Bicycle Master Plan

May 23, 2017

Amended by City Council Resolution Number 2020-085 on 7/14/2020

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1. Introduction

The 2017 Anaheim Bicycle Master Plan (the Proposed Project/the Plan) is a policy document that will guide the City of Anaheim in its implementation of citywide bicycle facilities. The Plan supersedes the 2004 Anaheim Bicycle Master Plan and is intended to improve bicycling safety, comfort, and accessibility. The Plan identifies a network of existing and proposed bicycle facilities that will improve multi-modal connectivity and increase bicycle mode share, especially for short trips. This is achieved through a system of on-street bike lanes and routes and off-street bike paths to connect residents, visitors, and workers to their destinations. The Plan does not propose to remove any vehicle travel lanes in favor of bicycle lanes. The Plan has been prepared to meet the California State requirements for a Bicycle Transportation Plan per Section 891.2 of the California Streets and Highways Codes.

1.1 Setting

Anaheim Regional Transportation Intermodal Center

The City of Anaheim, founded in 1857, is one of the nation's premier municipalities and is one of California's most populous cities (Figure 1, *Regional Setting*). Anaheim covers over 50 square miles with more than 358,000 residents, 124,000 private sector workers, and more than 3,000 City employees. The City provides public safety through the Anaheim Police Department and Anaheim Fire & Rescue, water and power service through Anaheim Public Utilities, parks, community centers, family services and

libraries through Anaheim Community Services, neighborhood improvements through Anaheim Public Works, and assistance for entrepreneurs, businesses and homeowners through the Anaheim Planning Department. The municipal corporation's annual budget is $1.7 billion. Successful sports franchises call Anaheim home, including the Los Angeles Angels of Anaheim Baseball, Anaheim Ducks, and the U.S. Men's and Women's National Volleyball Teams. Anaheim also boasts world-class meeting and entertainment venues with the Anaheim Convention Center (LEED-Certified and the largest on the West Coast), Disneyland Resort, Anaheim GardenWalk, Honda Center, Angel Stadium of Anaheim, and the City National Grove of Anaheim. In addition, Anaheim embraces its vibrant cultural arts community, including the world-renowned Anaheim Ballet. Annually, Anaheim welcomes 25 million visitors, making it a place where the world comes to live, work, and play.

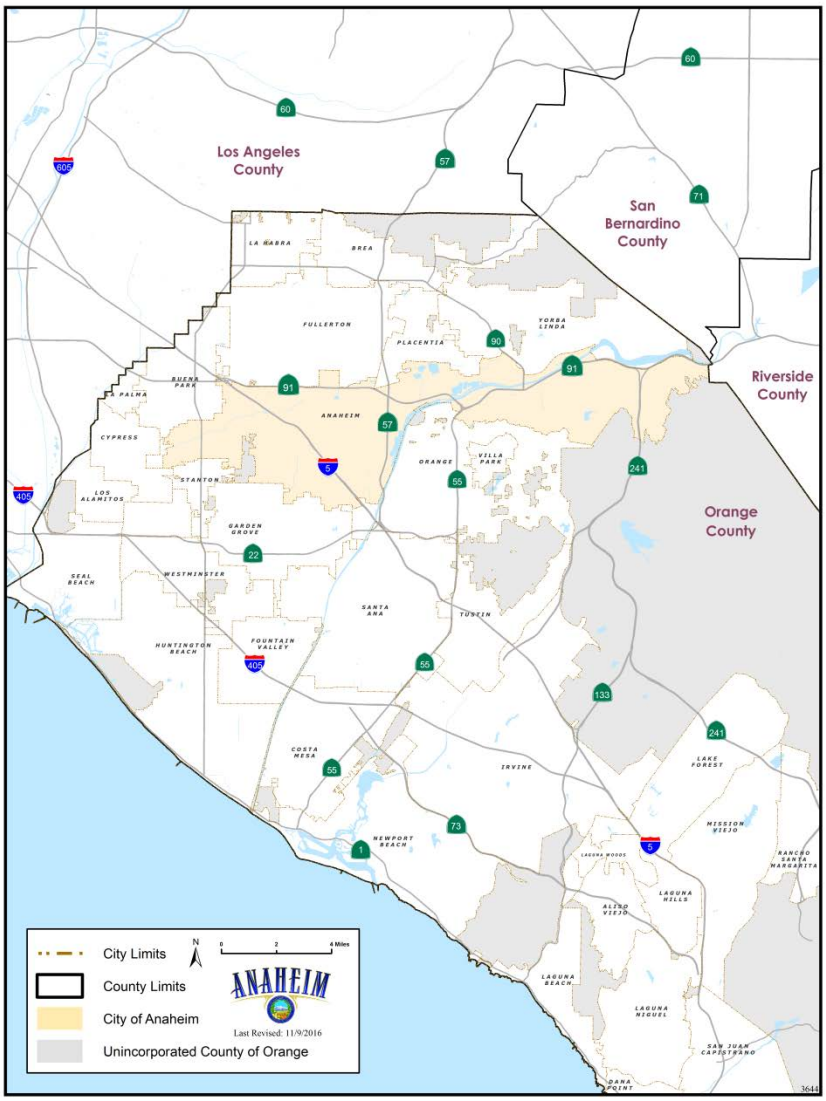

Figure 1 – Regional Setting

1.2 Purpose of the Bicycle Master Plan

The Bicycle Master Plan provides the vision for building out the bikeway network in the City of Anaheim over the next 20 years. The Plan identifies opportunities to close gaps in the existing network, connect to regional routes, parks, employment centers, and multi-modal transportation hubs, and to maximize the implementation of bike lanes within the planned roadway network without removing existing or planned vehicle travel lanes. The Plan is important for many reasons:

Eligibility for Funding*:* A primary function of the Bicycle Master Plan is to meet the requirements of regional, state and federal grant programs that provide funding for bicycle projects. To be eligible for most grant programs, the Bicycle Master Plan must address the requirements of Streets and Highways Code Section 891.2. A summary of how the Plan meets these requirements is provided in Appendix A*,* *Bicycle Transportation Account Compliance Checklist*. Once the Plan is approved by the City Council and the Orange County Transportation Authority (OCTA), projects identified in the Plan will be eligible to compete for grant funding. The Plan is current for five years from City Council approval.

Identify Priority Projects*:* The proposed bikeway network was evaluated on factors in the categories of demand, utility, connectivity, and readiness. Three scoring tiers were identified for high, medium, and low priority for implementation. Projects may be implemented out of scoring order as opportunities such as grant funding, development projects, capital improvement projects, or roadway resurfacing projects arise.

Close Gaps in the Existing Network*:* The Plan identifies several routes that will serve to close gaps in the existing network to overcome physical barriers to cycling, such as crossing Interstate 5 and State Route (SR) 91, and connectivity to the regional bikeways network. Gap closures are considered in the project prioritization scoring and are reflected in their priority ranking.

Improve Safety and Comfort for All Cyclists*:* The Plan proposes bikeways both on and off street to provide dedicated facilities for bicyclists to increase separation from motor vehicles. Additionally, the Plan identifies bicycle safety education programs provided by the City that are implemented through schools and community groups.

Improve Public Health*:* Bicycling is an active transportation mode that provides health benefits to riders, as well as public health benefits such as reduced emissions, traffic congestion, and energy consumption. Providing a comprehensive bikeway network increases accessibility to key destinations and can help to reduce vehicle miles traveled as more commuters and recreational cyclists can reach their desired destinations by bicycle.

2. Anaheim General Plan Goals and Policies

State law requires every city and county in California to adopt a comprehensive, long-term General Plan. The General Plan represents the community's view of its future; it is a blueprint for a city's or county's growth and development. City councils, boards of supervisors, and planning commissions use the goals and policies of the General Plan as a basis on which to make their land use decisions.

The General Plan is considered "comprehensive" since it covers the territory within the boundaries of the adopting jurisdiction and any areas outside of its boundaries that are within a jurisdiction's sphere-of-influence. It is also comprehensive in that it addresses a wide variety of issues that characterize a city or county. These issues range from the physical development of the jurisdiction, such as general locations, and extent of land uses and supporting infrastructure, to social concerns such as those identified in the Housing Element of a General Plan.

The General Plan is considered "long-term" since it looks 20 years or further into the future. Individual jurisdictions determine a time horizon that serves their individual needs. The General Plan projects conditions and needs into the future as a basis for determining long-term objectives and policies for day-to-day decision making. Throughout this horizon period, new information often becomes available and the needs and values of a community may change. To adjust to these dynamics, General Plans are reviewed and revised periodically.

The City of Anaheim General Plan[1] contains goals and policies related to bicycle facilities. These goals and policies include modifications that were proposed in conjunction with the Plan. Redlines of these amended sections and maps showing the amendments to the bikeways network are provided in Appendix B - *General Plan Amendment*.

1 http://www.anaheim.net/712/General-Plan

3. Existing Conditions

3.1 Existing Land Use

The City of Anaheim is geographically diverse, with the western and central portions of the City characterized by relatively flat ground that slopes gently to the southwest. This portion of the City is also characterized by a mix of suburban and urban development and is relatively built out. West Anaheim is undergoing a Specific Plan effort that is focusing on improving the Beach Boulevard corridor and surrounding neighborhoods. Central Anaheim is home to Downtown Anaheim (CtrCity) and the Anaheim Colony Historic District. The existing land use patterns in the City is included as Figure 2 – *Existing Land Use (West)* and Figure 3 - *Existing Land Use (East).*

Anaheim Central Library

The Anaheim Resort and the Platinum Triangle are located south of the downtown area, in the southern portion of the City on either side of Interstate 5 (I-5). The Anaheim Resort, generally located west of I-5, includes the Disneyland Resort, the Anaheim Convention Center and a mix of hotels, restaurants and visitor-serving uses. The Platinum Triangle, located east of I-5, is a former industrial area surrounding Angel Stadium that is transitioning into a vibrant mixed-use area. In addition to higher density residential, commercial and office development, the Platinum Triangle also includes Honda Center, City National Grove of Anaheim and the Anaheim Regional Transportation Intermodal Center (ARTIC). The Platinum Triangle is bound on the east by the Santa Ana River Trail, which directly connects cyclists to ARTIC and extends from the mountains to the beach.

Anaheim Canyon Metrolink Station

Anaheim Canyon is a regional employment center consisting of office, industrial and commercial uses that generally span the north side of the SR-91 between the Orange (SR-57) Freeway and Imperial Highway. The Anaheim Canyon Specific Plan was adopted in January 2016, and envisions transforming Anaheim Canyon into the leading center of the emerging Innovation Economy in Southern California. It also establishes a safe and accessible multimodal transportation network that accommodates vehicles, trucks, transit, pedestrians, and bicyclists to provide greater options and healthier living for area residents and workers. The area is served by the Anaheim Canyon Metrolink Station.

The eastern portion of the City extends generally east along either side of the Santa Ana River to the Riverside County line. This part of the City includes primarily hillside terrain. Residential development in the eastern portion of Anaheim largely consists of the various hillside communities on the south side of the Riverside Freeway (SR-91) that extend to the Eastern Transportation Corridor (SR-241). Other relatively flat residential neighborhoods are located north of the Santa Ana River and east of Imperial Highway, and generally south of the Santa Ana River at the intersection of the SR-91 and Costa Mesa (SR-55) Freeways.

East Anaheim Branch Library and Police Department

The City of Anaheim General Plan Land Use Element includes a Land Use Plan with land use designations for properties throughout the City. These designations indicate the City's preferred future land use for these properties. General Plan land use designations for the City are shown in Figure 4 – *General Plan Land Use Designations (West)* and Figure 5 –*General Plan Land Use Designations (East)*.

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Figure 2 – Existing Land Use (West)

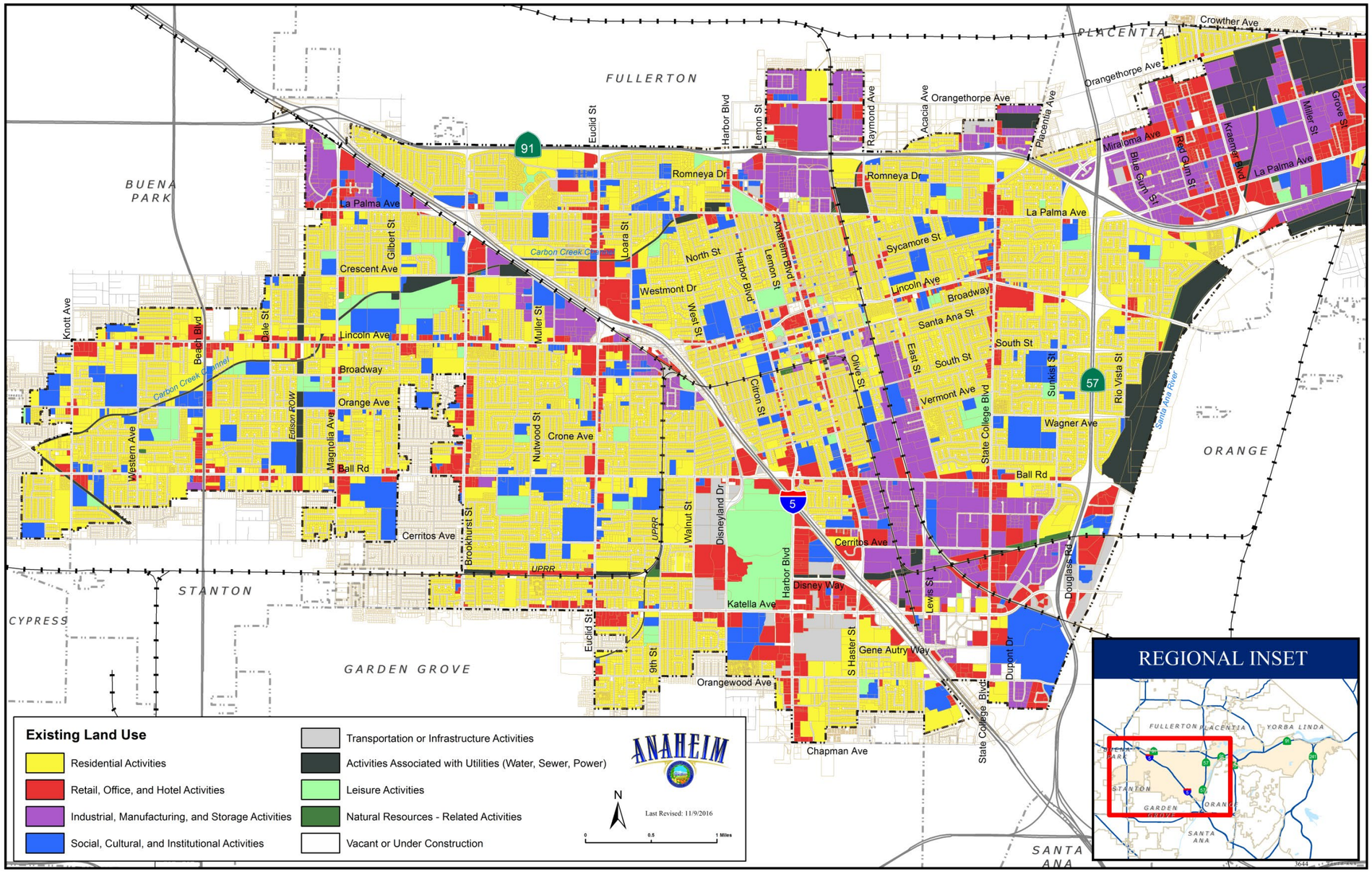

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Figure 3 – Existing Land Use (East)

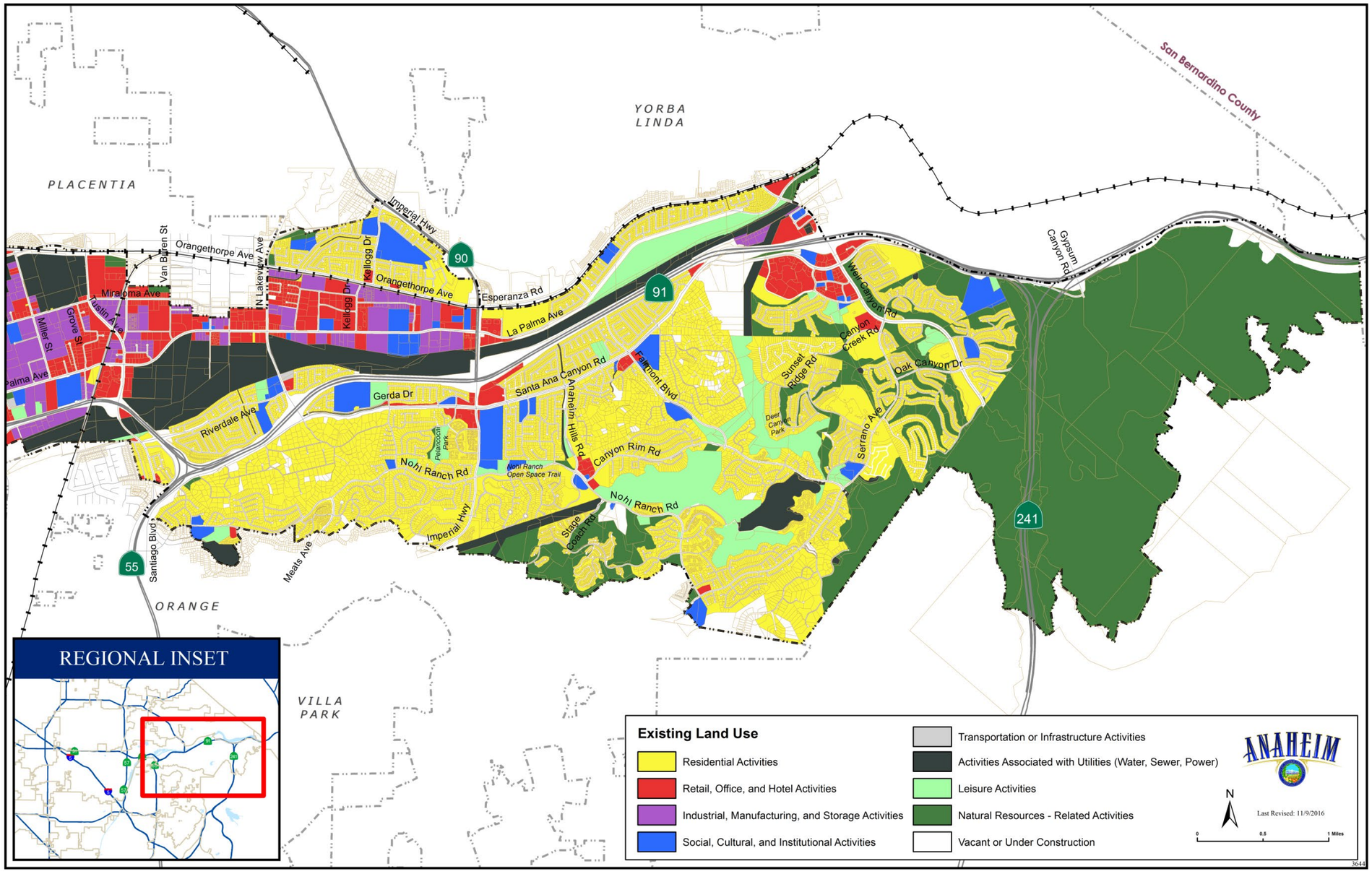

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Figure 4 – General Plan Land Use Designations (West)

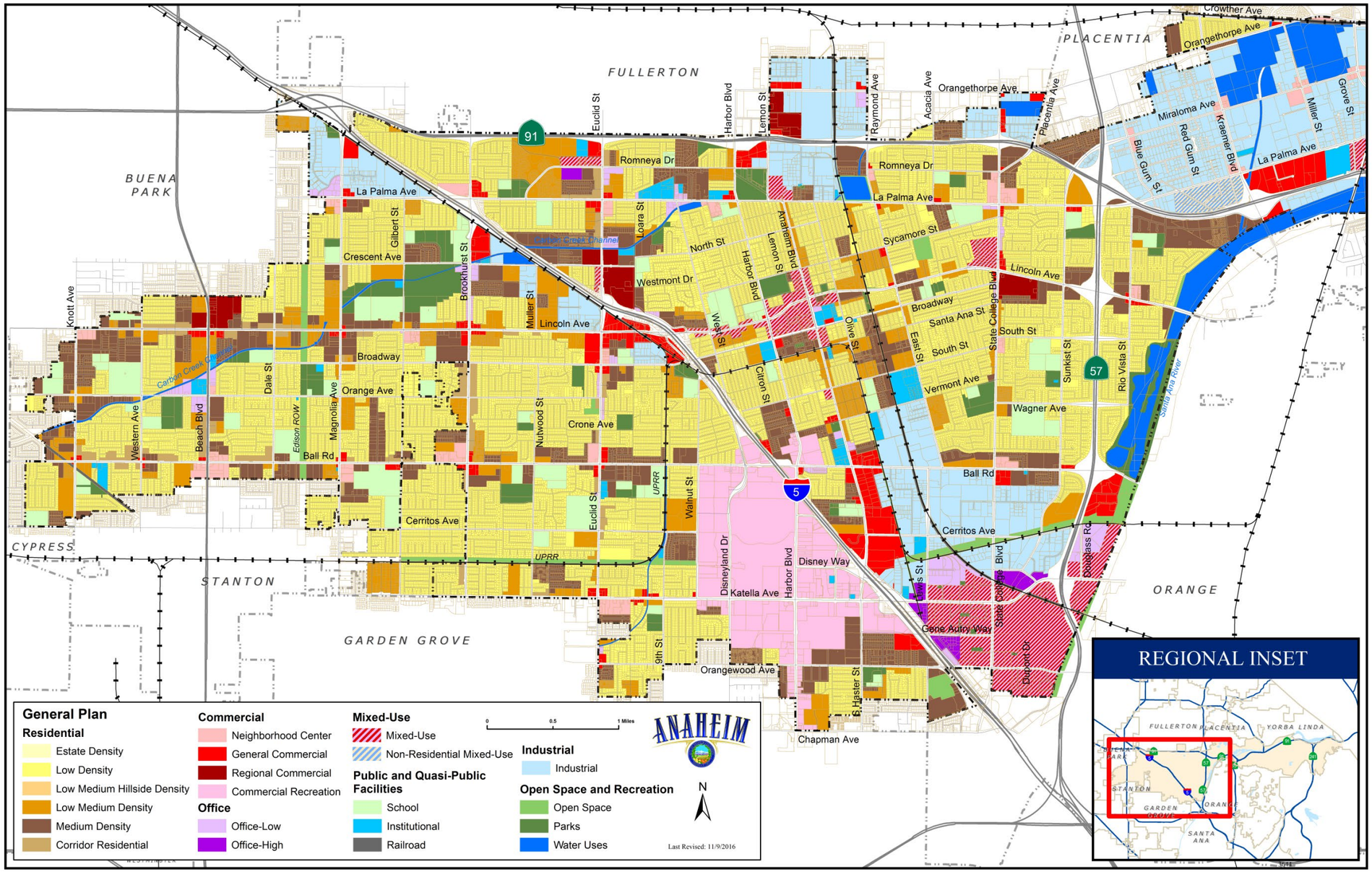

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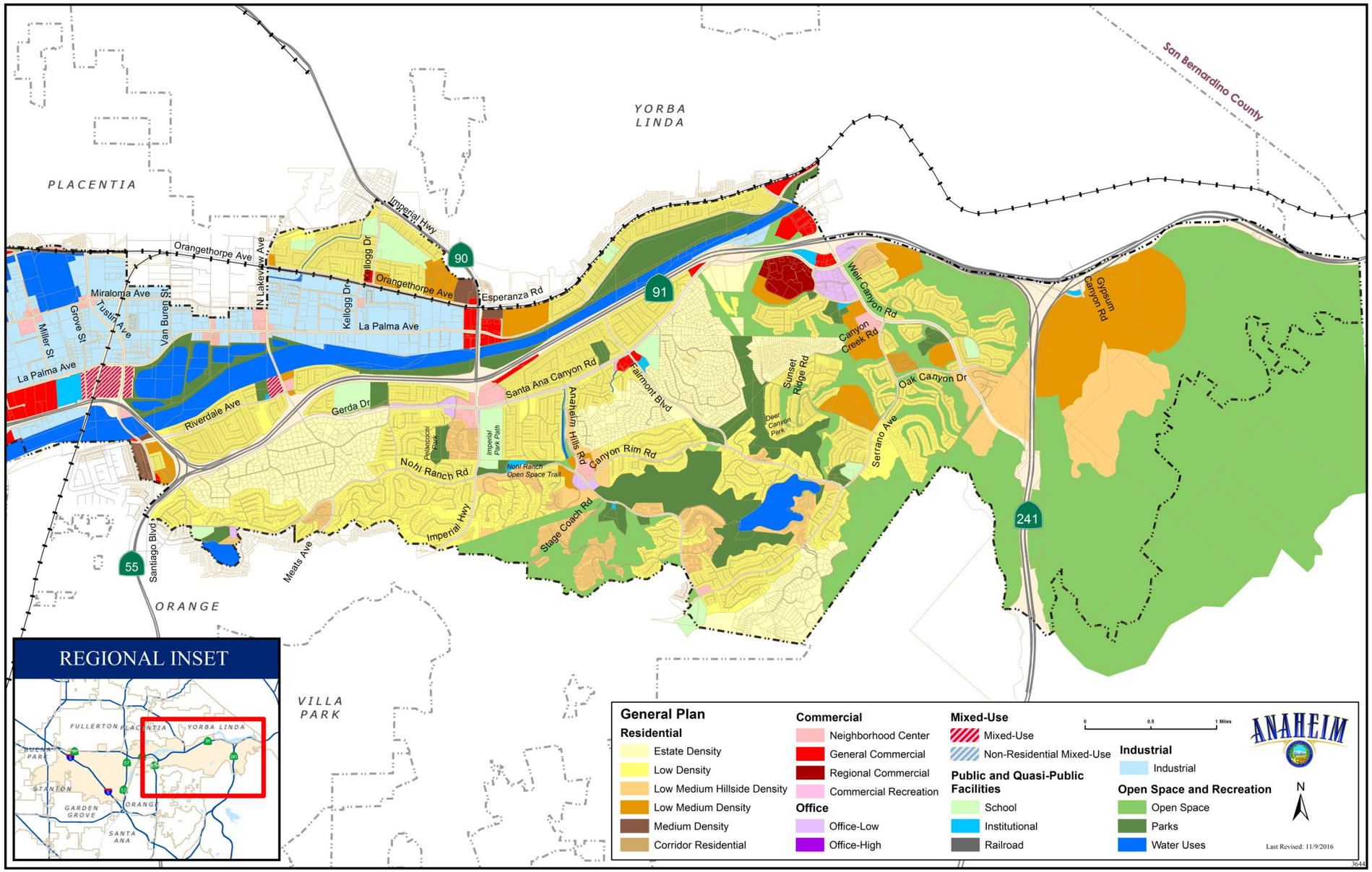
Figure 5 – General Plan Land Use Designations (East)



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3.2 Bicycle Facility Types

The Plan refers to the four classes of bikeways as defined in Streets and Highways Code 890.4: Classes I, II, III and IV. Until 2014, the California Department of Transportation (Caltrans) used three categories for bikeways. Governor Brown signed Assembly Bill 1193, The Protected Bikeways Act of 2014[2], which recognized cycle tracks as a fourth bikeway classification to promote active transportation and provide a right-of-way adjacent to, and protected from, vehicular traffic. Due to the potential right-of-way impacts for implementation, the City does not have and does not propose any Class IV cycle tracks at this time. The bikeways described below will be implemented according to the latest design guidelines in the Caltrans Highway Design Manual, [3] as further described in Appendix G, *Implementation Toolbox*.

Table 1 provides a summary of the centerline miles of bikeways in the network. A complete inventory of existing bikeways is included in Appendix C – *Inventory of the Anaheim Bikeway Network* and is shown in Figure 6 –*Bikeway Network (West)* and Figure 7 – *Bikeway Network (East)*.

Table 1 – Summary of Bikeway Network Mileage

Class	Centerline Miles		
	Existing	Proposed	Total
Class I: Bike Path	15.72	29.85	45.57
Class II: Bike Lane*	49.42	65.62	115.04
Class III: Bike Route	1.28	19.13	20.41
Class IV: Cycle Track	0	0	0
Total	66.42	114.60	181.02

*3.54 Miles of planned Class II Bike Lanes are currently improved as Class III Bike Routes on an interim basis

2 http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140AB1193
3 http://www.dot.ca.gov/hq/oppd/hdm/hdmtoc.htm

Class I Bikeway: Bike Paths

Anaheim Coves Bike Path (Bike ID 1)

890.4 (a): Class I bike paths, also referred to as "Class I Bikeways", or shared use paths, provide a completely separated right-of-way designated for the exclusive use of bicycles and pedestrians with crossflows by motorists minimized.

Class I bike paths provide critical connections to destinations not served by roadways for recreation and as direct high-speed commute routes. The most common applications are along rivers, ocean fronts, canals, utility right-of-ways, abandoned railroad right-of-ways, or within and between parks. A common application of a Class I bike path is to close gaps to bicycle travel caused by freeways or natural barriers such as a river.[4]

The City is coordinating with the Orange County Flood Control District (OCFCD) to allow the City to access maintenance roads for OCFCD facilities for utilization as Class I bike paths. This agreement would be the first step in the process to implement these proposed Class I bike paths through the life of the Plan. Certain facilities exist in usable condition as a Class I bike path, such as the south side of the Santa Ana River Trail east of Imperial Highway (Bike ID 177), and simply require access agreements to open them. Other OCFCD facilities, such as those on the Carbon Creek Channel (Bike IDs 6, 7, 8, and 165), would require improvements to make them usable as a Class I bike path. The City will conduct additional outreach to the

4 http://www.dot.ca.gov/hq/oppd/hdm/pdf/chp1000.pdf

local communities neighboring these facilities prior to implementing each proposed Bike ID in order to address any safety or access concerns of the local residents and potential bicycle facility users. The process for implementing a Class I Bike Path is outlined in Section 6.5, Implementation and Funding Opportunities.

Bike paths can also serve as parallel routes to roadways with high vehicle volume and speed that also have high potential bicycle demand. For example, La Palma Avenue from Blue Gum Street to Tustin Avenue (Bike ID 19) was proposed as a Class II bike lane in the 2004 Bicycle Master Plan. The proposed route was extended eastward to e/o Brasher Street in the Anaheim Canyon Specific Plan. However, as part of that analysis, this route has been changed in the Plan to reflect a Class I bike path on both sides of the street to serve bicyclists and pedestrians with origins and/or destinations on La Palma Avenue. The prevailing speed of 45-50 mph and relatively high traffic volume of over 35,000 ADT could deter the potentially high bicycle travel demand, even with a Class II bike lane. A shared use Class I Bike Path is proposed, however, with further study, Bike ID 19 could be implemented with a Class IV Cycle Track if sufficient space is available within the public right-of-way.

There are 15.28 miles of existing Class I bike paths in the City and 29.85 new miles are proposed as part of the Plan.

Class II Bikeway: Bike Lanes

Canyon Rim Road (Bike ID 52B)

890.4(b) Class II bike lanes, also referred to as "Class II bikeways", provide a restricted right-of-way designated for the exclusive or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and crossflows by pedestrians and motorists permitted.

Bike lanes are a space on the road for bicyclists adjacent to motor vehicle travel lanes and flow in the same direction as motor vehicle traffic, and are designated with pavement markings and signage. Bike lanes enable bicyclists to ride at their preferred speed without interference from prevailing traffic conditions and facilitate predictable behavior and movements between bicyclists and motorists.

Buffered Bike Lane: Class II bike lanes that provide a painted buffer for lateral separation between motor vehicle travel and/or parking lanes and bicycles are designed to visually reinforce Section 21760 of the California Vehicle Code that requires Three Feet for Safety when vehicles pass bicyclists. 74% of survey respondents polled for the 2017 Anaheim Bicycle Master Plan preferred buffered bike lanes. This treatment is appropriate for bike lanes on roadways with high motor vehicle traffic volumes and speed, adjacent to parking lanes, or a high volume of truck or oversized vehicle traffic. Typically, this treatment can be implemented where there are wide curb lanes or bike lanes. Areas that could be considered for future study include Brookhurst Street (Bike IDs 48, 49 A.20, and 49 B.20), Santa Ana Canyon Road (Bike ID 121), and Tustin Avenue (Bike ID 133).

Lane Reconfiguration: Often referred to as a "Road Diet", lane reconfiguration is the removal of one or more vehicle travel lanes to provide sufficient right-of-way for Class II Bike Lanes. Streets with excess vehicle capacity provide opportunities for this type of retrofit project, and under these conditions, the right-of-way for the excess vehicle capacity could be reallocated to bike lanes. Depending on a street's existing configuration, traffic operations, user needs, and safety concerns, various lane reduction configurations exist. For instance, a four-lane street (with a center line and two travel lanes in each direction) could be modified to include one travel lane in each direction, a center turn lane, and bike lanes.

Miller Street, from La Palma Avenue to Orangethorpe Avenue (Bike ID 95), was recently implemented as a road diet in the Anaheim Canyon. Miller Street was a four lane, undivided arterial with a forecasted ADT of less than 15,000. As part of the traffic analysis for the Anaheim Canyon Specific Plan, Miller Street was analyzed for the conversion to a two lane divided street to ensure that the reduction in vehicle travel lanes would not cause a significant adverse impact to adjacent streets and intersections. The findings were favorable, and the proposed reduction in vehicle travel lanes required a General Plan Amendment to reclassify the street in the Circulation Element, as well as an amendment to the Master Plan of Arterial Highways (MPAH), which is administered by OCTA. The approval of the reclassification by OCTA finalized the change in the General Plan Circulation Element, which allowed for the road diet to be implemented without conditions.

Similarly proposed Class II Bike Lanes identified in the Plan that meet the criteria for a road diet may be implemented as such upon the completion of additional, site specific traffic analysis to identify overall transportation impacts, including analysis of peak hour volumes. Studies from around the country indicate that streets with high-end traffic volumes ranging from 22,000 – 30,000 ADT are candidates for a road diet.

In several locations, Class II Bike Lanes do not continue through intersections, which reflect the engineering standard details for the design of roadways in the City. All intersections shall be designed to City Standards with the engineering design details addressing MUTCD and Caltrans Highway Design Manual standards for bikeways through intersections. Examples of intersection treatments are included in Appendix G - *Implementation Toolbox*.

There are 49.42 miles of existing Class II bike lanes, and 65.62 new miles are proposed in the Plan.

Class III Bikeways: Bike Routes

890.4(c) Class III bike routes, also referred to as "Class III bikeways", provide a right-of-way on-street or off-street, designated by signs or permanent markings and shared with pedestrians and motorists. Class III bike routes provide shared use with motor vehicle traffic in the same travel lane.

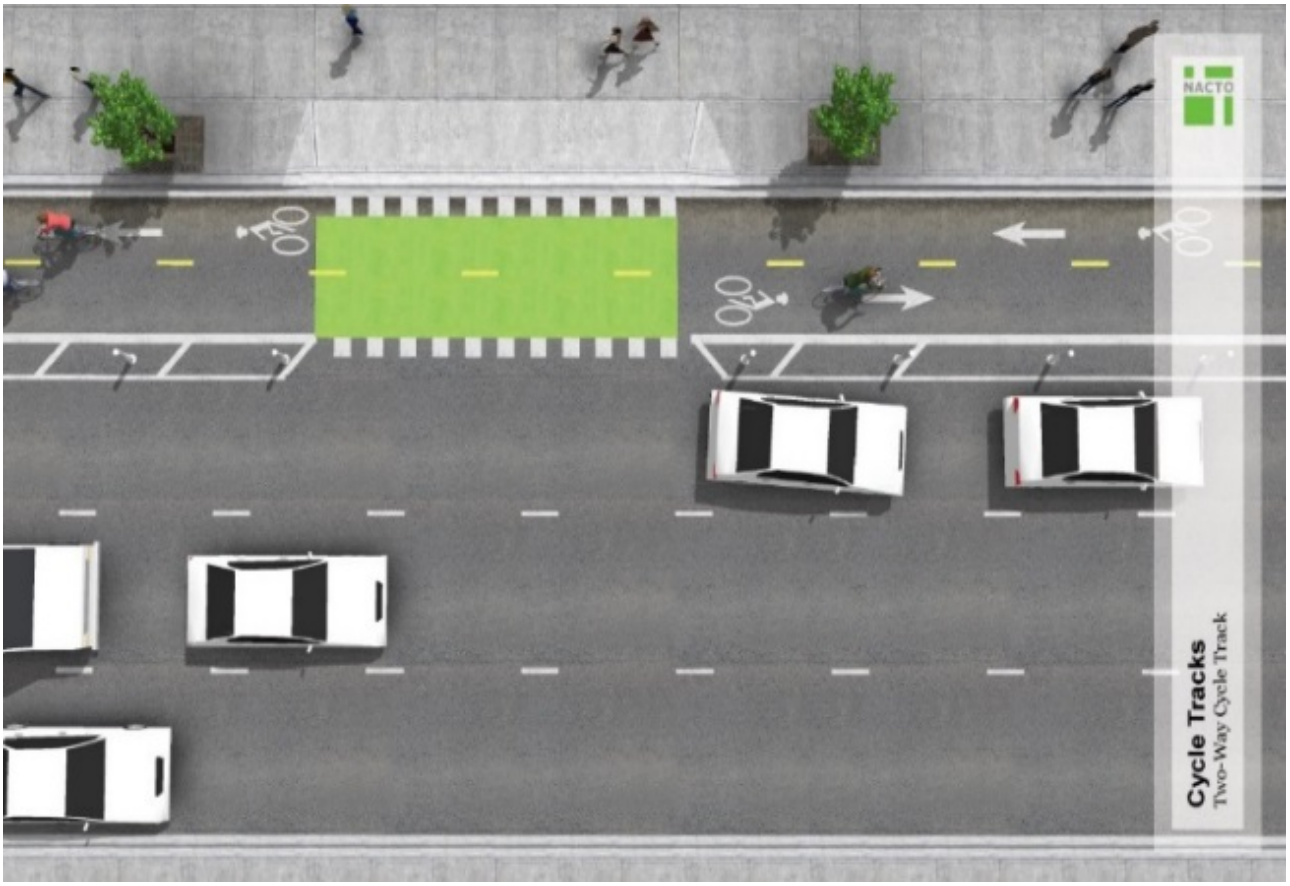
Sharrows: Class III bike routes can be enhanced with signage and on-street pavement markings which help reinforce that the travel lane is shared with motor vehicles and bicycles.

Bicycle Boulevard: Class III bike routes on local roads or residential streets designed to facilitate safe and convenient bicycle travel are called bicycle boulevards. Treatments area intended to increase motorists' awareness of bicycle activity through the use of traffic calming devices such as signs, pavement markings, and speed and volume management measures.

The City may implement proposed Class III bikeways as either a Sharrow or a Bicycle Boulevard, which will be determined on a case-by-case basis. Design guidelines for sharrows and bicycle boulevards are further described in Appendix G.

There are 1.28 miles of existing and 19.13 miles of planned Class III bike routes in the City. There are an additional 3.54 miles of interim Class III bikeways which are currently implemented on streets where Class II facilities are planned. Based on the current width of certain streets, there is insufficient room to install Class II bicycle lanes while maintaining he current vehicle lanes and maintain the existing medians and/or on- street parking. The ultimate plan is to install Class II Bike Lanes on these routes as opportunities arise.

Class IV: Cycle Track



http://nacto.org/publication/urban-bikeway-design-guide/cycle-tracks/two-way-cycle-tracks/

890.4(d) Class IV Cycle tracks or separated bikeways, also referred to as "Class IV bikeways", promote active transportation and provide a right-of-way designated exclusively for bicycle travel adjacent to a roadway and which are separated from vehicular traffic. Types of separation include, but are not limited to, grade separation, flexible posts, inflexible physical barriers, or on-street parking.

In situations where on-street parking is allowed, cycle tracks are located to the curb-side of the parking.[5] A two-way cycle track may be configured as a protected cycle track at street level with a parking lane or other barrier between the cycle track and the motor vehicle travel lane and/or as a raised cycle track to provide vertical separation from the adjacent motor vehicle lane.

Due to potential right-of-way impacts, the City is not proposing Class IV Cycle Tracks as part of this Plan. However, Cycle Tracks are not precluded and may be considered on a case-by-case basis.

5 http://nacto.org/cities-for-cycling/design-guide/cycle-tracks/

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Figure 6 – Bikeway Network (West)

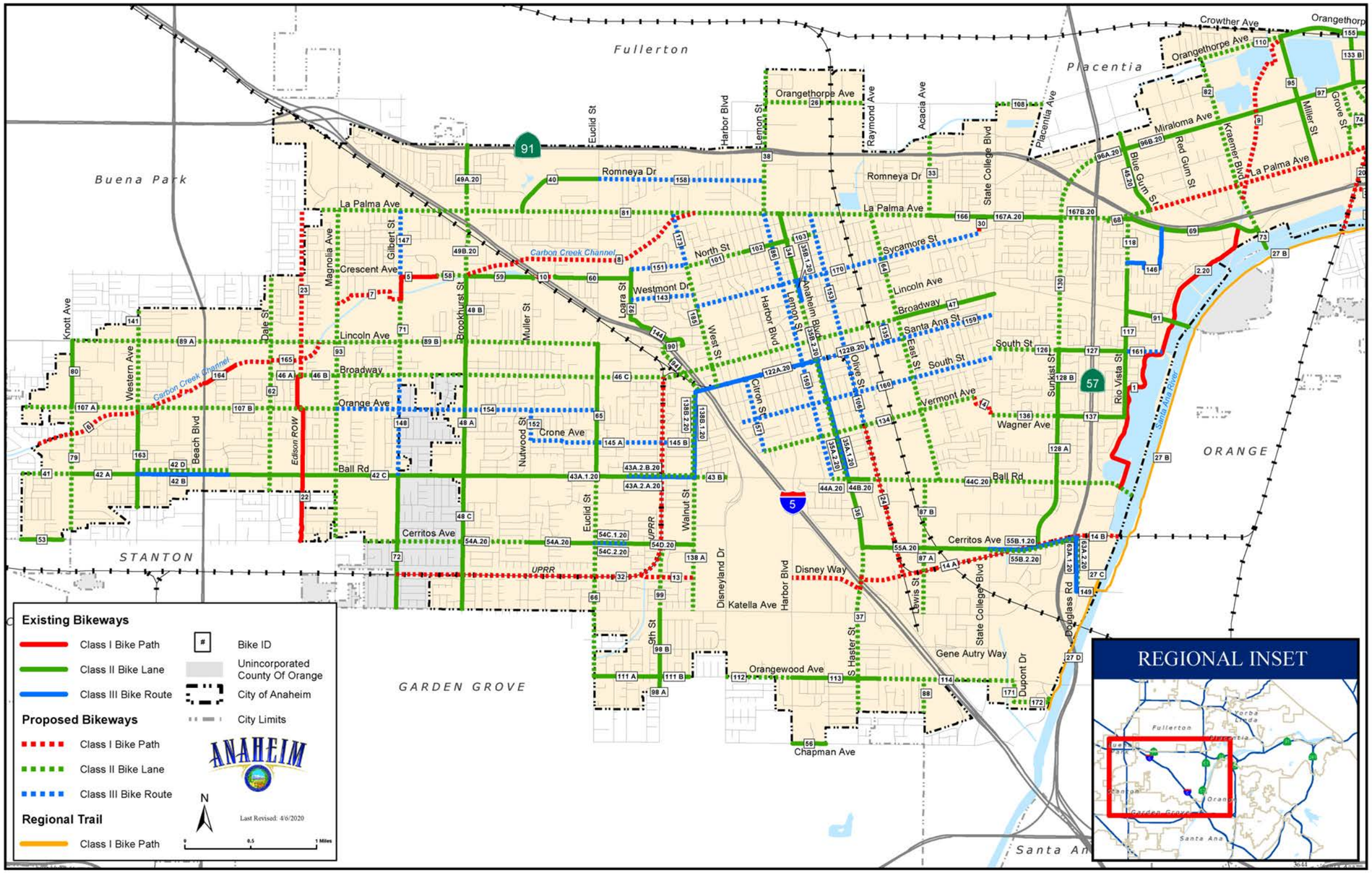

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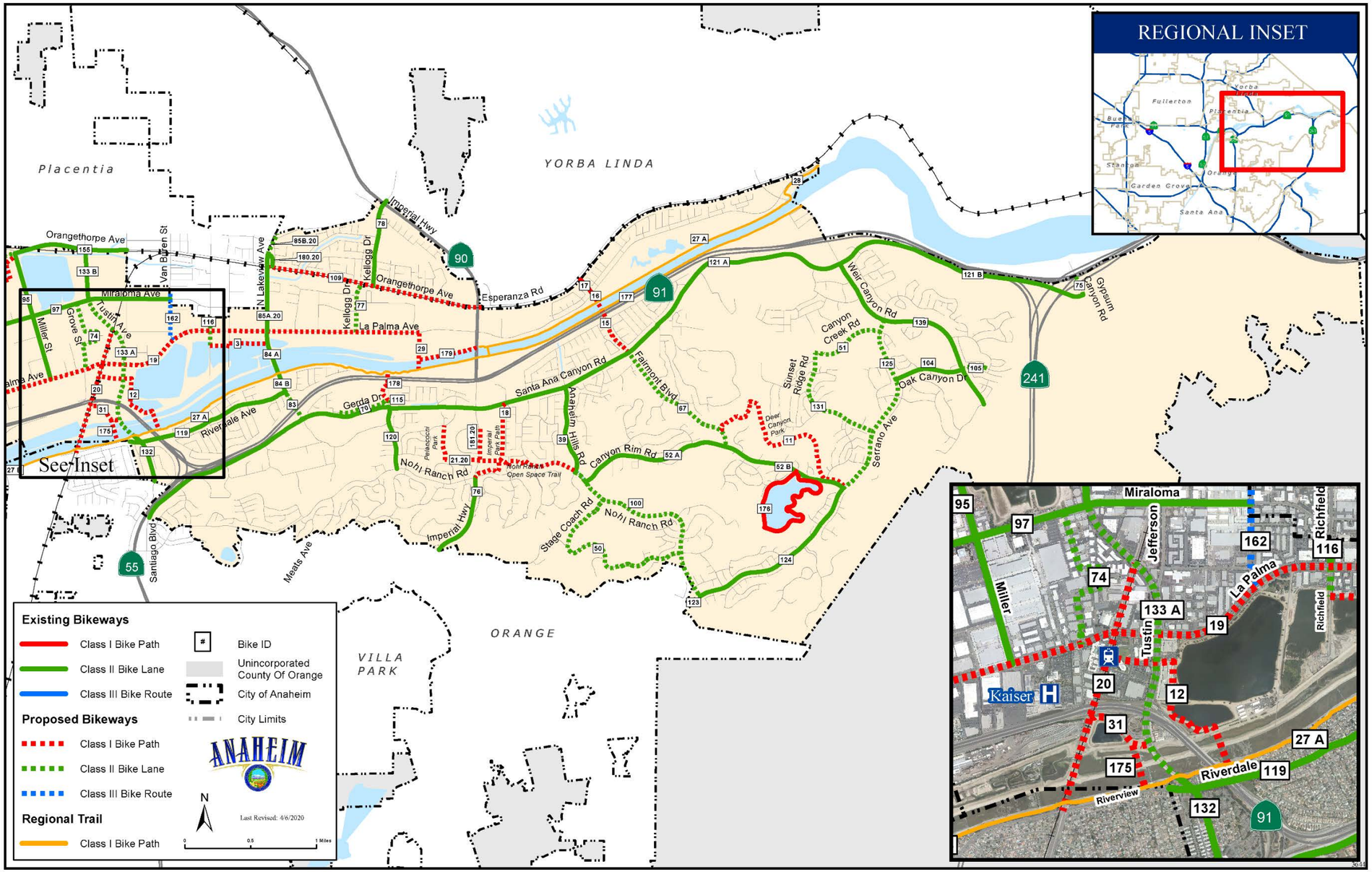
Figure 7 – Bikeway Network (East)



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3.3 Existing Bikeways

The City of Anaheim has approximately 69.96 miles of existing bikeways in the City. The bikeways network was inventoried with Geographic Information Systems (GIS) software, and an interactive map is available at www.anaheim.net/bike. 42.02 miles have been added to the City's network in the last 15 years as part of street rehabilitation, private development, and/or park and recreation facility projects and are detailed in Appendix B. The existing bikeways network is shown in Figure 8 – *Existing Bikeways (West)* and Figure 9 – *Existing Bikeways (East).*

It is important to note that bicycles are permitted on all roads in the State of California and in Anaheim (with the exception of access-controlled freeways). As such, Anaheim's entire street network is effectively the city's bikeway network, regardless of whether or not a bikeway stripe, stencil, or sign is present on a given street. The designation of certain roads as Class II or III bicycle facilities is not intended to imply that these are the only roadways intended for bicycle use, or that bicyclists should not be riding on other streets. Rather, the designation of a network of Class II and III on-street bikeways recognizes that certain roadways are optimal bicycle routes, for reasons such as directness or access to significant destinations, and allows the City of Anaheim to then focus resources on building out this primary network.

Additionally, existing bikeways built to their bikeway classification can be improved or upgraded. Existing Class II bicycle lanes can be upgraded to buffered bike lanes where there is sufficient room. Existing Class III bike routes could be upgraded to Class II bike lanes if needed. Also, Class II bike lanes could be rebuilt as Class IV cycle tracks where there is sufficient room and adequate spacing between driveways. Existing facilities should be reviewed as maintenance activities are performed or street improvement projects are planned and implemented.

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Figure 8 – Existing Bikeways (West)

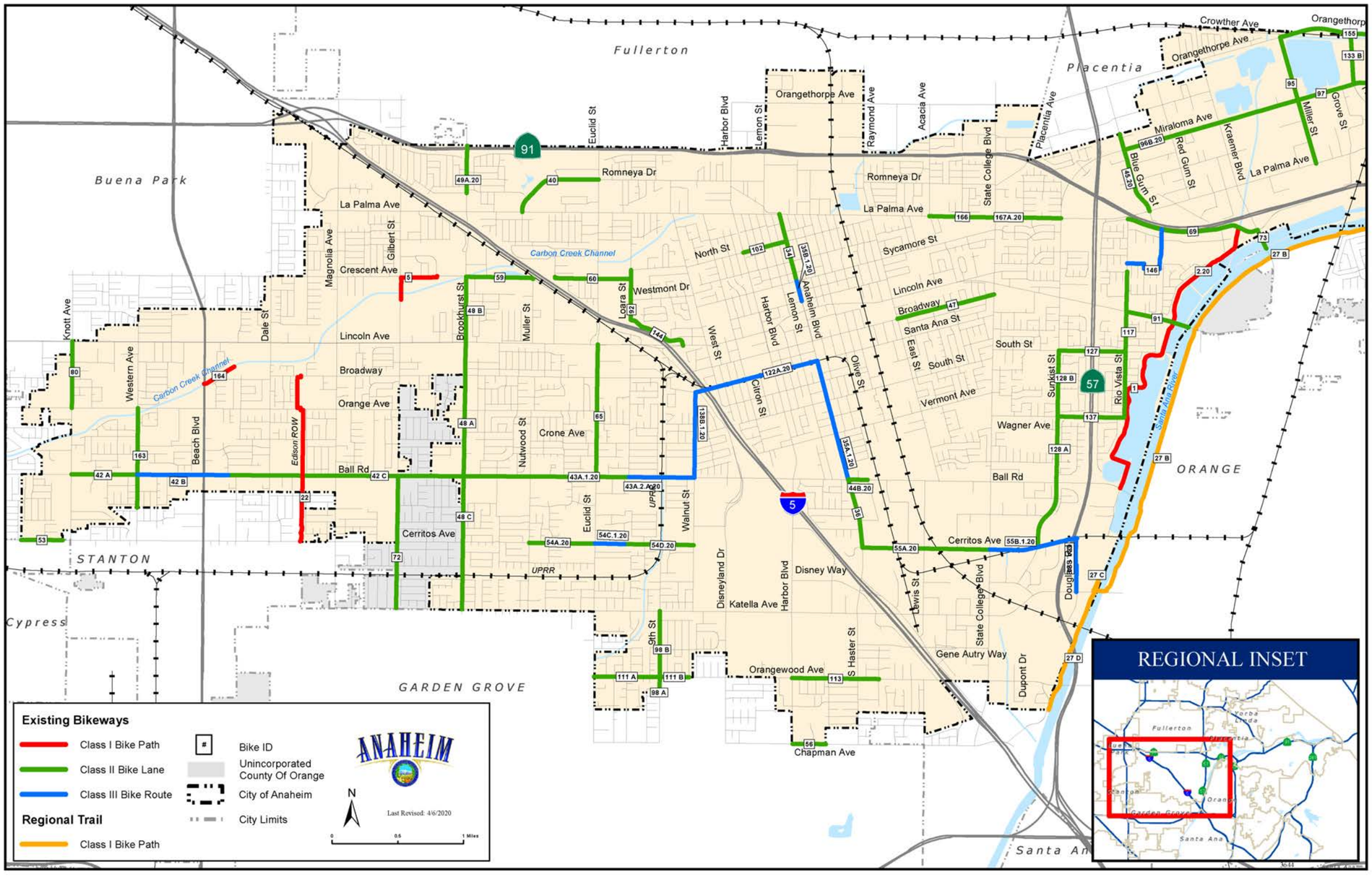

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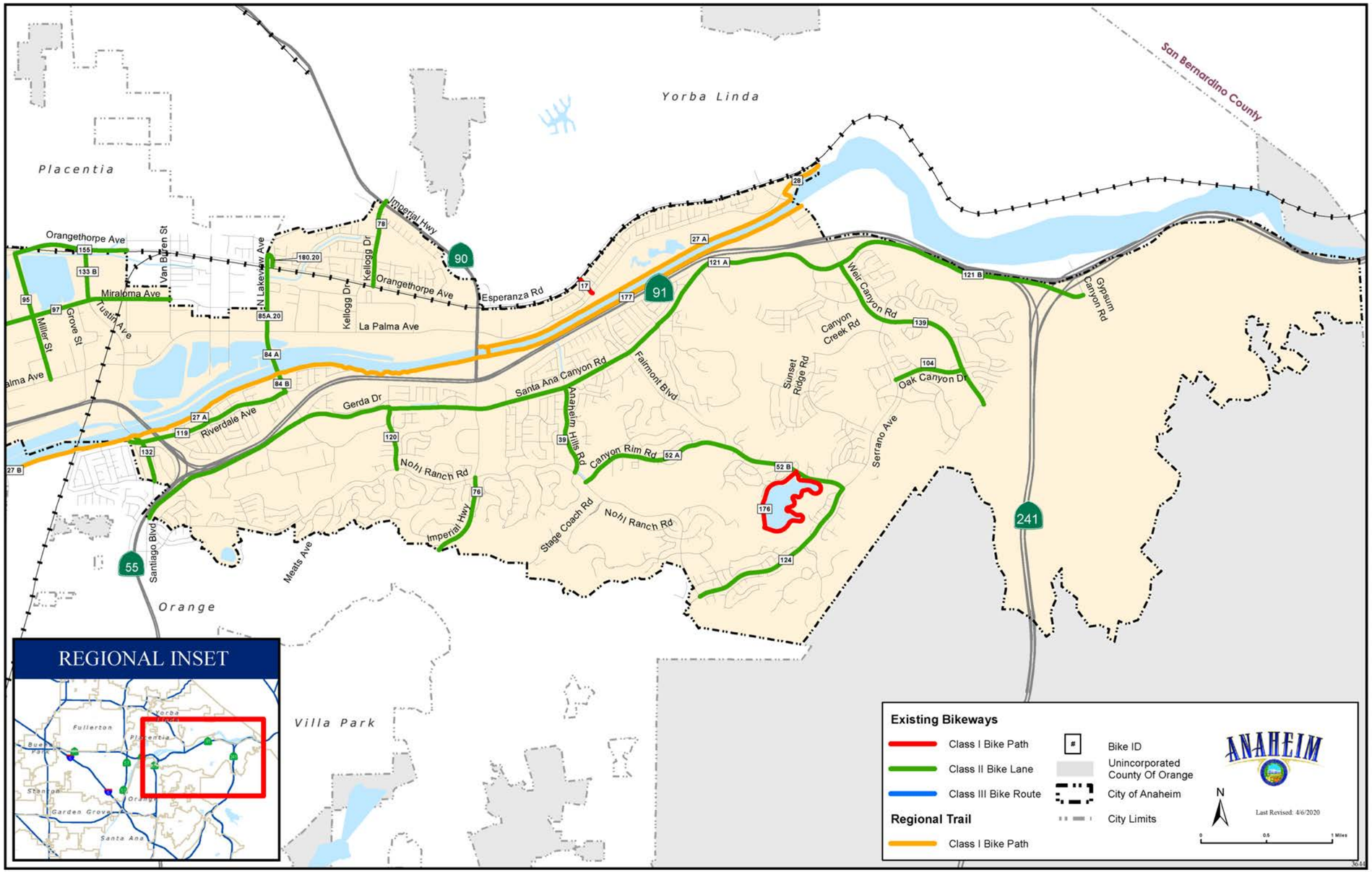
Figure 9 – Existing Bikeways (East)



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Santa Ana River Trail at ARTIC (Bike ID 27C)

Class I Bike Paths: The regional backbone of the bikeway network is the Class I Santa Ana River Trail (SART), which extends along the Santa Ana River from the ocean to the mountains in the Inland Empire. 8.79 miles of the SART are located in the City of Anaheim along the SR-91, from east of Yorba Linda Boulevard in the east to just west of Tustin Avenue in the west (Bike IDs 27A, 28, and 177). The trail crosses the City boundary into Orange and re-enters Anaheim near Katella Avenue (Bike ID 27C), where it connects to ARTIC, and then crosses back into the City of Orange.

The Class I side path on Fairmont Boulevard between La Palma Avenue and the Yorba Linda city limit (Bike ID 17) serves as a Class I connection to the OC Loop, a 66-mile continuous facility for bicycles and pedestrians that will link important existing regional facilities throughout the west and north portion of Orange County. The South Anaheim Coves Trail (Bike ID 1) was completed in 2011 as part of a 14 acre nature park on the west side of the Santa Ana River between Lincoln Avenue and Ball Road. Portions of the Carbon Creek Bike Path exist in the vicinity of Schweitzer Park (Bike ID 164) and Dad Miller Golf Course (Bike ID 5) in west Anaheim, as well as on the SoCal Edison ROW west of Magnolia Street (Bike ID 22). The Walnut Canyon Reservoir (Bike ID 176) is surrounded by a Class I bike path that serves as a recreational facility in the Anaheim Hills.

Class II Bike Lanes: There are 49.42 miles of existing Class II bike lanes in the City along segments of major and primary arterials such as Anaheim Boulevard (Bike IDs 34 and 36), Ball Road (Bike ID 42A and 42C), Brookhurst Street (Bike ID 48), Euclid Street (Bike ID 65), Imperial Highway (Bike ID 76), Orangethorpe Avenue (Bike ID 155), Santa Ana Canyon Road (Bike ID 121). 27.54 of these miles were implemented since 2004 as part of planned road widening and maintenance projects, which are detailed in Appendix B. Class II bike lanes may also be implemented as buffered bike lanes with a painted separation between vehicle and bicycle traffic, as right-of-way allows, as was done on Santa Ana Canyon Road between Festival Drive and Eucalyptus Drive (Bike ID 121A).

Santa Ana Canyon Road Buffered Bike Lane (Bike ID 121A)

Class III Bike Routes: There are two Class III bike routes in the City, which are located on Dutch and Park Vista Avenues from Rio Vista Street to Frontera Street (Bike ID 146) and a segment of Ball Road (Bike ID 42B). Bike ID 146 connects the Class II bike lanes on Rio Vista Street and Frontera Street, and serves Rio Vista Park and Elementary School, and the surrounding residential neighborhoods. Bike ID 42B is a Class III route that connects Class II Bike Lanes on Ball Road at either end. This route is proposed to be upgraded to a Class II bike lane to close this gap on Ball Road.

3.4 Bicycle Parking and End-of-Trip Facilities

Secure bicycle parking is a key factor in encouraging bicycle use for both long and short trips. Various forms of bicycle parking serve different users and types of trips. Bicycle parking is commonly located in visible and convenient areas at key destinations such as schools, commercial centers, parks, libraries, shopping centers, government buildings, office parks, tourist destinations, and multi-family housing.

Bicycle racks best serve destinations where users are expected to park for less than two hours, such as at retail centers and activity centers like parks, libraries, and other civic locations. Bike racks are typically installed in highly visible areas where users can use their own lock to secure the frame of the bicycle at two points to the rack. The City standard is a loop rack, however, bicycle racks can artistically reflect a design element of its location, such as the dog-shaped rack installation at the Olive Hills Dog Park.

Standard Bicycle Racks at the Festival

Artistic Bicycle Racks at Olive Hills Dog Park

Bicycle lockers serve users who are expected to park at a destination for more than two hours, such as transit centers, office parks and other employment centers, schools, and multi-family housing. Lockers should provide secure and weather protected storage for bicycles and their accessories. Bicycle lockers are provided at the Anaheim Canyon Metrolink Station, ARTIC, Anaheim City Hall, and Angel Stadium of Anaheim. Many employees prefer to park their bicycles inside the building, such as in their office or a nearby storage room, if space is available. Similarly, residents of multi-family housing may prefer to park in their units or garage/storage space.

Bicycle Lockers at ARTIC

The City does not have a complete inventory of bicycle parking currently in the City. However, bicycle parking is a mitigation measure for new development projects in the Platinum Triangle and The Anaheim Resort, and is required for new non-residential developments and schools subject to the Green Building Standards Code (CALGreen Code). On December 12, 2016, the Planning Commission recommended City Council approval of a comprehensive municipal code amendment for vehicle parking, which also addresses the provision of bicycle parking, especially for projects that cannot provide the required vehicle parking on-site. The code amendment includes an incentive program that allows developers to provide bicycle parking and other amenities in lieu of a vehicle parking space(s). The parking code amendment is anticipated to be considered by the City Council in March, 2017.

In addition to secure bicycle parking, amenities at a bicycle rider's destination, such as shower and locker facilities, contribute to the viability of bicycling as a commute option for local employees. There are locker facilities at ARTIC and Anaheim City Hall West Tower that are available for use by City of Anaheim employees. Several large employers in the City also provide shower and locker facilities for use by their employees who bicycle to work. Employees desiring to bicycle to work should check with their employer for facilities that may be available to them.

Figure 10 - *Probable and Proposed Bicycle Parking and End-Of-Trip Facilities,* shows the destinations most likely to provide bicycle parking, as well as proposed projects in the City that would be required to install bicycle parking as a required by the City.

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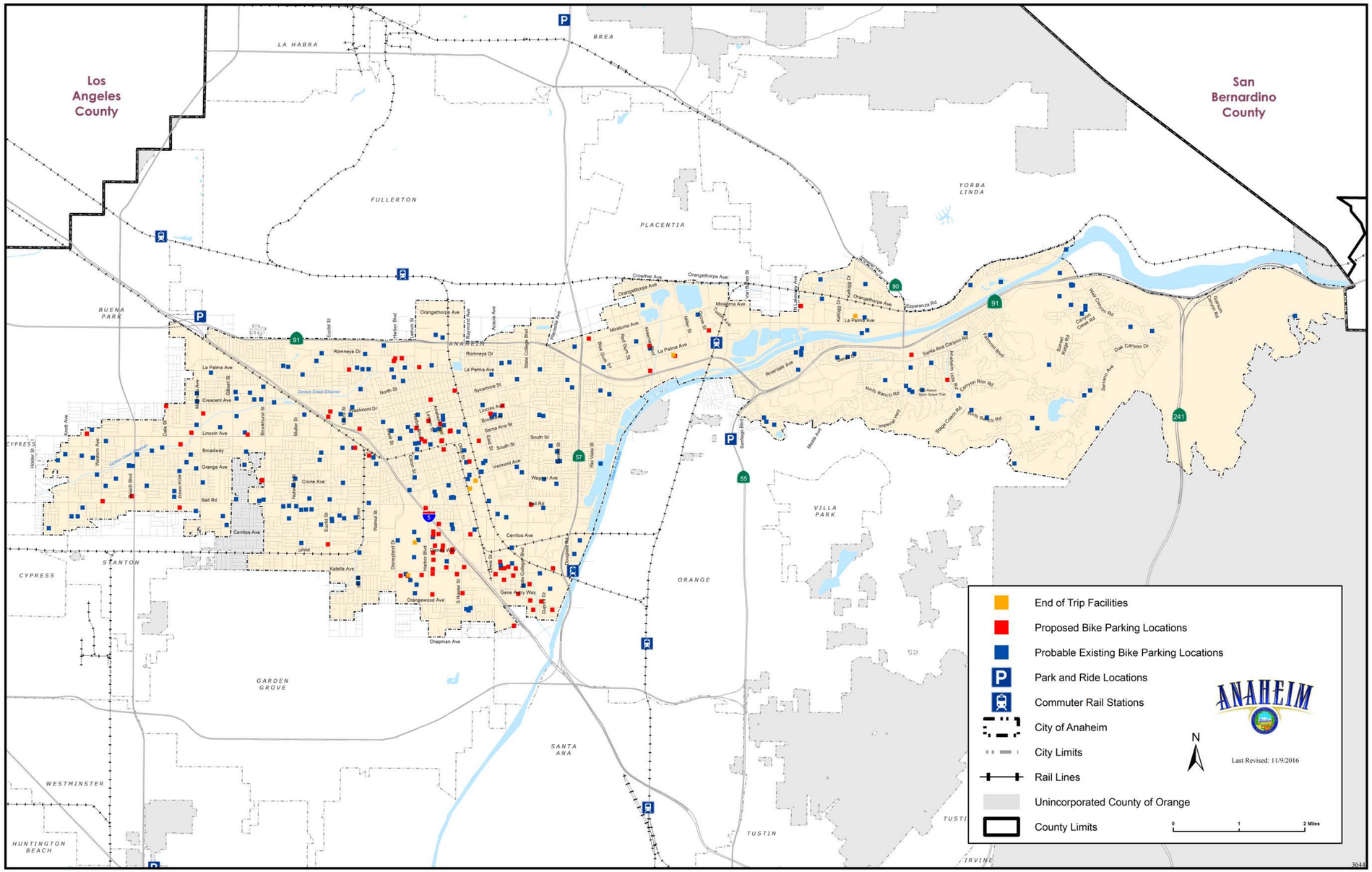
Figure 10 – Probable and Proposed Bicycle Parking and End-Of-Trip Facilities



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3.5 Multi-Modal Connections

Improving the bicycle-transit link to provide the "first mile/last mile" connection is an important part of making bicycling a part of daily life in Anaheim. Linking bicycles with mass transit (bus and commuter rail) overcomes such barriers as lengthy trips, personal security concerns, and riding at night, in poor weather, or up hills. Park-and-ride locations provide for intermodal travel by bicyclists to carpools and vanpools. Bicycle parking facilities at these locations facilitate links to ride-sharing activities. Additionally, by bicycling to transit instead of driving, communities benefit from reduced air pollution, greenhouse gases, demand for park-and-ride land, energy consumption, vehicle miles traveled, and traffic congestion. The inter-modal network for bicycles is shown in Figure 11 – *Multi-Modal Connections.*

Metrolink Bicycle Car at Anaheim Canyon Station

The Anaheim Canyon Metrolink Station is located near the intersection of Tustin Avenue and La Palma Avenue, just north of the SR-91. The Anaheim Canyon Metrolink Station serves commuter destinations in the Anaheim Canyon, which is an area of concentrated employment in the City. Bicycles are allowed on all Metrolink trains, on a space available basis, for up to three bicycles per car. Special bike cars are available on select trains, and have space to accommodate up to 18 bicycles on the lower level.

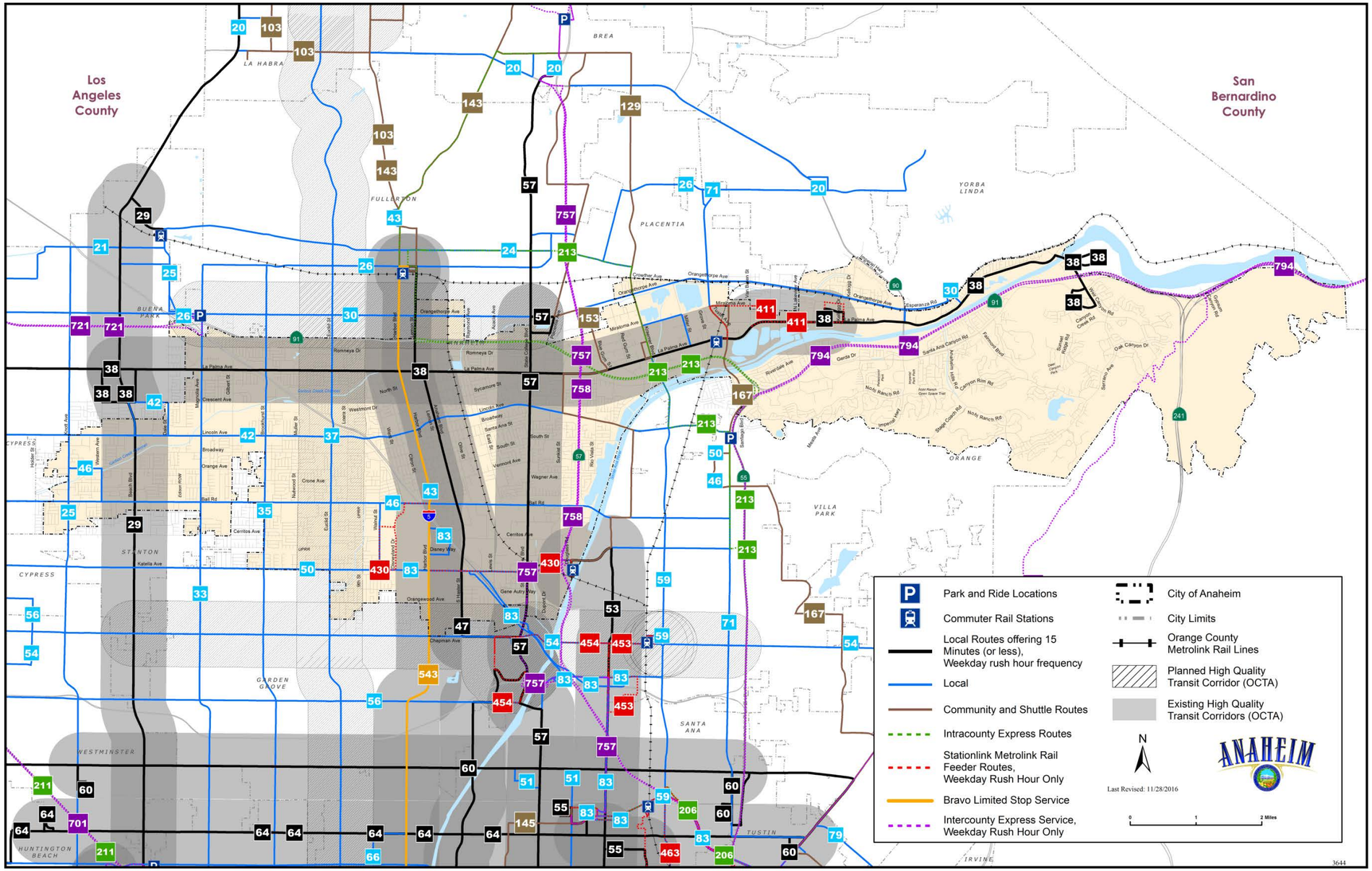
The ARTIC is located on Katella Avenue in the Platinum Triangle, and is near popular destinations such as Angel Stadium of Anaheim, Honda Center, the Disneyland Resort, and the Santa Ana River Trail. ARTIC is served by the SR-57 freeway, Amtrak, Metrolink, OCTA buses, Anaheim Resort Transit, Greyhound and other private bus operators, taxis, and short and long term parking for transit users. ARTIC has bicycle lockers and racks on-site to serve bicycle commuters connecting to the various modes serving ARTIC. Recreational riders have direct access to the Santa Ana River Trail. For example, organized groups of cyclists take rides to distant destinations, such as San Diego, and return to ARTIC on the Amtrak while their bicycles are driven back in a cargo truck.

Multi-Modal Connections at ARTIC

OCTA operates bus service in Anaheim and throughout Orange County with connections to neighboring counties. All buses are equipped with bicycle racks that can accommodate up to two bicycles on the front of the bus. Additional information about how to extend a bicycle trip by bus is available at www.octa.net.

A High Quality Transit Corridor (HQTC) is an existing corridor with fixed bus service at intervals of 15 minutes or less during peak commute hours. The current HQTCs in Anaheim are on Beach Boulevard, Harbor Boulevard, Anaheim Boulevard, State College Boulevard, and La Palma Avenue between the west city limits and Tustin Avenue. Typically, HQTCs serve areas with high pedestrian and bicycle demand. The Beach Boulevard, Harbor Boulevard, and State College Boulevard corridors also carry high volumes of vehicle traffic. For longer distance riders, parallel routes on slower streets are an alternative, however they are not feasible for short distance trips or to serve origins and destinations on the corridor. Therefore, HQTC transit service should be promoted as a link between bicycle facilities that connect to HQTC streets.

Figure 11 – Multi-Modal Connections



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3.6 Education, Awareness and Enforcement Programs

Bicycle education and awareness programs in the City include employer-based programs through the Anaheim Transportation Network, as well as those implemented by Anaheim Police and Anaheim Fire & Rescue through schools and various community events. Enforcement of bicycle related vehicle codes is provided by the Anaheim Police Department.

Employer Based Programs: Large employers (over 250 employees) in the City of Anaheim are subject to the Transportation Demand Management (TDM)[6] Chapter 14.60 of the City of Anaheim Municipal Code, as well as the South Coast Air Quality Management District's (SCAQMD) Rule 2202[7] *On-Road Motor Vehicle Mitigation Options*. Employers subject to these regulations have a menu of options to reduce mobile source emissions generated from employee commutes, designed to comply with federal and state Clean Air Act requirements, Health & Safety Code Section 40458, and Section 182(d)(1)(B) of the federal Clean Air Act. As of April, 2016, there are 28 large employers in the City subject to Rule 2202 and the TDM Ordinance, and nine of them participate in the Employee Commute Reduction Program (ECRP).

The Anaheim Transportation Network (ATN)[8] was created in 1995 as a local non-profit Transportation Management Association. ATN offers rideshare services to all employers and employees in Anaheim, including those subject to Rule 2202 and the TDM Ordinance. Employers in the City pay an annual fee to participate in ATN, which includes access to professional staff to help write and implement annual rideshare plans. About half of participating employers fully embrace bicycling and incorporate it into their programs, which include the annual Bike Week in May with community events featuring music, snacks, prizes, and raffles. ATN partners with the Orange County Bicycle Coalition to provide educational sessions to employers. ATN occasionally has resources to provide safety items to employees it serves, such as helmets and lights, or security items such as locks. Many employees prefer to keep their bicycles in their offices if space is available.

6 http://library.amlegal.com/nxt/gateway.dll/California/anaheim/title18zoning?f=templates$fn=default.htm$3.0$vid=amlegal:anaheim_ca$anc=

7 http://www.aqmd.gov/home/programs/business/business-detail?title=rule-2202-on-road-motor-vehicle-mitigation-options

8 http://rideart.org/rideshare/

Anaheim Fire & Rescue: The Anaheim Fire & Rescue Department's "Wear Your Helmet Like A Pro" program[9] is part of their mission to "ensure the safety and welfare of the public we serve". Similar to wearing a seat belt when driving in an automobile, wearing a helmet when riding a bicycle, scooter or skateboard is critical for one's safety and to help prevent a traumatic brain injury in the event of a collision. The program focuses on helmet safety education for children ages five to 14, working closely with the seven school districts and non-profit organizations serving Anaheim. As of June 2016, the agency has provided approximately 4,500 safety helmets to Anaheim youth. Helmets are also available at each of the City's 11 fire stations.

Anaheim Fire and Rescue – Wear Your Helmet Like A Pro Poster

9 http://www.anaheim.net/1924/Wear-Your-Helmet-Like-A-Pro

Anaheim Police Department: The Anaheim Police Department Traffic Bureau - Traffic Safety Program conducts an educational program in partnership with the City's Community Services and Public Works Divisions, and in cooperation with seven school districts and a non-profit partner Coast to Coast. The goal of the Traffic Safety Program is to reduce serious injury and fatal traffic collisions through traffic safety and awareness. The program emphasizes bicycle, pedestrian, and automobile safety to help members of the community of all ages to safely navigate throughout the City. The educational program is presented in five basic traffic safety modules with age appropriate curriculum for the following audiences: Kindergarten-6th Grade, Junior High School, High School, Adults and Seniors, and Homeless Outreach. The Traffic Safety Program is often presented at schools, neighborhood or community events, Coffee with a Cop, and PTA meetings. The Traffic Safety Program was launched in January, 2015 and has been presented at 76 locations and reached 28,745 students and 1,853 adults in its first two years. The program is partially funded through a grant from the Office of Traffic Safety.

Anaheim Police Department – Traffic Safety Program

In August, 2016, the Anaheim Police Department launched a voluntary bicycle registration program as part of National Night Out. The goal of the program is to help the citizens of Anaheim record their bicycle information so that it is easily available in the event of a bicycle theft and a police report is generated. There is no cost to the bicycle owner to register their bicycle, which can be done at any local police station. Since its inception, 32 bicycles have been voluntarily registered in the City. Table 2 below presents a summary of bicycle thefts reported since 2013.

Table 2 – Reported Bicycle Thefts in Anaheim

Year	Number of Thefts Reported
2013	438
2014	339
2015	456
2016	387

In 2016, the City Council approved the State of California - Office of Traffic Safety S.T.E.P. Grant that includes $86,260 to purchase bicycle helmets. The Anaheim Police Department has partnered with the Anaheim Fire Department's Wear a Helmet Like a Pro campaign, described above, to also distribute helmets at traffic safety presentations.

In addition to providing educational and safety resources to Anaheim residents, the Anaheim Police Department enforces the California Vehicle Code, including violations involving bicyclists. Common bicycle related violations and their corresponding fines and violations issued in the City are included in Table 3 below.

Table 3 – Bicycle Related Vehicle Code Sections

Vehicle Code Section	Description	Fine
21208(a)	Riding outside of a bicycle lane	$197
21650.1	Bicycle riding the wrong way	$197
21760(b)	Passing a bicycle less than 3 feet away	$238
21200.5	Riding a bicycle under the influence of alcohol or drugs	$690
21201(d)	Safety equipment while riding in the dark	$197
21212(a)	Helmets required for persons under 18 years of age	$197

The Anaheim Police Department and the Anaheim Fire & Rescue respond to collisions involving bicyclists. The Anaheim Police Department has reported the following data for collisions and citations issued, as shown in Table 4.

Table 4 – Collisions and Citations Issued in Anaheim

Year	# of Collisions with Bicyclists	# Citations Issued
2013	224	85
2014	220	180
2015	181	150
2016	168	123

The City has experienced a trend of a reduced number of collisions involving bicyclists annually in the last four years reported. Citations more than doubled from 2013-2014, indicating an increased level of enforcement of bicycle violations. Additionally, both collisions and citations decreased when Traffic Safety Program was introduced in 2015.

Safe Routes to Schools: The Safe Routes to School (SRTS) program is a national and international movement to engage community members to improve the walkability and bike-ability to and from schools for children. SRTS involves parents, teachers, students, local agencies, public health agencies, law enforcement, engineering professionals, and the public to reach a comprehensive and integrated solution for improved street safety.

Prior to 2013, State and Federal funding grants were available to implement infrastructure projects to improve routes to schools. After the passage of the Moving Ahead for Progress in the 21st Century Act (MAP-21) in 2012, SRTS projects were eligible for grant applications through various sources at the Federal level, and through the Active Transportation Program (ATP) at the State level. A list of projects implemented in the City of Anaheim through these programs is provided in Section 6.3 (Past Expenditures on the Bikeway Network).

Community engagement for programs like the SRTS Program has also been conducted in Anaheim. In 2015, the Orange County Health Care Agency SRTS Program worked with students at Anaheim High School and Benjamin Franklin Elementary School to conduct walkability audits and collect data on the accessibility and safety of routes to school. As part of the program, the students reviewed their findings to identity areas that could be improved and suggested potential solutions. The students also organized an interactive presentation with the City, giving the students an opportunity to engage directly with representatives from the City's Public Works Department and Code Enforcement staff and the respective School Boards, to understand the opportunities and constraints for making changes. As a result of this effort, changes were implemented to improve the safety of routes to school as follows:

- Anaheim High School – Student surveys and the Walkability Audit conducted in April 2015 identified a number of observations including the condition of sidewalks, speed of traffic and that it was not always easy to cross streets on the route to school. Students advocated for a crosswalk and stop sign installation at North Citron Street and West Cypress Street to slow traffic and improve safety. The City subsequently conducted a traffic study and installed a crosswalk and stop sign at that intersection.

- Benjamin Franklin Elementary School – Student surveys and the Walkability Audit conducted in November 2015 identified a number of observations including the condition of sidewalks, areas where it was not easy to cross streets and speed of traffic on the route to school. The City subsequently prepared a signage and striping plan and implemented improvements to slow traffic around the school.

Changes made surrounding Anaheim High School – Safe Routes to School Anaheim High Report.

In addition, in 2016, the Alliance for a Healthy Orange County (AHOC) launched an Active Transportation Leadership Program that was funded through grant from the Centers for Disease Control and Prevention and the California Endowment. The purpose of this program was to engage students at Anaheim High School on a better understanding of the local, regional, and statewide active transportation policies. A series of workshops were held to educate how students could get involved in their community from the Active Transportation standpoint.

3.7 Constraints and Opportunities

There are several factors that present both constraints and opportunities that influence the implementation of bicycle facilities in the City, including topography, freeways, the Santa Ana River Trail, condition of the circulation network, funding availability, and competition between street uses (vehicular, bicycle, pedestrian, and parking).

Topography: The City's topography presents both constraints and opportunities for bicyclists. The majority of the City west of the Santa Ana River, and east of the SR-57 freeway and north of Santa Ana Canyon Road, is relatively flat, which is ideal for cyclists of all levels. In the Anaheim Hills area south of Santa Ana Canyon Road and east of the SR-55 freeway, the topography is hilly, which can be a hindrance to commuting and recreational cyclists, but a welcomed challenge for enthusiasts.

Freeways: Anaheim is intersected by several freeways. The limited crossing points and increased traffic at freeway interchanges serve as major constraints. I-5 and SR-57 have several crossings without interchanges that are opportunities to cross the freeways, such as at Santa Ana Street, Broadway, Crescent Avenue, and La Palma Avenue on the I-5, and Cerritos Avenue, Wagner Avenue, South Street, and La Palma Avenue on the SR-57. To the west of the SR-55, there are limited areas to cross the SR-91 freeway without also traversing an interchange on a major arterial. Four opportunities have been identified in coordination with the City of Fullerton, two of which traverse interchanges: Brookhurst Street, Lemon Street, Acacia Avenue, and Sunkist Street. To the east of the SR-55, bikeways not only need to cross the SR-91, but also the Santa Ana River. There are several proposed projects that will help to serve this north/south connection, such as the options to connect the Anaheim Canyon Metrolink Station with the Santa Ana River Trail (Bike IDs 20, 31, and /or 75), and proposed crossings at Tustin Avenue (Bike IDs 12 and 133A), the Santa Ana River west of Imperial Highway (Bike ID 29), Peralta Canyon Park (Bike ID 178), and at Fairmont Boulevard (Bike ID 15).

Santa Ana River Trail: The Santa Ana River Trail is a regional asset for recreational and commuter bicyclists in the City, as one can ride the trail from the mountains to the ocean. The trail also directly connects to the ARTIC, which provides intermodal connections to destinations in Anaheim, across the state of California, and beyond. While the trail along the river is an opportunity, accessing the river trail from adjacent neighborhoods and crossing the river are both constraints. There are several proposed projects that will address this issue, such as proposed crossings at Tustin Avenue (Bike IDs 133 and 12), west of Imperial Highway (Bike ID 29), and at Fairmont Boulevard (Bike ID 15). There are also several jurisdictions that must coordinate on projects along the Santa Ana River Trail, such as the cities of Yorba Linda and Orange, the Orange County Flood Control District, Orange County Water District, and the County of Orange. The proposed connection to Anaheim Canyon Metrolink station across the SR-91/SR-55 and Santa Ana River that will serve different types of users (i.e. recreational, commuter to the train, commuter on the bike system) is very complex and costly. The City is pursuing grant funding to implement the most feasible of the options in this area (Bike IDs 20, 31, and /or 75).

Grid Street System in the West/Central Areas: The existing grid system prevalent in central and west Anaheim present opportunities to expand the current bikeway system. Some areas of the city have several bikeway facilities and others have very few. Generally, older sections of the city have less bikeway infrastructure than newer areas. One reason for the lack of facilities in older areas of the city is the narrow curb-to-curb street widths that would require re-engineering to include bike lanes or to provide adequate room for bicycles in a wide curb lane. There are several existing bikeways where a travel lane was removed to provide bicycle facilities on low volume streets, such as on Gilbert Street (Bike ID 72). The Plan does not recommend the removal of travel lanes, but individual corridors can be evaluated for specific scenarios on a case-by-case basis as discussed below in the Vehicle Travel Lanes section. Many streets in these areas have on-street parking, which can be an obstacle to the implementation of bikeways, as discussed in the Vehicle Parking section below. The proposed on-street bikeway network is constrained to the General Plan build-out of the City's circulation network.

State College Boulevard: Between La Palma Avenue to the north and Ball Road to the south, the grid street system shifts directions at State College Boulevard between the original Anaheim Colony area and the neighborhoods to the east. Therefore, east/west streets are staggered as they cross State College Boulevard, making direct connections on these streets difficult. Proposed east/west connections across State College Boulevard exist at Sycamore Street (Bike IDs 170 and 30), South Street (Bike IDs 160 and 126) and Vermont Avenue (Bike ID 134) and Wagner Avenue (Bike ID 136) via a Class I connection through Boysen Park (Bike ID 4). Segments on Broadway Avenue (Bike ID 47) and Santa Ana Street (Bike ID 159) both end at State College Boulevard because direct east/west connections would require the use of privately owned property. State College Boulevard itself is a heavily utilized north/south vehicle route as an alternative to the SR-57 during heavy congestion. As a High Quality Transit Corridor, extended north/south trips could be encouraged to use transit or use lower volume parallel routes like Sunkist Street (Bike IDs 128 and 130) or East Street (Bike ID 64).

Funding Availability: Limited financial resources to implement the proposed bikeway network is a universal challenge. By adopting the Plan, the City will be eligible to compete for various regional, state, and federal grant funds with which to implement proposed bikeways. While the Plan identifies a priority ranking for the proposed projects, they may be implemented in any order as the parameters for certain grants are usually specific and only apply to a handful of projects. Additionally, while the priority ranking combines several segments into a corridor, any segment within that corridor can be implemented independently of the others. Funding for an entire corridor doesn't need to be secured in order to implement any part of the corridor.

Street Improvement Projects and Roadway Maintenance: By identifying the proposed bikeway network, especially Class II bike lanes, the City can more readily coordinate the implementation or improvement of bike lanes in conjunction with routine street and/or underground utility maintenance. Improvement of bike lanes includes widening of bike lanes and/or buffered bike lanes. Many of the bikeways that have been implemented in the City since 2004 were done as part of pavement projects, which result in a relatively low implementation cost. Additionally, some bikeways may be implemented or improved as part of private development projects that may require improvements to adjacent streets.

Vehicle Travel Lanes: The Plan does not propose to remove any vehicle travel lanes in favor of bicycle lanes. However, lane reconfiguration, also referred to as a "road diet"[10] may be an option in specific locations in which the street is carrying less volume than for which it was designed. Examples of successful implementation of a "road diet" in the City are on Broadway from East Street to State College Boulevard (Bike ID 47) and on Miller Street between La Palma Avenue and Orangethorpe Avenue (Bike ID 95). Any project for which a vehicle lane would be removed will be subject to further feasibility studies, traffic impact analysis, public outreach, and environmental review, and are not included in the scope of the Plan. Such a study was done for the road diet that was implemented on Miller Street (Bike ID 95), as discussed on page 27.

The width of the median and/or vehicle travel lanes could also be reduced in order to allow for bike lanes within existing right of way. Lane narrowing utilizes roadway space that exceeds minimum standards to provide the needed space for bike lanes. Many roadways have existing travel lanes that are wider than those prescribed in City standards. For most streets, City standards allow for the use of 11 foot lanes. Industry standards allow for the use of 10 foot lanes as needed. Special consideration should be given to the amount of heavy vehicle traffic and horizontal curvature before 10 foot wide travel lanes are installed to create space for bike lanes. Center turn lanes can also be narrowed in some situations to free up pavement space for bike lanes.

Vehicle Parking: There are several areas in the City that have limited on-street parking capacity in relation to surrounding land uses. There are many residential permit parking areas in the City. The removal of on-street parking in favor of bicycle lanes could negatively impact permit parking neighborhoods immediately adjacent to proposed bike lanes. This was a factor in the prioritization process, with segments that required the removal of on-street parking scoring lower than those that do not. Any bikeways that would require the removal of on-street parking would require further outreach to the surrounding community.

When developments are not able to accommodate their code required vehicle parking on-site, they may request a variance from the Planning Commission. On December 12, 2016, the Planning Commission recommended City Council approval of a comprehensive municipal code amendment for vehicle parking, which also addresses the provision of bicycle parking, especially for projects that cannot provide the required vehicle parking on-site. The code amendment includes an incentive program that allows developers to provide bicycle parking and other amenities in lieu of a vehicle parking space(s). The parking code amendment is anticipated to be considered by the City Council in March, 2017.

Areas for Future Study: The scope of the Plan is limited to updating the existing condition and proposing bikeways that do not require the removal of vehicle travel lanes. Staff has identified areas for future study that focus on specific geographic areas or types of bikeways facilities that may have additional impacts to the Planned Roadway Network in the Circulation Element of the General Plan. These areas for future study include The Anaheim Resort and Platinum Triangle, road diets, Class III Bicycle Boulevards, Class IV Cycle Tracks, off-road/unpaved riding and hiking trails, and a comprehensive Active Transportation Plan that includes pedestrian facilities. Additionally, the General Plan Amendment to reflect the Plan will require amendments to the Anaheim Canyon Specific Plan, Platinum Triangle Specific Plan, and Anaheim Resort Specific Plan in order to bring them into consistency with the General Plan, including the development of

10 http://safety.fhwa.dot.gov/road_diets/info_guide/rdig.pdf

street typical cross-sections, as required by State law. These amendments will follow the adoption of the Plan.

Most areas of the city could benefit from an increase in bikeway mileage, and there are numerous gaps in the existing system. Although there are significant amounts of bicycle facilities in Anaheim, more is needed in underserved areas and where there are obvious gaps in the network. Recommendations in this Plan address bicycle facility gap issues.

3.8 Coordination with Other Plans and Programs

The Plan was prepared in coordination with several other local and regional bikeways planning efforts. The project team researched other planning documents to determine what bikeways have been planned that will link to Anaheim. Where overlapping plans exist, the most recent documents were used where there were inconsistencies in planned facilities. The Plan was developed in coordination with the following plans and programs:

2004 Bicycle Master Plan

The Plan supersedes the 2004 Anaheim Bicycle Master Plan. Amendments to the Anaheim General Plan Circulation, Economic Development, Community Design, and Green Elements will be reviewed for approval by City Council concurrent with is review of the Plan, as described in detail in Appendix B.

Green Element

The Plan incorporates Goals and Policies of the Green Element of the City's General Plan to protect and enhance natural and recreational resources. For example, the Plan proposes connections to enhance access to the Santa Ana River Trail as called for in the Green Element. It also utilizes other rights-of-way to create new trails. The Green Element strives to reduce commute trips in single-occupant vehicles. Implementation of the Plan will provide options for more people to commute by bicycle. It will also enhance recreational opportunities will more attractive options for bicycling as well as expand access to parks. Lastly, the Plan will increase the number of trails and access to existing trails. The Plan also proposes General Plan Amendments that reinforce the integration of bicycle facilities into development in the City.

2009 OCTA Commuter Bikeways Strategic Plan

The 2009 OCTA Commuter Bikeways Strategic Plan (CBSP)[11] is a compilation of bikeway projects planned by Orange County Cities and the County of Orange. OCTA plans to update the CBSP beginning in early 2017. Assuming the Plan is adopted by the City Council before OCTA completes the update to the CBSP, bikeways identified in the Plan will be incorporated into the OCTA updated CBSP for Anaheim.

Neighboring Local Jurisdictions

Neighboring Local Jurisdictions were researched regarding the status of their bike master plans and routes on connecting streets. In the event a City does not have a specific Bicycle Master Plan, its General Plan Circulation Element will reflect its bikeway network. A city without a Bicycle Master Plan may use the OCTA CBSP to apply for funding for bicycle facilities. Table 5 - Bikeway Connections with Neighboring Jurisdictions summarizes bikeway connections between Anaheim and surrounding jurisdictions.

> *Buena Park* – The City of Buena Park does not have a Bicycle Master Plan. Segments connecting to Anaheim were identified as part of the Fourth District Bikeways Strategy[12], such as the extension of the Class 1 bike path on the SoCal Edison ROW (Bike ID 23), and connections across Buena Park between Cypress and Anaheim on Orange Avenue (Bike ID 107), Ball Road (Bike ID 41), and the Carbon Creek Channel (Bike ID 6).
> *Cypress* – The City of Cypress does not have a Bicycle Master Plan. A Class II bike lane (Bike ID 53) exists on Cerritos Avenue, where the boundary of Anaheim and Cypress is in the center of the

11 http://www.octa.net/pdf/bikeways09.pdf
12 http://octa.net/pdf/4thDistrictBikewaysReport.pdf

street. However, the City of Anaheim maintains both sides of the street. The bike lane continues west into Cypress past the City limit, which is maintained by Cypress.

Fullerton – The City of Fullerton completed its Bicycle Master Plan in 2011, which was adopted as part of its General Plan update. Connections are made on Brookhurst Street (Bike ID 49 1.20 and 49 B.20), Lemon Street (Bike ID 38), Acacia Avenue (Bike ID 33), and Orangethorpe Avenue (Bike IDs 26 and 108). These segments are bicycle connections that are also identified in the Fourth District Bikeways Strategy.

Garden Grove – The City of Garden Grove released their Active Streets Master Plan in June 2016. The cities of Anaheim and Garden Grove have a reciprocal agreement for Anaheim to maintain the bikeway on both sides of Chapman Avenue (Bike ID 56). Connections exist on Ninth Street (Bike ID 98), Brookhurst Street (Bike ID 48), Anaheim Boulevard/Haster Street (Bike ID 37), and Euclid Street (Bike ID 66). A segment of Orangewood Avenue is within Garden Grove and connects to Bike ID 111B in the west and Bike ID 112 to the east.

Orange – The City of Orange most recently updated their Bicycle Master Plan in 2001. There are several existing and proposed bikeway connections with Anaheim, including all crossings of the Santa Ana River: East-West SoCal Edison right-of-way/Union Pacific Railroad right-of-way (Bike ID 14B); Ball Road (Bike IDs 44 A.20, 44 B.20 and 44 C.20); Lincoln Avenue (Bike ID 91); Glassell Street (Bike ID 73); and the Metrolink Side Trail (Bike ID 20). Street connections include Tustin Avenue (Bike ID 132), Orangewood Avenue (Bike ID 114); Lewis Street (Bike ID 88), Santa Ana Canyon Road (Bike ID 121A), Serrano Avenue (Bike ID 123), and Imperial Highway/Cannon Street (Bike ID 76).

Placentia – The City of Placentia does not have a Bicycle Master Plan, but does have a bikeways path map. The City is in the process of updating their General Plan, which will address the bikeways network. Connections are made on Lakeview Avenue (Bike IDs 85 A.20 and 85 B.20), Orangethorpe Avenue (Bike IDs 108, 110, and 155), Blue Gum Street (Bike ID 45), Tustin Avenue (Bike ID 133), Van Buren Street (Bike ID 162), and Richfield Road (Bike ID 116). Several of these segments are shared jurisdiction where the cities coordinate on street maintenance.

Stanton – The City of Stanton does not have a Bicycle Master Plan. Anaheim coordinated with Stanton to complete the Anaheim portion of the SoCal Edison ROW (Bike ID 22). Existing and proposed Class II bike lanes connections to Stanton include: Cerritos Avenue (Bike IDs 54 A.20, 54 B.20, 54 C.1.20, 54 C.2.20 and 54 D.20); Magnolia Street (Bike ID 93); Dale Street (Bike ID 62); Western Avenue (Bike ID 163); and Knott Avenue (Bike ID 79). Anaheim will also coordinate with Stanton on the implementation of the proposed Class I bike path on the Union Pacific Railroad ROW (Bike ID 32).

Yorba Linda – The City of Yorba Linda does not have a Bicycle Master Plan, but does have a bikeways map. Connections are made on Lakeview Avenue (Bike IDs 85 A.20 and 85 B.20), Orangethorpe Avenue (Bike ID 109), Kellogg Drive (Bike ID 78), Fairmont Boulevard (Bike ID 17), Gypsum Canyon Road (Bike ID 75), and the Santa Ana River Trail (Bike ID 28).

County of Orange – The County of Orange uses the Major Riding and Hiking Trails and Off-Road Paved Bikeways to guide the development of trails and bikeways in the County. The County maintains the Santa Ana River Trail, of which over 10 miles are located in Anaheim. Anaheim regularly coordinates with the County in relation to the Santa Ana Regional Bike Trail, including the proposed project to improve the trail through Yorba Linda to the Riverside County Line[13] and with proposed projects connecting to the Anaheim Canyon Metrolink Station and Anaheim Coves. The City also coordinates with the County regarding bicycle facilities in the unincorporated areas in West Anaheim, such as the recently constructed Class II bikeway on Gilbert Street from the south city limits to Ball Road (Bike ID 72), and sections of the Class II bikeways on Ball Road (Bike ID 42), and Brookhurst Street (Bike ID 48C).

Orange County Water District – Anaheim regularly coordinates with the Orange County Water District regarding bikeways that affect their jurisdiction along the Santa Ana River Trail.

Anaheim Coves and North Extension – In an effort to expand the City of Anaheim's natural, transportation and recreational resources for the community, the City has been working to enter into a partnership with three public agencies that own the land north of Lincoln Avenue for the purpose of extending Anaheim Coves. This project was identified as a key opportunity in the Anaheim Outdoors Connectivity Plan. The project scope of work includes developing 14 acres of native landscape and constructing a 0.9 miles of a Class I, 10-foot-wide paved bicycle trail by using a porous asphalt paving, constructing a sub-base aggregate and concrete curb at porous asphalt; two-way striping; installing a bike rack; distance markers; benches; trash receptacles; recycle containers; pet waste dispensers; appropriate safety signage; two-cable guardrail at Carbon Canyon Channel; and a drinking fountain at Frontera Street. The project will span from Lincoln Avenue to Frontera Street along the west side of the Santa Ana River. Based on the sense of shared support for the project by the parties, the City has received authorization from the Orange County Water District (OCWD), Orange County Flood Control District (OCFCD) and Southern California Edison (SCE) to move forward with design and compliance with the California Environmental Quality Act. The City Council approved the Anaheim Coves North Extension project at its meeting on February 7, 2017.

Orange County Flood Control District – The City's General Plan, Bicycle Master Plan and Anaheim Outdoors Connectivity Plan identify the potential use of Orange County Flood Control District (OCFCD) maintenance roads by bicyclists and pedestrians. The multi-use of these maintenance roads has been identified in an effort to expand the City of Anaheim's transportation and recreational resources. The City of Anaheim and OCFCD plan to enter into an operation and maintenance agreement that identifies existing OCFCD maintenance roads that could be converted into future bikeways and trails and identifies the City's role in improving and maintaining these facilities. The improvements needed to expand the bike and pedestrian network include bridges, gates, fences, and the resurfacing of the existing OCFCD maintenance roads. In some cases, the improvements are as simple as adding signage and striping, and opening the gates for public use. Many of these segments represent important links between neighborhoods, schools, parks, and libraries.

13 http://ocplanning.net/planning/projects/santa_ana_river_parkway_extension_project

OCTA Bikeways Strategies

OCTA Bikeways Strategies[14] were commissioned by the Orange County Council of Governments and OCTA to expand upon the 2009 CBSP. The Bikeways Strategies were organized by County supervisorial districts, and areas of Anaheim are located in or adjacent to Districts 3 and 4. The OC Foothills Bikeways Strategy was most recently completed in 2016, and the Plan reflects coordination between the agencies involved in the development of each strategy.

Orange County Loop

OC Loop[15] is a vision for 66 miles of seamless connections and an opportunity for people to bike, walk, and connect to some of California's most scenic beaches and inland reaches. About 70% of the OC Loop is existing, and the County of Orange prepared a gap feasibility study to better position cities to pursue grant funding to implement the missing OC Loop segments. Segment H of the OC Loop is located within the City of Anaheim and would connect between the Santa Ana River and Fairlynn Boulevard and the El Cajon Trail in Yorba Linda.

OCTA Outlook 2035 Long Range Transportation Plan

The OCTA Outlook 2035 Long Range Transportation Plan16 includes the multi-modal projects and programs that are the basis for the Southern California Association of Governments' Regional Transportation Plan (RTP). The LRTP provides a visionary blueprint for transportation improvements for Orange County and input into the development of the RTP. The general goals of the LRTP are to assess the performance of the transportation system over a 20+ year horizon, and to identify the projects that best address the needs of the system based on expected population, housing and employment growth, while taking forecast financial assumptions into account at the same time. The LRTP will provide both a financially constrained plan, which takes into account funding limitations, and an unconstrained plan, which contains a vast array of potential improvements should additional funding sources become available. The focus of the LRTP, which looks out to the year 2035, will be on sustainability, specifically addressing the reduction of greenhouse gases from cars and trucks. Sustainability is related to the quality of life in a community -- whether the economic, social and environmental systems that make up the community are providing a healthy, productive, meaningful life for all community residents.

2016-2040 Regional Transportation Plan / Sustainable Communities Strategy

The Southern California Association of Governments (SCAG) 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS)[17] has the goal of maintaining regional mobility, while committing to reducing emissions from transportation sources to comply with California Senate Bill (SB) 375 and the National Ambient Air Quality Standards from the U.S. Clean Air Act. SB 375 calls for regional plans to meet reductions in greenhouse gas emissions. The Active Transportation portion of the RTP/SCS represents how the region plans to use active transportation to help meet its transportation challenges over the next 25 years, including longer-trip strategies for commuters and active recreation, integrating active transportation with transit, short-trip strategies for utilitarian trips (shopping, school, local retail), and safety/encouragement. The bike strategies and facilities in the RTP/SCS are derived in part from the plans that OCTA and local cities submitted.

14 http://octa.net/Bike/Bikeways-Planning/
15 http://octa.net/Bike/The-OC-Loop/
16 http://www.octa.net/Projects-and-Programs/Plans-and-Studies/Long-Range-Transportation-Plan/
17 http://scagrtpscs.net/Pages/default.aspx

State Implementation Plan

The SCAQMD prepares the State Implementation Plan (SIP) to comply with the California Clean Air Act and SB 375. The California Clean Air Act establishes requirements for local/regional air districts to meet state mandates. This filters through the California Air Resources Board (CARB). CARB is responsible for compiling district plans to comply with the Federal Clean Air Act. SCAQMD coordinates efforts with SCAG to comply with transportation requirements through the RTP/SCS. The SCAQMD also coordinates compliance with Rule 2202, which was discussed in section 3.6 above.

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Table 5 – Bikeway Connections with Neighboring Jurisdictions

Neighboring Jurisdiction	Bike ID	Street/Path Name	Bikeway Class	Existing	Proposed
Buena Park	6	Carbon Creek Channel	I		X
	107	Orange Avenue	II		X
	23	North-South SoCal Edison Right-of-Way w/o Magnolia Street	I		X
	41	Ball Road	II		X
Buena Park and Cypress	53	Cerritos Avenue	II	X	
Fullerton	49 A.20 and 49 B.20	Brookhurst Road	II	49 A.20	49 B.20
	38	Lemon Street	II		X
	33	Acacia Avenue	II		X
	26 and 108	Orangethorpe Avenue	II		X
Garden Grove	111 and 112	Orangewood Avenue	II	X	X
	98	Ninth Street	II	X	
	48	Brookhurst Street	II	X	
	37	Anaheim Boulevard/ Haster Street	II		X
	56	Chapman Avenue	II	X	
	66	Euclid Street	II		X
Orange	123	Serrano Avenue	II		X
	20	Metrolink Side Trail	I		X
	76	Imperial Highway	II	X	
	121A	Santa Ana Canyon Road	II	X	
	132	Tustin Avenue	II		X
	73	Glassell Street	II	X	
	91	Lincoln Avenue	II	X	
	44 A.40, 44 B.20 and 44 C.20	Ball Road	II	44 B.20	44 A.20 and 44 C.20
	14B	East-West Edison right-of-way/ Union Pacific Railroad right-of-way north of Katella Avenue	I		X
	114	Orangewood Avenue	II		X
	88	Lewis Street	II		X
Placentia	108 and 110	Orangethorpe Avenue	II		X
	155	Orangethorpe Avenue	II	X	
	85	Lakeview Avenue	II		X
	162	Van Buren Street	III		X
	133	Tustin Avenue	II	X	

	82	Kraemer Boulevard	II		X
	45	Blue Gum Street	II	X	
	116	Richfield Road	II		X
Stanton	54 A.20, 54 B.20, 54 C.1.20, 54 C.2.20 and 54 D.20	Cerritos Avenue	II	54 D.20, Interm Class III 54 C.1.20	54 A.20, 54 B.20, 54 C.2.20
	32	Union Pacific Railroad north of Katella and east of Euclid	I		X
	93	Magnolia Street	II		X
	22	North-South SoCal Edison ROW west of Magnolia Street	I	X	
	62	Dale Street	II		X
	163	Western Avenue	II	X	
	79	Knott Avenue	II		X
Yorba Linda	85 A.20 and 85 B.20	Lakeview Avenue	II	85 A.20	85 B.20
	78	Kellogg Drive	II	X	
	109	Orangethorpe Avenue	II		X
	17	Fairmont Boulevard	II	X	
	28	Santa Ana River Trail	I	X	
	75	Gypsum Canyon Road	II		X
County of Orange	27	Santa Ana River Trail	I	X	
	72	Gilbert Street	II	X	
	42A	Ball Road	II	X	
	42B	Ball Road	III	X	
	42C	Ball Road	II	X	
	42D	Ball Road	II		X
	48C	Brookhurst Street	II	X	

4. Needs Analysis

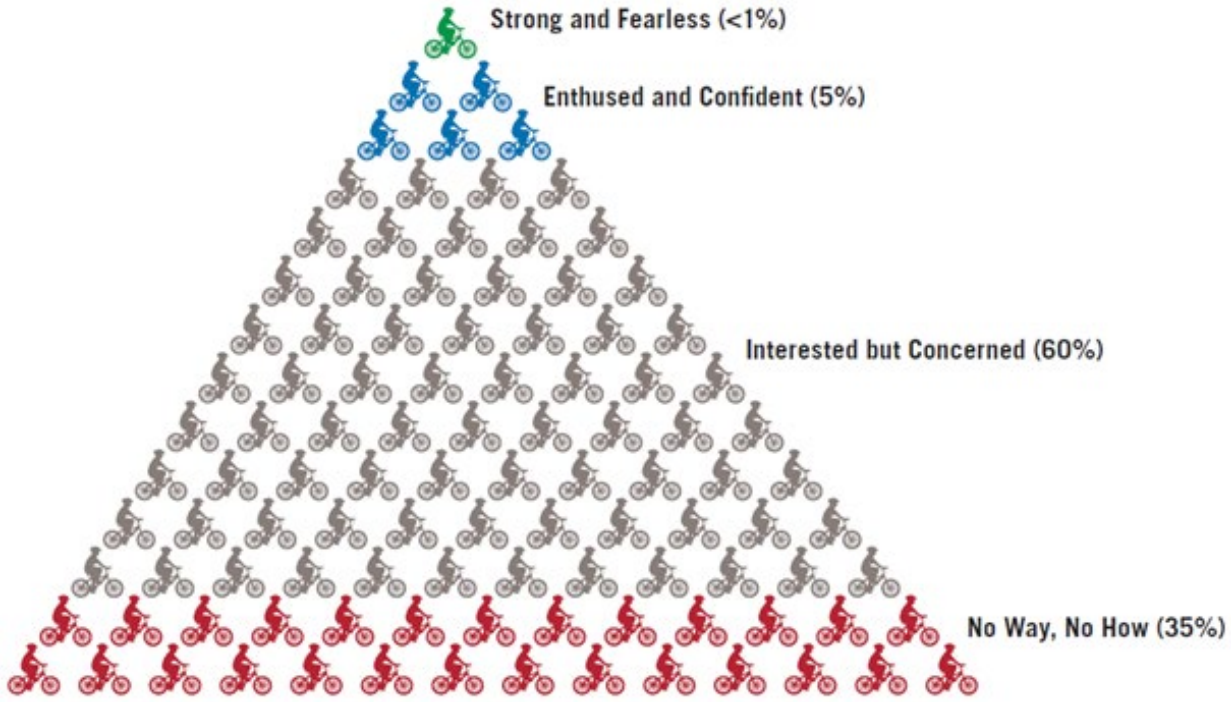
4.1 Population and Employment Profile

According to the United States Census Bureau's 2014 American Community Survey (ACS) five-year estimates[18], Anaheim's population was approximately 342,973, with a projected population of 380,000 by 2035. Residential growth will occur primarily in the Platinum Triangle and through infill development throughout the mostly built-out city. Major employment centers in the City include The Anaheim Resort and the Anaheim Canyon. More than 58% of the City's residents are ages 15-54, and are of prime bicycling age for work commute trips.

4.2 Types of Bicyclists

The Plan seeks to address the needs of all current and potential bicyclists and seeks to understand the needs and preferences of all types of bicyclists, which may vary among skill levels and trip types. In addition, the propensity to bicycle varies from person to person, providing insight into potential increases in bicycling rates. Research shows that there are four types of bicyclists,[19] as shown in Figure 12 – *Four Types of Bicyclists*:

Figure 12 – Four Types of Bicyclists



18 http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF
19 http://www.portlandoregon.gov/transportation/article/264746

Strong and Fearless bicyclists will ride almost anywhere, any time. High traffic volumes and speeds, and lack of bikeway designation do not deter these riders. They are estimated to be less than one percent of the population.

Enthused and Confident bicyclists will ride on most roadways where traffic volumes and speeds are not high. These riders, estimated at 5 to 7 percent of the population, are confident in positioning themselves to share the roadway with motorists.

Interested but Concerned bicyclists will ride if bicycle paths or lanes are provided on low traffic and low speed streets. They are typically not confident cycling alongside motorists. These riders are estimated to comprise 60% of the population, and the primary target group that is likely to bicycle more if encouraged to do so.

"No Way No How" people do not consider cycling part of their transportation or recreation options, and comprise about one-third of the population.

The needs of bicyclists also vary among trip purposes. For example, people who bicycle for performance-recreational purposes may prefer long and straight roadways without traffic signals, while bicyclists who ride with children to school may prefer direct roadways with lower vehicular volumes and speeds. This Plan considers these differences and develops a bikeway network to serve all user types, including:

Commuters - Adults who regularly bicycle between home and work
Enthusiasts - Skilled adults who ride for exercise and recreation
Casual/Family/Elderly Riders - Adults who use bicycles for running errands, recreation, tourism, exercise, or as a family activity
Children - Children who bicycle to school and for fun

An effective bikeway network accommodates bicyclists of all abilities. Casual bicyclists generally prefer roadways with low traffic volumes and low speeds. They also prefer paths that are physically separated from roadways. Because experienced bicyclists typically ride to destinations or to achieve a goal, they generally choose the most direct route, which may include arterial roadways with or without bike lanes. Bicyclists of all abilities and purposes ride every day in Anaheim. Parents bicycle with their children to school, people bicycle to work, community members bicycle to transit stations, and recreational bicyclists ride through the City on extended bicycle trips.

Recent technology, such as electric bicycles, has encouraged less confident bicycle riders to enjoy the benefits of cycling. At times, this has also allowed bicyclists to utilize facilities such as on-street bike lanes that they may not normally feel able to ride in safely and comfortably.

4.3 Cyclist Comfort Level

In 2012, the Mineta Transportation Institute developed measures of low-stress connectivity to evaluate and guide bicycle network planning[20]. Criteria include factors such as number of vehicle travel lanes and vehicle speed. Road segments can be classified into four Levels of Traffic Stress (LTS): LTS 1 is generally suitable for children; LTS 2 represents the comfort level for the "Interested but Concerned" rider type; LTS 3 can be tolerated by the "Enthused and Confident" rider type that prefers to still have dedicated space on the road for cyclists; and LTS 4 can only be tolerated by the "Strong and Fearless" rider type. Table 6 – *Level of Traffic Stress in Mixed Traffic* below shows a generalized summary of methods to determine LTS levels on arterial streets.

Table 6 – Level of Traffic Stress in Mixed Traffic

	Street Width		
Speed Limit	2-3 lanes	4-5 lanes	6+ lanes
Up to 25 mph	LTS 1[a] or 2[a]	LTS 3	LTS 4
30 mph	LTS 2[a] or 3[a]	LTS 4	LTS 4
35+ mph	LTS 4	LTS 4	LTS 4

Note: [a] Use lower value for streets without marked centerlines or classified as residential and with fewer than 3 lanes; use higher value otherwise.

Class I Bike Paths and Class IV Cycle Tracks have the lowest level of traffic stress between intersections, and are generally categorized as LTS 1. Class II Bike Lanes and Class III Bike Routes can exhibit the full range of traffic stress. Where they have ample width and are positioned on a road whose traffic is slow and simple (a single lane per direction), they can offer cyclists a low-stress riding environment. However, bike lanes can also present a higher stress environment when positioned on roads with heavy traffic or next to parking lanes.

20 http://transweb.sjsu.edu/PDFs/research/1005-low-stress-bicycling-network-connectivity.pdf

4.4 Public Outreach

The City solicited input from the public over the course of the planning process, which began with the City's *Anaheim Outdoors Connectivity Plan* that was adopted in 2014. Outreach efforts included:

1. Presentations at regularly scheduled Neighborhood Council District meetings, where details of the Plan were discussed and the public was invited to participate. The planning process was introduced at the Neighborhood Council meetings in January 2014, and followed with more detailed presentations in August 2014. Staff returned to the Neighborhood Councils in January 2016 to present the Plan recommendations at that point in the planning process. Staff returned to the Neighborhood Councils in July 2016, to announce that the Draft Plan was available for public comment from August 1, 2016 to August 31, 2016. Additional meetings were held with the Neighborhood Districts in February, 2017.

2. An online survey was completed by 201 respondents in Fall 2014. Findings are detailed in Appendix D - *Anaheim Outdoors Bicycle Master Plan Update Survey Results* and are summarized as follows:

    - Over 70% of respondents see bicyclists on Anaheim streets once or more per day
    - If safe bicycle routes were in close proximity, respondents would bicycle to complete the following trip types:
        - 90% for exercise/health
        - 61% for shopping/errands
        - 54% for work commutes
        - 23% to get to transit
    - Over 83% of respondents answered that there are too few bicycle routes in Anaheim, and over 76% shared that this prevents them from bicycling more often
    - To be influenced to bicycle more often, respondents prioritized the following:
        - More buffered bike lanes (74%)
        - More paved off-street (Class I) paths (67%)
        - More traditional on-street bike lanes (Class II with 6-inch stripe) (59%)
        - More bicycle boulevards (shared roadways designed to slow vehicle traffic and give equal priority to bicyclists) (59%)

3. A Bicycle Master Plan Open House was held Saturday, October 18, 2014, at the Muzeo, to solicit public input on their preferences among the proposed new bicycle lanes and trails. The public preferences are summarized as follows:

    - Lemon Street bicycle boulevard from Ball Road to La Palma Park
    - Broadway buffered bike lanes from Dale Street to Olive Street
    - Orange Avenue buffered bike lanes from Carbon Creek Channel to Magnolia Avenue
    - Ball Road bicycle path from Lemon Street to Walnut Street
    - Carbon Creek Channel bicycle path from Beach Boulevard through Dad Miller Golf Course

4. A fact sheet on the Plan, including the web link to the Plan on the City's website, was distributed in August 2016 to raise awareness of the Plan and solicit public input during the public review period from August 1 to August 31, 2016. It was available at the four Neighborhood Council Meetings in July 2016, National Night Out on August 2, 2016, at educational programs held by the Traffic Safety Program, at all City facilities and events, and at various back-to-school open houses in local school districts in the month of August 2016. The fact sheet was also emailed to various distribution lists, including OCTA's. The fact sheet is included as Appendix E – *Bike Anaheim Ride With Us Fact Sheet*.

5. A workshop was held at the Planning Commission meeting on August 8, 2016, which included the opportunity for public comment.

6. The Plan was adopted through a series of Planning Commission and City Council hearings in Spring, 2017.

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5. Bikeway Network Recommendations

5.1 Proposed Bikeways

A comprehensive bikeway network improves bicyclists' level of safety, convenience, and access to key destinations. Planning a bikeway network enables the City to prioritize and seek funding to construct bicycle facilities where they will provide the greatest benefit to bicyclists and the community-at-large. The proposed bikeway network, when completed, will include 184.56 miles of bicycle facilities to increase connectivity within Anaheim and to surrounding communities. The proposed bikeway network has been developed to create a safe and logical network. It is important to note that bicyclists are legally entitled to ride on all city streets, regardless of whether the streets are a part of the designated bikeway network.

The scope of the Plan is limited to proposing bikeways that do not require the removal of vehicle travel lanes. Staff has identified areas for future study that focus on specific geographic areas or types of bikeways facilities that may have additional impacts to the Planned Roadway Network in the Circulation Element of the General Plan. These areas for future study include The Anaheim Resort and Platinum Triangle, road diets, Class III Bicycle Boulevards, Class IV Cycle Tracks, off-road/unpaved riding and hiking trails, and pedestrian facilities.

Table 7 – *Proposed Bikeways* details all of the proposed bikeways in the Anaheim bikeway network, which are also shown in Figure 13 – *Proposed Bikeway Network (West)* and Figure 14 – *Proposed Bikeway Network (East)*.

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Table 7 – Proposed Bikeways

Class I Bike Path Proposed				
Bike ID	**Street/Path**	**From**	**To**	**Centerline Miles**
3	Basin Trail south of La Palma Avenue	Richfield Road	Lakeview Avenue	0.46
4	Boysen Park Path	Vermont Avenue	Wagner Avenue	0.25
6	Carbon Creek Channel	Buena Park City Limit	Beach Boulevard	1.30
7	Carbon Creek Channel	Magnolia Avenue	Gilbert Street	0.57
8	Carbon Creek Channel	Brookhurst Street	La Palma Avenue	1.89
165	Carbon Creek Channel	Schweitzer Park	Lincoln Avenue	0.73
9	Carbon Creek Diversion Channel	Kraemer Boulevard	Orangethorpe Avenue	1.35
10	Crescent Avenue Bike Bridge	Muller Street	Chippewa Avenue	0.18
11	Deer Canyon Park	Fairmont Boulevard	Serrano Avenue	1.62
12	East Tustin Flood Control Path	Santa Ana River Trail	Anaheim Canyon Metrolink	0.79
13	East-West Edison right-of-way north of Katella Avenue	UPRR West of Ninth Street	Walnut Street	0.41
14A	East-West Edison right-of-way/Union Pacific Railroad right-of-way north of Katella Avenue	Harbor Boulevard	Douglass Road	2.31
14B	East-West Edison right-of-way/Union Pacific Railroad right-of-way north of Katella Avenue	Douglass Road	Orange City Limit	0.32
15	Fairmont Boulevard	Santa Ana Canyon Road	La Palma Avenue	0.54
16	Fairmont Boulevard	Santa Ana River Trail	La Palma Avenue	0.09
179	Imperial La Palma Connector	Santa Ana River Trail Connector w/o Imperial Highway	Imperial Highway	0.45
18	Imperial Park Path	Nohl Ranch Road	Santa Ana Canyon Road	0.75
19	La Palma Avenue	Blue Gum Street	east of Brasher Street	4.23
20	Metrolink Side Trail	Orange/Olive Road	Tustin Avenue	0.98
21	Nohl Ranch Open Space Trail	Avd Margarita	Anaheim Hills Road	1.32

23	North-South Edison right-of-way west of Magnolia Street	Broadway	La Palma Avenue	1.26
24	North-South Union Pacific Railroad- Olive Street Continuation	Vermont Avenue	E-W Southern California Edison right-of-way south of Cerritos Avenue	1.18
109	Orangethorpe Avenue	Lakeview Avenue	Imperial Highway	1.66
178	Peralta Canyon Park Overcrossing	Pinney Drive	Santa Ana River Trail	0.25
29	Santa Ana River Trail Connector west of Imperial Highway	Santa Ana River Trail	La Palma Avenue	0.28
30	Sycamore Connector west of State College Boulevard	Sycamore Street	La Palma Avenue	0.13
31	Tustin Avenue-Metrolink Connection Alt 1	Orange Sub	Tustin Avenue	0.28
175	Tustin Avenue-Metrolink Connection Alt 2	Orange Sub	Santa Ana River Trail	0.17 (Alt. to 31 – Not Counted)
32	Union Pacific Railroad north of Katella and east of Euclid	Stanton City Limits	Broadway	3.42
181.20	Imperial Highway	Bike ID 21	Avenida Bernardo North	0.24
			Total	**29.85**

Class II Bike Lane Proposed				
Bike ID	**Street/Path**	**From**	**To**	**Centerline Miles**
33	Acacia Street	La Palma Avenue	Fullerton City Limits	.61
35 A.2.20, 35 B.2.20	Anaheim Boulevard	Ball Road	Sycamore Street	35 A (0.93) and 35 B (0.62)
37	Anaheim Boulevard/Haster Street	Garden Grove City Limits	Cerritos Avenue	1.25
38	Anaheim Boulevard/Lemon Street	La Palma Avenue	Fullerton City Limits north of Freedom Lane	1.10
41	Ball Road	Buena Park City Limits	Knott Avenue	0.38
42D	Ball Road	Western Avenue	Gaymont Street	0.69

43 A.1.20, 43 A.2.B.20	Ball Road	Brookhurst Street	Walnut Street	43 A.1.20 (1.25) and 43 A.2.20 (0.5)
43B	Ball Road	Walnut Street	West Place	0.25
44 A.20, 44 B.20, 44 C.20	Ball Road	Lemon Street	Orange City Limits	0.12, 0.15, 2.04
46A	Broadway	Dale Street	Southern California Edison Trail	0.23
46B	Broadway	Southern California Edison Trail	Gilbert Street	0.75
46C	Broadway	Gilbert Street	East Street	3.85
49	Brookhurst Street	Crescent Avenue	Fullerton City Limits	1.00
50	Camino Grande/Stagecoach Road	Nohl Ranch Road	Nohl Ranch Road	1.53
51	Canyon Creek Road	Sunset Ridge Road	Serrano Avenue	0.56
54 A.20, 54 B.20, 54 C.2.20, ~~54 D.20~~	Cerritos Avenue	West City Limits (east of Magnolia)	Walnut Street	1.26, 0.5, 0.22, ~~0.53~~
~~55 A.20~~, 55 B.2.20	Cerritos Avenue	Anaheim Boulevard	Douglass Road	~~0.97~~, 0.68
58	Crescent Avenue	Carbon Creek Channel	Brookhurst Street	0.22
62	Dale Street	Stanton City Limits	Buena Park City Limits	1.64
63 A.2.20	Douglass Road	Katella Avenue	Cerritos Avenue	0.41
171	Dupont Drive (W)	Orangewood Avenue	Dupont Drive (E)	2.22
64	East Street	Ball Road	La Palma Avenue	2.09
66	Euclid Street	Orangewood Avenue	Ball Road	1.52
67	Fairmont Boulevard	Canyon Rim Road	Santa Ana Canyon Road	1.07
68	Frontera Street	La Palma Avenue	Rio Vista Street	0.20
70	Gerda Drive	Crescent Elementary School	Pinney Drive/Royal Oak Road	0.39
71	Gilbert Street	Broadway	Carbon Creek Trail	0.58
74	Grove Street	La Palma Avenue	Miraloma Avenue	0.67
75	Gypsum Canyon Road	Santa Ana Canyon Road	Yorba Linda City Limit	0.16
77	Kellogg Drive	La Palma Avenue	Orangethorpe Avenue	0.38
79	Knott Avenue	Stanton City Limits	Orange Avenue	0.93
82	Kraemer Boulevard	Frontera Street	Orangethorpe Avenue	1.37

81	La Palma Avenue	Buena Park City Limits	Acacia Street	4.63
167 A.20, 167 B.20	La Palma Avenue	State College Boulevard	Blue Gum Street	~~0.50~~, 0.68
83	Lakeview Avenue	Santa Ana Canyon Road	Riverdale Avenue	0.25
85A	Lakeview Avenue	La Palma Avenue	Lakeview Connector	0.59
85B	Lakeview Avenue	Lakeview Connector	Yorba Linda City Limit	0.17
87A	Lewis Street	Katella Avenue	Cerritos Avenue	0.50
87B	Lewis Street	Cerritos Avenue	Ball Road	0.52
88	Lewis Street	Orange City Limits	Orangewood Avenue	0.25
89A	Lincoln Avenue	Knott Avenue	Southern California Edison Trail	1.74
89B	Lincoln Avenue	Southern California Edison Trail	Euclid Street	2.26
90	Lincoln Avenue	Manchester Avenue	Wilshire Avenue	0.16
93	Magnolia Avenue	Stanton City Limits	La Palma Avenue	2.49
94	Manchester Avenue	Santa Ana Street	Lincoln Avenue	0.44
96 a.20, 96 B.20	Miraloma Avenue	Sunkist Street	La Loma Circle	1.31
99	Ninth Street	Katella Avenue	Cerritos Avenue	0.50
100	Nohl Ranch Road	Anaheim Hills Road	Serrano Avenue	1.56
101	North Street	West Street	Harbor Boulevard	0.45
103	North Street	Anaheim Boulevard	Olive Street	0.22
105	Oak Canyon Drive	Weir Canyon Road	Running Springs Drive	0.21
107A	Orange Avenue	Buena Park City Limits	Carbon Creek Trail	0.97
107B	Orange Avenue	Carbon Creek Channel	Magnolia Avenue	1.41
26	Orangethorpe Avenue	Lemon Street	Raymond Avenue	0.75
108	Orangethorpe Avenue	State College Boulevard	Placentia Avenue	0.36
110	Orangethorpe Avenue	Kraemer Boulevard	Miller Street	0.63
112	Orangewood Avenue	West Street	Harbor Boulevard	0.51
114	Orangewood Avenue	Mountain View Avenue	Dupont Drive (W)	1.03
115	Pinney Drive	Santa Ana Canyon Road	Gerda Drive	0.06
116	Richfield Road	Basin Trail south of La Palma Avenue	Placentia City Limits	0.22

118	Rio Vista Street	Dutch Avenue	Frontera Street	0.40
123	Serrano Avenue	Orange City Limits	Nohl Ranch Road	0.10
125	Serrano Avenue	Canyon Rim Road	Weir Canyon Road	1.45
126	South Street	State College Boulevard	Peregrine Street	0.50
130	Sunkist Street	South Street	Miraloma Avenue	1.01
131	Sunset Ridge Road	Canyon Creek Road	Serrano Avenue	0.91
172	Towne Centre Place	Dupont Drive (E)	Rampart Street	0.23
133A	Tustin Avenue	Santa Ana River Trail	Miraloma Avenue	1.18
134	Vermont Avenue	Citron Street	Boysen Park Trail	1.65
136	Wagner Avenue	State College Boulevard	Sunkist Street	0.50
138A	Walnut Street	Katella Avenue	Ball Road	1.02
138 B.2.20	Walnut Street	Ball Road	Santa Ana Street	0.65
140	West Street	Santa Ana Street	North Street	0.94
141	Western Avenue	Orange Avenue	Buena Park City Limits	0.76
180.20	Lakeview Connector Road			0.11
			Total	**65.62**

Class III Bike Routes Proposed

Bike ID	Street/Path	From	To	Centerline Miles
57	Citron Street	Vermont Avenue	Santa Ana Street	0.57
145 A	Crone Avenue	UPRR Trail	Walnut Street	1.00
145 B	Crone Avenue	Nutwood Street	UPRR Trail	0.25
147	Gilbert Street	La Palma Avenue	Crescent Avenue	0.49
148	Gilbert Street	Broadway	Ball Road	0.76
149	Katella Avenue	Douglass Road	Santa Ana River Trail	0.13
86	Lemon Street	Sycamore Street	La Palma Avenue	0.56
150	Lemon Street	Ball Road	Sycamore Street	1.53
151	North Street	Loara Street	West Street	0.42
152	Nutwood Street	Orange Avenue	Crone Street	0.23
106	Olive Street	Vermont Avenue	Santa Ana Street	0.57
153	Olive Street	Santa Ana Street	La Palma Avenue	1.09
154	Orange Avenue	Magnolia Avenue	Euclid Street	1.98
158	Romneya Drive/Carl Karcher Way	Euclid Street	Anaheim Boulevard	1.26

122 A.20 , 122 B.20	Santa Ana Street	Walnut Street	East Street	~~0.96~~, 0.67
159	Santa Ana Street	East Street	State College Boulevard	0.72
160	South Street	Indiana Street	State College Boulevard	1.97
161	South Street	Rio Vista Street	Anaheim Coves Trail	0.28
170	Sycamore Street	West Street	Sycamore Connector	2.22
162	Van Buren Street	La Palma Avenue	Placentia City Limit north of Miraloma Avenue	0.42
135	Vine Street	Santa Ana Street	Broadway	0.15
173	West Street	North Street	La Palma Avenue	0.42
143	Westmont Drive	Loara Street	West Street	0.48
			Total	**19.13**

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Figure 13 – Proposed Bikeway Network (West)

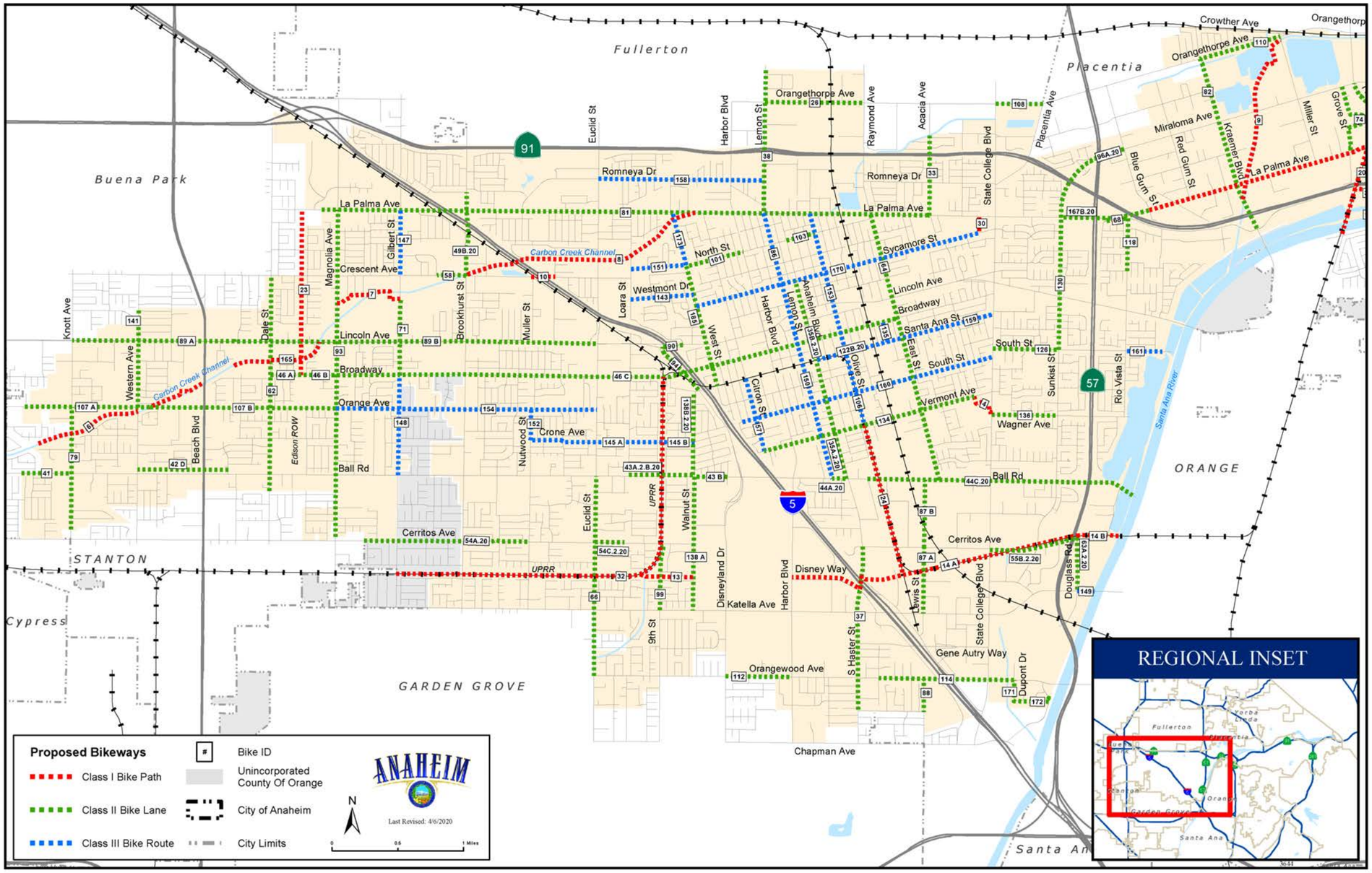

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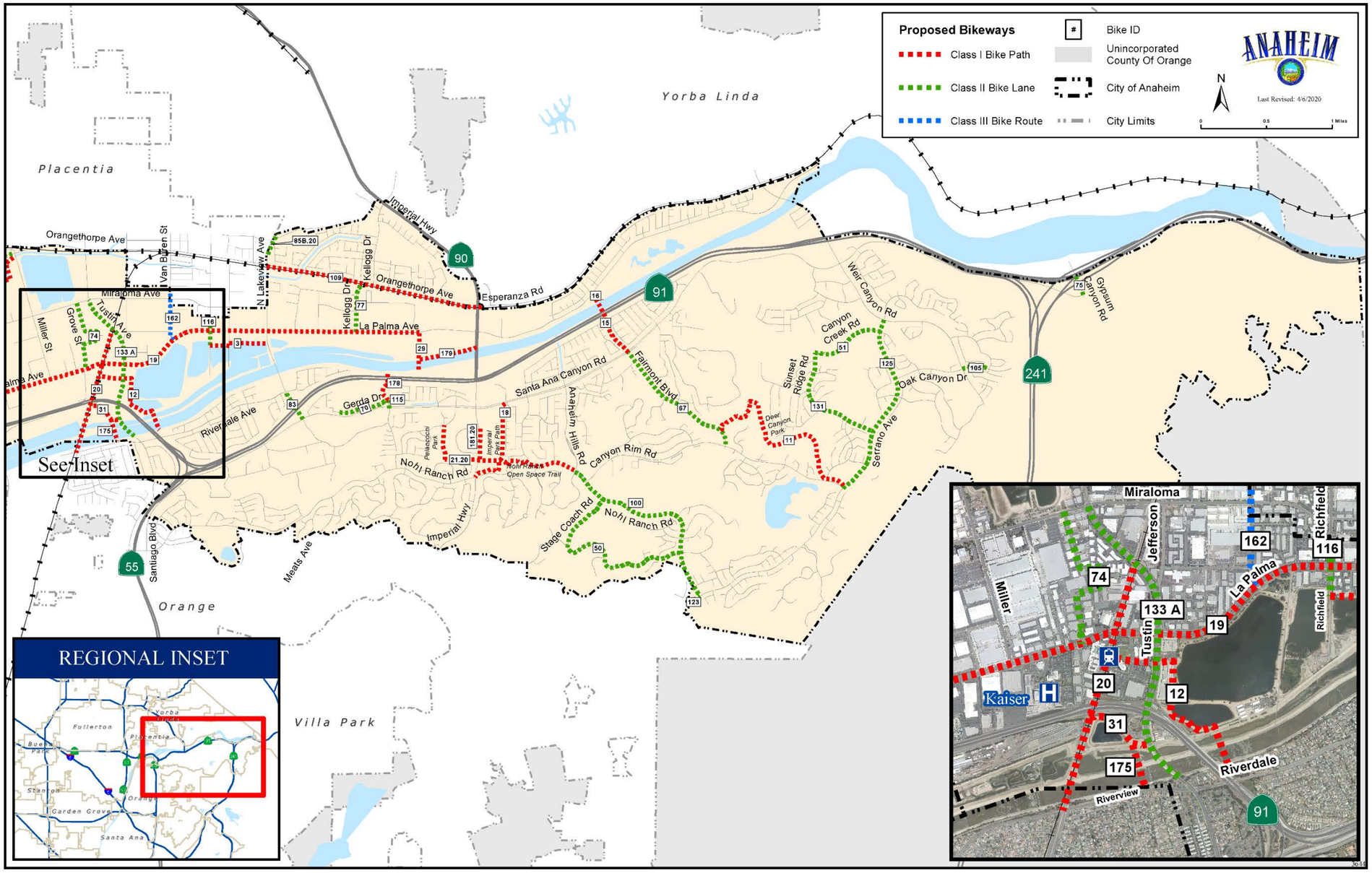
Figure 14 – Proposed Bikeway Network (East)



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5.2 Proposed Parking and End-of-Trip Facilities

The City will continue to promote the integration of bicycle parking and end-of-trip facilities into future development of commercial, industrial, institutional, recreational, and multi-family residential developments in the City. The proposed amendments to the General Plan, detailed in Appendix B, will help to implement more bicycle parking. The proposed parking code amendment, as discussed in Section 3.7 above, will address bicycle parking in the City's municipal code.

5.3 Proposed Multi-Modal Connections

Convenient connections for bicyclists to continue their trips on public transit include three key elements: bicycle access to transit stops; bicycle parking facilities at multi-modal centers; and accommodation for bicycles on trains and buses. The bikeway network connects to existing transit stops and provides bicycle parking at multi-modal centers such as the Anaheim Canyon Metrolink Station and the ARTIC. Multi-modal connections were scoring criteria in the priority ranking for the proposed segments of the Plan.

5.4 Proposed Education, Awareness, and Enforcement Programs

The City recognizes that in addition to providing safe and inviting bikeways facilities, ongoing education, awareness, and enforcement are critical components of the safety of riders on the City's bikeway network. In addition to maintaining existing programs with the Anaheim Police Department and Anaheim Fire & Rescue as funding is available, the City will pursue grant funding for additional resources for the Traffic Safety Program and bicycle helmet distribution. Additional opportunities include the creation and distribution of a bicycle user map, pursuing a Safe Routes to Schools program, and coordinating with ATN and employers in the City to increase the number of bicycle commuters.

5.5 Bicycle Signal Detection

In-pavement loop detectors are used at signalized intersections to trigger a traffic light when a roadway user approaches the intersection. California law (AB 1581) requires that all new traffic actuated traffic signals respond to the presence of bicycles and motorcyclists. The City of Anaheim currently complies with State guidelines for traffic signal timing and detection. This is accomplished through traffic signal retiming, signal upgrades, and rehabilitation projects. The City is committed to continue to seek funding to ensure bicycle loop detectors are installed at all signalized intersections, particularly during roadway construction. While bicycle detector loops facilitate faster and more convenient bicycle trips, if they aren't calibrated properly, or stop functioning, they can frustrate cyclists waiting for signals to change, unaware that the loop is not working. The City is responsible for ensuring that all bicycle loops are operable.

5.6 Implementation Toolbox

Appendix G – *Implementation Toolbox*, is a menu of design standards from the current versions of the Caltrans Highway Design Manual (HDM) and the California Manual of Uniform Traffic Control Devices (CA MUTCD). Additionally, the toolbox includes a selection of non-standard treatments, for reference, from nationally recognized publications by the National Association of City Transportation Officials (NACTO), which have not been adopted into the CA MUTCD or the HDM. These standards and best practices have been implemented by public agencies and municipalities nationwide. This menu of options is intended to assist the City in the selection and design of bicycle facilities, to ensure that the appropriate bicycle facility is placed. The wide range of tools could address issues on specific types of facilities, including Class I Bike Paths, and would be implemented on a case-by-case basis.

6. Implementation and Funding

6.1 Project Prioritization

The proposed bikeway network was prioritized based on key indicators of **demand, utility, connectivity,** and **readiness**. Based on the ranking analysis, three tiers of ranked projects have been identified, as shown in Table 8 – *Priority Ranking of the Proposed Network – Tier 1,* Table 9 – *Priority Ranking of the Proposed Network – Tier 2*, Table 10 – *Priority Ranking of the Proposed Network – Tier 3*, and Figure 15 - *Bikeway Network Priority Ranking (West)* and Figure 16 - *Bikeway Network Priority Ranking (East)*. The complete scoring analysis is provided in Appendix F - *Anaheim Bikeway Network Priority Ranking Scores*. For purposes of prioritization, individual segments were combined into corridors, shown in **Bold**, to better capture the intent of closing gaps in the existing network. Individual segments are also scored, and shown in *italics*.

Demand Criteria focus on population and employment along each segment. The probability of bicycle commuting trips is higher in corridors that have higher population and/or employment densities. Bikeways connecting to employers with more than 250 employees have a higher demand due to Transportation Demand Management programs implemented by these employers. Medium to high density residential areas typically have lower automobile demand and higher bicycle and transit ridership.

Utility Criteria focus on the completeness of the bikeway network. New bikeways that connect to existing facilities tend to attract more ridership as they serve to extend existing facilities and provide more opportunities to areas serviced by existing bikeways. Several bikeways, both existing and proposed, have been identified as Regional Bikeways through a collaborative process with OCTA and the cities within each County Supervisorial District. These intercity bikeways are intended to serve as the backbone of the County's bikeway network. Facilities that connect to the regional bikeway system are anticipated to benefit from these connections once the regional network is substantially completed. Inter-city connectivity outside of these regional corridors was also considered to account for bicyclists from other cities that may consider using their bikeways due to a connection into Anaheim.

Connectivity Criteria focus on multimodal flexibility and special generators that lie outside typical commuter bicycling patterns. Connectivity to Metrolink, Amtrak, and high quality transit corridors were ranked highly, as bicycles can be used to provide the last mile connection between transit and employment or population centers. High Quality Transit Corridors are those bus routes with a service frequency of 15 minutes or less during peak hours. Connections to elementary, middle, and high schools received additional points, as well as connections to parks, community centers, and libraries.

Readiness Criteria focus on agency coordination and physical barriers to implementation. Bicycle projects may become more complex as more affected agencies are involved with the process. Right of way acquisition is costly relative to the cost to construct bicycle facilities, and can serve as a significant setback to the implementation of bikeways. Removal of on-street parking to provide bicycle facilities may have unintended consequences to degrade the quality of life in the surrounding residential neighborhoods that may be already impacted by spillover parking concerns.

Table 8 – Priority Ranking of the Proposed Network – Tier 1

Tier 1 Priority Ranking					
Rank	Bike IDs	Street/Path	From	To	Score
1	6 164 165 7 5 8	Carbon Creek Channel	Buena Park City Limits	La Palma Avenue	87
2	107 154	Orange Avenue	Buena Park City Limits	Euclid Street	87
3	122 A.20 122 B.20 159	Santa Ana Street	Walnut Street	State College Boulevard	87
4	37 36 35 A.2.20 35 B.2.20 34 38	Haster Street/ Anaheim Boulevard/ Lemon Street	Garden Grove City Limits	Fullerton City Limits	86
5	81 166 167	La Palma Avenue West	Buena Park City Limits	Blue Gum Street	84
6	68 69	Frontera Street	La Palma Avenue	Glassell Street	82
7	32 13	UPRR/Edison w/o Walnut	Stanton City Limits	Broadway	81
8	41 42D 43 A.1.20 43 A.2.B.20 43 B	Ball Road	Buena Park City Limits	West Place	79
9	48 49 A.20 49 B.20	Brookhurst Street	Katella Avenue	Fullerton City Limits	79
10	128 130 96 A.20 96 B.20 97	Sunkist/ Miraloma	Cerritos Avenue	Van Buren Street	79
11	134 4 136 137	Vermont/Wagner	Citron Street	Rio Vista Street	79

Rank	Bike IDs	Street/Path	From	To	Score
12	**58 59 10 60 151 101 102 103**	**Crescent Avenue/ North Street**	**Carbon Creek Channel**	**Olive Street**	**77**
13	**46 47**	**Broadway**	**Dale Street**	**State College Boulevard**	**75**
14	**160 126 127 161**	**South Street**	**Indiana Street**	**Anaheim Coves Trail**	**75**
15	**123 124 125**	**Serrano Avenue**	**Orange City Limits**	**Weir Canyon Road**	**74**
16	**132 133A**	**Tustin Avenue**	**Orange City Limits**	**Placentia City Limits**	**74**
17	**143 170 30**	**Sycamore Street/Westmont Drive**	**Loara Street**	**Van Buren Street**	**73**
18	*89A & B*	*Lincoln Avenue*	*Knott Avenue*	*Euclid Street*	*72*
19	*109*	*Orangethorpe Avenue*	*Lakeview Avenue*	*Imperial Hwy*	*72*
20	**88 84 85**	**Lakeview Avenue**	**Santa Ana Canyon Road**	**Yorba Linda City Limits**	**72**

Table 9 – Priority Ranking of the Proposed Network – Tier 2

Tier 2 Priority Ranking					
Rank	**Bike IDs**	**Street/Path**	**From**	**To**	**Score**
21	**64 87**	**East/Lewis**	**Katella Avenue**	**La Palma Avenue**	**69**
22	**94 90 144 92**	**Manchester/Loara**	**Santa Ana Street**	**North Street**	**69**
23	**153 106 24**	**Olive Street**	**Edison Trail s/o Cerritos**	**La Palma Avenue**	**69**
24	**55 A.20 55 B.2.20 63 A.2.20 149**	**Cerritos/ Douglass/ Katella**	**Anaheim Boulevard**	**Santa Ana River Trail**	**68**
25	**147 71 148 72**	**Gilbert Street**	**South City Limits**	**La Palma Avenue**	**68**
26	**22 23**	**N-S Edison ROW w/o Magnolia**	**Stanton City Limits**	**La Palma Avenue**	**67**
27	*44* **A.20 44 B.20 44 C.20**	*Ball Road*	*Lemon Street*	*Orange City Limits*	*66*
28	*54* **A.20 54 B.20 54 C.2.20 54 D.20**	*Cerritos Avenue*	*West City Limits (e/o Magnolia)*	*Walnut Street*	*65*
29	**40 158**	**Anaheim Shores/ Romneya/Karcher**	**La Palma Avenue**	**Anaheim Boulevard**	**65**
30	**111 112 113 114 171 172**	**Orangewood Avenue**	**Euclid Street**	**Rampart Street**	**65**
31	**140 173**	**West Street**	**Santa Ana Street**	**La Palma Avenue**	**65**
32	*26*	*Orangethorpe Avenue*	*Lemon Street*	*Raymond Avenue*	*64*
33	**66 65**	**Euclid Street**	**Orangewood Avenue**	**Lincoln Avenue**	**64**
34	**86 15**	**Lemon Street**	**Ball Road**	**La Palma Avenue**	**64**

35	*93*	*Magnolia Avenue*	*Stanton City Limits*	*La Palma Avenue*	*63*

Rank	Bike IDs	Street/Path	From	To	Score
36	**152 145A 145B**	**Crone Avenue/ Nutwood Street**	**Orange Avenue**	**Walnut Street**	**63**
37	**82 73**	**Kraemer/ Glassell**	**Orange City Limits**	**Orangethorpe Avenue**	**63**
38	*33*	*Acacia Street*	*La Palma Avenue*	*Fullerton City Limits*	*62*
39	*138*	*Walnut Street*	*Katella Avenue*	*Santa Ana Street*	*62*
40	*162*	*Van Buren Street*	*La Palma Avenue*	*Placentia City Limits*	*60*
41	**31 12 20**	**Tustin Metrolink Paths**	**Orange City Limits**	**Tustin Avenue**	**60**
42	*62*	*Dale Street*	*Stanton City Limits*	*Buena Park City Limits*	*59*
43	**67 15 16 17**	**Fairmont Boulevard**	**Canyon Rim Road**	**Yorba Linda City Limits**	**58**
44	**104 105**	**Oak Canyon Drive**	**Serrano Avenue**	**Running Springs Drive**	**57**
45	*57*	*Citron Street*	*Vermont Avenue*	*Santa Ana Street*	*56*
46	**19 29 179**	**La Palma Avenue East**	**Blue Gum Street**	**Santa Ana River Trail**	**56**
47	**21.20 100 181.20**	**Nohl Ranch**	**Pelanconi Park**	**Serrano Avenue**	**56**

Table 10 – Priority Ranking of the Proposed Network – Tier 3

Tier 3 Priority Ranking					
Rank	**Bike IDs**	**Street/Path**	**From**	**To**	**Score**
48	**76 18**	**Imperial Hwy**	**Orange City Limits**	**Santa Ana Canyon Road**	**52**
*49**	*45.20*	*Blue Gum Street*	*La Palma Avenue*	*Placentia City Limits*	*51*
50*	**1 2.20**	**Anaheim Coves Trail**	**Ball Road**	**Frontera Street**	**49**
51	**77 78**	**Kellogg Drive**	**La Palma Avenue**	**Yorba Linda City Limits**	**49**
52	**117 118**	**Rio Vista Street**	**Wagner Street**	**Frontera Street**	**48**
53	**163 141**	**Western Avenue**	**Stanton City Limits**	**Buena Park City Limits**	**48**
54	*9*	*Carbon Creek Diversion Channel*	*Kraemer Boulevard*	*Orangethorpe Avenue*	*47*
55	**120 115 178 70**	**Royal Oak/ Pinney/ Gerda**	**Nohl Ranch Road**	**Crescent Elementary School**	**46**
56	**51 131**	**Canyon Creek/Sunset Ridge**	**Serrano Avenue**	**Serrano Avenue**	**45**
57	*108*	*Orangethorpe Avenue*	*State College Boulevard*	*Placentia Avenue*	*44*
58	**98 99**	**Ninth Street**	**Garden Grove City Limits**	**Cerritos Avenue**	**44**
59	*13*	*East-West Edison ROW/Union Pacific Railroad ROW north of Katella Avenue*	*Harbor Boulevard*	*Orange City Limits*	*43*
60	*74*	*Grove Street*	*La Palma Avenue*	*Miraloma Avenue*	*43*
61	**79 80**	**Knott Avenue**	**Stanton City Limits**	**Lincoln Avenue**	**41**
62	*11*	*Deer Canyon Park*	*Fairmont Boulevard*	*Serrano Avenue*	*40*
63	*110*	*Orangethorpe Avenue*	*Kraemer Boulevard*	*Jefferson Street*	*34*
64	*135*	*Vine Street*	*Santa Ana Street*	*Broadway*	*34*
65	*116*	*Richfield Road*	*Basin Trail s/o La Palma Avenue*	*Placentia City Limits*	*33*
66	*3*	*Basin Trail s/o La Palma Avenue*	*Richfield Road*	*Lakeview Avenue*	*27*

Rank	Bike IDs	Street/Path	From	To	Score
67	*75*	*Gypsum Canyon Road*	*Santa Ana Canyon Road*	*Yorba Linda City Limits*	*26*
68	*50*	*Camino Grande/Stagecoach Road*	*Nohl Ranch Road*	*Nohl Ranch Road*	*24*
69	*88*	*Lewis Street*	*Orange City Limits*	*Orangewood Avenue*	*22*

***Full segment completed**

Proposed projects may be implemented out of scoring order as opportunities arise, which may include grant availability, new development projects, capital improvement projects, or roadway repaving. The City Public Works Department and Community Services Department (for Class I Bike Paths) will regularly review the project list and rankings to evaluate current priorities, needs, and opportunities for implementing the bikeway network in a logical and efficient manner. Due to the unpredictability of funding sources, economic conditions, and community support, some projects, especially those that require right-of-way purchase or coordination with multiple jurisdictions, may take longer to be developed. Additionally, while the priority ranking combines several segments into a corridor, any segment within that corridor can be implemented independently of the others. Funding for an entire corridor doesn't need to be secured in order to implement any part of the corridor.

As projects are implemented, lower ranked projects will move up the list. The project list and individual projects outlined in the Plan are flexible concepts that serve as a guideline. The ranked project list, and perhaps the overall system and segments themselves, may change over time as a result of changing bicycling patterns, land use patterns, implementation constraints and opportunities and coordination with the implementation of other transportation system facilities.

Figure 15 – Bikeway Network Priority Ranking (West)

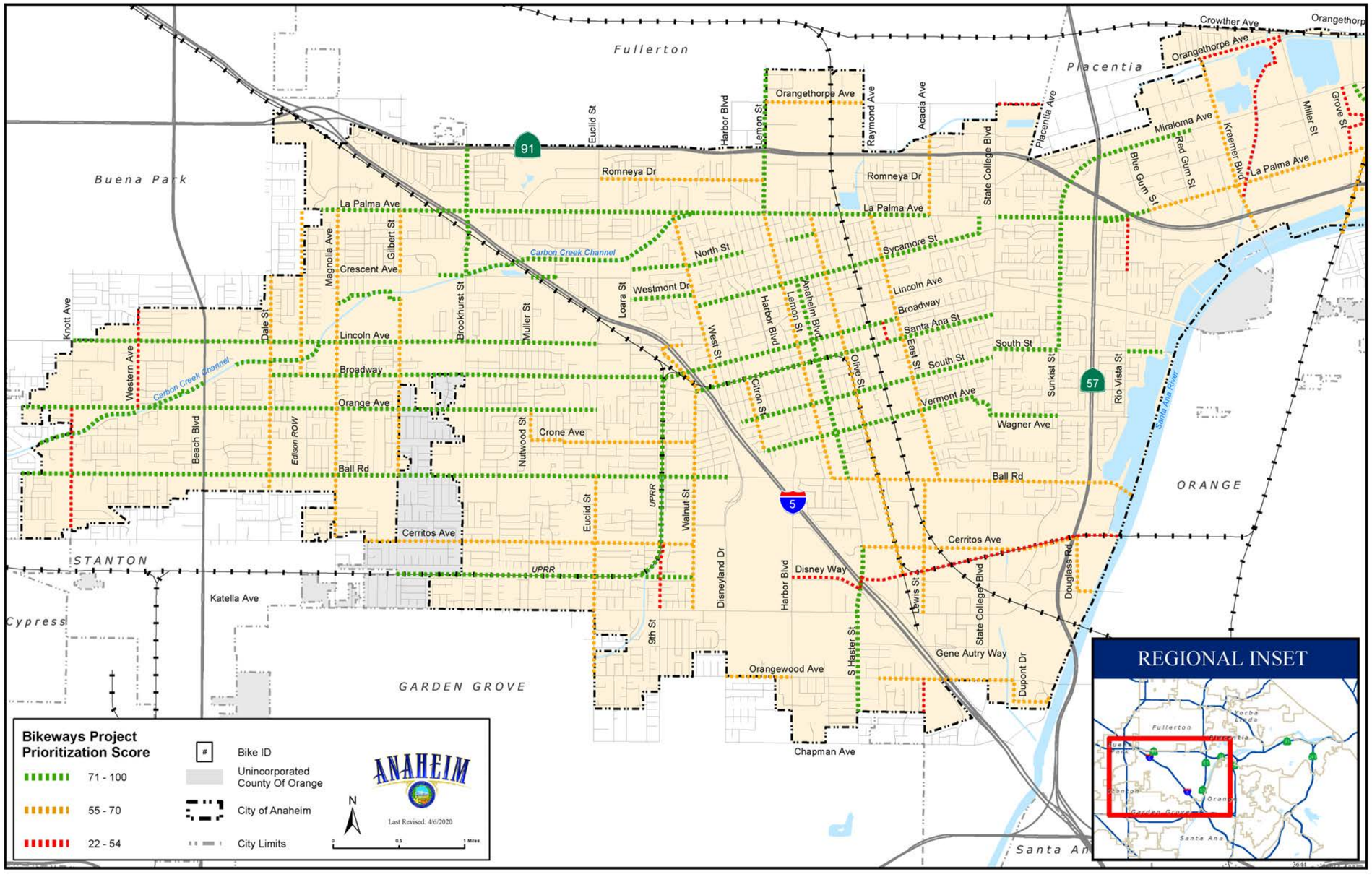

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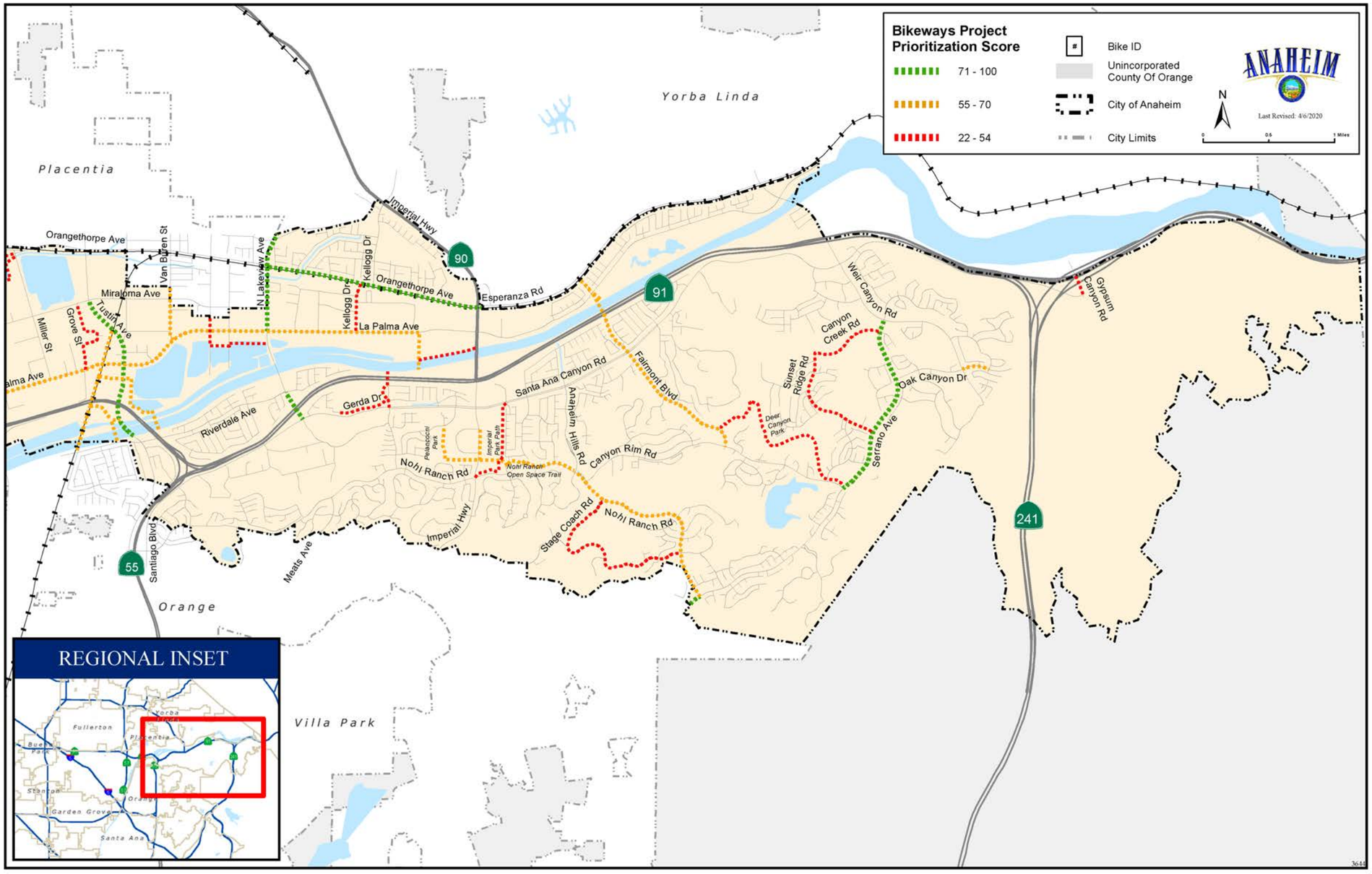
Figure 16 – Bikeway Network Priority Ranking (East)



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6.2 Bicycle Ridership Estimates and Forecasts

Current bicycling level and forecasted future bicycle ridership and vehicle trip reduction in Anaheim were estimated using US Census data, along with adjustments for likely Census underestimations. Census data captures only work commute trips and does not include bicycle trips for other purposes, such as school, shopping, or other errands. Of the work commute trips reported, Census data only captures the mode of travel for the longest portion of the trip, and excludes bicycle trips as part of a multi-modal trip.

The Plan supplements US Census data with other methodologies for estimating bicycle trips of students and transit riders, which are described in Table 11 - *Bikeway Network Ridership and VMT Reduction Estimates.* The Plan estimates that the actual current number of daily bicycle commuters in Anaheim is closer to 6,593 riders, making 13,186 daily trips and saving an estimated 9,097 vehicle trips per weekday. This estimate does not include recreation or utilitarian bicycle trips.

Additional assumptions according to industry standards were used to estimate future ridership and VMT reductions from the build out of the bikeways network. The 2002 National Cooperative Highway Research Program (NCHRP) report, *Guidelines for Analysis of Investments in Bicycle Facilities (NCHRP Report 552)* [21] presents methodologies and tools to estimate potential value and benefits of bicycle facilities. Bicycle ridership estimates were developed using a cost, demand, and benefit analysis and estimation tool[22] derived from and consistent with NCHRP Report 552. People within one mile of a bikeway are more likely to ride a bicycle, with the likelihood of bicycling increasing within one-half mile and one-quarter-mile of bikeways. Estimated ridership for a new facility is derived based on existing and induced demand from the quarter-mile, half-mile and one mile buffers around a facility. To be conservative, the existing population density was used rather than the forecast build out density, and the future forecasts were normalized based on the US Census based existing ridership estimation.

As shown in Table 11 - *Bikeway Network Ridership and VMT Reduction Estimates*, completion of the proposed Anaheim Bikeway Network could increase the total number of bicycle trips from the current estimate of 13,186 to 41,444, with annual VMT reduction increase from 9,975,331 to 31,350,424.

21 http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_552.pdf
22 http://www.pedbikeinfo.org/bikecost/

Table 11 – Bikeway Network Ridership and VMT Reduction Estimates

Current Statistics and Estimates	Anaheim	Methodology Notes
Estimated Ridership of the Existing Bikeway Network		
Population	342,973	2014 ACS
Number of Employed Persons	155,031	2014 ACS
Bicycle-to-Work Mode Share	0.7%	2014 ACS
Number of Bicycle Commuters	1,085	Employed Persons multiplied by bike-to-work mode share
Work-at-Home Mode Share	3.2%	2014 ACS
Estimated Work-at-Home Bicycle Commuters	2,480	Assumes 50% of population working at home makes at least one bicycle trip per day
Existing Transit-to-Work Mode Share	4.4%	2014 ACS
Estimated Transit-Bicycle Commuters	1,705	Employed persons multiplied by transit mode share. Assumes 25% of transit riders access transit by bicycle.
School Children Grades K-12	66,114	2014 ACS
Estimated School Children Bicycling Mode Share	2.0%	National Safe Routes to School Surveys (2003)
Estimated School Bicycle Commuters	1,322	School children multiplied by school children bike mode share
Adjusted Current Estimated Total Number of Daily Bicycle Commuters	6,593	Total of bike-to-work, work at home, transit, and school commuters. Does not include recreation or utilitarian
Adjusted Current Estimated Total Daily Bicycle Trips	13,188	Total bicycle commuters x 2 (for round trips)

Current Statistics and Estimates	Anaheim	Methodology Notes
Estimated VMT Reductions of Current Bicycle Network		
Reduced Vehicle Trips per Weekday	9,097	Assumes 73% of bicycle trips replace vehicle trips for adults and 53% for school children. Based on survey results from 10 California cities conducted by Alta between 1990 and 1999, L.A. Countywide Policy Document survey (1995), and National Bicycling & Walking Study, FHWA, 1995.
Reduced Vehicle Trips per Year	2,374,410	Reduced number of weekday vehicle trips multiplied by 261 (weekdays in a year)
Reduced Vehicle Miles per Weekday	38,220	Assumes average round trip travel length of 7 miles for adults and 1 mile for school children.
Reduced Vehicle Miles per Year	9,975,331	Reduced number of weekday vehicle miles multiplied by 261 (weekdays in a year)
Projected Ridership and VMT Reductions at Build Out of Bicycle Network		
Future Estimated Total Daily Bicycle Trips	41,444	NCHRP 552 Methodology using the analysis tool at http://www.pedbikeinfo.org/bikecost
Reduced Vehicle Trips per Weekday	28,591	Assumes same ratio of vehicle trip replacement from existing conditions, assumes same percentage of school trips from existing conditions
Reduced Vehicle Trips per Year	7,462,284	Reduced number of weekday vehicle trips multiplied by 261 (weekdays in a year)
Reduced Vehicle Miles per Weekday	120,117	Assumes average round trip travel length of 7 miles for adults and 1 mile for school children, using same school children percentage of total trips estimated for existing conditions.
Reduced Vehicle Miles per Year	31,350,424	Reduced number of weekday vehicle miles multiplied by 261 (weekdays in a year)

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6.3 Past Expenditures on the Bikeway Network

Since 2004, Anaheim has implemented approximately 42.98 miles of new bikeways. Table 12 – *Bikeway Network Expenditures Since 2004* summarizes these estimated costs.

Table 12 – Bikeway Network Expenditures Since 2004

Class	Centerline Miles	Cost Per Mile	Total Estimated Cost
Class I Bike Path (Anaheim Coves South)	1.63	$306,748	$520,062
Class I Bike Path (Anaheim Coves North)	0.94	$803,700	$855,000
Class I Bike Path (SoCal Edison ROW w/o Magnolia)	1.33	$338,345	$450,000
Class I Bike Path	0.83	$1,957,040	$1,624,343
Class II Bike Lane	27.54+5.62= 33.16	$133,170	$4,415,917
Class III Bike Route	0.59+0.96+3.54= 5.09	$25,070	$127,606
		Total	**$7,992,928**

Two notable recent projects are 3.79 miles of new Class I bike paths, including the Anaheim Coves Trail, which is 2.5 miles long and cost $1,375,062, and the SoCal Edison Bike Path between Broadway and Stanton City Limits, which is 1.3 miles long and cost $450,000.

The remaining Class I bike paths are estimated to have cost a combined total of $1,624,343. The 27.54 miles of Class II bike lanes 0.59 miles of Class III bike routes have been added as part of road widening or street pavement rehabilitation projects. Since these were part of larger projects, the portion of the overall cost attributed to the bikeway is difficult to isolate, therefore the costs were

estimated using national bikeways cost estimates developed for the Federal Highway Administration[23].

The City of Anaheim has implemented several projects designed to improve pedestrian and biking routes to schools and throughout the community. Prior to 2013, State and Federal funding grants were available for SRTS infrastructure improvements. Table 13 – *Safe Routes to Schools Grant Awards,* lists projects in Anaheim funded through the SRTS Federal Grant or the SR2S State Grant Programs.

Table 13 – Safe Routes to Schools Grant Awards

Project	Year Awarded	Award Amount	Description	Benefitting Schools
Magnolia Avenue and Winston Road Traffic Signal Installation Project	2015	$368,100	Installation of a new traffic signal at the intersection of Magnolia Avenue and Winston Road	Magnolia High, Salk Elementary
La Palma Sidewalk Improvement Project	2013	$450,000	Sidewalk gap closure (410 feet) project on the south side of La Palma Avenue between Sunkist Street and SR-57 freeway.	Sunkist Elementary, Sycamore Junior High
Lincoln Avenue and Westchester Drive Traffic Signal System Improvement	2013	$331,200	To signalize the intersection and include pedestrian countdown signals.	Centralia Elementary, Danbrook Elementary
Bike Trail Along Edison Right-Of-Way	2012	$448,560	To build a bicycle trail along Edison Right-of-Way between Broadway and Lola Avenue	Dale Junior High, Maxwell Elementary
Sidewalk Gap Closure on Ball Road	2011	$426,600	To build 1,350 feet of sidewalk on the north side of Ball Road between Magnolia Avenue and 160 feet west of Sherrill Street. Bike lanes will also be installed on Ball Road between Magnolia Avenue and Dale Avenue	Dale Jr High School, Magnolia High School
Sidewalk Gap Closure on La Palma Avenue	2011	$530,000	To build 300 feet of sidewalk on the south side of La Palma Avenue west of East Street	Sycamore Junior High, Thomas Edison Elementary

23 www.pedbikeinfo.org/cms/downloads/Countermeasure%20Costs_Report_Nov2013.pdf

After the passage of the Moving Ahead for Progress in the 21st Century Act (MAP-21) in 2012, SRTS projects were integrated into the State's Active Transportation Program (ATP). Federal and State funded SRTS infrastructure and non-infrastructure projects are now funded through this program. The four projects in Table 14 – *Active Transportation Program Awards, were* awarded to the City of Anaheim in the first ATP Cycle in 2014 and are currently in design or under construction. The project awarded to Anaheim in 2015 will commence design in mid-2017.

Table 14 – Active Transportation Program Awards

Project	Year Awarded	Award Amount	Description	Benefitting Schools
West Street and Citron Street Sidewalk Gap Closure	2015	$2,056,000	Multiple sidewalk gap closures on West Street, Citron Street, and Sycamore Street	Mann Elementary, Price Elementary, Westmont Elementary, Anaheim High
South Street Sidewalk Gap Closure	2014	$796,000	Sidewalk gap closure project on the south side of South Street between the Metrolink tracks and East Street	Jefferson Elementary, Olive Elementary
Western Avenue Pedestrian Signal	2014	$400,000	New pedestrian signal at an existing midblock school crosswalk on Western Avenue.	Danbrook Elementary, Orangeview Jr High, Western High
Cerritos Avenue Sidewalk Gap Closure	2014	$1,209,000	Full sidewalk gap closure project on the south side of Cerritos Avenue east of Euclid Street. Partial gap closure on the north side of the street.	Palm Lane Elementary, Ball Jr High, Loara High
Anaheim Coves Trail Northern Extension	2014	$832,000	To extend the Anaheim Coves trail northerly from Lincoln Avenue to Frontera Street	

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6.4 Proposed Bikeway Network Cost Estimates

Each proposed bikeway in the network will undergo more detailed cost analysis prior to proceeding with the project. Costs can range widely as most Class II or III bike lanes may be implemented as part of larger road rehabilitation projects, but complex projects, such as connections to the Anaheim Canyon Metrolink Station, can be extremely costly. The same FHA cost estimates are used for the proposed Bikeway Network. The City will continue to seek grant funding in addition to incorporating bikeways installation into larger projects. Table 15 – *Proposed Bikeway Network Estimated Cost* summarizes cost estimates for the proposed bikeway network recommended in this plan.

Table 15 – Proposed Bikeway Network Estimated Cost

Class	Centerline Miles	Cost Per Mile	Total Estimated Cost
Class I Bike Path	29.85	$1,957,040	$58,417,644
Class II Bike Lane	65.62	$133,170	$8,738,615.4
Class III Bike Route	19.13	$25,070	$479,589
		Total	**$67,635,848**

6.5 Implementation and Funding Opportunities

The City of Anaheim's Planned Roadway Network is approximately 640 centerline miles. The Department of Public Works collects pavement condition information such as distress (cracking), rutting, and roughness. Pavement condition is considered with other variables such as traffic volume, type of road, maintenance history, coordination with other capital projects, and allocated funding levels to prioritize street resurfacing projects. The Traffic and Transportation Section works closely with the Design Section and Operations Division to review resurfacing efforts and implements bicycle improvements in conjunction with resurfacing. This close coordination has resulted in the implementation of the majority of Class II and Class III bikeway installations since 2004.

The Department of Public Works actively seeks to implement bicycle facilities with any street improvement project that involves the widening and/or upgrade of existing arterial streets. Each year, Anaheim pursues grant opportunities to build out the arterial highways in the Circulation Element of the General Plan, consistent with the OCTA Master Plan of Arterial Highways. In conjunction with these projects, implementation of or improvements to a bicycle facility in the Bicycle Master Plan is included the project. The adoption of the Plan will allow for a significant increase in the number of arterial streets that are eligible for bikeway improvements. Additionally, any development of private property immediately adjacent to any street on the Bicycle Master Plan is subject to dedicate and improve the street to the ultimate width, including bicycle lanes, consistent with the Anaheim Municipal Code sections on Dedications and Improvements.

Class I Bike Paths that are located outside of the City's Planned Roadway Network may require additional consideration prior to implementation. Bike Paths occur in a variety of settings and are generally co-located with the following types of facilities: flood control channel maintenance roads (Carbon Creek Channel Bike ID 164), abandoned railroad right-of-way (Union Pacific Railroad Bike ID 32), beneath overhead utility easement right-of-way (Edison Easement Bike ID 22), and within or between parks (Anaheim Coves Bike ID 1).

Class I Bike Paths adjacent to residential areas may present unique situations that will be addressed with the property owner(s) and surrounding community through project planning, implementation, and maintenance. The process for implementing a Class I Bike Path that is outside of the City's Planned Roadway Network is outlined below:

1. If the City does not own the property on which the Class 1 Bike Path is planned, City staff will approach the property owner (e.g., other public agency, utility company, railroad operator, private property owner) and request to enter into a non-binding letter of interest for the proposed project. As applicable, the letter would generally identify: the type of proposed agreement, (i.e. lease, license, easement, joint use agreement); its term; law enforcement jurisdiction; potential property acquisition; maintenance responsibilities; cost sharing agreement; contingencies, etc.
2. City staff will collaborate with the surrounding community, through a community advisory working group, to identify potential issues and solutions related to the implementation of the Class 1 Bike Path. Outreach is typically initiated by mailing a notice to all addresses within a minimum of 300 feet of the project site.

3. City staff will pursue funding for the project, typically by applying for grants. City Council approval is required for acceptance of a grant in accordance with City Charter Section 518, 1211; and City Council Policy 4 and 4.1.
4. City staff will analyze potential environmental impacts of the proposed project pursuant to the California Environmental Quality Act (CEQA). CEQA outlines a public review process and requires that the City, as lead agency, to adopt or certify the environmental document(s) required by State law prior to construction of a proposed project. In addition, compliance with the National Environmental Protection Act (NEPA) would be required for projects that receive federal funding.
5. City staff and a design consultant (as applicable), in close coordination with the community advisory working group, would finalize the project design, including features of the built environment such as access control, fencing, lighting, amenities, parking, etc. City Council approval is required for design consultant contracts in accordance with City Charter Section 518, 1211; and City Council Policy 4 and 4.1.
6. The City will enter into formal agreements with the property owner(s) as described in the letter of interest that initiated the proposed project. These agreement(s) would identify the design of the project, as well as maintenance and enforcement responsibilities. The agreement(s) would require City Council approval, as well as approval and/or permits from the governing body of the property owner(s), if they are public agencies in accordance with City Charter Section 518, 1211.
7. Once all agreements/permits are in place, proceed with the award of the construction contract in accordance with Administrative Regulation 105 (Council Agenda Items) and Administrative Regulation 110 (Administration of Contracts for City Improvements, Public Work Construction Projects).

Potential funding sources for projects, programs, and plans can be found at the federal, state, regional, and local levels, including non-traditional funding sources. More expensive projects may take longer to implement. Most funding sources are highly competitive, with many potential projects competing for a relatively small amount of money. Therefore, it is impossible to determine exactly which projects will be funded by which funding sources. Additionally, programs and opportunities will be implemented and/or change over time. Anaheim actively pursues opportunities to implement and projects as funding is available. Projects may be implemented out of priority order as grants typically are specific in the type of projects that are eligible. Additionally, street improvement projects and pavement maintenance projects will not follow the bicycle project priority list; Anaheim will take advantage of these projects and programs as they occur.

Table 16 – *Recently Funded Bikeways Project,* is an example of a project that was funded by a combination of grant funding, development fees, and other non-grant sources for its design and implementation.

Table 16 – Recently Funded Bikeways Project

Project	Year Awarded	Award Amount	Description
Nohl Ranch Multi-Use Trail (Bike ID 21)	2016 (Funds Available FY 17/18)	$650,000 from Bicycle Corridor Improvement Program (BCIP)	12-foot wide Class I bikeway and 10-foot wide riding and hiking trail in compliance with Caltrans standards.

Appendices

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Appendix A
Bicycle Transportation Account Compliance Checklist

Appendix A
Bicycle Transportation Account Compliance Checklist

BTA 891.2	Plan Element	Location
a)	The estimated number of existing bicycle commuters in the plan area and the estimated increase in the number of bicycle commuters resulting from implementation of the plan.	Page 101
b)	A map and description of existing and proposed land use and settlement patterns which shall include, but not be limited to, locations of residential neighborhoods, schools, shopping centers, public buildings, and major employment centers.	Maps - Pages 15, 17 (Existing Land Use) Pages 19, 31 (Proposed Land Use) Description – Pages 11 to 13
c)	A map and description of existing and proposed bikeways.	Maps - Pages 31, 33, 37, 39, 85, 87 Description – Pages 23 to 42 & Pages 77 to 83
d)	A map and description of existing and proposed end-of-trip bicycle parking facilities. These shall include, but not be limited to, parking at schools, shopping centers, public buildings, and major employment centers.	Map - Page 47 Description – Pages 43, 44, 45, 89
e)	A map and description of existing and proposed bicycle transport and parking facilities for connections with and use of other transportation modes. These shall include, but not be limited to, parking facilities at transit stops, rail and transit terminals, ferry docks and landings, park and ride lots, and provisions for transporting bicyclists and bicycles on transit or rail vehicles or ferry vessels.	Map – Page 47 & 51 Description – Pages 49, 50
f)	A map and description of existing and proposed facilities for changing and storing clothes and equipment. These shall include, but not be limited to, locker, restroom, and shower facilities near bicycle parking facilities.	Map - Page 47 Description – Pages 43, 44, 45, 89
g)	A description of bicycle safety and education programs conducted in the area included within the plan, efforts by the law enforcement agency having primary traffic law enforcement responsibility in the area to enforce provisions of the Vehicle Code pertaining to bicycle operation, and the resulting effect on accidents involving bicyclists.	Page 53 to 58, 89
h)	A description of the extent of citizen and community involvement in development of the plan, including, but not limited to, letters of support.	Pages 74 & 75
i)	A description of how the bicycle transportation plan has been coordinated and is consistent with other local or regional transportation, air quality, or energy conservation plans, including, but not limited to, programs that provide incentives for bicycle commuting.	Pages 63 to 67
j)	A description of the projects proposed in the plan and a listing of their priorities for implementation.	Pages 77 to 99
k)	A description of past expenditures for bicycle facilities and future financial needs for projects that improve safety and convenience for bicycle commuters in the plan area.	Pages 105 to 110

Appendix B
General Plan Amendments

General Plan Amendment No. 2017-00513 includes the following:

Existing Bikeways Not in 2004 General Plan – Addition To GP				
Class I Bike Path				
Bike ID	**Street/Path**	**From**	**To**	**Centerline Miles**
176	Walnut Canyon Reservoir	Canyon Rim	Canyon Rim	1.74
			Total	**1.74**

Existing Bikeways Built Since 2004 – Addition to GP				
Class I Bike Path				
Bike ID	**Street/Path**	**From**	**To**	**Centerline Miles**
1	Anaheim Coves Trail	Ball Road	Lincoln Avenue	1.63
17	Fairmont Boulevard	La Palma Avenue	Yorba Linda City Limits	0.14
22**	North-South SoCal Edison Right of Way west of Magnolia Avenue	Stanton City Limits	Broadway	1.33
28	Santa Ana River Trail	Yorba Linda Boulevard	Yorba Linda City Limits	0.42
164*	Carbon Creek Channel	Beach Boulevard	Schweitzer Park	0.27
			Total	**3.79**

*Identified as proposed in 2004 and has been implemented
**Identified as proposed in 2004 and has been partially implemented

Existing Bikeways Built Since 2004 – Addition to GP				
Class II Bike Lane				
34	Anaheim Boulevard	Sycamore Street	La Palma Avenue	0.53
36	Anaheim Boulevard	Cerritos Avenue	Ball Road	0.53
40	Anaheim Shores / Romneya Drive	La Palma Avenue	Euclid Street	0.71
42A**	Ball Road	Knott Avenue	Western Ave	0.5
42C**	Ball Road	Gaymont Street	Brookhurst Street	0.5
47**	Broadway	East Street	State College Boulevard	0.76
48B**	Brookhurst Street	Lincoln Avenue	Crescent Avenue	0.50
48C**	Brookhurst Street	Ball Road	Katella Avenue	1.01
52A*	Canyon Rim Road	Nohl Ranch Road	Fairmont Boulevard	1.17
52B	Canyon Rim Road	Fairmont Boulevard	Serrano Avenue	0.97
56	Chapman Avenue	Harbor Boulevard	Garden Grove City Limits	0.25
59*	Crescent Avenue	Brookhurst Street	Muller Street	0.51
60*	Crescent Avenue	Chippewa Avenue	Loara Street	0.58
69**	Frontera Street	Rio Vista Street	Glassell Street	1.01

Bike ID	Street/Path	From	To	Centerline Miles
72	Gilbert Street	South City Limits	Ball Road	1.01
73*	Glassell Street	Orange City Limits	Frontera Street	0.16
80**	Knott Avenue	Orange Avenue	Lincoln Avenue	0.51
84**	Lakeview Avenue	La Palma	Riverdale	0.48
91*	Lincoln Avenue	Rio Vista Street	Orange City Limits	0.49
92	Loara Street	Wilshire Street	North Street	0.38
95*	Miller Street	La Palma Avenue	Orangethorpe Avenue	1.00
97**	Miraloma Avenue	La Loma Circle	Van Buren Street	1.91
98B**	Ninth Street	Orangewood Avenue	Katella Avenue	0.50
102	North Street	Harbor Boulevard	Anaheim Boulevard	0.34
111A*	Orangewood Avenue	Euclid Street	Ninth Street	0.50
111B	Orangewood Avenue	Ninth Street	East City Limit east of Janette Lane	0.22
117**	Rio Vista Street	Wagner Street	Dutch Avenue	1.11
120*	Royal Oak Road	Nohl Ranch Road	Santa Ana Canyon Road	0.47
121B	Santa Ana Canyon Road	Weir Canyon Road	Gypsum Canyon Road	1.98
124**	Serrano Avenue	Nohl Ranch Road	Canyon Rim Road	1.43

Bike ID	Street/Path	From	To	Centerline Miles
127**	South Street	Sunkist Street	Rio Vista Street	0.51
128B**	Sunkist Street	Wagner Avenue	South Street	0.50
132	Tustin Avenue	Orange City Limits	Santa Ana River Trail	0.39
133B*	Tustin Avenue	Miraloma Avenue	Placentia City Limits	0.38
137**	Wagner Avenue	Sunkist Street	Rio Vista Street	0.51
144*	Wilshire Avenue	Loara Street	Lincoln Avenue	0.47
163**	Western Avenue	Stanton City Limits	Orange Avenue	0.76
166**	La Palma Avenue	Acacia Street	State College Boulevard	0.50
			Total	**26.04**

*Identified as proposed in 2004 and has been implemented
**Identified as proposed in 2004 and has been partially implemented

Existing Bikeways Built Since 2004 – Addition to GP				
Class III Bike Routes				
Bike ID	**Street/Path**	**From**	**To**	**Centerline Miles**
42B	Ball Road	Western Avenue	Gaymont Street	0.69
146	Dutch Avenue/Park Vista Avenue	Rio Vista Street	Frontera Street	0.59
			Total	**1.28**
			Total Bikeways Built Since 2004	**32.85**

Proposed Projects Not Identified in the 2004 Bicycle Master Plan				
Class I Bike Paths				
Bike ID	**Street/Path**	**From**	**To**	**Centerline Miles**
2	Anaheim Coves Trail North Extension	Lincoln Avenue	Frontera Street	0.94
7	Carbon Creek Channel	Magnolia Avenue	Gilbert Street	0.57
8	Carbon Creek Channel	Brookhurst Street	La Palma Avenue	1.89
14B	East-West Edison right-of-way/Union Pacific Railroad right-of-way north of Katella Avenue	Douglass Road	Orange City Limit	0.32
15	Fairmont Boulevard	Santa Ana Canyon Road	La Palma Avenue	0.54
21	Nohl Ranch Open Space Trail	Avd Margarita	Anaheim Hills Road	1.27
31	Tustin Avenue-Metrolink Connection Alt 1	Orange Sub	Tustin Avenue	0.28
175	Tustin Avenue-Metrolink Connection Alt 2	Orange Sub	Santa Ana River Trail	0.17 (Alternative - Not Counted)
178	Peralta Canyon Park Overcrossing	Pinney Drive	Santa Ana River Trail	0.25
179	Imperial La Palma Connector	Santa Ana River Trail Connector w/o Imperial Highway	Imperial Highway	0.45
			Total	**6.51**

Proposed Projects Not Identified in the 2004 Bicycle Master Plan				
Class II Bike Lanes				
Bike ID	**Street/Path**	**From**	**To**	**Centerline Miles**
26	Orangethorpe Avenue	Lemon Street	Raymond Avenue	0.75
33	Acacia Street	La Palma Avenue	Fullerton City Limits	0.61
35	Anaheim Boulevard	Ball Road	Sycamore Street	1.56
37	Anaheim Boulevard/Haster Street	Garden Grove City Limits	Cerritos Avenue	1.25
38	Anaheim Boulevard/Lemon Street	La Palma Avenue	Fullerton City Limits north of Freedom Lane	1.10
42D	Ball Road	Western Avenue	Gaymont Street	0.69
43B	Ball Road	Walnut Street	West Pl	0.25
44	Ball Road	Lemon Street	Orange City Limits	2.31
46A	Broadway	Dale Street	SCE Trail	0.23
46C	Broadway	Gilbert Street	East Street	3.85
54	Cerritos Avenue	West City Limits (east of Magnolia)	Walnut Street	2.51
62	Dale Street	Stanton City Limits	Buena Park City Limits	1.64
66	Euclid Street	Orangewood Avenue	Ball Road	1.52

Bike ID	Street/Path	From	To	Centerline Miles
87B	Lewis Street	Cerritos Avenue	Ball Road	0.52
88	Lewis Street	Orange City Limits	Orangewood Avenue	0.25
89B	Lincoln Avenue	SoCal Edison Trail	Euclid Street	2.26
93	Magnolia Avenue	Stanton City Limits	La Palma Avenue	2.49
101	North Street	West Street	Harbor Boulevard	0.45
103	North Street	Anaheim Boulevard	Olive Street	0.22
107B	Orange Avenue	Carbon Creek Channel	Magnolia Avenue	1.41
112	Orangewood Aveenue	West Street	Harbor Boulevard	0.51
116	Richfield Road	Basin Trail south of La Palma Avenue	Placentia City Limits	0.22
126	South Street	State College Boulevard	Sunkist Street	0.50
133A	Tustin Avenue	Santa Ana River Trail	Miraloma Avenue	1.18
138A	Walnut Street	Katella Avenue	Ball Road	1.02
			Total	**29.29**

Proposed Projects Not Identified in the 2004 Bicycle Master Plan				
Class III Bike Routes				
Bike ID	**Street/Path**	**From**	**To**	**Centerline Miles**
145B	Crone Street	Nutwood Street	UPRR	0.25
147	Gilbert Street	La Palma Avenue	Crescent Avenue	0.49
148	Gilbert Street	Broadway	Ball Road	0.76
150	Lemon Street	Ball Road	Sycamore Street	1.53
151	North Street	Loara Street	West Street	0.42
152	Nutwood Street	Orange Avenue	Crone Street	0.23
153	Olive Street	Santa Ana Street	La Palma Avenue	1.09
154	Orange Avenue	Magnolia Avenue	Euclid Street	1.98
158	Romneya Drive/Carl Karcher Way	Euclid Street	Anaheim Boulevard	1.26
159	Santa Ana Street	East Street	State College Boulevard	0.72
160	South Street	Indiana Street	State College Boulevard	1.97
161	South Street	Rio Vista Street	Anaheim Coves Trail	0.28
			Total	**10.98**

Change in Bikeways Classification				
Class II Bike Lane Reclassified to Class I Bike Path				
Bike ID	**Street/Path**	**From**	**To**	**Centerline Miles**
19	La Palma Avenue	Blue Gum Street	e/o Brasher Street	4.23
109	Orangethorpe Avenue	Lakeview Avenue	Imperial Highway	1.66
			Total	**5.89**

Change in Bikeways Classification				
Class II Bike Lane Reclassified to Class III Bike Route				
Bike ID	**Street/Path**	**From**	**To**	**Centerline Miles**
57	Citron Street	Vermont Avenue	Santa Ana Street	0.57
86	Lemon Street	Sycamore Street	La Palma Avenue	0.56
106	Olive Street	Vermont Avenue	Santa Ana Street	0.57
122	Santa Ana Street	Walnut Street	East Street	1.63
135	Vine Street	Santa Ana Street	Broadway	0.15
143	Westmont Drive	Loara Street	West Street	0.48
145A	Crone Avenue	UPRR Trail	Walnut Street	1.00
170	Sycamore Street	West Street	Sycamore Connector	2.22
173	West Street	North Street	La Palma Avenue	0.42
			Total	**7.60**

Change in Bikeways Classification				
Class III Bike Route Changed to Class II Bike Lane				
155	Orangethorpe Avenue	Miller Street	Jefferson Street	0.87
108	Orangethorpe Avenue	State College Boulevard	Placentia Avenue	0.36
115	Pinney Drive	Santa Ana Canyon Road	Gerda Drive	0.06
			Total	**1.29**

Deletion from the General Plan				
Bike ID	**Street/Path**	**From**	**To**	**Centerline Miles**
N/A	Mountain Park Drive	Weir Canyon Road	Gypsum Canyon Road	N/A
N/A	Weir Canyon Road	Blue Sky Road	Mountain Park Drive	N/A
N/A	Gypsum Canyon Road	Mountain Park Drive	Santa Ana Canyon Road	N/A
N/A	Oak Canyon Drive	Running Springs Road	East end of Street	N/A
N/A	Old Bridge Path	Fairmont Boulevard	Old Bridge Road	N/A
N/A	Orangewood/Santa Ana River Link	I-5	Santa Ana River	N/A

Figures: Replace Figure C-5, Page C-33 of the Circulation Element of the Anaheim General Plan, Figure G-1, Page G-5 of the Green Element of the Anaheim General Plan to reflect the changes referenced in the tables above.

Text: Amendments to the Anaheim General Plan are shown in ~~strikeout~~ for removal and **bold** for additions.

Circulation Element

GOAL 2.2: Provide a safe circulation system.
Policies:

1) Promote the principle that streets have multiple uses and users, and protect the safety of all users.
2) Discourage high speed, through traffic on local streets with appropriate traffic calming measures (e.g., traffic enforcement, bulb-outs, lane striping, chokers, etc).
3) Design access onto major arterial streets in an orderly and controlled manner.
4) Promote common driveways and reduce curb cuts along arterial highways to minimize impacts to traffic flows.
5) Minimize disruptions to traffic and pedestrian/bicycle flow.
6) Implement street design features on arterial highways such as the use of medians, bus turnouts, consolidated driveways and on-street parking prohibitions to minimize mid-block traffic congestion.
7) Implement street design features that discourage through traffic intrusion on residential streets.
8) Support freeway improvements that remove through traffic from local and arterial streets.
9) Provide bus turnouts along heavily traveled arterials to minimize traffic conflicts.
10) Provide adequate sight distances for safe vehicular movement on roadways, at intersections and at driveways.
11) Implement arterial grade separations at railroad crossings.

GOAL 3.1: Provide a well-maintained street system.
Policies:

1) Maintain the street network in optimal functioning condition.
2) Maintain and rehabilitate all components of the circulation system, including roadways, sidewalks, bicycle facilities, pedestrian facilities, Intelligent Transportation systems and traffic signals.
3) Prioritize maintenance and reconstruction projects.
4) Coordinate maintenance or enhancement of transportation facilities with related infrastructure improvements.

5) Implement bicycle routes, priority signaling and bicycle amenities whenever roadways are improved.

6) Give additional maintenance priority to streets with bike lanes or bike routes.

GOAL 7.1: Protect and encourage bicycle travel.
Policies:

1) Provide safe, direct, and continuous bicycle routes for commuter and recreational cyclists.

2) Incorporate bicycle planning into the traditional transportation and roadway maintenance planning processes.

3) Support and implement bicycle routes that minimize cyclist/motorist conflicts.

4) Support roadway design policies that promote attractive circulation corridors and safe and pleasant traveling experiences for bicyclists.

5) Support OCTA's program to provide bike racks on transit buses.

6) Implement a bikeway system with linkages to routes in neighboring jurisdictions and regional bicycle routes.

7) Maximize the use of easements and public rights-of-way along flood channels, utility corridors, rail lines and streets for bicycle and pedestrian paths.

8) Connect Downtown with The Platinum Triangle ~~using the Olive Street railroad right-of-way~~ for pedestrian, bicycle, and/or transit users.~~as a "rails to trails" project~~.

9) Require that new streets or developments contain adequate right of way for bicycle lanes, where appropriate.

10) Where space and appropriate roadway conditions currently exist, continue to install bike routes with priority to segments serving US Census documented existing high bicycle ridership areas.

11) Work with the Caltrans to provide appropriate accommodation for bicyclists and pedestrians along Caltrans facilities, as well as applying for funding for state, local and regional non-motorized modal projects.

Goal 12.1: Ensure adequate parking is made available to City residents, visitors, and businesses.
Policies:

1) Assess the adequacy of existing or proposed on- and off-street parking as needed, especially in urban and commercial areas, to ensure that an adequate supply is provided.

2) Explore strategies for the management of parking supply, which can include parking fees, metered on-street parking, and staggered work schedules.

3) Develop strategies for the control of parking demand such as improved transit service, amenities for bicyclists, and rideshare vehicles.

4) Develop strategies for shared parking opportunities in mixed-use and multiple-use development.

5) Encourage the use of well-designed, aesthetically-enhanced parking structures as an alternative to large, expansive surface parking lots.

6) Encourage businesses to provide bicycle parking facilities such as bike racks and lockers to promote bicycling.

Green Element

Goal 3.1: Actively plan for the use of utility easements as recreational trails and open space amenities.
Policy:

1) Coordinate with Southern California Edison to pursue the implementation of recreational and open space amenities on utility easements.

Goal 9.1: Reduce single-occupancy vehicle trips
Policies:

1) Encourage alternative work schedules for public and private sector workers.

2) Encourage development of new commercial and industrial projects that provide on-site amenities that help to lesson vehicle trips such as on-site day care facilities, cafeterias, automated teller machines and bicycle storage facilities.

3) Encourage use of vanpools and carpools by providing priority parking through the project design process.

4) Encourage bicycle and pedestrian travel by improving the City's trail and bikeway master plan and by providing convenient links between the trail system and desired destinations.

5) Encourage the development of commercial, office and residential uses in appropriate mixed-use and multiple use settings.

Goal 10.1: Improve the efficiency and ridership of public transit within the City.
Policies:

1) Continue to expand the convenience and quality of local transit service.

2) Provide convenient connections and shuttle services from commuter rail stations to employment centers and entertainment venues.

3) Work with public transit providers to ensure that transit stops are safe, comfortable and convenient.

4) Continue multi-faceted efforts to inform the public about transit opportunities, scheduling and benefits.

5) Provide convenient first/last mile bicycle and pedestrian connections to transit stops.

Goal 11.1: Encourage land planning and urban design that support alternatives to the private automobile such as mixed-use, provision of pedestrian and bicycle amenities, and transit-oriented development.

Policies:

1) Encourage commercial growth and the development of commercial centers in accordance with the Land Use Element.

2) Encourage mixed-use development in accordance with the Land Use Element.

3) Encourage retail commercial uses in or near residential areas and employment centers to lessen vehicle trips.

4) Encourage higher densities and mixed-use development in the vicinity of major rail and transit stops.

5) Encourage a diverse mix of retail uses within commercial centers to encourage one-stop shopping.

6) Locate new public facilities with access to mass transit service and other alternative transportation services, including rail, bus, bicycles and pedestrian use.

7) Provide everyday opportunities to connect with nature through the promotion of trails, bicycle routes, and habitat friendly landscaping.

Community Design Element

GOAL 3.1: Single-family neighborhoods are attractive, safe and comfortable.
Policies:

1) Continue to maintain and improve the visual image and quality of life of single-family neighborhoods.

2) Strengthen the important elements of residential streets that unify and enhance the character of the neighborhood, including parkways, mature street trees, compatible setbacks, and a unified range of architectural detailing.

3) Require new and infill development to be of compatible scale, materials, and massing as existing development.

4) Improve the pedestrian and social atmosphere of the street by orienting new homes towards the street with attractive front porches, highly visible street facades, and compatible setbacks.

5) Enhance and encourage neighborhood or street identity with theme landscaping or trees, entry statements, and enhanced school or community facility identification.

6) Maintain, improve and/or develop parkways with canopy street trees, providing shade, beauty and a unifying identity to residential streets.

7) Encourage well-designed, front yards to provide an effective visual transition from the street to the homes.

8) Where feasible, encourage the actual or visual narrowing of streets through measures such as widened parkways, canopy trees, and sidewalk bulbs at the intersections.

9) Site garages back from the street and minimize street frontage devoted to driveways and vehicular access.

10) If desired by the community, provide continuous sidewalks and links to nearby community facilities, retail centers and transit stops for safety and convenience.

11) Encourage a variety of architectural styles, massing, floor plans, facade treatment and elevations to create visual interest.

12) Reduce the impact of monotonous walls, located at the periphery of residential neighborhoods along arterial corridors, through landscaping, varied surface treatment, and use of vertical and/or horizontal design elements.

13) Provide safe and convenient pedestrian and bicycle access from single family neighborhoods to nearby commercial centers, schools, and transit stops.

GOAL 4.1: Multiple-family housing is attractively designed and scaled to complement the neighborhood and provides visual interest through varied architectural detailing.
Policies:

1) Reduce the visual impact of large-scale, multiple-family buildings by requiring articulated entry features, such as attractive porches, and detailed facade treatments, which create visual interest and give each unit more personalized design.

2) Discourage visually monotonous, multiple-family residences by incorporating different architectural styles, a variety of rooflines, wall articulation, balconies, window treatments, and varied colors and building materials on all elevations.

3) Require appropriate setbacks and height limits to provide privacy where multiple-family housing is developed adjacent to single-family housing.

4) Reduce the visual impact of parking areas by utilizing interior courtyard garages, parking structures, subterranean lots, or tuck-under, alley-loaded designs.

5) Require minimum lot size criteria in the Zoning Code to encourage professional, responsible, on-site property management.

6) Provide usable common open space amenities. Common open space should be centrally located and contain amenities such as seating, shade and play equipment. Private open space may include courtyards, balconies, patios, terraces and enclosed play areas.

7) Where a multiple-story apartment building abuts single-story development, provide for a gradual transition in height by reducing the height of the building adjacent to the smaller scale use.

8) Provide safe and convenient pedestrian and bicycle access from multiple-family development to nearby commercial centers, schools, and transit stops.

9) Where possible, underground or screen utilities and utility equipment or locate and size them to be as inconspicuous as possible.

10) Encourage multi-family housing developers to comply with Residential Voluntary Measure A4.106.9.2 of the California Green Building Standards Code that outlines the provision of long-term bicycle parking for multi-family buildings.

GOAL 8.1: Anaheim's mixed-use areas are attractively designed, pedestrian and bicycle-friendly, easily accessible, and contain a proper blend of commercial retail, office and residential uses.
Policies:

1) Encourage design flexibility in mixed-use development by allowing both a vertical and/or horizontal mix of uses.
2) In vertical mixed-use, site retail or office uses on the ground floor, with residential and/or office uses above.
3) Encourage architecture that divides individual buildings into a base, middle and top (i.e., second story and higher density residential uses could incorporate different window treatment, architectural detailing, colors, balconies, and bays). For two-story buildings, ground floor retail uses should be distinguished from second story facades, with both containing rich surface articulation. Rooflines should have a finished look with cornices, parapets or other finishing details.
4) Locate commercial/retail uses near the sidewalk to provide high visibility from the street.
5) Design development with the pedestrian in mind by including wide sidewalks, canopy street trees, sitting areas and clearly defined pedestrian routes.
6) With large-scale mixed-use development, orient the tallest portions of the buildings towards the center of the site and ensure that the height of the buildings at the periphery are compatible with adjacent development.
7) Minimize the visual impact of surface parking by providing either parking structures, rear- or side-street parking with effective landscape buffering.
8) Segregate residential parking from commercial and office parking.
9) Locate mixed-use development in areas of high visibility and accessibility, and along streets that balance vehicular and pedestrian traffic.
10) Strategically locate potentially disruptive retail uses such as nightclubs or bars to avoid future conflicts with adjacent residential uses.
11) Provide each residential use with its own private space (such as balconies, patios or terraces) and larger communal spaces such as lobbies, central gardens or courtyards.
12) Where possible, underground or screen utilities and utility equipment or locate and size them to be as inconspicuous as possible.
13) Provide appropriate bicycle parking facilities to serve diverse users of mixed-use developments. Bicycle parking should be highly visible and/or near the entrance of the building.

GOAL 13.1: Anaheim has a vibrant, distinctive, bicycle and pedestrian-friendly Downtown that respects its historic context and provides civic, shopping, employment, and entertainment opportunities for residents and visitors.

Policies:

1) Use the Anaheim Colony Vision, Principles and Design Guidelines to ensure that new development reflects the diverse architectural heritage, and that the detailing and scale of the area is maintained and/or enhanced.

2) Incorporate historic themes and community symbols into the design of the Downtown area to distinguish it as Anaheim's historic/civic core.

3) Provide generous bicycle and pedestrian amenities such as bicycle lanes, sharrows or signs to encourage vehicles to share the road with bicyclists, bike racks and lockers, wide sidewalks, ground-level retail uses, parkways, vintage streetlights, sitting areas, and street furniture as key features of Downtown Anaheim.

4) Establish a strong sense of architectural identity and visual continuity through similarities in scale, height, massing, facade organization, signage, material use, colors and roof shapes.

5) Encourage architectural detailing, which includes richly articulated surfaces and varied facade treatment, rather than plain or blank walls.

6) Locate commercial buildings close to the public right-of-way to better define the urban space and create pedestrian interest. Consistent street frontages of buildings are encouraged, but can be relieved with occasional courtyards, patios and setbacks.

7) Develop a sign program for important streets that complements the architecture of individual buildings and also provides a unifying element along the streetscape.

8) Encourage the following types of signs: indirectly lit signs, raised letter signs, wall signs, awnings, and double-faced, projecting signs along pedestrian streets.

9) Discourage the use of the following types of signs: internally illuminated, plastic, flashing signs, billboards, generic trademark signs, and any sign temporarily affixed to ground-floor windows. Roof signs are generally discouraged, although exceptions can be made for historically appropriate designs through established zoning provisions.

10) Where feasible, incorporate either angled or parallel parking on local commercial streets in the Downtown area to provide convenient access to retail uses.

11) Minimize the visual impact of surface parking lots by locating them behind buildings, away from the street, if possible, or through perimeter and interior landscaping and small-scale fencing.

12) Encourage use of parking structures in lieu of surface parking lots. When provided along a pedestrian-oriented street, the structure should be designed to provide ground-level retail and/or office space. On streets where cars must occupy the ground level, a landscaped setback should be used to minimize and soften the visual impact of the structure.

13) Design public plazas and spaces that are both comfortable and convenient. They should be well-defined by surrounding buildings, located near the street for visual contact and

convenience, contain abundant seating opportunities, and incorporate amenities such as distinctive focal points, public art, ample shade, and eating and entertainment possibilities.

14) Mark the transition from residential areas of the Colony to the Downtown core with special edge treatment, gateway monumentation and distinctive signage.

Economic Development Element

GOAL 6.4: Promote the revitalization of Downtown Anaheim as a pedestrian-oriented and bicycle-friendly civic town center, enhanced with diverse retail, residential and cultural opportunities.
Policies:

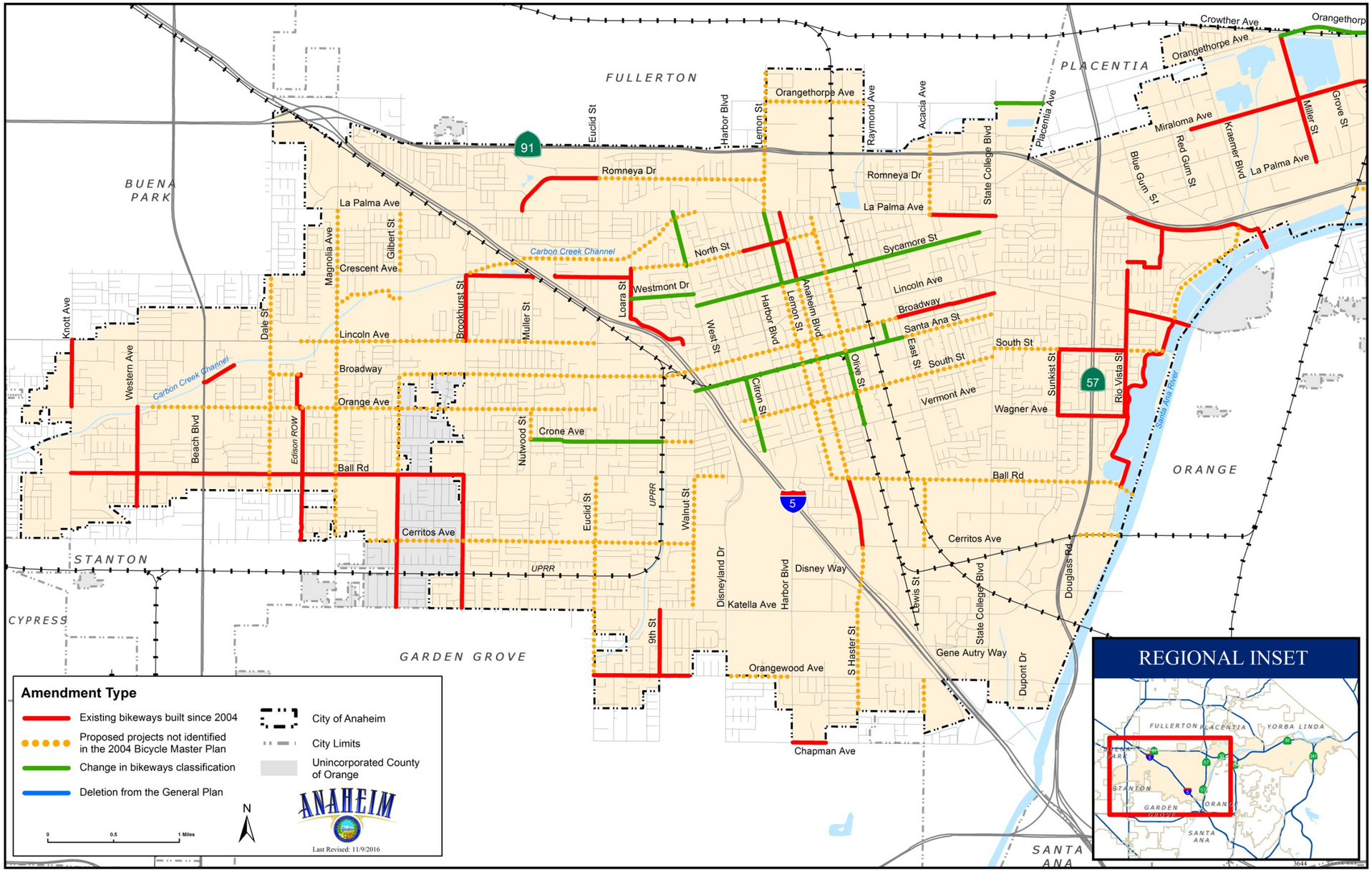
1) Promote the Anaheim Colony Historic District as a destination for local residents and regional visitors thereby creating a stimulus for economic revitalization.

2) Encourage quality design through implementation of the Anaheim Colony Vision, Principles, and Design Guidelines.

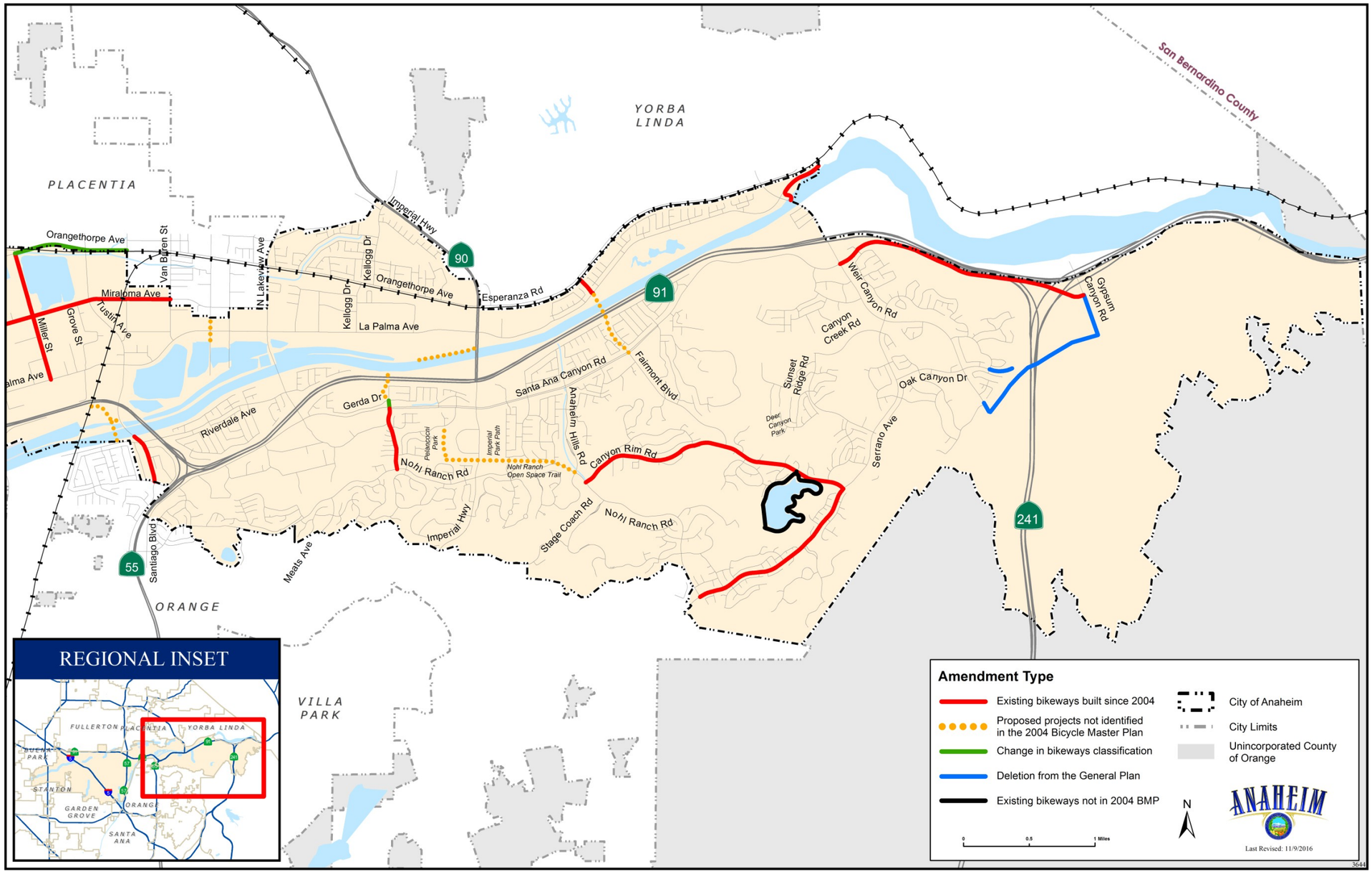
3) Encourage mixed-use development incorporating ground-floor retail and high quality architecture that is consistent with the historic nature of the area.

4) Encourage well-designed, convenient parking structures, distinctive street furniture, and ample bicycle and pedestrian amenities as stimuli to Downtown shopping and commercial activity.

General Plan Amendments (West)



General Plan Amendments (East)



Bike ID	Updated Bike ID	Class and Status (May 23, 2017)	Updated Class and Status	Planned Mileage	Implemented Mileage	Interim Class 3 Implemented	Summary of Change
2	2.20	Class I Proposed	Class I Existing	0.94	0.94		Proposed now existing
35	35 A.1.20	Class II Proposed	Class III Existing			0.93	Segment has been split; This portion is an existing interim Class 3 segment
35	35 A.2.20	Class II Proposed	Class II Proposed	0.93			Segment has been split; This portion is still proposed
35	35 B.1.20	Class II Proposed	Class III Existing			0.16	Segment has been split; This portion is an existing interim Class 3 segment
35	35 B.2.20	Class II Proposed	Class II Proposed	0.62			Segment has been split; This portion is still proposed
43 A	43 A.1.20	Class II Proposed	Class II Existing	1.26	1.26		Segment has been split; This portion is now existing
43 A	43 A.2.A.20	Class II Proposed	Class III Existing			0.50	Segment has been split; This portion is an existing interim Class 3 segment
43 A	43 A.2.B.20	Class II Proposed	Class II Proposed	0.50			Segment has been split; This portion is still proposed
44	44 A.20	Class II Proposed	Class II Proposed	0.12			Segment has been split; This portion is still proposed
44	44 B.20	Class II Proposed	Class II Existing	0.15	0.15		Segment has been split; This portion is now existing
44	44 C.20	Class II Proposed	Class II Proposed	2.04			Segment has been split; This portion is still proposed
45	45.20	Class II Proposed	Class II Existing	0.64	0.64		Proposed now existing
49	49 A.20	Class II Proposed	Class II Existing	0.36	0.36		Segment has been split; This portion is now existing
49	49 B.20	Class II Proposed	Class II Proposed	0.64			Segment has been split; This portion is still proposed
54	54 A.20	Class II Proposed	Class II Proposed	1.26			Segment has been split; This portion is still proposed
54	54 B.20	Class II Proposed	Class II Existing	0.50			Segment has been split; This portion is still proposed
54	54 C.1.20	Class II Proposed	Class III Existing			0.22	Segment has been split; This portion is an existing interim Class 3 segment
54	54 C.2.20	Class II Proposed	Class II Proposed	0.22			Segment has been split; This portion is still proposed
54	54 D.20	Class II Proposed	Class II Existing	0.53	0.53		Segment has been split; This portion is now existing
55	55 A.20	Class II Proposed	Class II Existing	0.97	0.97		Proposed now existing
55	55 B.1.20	Class II Proposed	Class III Existing			0.68	Segment has been split; This portion is an existing interim Class 3 segment
55	55 B.2.20	Class II Proposed	Class II Proposed	0.68			Segment has been split; This portion is still proposed
63	63 A.1.20	Class II Proposed	Class III Existing			0.41	Segment has been split; This portion is an existing interim Class 3 segment
63	63 A.2.20	Class II Proposed	Class II Proposed	0.41			Segment has been split; This portion is still proposed

Bike ID	Updated Bike ID	Class and Status (May 23, 2017)	Updated Class and Status	Planned Mileage	Implemented Mileage	Interim Class 3 Implemented	Summary of Change
85 A	85 A.20	Class II Proposed	Class II Existing	0.59	0.59		Total length for 85 is unchanged. Length of split segments are corrected. Planned mileage changed from 0.50 to 0.59 and is now existing
85 B	85 B.20	Class II Proposed	Class II Proposed	0.17			Total length for 85 is unchanged. Length of split segments are corrected. Planned Mileage change from 0.26 to 0.17 and is still proposed
96	96 A.20	Class II Proposed	Class II Proposed	0.78			Segment has been split; This portion is still proposed
96	96 B.20	Class II Proposed	Class II Existing	0.53	0.53		Segment has been split; This portion is now existing
122	122 A.20	Class III Proposed	Class III Existing	0.96	0.96		Segment has been split; This portion is now existing
122	122 B.20	Class III Proposed	Class III Proposed	0.67			Segment has been split; This portion is still proposed
138 B	138 B.1.20	Class II Proposed	Class III Existing			0.65	Segment has been split; This portion is an existing interim Class 3 segment
138 B	138 B.2.20	Class II Proposed	Class II Proposed	0.65			Segment has been split; This portion is still proposed
167	167 A.20	Class II Proposed	Class II Existing	0.50	0.50		Segment has been split; This portion is now existing
167	167 B.20	Class II Proposed	Class II Proposed	0.68			Segment has been split; This portion is still proposed
	180.20		Class II Existing	0.11	0.11		New existing segment for Class II "Lakeview Connector Road"
	181.20		Class I Proposed	0.24			New spur alignment. New Planned Mileage
21	21.20	Class I Proposed	Class I Proposed	1.32			Realignment of planned 1.27 miles to 1.32 Miles adds 0.5 miles
				19.95	7.52	3.54	

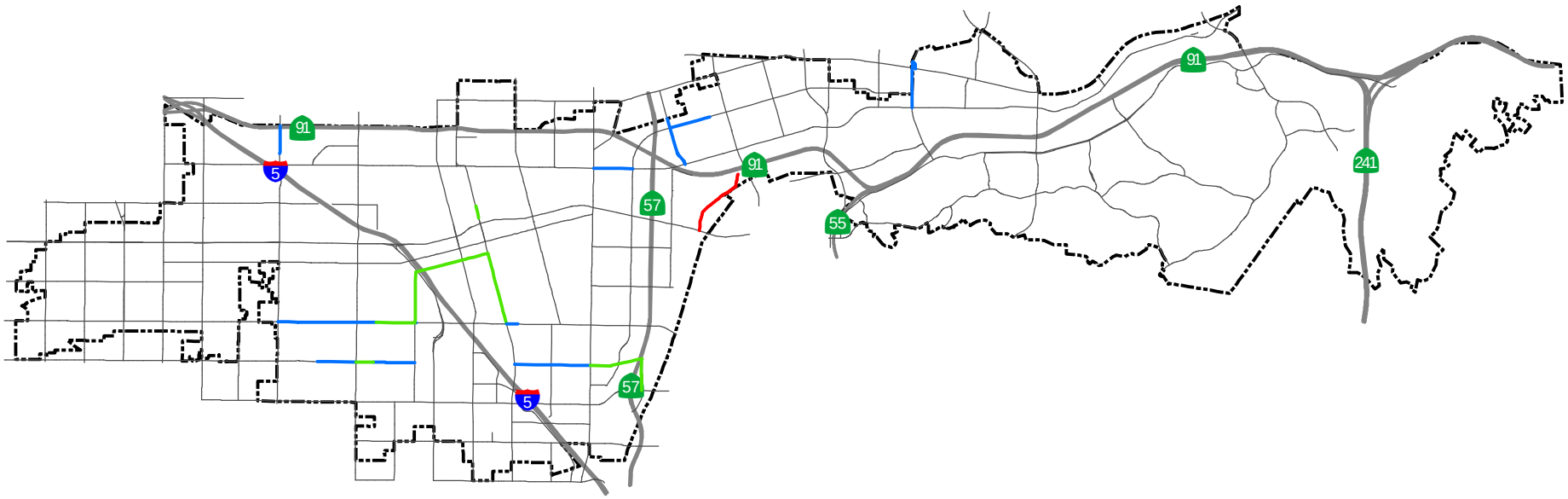
Includes added 0.5 miles from realignment of Bike ID 21

Includes added 0.24 miles from new spur alignment

Includes added 0.11 miles for "Lakeview Connector Road"

5.62	Class II
0.96	Class III
0.94	Class I

Implemented General Plan Bikeways Since 2017 Bicycle Master Plan Adoption



0 5,000 10,000
Feet
1 inch = 2 miles

Map Location

GPA2020-00530

Legend

Class I Existing — Class II Existing — Class III Existing

ANAHEIM

City of Anaheim
GIS Central
March 30, 2020

5874

Map Location

GPA2020-00530

Legend

- Adopted 2017 General Plan - Planned Bikeway Segment ID #21
- Proposed Realignment of Bikeway Segment #21
- Proposed Spur Bikeway Segment

ANAHEIM

City of Anaheim
GIS Central
April 06, 2020

5874

Map Location

GPA2020-00530

Legend

- Adopted General Plan Trail No. 20
- Proposed General Plan Trail No. 20

ANAHEIM

City of Anaheim
GIS Central
April 06, 2020

5874

Appendix C
Inventory of the Anaheim Bikeway Network

Appendix C
Inventory of the Anaheim Bikeways Network

Existing Bikeways

Class I Bike Path Existing				
Bike ID	**Street/Path**	**From**	**To**	**Centerline Miles**
1	Anaheim Coves Trail	Ball Road	Lincoln Avenue	1.63
2.20	Anaheim Coves Trail	Lincoln Avenue	Frontera St	0.94
5	Carbon Creek Channel	Gilbert Street	Crescent Avenue	0.45
164	Carbon Creek Channel	Beach Boulevard	Schweitzer Park	0.27
17	Fairmont Boulevard	La Palma Avenue	Yorba Linda City Limits	0.14
22	North-South SoCal Edison right-of-way west of Magnolia Street	Stanton City Limits	Broadway	1.33
27A	Santa Ana River Trail	Orange City Limit	Yorba Linda Boulevard	5.72
28	Santa Ana River Trail	Yorba Linda Boulevard	Yorba Linda City Limits	0.42
27C	Santa Ana River Trail West	Orange City Limit	Orange City Limit	0.43
45	Blue Gum Street	La Palma Avenue	Placentia City Limits	0.64
177	Santa Ana River Trail South	Santa Ana River Trail Connector at Imperial Highway	Yorba Linda City Limits	2.65
176	Walnut Canyon Reservoir	Canyon Rim Road	Canyon Rim Road	1.74
			Total	**15.72**

Class II Bike Lane Existing				
Bike ID	**Street/Path**	**From**	**To**	**Centerline Miles**
34	Anaheim Boulevard	Sycamore Street	La Palma Avenue	0.53
36	Anaheim Boulevard	Cerritos Avenue	Ball Road	0.53
39	Anaheim Hills Road	Nohl Ranch Road	Santa Ana Canyon Road	0.67
40	Anaheim Shores / Romneya Drive	La Palma Avenue	Euclid Street	0.71

42A	Ball Road	Knott Avenue	Western Ave	0.5
42C	Ball Road	Gaymont	Brookhurst	1.79

Bike ID	Street/Path	From	To	Centerline Miles
47	Broadway	East Street	State College Boulevard	0.76
48A	Brookhurst Street	Lincoln Avenue	Ball Road	1.02
48B	Brookhurst Street	Lincoln Avenue	Crescent Avenue	0.50
48C	Brookhurst Street	Ball Road	Katella Avenue	1.01
52A	Canyon Rim Road	Nohl Ranch Road	Fairmont Boulevard	1.17
52B	Canyon Rim Road	Fairmont Boulevard	Serrano Avenue	0.97
53	Cerritos Avenue (West of Knott Avenue)	Buena Park City Limits	Stanton City Limits	0.32
56	Chapman Avenue	Harbor Boulevard	Garden Grove City Limits	0.25
59	Crescent Avenue	Brookhurst Street	Muller Street	0.51
60	Crescent Avenue	Chippewa Avenue	Loara Street	0.58
65	Euclid Street	Ball Road	Lincoln Avenue	1.01
69	Frontera Street	Rio Vista Street	Glassell Street	1.01
72	Gilbert Street	South City Limits	Ball Road	1.01
73	Glassell Street	Orange City Limits	Frontera Street	0.16
76	Imperial Highway	Orange City Limits	Nohl Ranch Road	0.67
78	Kellogg Drive	Orangethorpe Avenue	Yorba Linda City Limit	0.67
80	Knott Avenue	Orange Avenue	Lincoln Avenue	0.51
84A	Lakeview Avenue	La Palma Avenue	Santa Ana River Trail	0.33
84B	Lakeview Avenue	Santa Ana River Trail	Riverdale Avenue	0.15
91	Lincoln Avenue	Rio Vista Street	Orange City Limits	0.49
92	Loara Street	Wilshire Street	North Street	0.38
95	Miller Street	La Palma Avenue	Orangethorpe Avenue	1.00
97	Miraloma Avenue	La Loma Circle	Van Buren Street	1.91
98A	Ninth Street	Garden Grove City Limits	Orangewood Avenue	0.12
98B	Ninth Street	Orangewood Avenue	Katella Avenue	0.50
102	North Street	Harbor Boulevard	Anaheim Boulevard	0.34
104	Oak Canyon Drive	Serrano Avenue	Weir Canyon Road	0.53
111A	Orangewood Avenue	Euclid Street	Ninth Street	0.50
111B	Orangewood Avenue	Ninth Street	East City Limit east of Janette Lane	0.22
113	Orangewood Avenue	Harbor Boulevard	Mountain View Avenue	0.66

117	Rio Vista Street	Wagner Street	Dutch Avenue	1.11
119	Riverdale Avenue	Orange City Limits	Lakeview Avenue	1.26
120	Royal Oak Road	Nohl Ranch Road	Santa Ana Canyon Road	0.47
121A	Santa Ana Canyon Road	Orange City Limits	Weir Canyon Road	5.98
121B	Santa Ana Canyon Road	Weir Canyon Road	Gypsum Canyon Road	1.98
124	Serrano Avenue	Nohl Ranch Road	Canyon Rim Road	1.43
127	South Street	Peregrine Street	Rio Vista Street	0.51
128A	Sunkist Street	Cerritos Avenue	Wagner Avenue	1.03
128B	Sunkist Street	Wagner Avenue	South Street	0.50
132	Tustin Avenue	Orange City Limits	Santa Ana River Trail	0.39
133B	Tustin Avenue	Miraloma Avenue	Placentia City Limit	0.38
137	Wagner Avenue	Sunkist Street	Rio Vista Street	0.51
139	Weir Canyon Road	Santa Ana Canyon Road	Blue Sky Road	1.67
144	Wilshire Avenue	Loara Street	Lincoln Avenue	0.47
155	Orangethorpe Avenue	Miller Street	Jefferson Street	0.87
163	Western Avenue	Stanton City Limits	Orange Avenue	0.76
166	La Palma Avenue	Acacia Street	State College Boulevard	0.5
180.20	Lakeview Connector Road			0.11
			Total	**44.9**

Class III Bike Route Existing				
Bike ID	**Street/Path**	**From**	**To**	**Centerline Miles**
42B	Ball Road	Western	Gaymont	0.69
146	Dutch Avenue/Park Vista Avenue	Rio Vista Street	Frontera Street	0.59
			Total	**1.28**

Appendix C
Inventory of the Anaheim Bikeways Network

Proposed Bikeways

Class I Bike Path Proposed				
Bike ID	**Street/Path**	**From**	**To**	**Centerline Miles**
3	Basin Trail south of La Palma Avenue	Richfield Road	Lakeview Avenue	0.46
4	Boysen Park Path	Vermont Avenue	Wagner Avenue	0.25
6	Carbon Creek Channel	Buena Park City Limit	Beach Boulevard	1.30
7	Carbon Creek Channel	Magnolia Avenue	Gilbert Street	0.57
8	Carbon Creek Channel	Brookhurst Street	La Palma Avenue	1.89
165	Carbon Creek Channel	Dale Street	Lincoln Avenue	0.73
9	Carbon Creek Diversion Channel	Kraemer Boulevard	Orangethorpe Avenue	1.35
10	Crescent Avenue Bike Bridge	Muller Street	Chippewa Avenue	0.18
11	Deer Canyon Park	Fairmont Boulevard	Serrano Avenue	1.62
12	East Tustin Flood Control Path	Santa Ana River Trail	Anaheim Canyon Metrolink	0.79
13	East-West Edison right-of-way north of Katella Avenue	UPRR West of Ninth Street	Walnut Street	0.41
14A	East-West Edison right-of-way/Union Pacific Railroad right-of-way north of Katella Avenue	Harbor Boulevard	Douglass Road	2.31
14B	East-West Edison right-of-way/Union Pacific Railroad right-of-way north of Katella Avenue	Douglass Road	Orange City Limit	0.32
15	Fairmont Boulevard	Santa Ana Canyon Road	La Palma Avenue	0.54
16	Fairmont Boulevard	Santa Ana River Trail	La Palma Avenue	0.09
179	Imperial La Palma Connector	Santa Ana River Trail Connector w/o Imperial Highway	Imperial Highway	0.45

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Bike ID	Street/Path	From	To	Centerline Miles
18	Imperial Park Path	Nohl Ranch Road	Santa Ana Canyon Road	0.75
19	La Palma Avenue	Blue Gum Street	east of Brasher Street	4.23
20	Metrolink Side Trail	Orange/Olive Road	Tustin Avenue	0.98
21.20	Nohl Ranch Open Space Trail	Avd Margarita	Anaheim Hills Road	1.32
181.20	Imperial	Bike ID 21	Avenida Bernardo Rd North	0.24
23	North-South Edison right- of-way west of Magnolia Street	Broadway	La Palma Avenue	1.26
24	North-South Union Pacific Railroad- Olive Street Continuation	Vermont Avenue	E-W Southern California Edison right-of-way south of Cerritos Avenue	1.18
109	Orangethorpe Avenue	Lakeview Avenue	Imperial Highway	1.66
178	Peralta Canyon Park Overcrossing	Pinney Drive	Santa Ana River Trail	0.25
29	Santa Ana River Trail Connector west of Imperial Highway	Santa Ana River Trail	La Palma Avenue	0.28
30	Sycamore Connector west of State College Boulevard	Sycamore Street	La Palma Avenue	0.13
31	Tustin Avenue-Metrolink Connection Alt 1	Orange Sub	Tustin Avenue	0.28
175	Tustin Avenue-Metrolink Connection Alt 2	Orange Sub	Santa Ana River Trail	0.17 (Alt. to 31 – Not Counted)
32	Union Pacific Railroad north of Katella and east of Euclid	Stanton City Limits	Broadway	3.42
			Total	**30.05**

Class II Bike Lane Proposed				
Bike ID	**Street/Path**	**From**	**To**	**Centerline Miles**
33	Acacia Street	La Palma Avenue	Fullerton City Limits	.61

35	Anaheim Boulevard	Ball Road	Sycamore Street	1.56
37	Anaheim Boulevard/Haster Street	Garden Grove City Limits	Cerritos Avenue	1.25

Bike ID	Street/Path	From	To	Centerline Miles
38	Anaheim Boulevard/Lemon Street	La Palma Avenue	Fullerton City Limits north of Freedom Lane	1.10
41	Ball Road	Buena Park City Limits	Knott Avenue	0.38
42D	Ball Road	Western Avenue	Gaymont Street	0.69
43A	Ball Road	Brookhurst Street	Walnut Street	1.75
43B	Ball Road	Walnut Street	West Place	0.25
44	Ball Road	Lemon Street	Orange City Limits	2.31
46A	Broadway	Dale Street	Southern California Edison Trail	0.23
46B	Broadway	Southern California Edison Trail	Gilbert Street	0.75
46C	Broadway	Gilbert Street	East Street	3.85
49	Brookhurst Street	Crescent Avenue	Fullerton City Limits	1.00
50	Camino Grande/Stagecoach Road	Nohl Ranch Road	Nohl Ranch Road	1.53
51	Canyon Creek Road	Sunset Ridge Road	Serrano Avenue	0.56
54	Cerritos Avenue	West City Limits (east of Magnolia)	Walnut Street	2.51
55	Cerritos Avenue	Anaheim Boulevard	Douglass Road	1.65
58	Crescent Avenue	Carbon Creek Channel	Brookhurst Street	0.22
62	Dale Street	Stanton City Limits	Buena Park City Limits	1.64
63	Douglass Road	Katella Avenue	Cerritos Avenue	0.41
171	Dupont Drive (W)	Orangewood Avenue	Dupont Drive (E)	0.23
64	East Street	Ball Road	La Palma Avenue	2.09
66	Euclid Street	Orangewood Avenue	Ball Road	1.52
67	Fairmont Boulevard	Canyon Rim Road	Santa Ana Canyon Road	1.07
68	Frontera Street	La Palma Avenue	Rio Vista Street	0.20
70	Gerda Drive	Crescent Elementary School	Pinney Drive/Royal Oak Road	0.39
71	Gilbert Street	Broadway	Carbon Creek Trail	0.58
74	Grove Street	La Palma Avenue	Miraloma Avenue	0.67

Appendix C
Inventory of the Anaheim Bikeways Network

Bike ID	Street/Path	From	To	Centerline Miles
75	Gypsum Canyon Road	Santa Ana Canyon Road	Yorba Linda City Limit	0.16
77	Kellogg Drive	La Palma Avenue	Orangethorpe Avenue	0.38
79	Knott Avenue	Stanton City Limits	Orange Avenue	0.93
82	Kraemer Boulevard	Frontera Street	Orangethorpe Avenue	1.37
81	La Palma Avenue	Buena Park City Limits	Acacia Street	4.63
167	La Palma Avenue	State College Boulevard	Blue Gum Street	1.18
83	Lakeview Avenue	Santa Ana Canyon Road	Riverdale Avenue	0.25
85A	Lakeview Avenue	La Palma Avenue	Orangethorpe Avenue	0.50
85B	Lakeview Avenue	Orangethorpe Avenue	Yorba Linda City Limit	0.26
87A	Lewis Street	Katella Avenue	Cerritos Avenue	0.50
87B	Lewis Street	Cerritos Avenue	Ball Road	0.52
88	Lewis Street	Orange City Limits	Orangewood Avenue	0.25
89A	Lincoln Avenue	Knott Avenue	Southern California Edison Trail	1.74
89B	Lincoln Avenue	Southern California Edison Trail	Euclid Street	2.26
90	Lincoln Avenue	Manchester Avenue	Wilshire Avenue	0.16
93	Magnolia Avenue	Stanton City Limits	La Palma Avenue	2.49
94	Manchester Avenue	Santa Ana Street	Lincoln Avenue	0.44
96	Miraloma Avenue	Sunkist Street	La Loma Circle	1.31
99	Ninth Street	Katella Avenue	Cerritos Avenue	0.50
100	Nohl Ranch Road	Anaheim Hills Road	Serrano Avenue	1.56
101	North Street	West Street	Harbor Boulevard	0.45
103	North Street	Anaheim Boulevard	Olive Street	0.22
105	Oak Canyon Drive	Weir Canyon Road	Running Springs Drive	0.21
107A	Orange Avenue	Buena Park City Limits	Carbon Creek Trail	0.97
107B	Orange Avenue	Carbon Creek Channel	Magnolia Avenue	1.41
26	Orangethorpe Avenue	Lemon Street	Raymond Avenue	0.75
108	Orangethorpe Avenue	State College Boulevard	Placentia Avenue	0.36
110	Orangethorpe Avenue	Kraemer Boulevard	Miller Street	0.63
112	Orangewood Avenue	West Street	Harbor Boulevard	0.51
114	Orangewood Avenue	Mountain View Avenue	Dupont Drive (W)	1.03

Appendix C
Inventory of the Anaheim Bikeways Network

Bike ID	Street/Path	From	To	Centerline Miles
115	Pinney Drive	Santa Ana Canyon Road	Gerda Drive	0.06
116	Richfield Road	Basin Trail south of La Palma Avenue	Placentia City Limits	0.22
118	Rio Vista Street	Dutch Avenue	Frontera Street	0.40
123	Serrano Avenue	Orange City Limits	Nohl Ranch Road	0.10
125	Serrano Avenue	Canyon Rim Road	Weir Canyon Road	1.45
126	South Street	State College Boulevard	Peregrine Street	0.50
130	Sunkist Street	South Street	Miraloma Avenue	1.01
131	Sunset Ridge Road	Canyon Creek Road	Serrano Avenue	0.91
172	Towne Centre Place	Dupont Drive (E)	Rampart Street	0.23
133A	Tustin Avenue	Santa Ana River Trail	Miraloma Avenue	1.18
134	Vermont Avenue	Citron Street	Boysen Park Trail	1.65
136	Wagner Avenue	State College Boulevard	Sunkist Street	0.50
138A	Walnut Street	Katella Avenue	Ball Road	1.02
138B	Walnut Street	Ball Road	Santa Ana Street	0.65
140	West Street	Santa Ana Street	North Street	0.94
141	Western Avenue	Orange Avenue	Buena Park City Limits	0.76
			Total	**71.13**

Class III Bike Routes Proposed				
Bike ID	**Street/Path**	**From**	**To**	**Centerline Miles**
57	Citron Street	Vermont Avenue	Santa Ana Street	0.57
145A	Crone Avenue	UPRR Trail	Walnut Street	1.00
145B	Crone Avenue	Nutwood Street	UPRR Trail	0.25
147	Gilbert Street	La Palma Avenue	Crescent Avenue	0.49
148	Gilbert Street	Broadway	Ball Road	0.76
149	Katella Avenue	Douglass Road	Santa Ana River Trail	0.13
86	Lemon Street	Sycamore Street	La Palma Avenue	0.56
150	Lemon Street	Ball Road	Sycamore Street	1.53
151	North Street	Loara Street	West Street	0.42
152	Nutwood Street	Orange Avenue	Crone Street	0.23
106	Olive Street	Vermont Avenue	Santa Ana Street	0.57
153	Olive Street	Santa Ana Street	La Palma Avenue	1.09
154	Orange Avenue	Magnolia Avenue	Euclid Street	1.98

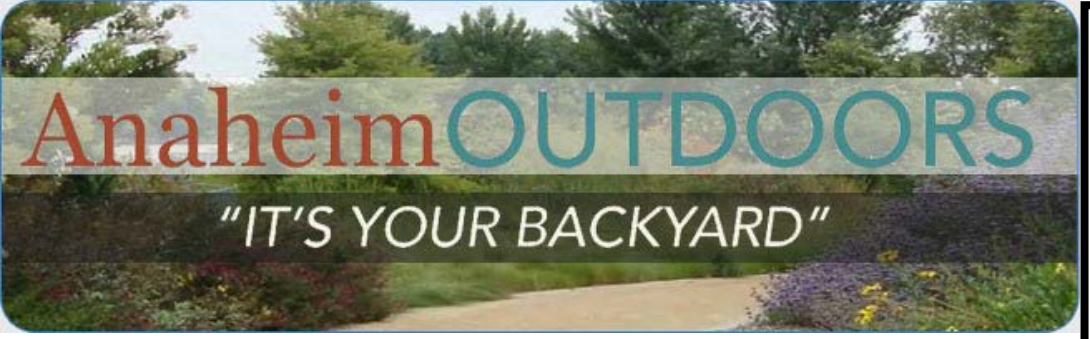
Appendix C
Inventory of the Anaheim Bikeways Network

Bike ID	Street/Path	From	To	Centerline Miles
158	Romneya Drive/Carl Karcher Way	Euclid Street	Anaheim Boulevard	1.26
122	Santa Ana Street	Walnut Street	East Street	1.63
159	Santa Ana Street	East Street	State College Boulevard	0.72
160	South Street	Indiana Street	State College Boulevard	1.97
161	South Street	Rio Vista Street	Anaheim Coves Trail	0.28
170	Sycamore Street	West Street	Sycamore Connector	2.22
162	Van Buren Street	La Palma Avenue	Placentia City Limit north of Miraloma Avenue	0.42
135	Vine Street	Santa Ana Street	Broadway	0.15
173	West Street	North Street	La Palma Avenue	0.42
143	Westmont Drive	Loara Street	West Street	0.48
			Total	**19.13**

Appendix D
Anaheim Outdoors Bicycle Master Plan Update Survey Results

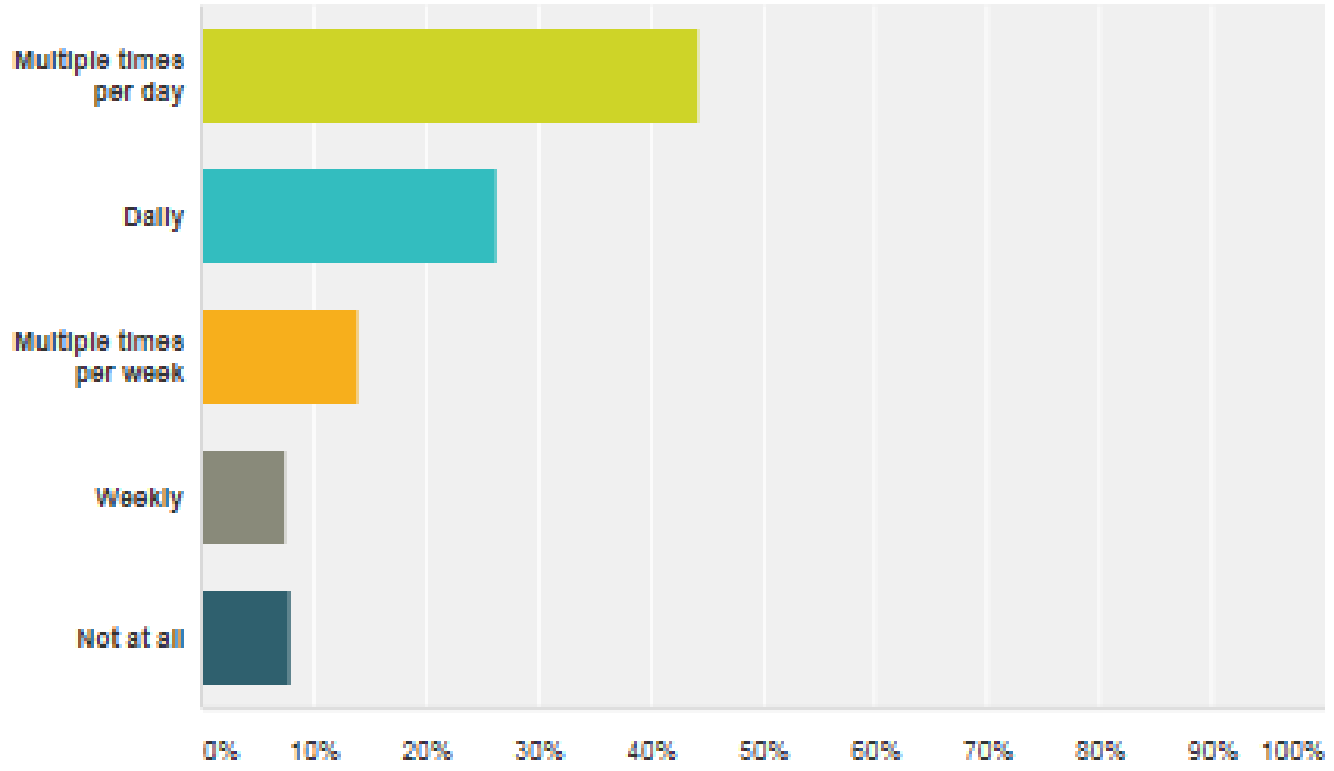
BICYCLE MASTER PLAN UPDATE SURVEY RESULTS

Anaheim Outdoors' commitment to engaging the community to define the vision elicited over 200 survey responses, as summarized in the following slides.



HOW OFTEN DO YOU SEE OTHERS MAKING TRIPS BY BICYCLE?

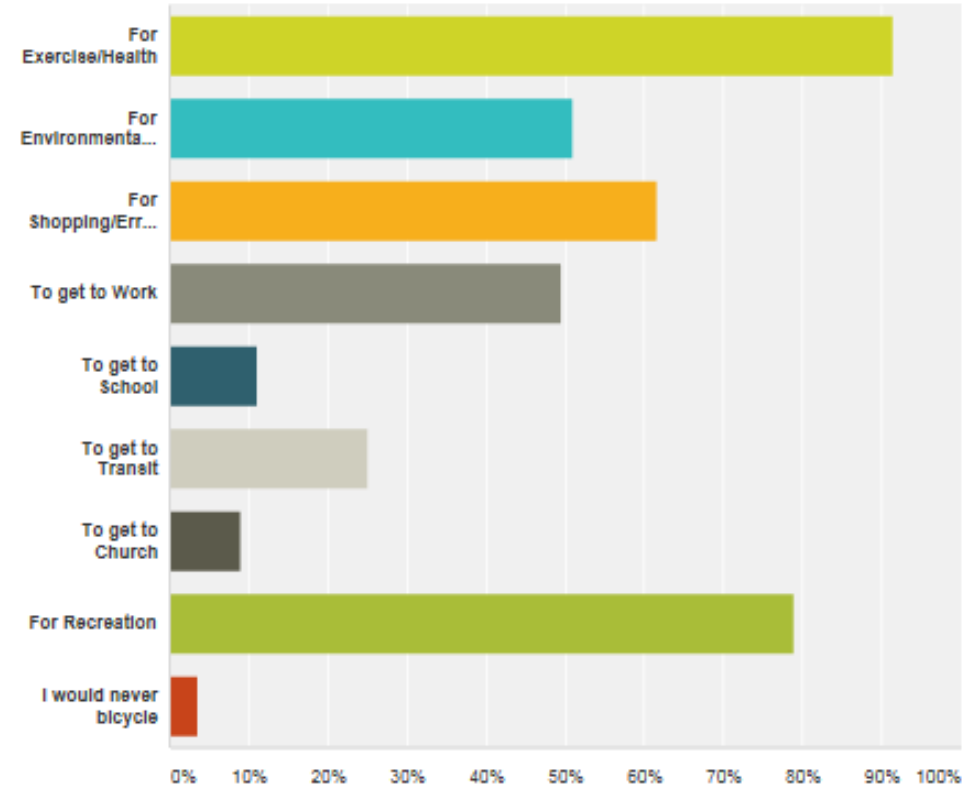
Answered: 201 Skipped: 1



Answer Choices	Responses	
Multiple times per day	44.28%	89
Daily	26.37%	53
Multiple times per week	13.93%	28
Weekly	7.46%	15
Not at all	7.96%	16
Total		201

WHAT TYPES OF TRIPS WOULD YOU USE A BICYCLE FOR IF SAFE BICYCLE LANES OR TRAILS WERE IN CLOSE PROXIMITY TO YOUR RESIDENCE?

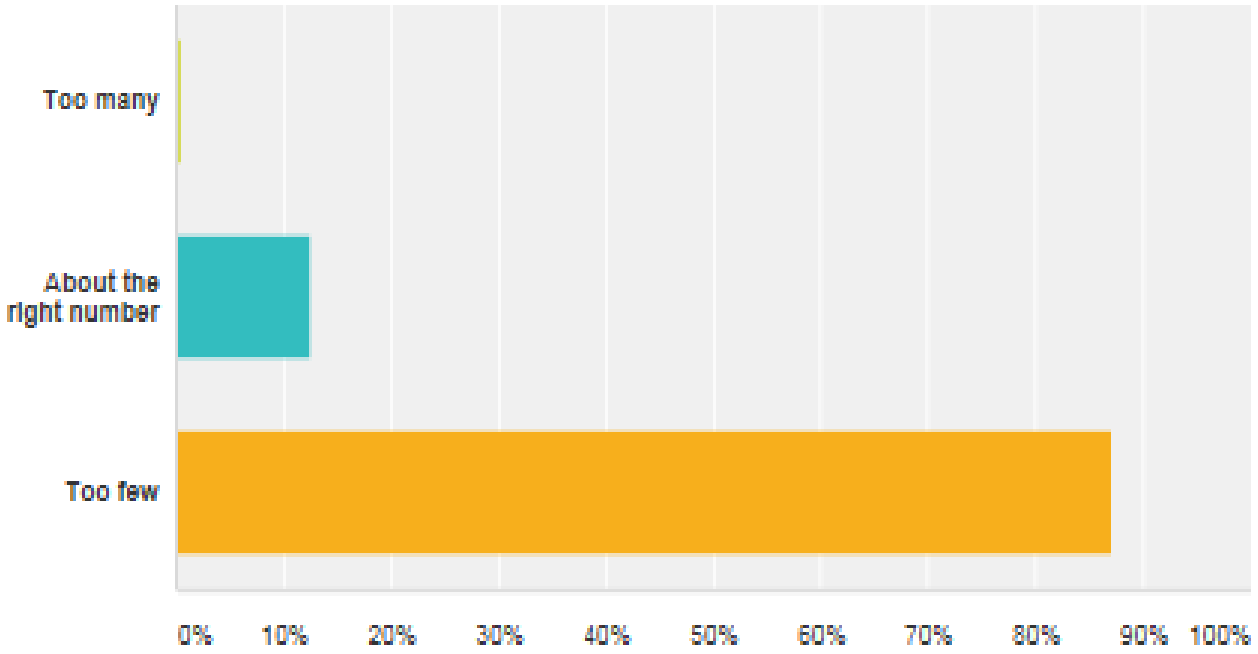
Answered: 200 Skipped: 2



Answer Choices	Responses	
For Exercise/Health	91.50%	183
For Environmental and/or Social Reasons	51.00%	102
For Shopping/Errands	61.50%	123
To get to Work	49.50%	99
To get to School	11.00%	22
To get to Transit	25.00%	50
To get to Church	9.00%	18
For Recreation	79.00%	158
I would never bicycle	3.50%	7
Total Respondents: 200		

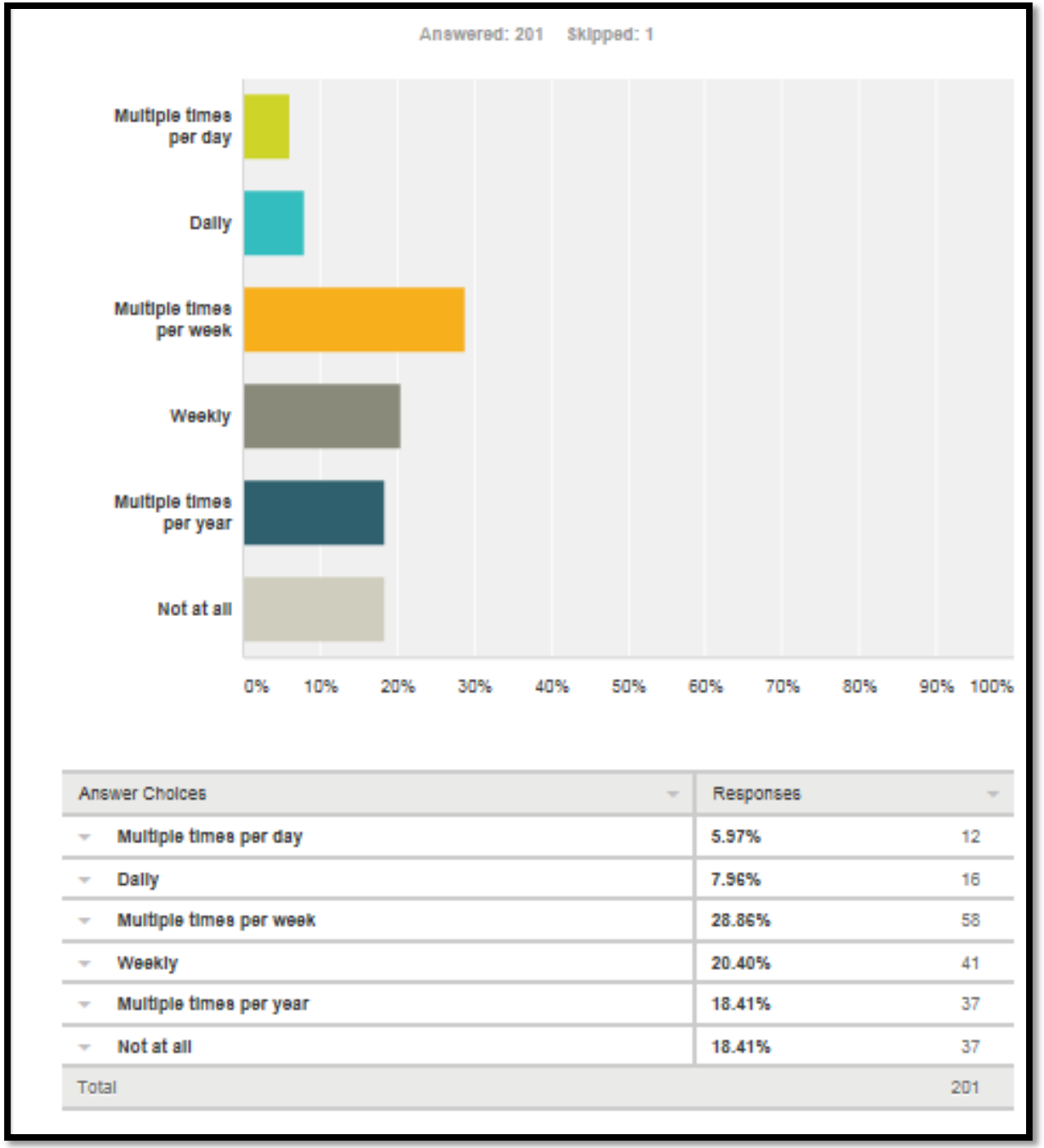
MY NEIGHBORHOOD'S BICYCLE LANES AND TRAILS ARE:

Answered: 200 Skipped: 2



Answer Choices	Responses	
Too many	0.50%	1
About the right number	12.50%	25
Too few	87.00%	174
Total		200

HOW OFTEN DO YOU BICYCLE?



Answer Choices	Responses	
Multiple times per day	5.97%	12
Daily	7.96%	16
Multiple times per week	28.86%	58
Weekly	20.40%	41
Multiple times per year	18.41%	37
Not at all	18.41%	37
Total		201

WHAT PREVENTS YOU FROM BICYCLING MORE?

Answer Choices	Responses	
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UaiaaTeJ□ala Wftll b'leyE'.Jl el_e l!iell avmor		.2"1
Destinations are too far away		4"1
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l tr&'l' ""1fh e; l iih l **Bf1**		9
1 mo11'f l:la\le **9noi.-1111** lm e		3"1
Insufficient lighting		.29
ltYae IJBr	12.37%	
ir:err-al□	!6.i'	17
ly bicycle is in disrepair		6
I do not own a bicycle	16. i' %	13
Total Respondents: 194		

Answered: 194 Skipped: 8

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WOULD THE FOLLOWING IMPROVEMENTS INFLUENCE YOU TO BIKE MORE OFTEN?

	Likely	Somewhat Likely	Somewhat Unlikely	Unlikely	Total	Average Rating
More Bike Lanes (On-street with Separate Lanes for bikes designated by an 8-inch white line)	58.97% 115	25.13% 49	7.18% 14	8.72% 17	195	1.66
More Buffered Bike Lanes (On-street with Separate Lanes for bikes designated by a 4-foot barrier)	75.38% 150	16.58% 33	2.51% 5	5.53% 11	199	1.38
More Paved (off-street) Bike Paths	73.50% 147	17.00% 34	4.50% 9	5.00% 10	200	1.41
Bicycle Boulevards (shared roadways designed to give priority to cycling traffic and slowing vehicle traffic)	61.34% 119	15.46% 30	10.31% 20	12.89% 25	194	1.75
More Education Programs	31.82% 56	25.00% 44	20.45% 36	22.73% 40	176	2.34
More Enforcement Programs	40.91% 72	26.70% 47	16.48% 29	15.91% 28	176	2.07
Increased Maintenance (sweeping/repairs to bike lanes, routes, paths, and landscape trimming, etc.)	52.43% 97	26.49% 49	9.73% 18	11.35% 21	185	1.80
More Bicycle Parking/Storage	47.25% 86	26.92% 49	15.93% 29	9.89% 18	182	1.88
Showers and Lockers at Work	38.79% 64	20.00% 33	16.36% 27	24.85% 41	165	2.27

Appendix E
Bike Anaheim Ride With Us Fact Sheet

Bike Anaheim

Ride With Us!

Anaheim's Bicycle Master Plan is the vision for the city's bikeways network.

With community input, the plan will guide building of new bikeways in the next two decades.

The goal? To triple Anaheim's more than 60 miles of bikeways with new routes that will connect neighborhoods, employment centers and transportation hubs.

Cycling lifts quality of life by lowering emissions, reducing congestion and promoting health and fun!

Recent Projects

Anaheim Coves Trail
Ball Road to Lincoln Avenue

Gilbert Street
Anaheim south city limits to Ball Road

West Anaheim
Between Magnolia and Dale avenues from Stanton city limits to Broadway Avenue

Proposed Projects

Nohl Ranch Open Space Trail
Pelanconi Park to Anaheim Hills Road

Anaheim Canyon
Metrolink Station to Santa Ana River Trail

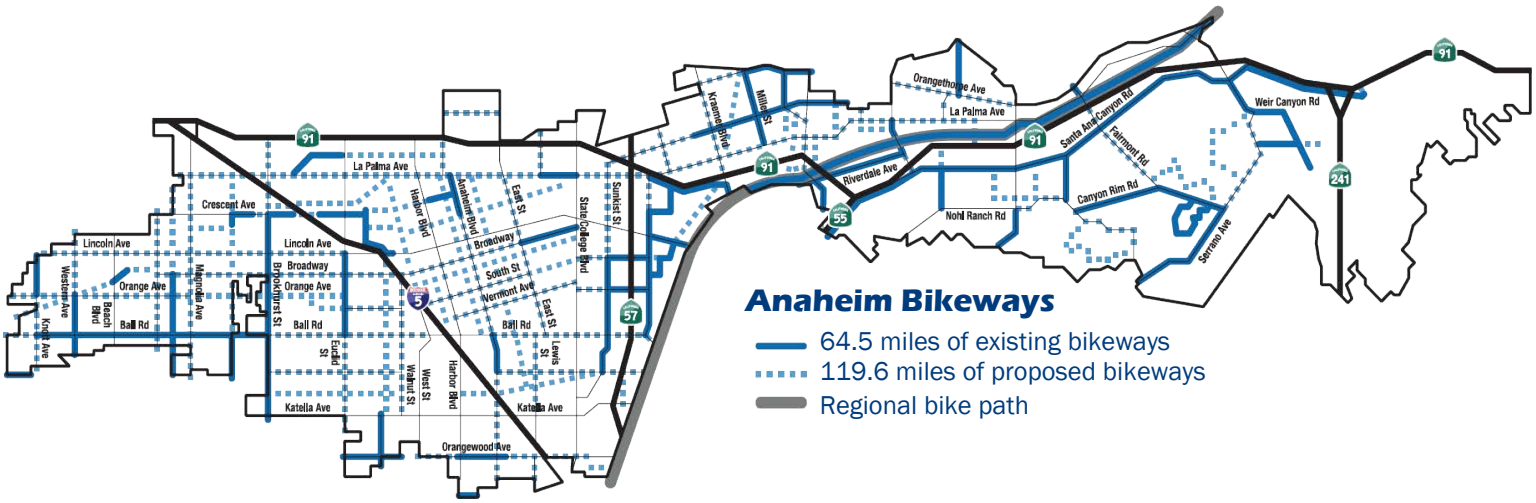
Anaheim Coves Trail North
Lincoln Avenue to Frontera Street

Get Involved

Aug. 1, 2016
Draft master plan available for review and comment at Anaheim.net/bike

Aug. 8, 2016
Planning Commission workshop, 5 p.m. Anaheim City Hall

Aug. 31, 2016
Last day for draft plan comments at bike@Anaheim.net



Learn More
Anaheim.net/bike

Explore the Map
Anaheim.net/bikemap

Comments
bike@anaheim.net

Appendix F
Anaheim Bikeway Network Priority Ranking Scores

Appendix F
Anaheim Bikeway Network Priority Ranking Scores

For purposes of prioritization, individual segments were combined into corridors, shown in **Bold**, to better capture the intent of closing gaps in the existing network. Stand-alone segments are shown in *italics*.

					Category	Demand		Utility			Connectivity			Readiness			
					Weight	8	8	6	6	2	3	4	3	2	4	4	
					Total	32		28			20			20			100
Bike ID	**Street/Path**	**From**	**To**	**Bikeway Class**	**Existing or Proposed**	**Employment Centers**	**Population Density**	**Regional Bikeway Connection**	**Gap Closure**	**Inter-City Connectivity**	**Multimodal Connectivity**	**Schools**	**Parks/ Library/ Rec Center**	**Agency Coordination**	**Existing ROW Impacts**	**On Street Parking Impact**	**Score**
Tier 1 Priority Ranking																	
	Carbon Creek Channel	**Buena Park City Limits**	**La Palma Avenue**	**Class I**	**Ex/Prop**	**2**	**2**	**2**	**2**	**2**	**1**	**2**	**2**	**1**	**0**	**2**	**87**
6	Carbon Creek Channel	Buena Park City Limits	Beach Boulevard	Class I	Proposed	2	2	2	2	2	1	2	1	1	0	2	84
164	Carbon Creek Channel	Beach Boulevard	Schweitzer Park	Class I	Existing	2	2	2	0	0	1	1	1	1	1	2	68
165	Carbon Creek Channel	Schweitzer Park	Lincoln Avenue	Class I	Proposed	0	2	2	1	0	0	2	2	1	0	2	58
7	Carbon Creek Channel	Magnolia Avenue	Gilbert Street	Class I	Proposed	0	1	0	1	0	0	2	1	1	1	2	39
5	Carbon Creek Channel	Gilbert Street	Crescent Avenue	Class I	Existing	0	1	1	0	0	0	2	2	1	2	2	46
8	Carbon Creek Channel	Brookhurst Street	La Palma Avenue	Class I	Proposed	2	2	1	2	0	1	2	2	1	0	2	77
	Orange Avenue	**Buena Park City Limits**	**Euclid Street**	**Various**	**Proposed**	**2**	**2**	**2**	**2**	**2**	**1**	**2**	**2**	**1**	**1**	**1**	**87**
107	Orange Avenue	Buena Park City Limits	Magnolia Avenue	Class II	Proposed	2	2	2	2	2	1	2	2	1	1	1	87
154	Orange Avenue	Magnolia Avenue	Euclid Street	Class III	Proposed	0	2	1	2	1	1	2	2	2	2	2	73
	Santa Ana Street	**Walnut Street**	**State College Boulevard**	**Class III**	**Proposed**	**2**	**2**	**2**	**1**	**0**	**1**	**2**	**2**	**2**	**2**	**2**	**87**
122A.20 122B.20	Santa Ana Street	Walnut Street	East Street	Class III	Proposed	2	2	2	1	0	1	2	2	2	2	2	87
159	Santa Ana Street	East Street	State College Boulevard	Class III	Proposed	0	1	0	0	0	1	2	1	2	2	2	42
	Haster Street/ Anaheim Boulevard/ Lemon Street	**Garden Grove City Limits**	**Fullerton City Limits**	**Class II**	**Ex/Prop**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**1**	**0**	**1**	**86**
37	Anaheim Boulevard/Haster Street	Garden Grove City Limits	Cerritos Avenue	Class II	Proposed	1	2	2	2	2	2	1	2	1	0	2	78
36	Anaheim Boulevard	Cerritos Avenue	Ball Road	Class II	Existing	0	2	2	0	0	1	2	0	2	1	2	55
35 A.2.20 35 B.2.20	Anaheim Boulevard	Ball Road	Sycamore Street	Class II	Proposed	2	2	2	1	0	1	0	2	2	1	1	71
34	Anaheim Boulevard	Sycamore Street	La Palma Avenue	Class II	Existing	0	2	2	1	0	2	0	2	2	2	1	62

38	Anaheim Boulevard/Lemon Street	La Palma Avenue	Fullerton City Limits n/o Freedom Ln	Class II	Proposed	2	1	2	0	2	1	0	2	1	0	2	59

Appendix F
Anaheim Bikeway Network Priority Ranking Scores

						Demand		Utility			Connectivity			Readiness			
					Category Weight	8	8	6	6	2	3	4	3	2	4	4	
					Total	32		28			20			20			100
Bike ID	**Street/Path**	**From**	**To**	**Bikeway Class**	**Existing or Proposed**	**Employment Centers**	**Population Density**	**Regional Bikeway Connection**	**Gap Closure**	**Inter-City Connectivity**	**Multimodal Connectivity**	**Schools**	**Parks/ Library/ Rec Center**	**Agency Coordination**	**Existing ROW Impacts**	**On Street Parking Impact**	**Score**
	La Palma Avenue West	**Buena Park City Limits**	**Blue Gum Street**	**Class II**	**Ex/Prop**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**0**	**0**	**1**	**84**
81	La Palma Avenue	Buena Park City Limits	Acacia Street	Class II	Proposed	2	2	2	2	2	2	2	2	0	0	1	84
166	La Palma Avenue	Acacia Street	State College Boulevard	Class II	Existing	0	1	2	0	0	2	2	1	2	2	1	53
167A.20 167B.20	La Palma Avenue	State College Boulevard	Blue Gum Street	Class II	Proposed	2	1	2	1	0	2	1	1	1	1	1	65
	Frontera Street	**La Palma Avenue**	**Glassell Street**	**Class II**	**Ex/Prop**	**2**	**2**	**2**	**2**	**0**	**1**	**1**	**1**	**2**	**1**	**2**	**82**
68	Frontera Street	La Palma Avenue	Rio Vista Street	Class II	Proposed	2	2	2	0	0	1	0	0	2	1	2	63
69	Frontera Street	Rio Vista Street	Glassell Street	Class II	Existing	2	2	2	2	0	0	1	1	1	0	1	69
	UPRR/Edison w/o Walnut	**Stanton City Limits**	**Broadway**	**Class I**	**Proposed**	**2**	**2**	**1**	**2**	**2**	**1**	**2**	**2**	**1**	**0**	**2**	**81**
32	Union Pacific Railroad north of Katella and east of Euclid	Stanton City Limits	Broadway	Class I	Proposed	0	2	1	2	2	1	2	2	0	0	2	63
13	East-West Edison ROW north of Katella Avenue	UPRR West of Ninth Street	Walnut Street	Class I	Proposed	2	2	1	0	0	0	0	1	1	0	2	51
	Ball Road	**Buena Park City Limits**	**West Pl**	**Class II**	**Ex/Prop**	**1**	**2**	**2**	**2**	**2**	**1**	**2**	**2**	**1**	**1**	**1**	**79**
41	Ball Road	Buena Park City Limits	Knott Avenue	Class II	Proposed	0	2	0	1	2	0	1	1	1	2	1	47
42	Ball Road	Knott Avenue	Brookhurst St	Class II	Existing	0	2	2	2	2	1	2	2	2	1	1	73
43a.1.20 43A.2.B.20 43B	Ball Road	Brookhurst Street	West Pl	Class II	Proposed	1	2	2	2	0	1	2	2	1	1	1	75
	Brookhurst Street	**Katella Avenue**	**Fullerton City Limits**	**Class II**	**Ex/Prop**	**1**	**2**	**2**	**2**	**2**	**1**	**2**	**2**	**1**	**0**	**2**	**79**
48	Brookhurst Street	Katella Avenue	Crescent Avenue	Class II	Existing	1	2	2	2	2	0	2	2	1	1	2	80
49A.20 49B.20	Brookhurst Street	Crescent Avenue	Fullerton City Limits	Class II	Proposed	1	2	2	2	2	1	2	2	1	0	2	79
	Sunkist/ Miraloma	**Cerritos Avenue**	**Van Buren Street**	**Class II**	**Ex/Prop**	**2**	**1**	**2**	**2**	**2**	**1**	**2**	**2**	**1**	**1**	**1**	**79**
128	Sunkist Street	Cerritos Avenue	South Street	Class II	Existing	1	1	1	2	0	0	2	2	2	1	0	56

130	Sunkist Street	South Street	Miraloma Avenue	Class II	Proposed	1	1	1	0	0	0	2	1	2	1	0	41
96A.20 96B.20	Miraloma Avenue	Sunkist Street	La Loma Cir	Class II	Proposed	1	1	2	1	0	1	1	1	1	1	2	58
97	Miraloma Avenue	La Loma Cir	Van Buren Street	Class II	Existing	2	0	2	2	2	0	0	0	0	1	2	56
	Vermont/Wagner	**Citron Street**	**Rio Vista Street**	**Various**	**Ex/Prop**	**2**	**2**	**1**	**2**	**0**	**1**	**2**	**2**	**2**	**1**	**1**	**79**
					Category	Demand		Utility			Connectivity			Readiness			
					Weight	8	8	6	6	2	3	4	3	2	4	4	
					Total	32		28			20			20			100

Bike ID	Street/Path	From	To	Bikeway Class	Existing or Proposed	Employment Centers	Population Density	Regional Bikeway Connection	Gap Closure	Inter-City Connectivity	Multimodal Connectivity	Schools	Parks/ Library/ Rec Center	Agency Coordination	Existing ROW Impacts	On Street Parking Impact	Score
134	Vermont Avenue	Citron Street	Boysen Park Trail	Class II	Proposed	2	2	1	0	0	1	2	2	2	1	0	63
4	Boysen Park Path	Vermont Avenue	Wagner Avenue	Class I	Proposed	0	1	1	0	0	1	2	1	1	0	2	38
136	Wagner Avenue	State College Boulevard	Sunkist Street	Class II	Proposed	0	1	0	2	0	1	2	2	2	1	1	49
137	Wagner Avenue	Sunkist Street	Rio Vista Street	Class II	Existing	0	1	0	2	0	0	2	2	1	1	2	48
	Crescent Avenue/ North Street	**Carbon Creek Channel**	**Olive Street**	**Various**	**Ex/Prop**	**2**	**2**	**1**	**2**	**0**	**1**	**2**	**2**	**1**	**1**	**1**	**77**
58	Crescent Avenue	Carbon Creek Channel	Brookhurst Street	Class II	Proposed	0	1	1	2	0	0	1	1	1	1	2	47
59	Crescent Avenue	Brookhurst Street	Muller Street	Class II	Existing	1	2	1	1	0	0	1	0	2	1	1	52
10	Crescent Avenue Bike Bridge	Muller Street	Chippewa Avenue	Class I	Proposed	1	2	0	2	0	0	1	0	1	0	2	50
60	Crescent Avenue	Chippewa Avenue	Loara Street	Class II	Existing	2	2	0	1	0	0	2	0	2	2	1	62
151	North Streetreet	Loara Street	West Street	Class III	Proposed	2	2	0	1	0	0	2	1	2	2	2	69
101	North Street	West Street	Harbor Boulevard	Class II	Proposed	0	1	0	2	0	1	1	1	2	2	1	46
102	North Street	Harbor Boulevard	Anaheim Boulevard	Class II	Existing	0	1	1	1	0	1	1	0	2	2	1	43
103	North Street	Anaheim Boulevard	Olive Street	Class II	Proposed	0	1	1	2	0	0	0	0	2	2	1	42
	Broadway	**Dale Street**	**State College Boulevard**	**Class II**	**Ex/Prop**	**2**	**2**	**1**	**2**	**1**	**1**	**2**	**2**	**1**	**1**	**0**	**75**
46	Broadway	Dale Street	East Street	Class II	Proposed	2	2	1	2	1	1	2	2	1	1	0	75
47	Broadway	East Street	State College Boulevard	Class II	Existing	0	1	0	0	0	1	2	2	2	1	0	33
	South Street	**Indiana Street**	**Anaheim Coves Trail**	**Various**	**Ex/Prop**	**2**	**2**	**1**	**1**	**1**	**1**	**2**	**2**	**2**	**1**	**1**	**75**
160	South Street	Indiana Street	State College Boulevard	Class III	Proposed	2	2	1	0	0	1	2	2	2	2	2	75
126	South Street	State College Boulevard	Peregrine Street	Class II	Proposed	0	1	0	1	0	1	2	2	2	0	0	35

127	South Street	Peregrine Street	Rio Vista Street	Class II	Existing	0	1	0	1	0	0	0	1	1	2	2	35
161	South Street	Rio Vista Street	Anaheim Coves Trail	Class III	Proposed	0	1	0	0	1	0	0	1	1	2	2	31
	Serrano Avenue	**Orange City Limits**	**Weir Canyon Road**	**Class II**	**Ex/Prop**	**1**	**1**	**2**	**2**	**2**	**0**	**2**	**2**	**2**	**1**	**2**	**74**
					Category	Demand		Utility			Connectivity			Readiness			
					Weight	8	8	6	6	2	3	4	3	2	4	4	
					Total	32		28			20			20			100

Bike ID	Street/Path	From	To	Bikeway Class	Existing or Proposed	Employment Centers	Population Density	Regional Bikeway Connection	Gap Closure	Inter-City Connectivity	Multimodal Connectivity	Schools	Parks/ Library/ Rec Center	Agency Coordination	Existing ROW Impacts	On Street Parking Impact	Score
123	Serrano Avenue	Orange City Limits	Nohl Ranch Road	Class II	Proposed	0	1	2	1	2	0	1	0	1	1	2	48
124	Serrano Avenue	Nohl Ranch Road	Canyon Rim Road	Class II	Existing	0	1	2	1	1	0	1	2	2	1	2	54
125	Serrano Avenue	Canyon Rim Road	Weir Canyon Road	Class II	Proposed	1	1	2	2	0	0	1	1	2	1	2	63
	Tustin Avenue	**Orange City Limits**	**Placentia City Limits**	**Class II**	**Proposed**	**2**	**2**	**2**	**2**	**2**	**2**	**0**	**0**	**0**	**0**	**2**	**74**
132	Tustin Avenue	Orange City Limits	Santa Ana River Trail	Class II	Existing	1	2	2	2	2	0	0	0	0	2	1	64
133A	Tustin Avenue	Santa Ana River Trail	Placentia City Limits	Class II	Proposed	2	1	2	2	2	2	0	0	0	0	2	66
	Sycamore Street/Westmont Drive	**Loara Street**	**Van Buren Street**	**Various**	**Proposed**	**2**	**2**	**1**	**2**	**0**	**1**	**2**	**2**	**1**	**1**	**0**	**73**
143	Westmont Drive	Loara Street	West Street	Class III	Proposed	2	1	0	2	0	0	2	1	2	2	0	59
170	Sycamore Street	West Street	Sycamore Connector	Class III	Proposed	0	2	1	2	0	1	2	2	2	2	0	63
30	Sycamore Connector w/o State College Bl	Sycamore Street	La Palma Avenue	Class I	Proposed	0	2	1	1	0	1	1	1	1	1	2	52
89	*Lincoln Avenue*	*Knott Avenue*	*Euclid Street*	*Class II*	*Proposed*	*2*	*2*	*1*	*2*	*2*	*1*	*2*	*1*	*0*	*0*	*1*	*72*
109	*Orangethorpe Avenue*	*Lakeview Avenue*	*Imperial Highway*	*Class I*	*Proposed*	*2*	*2*	*1*	*1*	*2*	*0*	*1*	*0*	*2*	*2*	*2*	*72*
	Lakeview Avenue	**Santa Ana Canyon Road**	**Yorba Linda City Limits**	**Class II**	**Ex/Prop**	**2**	**1**	**2**	**2**	**2**	**1**	**1**	**1**	**1**	**0**	**2**	**72**
88	Lakeview Avenue	Santa Ana Canyon Road	Riverdale Ave	Class II	Proposed	2	1	2	2	0	0	1	1	1	0	2	65
84	Lakeview Avenue	Riverdale Avenue	La Palma Avenue	Class II	Existing	2	1	2	2	0	1	0	1	1	1	2	68
85A.20 86B.20	Lakeview Avenue	La Palma Avenue	Yorba Linda City Limits	Class II	Proposed	1	1	2	0	2	1	0	0	0	1	2	47
Tier 2 Priority Ranking																	
	East/Lewis	**Katella Avenue**	**La Palma Avenue**	**Class II**	**Proposed**	**2**	**2**	**1**	**1**	**0**	**1**	**2**	**2**	**2**	**0**	**1**	**69**
64	East Street	Ball Road	La Palma Avenue	Class II	Proposed	2	2	1	1	0	1	2	2	2	0	1	69

87	Lewis Street	Katella Avenue	Ball Road	Class II	Proposed	2	0	1	0	0	0	0	1	1	1	2	39
	Manchester/Loara	**Santa Ana Street**	**North Street**	**Class II**	**Ex/Prop**	**2**	**2**	**1**	**1**	**0**	**0**	**2**	**1**	**1**	**1**	**2**	**69**
94	Manchester Avenue	Santa Ana Street	Lincoln Avenue	Class II	Proposed	1	0	1	0	0	0	2	1	1	2	2	43
					Category	Demand		Utility			Connectivity			Readiness			
					Weight	8	8	6	6	2	3	4	3	2	4	4	
					Total	32		28			20			20			100
Bike ID	**Street/Path**	**From**	**To**	**Bikeway Class**	**Existing or Proposed**	**Employment Centers**	**Population Density**	**Regional Bikeway Connection**	**Gap Closure**	**Inter-City Connectivity**	**Multimodal Connectivity**	**Schools**	**Parks/ Library/ Rec Center**	**Agency Coordination**	**Existing ROW Impacts**	**On Street Parking Impact**	**Score**
90	Lincoln Avenue	Manchester Avenue	Wilshire Avenue	Class II	Proposed	0	1	0	1	0	0	0	0	1	1	2	28
144	Wilshire Avenue	Loara Street	Lincoln Avenue	Class II	Existing	2	1	0	1	0	0	0	0	2	2	1	46
92	Loara Street	Wilshire Street	North Street	Class II	Existing	2	2	0	2	0	0	2	1	2	2	1	71
	Olive Street	**Edison Trail s/o Cerritos**	**La Palma Avenue**	**Various**	**Proposed**	**2**	**2**	**1**	**0**	**0**	**1**	**2**	**2**	**1**	**1**	**2**	**69**
153	Olive Street	Santa Ana Street	La Palma Avenue	Class III	Proposed	2	2	1	0	0	1	0	2	2	2	2	67
106	Olive Street	Vermont Avenue	Santa Ana Street	Class III	Proposed	2	2	0	0	0	0	2	1	1	2	2	61
24	North-South Union Pacific Railroad- Olive Street Continuation	Vermont Avenue	E-W SCE ROW south of Cerritos Avenue	Class I	Proposed	2	2	1	0	0	0	2	1	1	0	2	59
	Cerritos/ Douglass/ Katella	**Anaheim Boulevard**	**Santa Ana River Trail**	**Various**	**Proposed**	**2**	**0**	**2**	**2**	**2**	**2**	**1**	**0**	**1**	**1**	**2**	**68**
55A.20 55B.2.20	Cerritos Avenue	Anaheim Boulevard	Douglass Road	Class II	Proposed	2	0	2	2	0	1	1	0	1	1	2	61
63A.1.20	Douglass Road	Katella Avenue	Cerritos Avenue	Class II	Proposed	2	0	2	0	0	1	0	0	2	2	2	51
149	Katella Avenue	Douglass Road	Santa Ana River Trail	Class III	Proposed	2	0	2	1	2	2	0	0	1	2	2	62
	Gilbert Street	**South City Limits**	**La Palma Avenue**	**Various**	**Ex/Prop**	**1**	**2**	**1**	**2**	**0**	**1**	**2**	**1**	**2**	**1**	**1**	**68**
147	Gilbert Street	La Palma Avenue	Crescent Avenue	Class III	Proposed	1	1	1	1	0	1	2	1	2	2	2	62
71	Gilbert Street	Broadway	Carbon Creek Trail	Class II	Proposed	0	2	0	1	0	0	2	0	2	1	0	38
148	Gilbert Street	Broadway	Ball Road	Class III	Proposed	0	2	1	2	0	0	2	0	2	2	2	62
72	Gilbert Street	South City Limits	Ball Road	Class II	Existing	0	1	1	1	2	0	2	0	1	1	1	42
	N-S Edison ROW w/o Magnolia	**Stanton City Limits**	**La Palma Avenue**	**Class I**	**Ex/Prop**	**0**	**2**	**2**	**1**	**2**	**1**	**2**	**2**	**0**	**1**	**2**	**67**

22	North-South SoCal Edison ROW west of Magnolia Street	Stanton City Limits	Broadway	Class I	Existing	0	2	2	1	2	0	2	2	1	1	2	66
23	North-South SoCal Edison ROW west of Magnolia Street	Broadway	La Palma Avenue	Class I	Proposed	0	2	2	0	2	1	2	1	0	0	2	54
44A.20 *44B.20* *44C.20*	*Ball Road*	*Lemon Street*	*Orange City Limits*	*Class II*	*Proposed*	*2*	*2*	*1*	*2*	*2*	*1*	*0*	*1*	*1*	*0*	*1*	*66*
					Category	Demand		Utility			Connectivity			Readiness			
					Weight	8	8	6	6	2	3	4	3	2	4	4	
					Total	32		28			20			20			100
Bike ID	**Street/Path**	**From**	**To**	**Bikeway Class**	**Existing or Proposed**	**Employment Centers**	**Population Density**	**Regional Bikeway Connection**	**Gap Closure**	**Inter-City Connectivity**	**Multimodal Connectivity**	**Schools**	**Parks/ Library/ Rec Center**	**Agency Coordination**	**Existing ROW Impacts**	**On Street Parking Impact**	**Score**
54.A.20 *54.B.20* *54C.2.20* *54D.20*	*Cerritos Avenue*	*West City Limits (e/o Magnolia)*	*Walnut Street*	*Class II*	*Proposed*	*1*	*2*	*1*	*2*	*2*	*1*	*2*	*2*	*1*	*0*	*0*	*65*
	Anaheim Shores/ Romneya/Karcher	**La Palma Avenue**	**Anaheim Boulevard**	**Various**	**Ex/Prop**	**1**	**1**	**1**	**1**	**0**	**1**	**2**	**2**	**2**	**2**	**2**	**65**
40	Anaheim Shores / Romneya Drive	La Palma Avenue	Euclid Street	Class II	Existing	1	1	2	0	0	1	2	1	2	2	1	58
158	Romneya Drive/Carl Karcher Way	Euclid Street	Anaheim Boulevard	Class III	Proposed	1	0	1	1	0	1	2	2	2	2	2	57
	Orangewood Avenue	**Euclid Street**	**Rampart Street**	**Class II**	**Ex/Prop**	**2**	**2**	**0**	**1**	**2**	**1**	**1**	**2**	**1**	**1**	**1**	**65**
111	Orangewood Avenue	Euclid Street	ECL e/o Janette Lane	Class II	Existing	0	1	0	1	2	1	0	1	1	0	0	26
112	Orangewood Avenue	West Street	Harbor Boulevard	Class II	Proposed	2	2	0	1	2	1	0	0	1	0	0	47
113	Orangewood Avenue	Harbor Boulevard	Mountain View Avenue	Class II	Existing	1	2	0	0	1	1	1	2	2	1	2	55
114	Orangewood Avenue	Mountain View Avenue	Dupont Drive (W)	Class II	Proposed	1	2	0	1	1	1	1	2	1	0	0	47
171	Dupont Drive (W)	Orangewood Avenue	Dupont Drive (E)	Class II	Proposed	1	0	0	0	0	0	0	0	2	2	1	24
172	Towne Centre Pl	Dupont Drive (E)	Rampart Street	Class II	Proposed	1	0	0	0	1	0	0	0	2	0	2	22
	West Street	**Santa Ana Street**	**La Palma Avenue**	**Various**	**Proposed**	**2**	**2**	**1**	**0**	**0**	**1**	**2**	**2**	**1**	**1**	**1**	**65**
140	West Street	Santa Ana Street	North Street	Class II	Proposed	1	2	1	0	0	1	2	2	1	1	1	57
173	West Street	North Street	La Palma Avenue	Class III	Proposed	2	2	1	0	0	1	1	1	1	1	2	62
26	*Orangethorpe Avenue*	*Lemon Street*	*Raymond Avenue*	*Class II*	*Proposed*	*2*	*1*	*2*	*0*	*2*	*2*	*0*	*0*	*1*	*2*	*2*	*64*

Appendix F
Anaheim Bikeway Network Priority Ranking Scores

	Euclid Street	**Orangewood Avenue**	**Lincoln Avenue**	**Class II**	**Ex/Prop**	**1**	**1**	**1**	**2**	**2**	**2**	**2**	**2**	**1**	**0**	**1**	**64**
66	Euclid Street	Orangewood Avenue	Ball Road	Class II	Proposed	0	1	1	2	2	2	2	2	1	0	1	56
65	Euclid Street	Ball Road	Lincoln Avenue	Class II	Existing	1	1	1	0	0	1	2	2	2	0	1	47
	Lemon Street	**Ball Road**	**La Palma Avenue**	**Class III**	**Proposed**	**2**	**1**	**1**	**0**	**0**	**2**	**1**	**2**	**1**	**2**	**2**	**64**
86	Lemon Street	Sycamore Street	La Palma Avenue	Class III	Proposed	0	1	1	0	0	2	0	2	1	2	2	44
15	Lemon Street	Ball Road	Sycamore Street	Class III	Proposed	2	1	1	0	0	0	1	2	2	2	2	60

		Demand		Utility			Connectivity			Readiness			
Category													
Weight	8	8	6	6	2	3	4	3	2	4	4		
Total		32		28			20			20			100

Bike ID	Street/Path	From	To	Bikeway Class	Existing or Proposed	Employment Centers	Population Density	Regional Bikeway Connection	Gap Closure	Inter-City Connectivity	Multimodal Connectivity	Schools	Parks/ Library/ Rec Center	Agency Coordination	Existing ROW Impacts	On Street Parking Impact	Score
93	*Magnolia Avenue*	*Stanton City Limits*	*La Palma Avenue*	*Class II*	*Proposed*	*1*	*2*	*1*	*1*	*2*	*1*	*2*	*2*	*1*	*0*	*1*	*63*
	Crone Avenue/ Nutwood Street	**Orange Avenue**	**Walnut Street**	**Class III**	**Proposed**	**0**	**2**	**1**	**1**	**0**	**1**	**2**	**2**	**1**	**2**	**2**	**63**
152	Nutwood Street	Orange Avenue	Crone Street	Class III	Proposed	0	1	0	0	0	0	1	1	2	2	2	35
145A	Crone Avenue	UPRR Trail	Walnut Street	Class III	Proposed	0	1	1	0	0	0	1	0	1	2	2	36
145B	Crone Avenue	Nutwood Street	UPRR Trail	Class III	Proposed	0	2	1	1	0	1	2	2	1	2	2	63
	Kraemer/ Glassell	**Orange City Limits**	**Orangethorpe Avenue**	**Class II**	**Ex/Prop**	**2**	**1**	**2**	**2**	**2**	**1**	**0**	**0**	**0**	**0**	**2**	**63**
82	Kraemer Boulevard	Frontera Street	Orangethorpe Avenue	Class II	Proposed	2	0	1	2	2	1	0	0	0	0	2	49
73	Glassell Street	Orange City Limits	Frontera Street	Class II	Existing	1	1	2	2	2	0	0	0	0	1	2	56
33	*Acacia Street*	*La Palma Avenue*	*Fullerton City Limits*	*Class II*	*Proposed*	*1*	*2*	*2*	*1*	*2*	*1*	*2*	*1*	*1*	*0*	*0*	*62*
138A *138B.2.20*	*Walnut Street*	*Katella Avenue*	*Santa Ana Street*	*Class II*	*Proposed*	*2*	*2*	*2*	*0*	*0*	*0*	*2*	*2*	*2*	*0*	*0*	*62*
162	*Van Buren Street*	*La Palma Avenue*	*Placentia City Limits*	*Class III*	*Existing*	*2*	*1*	*1*	*0*	*0*	*0*	*1*	*2*	*2*	*2*	*2*	*60*
	Tustin Metrolink Paths	**Orange City Limits**	**Tustin Avenue**	**Class I**	**Proposed**	**2**	**1**	**2**	**1**	**2**	**2**	**0**	**0**	**0**	**0**	**2**	**60**
31	Tustin Avenue-Metrolink Connection	Orange Sub	Tustin Avenue	Class I	Proposed	1	0	2	0	0	0	0	0	0	0	2	28
12	East Tustin Flood Control Path	Santa Ana River Trail	Anaheim Canyon Metrolink	Class I	Proposed	2	0	0	1	0	2	0	0	0	0	2	36
20	Metrolink Side Trail	Orange/Olive Road	Tustin Avenue	Class I	Proposed	1	1	2	1	2	2	0	0	0	0	2	52
62	*Dale Street*	*Stanton City Limits*	*Buena Park City Limits*	*Class II*	*Proposed*	*0*	*2*	*1*	*2*	*2*	*0*	*2*	*1*	*1*	*1*	*1*	*59*

	Fairmont Boulevard	**Canyon Rim Road**	**Yorba Linda City Limits**	**Various**	**Ex/Prop**	**0**	**1**	**2**	**2**	**2**	**0**	**2**	**2**	**0**	**0**	**2**	**58**
67	Fairmont Boulevard	Canyon Rim Road	Santa Ana Canyon Road	Class II	Proposed	0	1	2	2	0	0	1	0	2	1	2	52
15	Fairmont Boulevard	Santa Ana Canyon Road	La Palma Avenue	Class I	Proposed	0	1	2	2	0	0	1	2	0	0	2	50
16	Fairmont Boulevard	Santa Ana River Trail	La Palma Avenue	Class I	Proposed	0	1	2	2	0	0	1	1	1	1	2	53
17	Fairmont Boulevard	La Palma Avenue	Yorba Linda City Limits	Class I	Existing	0	1	2	0	2	0	1	1	1	2	2	49
	Oak Canyon Drive	**Serrano Avenue**	**Running Springs Drive**	**Class II**	**Ex/Prop**	**0**	**1**	**1**	**2**	**0**	**0**	**2**	**1**	**2**	**2**	**2**	**57**
					Category	Demand		Utility			Connectivity			Readiness			
					Weight	8	8	6	6	2	3	4	3	2	4	4	
					Total	32		28			20			20			100

Bike ID	Street/Path	From	To	Bikeway Class	Existing or Proposed	Employment Centers	Population Density	Regional Bikeway Connection	Gap Closure	Inter-City Connectivity	Multimodal Connectivity	Schools	Parks/ Library/ Rec Center	Agency Coordination	Existing ROW Impacts	On Street Parking Impact	Score
104	Oak Canyon Drive	Serrano Avenue	Weir Canyon Road	Class II	Existing	0	1	1	2	0	0	1	1	2	2	2	53
105	Oak Canyon Drive	Weir Canyon Road	Running Springs Drive	Class II	Proposed	0	1	0	2	0	0	1	1	2	2	2	47
57	*Citron Street*	*Vermont Avenue*	*Santa Ana Street*	*Class III*	*Proposed*	*0*	*2*	*1*	*0*	*0*	*0*	*2*	*2*	*2*	*2*	*2*	*56*
	La Palma Avenue East	**Blue Gum Street**	**Santa Ana River Trail**	**Class I**	**Proposed**	**2**	**0**	**1**	**2**	**0**	**2**	**2**	**0**	**0**	**0**	**2**	**56**
19	La Palma Avenue	Blue Gum Street	e/o Brasher Street	Class I	Proposed	2	0	1	2	0	2	2	0	1	0	2	58
29	Santa Ana River Trail Connector w/o Imperial Highway	La Palma Avenue	Santa Ana River Trail	Class I	Proposed	2	0	0	0	0	0	2	0	0	0	2	32
179	Imperial La Palma Connector	Santa Ana River Trail Connector w/o Imperial Highway	Imperial Highway	Class I	Proposed	2	0	1	1	0	0	2	0	0	0	2	44
	Nohl Ranch	**Avd Margarita**	**Serrano Avenue**	**Various**	**Proposed**	**0**	**1**	**1**	**2**	**1**	**0**	**2**	**2**	**1**	**1**	**2**	**56**
21.20 181.20	Nohl Ranch Open Space Trail	Pelanconi Park	Anaheim Hills Road	Class I	Proposed	0	1	0	1	0	0	2	2	0	1	2	40
100	Nohl Ranch Road	Anaheim Hills Road	Serrano Avenue	Class II	Proposed	0	1	1	2	1	0	2	1	2	2	2	59
Tier 3 Priority Ranking																	
	Imperial Highway	**Orange City Limits**	**Santa Ana Canyon Road**	**Various**	**Ex/Prop**	**0**	**1**	**0**	**2**	**2**	**0**	**2**	**2**	**1**	**1**	**2**	**52**
76	Imperial Highway	Orange City Limits	Nohl Ranch Road	Class II	Existing	0	1	0	0	2	0	1	1	1	2	2	37
18	Imperial Park Path	Nohl Ranch Road	Santa Ana Canyon Road	Class I	Proposed	0	1	0	2	0	0	2	2	1	1	2	48

Appendix F
Anaheim Bikeway Network Priority Ranking Scores

*45.20**	*Blue Gum Street*	*La Palma Avenue*	*Placentia City Limits*	*Class II*	*Existing*	*2*	*0*	*2*	*0*	*2*	*1*	*0*	*0*	*2*	*1*	*2*	*51*
	Anaheim Coves Trail	**Ball Road**	**Frontera Street**	**Class I**	**Ex/Prop**	**1**	**1**	**1**	**2**	**1**	**0**	**0**	**1**	**1**	**0**	**2**	**49**
1	Anaheim Coves Trail	Ball Road	Lincoln Avenue	Class I	Existing	1	1	1	2	0	0	0	1	1	2	2	55
2.20*	Anaheim Coves Trail North Extension	Lincoln Avenue	Frontera Street	Class I	Existing	0	1	1	2	1	0	0	0	0	0	2	36
	Kellogg Drive	**La Palma Avenue**	**Yorba Linda City Limits**	**Various**	**Ex/Prop**	**2**	**1**	**0**	**0**	**2**	**1**	**1**	**0**	**1**	**1**	**2**	**49**
77	Kellogg Drive	La Palma Avenue	Orangethorpe Avenue	Class II	Proposed	2	0	0	0	0	1	0	0	1	1	2	33
					Category	Demand		Utility			Connectivity			Readiness			
					Weight	8	8	6	6	2	3	4	3	2	4	4	
					Total	32		28			20			20			100

Bike ID	Street/Path	From	To	Bikeway Class	Existing or Proposed	Employment Centers	Population Density	Regional Bikeway Connection	Gap Closure	Inter-City Connectivity	Multimodal Connectivity	Schools	Parks/ Library/ Rec Center	Agency Coordination	Existing ROW Impacts	On Street Parking Impact	Score
78	Kellogg Drive	Orangethorpe Avenue	Yorba Linda City Limits	Class II	Existing	1	1	0	0	2	0	1	0	1	1	2	38
	Rio Vista Street	**Wagner Street**	**Frontera Street**	**Class II**	**Ex/Prop**	**0**	**1**	**1**	**2**	**0**	**0**	**1**	**2**	**2**	**1**	**1**	**48**
117	Rio Vista Street	Wagner Street	Dutch Avenue	Class II	Existing	0	1	0	2	0	0	1	2	2	1	1	42
118	Rio Vista Street	Dutch Avenue	Frontera Street	Class II	Proposed	0	1	1	2	0	0	1	1	2	1	1	45
	Western Avenue	**Stanton City Limits**	**Buena Park City Limits**	**Class II**	**Proposed**	**0**	**2**	**1**	**1**	**2**	**0**	**2**	**2**	**1**	**0**	**0**	**48**
163	Western Avenue	Stanton City Limits	Orange Avenue	Class II	Existing	0	1	1	1	2	0	2	1	1	1	0	41
141	Western Avenue	Orange Avenue	Buena Park City Limits	Class II	Proposed	0	2	1	1	2	0	2	1	1	0	0	45
9	*Carbon Creek Diversion Channel*	*Kraemer Boulevard*	*Orangethorpe Avenue*	*Class I*	*Proposed*	*2*	*0*	*1*	*2*	*0*	*1*	*0*	*0*	*1*	*0*	*2*	*47*
	Royal Oak/ Pinney/ Gerda	**Nohl Ranch Road**	**Crescent Elementary School**	**Various**	**Ex/Prop**	**0**	**1**	**1**	**1**	**0**	**0**	**2**	**2**	**2**	**1**	**1**	**46**
120	Royal Oak Road	Nohl Ranch Road	Santa Ana Canyon Road	Class II	Existing	0	1	0	1	0	0	1	2	2	2	2	44
115	Pinney Drive	Santa Ana Canyon Road	Gerda Drive	Class II	Proposed	0	1	0	1	0	0	2	1	2	1	2	41
178	Peralta Canyon Park Overcrossing	Gerda Drive	Santa Ana River Trail	Class I	Proposed	0	1	1	1	0	0	2	2	0	0	2	42
70	Gerda Drive	Crescent Elementary School	Pinney Drive/Royal Oak Rd	Class II	Proposed	0	1	0	0	0	0	2	1	2	2	1	35
	Canyon Creek/Sunset Ridge	**Serrano Avenue**	**Serrano Avenue**	**Class II**	**Proposed**	**1**	**1**	**1**	**0**	**0**	**0**	**0**	**1**	**2**	**2**	**2**	**45**
51	Canyon Creek Road	Sunset Ridge Road	Serrano Avenue	Class II	Proposed	1	1	0	0	0	0	0	1	2	2	2	39

131	Sunset Ridge Road	Canyon Creek Road	Serrano Avenue	Class II	Proposed	0	1	1	0	0	0	0	0	2	2	2	34
108	*Orangethorpe Avenue*	*State College Boulevard*	*Placentia Avenue*	*Class II*	*Proposed*	*1*	*0*	*2*	*0*	*2*	*2*	*0*	*0*	*1*	*1*	*2*	*44*
	Ninth Street	**Garden Grove City Limits**	**Cerritos Avenue**	**Class II**	**Ex/Prop**	**0**	**2**	**0**	**1**	**2**	**0**	**1**	**2**	**2**	**1**	**0**	**44**
98	Ninth Street	Garden Grove City Limits	Katella Avenue	Class II	Existing	0	1	0	1	2	0	1	1	1	0	0	27
99	Ninth Street	Katella Avenue	Cerritos Avenue	Class II	Proposed	0	2	0	0	0	0	0	1	2	1	0	27

					Category	Demand		Utility			Connectivity			Readiness			
					Weight	8	8	6	6	2	3	4	3	2	4	4	
					Total	32		28			20			20			100

Bike ID	Street/Path	From	To	Bikeway Class	Existing or Proposed	Employment Centers	Population Density	Regional Bikeway Connection	Gap Closure	Inter-City Connectivity	Multimodal Connectivity	Schools	Parks/ Library/ Rec Center	Agency Coordination	Existing ROW Impacts	On Street Parking Impact	Score
13	*East-West Edison ROW/Union Pacific Railroad ROW north of Katella Avenue*	*Harbor Boulevard*	*Orange City Limits*	*Class I*	*Proposed*	*2*	*0*	*1*	*1*	*2*	*1*	*0*	*0*	*0*	*0*	*2*	*43*
74	*Grove St*	*La Palma Avenue*	*Miraloma Avenue*	*Class II*	*Proposed*	*2*	*0*	*1*	*1*	*0*	*1*	*0*	*0*	*2*	*2*	*0*	*43*
	Knott Avenue	**Stanton City Limits**	**Lincoln Avenue**	**Class II**	**Ex/Prop**	**0**	**2**	**1**	**0**	**2**	**0**	**2**	**1**	**0**	**1**	**0**	**41**
79	Knott Avenue	Stanton City Limits	Orange Avenue	Class II	Proposed	0	2	1	0	2	0	2	1	0	1	0	41
80	Knott Avenue	Orange Avenue	Lincoln Avenue	Class II	Existing	0	2	1	0	2	0	2	0	1	1	0	40
11	*Deer Canyon Park*	*Fairmont Boulevard*	*Serrano Avenue*	*Class I*	*Proposed*	*0*	*1*	*1*	*0*	*0*	*0*	*1*	*2*	*2*	*1*	*2*	*40*
110	*Orangethorpe Avenue*	*Kraemer Boulevard*	*Jefferson Street*	*Class II*	*Proposed*	*2*	*1*	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*34*
135	*Vine Street*	*Santa Ana Street*	*Broadway*	*Class III*	*Proposed*	*0*	*2*	*0*	*0*	*0*	*0*	*0*	*2*	*2*	*2*	*0*	*34*
116	*Richfield Road*	*Basin Trail s/o La Palma Avenue*	*Placentia City Limits*	*Class II*	*Proposed*	*1*	*0*	*0*	*0*	*2*	*1*	*0*	*0*	*1*	*2*	*2*	*33*
3	*Basin Trail s/o La Palma Avenue*	*Richfield Road*	*Lakeview Avenue*	*Class I*	*Proposed*	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*0*	*0*	*2*	*27*
75	*Gypsum Canyon Road*	*Santa Ana Canyon Road*	*Yorba Linda City Limits*	*Class II*	*Proposed*	*0*	*0*	*0*	*2*	*2*	*0*	*0*	*0*	*1*	*0*	*2*	*26*
50	*Camino Grande/Stagecoach Road*	*Nohl Ranch Road*	*Nohl Ranch Road*	*Class II*	*Proposed*	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*2*	*2*	*1*	*24*
88	*Lewis Street*	*Orange City Limits*	*Orangewood Avenue*	*Class II*	*Proposed*	*0*	*1*	*0*	*0*	*2*	*0*	*0*	*0*	*1*	*1*	*1*	*22*

Appendix F
Anaheim Bikeway Network Priority Ranking Scores

Criteria	Raw Score	Weight	Total Score	Description
Demand				
Employment Centers	2	8	16	Connects to employer with >250 employees
	1	8	8	Connects to census block with employment density > 0.00014 emp/sf
	0	8	0	Connects to census block with employment density < 0.00014 emp/sf
Population Density	2	8	16	Connects to census block with population density > 0.00053 pop/sf
	1	8	8	Connects to census block with population density < 0.00053 pop/sf
	0	8	0	Does not connect to any census block with residential properties
Utility				
Regional Bikeway Connection	2	6	12	Bikeway is part of regional bikeway corridor
	1	6	6	Bikeway connects to regional bikeway corridor
	0	6	0	Bikeway does not connect to regional bikeway corridor
Gap Closure	2	6	12	Bikeway connects to two or more existing bikeways
	1	6	6	Bikeway connects to one existing bikeway
	0	6	0	Bikeway does not connect to any existing bikeway
Inter-City Connectivity	2	2	4	Provides direct connection to another city
	1	2	2	Bikeway is on a city limit but does not cross the city limit
	0	2	0	Bikeway does not connect to another city
Connectivity				
Multimodal Connectivity	2	3	6	Bikeway connects to a Metrolink station or a Transit Priority Area (Intersection of two HQTC's)
	1	3	3	Bikeway connects with a High Quality Transit Corridor
	0	3	0	Bikeway does not connect with a High Quality Transit Corridor
Schools	2	4	8	Bikeway connects to 2 or more Elementary, Middle, or High Schools
	1	4	4	Bikeway connects to one Elementary, Middle, or High School
	0	4	0	Bikeway does not connect to any Elementary, Middle, or High Schools
Parks/ Library/ Rec Center	2	3	6	Bikeway connects to 2 or more libraries, parks, or community centers
	1	3	3	Bikeway connects to one library, park, or community center
	0	3	0	Bikeway does not connect to any libraries, parks, or community centers
Readiness				
Agency Coordination	2	2	4	Does not require coordination with any agencies for permit and/or approval
	1	2	2	Requires coordination with one or two agencies for permit and/or approval
	0	2	0	Requires coordination with three or more agencies for permit and/or approval
Existing ROW Impacts	2	4	8	Improvements fit within existing street section
	1	4	4	Improvements can fit within the existing right of way, but requires modifications to medians or curbs
	0	4	0	Significant ROW and widening required to implement bikeway
On Street Parking Impact	2	4	8	On-street parking unaffected
	1	4	4	Minimal in-street parking affected, usually less than 30% of the corridor, and not adjacent to spillover parking impacted areas
	0	4	0	Significant on-street parking impacts- requires lane removal or parking removal over most of the bikeway

Appendix G
Implementation Toolbox

Appendix G
Implementation Toolbox

INTRODUCTION

The following guidelines are derived from and consistent with standards within the Caltrans Highway Design Manual (HCM)[1], the California Manual on Uniform Traffic Control Devices (MUTCD)[2], and existing City of Anaheim Engineering Standard Details[3]. These guidelines are intended to reference the most recent versions of each of these sources as they are updated over time. Updates to the toolbox will be performed by the Public Works Department and approved by the City Engineer as design guidelines and standards within the HDM and the California MUTCD change over time.

A toolbox of strategies for implementing bicycle facilities is provided to illustrate many of the ways that individual bicycle facilities can be designed and implemented. This document is intended to assist the City in the design and implementation of bikeways and facilities within the context of the neighborhood it serves. Bikeways should not be implemented in a "one size fits all" approach. The implementation of the Bicycle Master Plan through this toolbox will ensure that the bicycle network will complement the neighborhoods they serve. The toolbox enables the City to work with the local neighborhoods and districts to determine the most appropriate improvements.

BIKEWAYS CLASSIFICATIONS

Class I – Bike Paths

Class I bike paths allow for two-way, off-street bicycle use. Bike paths can be designed for exclusive bicycle use, and can also be designed as shared-use paths that may be used by pedestrians and other non-motorized users. These facilities should generally be designed as separated facilities away from parallel streets. They are commonly planned along rights-of-way such as waterways, utility corridors, flood control access roads, and railroads which provide the opportunity for long separated bikeways. Bike paths can also include amenities such as lighting, signage, and fencing where appropriate. Bike paths provide critical connections in the city where roadways are absent or are not conducive to bicycle travel.

Class I Bike Paths adjacent to residential areas may present unique situations that will be addressed with the property owner(s) and surrounding community through project planning, implementation, and maintenance. Appropriate fencing, walls, gates and lighting related to park facilities may be installed according to City of Anaheim Community Services Department Parks Construction Standards Manual. Examples of standards include:

Fences and Gates
Omega fencing per Parks Construction Standards Manual Section 3.14.1.

Lighting
Security/pathway lighting per Parks Construction Standards Manual Section 5.4 in coordination with Anaheim Public Utilities Department.

[1] http://www.dot.ca.gov/hq/oppd/hdm/hdmtoc.htm
[2] http://www.dot.ca.gov/trafficops/camutcd/
[3] http://www.anaheim.net/285/Standard-Plans-and-Details

Walls

The walls along the North/South Edison Right-of-Way (Bike ID 22) provide an example of the edge treatment adjacent to residential areas.

Bike paths should have a minimum of eight feet of pavement, with at least two feet of unpaved shoulders on each side. Signs must have three feet of clearance from the bike path. Paved width of twelve feet is preferred. For shared use paths, a separate path five feet in width should be provided adjacent to the paved bike path, and striping and/or signage should be provided to separate pedestrian from bicycle travel areas.

Appropriate design speed, sight distance, superelevation, and clearances shall be incorporated into the design of any Class I bike path. Slopes greater than 4% require more detailed review. Grades should not exceed 5%. Speed bumps shall not be used. Bike path design should take into account vertical requirements, the impacts of maintenance of both the bike path and any utility corridors, and emergency vehicles on shoulders.

Both American Association of State Highway and Transportation Officials (AASHTO) and Caltrans recommend against using most sidewalks for bike paths, due to conflicts with driveways and intersections. Bike paths should only be considered adjacent to roadways that have high vehicle volume and vehicle speed, and those streets should also have uses with potential bicycle demand on that street. Where sidewalks are used as bike paths, they should be properly separated from the roadway, and pedestrian and bicycle uses should be separated. These paths should have carefully designed intersection and driveway crossings. Bike paths closer than five feet from the edge of the shoulder shall include a physical barrier to prevent bicyclists from encroaching onto the roadway, and would be considered Class IV Cycle Track facilities.

Crossings of roadways, other than at intersections, should be carefully engineered to accommodate a safe and visible crossing for users. The design needs to consider the width of the roadway, whether it has a median, the posted speed limit, and the roadway's average daily and peak-hourtraffic volumes.

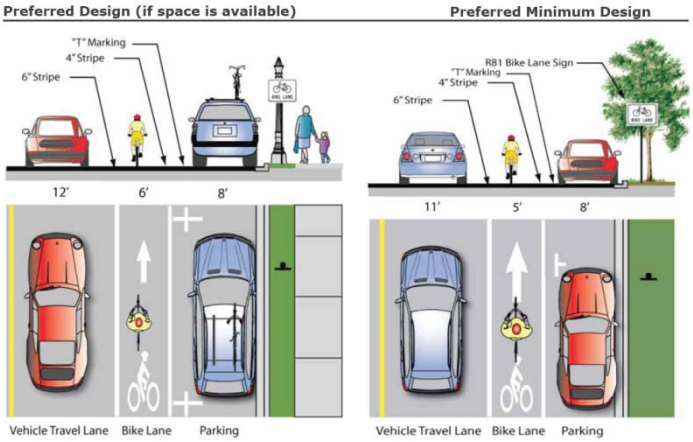
All shared use paths should generally conform to the design recommendation by:

- City of Anaheim Community Services Department Parks Construction Standards Manual
- California MUTCD
- Caltrans Highway Design Manual
- AASHTO Guide for the Development of Bicycle Facilities

Facilities adjacent to rail corridors should also conform with the latest version of these documents:

- "Rails-with-Trails": Lessons Learned, FHWA, 2002
- SCRRA Rail-with-Trail Design Guidelines

Class II – Bike Lanes



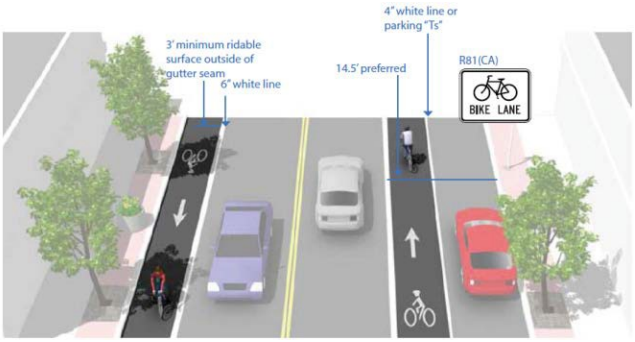
Bike lanes are defined by pavement striping and signage used to allocate a portion of a roadway for exclusive or preferential bicycle travel. Bike lanes are typically on the right side of the street, between the adjacent travel lane and curb, on-street parking, or edge of pavement. Consideration should be given to proximity and type of on-street parking, as well as prevailing speeds and traffic volumes in the design of bike lanes.

Bike Lane with No On-Street Parking

These bike lanes are adjacent to the curb or edge of pavement. Bike lanes designate an exclusive space for bicyclists through the use of pavement markings and signage. The bike lane is located adjacent to motor vehicle travel lanes and is used in the same direction as motor vehicle traffic. Consideration should be given to proximity and type of on-street parking, as well as prevailing speeds and traffic volumes in the design of bike lanes.

Bike lanes shall be a minimum of five feet wide or three feet wide from the gutter pan if the gutter is greater than two feet wide. A width of six feet is preferred. Bike lanes wider than six feet need extra striping and signage to ensure that motorists do not use the bike lane as a vehicle lane or parking lane. Wider bike lanes should be considered on streets with volumes greater than 45 mph, or on heavily travelled bike routes to allow for bicycles to pass within the bike lane.

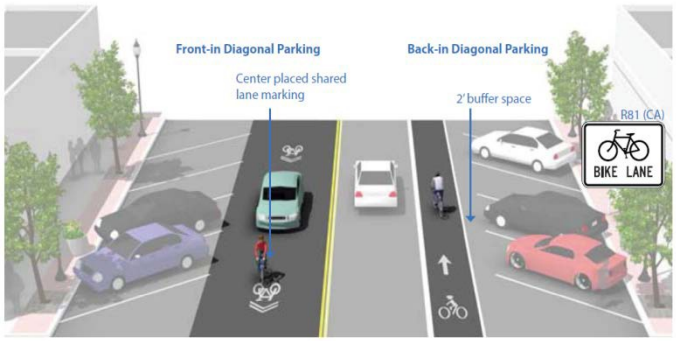
Bike Lane Next to On-Street Parallel Parking



Where on-street parking is permitted, the bike lane should be placed between the parking area and the travel lane and have a minimum width of five feet adjacent to an eight foot parking lane. Parking "T"s should be placed within the parking lane to ensure that autos are parked as close to the curb as possible. Alternatively, a four foot lane with a three foot buffer area is recommended so that bicyclists do not ride in the area where parked automobile doors can open. The buffer area should be clearly striped. For high turnaround or heavily utilized
parking areas, the bike lane should be six feet plus the door buffer.

Bike Lane and Diagonal Parking

In certain areas with high parking demand such as urban commercial areas, diagonal parking may be used to increase parking supply. Conventional diagonal parking is not compatible or recommended in conjunction with high levels of bicycle traffic. Drivers backing out of conventional diagonal parking have poor visibility of approaching bicyclists. Conventional diagonal parking should not be permitted on any street identified with a bike lane in the Bicycle Master Plan.



Buffered Bike Lane

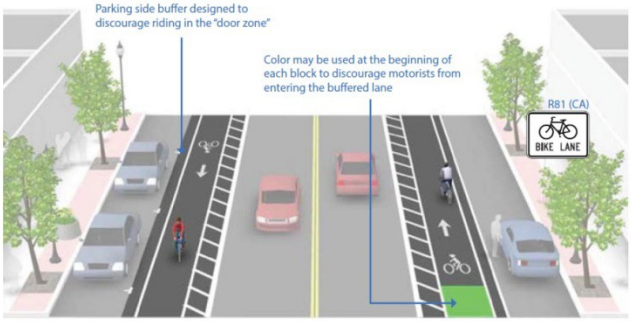
Buffered bike lanes are conventional bike lanes paired with a designated buffer space, separating the bike lane from the adjacent vehicle travel lane. Buffered bike lanes are designed to increase the space between the bike lane and the travel lane. This treatment is appropriate for bike lanes on roadways with high motor vehicle traffic volumes and speed, adjacent to parking lanes, or a high volume of truck or oversized vehicle traffic. Where bicyclist volumes are high or where bicyclist speed differentials are significant, the desired bicycle travel area width is seven feet. Buffers should be at least two feet wide. If three feet or wider, mark with diagonal or chevron hatching. For clarity at driveways or minor street crossings, consider a dotted line for the inside buffer boundary where cars are expected to cross.

Additional References and Guidelines

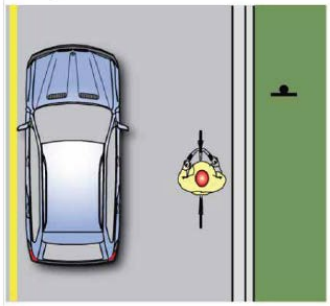
AASHTO. *Guide for the Development of Bicycle Facilities.* 2012.
Caltrans *CA-MUTCD.* 2014
NACTO. *Urban Bikeway Design Guide.* 2012.
Caltrans. *California HDM.* 2012.
Caltrans. *Main Street, California.* 2013.

Appendix G
Implementation Toolbox

Class III – Bike Routes



Bike routes have been typically designated as simple signed routes along street corridors, usually local streets and collectors, and sometimes along arterials to fill gaps between bike lanes. With proper route signage, design, and maintenance, bike routes can be effective in guiding bicyclists along routes suited for bicycling. Class III bike routes should be designed in a manner that encourages bicycle usage, convenience, and safety. There are a variety of other improvements that can enhance the safety and attraction of streets for bicyclists. Bike routes can become more useful when coupled with such techniques as signage, wide curb lanes, shared lane markings, and traffic calming measures.

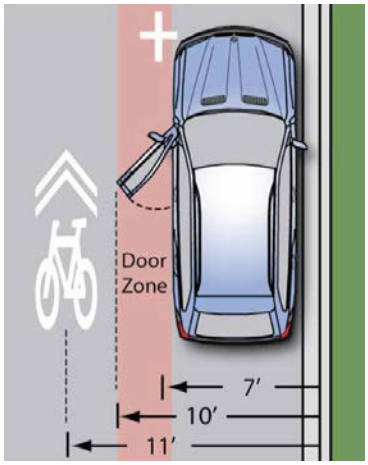


Bike routes should not be placed on streets with a speed limit greater than 35 miles per hour, or high hourly traffic volumes. Placement of new bike routes on arterial streets should be reviewed for compatibility with the street and the adjacent land uses before placement to ensure that the bike route is compatible with the neighborhood.

There are many features that can be implemented on bike routes, depending on the intended use of the facility. Bike routes can be as simple as signed shared routes, or could have multiple enhancements to convert the street into a Bicycle Boulevard (also called Neighborhood Greenway), or could have a range of improvements somewhere between the two. This section will review potential implementation tools from least impactful to most impactful.

Bike route with Wide Outside Lane

This type of facility is implemented on streets that are too narrow to stripe a Class II bike lane. It is an existing implementation of bike routes found in Anaheim. The wide outside lane provides adequate on-street space for the vehicle and bicycle to share the lane without requiring the vehicle to leave its lane to pass the bicyclist. This should only be implemented for lane widths of 14 or 15 feet. This type of facility should not be implemented on high volume or high speed streets.



Shared Lane Marking (Sharrow)

Shared Lane Marking stencils (commonly called "Sharrows") have been introduced for use in California and may complement signage as an additional treatment for bike routes. The stencil serves a number of purposes, such as reminding bicyclists to ride further from parked cars to avoid collisions with opening car doors, raising motorists' awareness of bicycles potentially in the travel lane, and showing bicyclists the correct direction of travel.

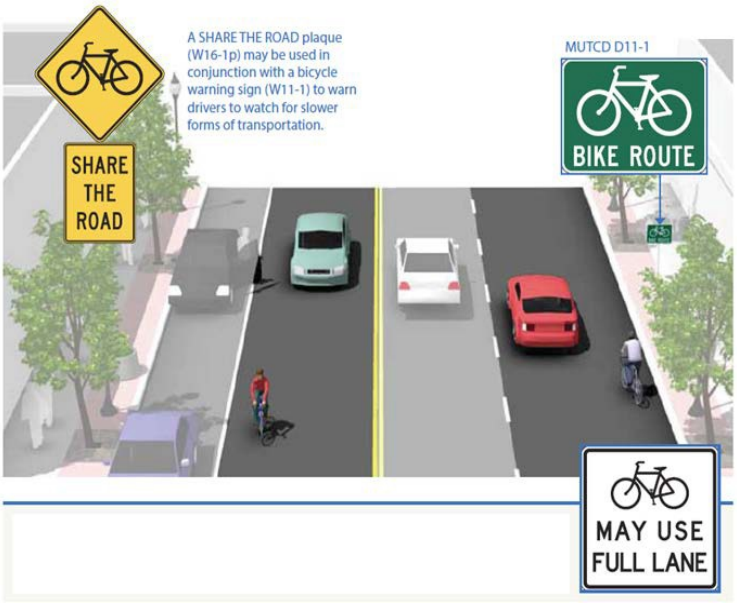
The 11 foot minimum distance from curb shown in the CA MUTCD is based on a seven foot parking stall. Shared lane markings adjacent to an eight foot parking stall may be installed at a minimum of 12feet from centerline to curb. Placing the sharrow between vehicle tire tracks may also be considered as it will increase the life of the markings and the long-term cost of maintenance to the treatment.

All new Class III bike routes should have sharrows in addition to bike route signage.

Additional Signage and Pavement Markings

Signage and pavement markings are cost-effective yet highly-visible treatments that can improve the riding environment on a bike route. Signage can serve both wayfinding and safety purposes.

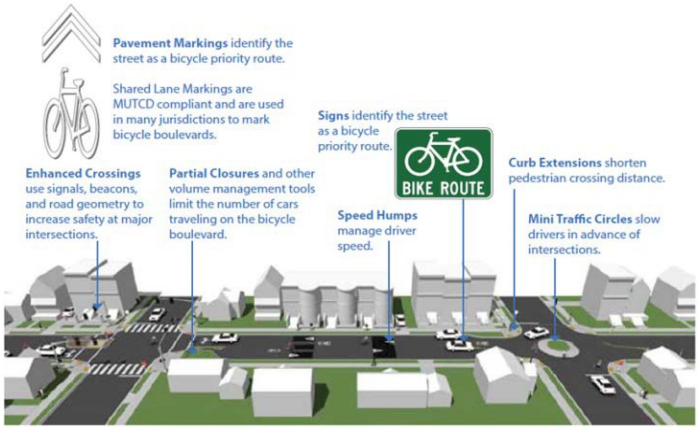
Wayfinding Signs are typically placed at key locations leading to and along the bike network, including where multiple routes intersect and at key bicyclist "decision points." Wayfinding signs displaying destinations and distances can dispel common misperceptions about time and distance while increasing user ease and accessibility to the bicycle network. Wayfinding signs also visually cue motorists that they are driving along a bike route and should correspondingly use caution. Note that too many road signs tend to clutter the right-of-way and become invisible to regular users.



Warning Signs advising motorists to "Share the Road", informing motorists that "Bicycles May Use Full Lane", or notifying motorists about the "Three Foot Rule" for passing bicyclists may also improve bicycling conditions on any street, including a bike route. These signs may be useful near major bicycle trip generators such as schools, parks and other activity centers. Warning signs should also be placed on major streets approaching any bikeway to alert motorists of bicycle crossings. These signs may be placed on all streets as deemed appropriate.

On-Street Parking Delineation with parking Ts on bike routes will clearly indicate where a vehicle should be parked and can discourage motorists from parking their vehicles too far into the adjacent travel lane. Parking Ts help bicyclists by maintaining a wide enough space to safely share a travel lane with moving vehicles while minimizing the need to swerve farther into the travel lane to maneuver around parked

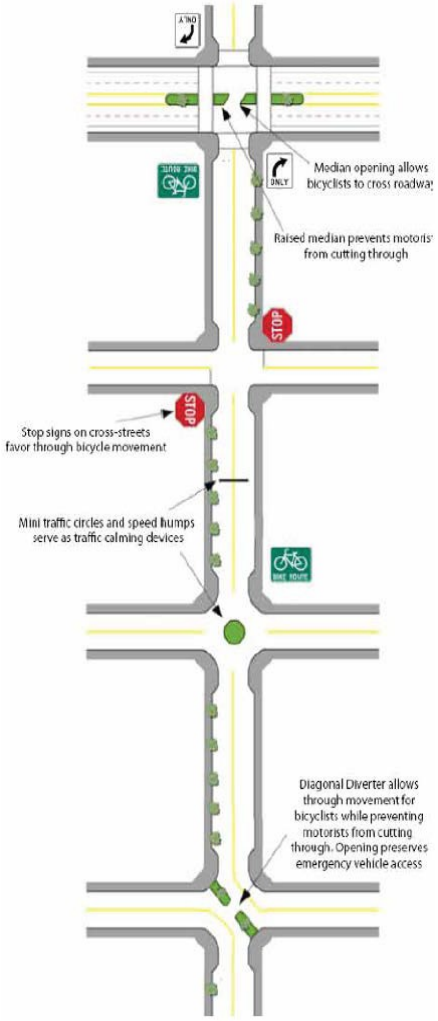
cars and opening doors. In addition to benefiting bicyclists, delineated parking spaces can also promote the efficient use of on-street parking by maximizing the number of spaces in areas where on-street parking is in high demand.



Loop Detector Stencils may be used at signalized intersections with in-pavement detection. The CA MUTCD Bicycle Detector Symbol may be used to indicate where bicyclists should wait to activate a green light

Local Intersections – Curb Bulb-Outs and High-Visibility Crosswalks

Installation of curb bulb-outs and high-visibility crosswalks is appropriate for bike routes near activity centers that may generate large amounts of pedestrian activity such as schools or commercial areas. The bulb-outs should only extend across the parking lane and should not obstruct bicyclists' path of travel or the travel lane. This treatment may be combined with a stop sign on the cross street if necessary. Bulb-outs also provide a safety benefit for pedestrians as it reduces crossing distance and increases the visibility of pedestrians waiting to cross the street. This is a traffic calming device, and typically requires neighborhood approval. It is a moderate cost measure, and could potentially impact storm water runoff if not designed correctly. Bulb-outs should not be installed at corners where trucks or buses frequently make a right turn. Bulb-outs can decrease on-street parking capacity, but they do significantly increase the line of sight for vehicles at the intersection by pushing parked vehicles away from the intersection.



Bicycle Boulevard

Bicycle boulevards (also known as "Neighborhood Greenways") are low-volume, low-speed streets modified to enhance bicyclist comfort by using treatments such as signage, pavement markings, traffic calming and/or traffic reduction, and intersection modifications. These treatments allow the through movement of bicyclists while discouraging similar through-trips by non-local motorized traffic.

• Signs and pavement markings are the minimum treatments necessary to designate a street as a bicycle boulevard.
• Bicycle boulevards should have a maximum posted speed of 25 mph. Use traffic calming to maintain an 85th percentile speed below 22 mph.

• Implement volume control treatments based on the context of the bicycle boulevard, using engineering judgment. Target motor vehicle volumes range from 1,000 to 3,000 vehicles per day.
• Intersection crossings should be designed to enhance safety and minimize delay for bicyclists.

Additional References and Guidelines

AASHTO. *Guide for the Development of Bicycle Facilities.* 2012.
Caltrans *CA-MUTCD.* 2014
Caltrans. *California HDM.* 2012.
NACTO. *Urban Bikeway Design Guide.* 2012.
Ewing, Reid and Brown, Steven. (2009). U.S. Traffic Calming

Additional References and Guidelines

NACTO. *Urban Bikeway Design Guide.* 2012.
Caltrans- Comprehensive Design Guidelines for Cycle Tracks- under development

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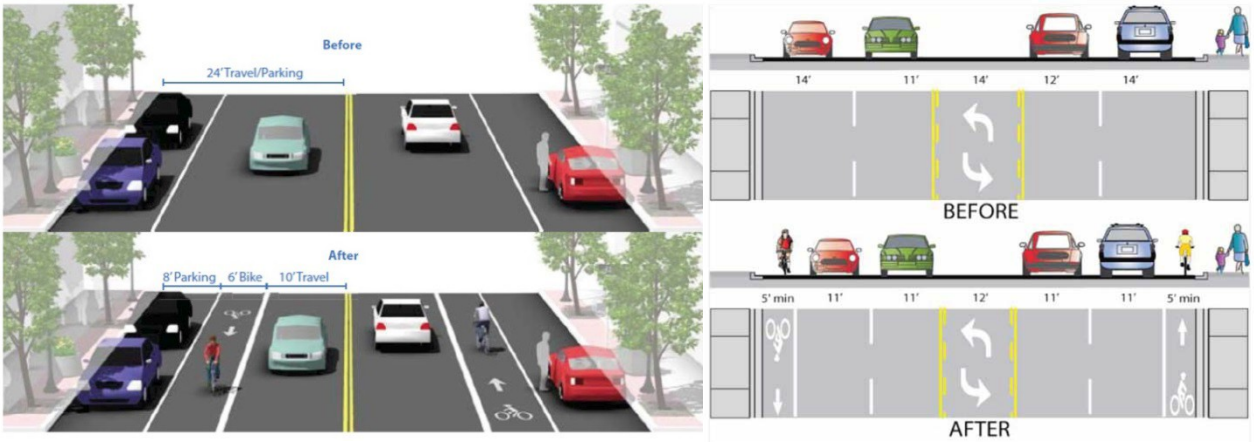
Implementation Toolbox

GAP CLOSURES AND ROADWAY RETROFITS

Lane Narrowing

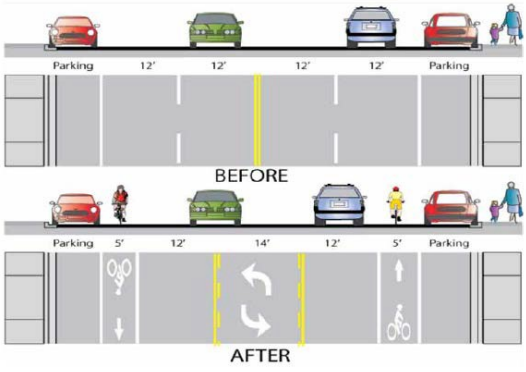
Lane narrowing utilizes roadway space that exceeds minimum standards to provide the needed space for bike lanes. Many roadways have existing travel lanes that are wider than those prescribed in City standards. For most streets, City standards allow for the use of 11 foot lanes. Industry standards allow for the use of 10 foot lanes as needed. Special consideration should be given to the amount of heavy vehicle traffic and horizontal curvature before 10 foot wide travel lanes are installed to create space for bike lanes. Center turn lanes can also be narrowed in some situations to free up pavement space for bike lanes.

Road Widening



If right-of-way is available, or a street is not widened to its ultimate width, road widening serves as an opportunity to complete bikeway segments. Sometimes, this will also involve lane narrowing.

Lane Reconfiguration



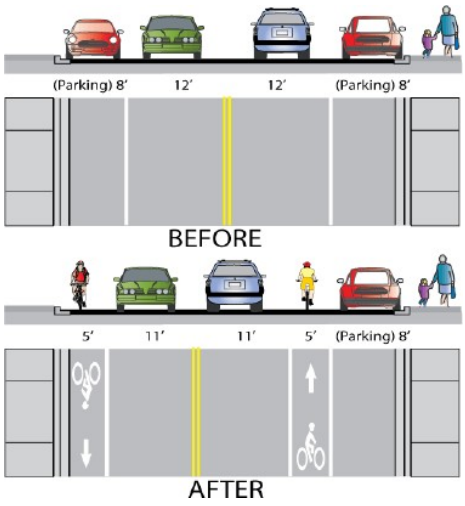
The removal of a single travel lane, often referred to as a "Road Diet", will generally provide sufficient space for bike lanes on both sides of a street. Streets with excess vehicle capacity provide opportunities for bike lane retrofit projects. Under these conditions, bike lanes could take the place of one or more vehicle travel lanes.

Depending on a street's existing configuration, traffic operations, user needs, and safety concerns, various lane reduction configurations exist. For instance, a four- lane street (with a center line and two travel lanes in each direction) could be modified to include one travel lane in each direction, a center turn lane, and bike lanes. Prior to implementing this measure, a traffic analysis is needed for each project location to identify overall transportation impacts including analysis of peak hour volumes. Studies from around the country indicate that this type of lane removal may be used on streets with high-end traffic volumes ranging from 22,000 – 30,000 ADT.

The removal of any travel lane will result in a reduction of available vehicle capacity. Any lane reconfiguration will require its own analysis, and possibly an amendment to the Anaheim General Plan, in order to ensure that the removal of the traffic lane will not significantly impact the surrounding streets.

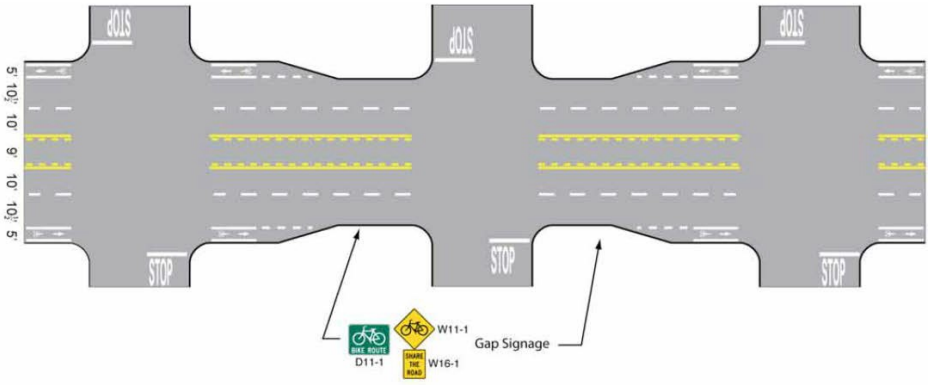
Parking Removal

Bicycle lanes could replace one or more on-street parking lanes on streets where there is negligible demand for on-street parking and/or the importance of bike lanes outweighs parking needs. For instance, parking may be needed on only one side of a street to accommodate residences and/or businesses. Eliminating or reducing on-street parking also improves sight distance for bicyclists in bike lanes and for motorists on approaching side streets and driveways. Prior to reallocating on-street parking for bike lanes, a parking study should be performed to gauge demand and concerns from local residents and businesses.



Connection Gap Closure – Wide Outside Lane & Signage

As an interim measure, for connection gaps with no on-street parking and without adequate right of way for widening or lane width reductions to provide continuous bike lanes, a wide outside lane may be used with the appropriate signage. If parking is under-utilized, its removal should be considered to provide for dedicated bicycle facilities. The gap area should have "Bike Route" signs and warning signs such as 'Share the Road'. It should be reiterated that this should only be considered as a temporary interim measure for short term bicycle network gap closures until funding can be secured to provide continuous bike lanes.



Additional References and Guidelines

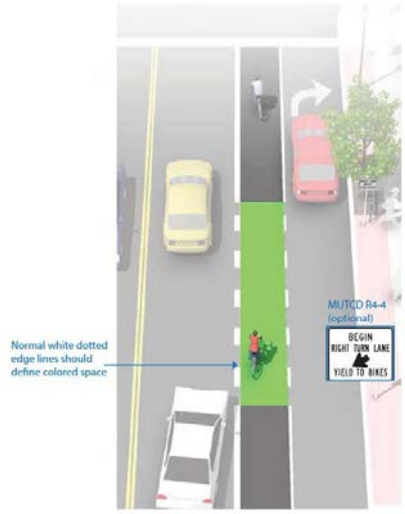
AASHTO. *Guide for the Development of Bicycle Facilities.* 2012.
AASHTO. *A Policy on Geometric Design of Highways and Streets.* 2011.
Caltrans. *California HDM.* 2012.
Caltrans. *Main Street, California.* 2013.
FHWA. *Evaluation of Lane Reduction "Road Diet" Measures on Crashes.* 2010.

Appendix G
Implementation Toolbox

INTERSECTION TREATMENTS

Bike Lane at Right Turn Only Lane

The appropriate treatment at right-turn lanes is to place the bike lane between the right-turn lane and the rightmost through lane. The design (right) illustrates a bike lane pocket, with signage indicating that motorists should yield to bicyclists through the conflict area. Existing bike lane width for that street shall be used

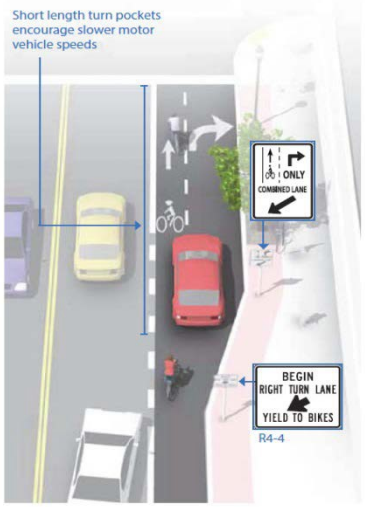


Additional References and Guidelines

AASHTO. *Guide for the Development of Bicycle Facilities.* 2012.
Caltrans *CA-MUTCD.* 2014
NACTO. *Urban Bikeway Design Guide.* 2012.
Caltrans. *California HDM.* 2012.
Caltrans. *Complete Intersections.* 2010.
FHWA. *Interim Approval (IA-14).* 2011.

Combined Bike Lane / Turn Lane

The combined bicycle/right turn lane places a standard width bike lane on the left side of a dedicated right turn lane. A dotted line delineates the space for bicyclists and motorists within the shared lane. This treatment includes signage advising motorists and bicyclists of proper positioning within the lane. This treatment is recommended at intersections lacking sufficient space to accommodate both a standard through bike lane and right turn lane.



For a shared turn-lane, the maximum width is 13 feet; narrower is preferable. The bike lane pocket should have a minimum width of four feet. A dotted four inch line and bike lane marking should be used to clarify bicyclist positioning within the combined lane, without excluding cars from the suggested bicycle area. A “Right Turn Only” sign with an “Except Bicycles” plaque may be needed to make it legal for through bicyclists to use a right turn lane.

Case studies cited by the Pedestrian and Bicycle Information Center indicate that this treatment works best on streets with lower posted speeds (30 MPH or less) and with lower traffic volumes (10,000 ADT or less). Shared turn-lanes may not be appropriate for high-speed arterials or intersections with long right turn lanes.

Additional References and Guidelines

NACTO. *Urban Bikeway Design Guide.* 2012.
AASHTO. *Guide for the Development of Bicycle Facilities.* 2012

BICYCLE DETECTION

Loop Detectors

Design Example

Bicycle-activated loop detectors are installed within the roadway to allow the presence of a bicycle to trigger a change in the traffic signal. This allows the bicyclist to stay within the lane of travel without having to maneuver to the side of the road to trigger a push button. Loops that are sensitive enough to detect bicycles should be supplemented with pavement markings to instruct bicyclists how to trip them.

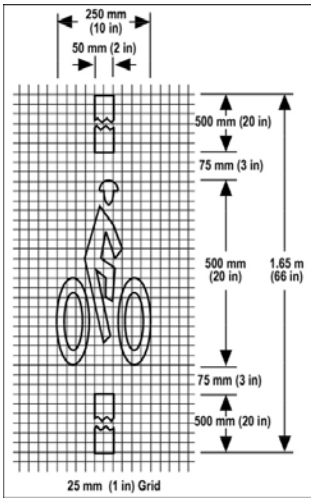
Video Detection Cameras

Video detection systems use digital image processing to detect a change in the image at a location. These systems can be calibrated to detect bicycles. Video camera system costs range from $20,000 to $25,000 per intersection.

Additional References and Guidelines

California MUTCD
Caltrans Highway Design Manual
Caltrans Standard Plans (1999) ES-5B
AASHTO Guide for the Development of Bicycle Facilities

Loop Detector Pavement Markings



Locate a Bicycle Detector Pavement Marking where a bicycle can be detected in a shared travel lane by a loop detector or other detection technology. Bicycle Detector Pavement Markings guide bicyclists to position themselves at an intersection to trigger signal actuation. Efforts need to be made to ensure that signal detection devices are capable of detecting a bicycle. Detectors for traffic-actuated signals need to be located in the bicyclist's expected path, including left-turn lanes and shoulders. Marking the road surface to indicate the optimum location for bicycle detection is helpful to the bicyclist.

Bikeway Signage

Several regulatory, warning, and wayfinding sign types are available to implement and supplement bicycle facilities. The following tables highlight signs currently available.

REGULATORY SIGNAGE (CA-MUTCD)

Description	Facility Type	CA MUTCD CODE	Graphic
STOP signs shall be installed on shared-use paths at points where bicyclists are required to stop.	Bike Path Class I	R1-1	
YIELD signs shall be installed on shared-use paths at points where bicyclists have an adequate view of conflicting traffic as they approach the sign, and where bicyclists are required to yield the right-of-way to that conflicting traffic.	Bike Path Class I	R1-2	
Where motor vehicles entering an exclusive right-turn lane must weave across bicycle traffic in bike lanes, the BEGIN RIGHT TURN LANE YIELD TO BIKES sign may be used to inform both the motorist and the bicyclist of this weaving maneuver.	Bike Lane Class II	R4-4	
The NO MOTOR VEHICLES sign may be installed at the entrance to a shared-use path.	Bike Path Class I	R5-3	
The Bicycle WRONG WAY sign and RIDE WITH TRAFFIC plaque may be placed facing wrong-way bicycle traffic, such as on the left side of a roadway. This sign and plaque may be mounted back-to-back with other signs to minimize visibility to other traffic.	Bike Lane Class II	R5-1b R9-3cP	
If the installation of signs is necessary to restrict parking, standing, or stopping in a bike lane.	Bike Lane Class II	R7-9 R7-9a	
Where pedestrians are prohibited, the No Pedestrians sign may be installed at the entrance to the facility.	Bike Path Class I	R9-3	

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Description	Facility Type	CA MUTCD CODE	Graphic
The R9-5 sign may be used where the crossing of a street by bicyclists is controlled by pedestrian signal indications.	Signal	R9-5	
The R9-6 sign may be used where a bicyclist is required to cross or share a facility used by pedestrians and is required to yield to the pedestrians.	Signal	R9-6	
The Shared-Use Path Restriction (R9-7) sign may be installed on facilities that are to be shared by pedestrians and bicyclists. The symbols may be switched as appropriate.	Bike Path Class I	R9-7	
The Bicycle Signal Actuation 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	Signal	R10-22	
Where it is not intended for bicyclists to be controlled by pedestrian signal indications, the BICYCLE PUSH BUTTON FOR GREEN LIGHT sign may be used.	Signal	R10-26	
The Bike Path Exclusion sign may be used to identify a bike path and prohibit motor vehicles and motorized bicycles from entering the bike path. If motorized bicycles are permitted, the "Motorized Bicycles" portion may be replaced with "Motorized Bicycles Permitted".	Bike Path Class I	R44A	
The BIKE LANE sign shall be placed at the beginning of each designated bike lane and along each at all major changes in direction.	Bike Lane Class II	R81 R81A R81C	

Guide Signage

Description	Facility Type	CA MUTCD CODE	Graphic
If used, Bike Route Guide signs should be placed at the beginning and end of bike routes and repeated at regular intervals so that bicyclists entering from side streets will have an opportunity to know that they are on a bike route. Similar guide signing should be used for shared roadways with intermediate signs placed for bicyclist guidance. The M1-8 sign may be used on numbered routes.	Bike Route Class III	D11-1 M4-14 M4-6 M4-5 M1-8 M1-8a	
If used, Bike Route Guide (D11-1) signs should be provided at decision points along designated bike routes, including supplemental signs to inform bicyclists of bike route direction changes and confirmation signs for route direction, distance, and destination. Option: The M4-14, M4-6, and M4-5 supplemental plaques may be mounted above the appropriate Bike route Guide signs, Bike route signs, or Interstate Bike route signs. Destination (D1-1, D1-1b, D1-2B, D1-3, D1-3b, and D3-1) signs may be mounted below Bike route Guide signs, Bike route signs, or Interstate Bike route signs to furnish additional information, such as directional changes in the route, or intermittent distance and destination information. Guidance: If used, the appropriate arrow (M6-1 through M6-7) sign (see Figure 9B-4) should be placed below the Bike route Guide sign.	Bike Route Class III	M6-1 / M6-2 M6-3 / M6-4 M6-5 / M6-6 M6-7 D1-1 D1-1b (R) D1-1b (L) D1-2b D1-3 D1-3b D3-1	

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Description	Facility Type	CA MUTCD CODE	Graphic
The BICYCLE PARKING AREA (D4-3) sign or BICYCLE PARKING (G93C(CA)) sign may be installed where it is desirable to show the direction to a designated bicycle parking area. The arrow may be reversed as appropriate.	Bicycle Parking	D4-3 G93C (CA)	
Directional sign for bikeway access to bike paths. The wording on the D11-1 and S17 (CA) signs can be changed to reflect a bike path and a specific bike path, respectively.	Bike Path Class I	D11-1 S17 (CA) M6-1	

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Warning Signage

Description	Facility Type	CA MUTCD CODE	Graphic
The Bicycle Warning sign alerts the road user to unexpected entries into the roadway by bicyclists, and other crossing activities that might cause conflicts. These conflicts might be relatively confined, or might occur randomly over a segment of roadway. This sign may use supplemental signs below the sign.	Non Bikeway Facilities	W-11-1	
Other bicycle warning signs such as SLIPPERY WHEN WET may be installed on bicycle facilities to warn bicyclists of conditions not readily apparent.	All Bikeways	W8-10 W8-10p	
Other bicycle warning signs such as Hill may be installed on bicycle facilities to warn bicyclists of conditions not readily apparent.	All Bikeways	W7-5	
Other bicycle warning signs such as BIKEWAY NARROWS may be installed on bicycle facilities to warn bicyclists of conditions not readily apparent.	Bike Path Class I	W5-4a	
Other bicycle warning signs such as NARROW BRIDGE may be installed on bicycle facilities to warn bicyclists of conditions not readily apparent.	All Bikeways	W5-2	
May be used to warn bike path users of pedestrian activity.	Bike Path Class I	W11-2	
May be used to warn bikeway users of a traffic signal ahead.	All Bikeways	W3-3	
Other bicycle warning signs such as BUMP may be installed on bicycle facilities to warn bicyclists of conditions not readily apparent.	All Bikeways	W8-1	
Other bicycle warning signs such as DIP may be installed on bicycle facilities to warn bicyclists of conditions not readily apparent.	All Bikeways	W8-2	
May warn bike path users of a playground ahead that may be adjacent to the path.	Bike Path Class I	W15-1	
To warn motorists to watch for bicyclists traveling along the highway, the SHARE THE ROAD plaque may be used with W11-1 sign.	Bike Route Class III	W16-1	

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Temporary Traffic Control (TTC)

Description	Facility Type	CA MUTCD CODE	Graphic
The PEDESTRIAN / BICYCLE DETOUR (M4-9a) should be used where a pedestrian/bicycle detour route has been established because of the closing of a pedestrian/ bicycle facility to through traffic. Standard: If used, the Pedestrian/Bicycle Detour sign shall have an arrow pointing in the appropriate direction.	Bike Path Class I	M4-9a	
The BICYCLE DETOUR (M4-9c) may be used where a pedestrian or bicycle detour route (not both) has been established because of the closing of a bicycle facility to through traffic.	Bike Lane Class II; or Bike Route Class III	M4-9c	
Several standard signs [W21-5, W21-5a, W21-5b, C24 (CA), C30A (CA), C31A (CA)] may be used to warn bicyclists of changes in conditions regarding the roadway shoulder.	Bike Route Class III or other Shared Roadway	W21-5a C24 (CA)	

Signage can serve both wayfinding and safety purposes including:

- Helping to familiarize users with the bicycle network
- Helping users identify the best routes to destinations
- Helping to address misperceptions about time and distance
- Helping overcome a "barrier to entry" for people who are not frequent bicyclists (e.g., "interested but concerned" bicyclists)

A community-wide bicycle wayfinding signage plan would identify:

- Sign locations
- Sign type – what information should be included and design features
- Destinations to be highlighted on each sign – key destinations for bicyclists
- May include approximate distance and travel time to each destination

Bicycle wayfinding signs also visually cue motorists that they are driving along a bike route and should use caution. Signs are typically placed at key locations leading to and along bike routes, including the intersection of multiple routes. Too many road signs tend to clutter the right-of-way, and it is recommended that these signs be posted at a level most visible to bicyclists rather than per vehicle signage standards.

Additional References and Guidelines

AASHTO. *Guide for the Development of Bicycle Facilities.* 2012.
Caltrans *CA-MUTCD.* 2014
NACTO. *Urban Bikeway Design Guide.* 2012.

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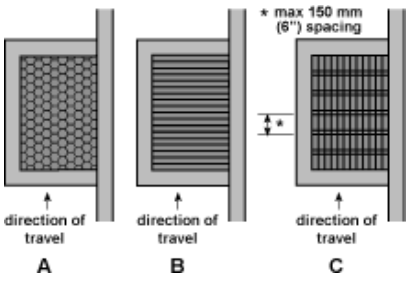
MISCELLANEOUS

Rumble Strips

Rumble strips are provided to alert motorists that they are wandering off the travel lanes onto the shoulder. They are most common on long sections of straight freeways in rural settings, but are also used on sections of winding streets where vehicles may cross into the shoulder. Early designs placed bumps across the entire width of the shoulder, which is very uncomfortable for cyclists. A newer rumble strip design is more bicycle-friendly: 12-16 inch grooves are cut to the left of the bike lane line and a right edge line is added at this location. This creates a buffer area between the travel lane and the bike lane.

Drainage Gates



Care must be taken to ensure that drainage grates are bicycle- safe. If not, a bicycle wheel may fall into the slots of the grate causing the cyclist to fall. Replacing existing grates or welding thin metal straps across the grate perpendicular to the direction of is required. These should be checked periodically to ensure that the straps remain in place. The most effective way to avoid drainage-grate problems is to eliminate them entirely with the use of inlets in the curb face. If a street-surface grate is required for drainage, care must be taken to ensure that the grate is flush with the road surface. Inlets should be raised after a pavement overlay to within 6 mm (1/4") of the new surface. If this is not possible or practical, the pavement must taper into drainage inlets so they do not cause an abrupt edge at the inlet.

Reflectors & Raised Pavement Markers

These can deflect a bicycle wheel, causing the cyclist to lose control. If pavement markers are needed for motorists, they should be installed on the motorist's side of the stripe, and have a beveled front edge. Pavement markers should not be used on shoulder lines or turn lane lines, as cyclists tend to use these. The use of raised pavement markers has been restricted or prohibited by several jurisdictions in recent years, including Washington State. Provisions can be made for their use in certain circumstances, including lane tapers, on uphill edgelines with 50’ separation between installations, and where a specific engineering study concludes that the benefit of the installation to correct a demonstrable problem at a given site.

Sidewalks as Bicycle Facilities

The use of sidewalks as bicycle facilities is not encouraged by AASHTO. There are exceptions to this rule: while in residential areas, it is true that sidewalk riding by young children too inexperienced to ride in the street is common. With lower bicycle speeds and lower auto speeds, potential conflicts are somewhat lessened, but still exist. But it is inappropriate to sign these facilities as bikeways. Bicyclists should not be encouraged (through signing) to ride facilities that are not designed to accommodate bicycle travel. Sidewalks can be used for short distances to make connections between off-street shared use paths and other facilities when such routing provides safer and more direct access than other available options. Shared use paths and cycle tracks can be placed next to sidewalks if appropriately designed.