOTAL LENGTH (MILES)	TOTAL COST	PROPOSED BIKE RECOMMENDATION	LENGTH (MILES)	COST	NOTES
Vineyard Ave - North	8th St	Airport Dr	2.04	-	Additional Studies Needed	2.04	-	
Inland Empire Blvd-Ontario Mills Parkway	Vineyard Ave	Etiwanda Ave	1.85	$18,600	Class III Bike Route	0.60	$18,600	The total length accounts for additional studies segment, but the total cost does not account for the additional studies segment.
					Additional Studies Needed	1.25	-	
6th Street - East	Euclid Ave	Cucamonga Creek Channel	2.75	$167,100	Class III Bike Boulevard	1.30	$40,300	
					Class II Bike Lane	1.45	$126,800	
Francis Street - West	Benson Ave	Grove Ave	3.00	$262,200	Class II Bike Lane/ Class III Bike Route	3.00	$262,200	The cost is based on the cost for the Class II facilities which results in a more conservative estimate.
Philips St - Belmont St	Benson Ave	Grove Ave	3.01	$198,500	Class II Buffered Bike Lane	1.71	$158,200	
					Class III Bike Boulevard	1.30	$40,300	
Vineyard Ave - South A	Mission Blvd	Riverside Dr	2.26	$202,000	Class II Bike Lane	1.51	$132,000	
					Class II Buffered Bike Lane	0.75	$70,000	
Milliken Ave - North	4th St	SR-60	3.67	-	Additional Studies Needed	3.67	-	
Francis Street - East	Grove Ave	Mission Blvd	2.03	$187,400	Class II Buffered Bike Lane	2.03	$187,400	
Haven Ave - North	4th St	SR-60	3.34	-	Additional Studies Needed	3.34	-	
Jurupa St	Archibald Ave	Etiwanda Ave	3.98	-	Additional Studies Needed	3.98	-	
Philadelphia Street - East	Grove Ave	Mission Blvd	3.60	$333,000	Class II Buffered Bike Lane	3.60	$333,000	
5th Street	Benson Ave	Cucamonga Ave	2.80	$86,900	Class III Bike Boulevard	2.80	$86,900	
Benson Ave - North	I-10	Holt Blvd	1.64	$143,500	Class II Bike Lane	1.64	$143,500	
Walnut Street	Fern Ave	Vineyard Ave	2.50	$218,500	Class II Bike Lane/ Class III Bike Route	2.50	$218,500	The cost is based on the cost for the Class II facilities which results in a more conservative estimate.
Archibald Ave - South B	SR-60	Remington Ave	3.69	$6,523,400	Class II Bike Lane	0.80	$70,000	
					Class I Shared Use Path	2.89	$6,453,400	
Cucamonga Creek Channel	8th St	Merrill Ave	5.97	$13,327,900	Class I Shared Use Path	5.97	$13,327,900	
6th Street, West	Benson Ave	Euclid Ave	2.36	$73,200	Class III Bike Boulevard	2.36	$73,200	
H St	Mountain Ave	Allyn Ave	1.88	$58,400	Class III Bike Boulevard	1.88	$58,400	
Etiwanda Ave	4th St	Philadelphia Ave	3.01	-	Additional Studies Needed	3.01	-	
Princeton St	Euclid Ave	Grove Ave	1.29	$40,100	Class III Bike Boulevard	1.29	$40,100	
J St	Palmetto Ave	Allyn Ave	1.79	$55,500	Class III Bike Boulevard	1.79	$55,500	

Table 4.11 Summary of Bicycle Network Cost Estimates

CORRIDOR	FROM	TO	TOTAL LENGTH (MILES)	TOTAL COST	PROPOSED BIKE RECOMMENDATION	LENGTH (MILES)	COST	NOTES
Benson Ave - South	Mission Blvd	Philadelphia St	1.53	$134,000	Class II Bike Lane	1.53	$134,000	
Archibald Ave - South A	Jurupa St	SR-60	1.23	-	Additional Studies Needed	1.23	-	
Archibald Ave - North	4th St	Airport Dr	1.04	$43,700	Class II Bike Lane	0.50	$43,700	The total length accounts for additional studies segment, but the total cost does not account for the additional studies segment.
					Additional Studies Needed	0.54	-	
Airport Dr	Haven Ave	Etiwanda Ave	3.03	-	Additional Studies Needed	3.03	-	
Chino Ave	Euclid Ave	Milliken Ave/ Hamner Ave	5.32	$11,879,600	Class I Shared Use Path	5.32	$11,879,600	
Haven Ave - South	SR-60	Bellegrave Ave	3.20	$5,643,700	Class II Bike Lane	0.7	$61,200	
					Class I Shared Use Path	2.5	$5,582,500	
Schaefer Ave	Euclid Ave	Haven Ave	4.34	$9,700,100	Class I Shared Use Path	5.33	$9,700,100	
Edison Ave -Ontario Ranch Rd	Euclid Ave	Milliken Ave/ Hamner Ave	4.83	$10,785,400	Class I Shared Use Path	4.83	$10,785,400	
Euclid Ave - South	Riverside Dr	Merrill Ave	2.50	$5,585,400	Class I Shared Use Path	2.50	$5,585,400	
Vineyard Ave	Riverside Dr	Merrill Ave	2.51	$5,593,400	Class I Shared Use Path	2.51	$5,593,400	
Milliken Ave/ Hamner Ave - South	SR-60	Bellegrave Ave	2.46	$5,487,800	Class I Shared Use Path	2.46	$5,487,800	
New Road 1	Campus Ave	Ontario Ave	2.30	$5,142,500	Class I Shared Use Path	2.30	$5,142,500	
Merrill Ave	Euclid Ave	Eastern Terminus	3.32	$290,200	Class II Bike Lane	3.32	$290,200	
New Road 4	Riverside Dr	Archibald Ave	0.82	$1,823,700	Class I Shared Use Path	0.82	$1,823,700	
Eucalyptus Ave	Euclid Ave	Milliken Ave/ Hamner Ave	4.33	$4,262,100	Class I Shared Use Path	1.81	$4,041,800	
					Class II Bike Lane	2.52	$220,300	
Grove Ave - South	Riverside Dr	Merrill Ave	2.50	$5,583,800	Class I Shared Use Path	2.50	$5,583,800	
Walker Ave	Riverside Dr	Merrill Ave	4.01	$350,300	Class II Bike Lane	4.01	$350,300	
Campus Ave	Riverside Dr	Merrill Ave	2.50	$5,578,500	Class I Shared Use Path	2.50	$5,578,500	
New Road 3	Campus Ave	Edison Ave	4.23	$9,444,300	Class I Shared Use Path	4.23	$9,444,300	
New Road 2	Grove Ave	Ontario Ave	1.49	$3,333,100	Class I Shared Use Path	1.49	$3,333,100	
Ontario Ave	Chino Ave	Edison Ave	1.01	$2,244,400	Class I Shared Use Path	1.01	$2,244,400	
New Road 5	Riverside Dr	Chino Ave	0.50	$1,114,000	Class I Shared Use Path	0.50	$1,114,000	
New Road 6	Chino Ave	Edison Ave	1.00	$2,238,700	Class I Shared Use Path	1.00	$2,238,700	

Table 4.11 Summary of Bicycle Network Cost Estimates

SCHOOL	DISTRICT	ADDRESS (STREET)	ENROLLMENT	ESTIMATED COST
Arroyo Elementary	OMSD	1700 East Seventh Street	392	$906,040
Berlyn Elementary	OMSD	1320 North Berlyn Avenue	764	$1,970,952
Bon View Elementary	OMSD	2121 South Bon View Avenue	694	$982,047
Central Language Academy	OMSD	415 East G Street	706	$1,760,242
Chaffey High	CJUHSD	1245 North Euclid Avenue	3268	$2,226,588
Colony High	CJUHSD	3850 East Riverside Drive	2090	$756,017
Corona Elementary	OMSD	1140 North Corona Avenue	552	$825,001
Creek View Elementary	MVSD	3742 Lytle Creek North Loop	614	$2,799,667
De Anza Middle	OMSD	1450 South Sultana Avenue	589	$526,483
Del Norte Elementary	OMSD	850 Del Norte Avenue	515	$898,659
Edison Elementary	OMSD	515 East Sixth Street	767	$638,553
El Camino Elementary	OMSD	1525 West Fifth Street	447	$827,032
Euclid Elementary	OMSD	1120 South Euclid Avenue	725	$2,400,342
Grace Yokley Middle	MVSD	2947 South Turner Avenue	892	$778,691
Hawthorne Elementary	OMSD	705 West Hawthorne Street	762	$724,277
Levi H. Dickey Elementary	CVUSD	2840 Parco Avenue	506	$362,489
Liberty Elementary	CVUSD	2730 South Bon View Avenue	642	$407,544
Mariposa Elementary	OMSD	1605 East D Street	679	$505,715
Mission Elementary	OMSD	5555 Howard Street	711	$1,983,717
Mountain View Elementary	MVSD	2825 Walnut Street	485	$872,189
Oaks Middle	OMSD	1221 South Oaks Avenue	876	$1,452,021
Ontario High	CJUHSD	901 West Francis Street	2385	$1,548,286
Ranch View Elementary	MVSD	3300 Old Archibald Road	564	$685,996
Ray Wiltsey Middle	OMSD	1450 East G Street	1096	$1,598,531

Table 4.12 Summary of Cost Estimates – Safe Routes to School

SCHOOL	DISTRICT	ADDRESS (STREET)	ENROLLMENT	ESTIMATED COST
Richard Haynes Elementary	OMSD	715 West Francis Street	806	$643,699
Sultana Elementary	OMSD	1845 South Sultana Avenue	769	$1,652,187
The Ontario Center	CSD	835 North Center Avenue	662	$913,705
Valley View High (Continuation)	CJUHSD	1801 East Sixth Street	446	$526,257
Vineyard Elementary	OMSD	1500 East Sixth Street	786	$720,437
Vista Grande Elementary	OMSD	1390 West Francis Street	456	$1,864,478
Woodcrest Junior High	CVUSD	2725 South Campus Avenue	408	$947,978

Chapter 5

IMPLEMENTATION STRATEGY

5.1 Introduction

The City can use many strategies to plan, design, and construct the recommendations proposed in Chapter 4: Recommendations. This chapter discusses some of these strategies and provides a Project Selection Decision Making Tree to illustrate how the approaches can be used together to select a project. It also offers an overview of various federal, state, and local/regional funding opportunities that the City can pursue for infrastructure projects.

5.2 Implementation Approaches

The implementation approaches consist of common decision-making strategies, as well as new ideas proposed in this Plan. They include the following:

- Prioritize highest-ranking corridors in Active Transportation Network
- Leverage existing opportunities
- Construct projects where funding is available
- Time and financial resource availability

Prioritize Highest Ranking Corridors: As a part of the Corridor Prioritization phase for the development of the Active Transportation Network (ATN), all 62 corridors were ranked. Of these corridors, the project team created project factsheets for seven high-priority corridors for which the City could pursue funding for first.

Leverage Existing Opportunities: Multiple city departments and divisions work on the City's roadway system. Using the recommendations identified in Chapter 4 as a guide, City staff could identify existing opportunities within each department and division to plan, design, and/or construct different aspects of the Active Transportation Network.

Funding Availability: Many funding sources are available for active transportation improvements. Using Chapter 4 as a starting point, the City could develop infrastructure projects for program applications based on the guidelines from each funding program. Compared to the Prioritize Highest Ranking Corridors approach (above), this approach is more flexible and opportunistic. It allows the City to find projects that best meet and are most tailored to the current funding opportunities available, thus improving the chance that applying to the particular relevant grant would have fair chance of success.

Project Cost and Time: Infrastructure improvements roughly follow along a time/cost continuum. Table 5.1 offers some active transportation improvements that fall into three categories: short-term/low-cost, mid-term/mid-cost, and long-term/high cost. The City could decide what kind of improvements to make based on time and financial commitments.

TYPE	DESCRIPTION	ESTIMATED TIME FRAME AND COST	EXAMPLE OF INFRASTRUCTURE
short-term/low cost	These types of infrastructure improvements present opportunities for more rapid implementation to address community concerns.	0-2 years $500 - $50K	• ADA curb ramps • high visibility crosswalks • pavement markings • signage • rectangular rapid flashing beacons (RRFB) • pedestrian intersection enhancements • Class II bike lane • re-striping existing bike lanes • neighborhood traffic calming measures (e.g curb extensions, speed humps, and raised crosswalks)
mid-term/mid cost	These types of projects either require additional research or are ready for implementation, but roadway impacts such as vehicular right-of-way, utility easements, and/or other constraints must be considered.	2-5 years $50K - $200K	• Class I Shared-use path • sidewalk (with curb and gutter) • curb extensions at major intersection and arterial street • Class II buffered bike lane • protected intersection • minor traffic control signal improvements (e.g. signal at T-intersections, commercial driveways, secondary streets, and pedestrian hybrid beacons)
long-term/high cost	This type of projects can be considered as planned projects and require added resources prior to implementation. These projects require more studies, right-of-way acquisition, and/or include the need for coordination with adjacent agencies or county governing bodies.	5+ years >$200K	• traffic signals • roundabouts • projects that require modifying or adding hard wiring infrastructure • grade separated freeway or roadway crossing for shared use path or bike path

Table 5.1 Active Transportation Infrastructure Cost and Time Continuum

5.3 Project Selection Decision Making Tree

SELECT A SCENARIO

A Plan Implementation

You want to implement the Plan, and you want to know how to get started.

- Are there any existing or planned projects that could incorporate active transportation infrastructure?
  - Yes
    - Work with the project team to include active transportation infrastructure into the existing or planned effort
    - Seek funding to plan, design, and/or construct the project
  - No
    - Seek funding to plan, design, and/or construct high ranking corridors in the ATN
    - Use the High Priority Corridor Factsheets as a tool to seek funding

B Funding Opportunity

You found out about a potential funding opportunity, and you want to decide on a project to seek funding.

- Is it a local funding opportunity or grant program opportunity?
  - Local
    - Use the recommendations discussed in Chapter 4 to identify a set of corridors for funding
    - Collaborate with relevant stakeholders to determine the final corridors
    - Include the selected corridors into the future CIP lists
  - Grant
    - Review funding program criteria
    - Use the recommendations discussed in Chapter 4 to identify corridors that fit program criteria
    - From this set of corridors, select the highest ranking corridors first to apply for funding
    - Include the selected corridors into the future CIP list as unfunded (but anticipated) projects

C Project Options

You have a list of concerns gathered through community outreach, field work, research, or other sources, and you want to explore options to address them.

- Are there any existing or planned projects that could address the concerns?
  - Yes
    - Explore project options and include them into an existing effort
  - No
    - How much financial resources and time can be allocated to address the concerns?
      - Low
        - Identify a project with short-term and low-cost treatments using Table 5.1 and the Design Guidelines
        - Include the project into future CIP lists
        - Seek funding for design and construction

        **If there is still high demand to address the concerns, seek funding for longer term/higher cost treatments*
      - Medium to High
        - Are the concerns located along a high ranking corridor in the ATN?
          - Yes
            - Identify a project with mid/high-terms and mid/high cost treatments using Table 5.1 and the Design Guidelines
            - Seek funding to plan, design, and/or construct the project
          - No
            - Identify a project with mid/high-terms and mid/high cost treatments using Table 5.1 and Design Guidelines
            - Combine the project with other potential projects to explore funding opportunities to increase the chance of winning the grant

D Project

You have a planning, design, and/or construction project that already has a set of infrastructure treatments or project scope, and you want to know how to best proceed.

- Does it have funding for design and/or construction?
  - Yes
    - Collaborate with relevant stakeholders to identify opportunities to include the project in future CIP lists
    - Design and/or construct the project, and seek additional funding if needed
  - No
    - Is the project located along a high ranking corridor in the ATN?
      - Yes
        - Use the funding sources list to identify ways to fund the project
        - Include the selected corridors in the future CIP list as unfunded (but anticipated) projects
      - No
        - Combine the project with other potential projects to explore funding opportunities to increase the chance of winning the grant

Reference Notes

- *ATN: Active Transportation Network*
- *CIP: Capital Improvement Projects*
- *Recommendations and Design Guidelines are found in Chapter 4*
- *Funding opportunities list is available in Section 5.4*

5.4 Funding Opportunities

Many programs are available for the City to pursue funding to plan, design, and construct the recommendations discussed in Chapter 4. These programs can supplement local funding sources. The following section presents a selected set of federal, state, and regional programs that the City can seek funding through. Descriptions were retrieved from each program's webpage. Programs focus on areas such as active transportation, air quality, housing, and recreation.

FEDERAL SOURCES

Highway Safety Improvement Program (HSIP)

The Highway Safety Improvement Program (HSIP) is a federal aid program that was created from the FAST Act. The purpose of the program is to reduce fatalities and serious injuries on all public roads. In California, HSIP funds are managed by the Caltrans Division of Local Assistance (DLA). The City can apply for HSIP funds toward any public road or publicly owned bicycle or pedestrian pathway or trail in order to improve the safety for its users.

Note: In the future HSIP Calls-for-Projects, a Local Roadway Safety Plan (or its equivalent such as Systemic Safety Analysis Report (SSAR) or Vision Zero Action Plan) will be required for an agency to be eligible to apply for Federal HSIP funds:

Administering Agency: CA Department of Transportation (Caltrans)

Community Development Block Grant (CDBG)

CDBG is a flexible program that provides communities with resources to address a wide range of unique community development needs. The federally-funding program is administered by the Department of Housing and Urban Development (HUD). On the local level, these funds are administered by the San Bernardino County Community Development and Housing Department and can fund a range of projects including neighborhood revitalization, transportation services, public safety programs, flood and drainage facilities, water/sewer improvements, street improvements/sidewalks, etc.

Administering Agency: San Bernardino County Community Development and Housing Department

Affordable Housing and Sustainable Communities Program (AHSC)

The program funds land-use, housing, transportation, and land preservation projects to support infill and compact development that reduce greenhouse gas emissions.

Administering Agency: Strategic Growth Council and Department of Housing and Community Development

Congestion Mitigation and Air Quality (CMAQ) Program

The program funds transportation projects likely to contribute to the attainment or maintenance of a national ambient air quality standard, with a high level of effectiveness in reducing air pollution.

Administering Agency: San Bernardino County Transportation Agency (SBCTA)

STATE SOURCES

Community-Based Transportation Planning Grant (CBTP) Program

The Community-Based Transportation Planning

grant program aims to engage the community in transportation and land use projects. Projects support concepts such as livable and sustainable communities with a transportation or mobility focus. They should also promote community identity and quality of life, as well as provide transportation and land use benefits to communities.

Administering Agency: Caltrans

Active Transportation Program (ATP)

The program funds active transportation-related infrastructure projects, plans, and education/encouragement/enforcement activities. It consolidated previous programs (Transportation Alternatives Program, Bicycle Transportation Account, and Safe Routes to Schools) into one program.

Administering Agency: Caltrans

Urban Greening Grant Program

Funding for the Urban Greening Program comes from revenue generated from the state's Cap and Trade program. Projects that qualify for grants from the program are required to show net GHG benefits along with other benefits. Additionally, they must include one of three project activities: sequester and store carbon by planting trees; reduce building energy use by strategically planting trees to shade buildings; and/or reduce commute vehicle miles traveled by constructing bicycle paths, bicycle lanes or pedestrian facilities that provide safe routes for travel between residences, workplaces, commercial centers, and schools.

Administering Agency: CA Natural Resources Agency

Sustainable Transportation Planning Grant Program: Sustainable Communities Grants

The program funds local and regional multimodal transportation and land use planning projects that further the region's RTP SCS (where applicable), contribute to the State's GHG reduction targets, and assist in achieving the Caltrans Mission and Grant Program Objectives. Caltrans mission is to: Provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability.

Administering Agency: Caltrans

Environmental Enhancement and Mitigation (EEM) Grant Program

EEM projects must contribute to mitigation of the environmental effects of transportation facilities. They must fit into one of the three categories:
1. Urban Forestry - projects designed to offset vehicular emissions of carbon dioxide.
2. Resource Lands - projects for the acquisition or enhancement of resource lands to mitigate the loss of, or the detriment to, resource lands lying within the right-of-way acquired for transportation improvements. 3. Mitigation Projects Beyond the Scope of the Lead Agency - projects to mitigate the impact of proposed Transportation Facilities or to enhance the environment, where the ability to effectuate the mitigation or enhancement measures is beyond the scope of the lead agency responsible for assessing the environmental impact of the proposed transportation improvement.

Administering Agency: CA Natural Resources Agency

State Highway Operation and Protection Program (SHOPP)

Projects eligible for SHOPP funds include major capital improvements that are necessary to preserve and protect the state highway system and are consistent with the TAMP. Projects included in the program shall be limited to improvements relative to the maintenance, safety, operation, and rehabilitation of state highways and bridges that do not add a new traffic lane to the system. Examples

of projects include curve and vertical alignment corrections, two-way left turn lanes, and multimodal corridor projects.

Administering Agency: Caltrans

Transformative Climate Communities

The Program funds community-led development and infrastructure projects that achieve major environmental, health, and economic benefits in California's most disadvantaged communities.

Administering Agency: Strategic Growth Council and Department of Conservation

Sustainable Transportation Equity Program

STEP is a new program that began in 2020 that aims to address community residents' transportation needs, increase residents' access to key destinations, and reduce greenhouse gas emissions with grant funding to support clean transportation.

Administering Agency: CA Air Resources Board

Local Partnership Program (LPP)

The primary objective of this program is to provide funding to counties, cities, districts, and regional transportation agencies in which voters have approved fees or taxes dedicated solely to transportation improvements or that have imposed fees, including uniform developer fees, dedicated solely to transportation improvements. The Local Partnership Program provides funding to local and regional agencies to improve: aging infrastructure, road conditions, active transportation, transit and rail, and health and safety benefits.

Administering Agency: CA Transportation Commission (CTC)

Local Streets and Roads (LSR) Program

The purpose of the program is to provide approximately $1.5 billion per year to cities and counties for basic road maintenance, rehabilitation, and critical safety projects on the local streets and roads system. To be eligible, each year, cities and counties must submit a proposed project list adopted at a regular meeting by their board or council that is then submitted to the California Transportation Commission (CTC). Once reviewed and adopted by the CTC, the list of eligible cities and counties to receive funding is sent to the State Controller to begin the apportionment process for that fiscal year.

Administering Agency: CA Transportation Commission (CTC)

Solutions for Congested Corridors (SCCP)

The purpose of the program is to provide funding to achieve a balanced set of transportation, environmental, and community access improvements to reduce congestion throughout the state. This statewide, competitive program makes $250 million available annually for projects that implement specific transportation performance improvements and are part of a comprehensive corridor plan by providing more transportation choices while preserving the character of local communities and creating opportunities for neighborhood enhancement.

Administering Agency: CA Transportation Commission (CTC)

REGIONAL/OTHER SOURCES

Sustainable Communities Program

The program offers grants that can be used toward planning and policy efforts that allow for the implementation of the regional RTP/SCS. Grants in the program fall into three categories: Integrated Land Use – Sustainable Land Use Planning, Transit Oriented Development (TOD) and Land Use & Transportation Integration; Active Transportation – Bicycle, Pedestrian and Safe Routes to School Plans; Green Region – Natural Resource Plans, Climate

Action Plans (CAPs) and Green House Gas (GHG) Reduction programs.

Administering Agency: Southern California Association of Governments (SCAG)

Safe Routes to Parks Activating Communities Program

The program provides tailored technical assistance for seven communities to develop Safe Routes to Parks action plans and awards $12,500 to each community to begin implementation of those plans. Awarded communities' action plans will address each stage of the Safe Routes to Parks Action Framework and provide clear steps to improve local park access for people walking, biking, and rolling.

Administering Agency: Safe Routes to School National Partnership