

OC on the Move

ACTIVE TRANSPORTATION PLAN

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ORANGE COUNTY OC Public Works

Final Plan **May 2023**

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Executive Summary

The Orange County Active Transportation Plan (Plan) is Orange County Public Works' (OCPW) effort to enable walking and biking connections in its unincorporated areas and along OC Flood Control District channel maintenance roads. The Plan will expand the County's active transportation network, improve transportation equality for people of all ages and abilities, and ensure interconnectivity between incorporated and unincorporated areas, key destinations, and public transit. The Plan builds on numerous previous active transportation planning efforts, community engagement, and Orange County stakeholder input.

This Plan focuses on active transportation use in 28 unincorporated areas, and along 16 flood control channels in Orange County. While the Plan's content contains a comprehensive understanding of active transportation conditions and recommendations Countywide, the Plan can also be read as a set of "mini-plans" for each unincorporated area.

The Community Profiles chapter includes information on each of the unincorporated area's existing active transportation conditions including an inventory of existing bicycle and pedestrian infrastructure, commute trends, and land use patterns; a needs analysis, studying pedestrian and bicyclist collisions and active transportation gaps in infrastructure; and a set of bicycle and pedestrian recommendations for each unincorporated area.

The project team also examined a set of flood control channels which met certain criteria to determine the feasibility of installing Class I shared-use paths along them. Readers can find a detailed study of these flood control channels and their recommendations in the Community Profiles chapter.

The Implementation chapter provides a consideration of all of the recommended active transportation facilities in unincorporated areas and along the flood control channels in Orange County. The project team prioritized each of the recommendations to determine the recommended projects that are most feasible for implementation by the County and supporting jurisdictions. This chapter also describes design recommendations for the top prioritized projects, and lists potential funding sources. Non-infrastructure program recommendations for the unincorporated area communities are included in this chapter to ensure community members are encouraged to walk and bike on the recommended active transportation facilities, and strategies are included to encourage OCPW to work with surrounding jurisdictions to create a complete and connected active transportation network.

Introduction

Introduction

Active transportation is any non-motorized method of transportation including walking, biking, scootering, skateboarding, and using a mobility device such as a wheelchair. An active transportation plan ensures that community members using these modes of transportation feel safe, and comfortable, and that active transportation infrastructure is convenient and connected.

This Plan is a tool to guide OCPW and other Orange County agencies in the development of the active transportation network in the County's unincorporated areas and flood control channels, and to create an environment that encourages community members to shift more of their automobile trips to walking or biking. This active transportation plan is a regional vision for walking and biking in Orange County. The recommendations in the Plan will require further design and engineering review prior to implementation on a project by project basis.

Using active transportation has numerous health, safety, and environmental benefits. Creating a network of bikeways, sidewalks, and crossing infrastructure creates a barrier between motor vehicles and people walking and biking, making transportation safer for all users. Biking and walking can also improve mental and physical health and can improve air quality by reducing the number of motor vehicles on the road. Additionally, creating connected infrastructure is equitable, allowing all community members to reach community destinations and services without the need to own a vehicle, which can be economically advantageous for individuals who do not have to pay for maintenance and fuel costs, but also for the County as the cost to maintain and implement active transportation projects is significantly less expensive than roadway projects.

Overview of the Study Area

The County's extensive unincorporated geography varies greatly, from coastal, to suburban, to foothills/rural. Unincorporated Orange County additionally includes wetlands, open spaces, privately owned gated communities and other areas without residents. Given the uninhabited nature of many of the unincorporated areas, OCPW selected the following focus areas for this study (**Figure 1**). The focus areas described throughout this Plan are described in 3 different ways depending on the area itself and the context - either by the term island, community and/or area. An island is typically defined as an area surrounded by an incorporated City. Each island has a unique community name, or identifier, and is contextually dependent, whereas, an area, can refer to any space, or region discussed within this Plan. In addition to the unincorporated areas, the project team used a set of criteria to analyze the flood control channels in Unincorporated Orange County, and found that 16 channels could feasibly support Class I shared-use paths.

It is important to note that Plan analyses were completed for the islands Scully Ridge and Hamer Island. However, the Plan does not include recommendations for these islands. Hamer Island has been incorporated into Placentia, and Scully Ridge was determined uninhabitable with little opportunity to connect to the greater active transportation network and removed from this study.

The next page provides a detailed table of contents which provides page numbers for each area's section in the main Plan. This Plan can be read as a typical document, but each Community Profiles Chapter can additionally be read as a series of mini-plans for each unincorporated area.

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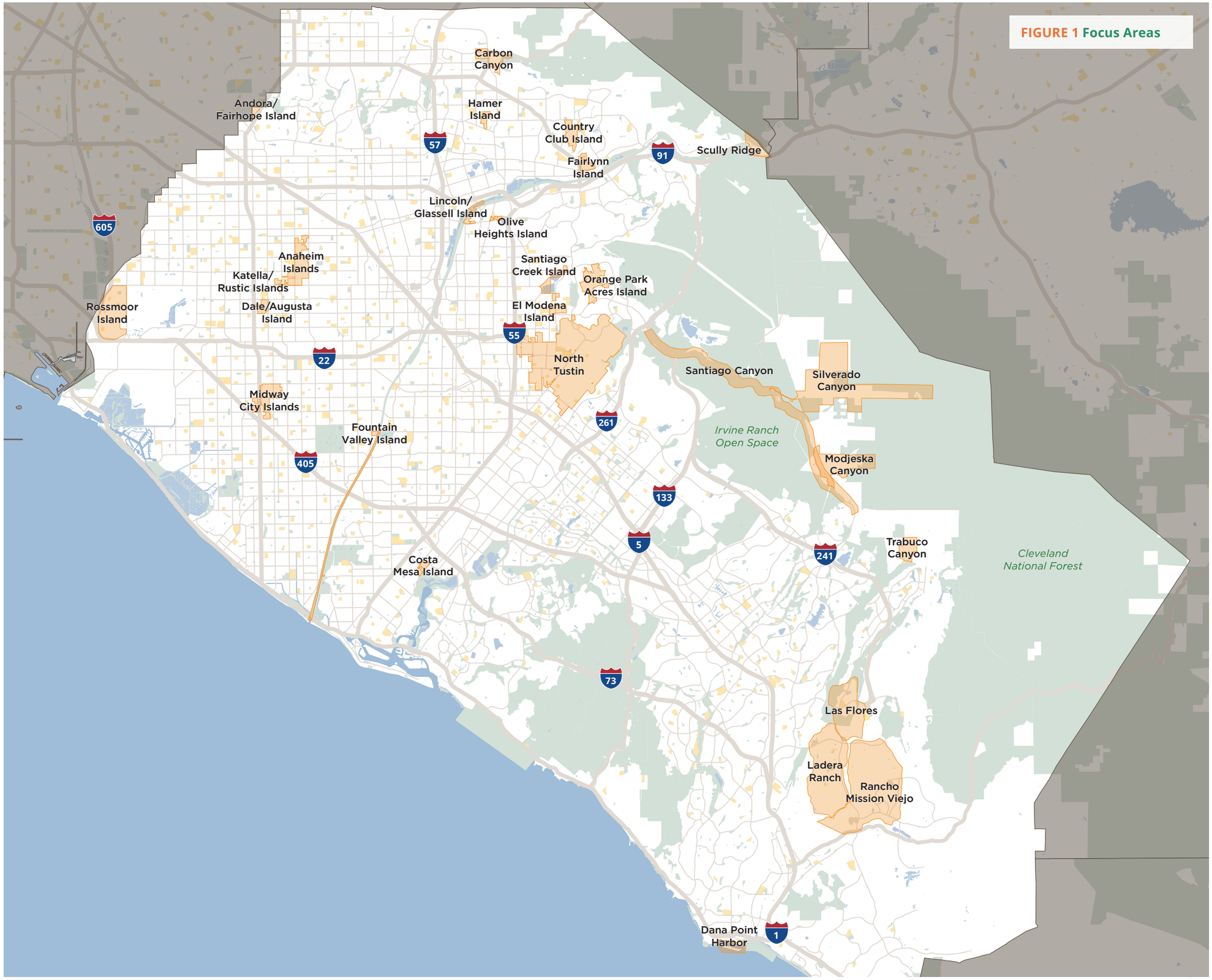


Additional analyses of each area can be found in the appendices

Orange County Unincorporated Areas

Active Transportation Plan

- Water
- School
- Park or Open Space
- Focus Areas
- County Boundary



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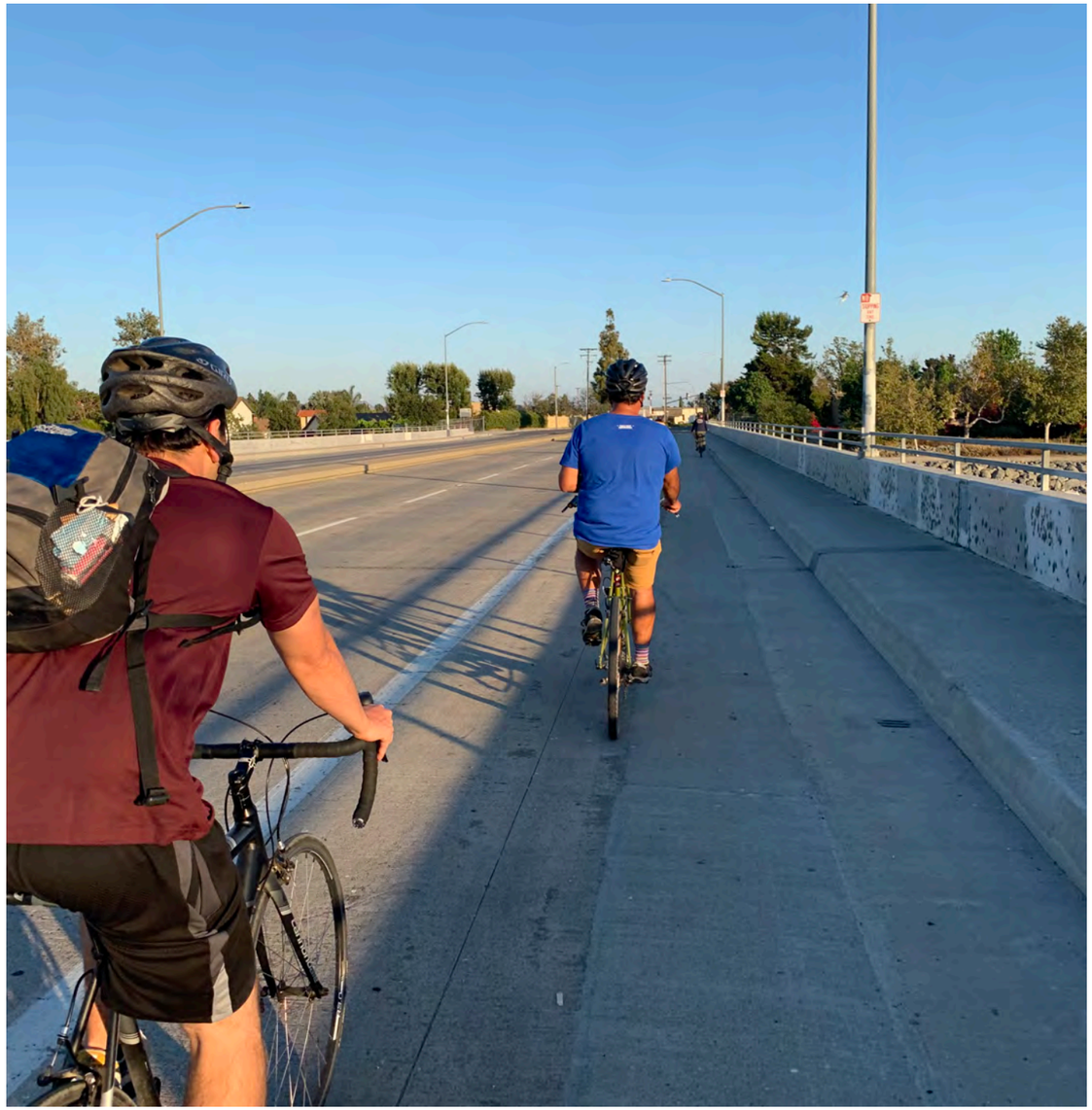
Vision and Goals

Vision Statement

Unincorporated communities and islands within Orange County and along Orange County Flood Control District (OCFCD) maintenance roads Right-of-Way will be places where walking, bicycling, and rolling are safe, accessible, convenient, and enjoyable options for people of all ages and abilities to travel for work, school, shopping, recreation, and other daily activities. Streets and sidewalks will be transformed to promote healthy and active lifestyles and increase public safety.

The vision of OC on the Move states OC Public Works' aspirations to further develop and improve active transportation within unincorporated communities, islands and OC Flood Control Channels. The vision statement will function as a guide to ensure decisions with respect to active transportation properly align with OC Public Work's goals and values, while maintaining our overarching Guiding Principles throughout: **Safety, Integrity, Quality, Teamwork** and **Adaptability.**

The goals listed on the next page are the desired result that OC Public Works will commit to achieve within a targeted timeline. Within the goals are objectives that are related to the attainment of goals. Each objective has policies/strategies, which are specific statements of work that are related to the accomplishment of the objective, and performance measures, which will be used to specify amounts of progress related to accomplishing the goal.[1] These objectives and policies can be found on **page 335**.



1 All values and metrics within this policy document may be reevaluated and revised in the future years to account for changing conditions.

Vision and Goals

Goals

1. SAFETY

Reduce the number, rate, and severity of collisions involving people walking, biking, and rolling.

Traffic-related and personal safety issues are a barrier for people bicycling and walking in unincorporated communities and islands and along OCFCD maintenance roads. Increase opportunities for people of all ages and abilities to easily access, and safely walk, bike, and roll along County streets and pathways through policy change.

2. CONNECTIVITY & ACCESS

Provide a comprehensive, continuous network of safe and convenient active transportation facilities.

Implementing bicycle and pedestrian infrastructure allows unincorporated community and island residents to access local and regional destinations safely and comfortably on bicycle or by foot. Creating shared-use facilities along OCFCD maintenance roads and providing access to these Right-of-Ways could lower Active Transportation travel stress for users. This framework prioritizes active transportation improvements that connect residents to key destinations and provide accessibility within and across unincorporated communities and islands.

3.SOCIAL EQUITY

Ensure that investments are made in historically disadvantaged communities and those dependent on active transportation and transit.

Bicycle and pedestrian facilities provide affordable, healthy transportation solutions for unincorporated areas, regardless of ethnicity, age, or income. However, in some communities, access to transportation options may not be equal across all populations. This Plan increases opportunities for the County's active transportation network to address current and historic inequities and improves economic opportunities for residents.

4.SUSTAINABILITY

Facilitate an increase in trips via active travel modes.

Creating walkable and bikeable communities can reduce greenhouse gas (GHG) emissions by encouraging people to use active transportation rather than drive, particularly for short trips. Proposed polices for this goal prioritize active transportation improvements that make unincorporated communities and islands more resilient in the face of climate change impacts, and encourages projects to adhere to best practices in sustainability.

5. IDENTITY AND PRESERVATION

Develop consistent facility design and branding, maintaining a clear identity for residents and visitors.

This framework prioritizes active transportation improvements that allow the County's unincorporated communities, islands, and shared-use facilities to present a clear identity to visitors and preserve each community's character.

6. REGIONAL COOPERATION

Create a seamless walking and biking network throughout the County.

Coordination amongst various agencies in Orange County will help with implementation of the projects, policies, and programs in this Plan, and will help implement a well-connected active transportation network. This framework identifies opportunities for the County to partner with local and regional agencies to accomplish shared mobility goals and objectives.

7. FISCAL RESPONSIBILITY

Pursue local, state, and federal grant funding for new projects, and establish regular facility maintenance strategies.

Funding for active transportation projects and programs comes from many sources, such as state grant opportunities and development-related requirements. This goal identifies strategies for active transportation projects to be planned, designed, and implemented in a financially prudent and responsible manner.

Stakeholder Engagement

Summary of Engagement Activities

Public input is an important reference point for understanding people's daily walking and biking experiences in Orange County's unincorporated communities, and provides key information for developing Plan recommendations. The public engagement activities conducted during the development of the Plan included Virtual Community Workshops, In-Person and Virtual Walk-Audits, a Project Website, a Web-Based Input Map, and a Community Survey. The dates and duration of each engagement activity can be found in **Table 1**.

WALK AUDITS

Walk audits, where the project team assesses pedestrian and bicycle infrastructure and operational conditions at specific sites, were held in Fall 2020. While walk audits are normally conducted as in-person site walks, Covid-19 restrictions allowed the team to conduct only 4 in-person walk audits, with the rest held virtually. In addition to the 4 in-person walk audits completed with County staff, 11 virtual public walk audits were completed independently by project staff (see Appendix H). These walk audits helped the project team understand challenges and opportunities at various locations throughout the unincorporated areas, including hearing directly from community members about their own barriers to walking and bicycling. More information about the results of the walk audits can be found in Appendix B.

COMMUNITY WORKSHOPS

The project team hosted 4 virtual community workshops via Zoom in Summer 2021 in order to share project information, answer questions, and provide a forum for feedback from the public. Each of the 4 workshops was targeted to a group of unincorporated islands so community members could attend and comment on the islands with which they felt most familiar (see Appendix H). The workshops introduced active transportation concepts to attendees, discussed how attendees could provide system-wide or site-specific comments for the project team's reference, and reviewed the timeline and steps to complete the Plan. Each workshop concluded with an open group discussion on walking and biking experiences within the communities. In addition to these community engagement events, mailers were sent out to residents near the study areas with project information and links to the project survey, map, and website.

Two workshops were also held via Zoom in January 2023. These workshops reviewed the final recommendations in this Plan and highlighted key recommendations in each Supervisorial District. Although the recommendations process was complete by the time of these workshops, community members were still invited to provide feedback. This feedback will be used by the County during future design and engineering phases of the projects. Detailed information about the workshops can be found in Appendix H.

TABLE 1 Duration of Engagement Activities

	Engagement Activity	Start Date	End Date
1	County Staff Walk Audits	October 1, 2020	October 31, 2020
2	Virtual Walk Audits	November 1, 2020	December 20, 2020
3	Public Input Map	October 1, 2020	August 20, 2021
4	Community Survey	May 1, 2021	August 20, 2021
5	Community Workshops	July 2021	January 2023
6	Project Website	October 2020	May 2022



The team conducted 4 in-person walk audits.

PROJECT WEBSITE AND PUBLIC INPUT MAP

The project website, walkbikeocpw.com, was launched in October 2020. The website hosted informational materials about the project for community members to explore, including information about upcoming events, completed documents, and the project timeline. The website also included links to the public input map, and the community survey. Additionally, community members could contact the project team at any time from the website to provide feedback on the project, or to ask questions. The project website, the public input map, and the community survey were available in English, Spanish, and Vietnamese.

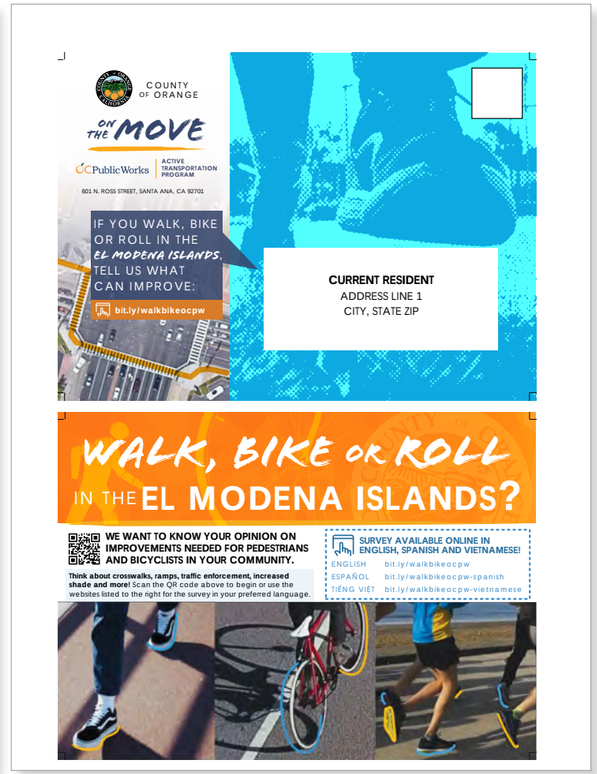
The public input map was an interactive map of Orange County in which community members were able to drop points in areas of the unincorporated communities which they felt needed walking or biking improvements. The public input map displayed existing and planned walking and biking facilities so community members could comment on their experiences using existing facilities, and provide their feedback on planned facilities. Facilities were shown countywide to help community members identify network connections outside of the unincorporated communities. Participants could also draw lines to show desired walking and biking connections, and could leave notes about popular destinations within the unincorporated area. Participants could then "like" or "dislike" other comments that they did or did not agree with, which helped to show the project team which improvements or connections had the most public support. The public input map received over 1,500 interactions including points, lines, likes, and dislikes.

ONLINE COMMUNITY SURVEY

The online survey allowed residents, people who work in the unincorporated communities, visitors to the unincorporated communities, or anyone else interested in the project to provide feedback on their experience walking and biking in unincorporated Orange County. The survey provided insights to how often respondents use active transportation in their daily lives, and the places they most frequently travel utilizing active transportation. Additionally, respondents provided feedback on the infrastructure that most needs improvement or that they would most like to see installed, and some of the barriers to walking and biking in their communities. In April 2021, the survey was promoted through mailers sent out residents of the 28 unincorporated communities included in this Plan. The survey was open for comment from May 1, 2021 through August 20, 2021. In total, the community survey received 1,121 responses.



The project team hosted 4 virtual community workshops via Zoom in Summer 2021 in order to share project information, answer questions, and provide a forum for feedback from the public.



Postcards were sent to residents in unincorporated Orange County. These postcards encouraged residents to visit the project website and take the survey.

Key Findings of Survey and Input Map

The results of the survey and public input map were reviewed countywide to understand major themes that OCPW could address. However, each of the unincorporated islands is unique, and has its own active transportation barriers and opportunities. Therefore, in addition to analyzing the responses countywide, the unincorporated islands were also geographically grouped together and analyzed in order to better understand the active transportation needs of each area. In addition to these community groups, responses related to the flood control channels in Orange County were separated and analyzed so that a clear picture of how the flood control channels can best be used by pedestrians and bicyclists would form. The grouped responses can be found in Appendix H.

COUNTYWIDE RESULTS

Demographics Data

As noted above, the community survey received 1,121 responses, and the public input map received over 1,500 interactions including points, lines, likes, and dislikes. Demographic information was voluntarily collected from survey respondents to help assess if the survey was receiving feedback from all unincorporated area residents. 50% of respondents were 46-64 years old, 31% were 19-45, and 18% were 65 or older. Less than 1% of respondents were 18 or younger. 72% of respondents were White, 14% were Asian/Pacific Islander, 11% were Hispanic/Chicano/Latino and 3% were other races/ethnicities. 48% of respondents have an income of over $100,000, 17% have an income of $50,000- $100,000 and 7% of respondents have an income under $49,999. 28% of respondents preferred not to provide their income information. Of the survey respondents who provided a zip code, 99% of them live within Orange County, although not necessarily within an unincorporated area.

While the survey and map did receive robust responses, these results only represent a small percentage of the people who live, work, shop, or recreate within unincorporated Orange County. The data from these public input comments will be used in addition to other efforts to make informed recommendations for each of the islands.

Survey Responses

When asked how often respondents walk, bike, and take the bus, the most popular responses show that nearly 50% of respondents walk daily, 21% use a bicycle 1-2 times per week, and 88% never take the bus. Respondents are most likely to drive alone to work, school, and to shopping centers, however, 57% of respondents typically walk to the park. The top

FIGURE 2 Where would you like to see better pedestrian and bicycling routes to?

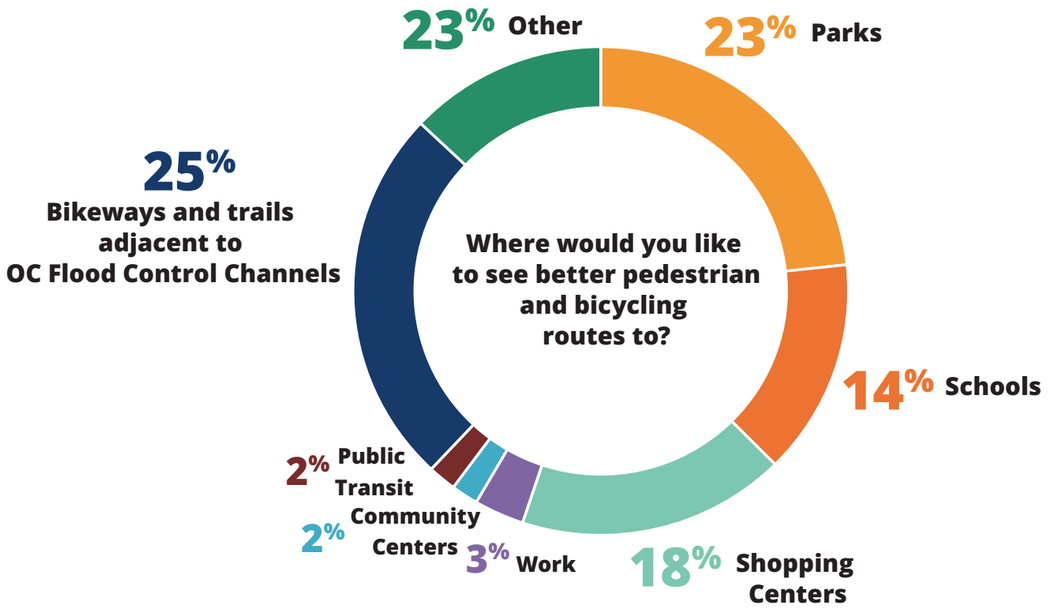
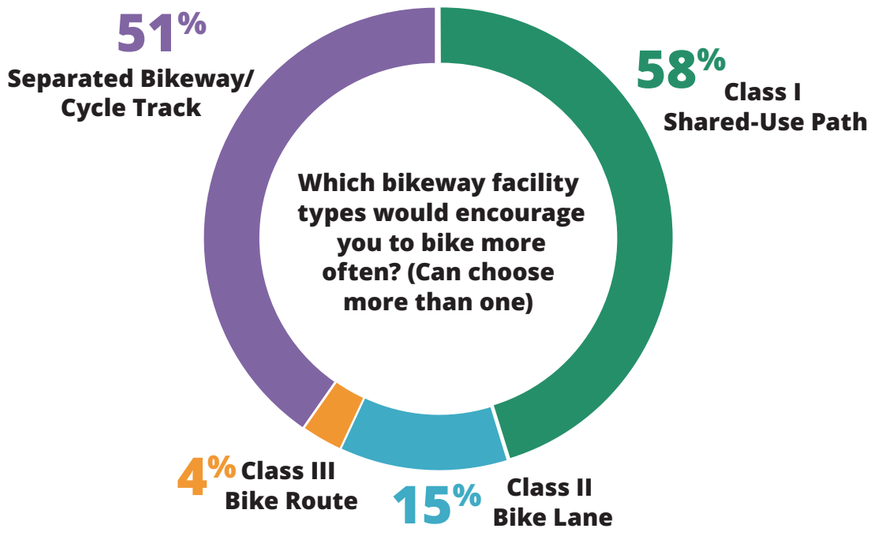


FIGURE 3 Which bikeway facility types would encourage you to bike more often?



places respondents would like to see bicycle and pedestrian routes to include bikeways and trails adjacent to the OC Flood Control Channels, parks, and shopping centers (**Figure 2**) Many respondents also wrote that they would like to connect to other neighborhood streets in their communities to have more pleasant casual walks, and be able to more easily visit their neighbors and friends.

When asked how safe respondents feel walking, biking, and using the bus, 44% said they feel very safe walking, 24% said they feel very safe taking the bus, and 17% said they feel very safe biking. When asked what would encourage respondents to walk more, the top answers were: more sidewalks or improvements to existing sidewalks, additional opportunities to cross the street, and improvements that increase people's feeling of personal safety. Bicyclists also indicated that they would bike more frequently with improved infrastructure, preferably with more shared-use paths and separated bikeways (**Figure 3**).

The survey asked participants "What streets in your community could best use the walk and bicycling improvements discussed on this survey to improve your access to school, work, play, dining, shopping?" The following list of streets were the most popular responses at a countywide level, in order of frequency:

1. Antonio Parkway
2. Foster Road
3. Sienna Parkway
4. Katella Avenue
5. O'Neill Drive
6. Montecito Drive
7. Newport Avenue
8. Los Alamitos Drive
9. Chapman Avenue
10. Seal Beach Boulevard

Countywide Themes from the Survey and Public Input Map

- E-Bike Conflicts: Pedestrians feel unsafe when there are e-bike users sharing the sidewalk and riding at high speeds. Many respondents requested stricter e-bike regulations and increased educational programs for e-bike riders. In addition to comments from the survey and public input map, community members also voiced concerns about e-bikes during the community workshops and community walk audits.
- Traffic Calming: Many respondents feel unsafe walking or biking because of the speed and volume of vehicle traffic on walking and biking routes. Respondents requested traffic calming measures and increased enforcement of speeding drivers.
- Separated Bikeway: Respondents noted many locations in the unincorporated County where existing bike lanes feel unsafe or are not continuous. Open-ended comments revealed that respondents would be more likely to bike with their families on separated or protected bike lanes.

Select Comments

"We are having a terrible problem with electric bikes and pedestrians. The bikers are young and riding way too fast. Pedestrians have to move out of the way to avoid being hit. It is unclear in our community if bikes are allowed on sidewalks."

"Any high-speed roads would benefit from separated bike lanes or paths."

"Please consider better enforcement of traffic rules, especially the requirement that drivers stop for pedestrians at a crosswalk. Too often they don't."

"Unfortunately drivers will actually cross the center divider to go around a cyclist rather than wait 3 seconds for oncoming traffic to pass. Honestly it would be so helpful to educate drivers."

Orange County Unincorporated Area

Active Transportation Plan

Countywide

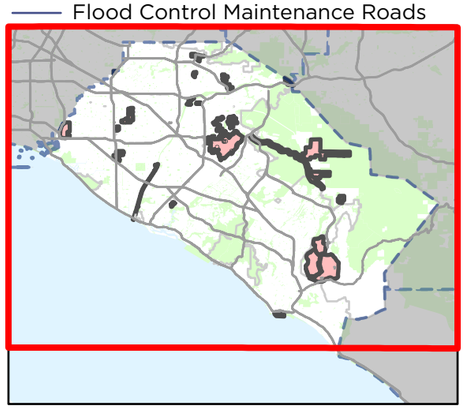
FIGURE 4 Countywide Public Engagement

Community Engagement

- What streets could best use improvements?
- Biking facilities that need improvement
- Destinations I currently or would like to access by walking or biking
- Walking facilities that need improvement
- Desired bike route/connection

Basemap

- Water Body
- School
- Park or Open Space
- County Boundary
- Chosen Unincorporated Area
- Chosen Unincorporated Area
- Flood Control Maintenance Roads



ORANGE COUNTY PublicWorks

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Previous Plan Coordination

This Plan is consistent with and builds upon the efforts of other various planning and policy documents. This includes OCTA's Commuter Bikeways Strategic Plan, the OCTA OC Loop Plan, and OCTA's Bike and Ped Plan as well as several local island Plans. OCPW intends to create an active transportation network that complements these plans and connects to previously identified infrastructure recommendations. The following is a list of some of the previous plans the project team reviewed and considered when designing this Active Transportation Plan.

- Silverado-Modjeska Specific Plan (Orange County, 1977)
- Carbon Canyon Specific Plan (City of Brea, 1986)
- North Tustin Specific Plan (Orange County, 1986)
- Las Flores Planned Community (Orange County, 1990)
- City of Dana Point General Plan (City of Dana Point, 1991)
- Foothill/Trabuco Specific Plan (Orange County, 1991)
- Recreational Trails Master Plan (City of Orange, 1993)
- Ladera Planned Community (Orange County, 2003)
- City of Brea General Plan (City of Brea, 2003)
- The Ranch Plan Planned Community (Orange County, 2006)
- City of Orange General Plan (City of Orange, 2010)
- Dana Point Harbor Revitalization Plan (City of Dana Point, 2011)
- 2035 Costa Mesa General Plan (City of Costa Mesa, 2015)
- Los Alamitos General Plan (City Los Alamitos, 2015)
- Yorba Linda General Plan (City of Yorba Linda, 2016)

COUNTY

- Commuter Bikeways Strategic Plan (OCTA, 2009)
- Fourth District Bikeways Strategy (OCTA, 2012)
- Nonmotorized Metrolink Accessibility Strategy (OCTA, 2013)
- Districts 1 and 2 Bikeways Strategy (OCTA, 2013)
- District 5 Bikeways Strategy Report (OCTA, 2015)
- OC Loop 70/30 Plan (OCTA, 2015)
- OC Foothills Bikeways Strategy (OCTA, 2016)
- Orange County's Bike + Ped Plan (OCTA, 2019)
- Orange County Safe Routes to School Plan (OCTA, 2021)

REGIONAL

- Santa Ana River Parkway and Open Space Plan (Coastal Conservancy, 2018)
- Connect SoCal (SCAG, 2020)
- Chino Hills State Park Road and Trail Management Plan (California State Parks, 2020)
- Caltrans Active Transportation Plan (2022)



Bicycle and Pedestrian Toolkit

Different types of bicycle and pedestrian facilities are better suited for different roadways, based on considerations such as vehicle speeds and volumes, the roadway width, and other types of transportation using the space. The following facilities are part of the County's toolbox. Some facilities promote both bicycle and pedestrian use. These facilities will need further study to ensure they do not conflict with local standards, and some will need approval by the Orange County Traffic Committee (OCTC) before installation.

This toolkit was applied to the streets in the unincorporated areas, and recommendations were made using the appropriate facilities from this toolkit.

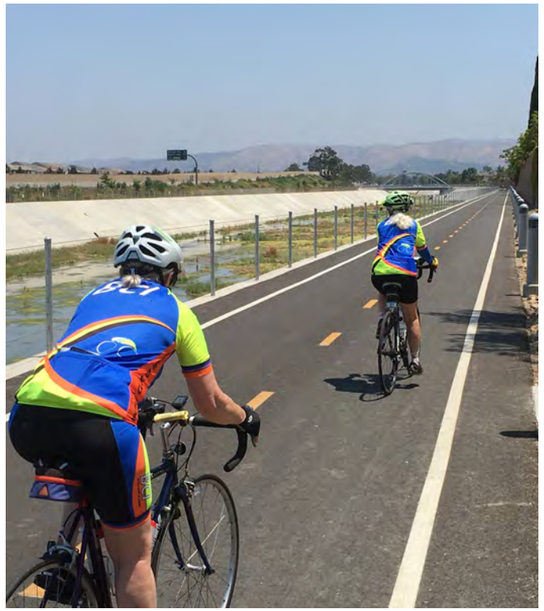
The County can refer to the following documents for additional details on these facilities:

- OCPW Highway Design Manual (HDM)
- Caltrans HDM
- OCPW Standard Plans
- Orange County Flood Control District (OCFCD) Design Manual
- Manual on Uniform Traffic Control Devices (MUTCD)
- National Association of City Transportation Officials (NACTO) Guides

Bicycle Facilities

Bikeway recommendations were applied to connectivity-focused corridors within each study area as well as connecting to outside jurisdiction's planned or existing networks, with appropriate applications of bikeway to roadway type. In addition to new recommended facilities, upgrades to existing facilities were recommended after consideration of community feedback and existing plan and policies.

Bicycle facilities are an important aspect of lowering the levels of traffic stress (LTS) on the roadway. However, other roadway factors like vehicle speeds and volumes also contribute to the level of traffic stress. More information about LTS can be found on **page 44**.



Bike Path (Class I): provide a completely separate right of way for the exclusive use by bicyclists and pedestrians with cross-flow minimized. The County's HDM requires a minimum paved width of 10 feet for a two-way bike path and a minimum paved width of 5 feet for a one-way bike path, with a minimum 2-foot-wide shoulder. Where heavier bicycle volumes are anticipated and/or significant pedestrian traffic is expected, the County's HDM calls for the paved width of a two-way bike path to be greater than 10 feet, preferably 12 feet or more. Class I paths generally have a low level of traffic stress and are suitable for most bicyclists.



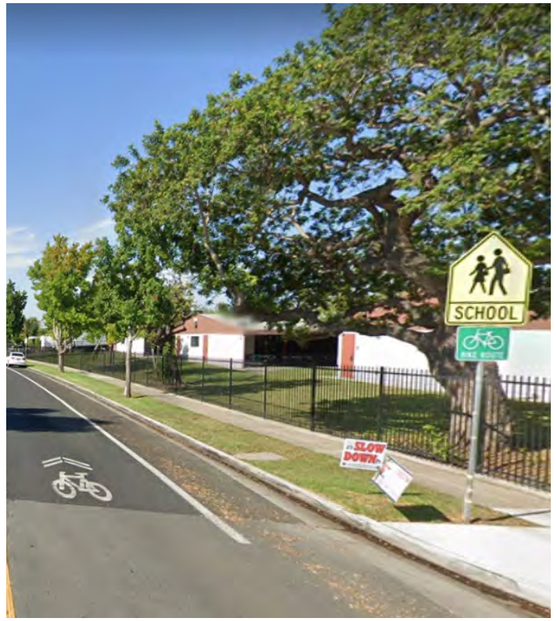
Bike Lanes (Class II): provide a striped lane for one-way bike travel on a street or highway. The County's HDM requires a minimum width of 8 feet measured from the curb face or 4 feet measured from the edge of pavement if there is no curb and gutter. Depending on the vehicle volumes and speed of the roadway, bicycle lanes can vary in their level of traffic stress.

Bicycle Toolkit





Buffered Bicycle Lane (Class IIb): Caltrans' HDM also recognizes buffered bicycle lanes, which include a striped buffer usually 2 to 3 feet wide to help further separate the bicycle lane from vehicular traffic. Depending on the vehicle volumes and speed of the roadway, buffered bicycle lanes can vary in their level of traffic stress.

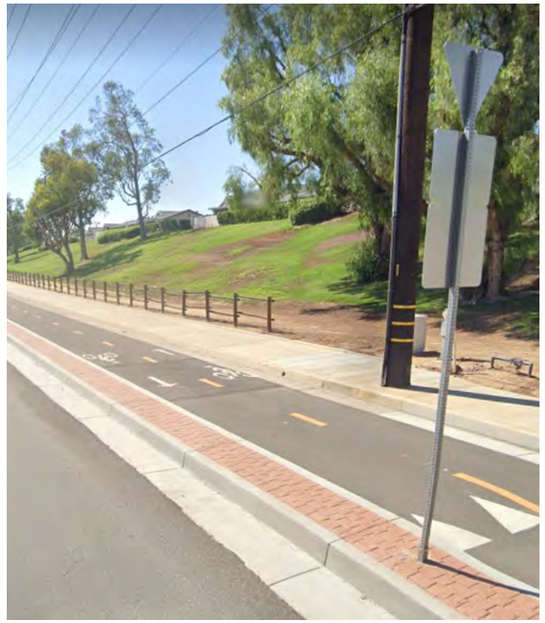


Bicycle Routes (Class III):
are shared roadways with the appropriate signage that provide for shared-use with cyclist or motor vehicle traffic, typically on lower volume roadways per Caltrans HDM (Chapter 1000).
A bicycle route has signs posted identifying it as such and may have shared lane markings (sharrows). Bike routes on low speed and low volume roadways can have a low level of traffic stress.





Bicycle Boulevard (Class IIIb): similar to bicycle routes, but also include traffic calming facilities such as chicanes or diverters, and often include branded signage along the length of the facility. Bike boulevards on low speed and low volume roadways can have a low level of traffic stress.



Separated Bikeways/ Cycle Tracks (Class IV): require a physical separation between the bikeway and vehicular traffic, per Caltrans' HDM (Chapter 1000) and Caltrans DIB #89-01 Class IV Bikeway Guidance. These documents provide guidance on facility dimensions, crossings, co-locating near transit stops and street parking, two-way separated facilities, and materials for separation such as grade separation, concrete curbs, flexible posts, inflexible physical barriers, or on-street parking. Depending on the vehicle volumes and speed of the roadway, separated bikeways can vary in their level of traffic stress, though they are typically lower stress than bike lanes alone.



Bike Parking: can include curbside and sidewalk racks, bike corrals, bike lockers and bike station. Racks provide short-term parking options, while lockers provide long-term secure parking at higher demand locations. Bike stations provide long-term parking typically near transit.



Bike Signals: create separation between bicyclists and vehicles and allows for better intersection movements for all users.



Wayfinding: signage can contribute to the ease of use and enjoyment of active transportation facilities and promotes walking and bicycling by providing useful information regarding distances/times to various destinations.



Bicycle Protected Intersections: are designed to provide additional separation, comfort, and safety for bicyclists. These intersection may include bike boxes, bike signals, curb extensions, refuge islands, and green bike lanes. These intersections are ideal for areas with conflicts between drivers, bicyclists, and pedestrians.

Pedestrian Toolkit

Pedestrian Facilities

The appropriate pedestrian improvement was applied to each street based on its characteristics and classification. Recommendation pedestrian improvements were determined through a diverse set of criteria, including collisions, level of traffic stress, composite demand, network gaps, and public comment, amongst other possible criteria. **Table 2** shows the potential recommended pedestrian facilities. Images of these pedestrian facilities are shown on the following pages.

TABLE 2 Pedestrian Recommendations

Pedestrian Recommendations
Pedestrian refuge islands
Pedestrian hybrid beacon (e.g., HAWK)
Rapid rectangular flashing beacon (RRFB)
Enhanced pavement markings and signage
Curb extensions
Pedestrian-scale lighting
High visibility crosswalks
Curb ramps
Slip lane modifications/corner radius reductions
Signal timing improvements
Traffic calming (e.g. road diets, traffic diverters, chicanes, and traffic circles)
Sidewalk improvement (e.g., meandering sidewalks)
DG (decomposed granite) pathways
Trail crossings (OCPW- maintained road crossings linking OC Parks trails)



High-Visibility Crosswalks: feature special roadway striping that enhances visibility.



Pedestrian Refuge Islands: allow pedestrians to stop before finishing crossing a road.



Enhanced Pavement Markings and Signage: help establish pedestrians in the intersection.



Curb Ramps: are accessible ramps to transition pedestrians from the road to the sidewalk.



Pedestrian Hybrid Beacon (e.g. HAWK): when activated by a pedestrian, lights overhead turn red indicating that drivers must stop for the pedestrian to cross.



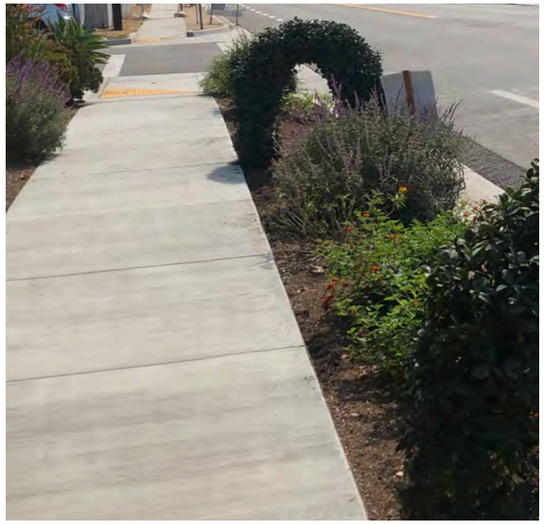
Curb Extensions: are extensions of the sidewalk area that can reduce crossing distances.



Pedestrian-scale Lighting: is designed to specifically illuminate sidewalks and pedestrian pathways.



Signal Timing Improvements: prioritize pedestrian safety typically by increasing cycle lengths and wait times for pedestrians.



Sidewalk Improvements: provide a safe separate space from vehicles and allow people of all ages and abilities to walk to destinations.



Decomposed Granite (DG) Pathways: provide a natural but stable pathway surface.



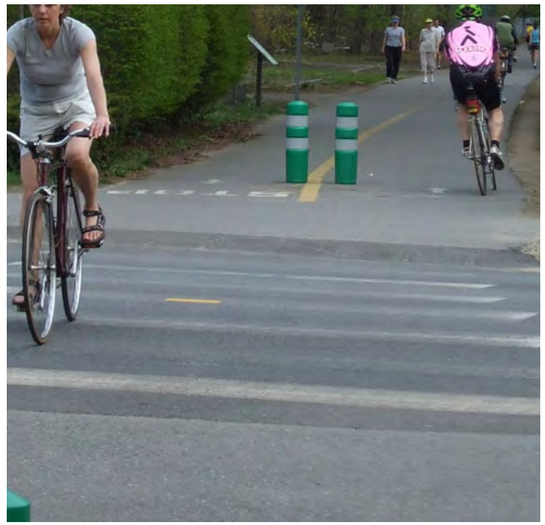
Slip lane Modifications/Corner Radius Reductions: slows turning vehicles and shortens pedestrian crossing distances.



Traffic Calming/ Chicanes: features that reduce vehicle speeds. This image shows chicanes which narrow the roadway to slow vehicle speeds.



Rapid Rectangular Flashing Beacon (RRFB): when activated by a pedestrian, lights overhead flash alerting drivers that a person is using the crosswalk.



Trail Crossings: are OCPW maintained road crossings linking Orange County parks and trails.

Facility Design Guidance

Bicycle and Pedestrian Facility Design

The following design guidelines provide examples of how the different bike classes and pedestrian infrastructure can be implemented on Orange County streets. Highly prioritized recommendations have more detailed design guidelines in Chapter 5 Project Prioritization; however, the following section provides more general examples of the infrastructure recommended in this Plan. These design guidelines are not intended to replace additional design and engineering studies.

The following images and descriptions explain general bicycle lane design guidance based on the California MUTCD manual. Detailed designs of bicycle recommendations on urban, residential, and rural streets can be found in **Figure 5-Figure 11**.

Pedestrian facility design begins on **page 25**.

CLASS I SHARED-USE PATH

- Shared-use paths are physically separated from the roadway by grade and vertical elements.
- Shared-use paths can be used by pedestrians and bicyclists.
- Shared-use paths should be a minimum of 10 feet, but 12 feet is preferred.

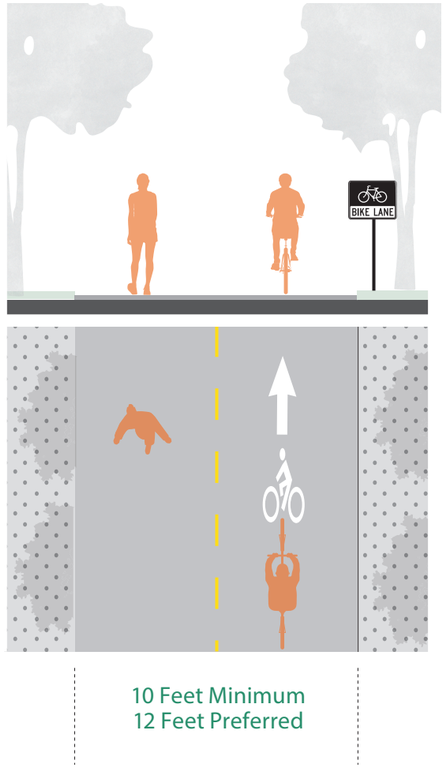


FIGURE 5 Class I: Urban

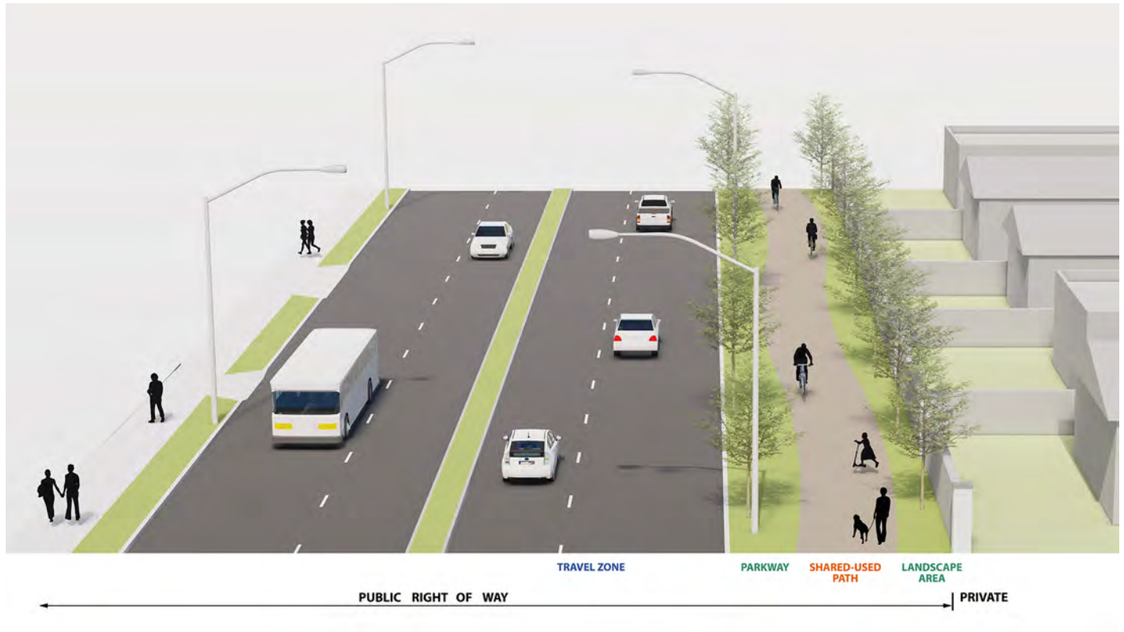
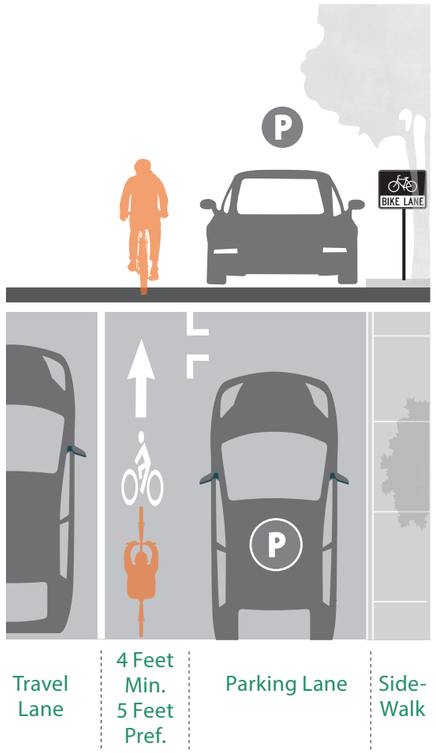


FIGURE 6 Class I: Flood Control



CLASS II BIKE LANES

- Bike lanes should be a minimum of 5 feet wide.
- Bike lane pavement markings should be used to define the bike lane and designate space for bicyclists.
- Bike lanes can be installed next to the curb or the parking lane.



CLASS IIB BUFFERED BIKE LANES

- Buffered bike lanes should be a minimum of 5 feet wide with at least a 2 feet 6 inch buffer.
- Bike lane pavement markings should be used to define the bike lane and designate space for bicyclists.

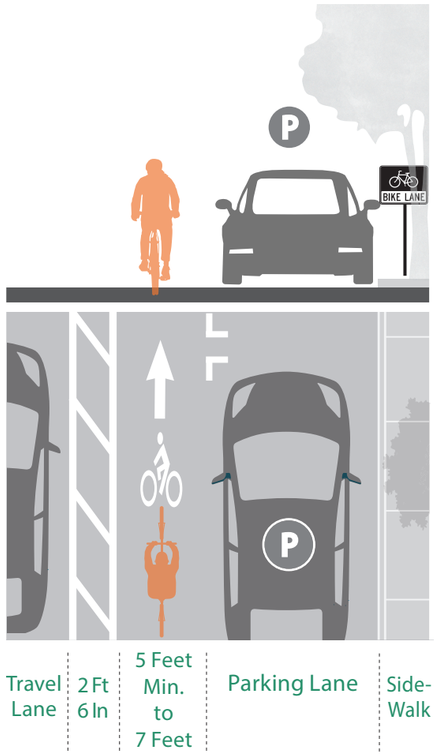


FIGURE 7 Class II: Urban

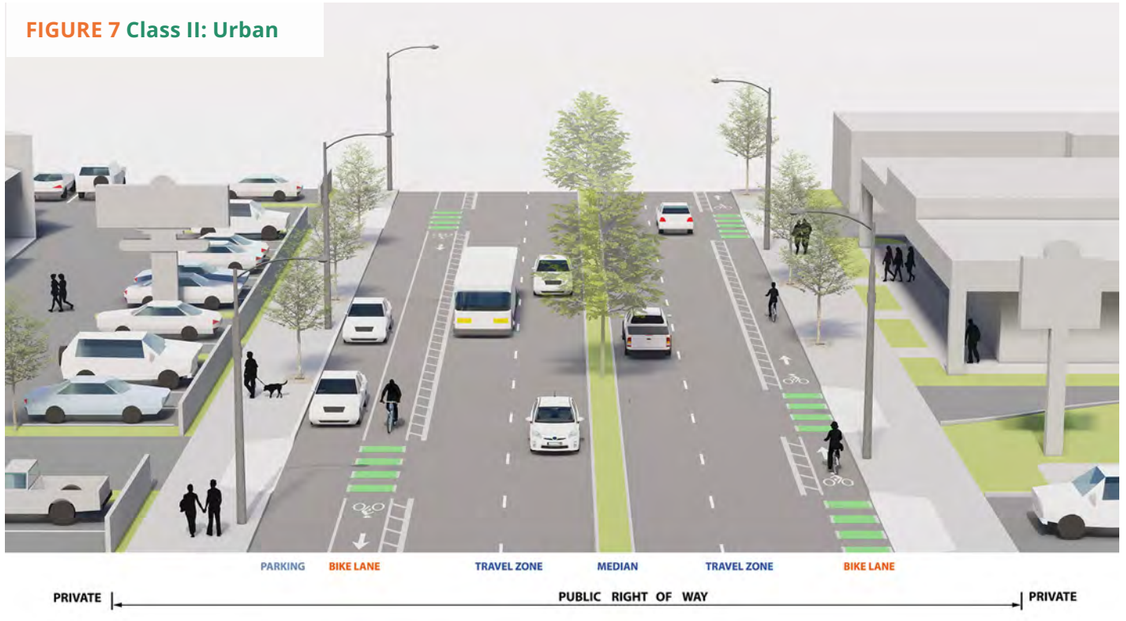
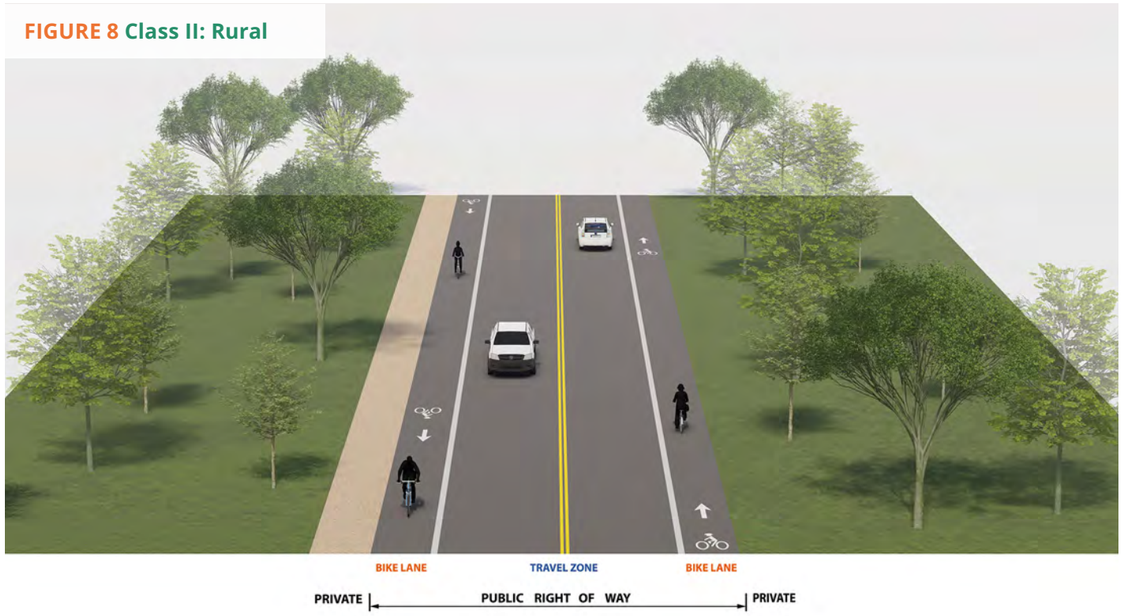
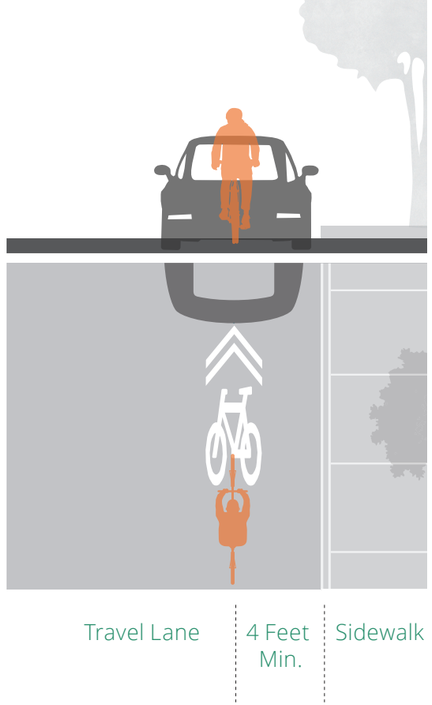


FIGURE 8 Class II: Rural



CLASS III BIKE ROUTES

- Pavement sharrows should position bicyclists in the travel lane an appropriate distance from the "door zone" of parked vehicles, or at least 4 feet from the curb when there is no on-street parking.



CLASS IIIB BIKE BOULEVARD

- Bike boulevards use pavement sharrows, signage, and traffic calming measures to discourage motor vehicle trips and prioritize bicyclists.
- Traffic calming elements like chicanes and curb extensions help slow motor vehicles and lower traffic volumes (see **page 26**).

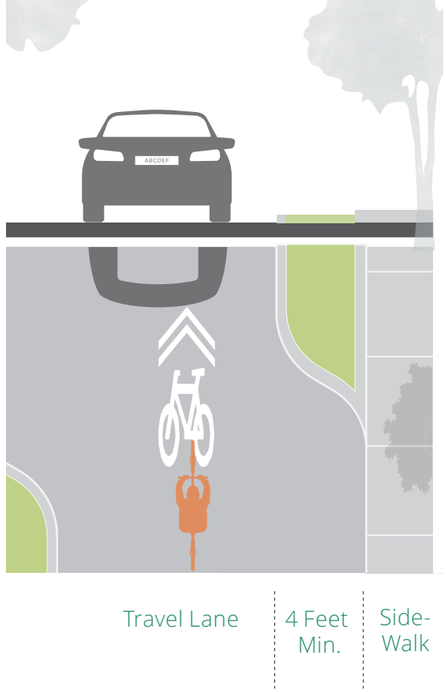


FIGURE 9 Class III: Residential



CLASS IV SEPARATED BIKEWAY/ CYCLE TRACK

- The bike lane should be at least 6 feet wide with at least a 2 feet 6 inch buffer. Physical vertical separation should be installed in the buffer, such as bollards, planters, or signs. A raised median can also act as separation.
- Bike lane pavement markings should be used to define the bike lane and designate space for bicyclists.

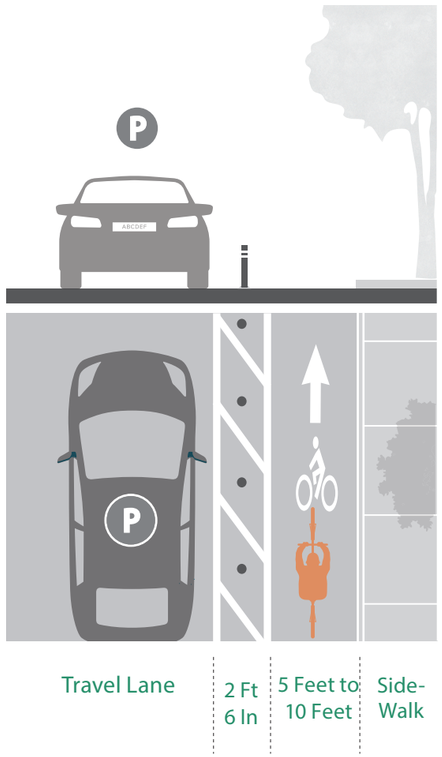


FIGURE 11 Class IV: Rural

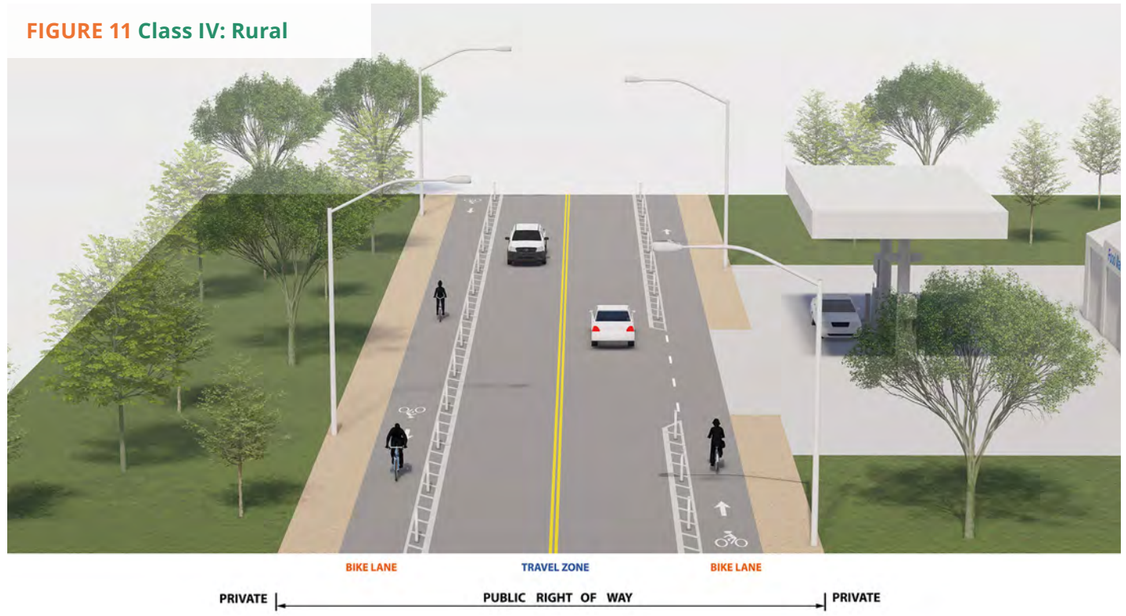
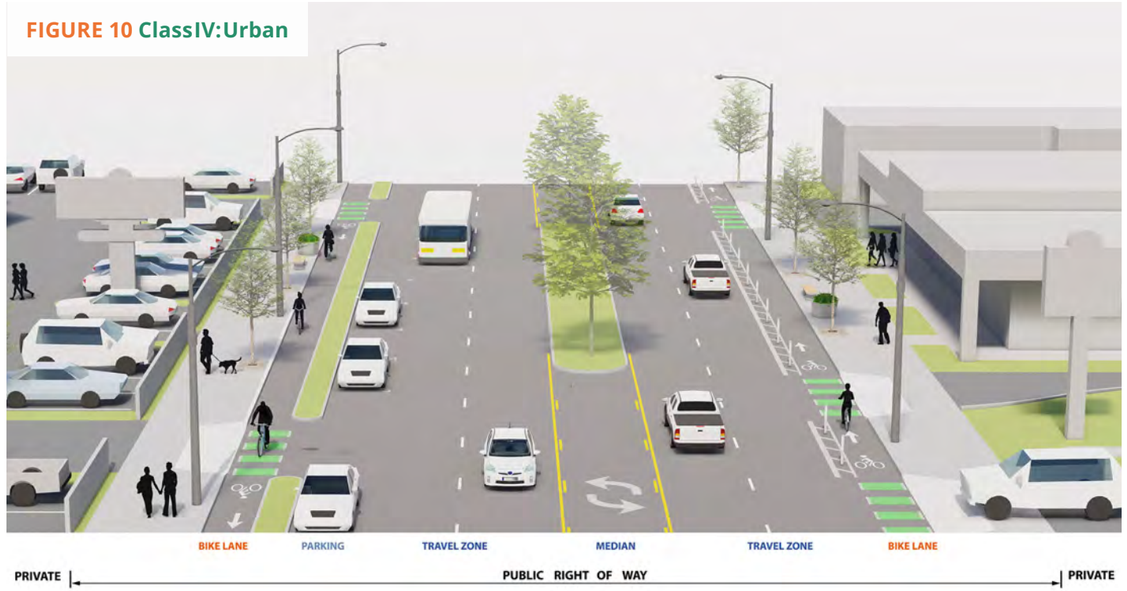
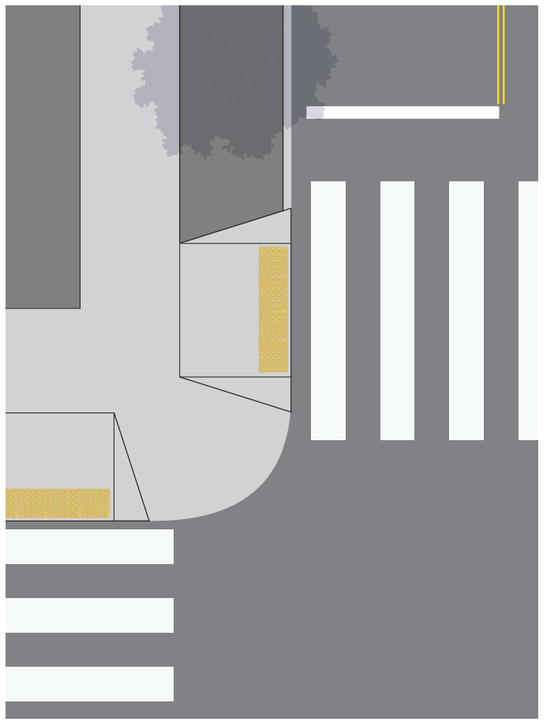


FIGURE 10 ClassIV:Urban



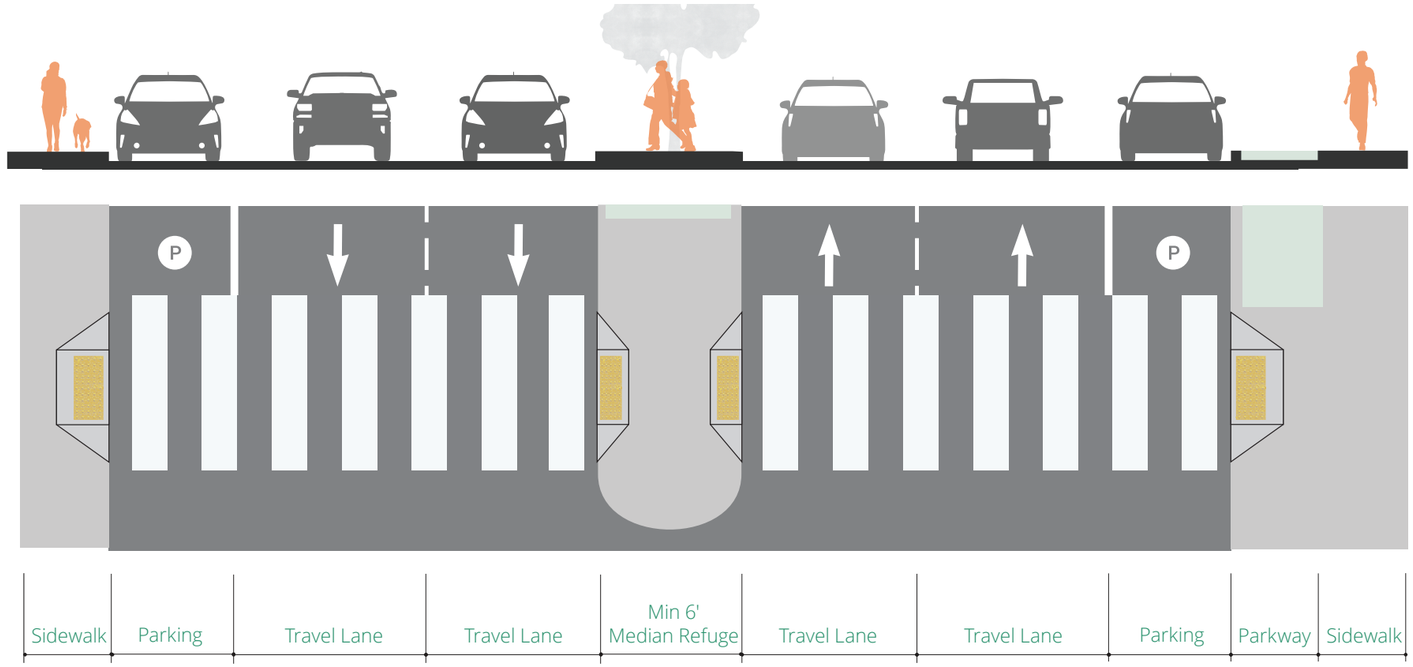
CROSSWALKS

- Crosswalks should be 10-15 feet wide with 2 foot white or yellow stripes.
- Advance stop bars should be placed perpendicular to the travel lane in advance of the crosswalk.



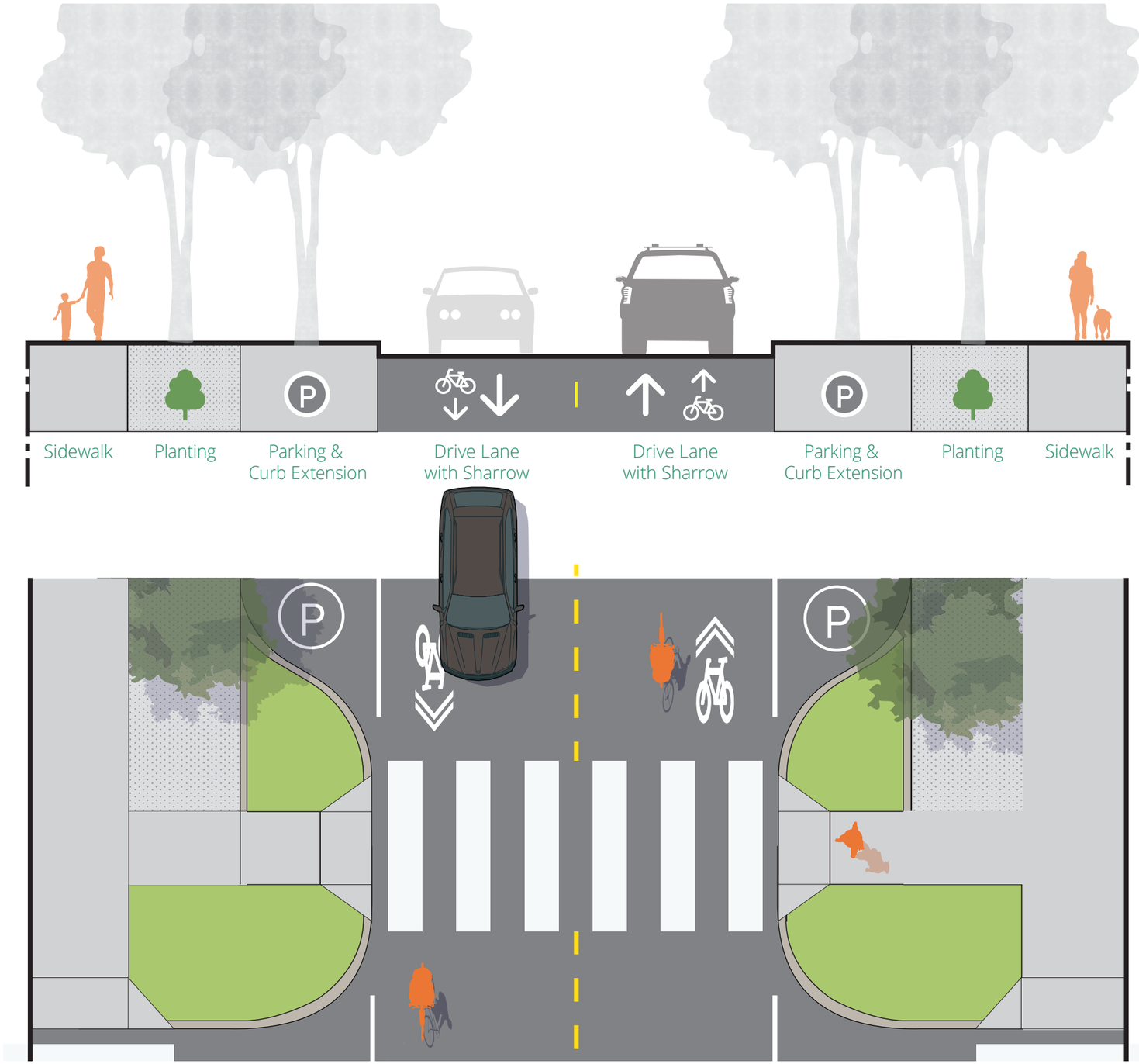
MEDIAN REFUGE ISLAND

- Pedestrian islands can be installed along wide roadways with high traffic volumes.
- Median refuge islands should be at least 6 feet wide, but wider islands can be more comfortable for pedestrians.



CURB EXTENSIONS AND CHICANES

- Curb extensions can allow for enhancements like seating and greenery.
- Curb extensions should be bi-directional where feasible.
- Storm water management features should be included within the curb extension.
- When appropriate, chicanes can be installed to slow vehicles. Chicanes should be designed in an S-shape.



Wayfinding Toolkit

Wayfinding Signage

Wayfinding signage can be a low-cost and effective strategy to improve the bicycle and pedestrian network in Orange County. Wayfinding can lead people to local destinations like parks, schools, and cultural areas. Wayfinding also provides directions to active transportation facilities like bike lanes and shared-use paths. Wayfinding along active transportation networks can show information about the network, and can assure pedestrians and bicyclists that they are on the correct path. Wayfinding along streets can direct bicyclists to safe bicycle facilities, while also alerting drivers that bicyclists may be in the area. Effective signage can also encourage active transportation by helping people realize they can walk or bike to places they want to go.

Cohesive wayfinding signage can help create a coordinated and well-branded active transportation network. On facilities like the shared-use paths on the Orange County flood control channels, well-branded signage can show that there is ownership to the space, which may help prevent unwanted behavior on the paths.

This Plan does not recommend specific areas for wayfinding signage. Instead the County should evaluate the entire network for opportunities to install wayfinding signage.

SIGNAGE STANDARDS

Wayfinding signage should be clear to people in motion, easy to use, logical, and simple. The signage should follow standards set by the California Manual on Uniform Traffic Control Devices (MUTCD), the National Committee on Uniform Traffic Control Devices (NCUTCD), and the Americans with Disabilities Act (ADA). The OC Parks Signage & Graphics Master Plan should also be referenced to understand signage guidelines in parks.

TYPES OF WAYFINDING

Different types of wayfinding signage can work together to create a complete sign family. Directional signage can point pedestrians and bicyclists to popular paths and points of interest. Directional signage on-street can also be used by drivers, but it should include pedestrian and bicyclists-specific directions on the active transportation network. Directional signage should direct users to off-street and low-stress facilities when available, so visitors are aware of comfortable options. Directional signage can also direct pedestrians and bicyclists to utilize a crossing if a facility is ending on one side of the street.

Signage at the flood control channel shared-use paths can include information about the path, such as a map, safety information, and key destinations along the path.

Mileage markers along off-street facilities confirm to users that they are on the correct route and that they can expect to see other people on the route. These mile markers can also help in emergency situation by providing accurate location information. Mile markers typically have a directional arrow, mileage information, and path-use information.



Mile markers can help pedestrians and bicyclists orient themselves on flood control channel paths.



Signage can provide information about the path, including safety information and path rules.

Flood Control Channels

Orange County has nearly 250 miles of flood control maintenance roads that meet the requirements for potential shared-use path development. However, some of these flood control channel maintenance roads do not meet the requirement for being designed to the 100 year flood standard. Only those that did meet the 100 year standard were evaluated for access point feasibility. For implementation consideration, channels must meet all of the following criteria:

- Owned and maintained by the County and within the Orange County Flood Control District (OCFCD) right-of-way (ROW)
- Minimum paved width of 10 feet
- Meets 100 year flood standard
- At least two feasible access points

A final list of flood control channel segments that met these requirements is shown in **Table 3** and **Figure 12**. For some channels, segments of the flood control channel did not meet the necessary criteria, but the segment may be upgraded in the future. Temporary on-road connections are recommended in these cases.

TABLE 3 Suitable Flood Control Channels

	Channel Name	No.	Mi.	Extent	Primary Surrounding Land Uses	Nearby Points of Interest
1	Anaheim-Barber City Channel	C03	.25	I-405 to Westminster Blvd	Residential	Virginia K. Boos Park
2	Brea Canyon Channel	A04	.5	Central Ave to Lambert Rd	Residential; Industrial	Brea Junior High; Tamarack Park
3	Brea Creek Channel	A02	1.5	Dale St to Crossroads Wy	Residential; Industrial; Commercial	Metrolink Station; Amerige Heights Town Center; Bastanchury Park
4	Bolsa Chica Channel	C02	1.3	Rancho Rd to Edinger Ave	Residential	Seal Beach National Wildlife Refuge; Haven View Park; LePort Montessori School
5	Carbon Canyon Channel	E03	.25	Golden Ave to Bastanchury Rd	Residential	Friends Christian Middle School
6	Carbon Creek Channel Segment A	B01	2.5	I-5 to Gilbert St	Residential; Commercial	Gilbert Retarding Basin; Dad Miller Golf Course; TGR Learning Lab; Several schools; Brookhurst Park
7	Carbon Creek Channel Segment B	B01	5.5	Lincoln Ave to Los Alamitos Blvd	Residential; Commercial	Coyote Creek Channel; Schweitzer Park; Reid Park; Several schools
8	East Garden Grove- Wintersburg Channel	C05	4.5	Trask Ave to Edinger Ave	Residential; Industrial	Several schools
9	El Modena- Irvine Channel	F07	.25	Red Hill Ave to Bryan Ave/ Browning Ave	Residential	C.E. Utt Middle School
10	Greenville- Banning Channel Segment A	D03	.6	St Andrew Pl to Warner Ave	Residential; Industrial; Office Uses	Heritage Museum of Orange County; Several schools; Centennial Regional Park
11	Greenville- Banning Channel Segment B	D03	.5	Alton Ave to Sunflower Ave	Industrial; Office Uses	Calvary Chapel High School
12	Greenville- Banning Channel Segment C	D03	1	New Hampshire Dr to Gisler Ave	Residential	Santa Ana River Trail; Suburbia Park
13	Paularino Channel	F03	1.25	Fairview Rd to Bristol St	Residential	TeWinkle Park; Hammett Sports Complex; Costa Mesa High School
14	San Diego Creek Channel	F05	.5	Irvine Center Dr to Lake Forest Dr	Office Uses; Open Space	Los Olivos Community Park
15	Santa Ana Gardens Channel	F02	.25	Warner Ave to Adams St	Residential	Thomas Jefferson Elementary School; Several parks; McFadden Institute of Technology
16	Santa Ana-Delhi Channel	F01	1.5	Bristol St to Golden Circle	Residential; Hotel; Commercial	Newport Beach Golf Course; Santa Ana Country Club; Upper Newport Bay Nature Preserve; Bayview Trail

Orange County Unincorporated Areas

Active Transportation Plan

Countywide Recommendations

FLOOD CONTROL RECOMMENDATIONS

- Shared-Use Path Along Flood Control Channel (Class I)
- Potential Road Connections

BASEMAP

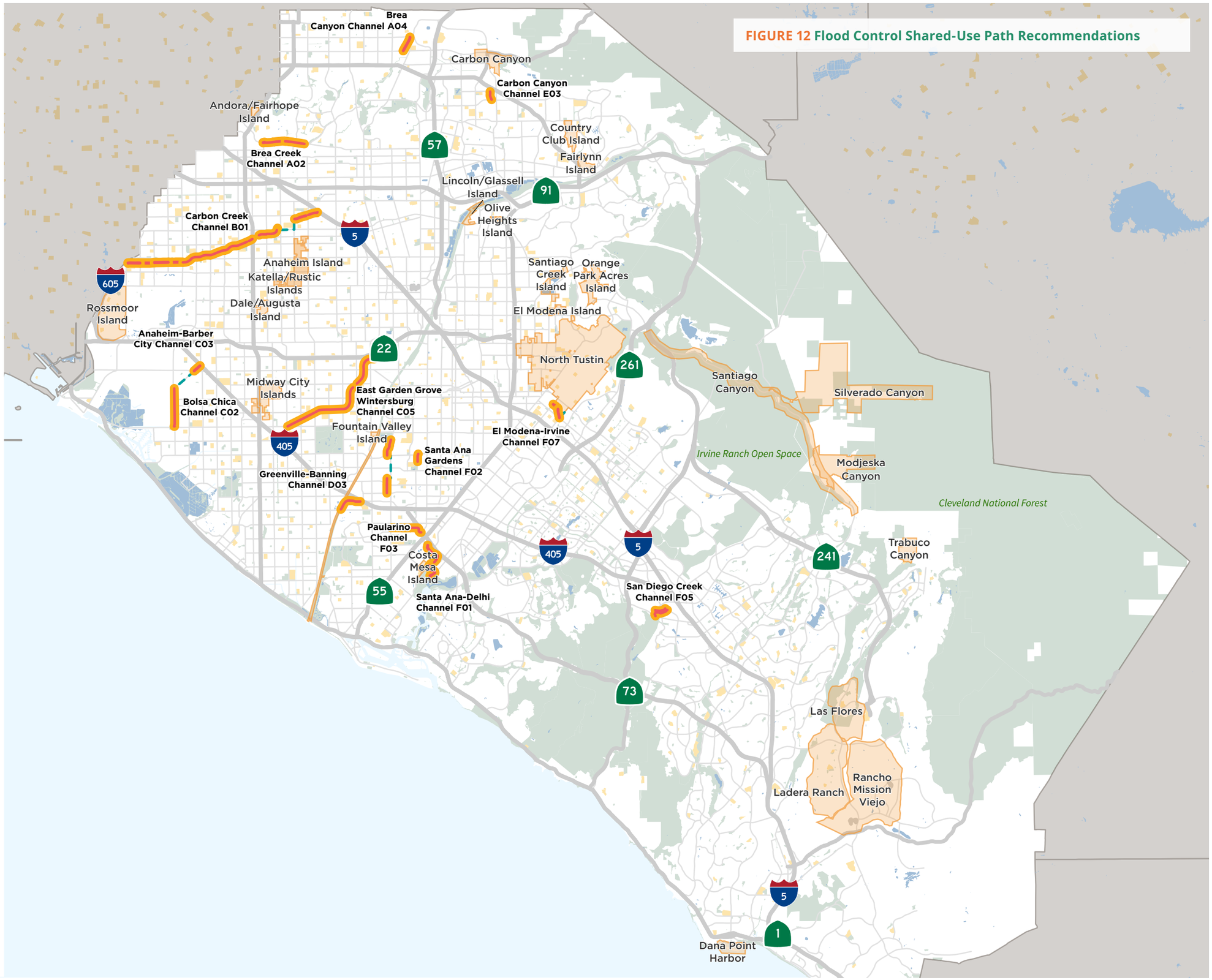
- Water Body
- School
- Park or Open Space
- County Boundary
- Focus Areas

OC Public Works
ORANGE COUNTY

0 3.5 7 Miles

N

FIGURE 12 Flood Control Shared-Use Path Recommendations



Community Profiles

Existing Conditions

COUNTYWIDE

This section of the Plan details existing active transportation facilities in Orange County. ***Table 5 on page 36*** *lists existing conditions details by area.*

It is important to note that in certain communities, such as Las Flores and Ladera Ranch, Homeowners Associations or other groups may have operations and maintenance responsibilities and/or specific design guidelines that need to be considered when future recommendations are made.

Bicycle Network

Existing bikeway infrastructure contributes to the ability of residents of unincorporated communities to bike to their destination. As described in the County's Highway Design Manual (HDM) (Chapter 1000) and similarly, Caltrans' HDM (Chapter 1000), bikeways are categorized into four classes described in the Bicycle Toolkit on page **16**.

As shown in **Table 4** and **Figure 13**, the majority of existing bikeways are in incorporated cities within the county. Within the County's unincorporated areas, there are a total of 67.7 miles, made up of 15.1 miles of existing Class I shared-use paths, 50.4 miles of Class II bicycle lanes, and 2.2 miles of Class III bicycle routes. The Santa Ana River Trail, the County's longest existing Class I path, provides a major regional connection through the County.

End-of-Trip Facilities

Bike racks, bike lockers, showers, and other end-of-trip facilities are an important element in the development of a robust active transportation network, and in encouraging people to utilize active transportation modes for more trips. Currently, the County typically requires developers to provide bicycle amenities and end-of-trip facilities based on the County's Transportation & Recreation Elements within the General Plan. Short-term bicycle parking exists at multiple County buildings, such as the Orange County Hall of Administration Building in Santa Ana. Additionally, the County's regional and wilderness parks typically provide bicycle parking, and bicycle lockers exist at Metrolink stations throughout the county.

Wayfinding

Currently, the County does not have a process for providing wayfinding signage in its unincorporated communities, except for on unpaved trails.

Public Transit

Unincorporated Orange County is served by Orange County Transportation Authority (OCTA) buses and by Metrolink and Amtrak trains, as shown in **Figure 14**. OCTA operates 60 bus routes throughout the County, including through unincorporated areas. These routes directly serve the majority of the unincorporated areas included in this assessment. However, as of 2021, the communities of Country Club Island, Carbon Canyon, Scully Ridge, Modjeska Canyon, Santiago Canyon, Silverado Canyon, Trabuco Canyon, Las Flores, Ladera Ranch, and Rancho Mission Viejo do not have existing public transportation routes running through their boundaries.

The County is also served by three Metrolink lines: The Orange County Line, the Inland Empire-Orange County Line, and the Perris Valley Line. Though none of the Metrolink stations are located directly within the unincorporated communities, many are located in adjacent or nearby cities. The County is also served by the Amtrak Pacific Surfliner, which has stations in Fullerton, Santa Ana, Irvine, San Juan Capistrano, and San Clemente, providing access to multiple unincorporated communities.

TABLE 4 Existing Bicycle Network (Miles)

Facility Type	Unincorporated Orange County	All of Orange County
Class I Shared-Use Path	17.1	300.9
Class II Bicycle Lanes	45.8	808.32
Class III Bicycle Route	2.2	112.6
Class IV Separated Bikeway	0.3	3.9
Total	**65.42**	**1225.7**

Land Use

Land use in most of the unincorporated islands to the northwest is suburban residential. The canyon communities have more rural residential areas and open space. To the southeast, Las Flores, Ladera Ranch, and Rancho Mission Viejo have the most diverse land use patterns, with a mix of open space, suburban residential, and mixed-use development zones (**Figure 15**).

Orange County Unincorporated Areas

Active Transportation Plan

EXISTING BIKEWAYS

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/Cycle Track - *Class IV*

BASEMAP

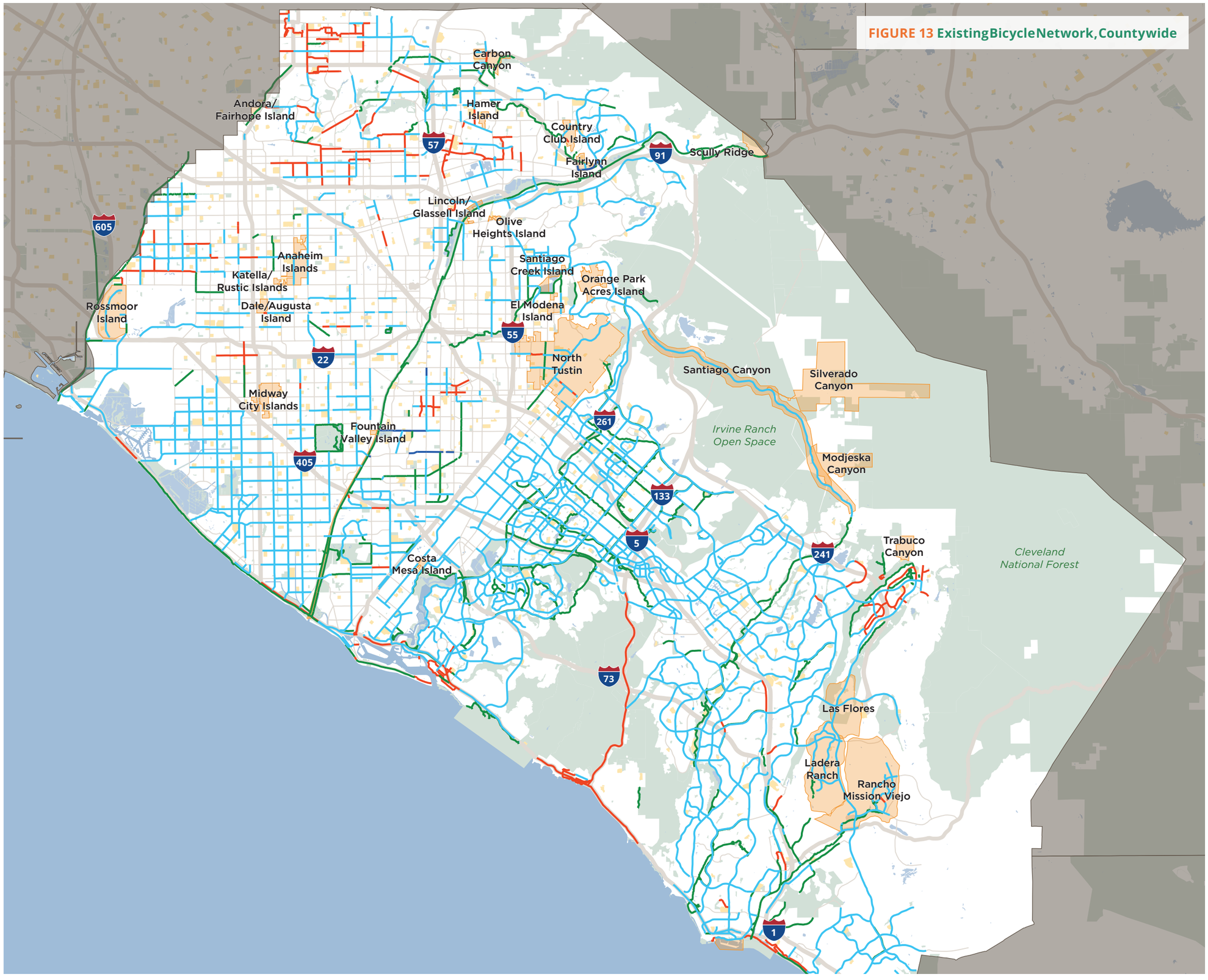
- Water
- School
- Park or Open Space
- Focus Areas
- County Boundary

OC Public Works

0 2.5 5 Miles

N

FIGURE 13 Existing Bicycle Network, Countywide



Orange County Unincorporated Areas

Active Transportation Plan

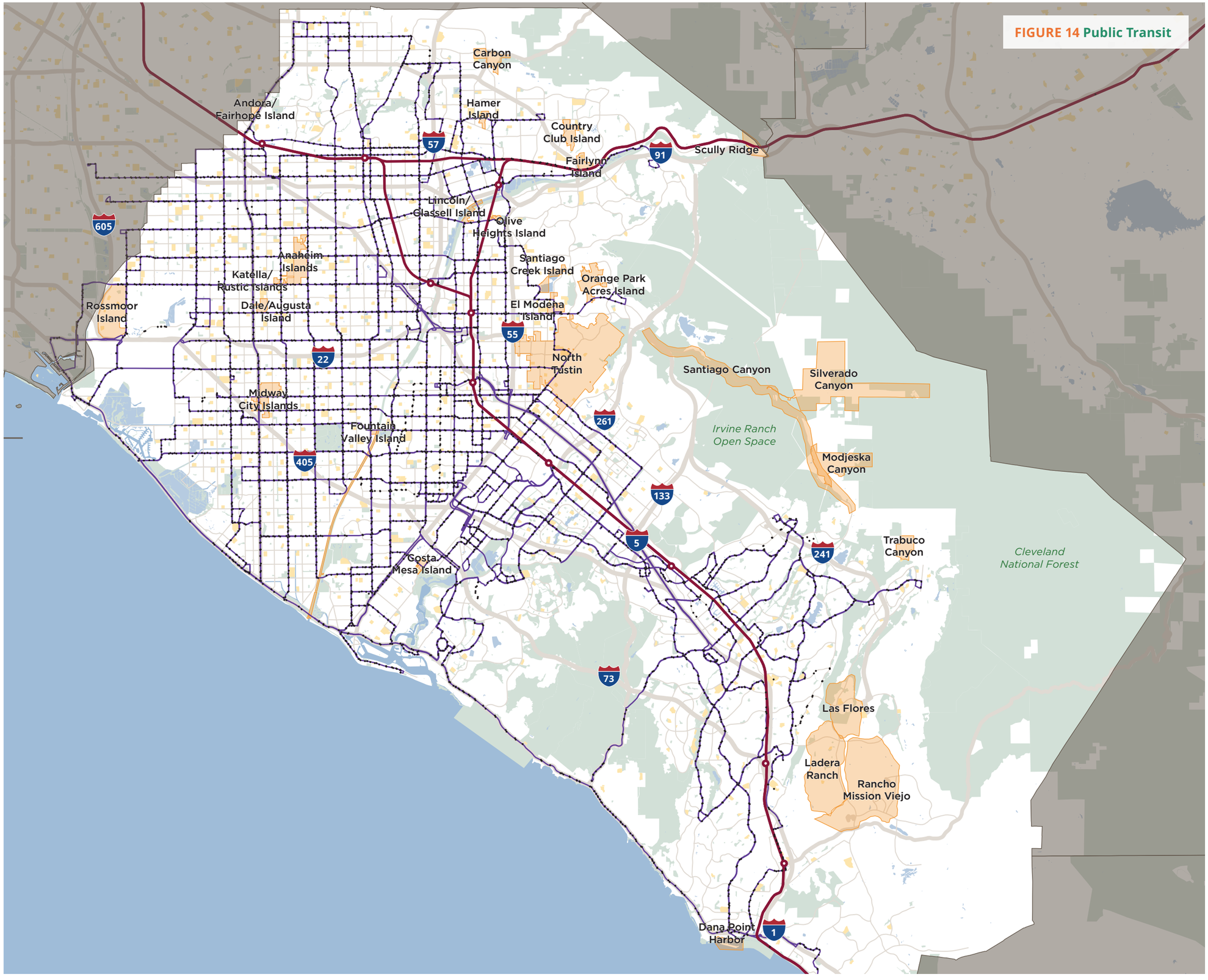
FIGURE 14 Public Transit

Transit

- Metrolink
- Metrolink Stations
- Bus Route
- Bus Stop

Basemap

- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

alta

N

0 2.5 5 Miles

Orange County Unincorporated Areas

Active Transportation Plan

Land Use

- Rural Residential
- Suburban Residential
- Urban Residential
- Mixed-Use Development
- Community Commercial
- Public Facilities
- Employment
- Open Space

Basemap

- Water Body
- Park or Open Space
- County Boundary

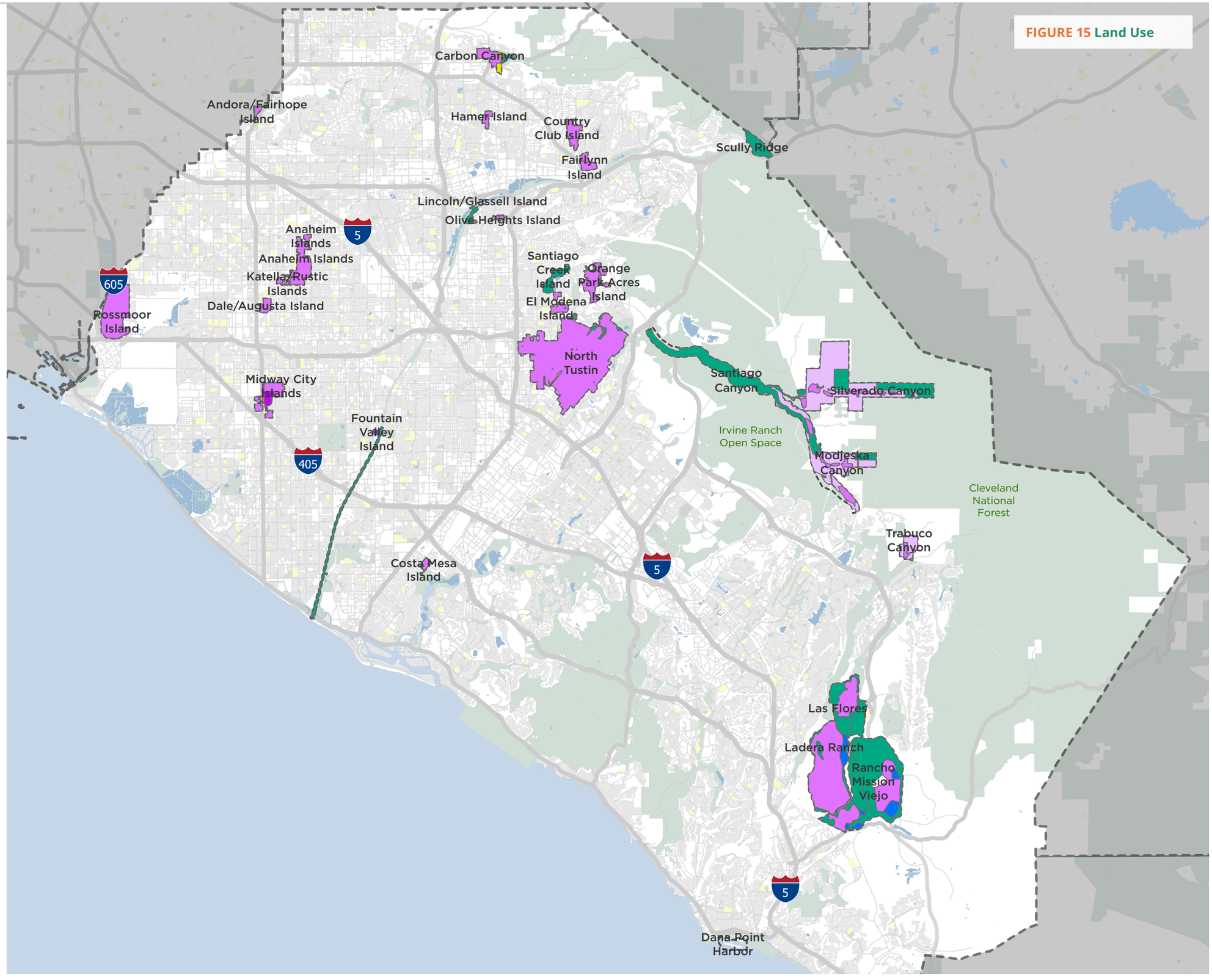
OC Public Works

alta

0 2.5 5 Miles

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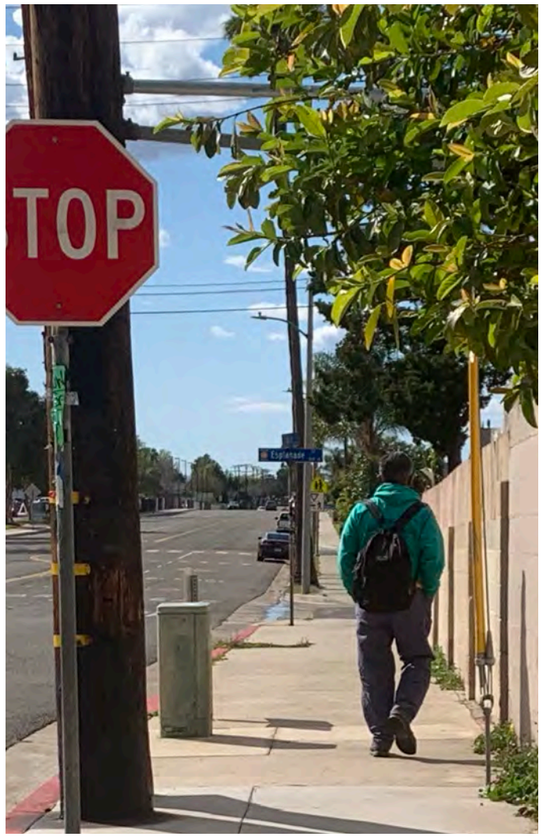
FIGURE 15 Land Use



Commute Trends

COUNTYWIDE

Residents' choice in travel mode to work can be a reflection of the County's existing infrastructure and connectivity, as well as cultural attitudes toward automobile use.



According to the 2018 American Community Survey, most residents of unincorporated Orange County commute to work by driving (95%). An additional 2% use public transportation, and a cumulative 2% reported biking or walking. Only 3% of residents in unincorporated Orange County do not have access to a vehicle.

Orange County tends to vary widely in terms of land use diversity and density, with lower densities prevailing throughout much of the unincorporated areas. Employment centers are often located away from residential areas and/or outside of unincorporated communities, likely encouraging workers to travel by car out of convenience. Public transit is not a widely used alternative in Orange County, and active transportation is also not a common travel mode.



COMMUTE TRENDS IN UNINCORPORATED ORANGE COUNTY

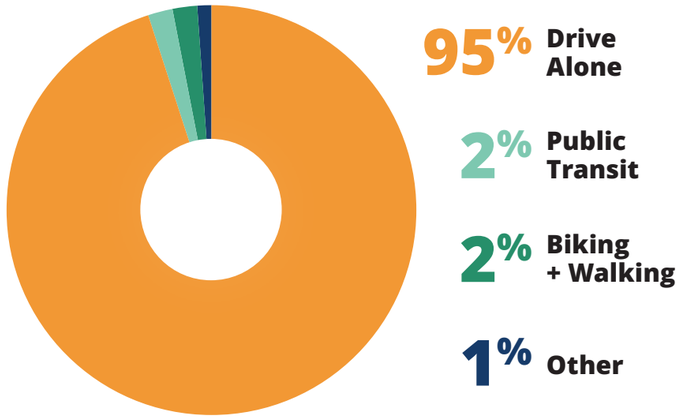


TABLE 5 Countywide Existing Conditions

Area	Number of Residents	Community Type	ACS Commute Trends		Population Without Access to a Vehicle	HPI Score	Total Existing Bikeway Miles
			Walk to Work	Bike to Work			
Anaheim Island	9,800	Single-Family Residential	1.60%	1.60%	5.70%	32%	1.25
Andora/Fairhope Island	438	Single-Family Residential	1.20%	0%	0.90%	67.60%	0.52
Carbon Canyon	N/A	N/A	N/A	N/A	N/A	84.30%	1.78
Costa Mesa Island	805	Single-Family Detached, Multifamily Housing, Condos, + Townhomes	1.40%	1.30%	1.50%	76.50%	0.56
Country Club Island	781	Single-Family Detached	0%	0.90%	1.30%	82.70%	0.55
Dale/Augusta Island	2,180	Single-Family Detached	0%	1.80%	7.70%	29.70%	0
Dana Point Harbor	N/A	N/A	N/A	N/A	N/A	58.90%	4.46
El Modena Island	3,680	Single-Family Detached, Multifamily Housing	1.90%	1%	1.90%	57.10%	0.37
Fairlynn Island	1,625	Single-Family Detached, Multifamily Housing	0%	3.20%	0.70%	77.60%	2.2
Fountain Valley Island	912	Single-Family Detached	0%	0.30%	5.10%	45%	0
Hamer Island	1,045	Single-Family Detached	0.90%	3%	2.90%	74.60%	0.11
Katella/Rustic Island	234	Single-Family Detached	0%	1%	5.80%	35.30%	0
Ladera Ranch	30,000	N/A	0.60%	1.40%	4.30%	91.50%	11.21
Las Flores	6,000	N/A	0.50%	1.70%	4.10%	89.90%	9.83
Lincoln/Glassell Island	9	N/A	1.40%	2.40%	3.40%	56.50%	0.87
Mac/Syracuse Island	461	Single-Family Detached, Multifamily Housing	N/A	N/A	N/A	35.30%	0
Midway City Island	8,593	Single-Family Detached, Multifamily Housing, Condos, + Townhomes	0.90%	1.50%	3.40%	45.10%	0.5
Modjeska Canyon	N/A	Single-Family Detached	5.90%	1.40%	2.50%	84.30%	0
North Tustin Island	28,200	Single-Family Detached, Multifamily Housing	0.70%	1%	2.90%	80.20%	13.38

Area	Number of Residents	Community Type	ACS Commute Trends		Population Without Access to a Vehicle	HPI Score	Total Existing Bikeway Miles
			Walk to Work	Bike to Work			
Olive Heights Island	42	Single-Family Detached, Multifamily Housing	0.60%	3.40%	3%	76.70%	0
Orange Park Acres	1,095	Single-Family Detached	0.80%	0%	2.70%	89.30%	1.79
Rancho Mission Viejo	37,457	Single-Family Detached, Multifamily Housing	0.80%	1.20%	3%	92.70%	11.48
Rossmoor Island	11,128	Single-Family Detached, Multifamily Housing	0%	0.40%	3.90%	79.70%	2.23
Santiago Canyon	N/A	N/A	N/A	N/A	N/A	92.4	12.27
Santiago Creek Island	N/A	N/A	N/A	N/A	N/A	71%	90
Scully Ridge	N/A	N/A	N/A	N/A	N/A	75.60%	53
Silverado Canyon	2,650	Single-Family Detached	0.20%	2.40%	0.50%	87.70%	0
Trabuco Canyon	2,650	Single-Family Detached	3.80%	0.60%	2.50%	94.50%	0

Active Transportation Counts

COUNTYWIDE

Pedestrian and bicycle counts were conducted to establish a baseline of walking and biking activity at various locations in Orange County's unincorporated communities. This count data also puts collision data in context to better understand the exposure to risk for pedestrians and bicyclists, and can be used to help estimate social, economic, and health benefits of new or improved walking and biking infrastructure.

Counts were conducted at a total of 20 screenline locations within 11 different islands. A screenline is an imaginary line over a street. Every time a person walking, biking, scootering, or using a mobility device such as a wheelchair crosses over the imaginary line from either direction, the counter marks down information about that person. A screenline can be placed near one leg of an intersection, or at a mid-block location. Screenline locations in this study were chosen based on the number of collisions on the street, community input, the level of traffic stress (LTS) of the street, and the level of street connectivity for active transportation users.

Results from the active transportation counts were used to confirm that the Plan recommends infrastructure in places where people are already walking and biking. For example, the counts revealed that hundreds pedestrians cross the intersection of Hewes Street and Center Avenue per day. It is likely that the recommended crossing infrastructure at this intersection will be well-used by pedestrians.

Active transportation counts can also help answer questions about who is walking and biking in different communities. Along Santiago Canyon Road dozens of bicyclists were counted during each study day. These bicyclists were overwhelmingly male. Improving the existing bike lanes on Santiago Canyon and implementing the recommended Class I shared-use path would likely encourage a more diverse group of bicyclists to ride in this area.

Table 6 and **Table 7** show the top five locations with the highest number of pedestrians and the highest number of bicyclist observed during the county periods. It is important to note that these counts account for a snapshot in time, and future counts may need to be conducted to establish a more clear understanding of typical active transportation. patterns. All active transportation count data can be found in Appendix B.

TABLE 6 Highest Number of Counted Pedestrians

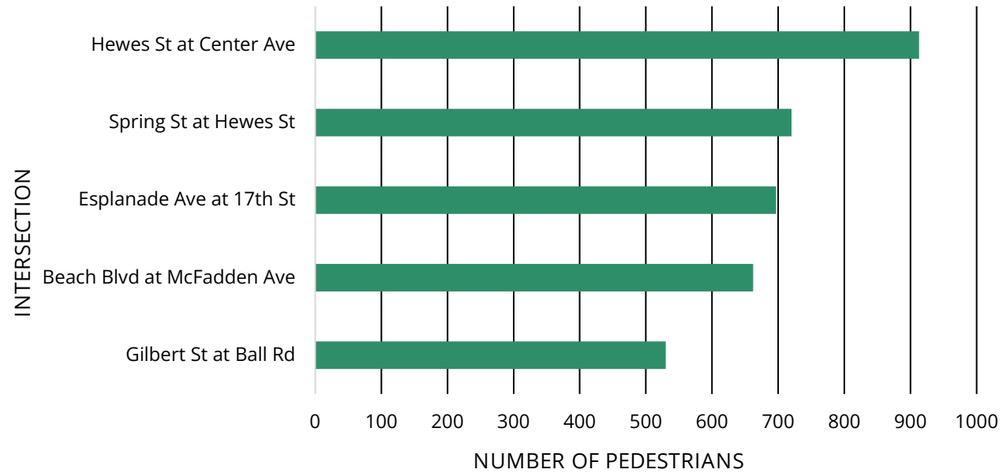
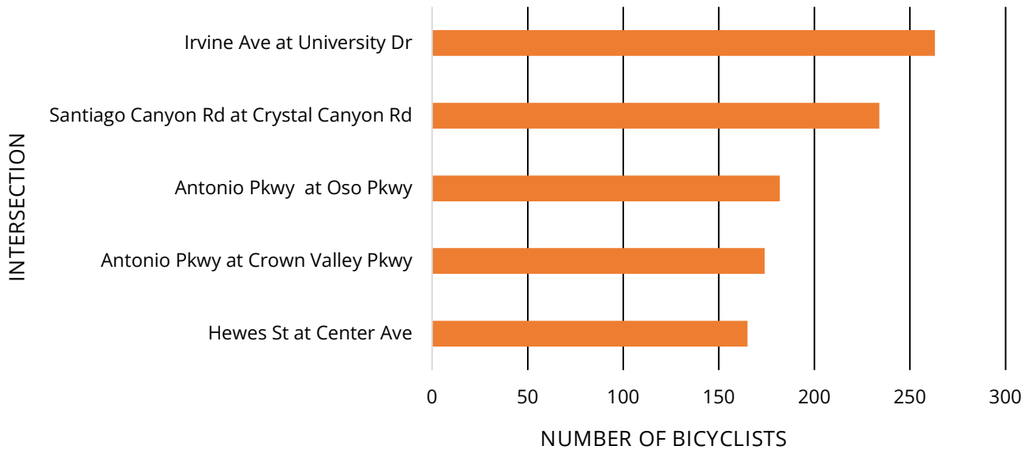


TABLE 7 Highest Number of Counted Bicyclists



Needs Assessment

COUNTYWIDE

The needs assessment section outlines the gaps in the existing network and addresses safety, connectivity, demand and accessibility within the existing network. Several factors were considered in the needs assessment analysis. These factors include:

Collisions: Bicycle and pedestrian involved collisions can provide insight into locations that have higher collision rates. These insights will inform the development recommendations for these locations.

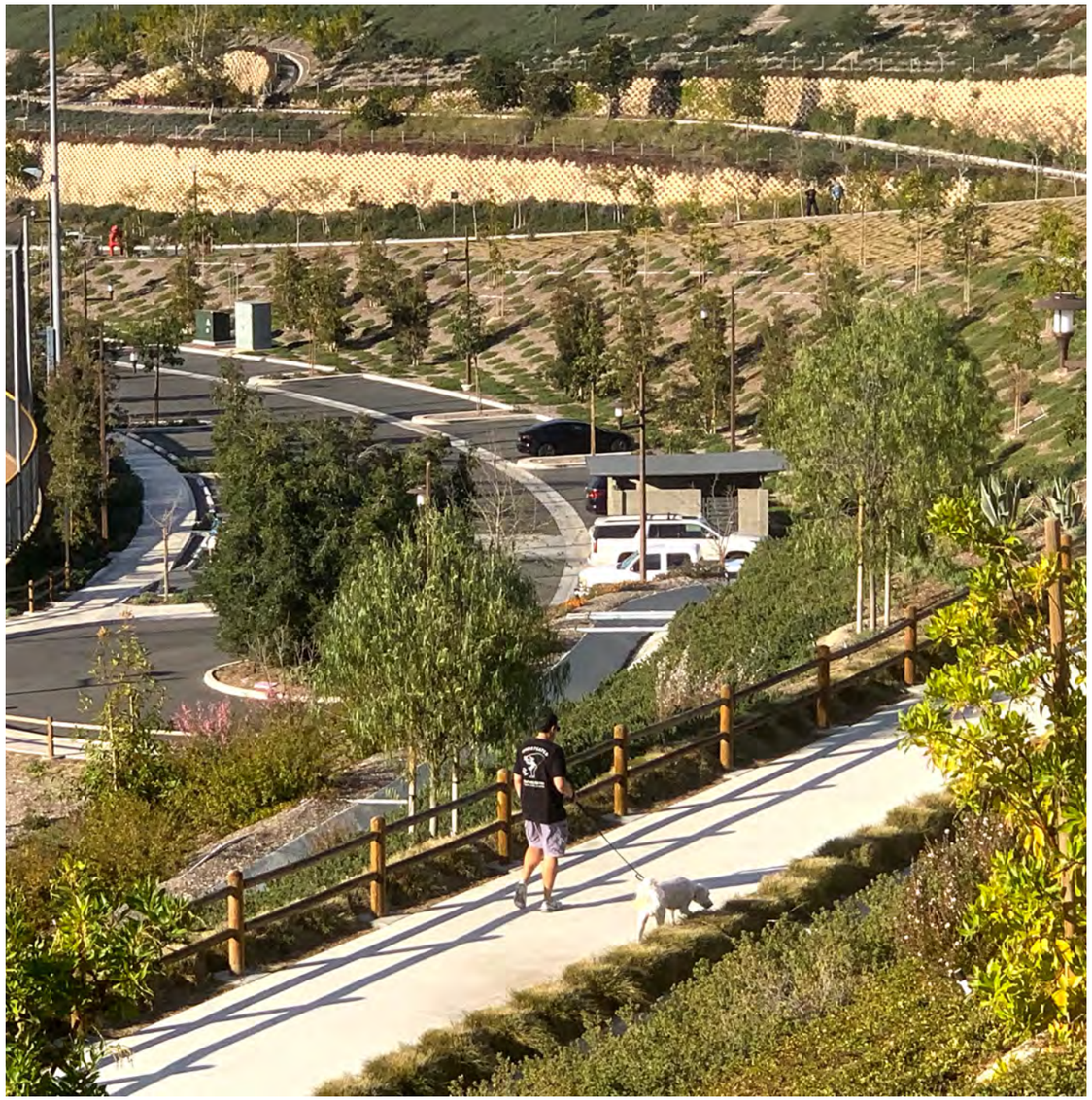
Transportation Demand: This analysis estimates the demand for bicycle and pedestrian facilities. The results summarize the geographic distribution of demand for bicycle and pedestrian facilities. The results will help inform and prioritize recommendations for bicycle and pedestrian infrastructure improvements.

Level of Traffic Stress: It is important to understand how stressful different routes and roadways conditions are perceived by the average rider and walker. In order to increase bicycle ridership and pedestrian use, the routes that provide access to the most prominent destinations need to feel safe for all users.

Needs and Gaps: Analyzing the bicycle and pedestrian connectivity of existing low-stress areas helps highlight the barriers between neighborhoods.

Active Transportation Benefits: An active transportation benefits analysis was undertaken to determine the potential benefits of new active transportation.

This section identifies collisions and the needs and gap analyses. The transportation demand analysis can be found in Appendix D, the level of stress analysis can be found in Appendix E, and the active transportation benefits analysis can be found in Appendix F.



Collisions

COUNTYWIDE

Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities and flood control channels in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

From 2009 to 2018, a total of 388 collisions involving bicyclists and pedestrians were reported in unincorporated areas of Orange County during the study period, 60% of which involved people bicycling and 40% of which involved people walking. The bicycle and pedestrian-involved collisions are shown in **Figure 16.**

PEDESTRIAN-INVOLVED COLLISIONS

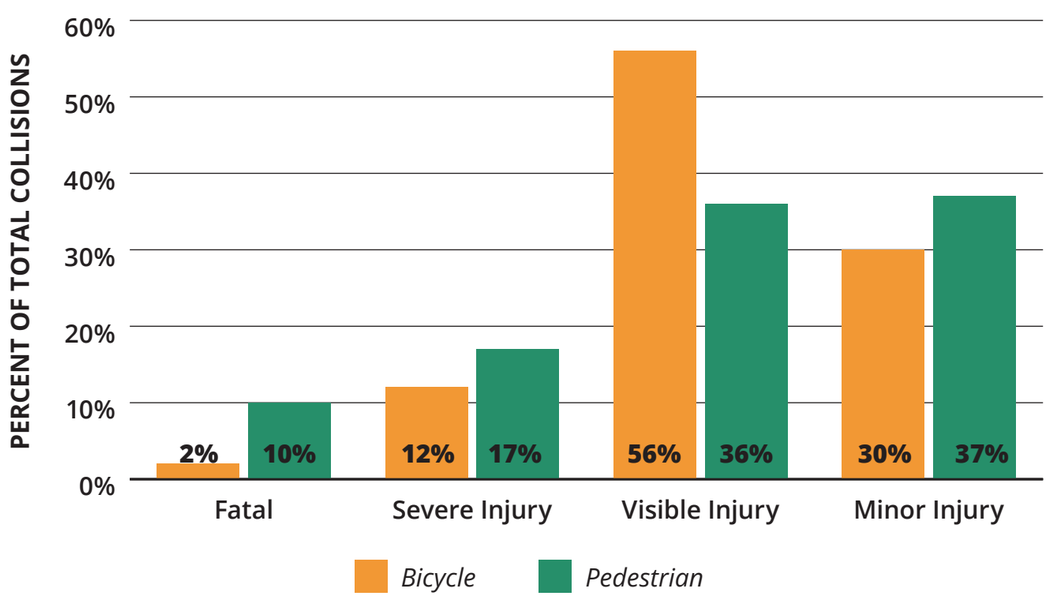
Between 2009 to 2018, 155 collisions occurred in unincorporated Orange County that involved a person walking. Fifteen (10%) of these were fatal collisions and 27 (17%) resulted in a severe injury.

The highest crash violation was due to pedestrian violations (40%) followed by unsafe vehicle speed (10%). Seventy-nine percent (79%) of pedestrian collisions occurred at an intersection. Studies have shown that a 30% reduction in traffic volumes would reduce pedestrian collisions at intersections by 50%.[1] A reduction in speed can also prevent pedestrian fatalities. The average risk of a pedestrian fatality is 50% at 42mph. This fatality risk is lowered to 10% at 23mph.[2]

The majority of these pedestrian related collisions occurred during the daylight (63%) followed by the nighttime in areas with existing street lights (23%). Many collisions involving pedestrians occurred in the following areas: Rossmoor Island, Anaheim Island, Katella/ Rustic Islands, Dale/Augusta Island, Midway City Islands, Olive Heights, Santiago Creek Island, El Modena Island, North Tustin, Santiago Canyon, Las Flores, Ladera Ranch, and Rancho Mission Viejo. (**Figure 17**)

1 Miranda -Moreno et al. The link between built environment, pedestrian activity and pedestrian-vehicle collision occurrence at signalized intersections. 2011.
2 Brian C. Tefft. Impact Speed and a Pedestrian's Risk of Severe Injury or Death. AAA Foundation for Traffic Safety (2011).

TABLE 8 Crash Severity Countywide



BICYCLE-INVOLVED COLLISIONS

During the same study period (2009 to 2018), 233 collisions in Orange County involved a person riding a bicycle. Five (2%) of these were fatal collisions, 28 (12%) resulted in severe injury, and 131 (56%) bicycle collisions resulted in a visible injury.

The highest crash violation was due to improper vehicular turning (22%) followed by unsafe speed (18%) and traveling on the wrong side of the road (18%). Seventy-four percent (74%) of bicycle collisions occurred at an intersection. Improving bicycle facilities, especially at intersections, may reduce conflicts between cyclists and drivers as they move throughout the county. Studies have shown that bicyclists are safest when using bicycle facilities including bike lanes and paths.[3]

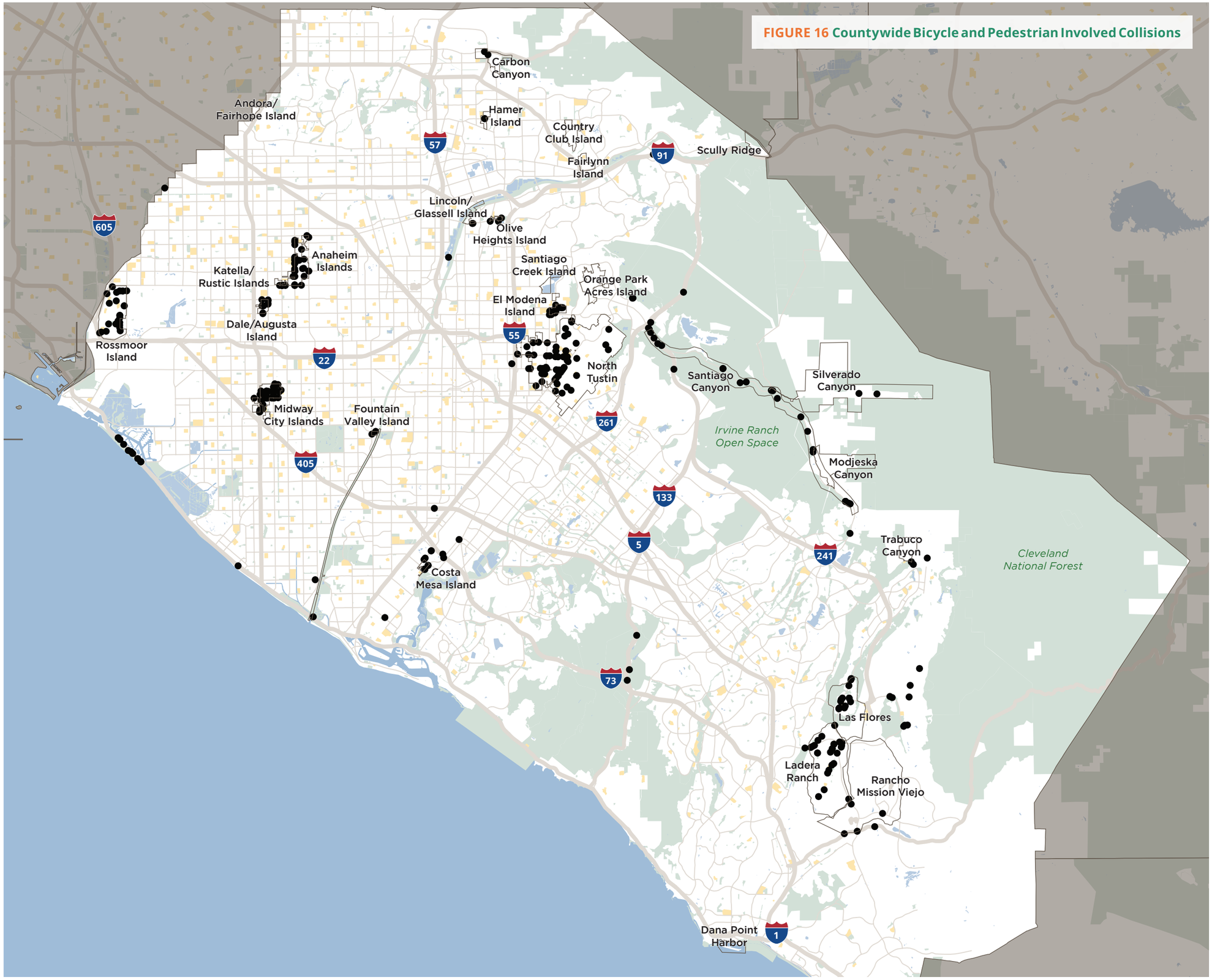
The majority of these bicycle-involved collisions occurred during the daylight (84%) followed by the night time in areas with existing street lights (9%). **Figure 18** provides an overview of all bicycle-involved collisions in Unincorporated Orange County between 2009-2018 and demonstrates a concentration of collisions in the North Tustin region as well as nearby islands such as Santiago Creek Island and El Modena Island. Collisions involving bicycles also occurred near the canyon areas such as Santiago Canyon as well as the northern and southern points of Orange County.

3 Reynolds, C.C., Harris, M.A., Teschke, K. et al. The impact of transportation infrastructure on bicycling injuries and crashes: a review of the literature. Environ Health 8, 47 (2009).

Orange County
Unincorporated Areas

Active Transportation Plan

FIGURE 16 Countywide Bicycle and Pedestrian Involved Collisions



CRASHES INVOLVING PEDESTRIANS + BICYCLISTS

- Point Location of Pedestrian / Bicycle Crash

BASEMAP

- Water
- School
- Park or Open Space
- Focus Areas
- County Boundary

OC Public Works

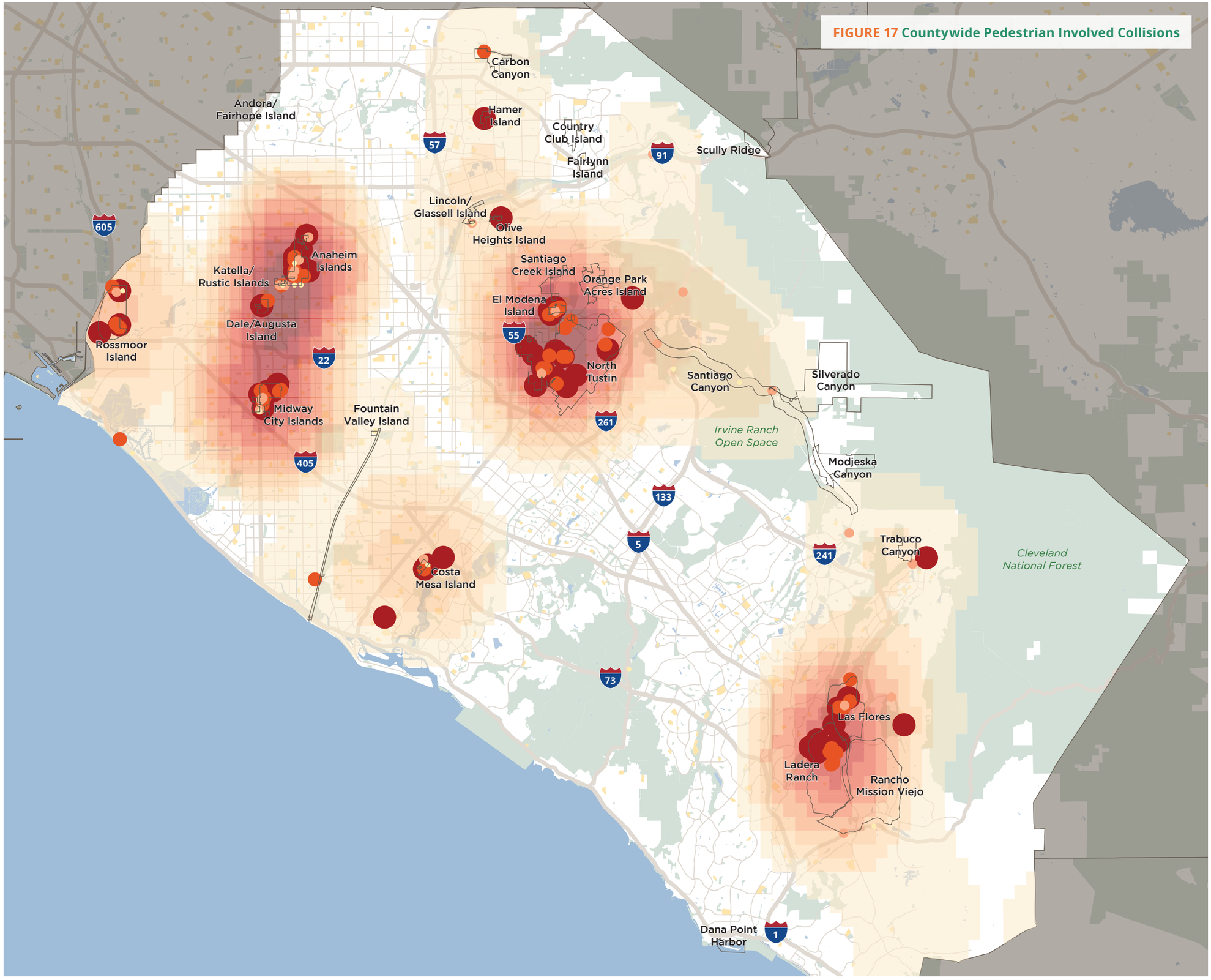
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0 2.5 5 Miles

Orange County
Unincorporated Areas

Active Transportation Plan

FIGURE 17 Countywide Pedestrian Involved Collisions



PEDESTRIAN INVOLVED CRASHES

- Fatal
- Severe Injury
- Minor Injury
- Complaint of Pain

- Low Density of Crashes
- High Density of Crashes

BASEMAP

- Water
- School
- Park or Open Space
- Focus Areas
- County Boundary

OC Public Works

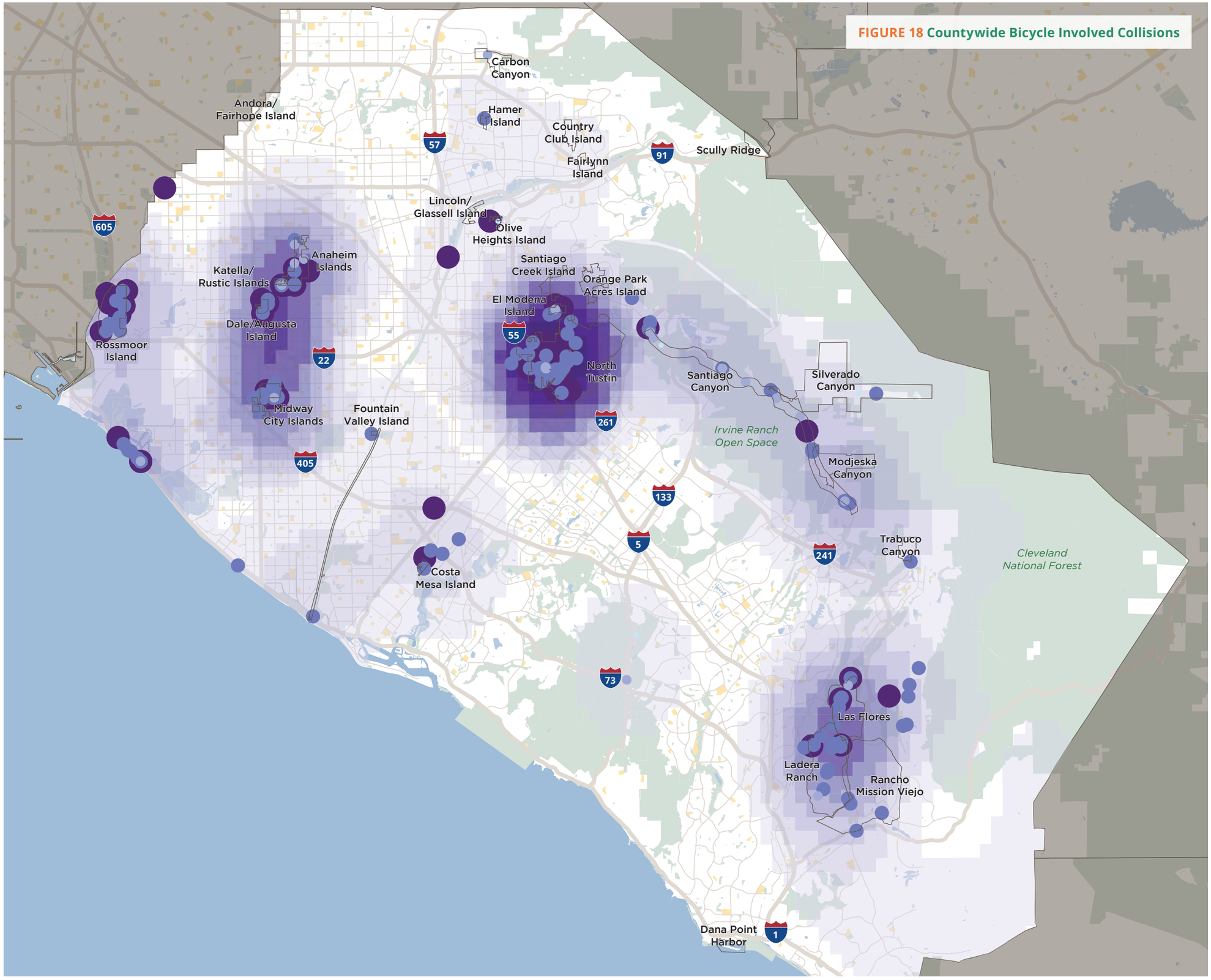
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0 2.5 5 Miles

Orange County
Unincorporated Areas

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FIGURE 18 Countywide Bicycle Involved Collisions



BICYCLE INVOLVED CRASHES

- Fatal
- Severe Injury
- Minor Injury
- Complaint of Pain

- Low Density of Crashes
- High Density of Crashes

BASEMAP

- Water
- School
- Park or Open Space
- Focus Areas
- County Boundary

OC Public Works

alta

0 2.5 5 Miles

Needs and Gaps

COUNTYWIDE

"So many older roads have no sidewalks or bike lanes. They often tend to be poorly lit as well so biking or even walking at night is too dangerous, especially for/with my children." -*Community Comment*

Network Gap Analysis

Figure 19 and **Figure 20** analyze the bicycle and pedestrian connectivity of existing low-stress areas of Orange County's unincorporated communities based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section. This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the city could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets

Each community profile will show complete connections displayed in the same color and create "low stress networks". When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadways is creating a barrier, such as a lack of a signalized crossings at the intersection. Each color represents a part of each unincorporated community where internal travel is low-stress, but crossing to another area is likely more stressful. This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a high-stress LTS 3 or 4 corridor.

Communities with the highest concentration of bicycle and pedestrian gaps include North Tustin, Ladera Ranch, Anaheim Island, Katella/ Rustic Islands, El Modena Island,and Rancho Mission Viejo.

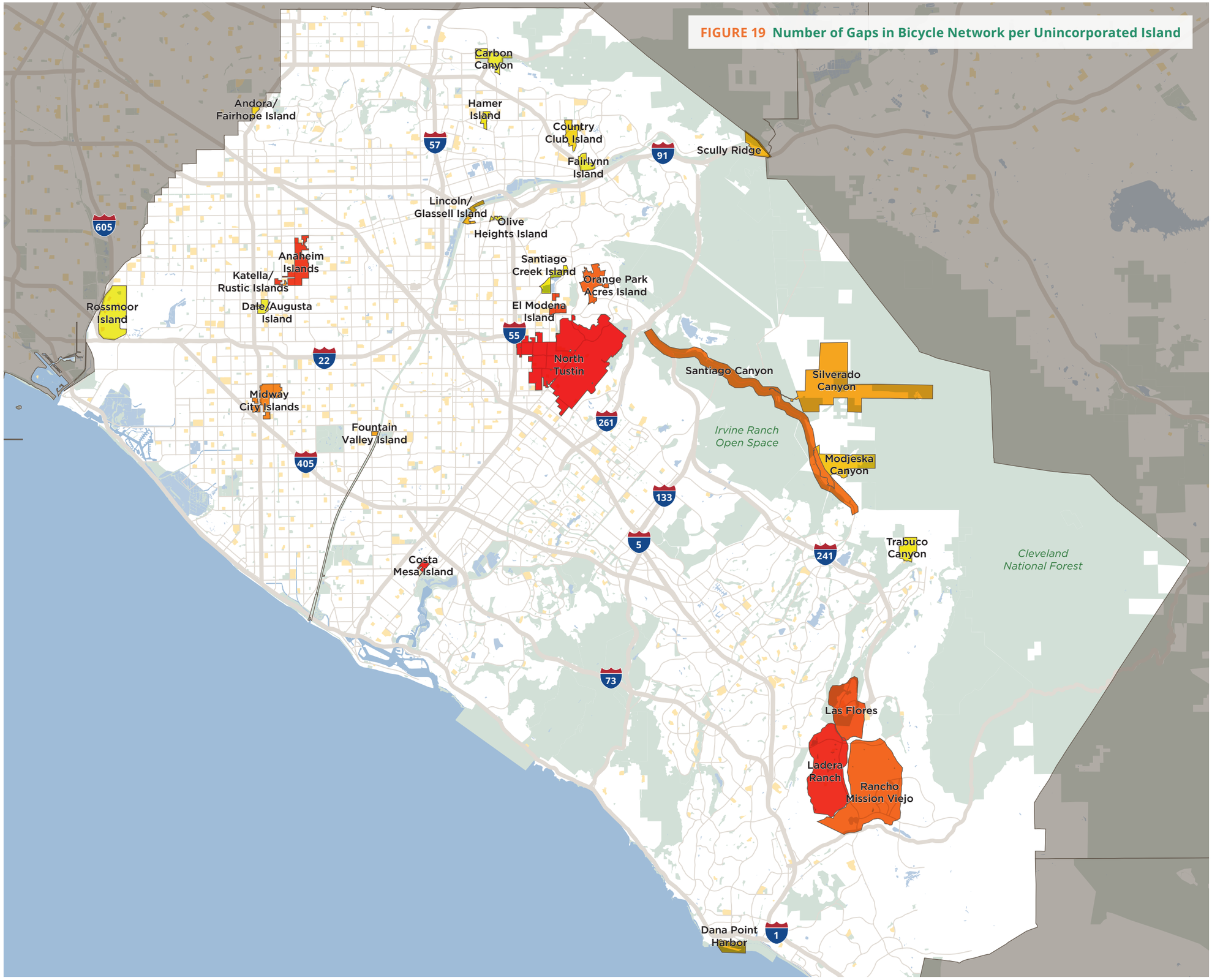
It is important to note, that some communities in unincorporated Orange County are considered to be rural. These rural communities may not have traditional sidewalks, but this is typically not considered an issue by residents.



Orange County
Unincorporated Areas

Active Transportation Plan

FIGURE 19 Number of Gaps in Bicycle Network per Unincorporated Island



NUMBER OF GAPS IN BICYCLE NETWORK PER UNINCORPORATED ISLAND

Few existing gaps in bicycle network

Many existing gaps in bicycle network

BASEMAP

- Water
- School
- Park or Open Space
- Focus Areas
- County Boundary

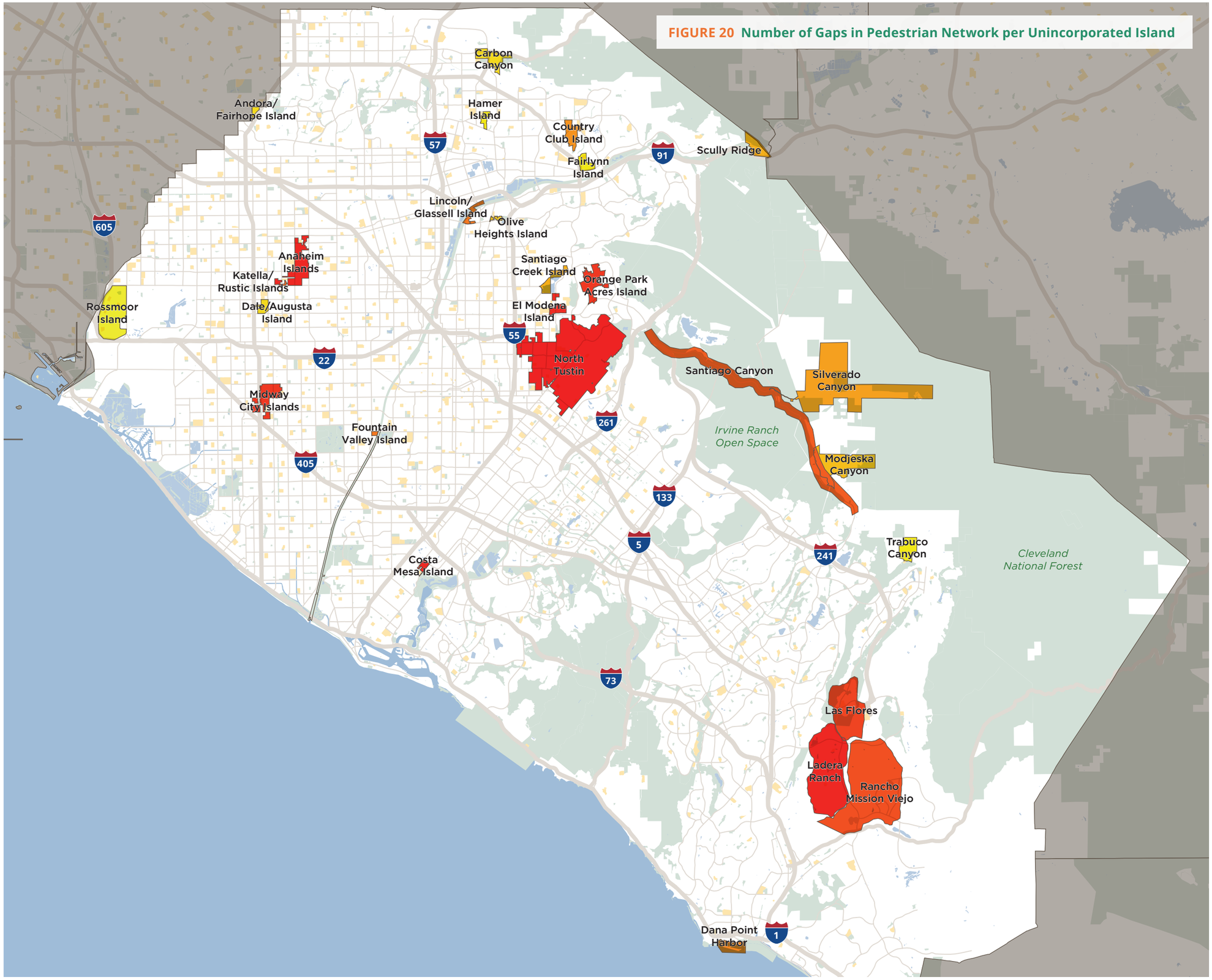
OC Public Works

0 2.5 5 Miles

Orange County
Unincorporated Areas

Active Transportation Plan

FIGURE 20 Number of Gaps in Pedestrian Network per Unincorporated Island



NUMBER OF GAPS IN PEDESTRIAN NETWORK PER UNINCORPORATED ISLAND

Few existing gaps in pedestrian network

Many existing gaps in pedestrian network

BASEMAP

- Water
- School
- Park or Open Space
- Focus Areas
- County Boundary

OC Public Works

0 2.5 5 Miles

Recommendations

COUNTYWIDE

Developing Recommendations

Developing recommendations is a multi-step process that requires understanding and balancing community feedback, existing conditions, project feasibility, and previous planning efforts. Recommendation locations were determined through a diverse set of criteria, including collisions, level of traffic stress, composite demand, network gaps, and public comment, amongst other possible criteria.

A toolkit of recommendations was applied to the streets within the unincorporated islands, and improvements were recommended based on a street's distinct characteristics. In some instances recommendations were made outside of the unincorporated area boundaries, but are still within unincorporated OCPW right-of-way.

A series of design documents were considered when making these recommendations including local codified ordinances, the Orange County Highway Design Manual, Orange County Standard Plans, Caltrans Highway Design Manuals and other federal design manuals. Still, these recommendations are planning - level and will require further study, design, and engineering prior to implementation. All recommendations are preliminary in nature and must be studied further for ultimate justification and implementation of these recommendations.

PEDESTRIAN RECOMMENDATIONS

The improvements included in the pedestrian recommendations include safe crossing infrastructure that slows vehicle speeds, reduces crossing distances, and makes pedestrians more visible, and sidewalk improvements to connect and widen pathways. Recommendations were applied to each street based on its characteristics and classification. See **Table 9** for the list of potential pedestrian recommendations. See **Figure 22** for a map of the pedestrian recommendations countywide.

BICYCLE RECOMMENDATIONS

Bikeway recommendations may be applied to connectivity-focused corridors within each study area as well as connecting to outside jurisdiction's planned or existing networks, with appropriate applications of bikeway to roadway type. In addition to new recommended facilities, upgrades to existing facilities may be recommended after consideration of community feedback and existing plans and policies. Countywide bicycle recommendations can be seen in **Figure 21**.

TABLE 9 Pedestrian Typologies

Major Road Improvements
Pedestrian refuge islands
Pedestrian hybrid beacon (e.g., HAWK)
Enhanced pavement markings and signage
Curb extensions
High visibility crosswalks
Curb ramps
Pedestrian-scale lighting
Slip lane modifications/corner radius reductions
Signal timing improvements
Traffic calming (e.g. road diets, traffic diverters, chicanes, and traffic circles)
Sidewalk improvement (e.g., meandering sidewalks)
Minor Road Improvements
Curb extensions
High visibility crosswalks
Rapid rectangular flashing beacon (RRFB)
Curb ramp
Pedestrian-scale lighting
Traffic calming (e.g. road diets, traffic diverters, chicanes, and traffic circles)
Enhanced pavement markings and signage
Sidewalk improvement (e.g., meandering sidewalks)
Rural Road Improvements
High visibility crosswalks
Pedestrian hybrid beacon (e.g., HAWK)
Pedestrian lighting
DG (decomposed granite) pathways
Trail crossings (OCPW- maintained road crossings linking OC Parks trails)
Enhanced pavement markings and signage

Orange County Unincorporated Areas

Active Transportation Plan

Countywide Recommendations

BICYCLE RECOMMENDATIONS

- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway/ Cycle Track (Class IV)
- Shared-Use Path Along Flood Control Channel (Class I)

BASEMAP

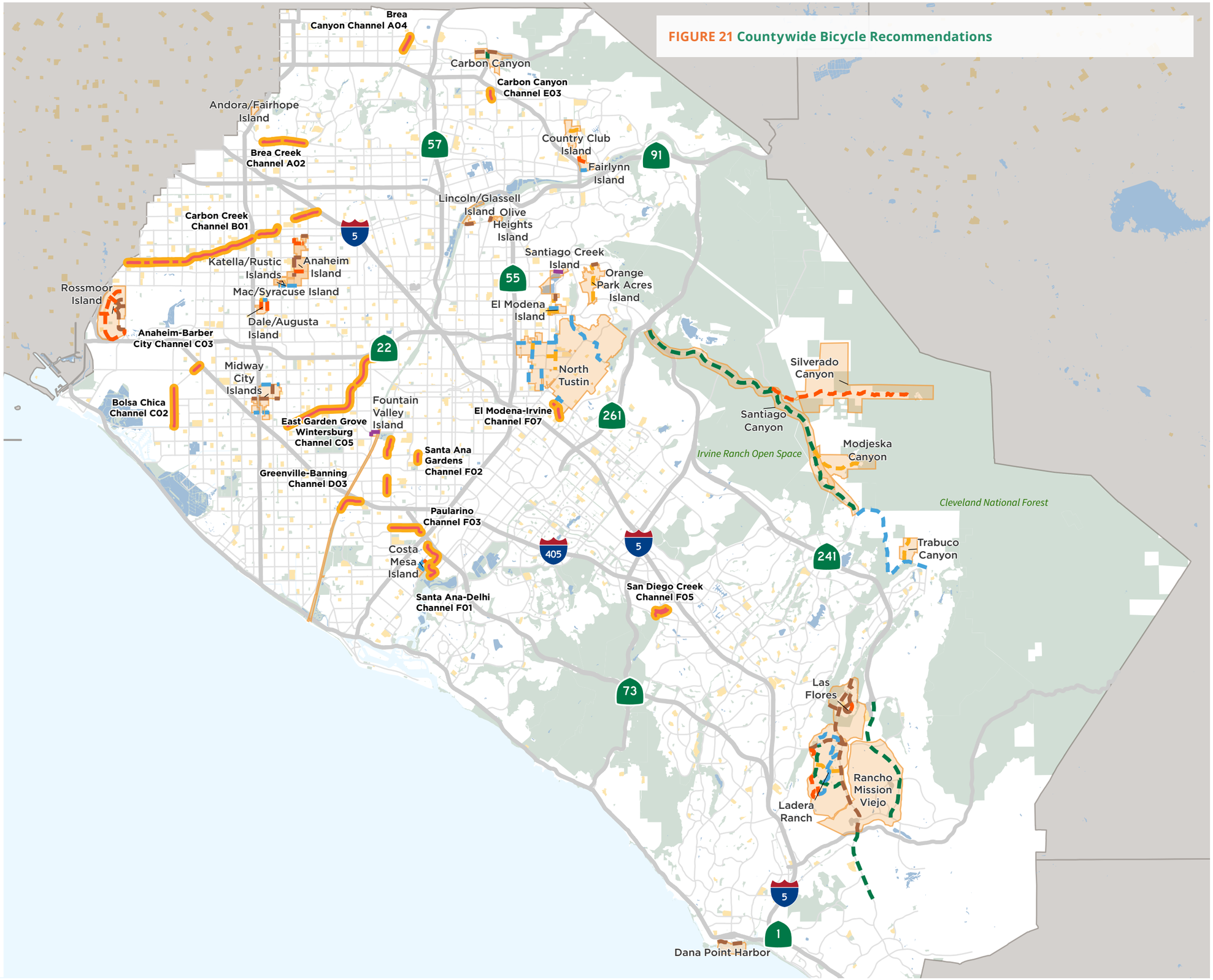
- Water Body
- School
- Park or Open Space
- County Boundary
- Focus Areas

OC Public Works

0 3.5 7 Miles

N

FIGURE 21 Countywide Bicycle Recommendations



Orange County Unincorporated Areas

Active Transportation Plan

Countywide Recommendations

PEDESTRIAN RECOMMENDATIONS

- Pedestrian Road Improvements
- Rural Road Improvement
- New Sidewalks

BASEMAP

- Water Body
- School
- Park or Open Space
- County Boundary
- Focus Areas

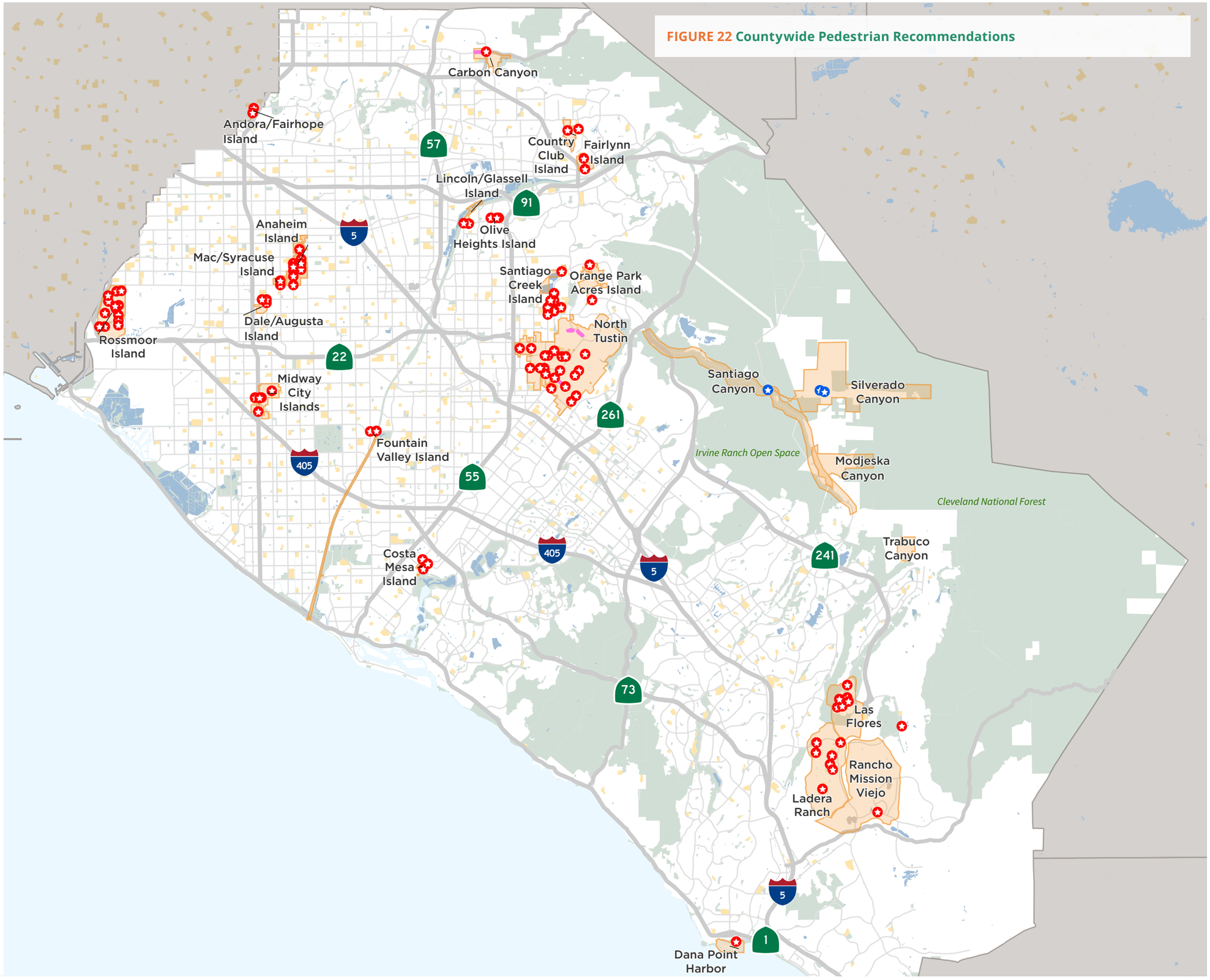
OC Public Works

ORANGE COUNTY

0 3.5 7 Miles

N

FIGURE 22 Countywide Pedestrian Recommendations



Community Profiles

Anaheim Island 51

Andora/Fairhope Island 59

Carbon Canyon 65

Costa Mesa Island 71

Country Club Island 78

Dale/Augusta Island 84

Dana Point Harbor 91

El Modena Island 95

Fairlynn Island 102

Fountain Valley Island 108

Hamer Island* 114

Katella/Rustic Islands 120

Ladera Ranch 127

Las Flores 135

Lincoln/Glassell Island 142

Mac/Syracuse Island 149

Midway City Island 154

Modjeska Canyon 162

North Tustin Island 168

Olive Heights Island 176

Orange Park Acres 183

Rancho Mission Viejo 189

Rossmoor Island 196

Santiago Canyon 203

Santiago Creek Island 209

Scully Ridge* 214

Silverado Canyon 218

Trabuco Canyon 225

Anaheim Island

SUPERVISORIAL DISTRICT 4

Context and Background

Anaheim Island is located adjacent to the City of Anaheim to the east, west, and north; City of Stanton to the southwest; and City of Garden Grove to the south. It is within the sphere of influence of the City of Anaheim. This unincorporated area spans 494.90 acres and is home to over 9,800 residents. The community is primarily single-family residential housing, with commercial activity nearby along Brookhurst Street, Ball Road, and Magnolia Avenue in adjacent jurisdictions.

The community is served by Magnolia Elementary School District and Anaheim Union High School District. It is also within a half-mile radius of three parks: Barton Park and Modjeska Park in the City of Anaheim and Hollenbeck Lane Park in the City of Stanton. Anaheim Island currently does not have any OCFCD-owned flood control channels that are suitable for pathway development.



COMMUTE TRENDS

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of current commute mode trends was conducted at the census block group level for Anaheim Island. Of the Anaheim Island residents 16 or older officially in the workforce, the ACS estimates that 1.6% walk and 1.6% use a bicycle to commute. However, bicycle ridership and rates of walking could be higher than this, as the ACS does not factor recreational trips or trips where commuters use more than one mode when traveling to work, such as taking a bus part way then riding a bicycle to the final destination.

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of households without access to a personal vehicle was conducted at the census tract level for Anaheim Island. The percentage of people without access to a motor vehicle ranges between 2% to nearly 10% of residents in various Census tracts. The average percentage of Anaheim Island residents without access to vehicles is 5.7%.

HEALTH + EQUITY

The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to identify communities that are disproportionately burdened by pollution. It combines multiple sources of pollution data (e.g., ozone concentrations and drinking water contaminants) with population indicators (e.g., birth weight and educational attainment). Communities that score in the most burdened 25% of the state are considered to be disadvantaged and receive a small advantage in California's competitive funding process, such as through the State's Active Transportation Program. Per the tool the southwest area of Anaheim Island meets the CalEnviroScreen threshold for disadvantaged communities, as it experiences more pollution burden.

Additionally, public health is shaped by other "non-health" policies and community characteristics, such as housing, education, economic, and social factors. These factors are included in the California Healthy Places Index (HPI) tool, developed by Public Health Alliance of Southern California, which determines how healthy a census tract is compared to others in the state. Per the HPI tool, Anaheim Island experiences worse public health than 78% of other California communities. Maps showing HPI and CalEnviroScreen scoring for Anaheim Island are included in Appendix C.

At a Glance

SIZE

494.9 Acres

POPULATION

9,800 Residents

COMMUNITY TYPE

Single-Family Residential

LOCAL SCHOOLS

Magnolia Elementary

Anaheim Union High School

Walk Audit

To help gain insights into existing conditions for biking and walking in Anaheim Island, the project team facilitated a virtual community audit on December 18, 2020. In total, seven community members participated in the Zoom audit. During the audit, participants observed that sidewalks throughout Anaheim Island lack consistent widths, with some too narrow for accessible travel. The majority of the audited street segments had no shade or minimal shade and participants noted that shade trees and landscaping would increase pedestrian comfort and the attractiveness of the streetscape. Residents also suggested public art to enhance the walking experience. On many streets in Anaheim Island, poor lighting is also a concern. More details about audit observations can be found in Appendix B.

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 23** on the next page, and described in the following sections.

BICYCLE NETWORK

Anaheim Island's existing bike network is made up of 1.25 miles of Class II bicycle lanes, located along Gilbert Street from Ball Road to Katella Avenue and along Ball Road from Gilbert Street to the community's eastern boundary, as shown in **Table 10**. According to residents, Salk Elementary School pickup and drop off is very busy and parents park cars along Gilbert Street next to the existing bike lane, making it uncomfortable for bicyclists. **Table 10** also shows 2.81 miles of Class II bicycle lanes and Class III bike routes proposed by OCTA in a previous plan.

PEDESTRIAN FACILITIES

Most streets in Anaheim Island have sidewalks on at least one side, though the widths are inconsistent. There are gaps in the sidewalk network along the southern side of Katella Avenue (though there are sidewalks along the adjacent frontage road), the western side of Gilbert Street south of Cerritos Avenue, and the eastern side of Gilbert Street north of Orange Avenue. Along Ball Road and Gilbert Street, sidewalk widths fluctuate and there is very little tree coverage.

Additionally, major signalized intersections have marked crosswalks, many of which are high-visibility continental crosswalks. Outside of Walt Disney Elementary School, there is a marked school crossing at Orange Avenue and Rosebay Street. Students at this uncontrolled intersection may benefit from additional crossing improvements since there are no existing stop signs or signals.

TABLE 10 Existing Bicycle Network (Miles)

Facility Type	Existing	Proposed by OCTA
Class I Shared-Use Path	0.00	1.00
Class II Bicycle Lanes	1.25	1.34
Class III Bicycle Route	0.00	0.47
Total	**1.25**	**2.81**



Orange County Unincorporated Area

Active Transportation Plan

Anaheim, Dale/Augusta, Katella/ Rustic, + Mac/Syracuse Islands

FIGURE 23 Anaheim Island Existing Conditions

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

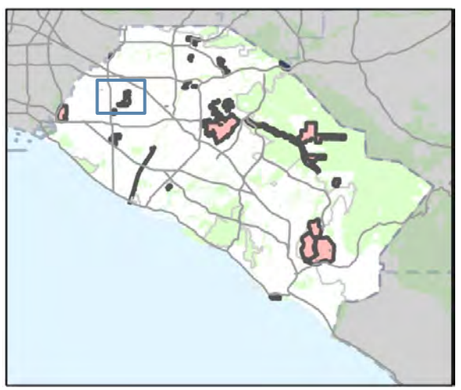
- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Rail Stop
- Bus Route
- Rail

BASEMAP

- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 0.25 0.5 Miles

N

Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, a total of 34 collisions involving bicyclists and pedestrians were reported in Anaheim Island during the study period, 32% of which involved people bicycling and 68% of which involved people walking.

PEDESTRIAN-INVOLVED COLLISIONS

Between 2009 to 2018, 23 collisions occurred in Anaheim Island that involved a person walking. 3 (13%) of these were fatal collisions and 5 (22%) resulted in a severe injury.

The highest crash violation was due to pedestrian violations (57%) followed by pedestrian right of way (13%). 13% of pedestrian collisions occurred at an intersection.

The majority of these pedestrian related collisions occurred during the daylight (48%) followed by the night time in areas with existing street lights (35%). Many collisions involving pedestrians occurred on Katella Ave and Gilbert St (**Figure 24**).

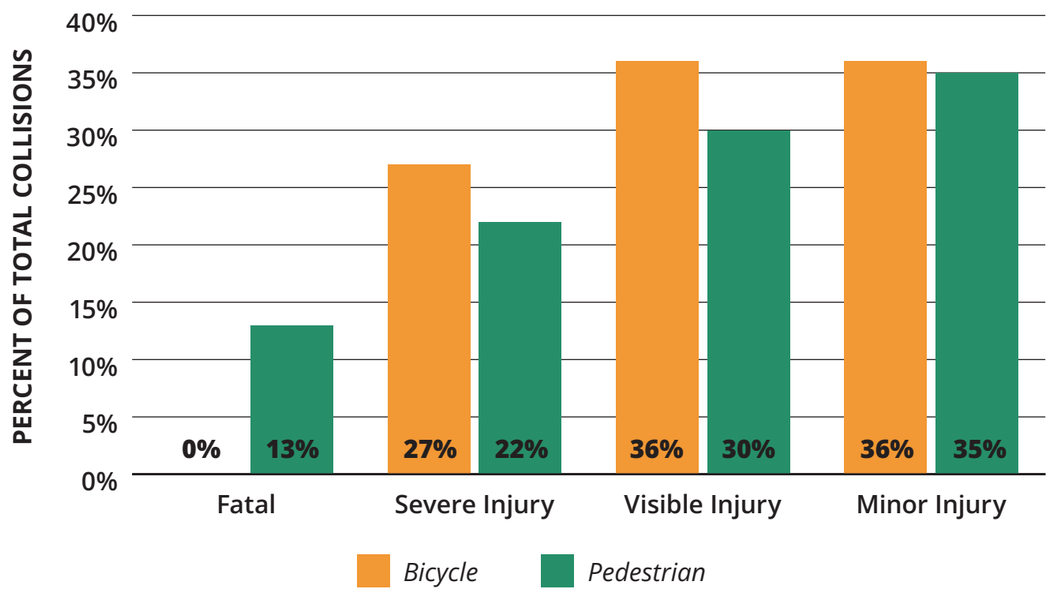
BICYCLE-INVOLVED COLLISIONS

During the same study period (2009 to 2018), 11 collisions in Anaheim Island involved a person riding a bicycle. 0 (0%) of these were fatal collisions, 3 (27%) resulted in severe injury, and 4 (36%) bicycle collisions resulted in a visible injury.

The highest crash violation was due to wrong side of road violations (64%) followed by driving or bicycling under the influence of alcohol or drugs (9%), unsafe speed (9%), improper passing (9%), and fault other than driver or pedestrian (9%). 3 (27%) of bicycle collisions occurred at an intersection.

The majority of these bicycle collisions occurred during the daylight (82%) followed by the nighttime with streetlights present (18%). **Figure 24** provides an overview of all bicycle-involved collisions in Anaheim Island between 2009-2018 and demonstrates a concentration of collisions along Gilbert St.

TABLE 11 Crash Severity in Anaheim Island





Orange County Unincorporated Area

Active Transportation Plan

Anaheim, Dale/Augusta, Katella/ Rustic, + Mac/Syracuse Islands

PEDESTRIAN INVOLVED CRASHES

- Fatal
- Severe Injury
- Minor Injury
- No Injury

BICYCLIST INVOLVED CRASHES

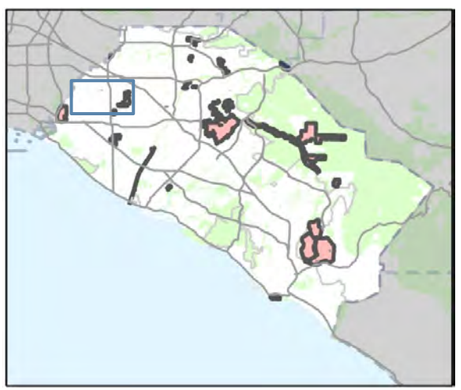
- Fatal
- Severe Injury
- Minor Injury
- No Injury

EXISTING BICYCLE FACILITIES

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

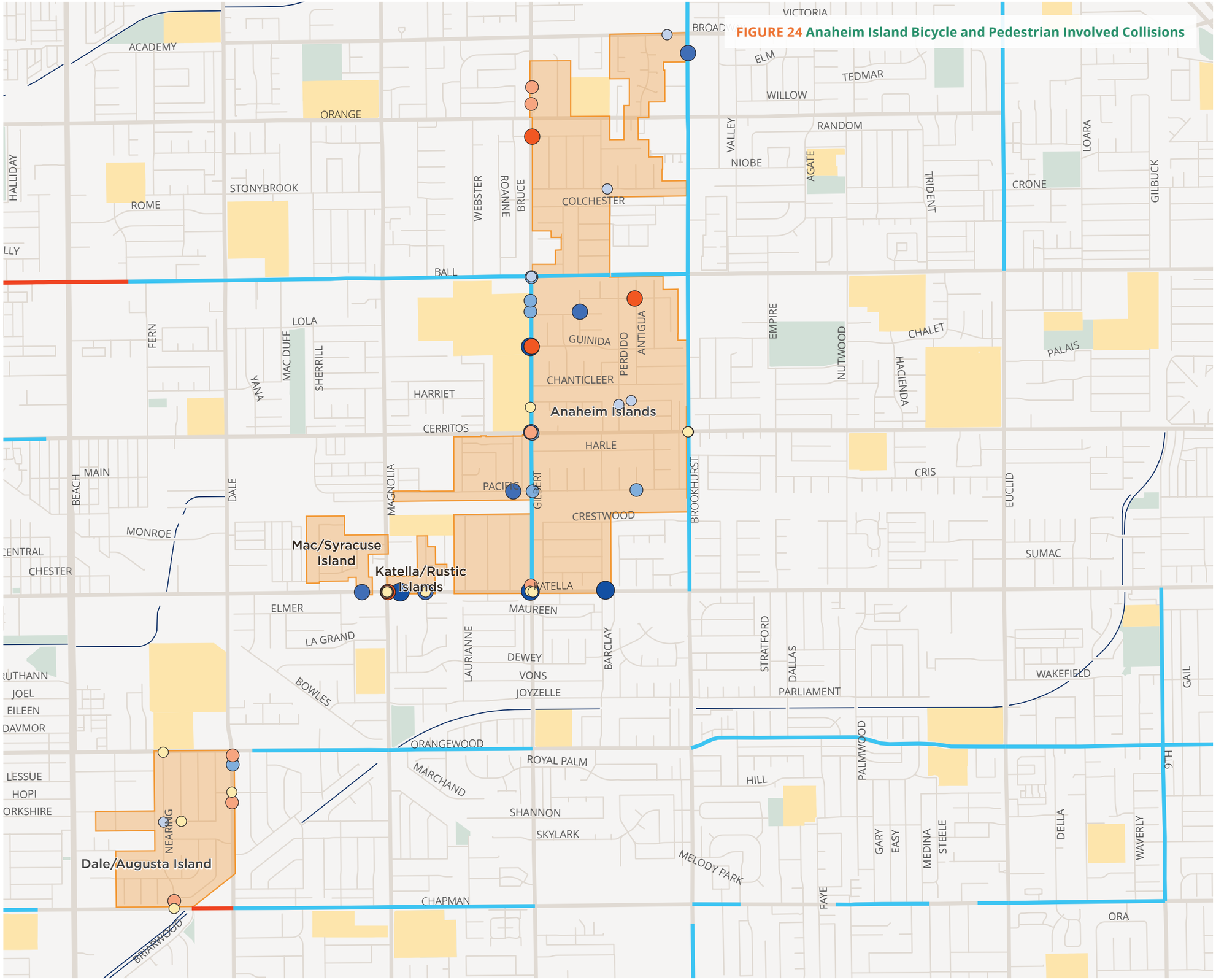
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas



0 0.25 0.5 Miles

FIGURE 24 Anaheim Island Bicycle and Pedestrian Involved Collisions



Network Gap Analysis

Figure 25 analyzes the bicycle and pedestrian connectivity of existing low-stress areas of Anaheim Island based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section. This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the community could include:

- Signalized intersections
- High-visibility crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets

Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of Anaheim Island where internal travel is low-stress, but crossing to another network is more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a high-stress LTS 3 or 4 corridor. The connectivity analysis shows that there are several pockets within Anaheim Island that provide complete low stress connections. Many of these low-stress connections are within residential neighborhoods that are not intersected by higher-stress roadways. However, streets like Cerritos Ave, Ball Rd, Gilbert St, and Orange Ave are higher-stress streets and provide barriers for both pedestrians and cyclists. This suggests that intersection and crossing improvements across these major thoroughfares will better facilitate pedestrian and bicycle travel between areas.

Based on the Needs and Gaps analysis, there are 31 low stress networks within Anaheim Island.



Orange County Unincorporated Area

Active Transportation Plan

Anaheim, Dale/Augusta, Katella/ Rustic, + Mac/Syracuse Islands

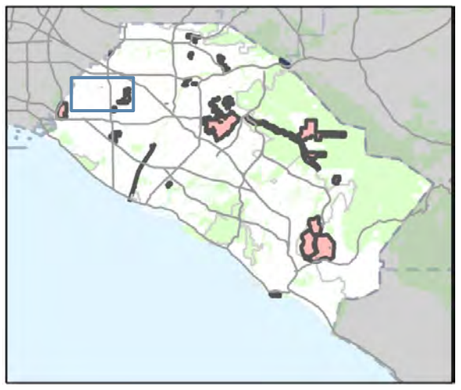
LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

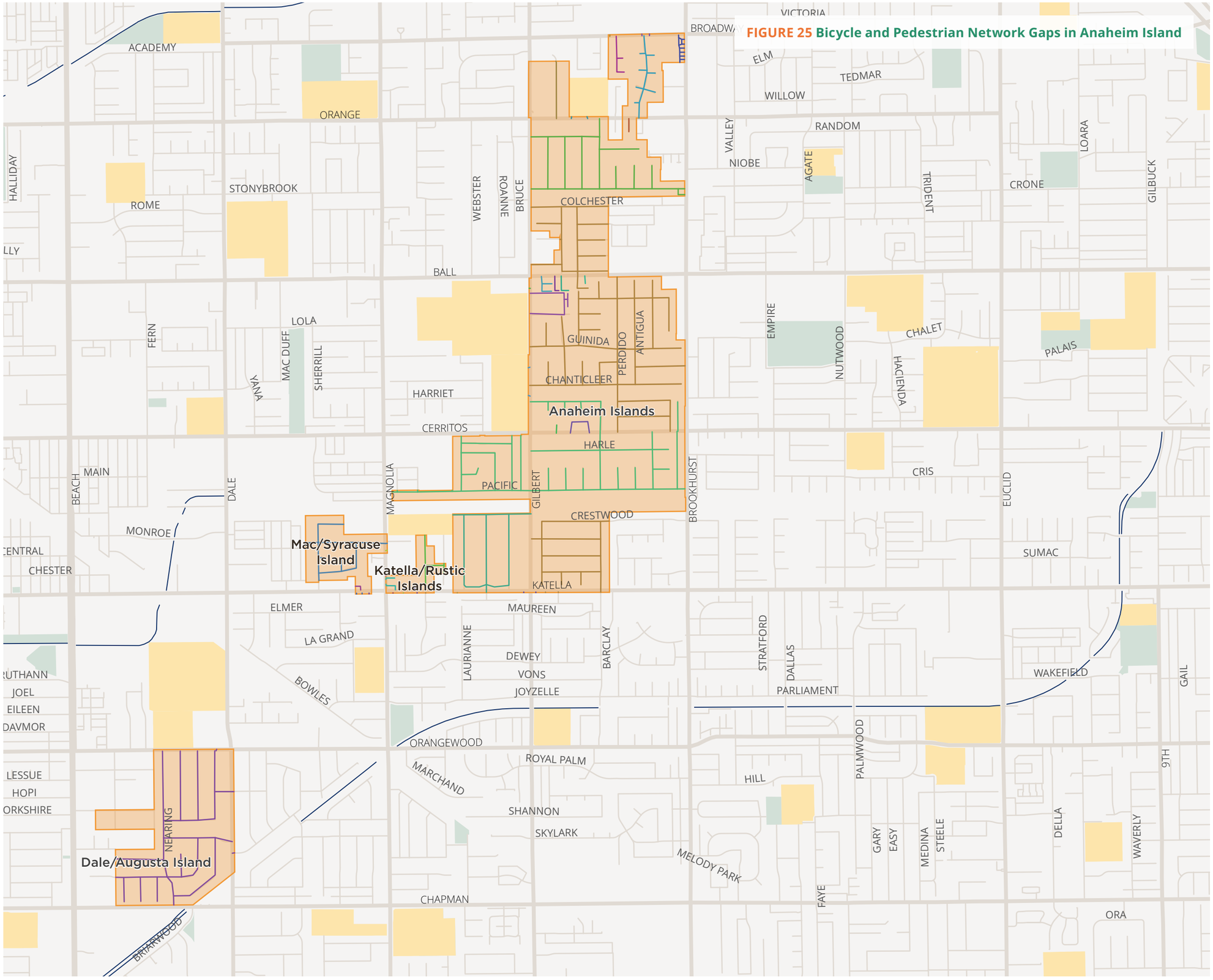
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas



0 0.25 0.5 Miles

FIGURE 25 Bicycle and Pedestrian Network Gaps in Anaheim Island



Recommendations

WHAT DID WE HEAR?

Community comments noted that the bike conditions should be improved on Gilbert Street, Brookhurst Street, Katella Avenue, and Ball Road in addition to pedestrian improvements within the neighborhood.

PEDESTRIAN RECOMMENDATIONS

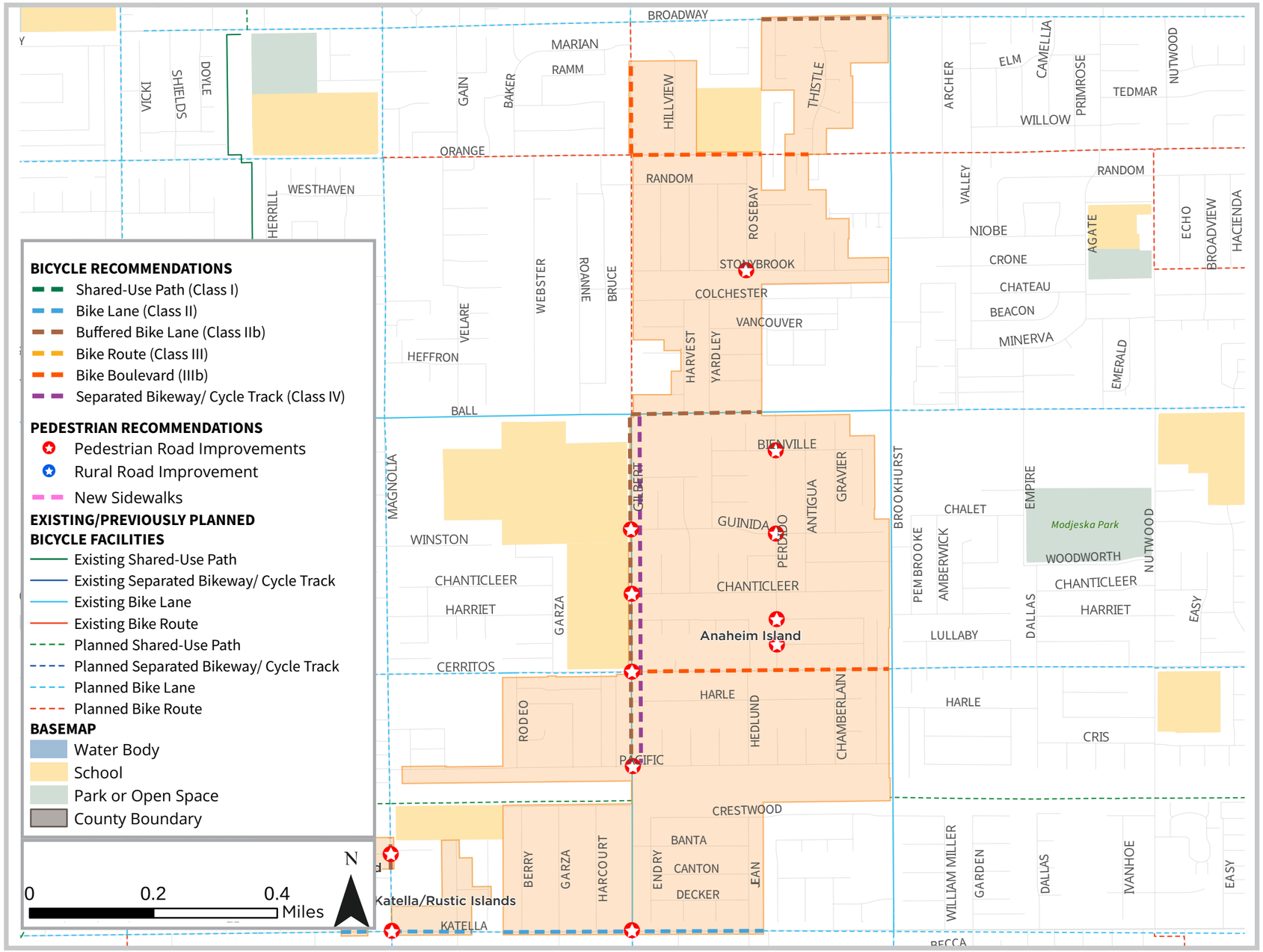
Recommended pedestrian infrastructure in Anaheim Island includes:

- Pedestrian hybrid beacon (e.g., HAWK)
- High visibility crosswalks

Bicycle Recommendations

Bicycle recommendations in Anaheim Island include:

- Class II Bike Lane 0.7 miles total
- Class IIb Buffered Bike Lane 1.22 miles total including:
  - Ball Road, upgrading the existing Class II bike lanes
- Class IIIb Bike Boulevard 0.95 miles total
- Class IV Separated Bikeway .67 miles total including:
  - The east side of Gilbert St, addressing public comments which asked for safer bicycle facilities



Andora/Fairhope Island

SUPERVISORIAL DISTRICT 4

Context and Background

Andora/Fairhope Island is located adjacent to the City of Buena Park to the east and south and the County of Los Angeles to the west and north. It is within the sphere of influence of the City of Buena Park. This unincorporated area spans 39 acres and is home to 438 residents as of 2019. The community is almost entirely single-family residential housing.

The community is served by Buena Park Elementary School District and Fullerton Joint Union High School District. Residents have access to Smith Murphy Park in the City of Buena Park, which is within a half-mile radius of the community. Additionally, 0.84 miles of OCFCD-owned flood control channels run along the southern border of Andora/Fairhope Island.

COMMUTE TRENDS

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of current commute mode trends was conducted at the census block group level for Andora/Fairhope Island. Of the Andora/Fairhope Island residents 16 or older officially in the workforce, the ACS estimates that 1.2% walk and 0% use a bicycle to commute. However, bicycle ridership and rates of walking could be higher than this, as the ACS does not factor recreational trips or trips where commuters use more than one mode when traveling to work, such as taking a bus part way then riding a bicycle to the final destination.

ACCESS TO VEHICLES

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of households without access to a personal vehicle was conducted at the census tract level for Andora/Fairhope Island. The percentage of people without access to a motor vehicle is up to 2% of residents in some Census tracts. The average percentage of Andora/Fairhope Island residents without access to vehicles is 0.9%.

HEALTH + EQUITY

The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to identify communities that are disproportionately burdened by pollution. It combines multiple sources of pollution data (e.g., ozone concentrations and drinking water contaminants) with population indicators (e.g., birth weight and educational attainment). Communities that score in the most burdened 25% of the state are considered to be disadvantaged and receive a small advantage in California's competitive funding process, such as through the State's Active Transportation Program. Per the tool, Andora/Fairhope Island does not meet this threshold for disadvantaged communities.

Additionally, public health is shaped by other "non-health" policies and community characteristics, such as housing, education, economic, and social factors. These factors are included in the California Healthy Places Index (HPI) tool, developed by Public Health Alliance of Southern California, which determines how healthy a census tract is compared to others in the state. Per the HPI tool, Andora/Fairhope Island is considered healthier than approximately 68% of other California communities. Maps showing HPI and CalEnviroScreen scoring for Andora/Fairhope Island are included in Appendix C.

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 26** on the following page and described in the following sections.

BICYCLE NETWORK

As shown in **Figure 26** and **Table 12**, Coyote Creek Bikeway, a Class I shared-use path, runs along the southern border of the community, though no access points exist within Andora/Fairhope Island. No other bicycle facilities currently exist in the small community.

PEDESTRIAN FACILITIES

All streets in Andora/Fairhope Island feature sidewalks on both sides. Currently, there are no marked crosswalks in this small community, though most intersections have ADA-compliant curb ramps.

At a Glance

SIZE
39 Acres

POPULATION
438 Residents

COMMUNITY TYPE
Single-Family Residential

LOCAL SCHOOLS
Buena Park Elementary

Fullerton Union High School

TABLE 12 Existing Bicycle Network (Miles)

Facility Type	Existing
Class I Shared-Use Path	0.52
Total	**0.52**

Orange County Unincorporated Area

Active Transportation Plan

Andora/Fairhope Island

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

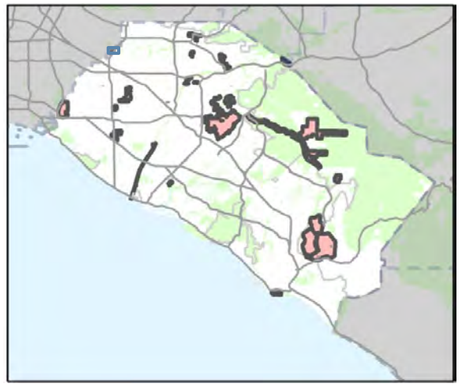
- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Rail Stop
- Bus Route
- Rail

BASEMAP

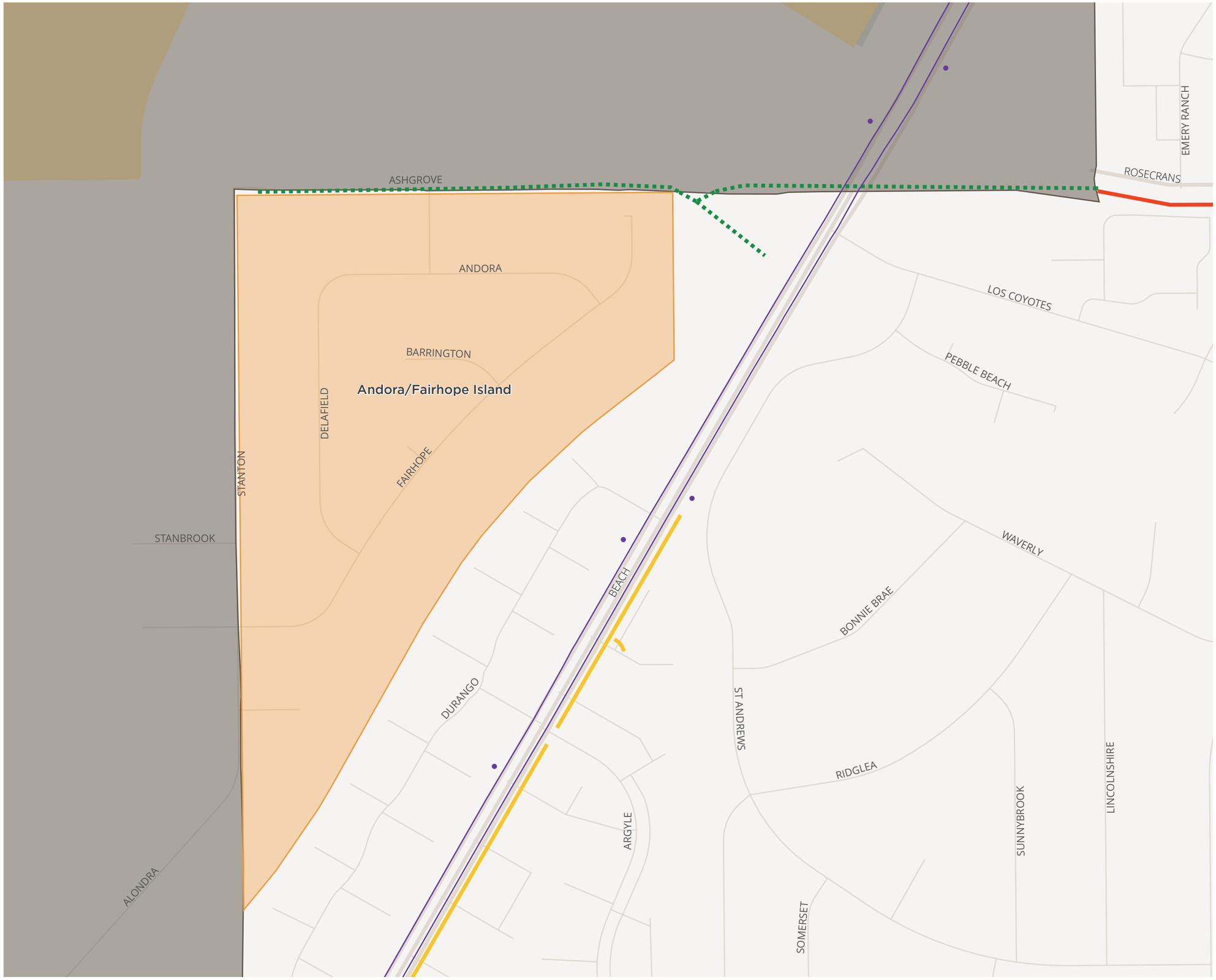
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 0.05 0.1 Miles

N



Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, there were no collisions that involved a pedestrian or bicyclist in Andora/Fairhope island.

Network Gap Analysis

Figure 27 analyzes the bicycle and pedestrian connectivity of existing low-stress areas of Andora/Fairhope Island based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section. This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the city could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of Andora/Fairhope where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis shows there are two connectivity areas in Andora/Fairhope Island. Intersection and crossing improvements across these major thoroughfares will better facilitate pedestrian and bicycle travel between the two areas.

Based on the Needs and Gaps analysis, there are 3 low stress networks within Andora/Fairhope Island.



Orange County
Unincorporated Area

Active Transportation Plan

Andora/Fairhope Island

FIGURE 27 Network Gaps in Andora/Fairhope Island

LOW STRESS NETWORKS

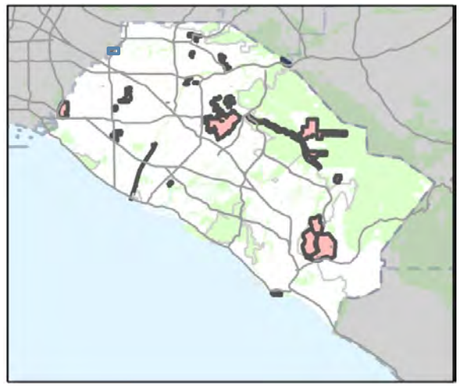
Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

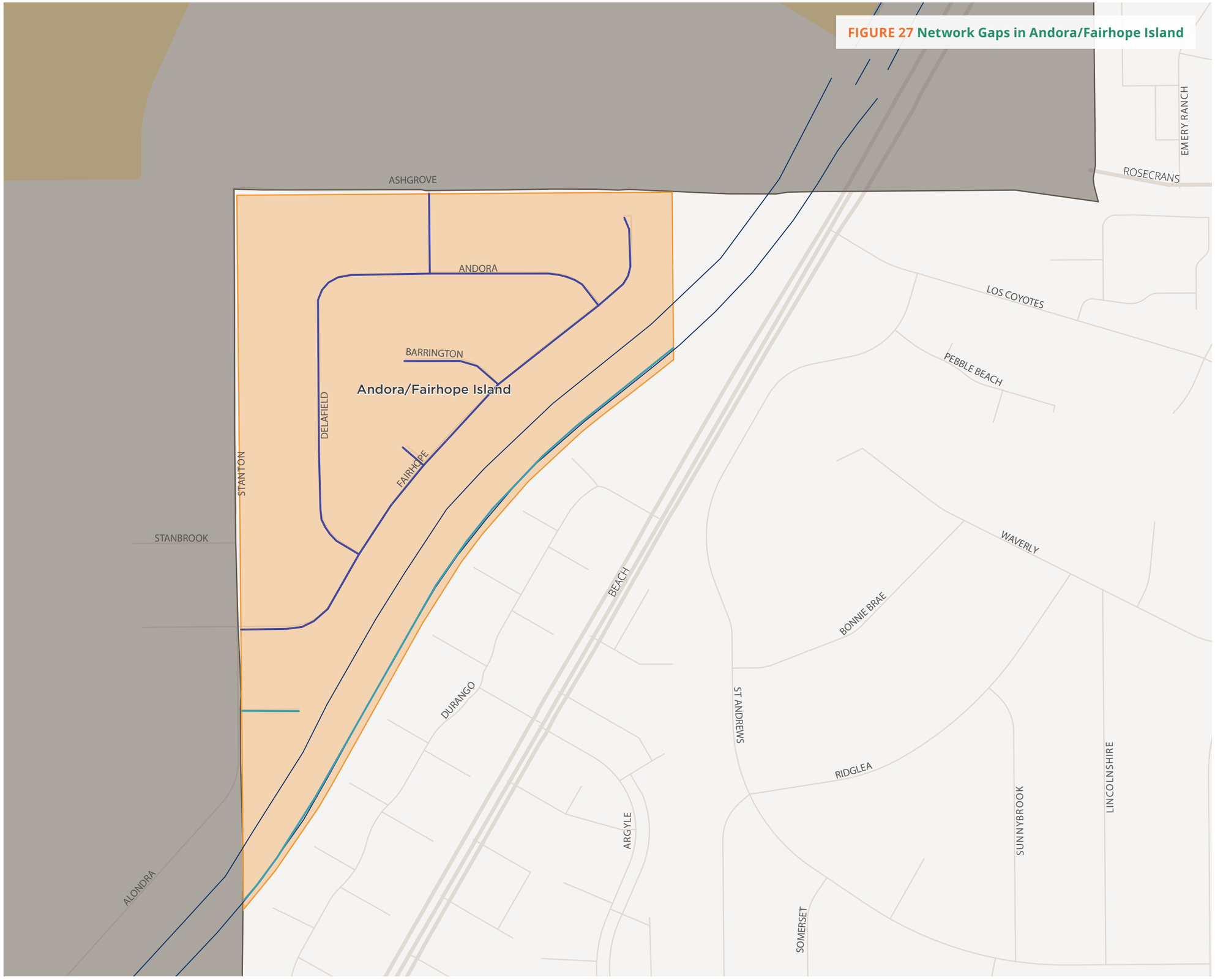
another.

BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.05 0.1 Miles



Recommendations

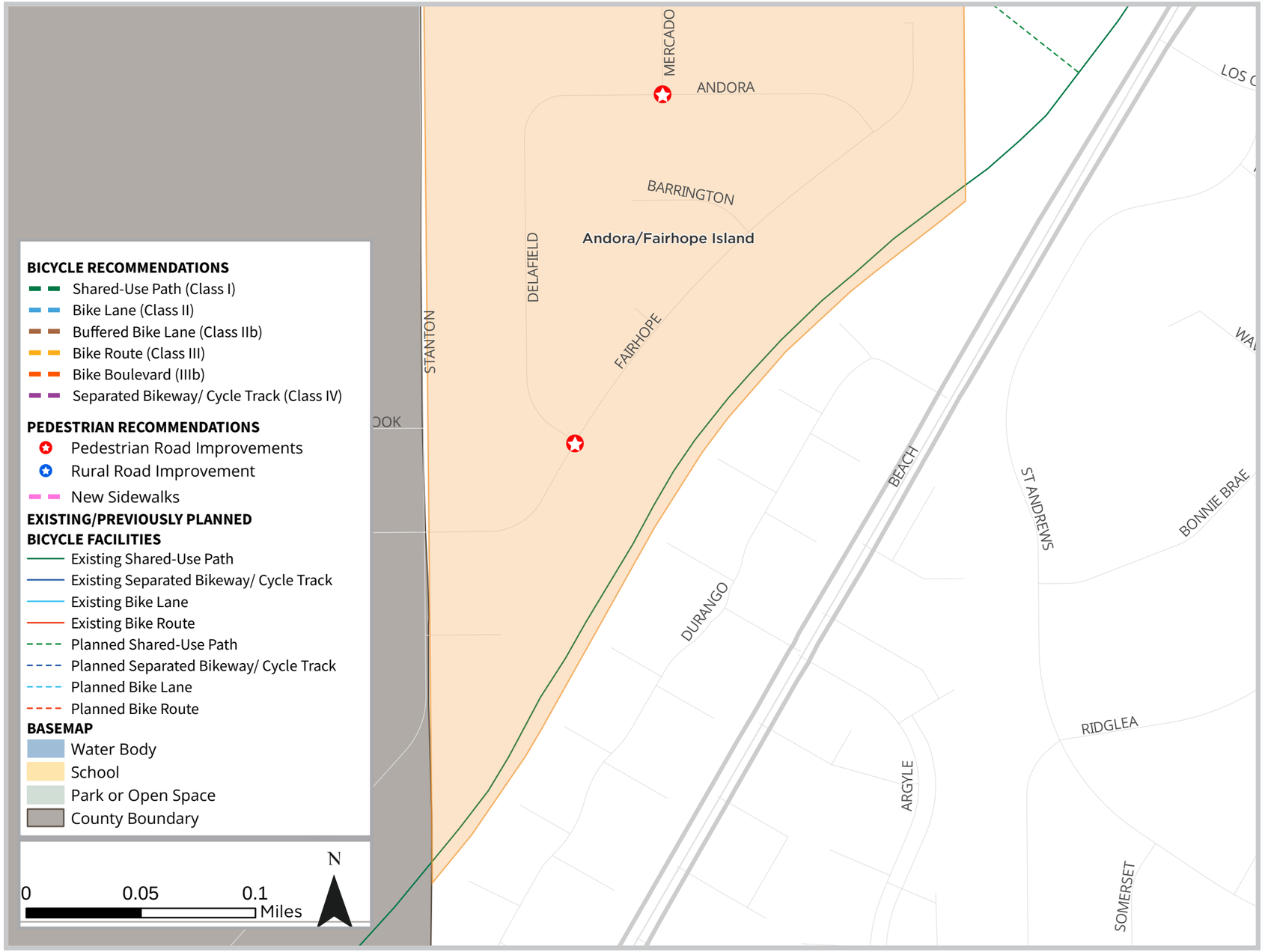
WHAT DID WE HEAR?

Although there were no community comments in Andora/Fairhope Island, survey responses from the zip codes near or in this area showed most residents only feel somewhat safe walking in their neighborhoods and would like to see improved pedestrian facilities. All recommendations are preliminary in nature and must be studied further through the OCPW process for the ultimate justification and implementation.

PEDESTRIAN RECOMMENDATIONS

Recommended pedestrian infrastructure in Andora/Fairhope Island includes:

- High visibility crosswalks



Carbon Canyon

SUPERVISORIAL DISTRICT 4

Context and Background

Carbon Canyon is an unincorporated area east of the City of Brea and north of the City of Yorba Linda. It is comprised primarily of open space and agricultural land. Carbon Canyon does not have any OCFCD-owned flood control channels that are suitable for pathway development.

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 28** on the next page and described in the following sections.

BICYCLE NETWORK

As shown in **Figure 28** and **Table 13**, Carbon Canyon has 1.74 miles of existing bikeways, the majority of which is a Class I shared-use path running through Carbon Canyon Regional Park. There are also existing bicycle lanes along Valencia Avenue. Additionally, **Table 13** shows 0.24 miles of Class I shared-use path along Carbon Canyon Road proposed by OCTA in a previous plan.

PEDESTRIAN FACILITIES

Sidewalks exist along both sides of Valencia Avenue; though the pavement is in good condition overall, there are multiple sign posts and utility poles and boxes that could be a barrier to people walking or using mobility devices. Sidewalks do not exist along the south side of Carbon Canyon Road, so pedestrians must cross to the north side to travel along the corridor. There are ADA-compliant curb ramps and marked crosswalks at signalized intersections along Valencia Avenue and Carbon Canyon Road. These marked crosswalks could be enhanced to be more visible, particularly for people crossing the right-turn pockets. Pork chops and pedestrian refuge islands exist at multiple crossings, such as at the intersection of Carbon Canyon Road and Santa Fe Road.

TABLE 13 Existing Bicycle Network (Miles)

Facility Type	Existing	Proposed by OCTA
Class I Shared-Use Path	1.10	0.24
Class II Bicycle Lanes	0.68	0.00
Total	**1.78**	**0.24**



Orange County Unincorporated Area

Active Transportation Plan

Carbon Canyon

FIGURE 28 Carbon Canyon Existing Conditions

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

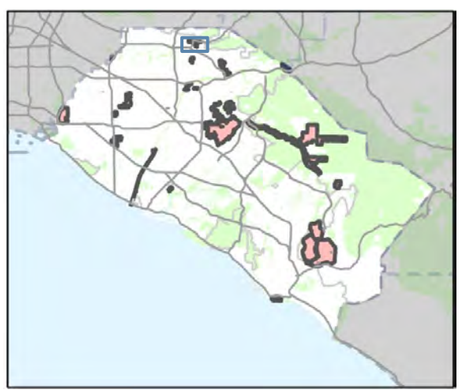
- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Rail Stop
- Bus Route
- Rail

BASEMAP

- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 0.1 0.2 Miles

N

Olinda Oil Museum and Trails
RUBEL
SANTE FE
WALKING BEAM
NARANJAL
LAMBERT
MORNING GLORY
FLOWER HILL
IROSE
BIRCH
ENTERPRISE
SURVEYOR
NASA
SATURN
AL
CONDOR
CARDINAL
VALLEY CROSSING
WHISTLE TRAIN
SANTE FE
GRANDVIEW
LANDMARK
Olinda Ranch Park
TANGERINE
BREA HILLS
CARBON CANYON
Brea Sports Park
VALENCIA
Carbon Canyon
ROSE
VESUVIUS
BLAKE
Carbon Canyon Regional Park
Chino Hills State Park
BLUE SPRUCE
RED PINE
LAVENDER
GARDENIA
VALLEY VIEW
BRAMBLE
GOLDEN POPPY

Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, a total of 2 collisions involving bicyclists and pedestrians were reported in Carbon Canyon during the study period, 50% of which involved people bicycling and 50% of which involved people walking.

PEDESTRIAN-INVOLVED COLLISIONS

Between 2009 to 2018, 1 collision occurred in Carbon Canyon that involved a person walking. This collision resulted in a visible injury.

The crash involved a pedestrian violation. It did not occur at an intersection. The absence or quality of pedestrian crossings throughout Orange County may lead to pedestrians to cross in unsafe conditions as they attempt to navigate vehicle traffic.

The collision occurred during the dark with no streetlights present. The collision occurred on Carbon Canyon Rd.

BICYCLE-INVOLVED COLLISIONS

During the same study period (2009 to 2018), 1 collision in Carbon Canyon involved a person riding a bicycle. This collision resulted in a severe injury. The crash involved improper turning. It did not occur at an intersection.

The collision occurred at dusk or dawn. **Figure 29** provides an overview of all bicycle-involved collisions in Carbon Canyon between 2009-2018.

Network Gap Analysis

Figure 30 analyzes the bicycle and pedestrian connectivity of existing low-stress areas of Carbon Canyon based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the city could include:

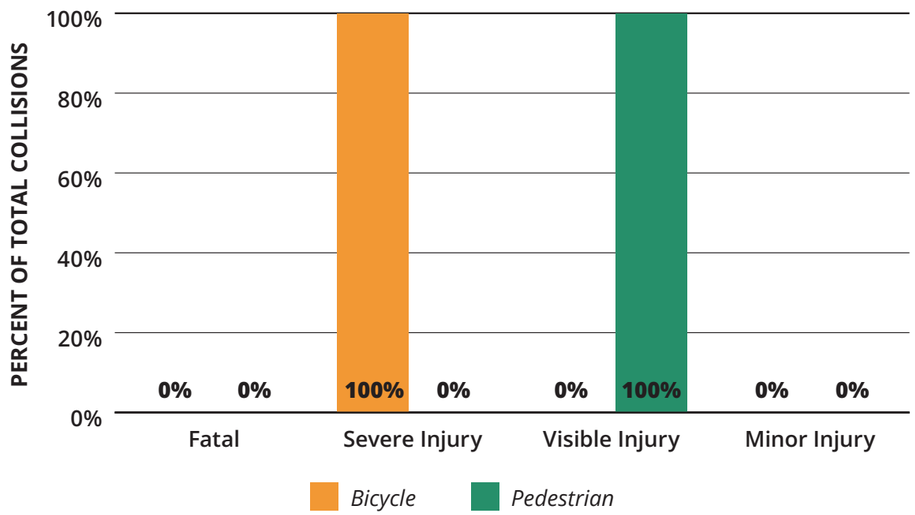
- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of Carbon Canyon where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis shows that most of the streets within Carbon Canyon exist as a single, low stress network, severed from the rest of the surrounding network by high-stress major arterials.

Based on the Needs and Gaps analysis, there are 3 low stress networks within Carbon Canyon.

TABLE 14 Crash Severity in Carbon Canyon



Orange County
Unincorporated Area

Active Transportation Plan

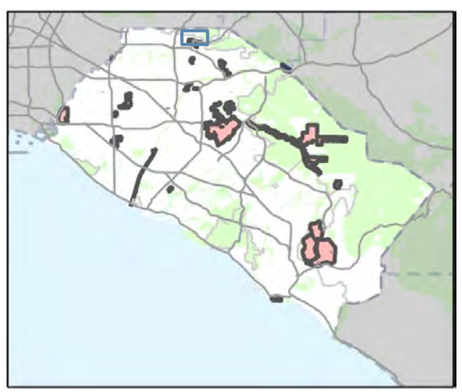
Carbon Canyon

PEDESTRIAN INVOLVED CRASHES
- Fatal
- Severe Injury
- Minor Injury
- No Injury

BICYCLIST INVOLVED CRASHES
- Fatal
- Severe Injury
- Minor Injury
- No Injury

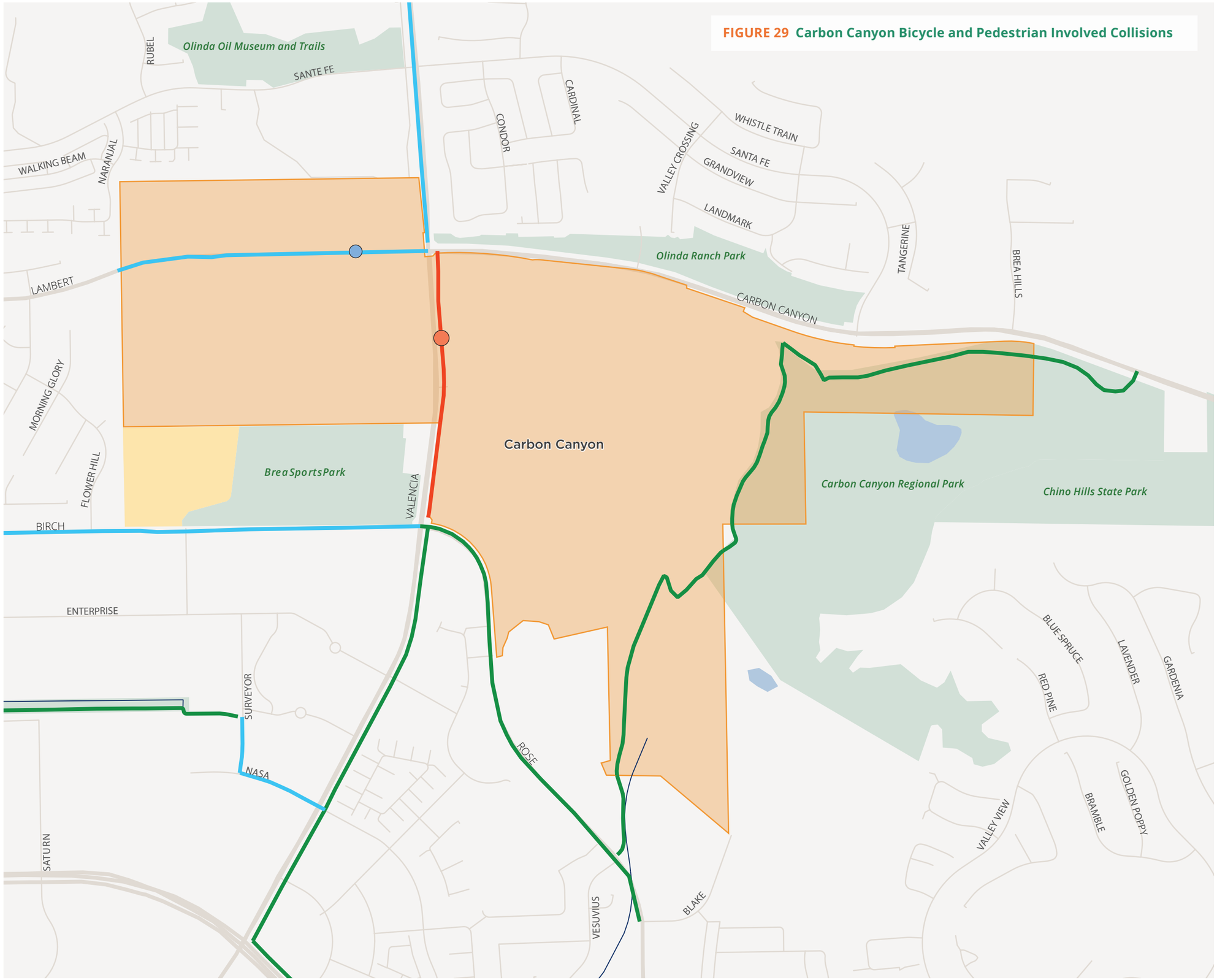
EXISTING BICYCLE FACILITIES
- Shared Use Path
- Bike Lane
- Bike Route
- Separated Bike Lane

BASEMAP
- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.1 0.2 Miles

FIGURE 29 Carbon Canyon Bicycle and Pedestrian Involved Collisions



Orange County Unincorporated Area

Active Transportation Plan

Carbon Canyon

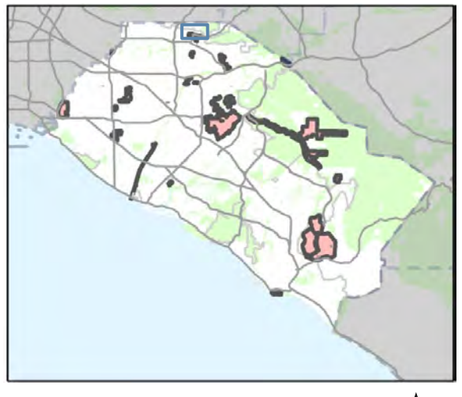
LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

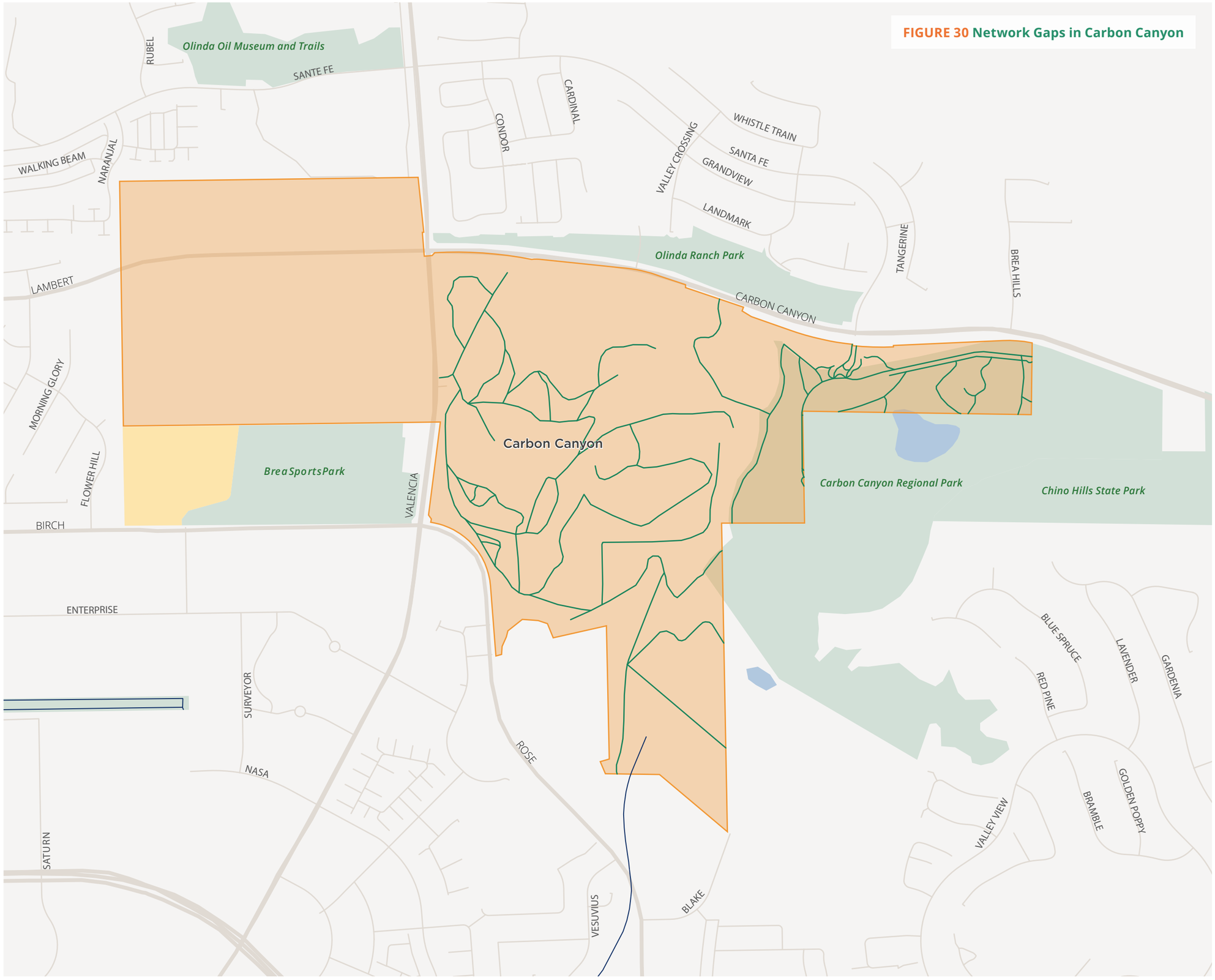
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.1 0.2 Miles

FIGURE 30 Network Gaps in Carbon Canyon



Recommendations

WHAT DID WE HEAR?

Community comments noted that the existing Class II on Lambert Road seemed too narrow. Community members requested separated bikeways that connect to each other.

PEDESTRIAN RECOMMENDATIONS

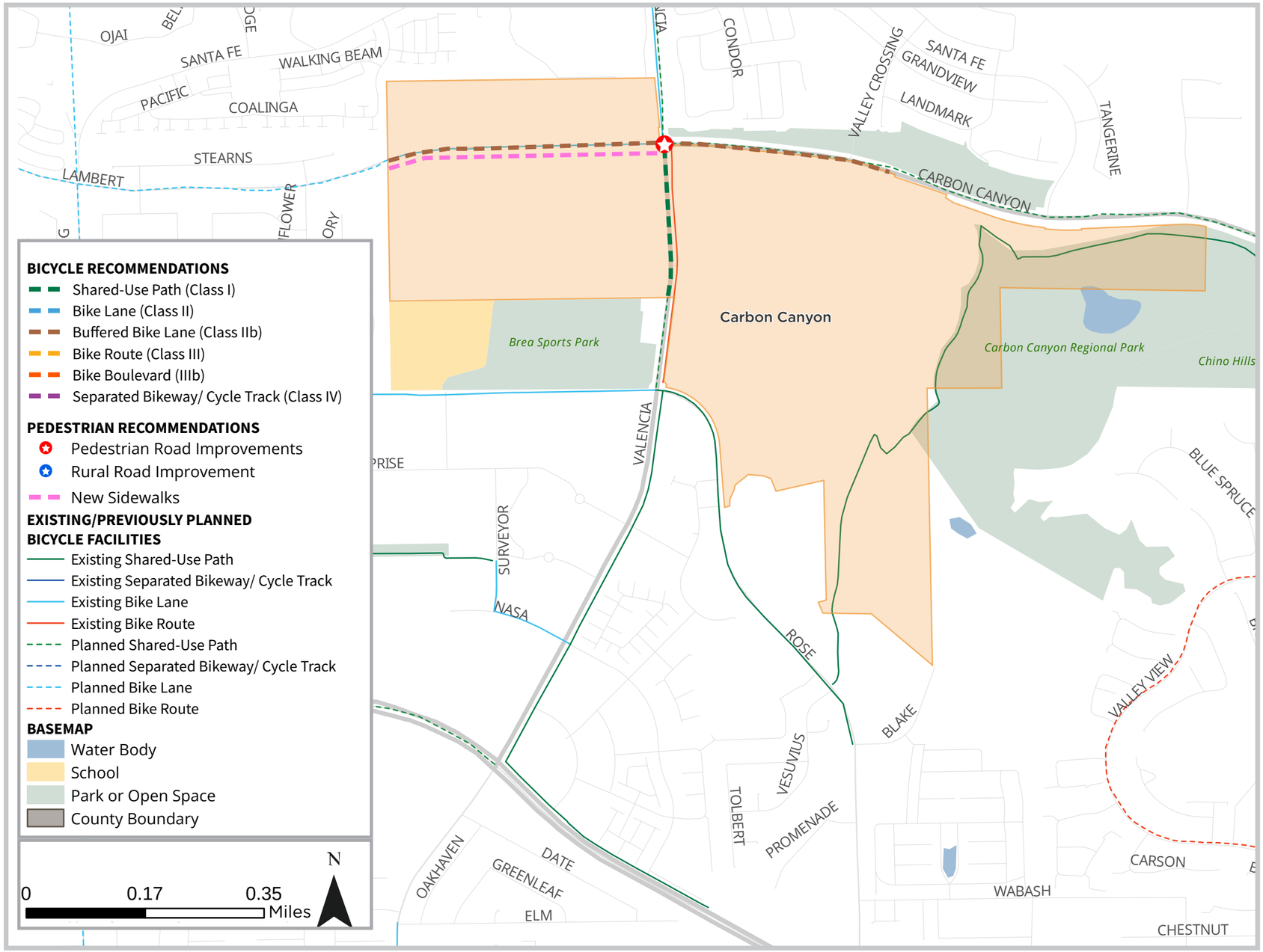
Recommended pedestrian infrastructure in Carbon Canyon includes:

- High visibility crosswalks
- Curb extensions
- New sidewalk

BICYCLE RECOMMENDATIONS

Bicycle recommendations in Carbon Canyon include:

- Class I 0.6 miles total including:
  - Valencia Ave connecting to previously planned Class I facilities on either side of the area boundary
- Class IIb 0.81 miles total including:
  - Lambert Rd/Carbon Canyon Rd separating bicyclists from vehicles on this high speed road



Costa Mesa Island

SUPERVISORIAL DISTRICT 5

Context and Background

Costa Mesa Island is located adjacent to the City of Costa Mesa to the north and west and the City of Newport Beach to the east and south. It is within the sphere of influence of the City of Costa Mesa. This unincorporated area spans approximately 195 acres and is home to 805 residents as of 2019. The community is about half single-family detached homes and about half multifamily housing, condos, and town-homes.

The community is served by Newport-Mesa Unified School District. Residents have access to Brentwood Park and Twinkle Park in the City of Costa Mesa, both within a half-mile radius of the community. Costa Mesa Island currently does not have any OCFCD-owned flood control channels that are suitable for pathway development.

COMMUTE TRENDS

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of current commute mode trends was conducted at the census block group level for Costa Mesa Island. Of the Costa Mesa Island residents 16 or older officially in the workforce, the ACS estimates that 1.4% walk and 1.3% use a bicycle to commute. However, bicycle ridership and rates of walking could be higher than this, as the ACS does not factor recreational trips or trips where commuters use more than one mode when traveling to work, such as taking a bus part way then riding a bicycle to the final destination.

ACCESS TO VEHICLES

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of households without access to a personal vehicle was conducted at the census tract level for Costa Mesa Island. The percentage of people without access to a motor vehicle is up to 4% of residents in some Census tracts. The average percentage of Costa Mesa Island residents without access to vehicles is 1.5%.

HEALTH + EQUITY

The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to identify communities that are disproportionately burdened by pollution. It combines multiple sources of pollution data (e.g., ozone concentrations and drinking water contaminants) with population indicators (e.g., birth weight and educational attainment). Communities that score in the most burdened 25% of the state are considered to be disadvantaged and receive a small advantage in California's competitive funding process, such as through the State's Active Transportation Program. Per the tool, Costa Mesa Island does not meet this threshold for disadvantaged communities.

Additionally, public health is shaped by other "non-health" policies and community characteristics, such as housing, education, economic, and social factors. These factors are included in the California Healthy Places Index (HPI) tool, developed by Public Health Alliance of Southern California, which determines how healthy a census tract is compared to others in the state. Per the HPI tool, Costa Mesa Island is considered healthier than approximately 77% of other California communities. Maps showing HPI and CalEnviroScreen scoring for Costa Mesa Island are included in Appendix C.

At a Glance

SIZE

195 Acres

POPULATION

805 Residents

COMMUNITY TYPE

Single-Family Detached Homes

Multifamily Housing, Condos, + Townhomes

LOCAL SCHOOLS

Newport-Mesa Unified School District

Walk Audit

The project team facilitated a client audit in October 2020 to evaluate existing conditions in Costa Mesa Island. The team observed that sidewalk conditions throughout Costa Mesa Island are fair with some utility obstructions that provide accessibility issues. There is also a need for safer pedestrian crossings throughout the community, as well as gap closure of the existing bikeway along Santa Ana Avenue in adjacent jurisdictions. More details about audit observations can be found in Appendix B.

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 31** on the next page and described in the following sections.

BICYCLE NETWORK

As shown in **Figure 31** and **Table 15**, there are 0.56 miles of existing bikeways in Costa Mesa Island, the Class II bike lanes along Irvine Avenue. Certain segments of Irvine Avenue have wide travel lanes that may be able to accommodate buffers added to the existing bicycle lanes. West of Costa Mesa Island, Santa Ana Avenue has existing Class II bicycle lanes, which fit because parking has been removed on one side of the street. However, this bikeway ends at the border of Costa Mesa Island. Additionally, **Table 15** includes 0.2 miles of Class II bicycle lanes along University Drive proposed by OCTA in a previous plan.

PEDESTRIAN FACILITIES

Sidewalks exist on both sides of most streets in Costa Mesa Island. However, there are some gaps along University Avenue and Santa Ana Avenue. The County is currently working on a sidewalk gap closure project along University Drive, which should create a continuous sidewalk along University. The sidewalks on the north side of Irvine Avenue have a lot of existing utilities/other boxes that could cause some accessibility issues. Crosswalks are marked at signalized intersections in and around the community, though some are not very visible. The County is building a pocket park at the corner of University and Santa Ana. Currently, there are standard marked crosswalks at this intersection.



TABLE 15 Existing Bicycle Network (Miles)

Facility Type	Existing	Proposed by OCTA
Class I Shared-Use Path	0.56	0.20
Total	**0.56**	**0.20**

Orange County Unincorporated Area

Active Transportation Plan

Costa Mesa Island

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Rail Stop
- Bus Route
- Rail

BASEMAP

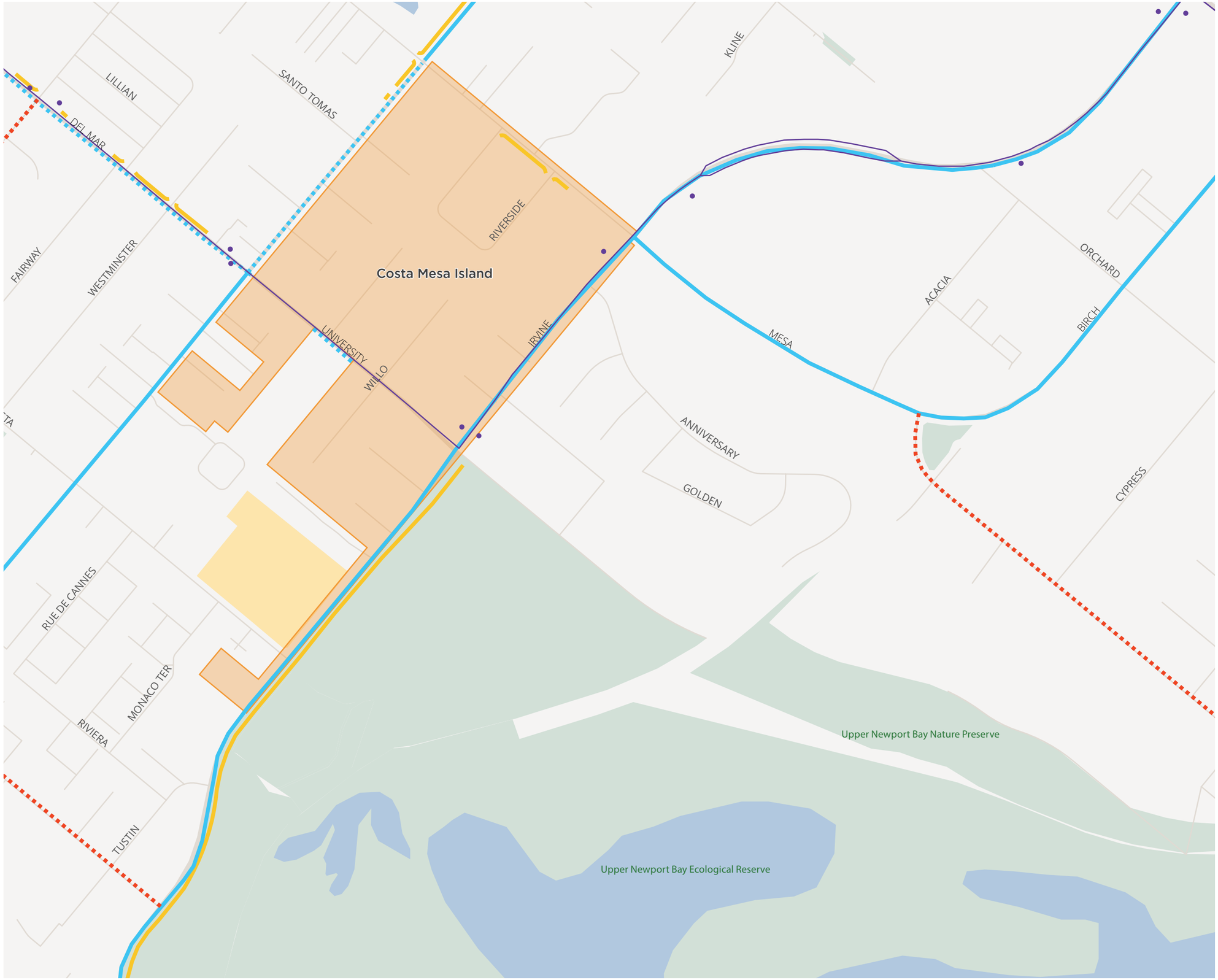
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 0.05 0.1 Miles

N



Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, a total of 7 collisions involving bicyclists and pedestrians were reported in Costa Mesa Island during the study period, 29% of which involved people bicycling and 71% of which involved people walking.

PEDESTRIAN-INVOLVED COLLISIONS

Between 2009 to 2018, 5 collisions occurred in Costa Mesa Island that involved a person walking. 1 (20%) of these were fatal collisions and 1 (20%) resulted in a severe injury.

The highest crash violation was due to pedestrian right of way and pedestrian violations (40% each). 20% of pedestrian collisions occurred at an intersection. The absence or quality of pedestrian crossings throughout Orange County may lead to pedestrians to cross in unsafe conditions as they attempt to navigate vehicle traffic.

The majority of these pedestrian related collisions occurred during the daylight (60%) followed by dusk/dawn and at night with streetlights present (20% each). Many collisions involving pedestrians occurred on Irvine Ave (**Figure 32**).

BICYCLE-INVOLVED COLLISIONS

During the same study period (2009 to 2018), 2 collisions in Costa Mesa Island involved a person riding a bicycle. 1 (50%) bicycle collision resulted in a visible injury.

Crash violations were due to improper turning (50%) and automobile right of way (50%). No bicycle collisions occurred at an intersection.

The bicycle collisions occurred during daylight. **Figure 32** provides an overview of all bicycle-involved collisions in Costa Mesa Island between 2009-2018 and demonstrates collisions occurred on University Dr near Irvine Ave.

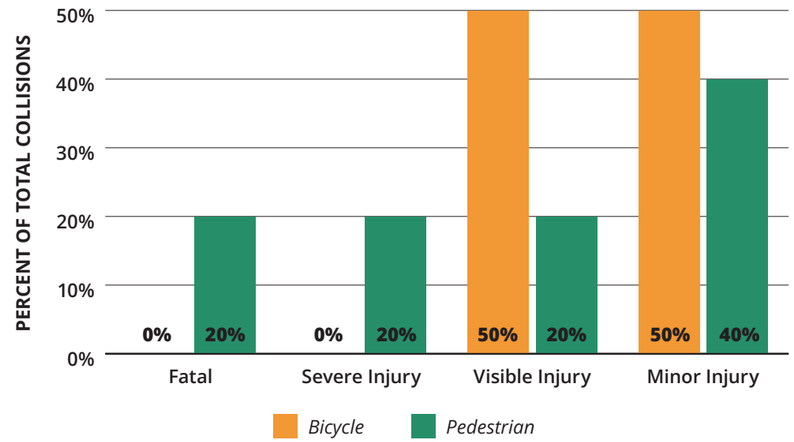
Network Gap Analysis

Figure 33 analyzes the bicycle and pedestrian connectivity of existing low-stress areas of Costa Mesa Island based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section. This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the city could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

TABLE 16 Crash Severity in Costa Mesa Island



Complete connections are displayed in the same color and create "low stress networks". When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of Costa Mesa Island where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis shows that there are many small pockets in the community, illustrating that stressful major routes are the only method of traveling between the various streets of the unincorporated area. This suggests that this part of the community will require intersection and crossing improvements across University Dr, Mesa Dr, Irvine Ave, and Santa Ana Ave to better facilitate pedestrian and bicycle travel between areas.

Based on the Needs and Gaps analysis, there are 34 low stress networks within Costa Mesa Island.

Orange County Unincorporated Area

Active Transportation Plan

Costa Mesa Island

PEDESTRIAN INVOLVED CRASHES
- Fatal
- Severe Injury
- Minor Injury
- No Injury

BICYCLIST INVOLVED CRASHES
- Fatal
- Severe Injury
- Minor Injury
- No Injury

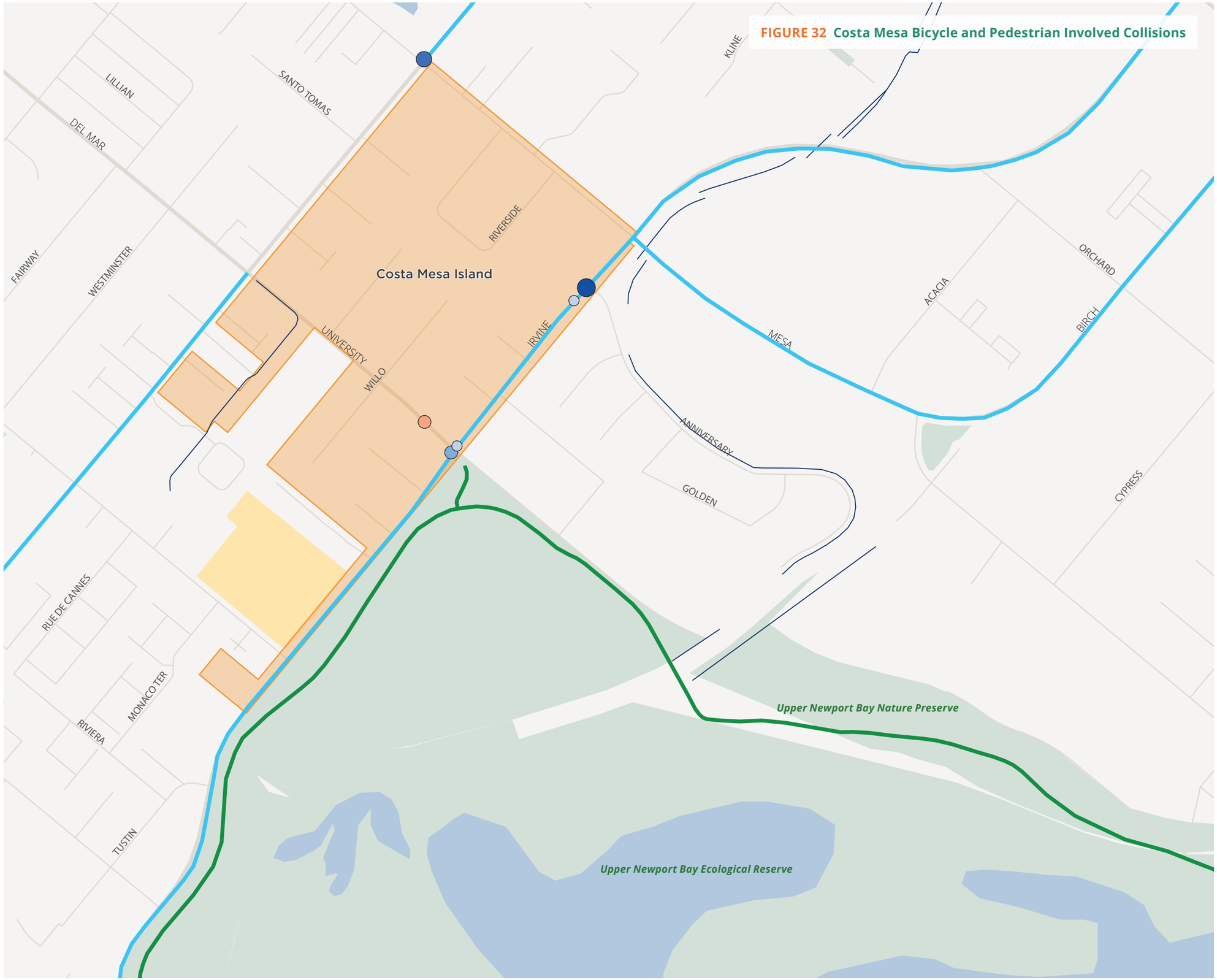
EXISTING BICYCLE FACILITIES
- Shared Use Path
- Bike Lane
- Bike Route
- Separated Bike Lane

BASEMAP
- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.05 0.1 Miles

FIGURE 32 Costa Mesa Bicycle and Pedestrian Involved Collisions



Orange County Unincorporated Area

Active Transportation Plan

Costa Mesa Island

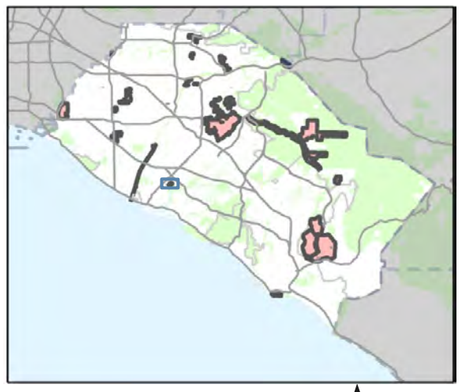
LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

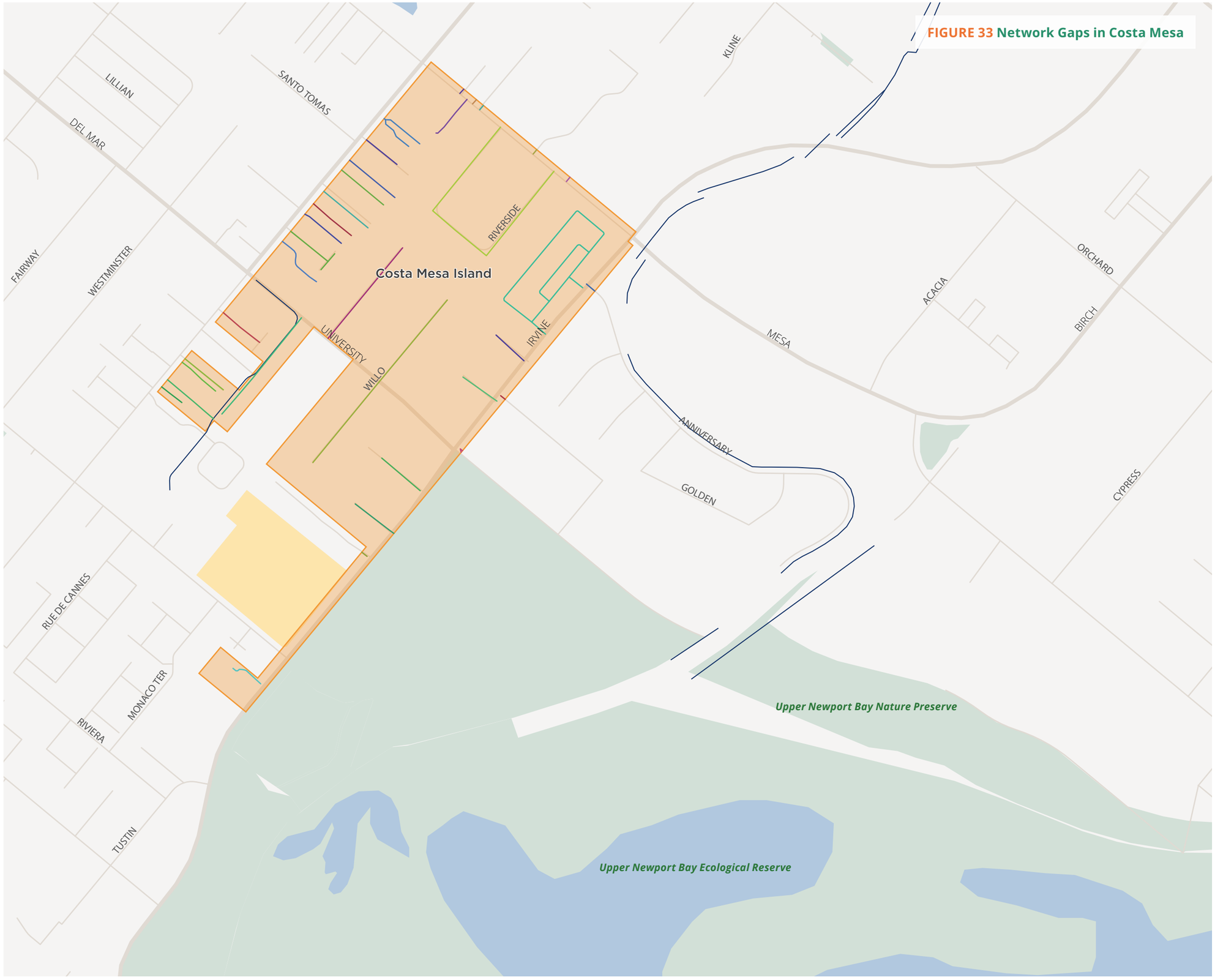
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.05 0.1 Miles

FIGURE 33 Network Gaps in Costa Mesa



Recommendations

WHAT DID WE HEAR?

Community members noted Irvine Avenue, Mesa Drive and Santa Ana Avenue as streets which could best use improvements. Digital walk audits identified locations in Costa Mesa where sidewalks are blocked with utility poles, and where enhanced crosswalks are needed.

PEDESTRIAN RECOMMENDATIONS

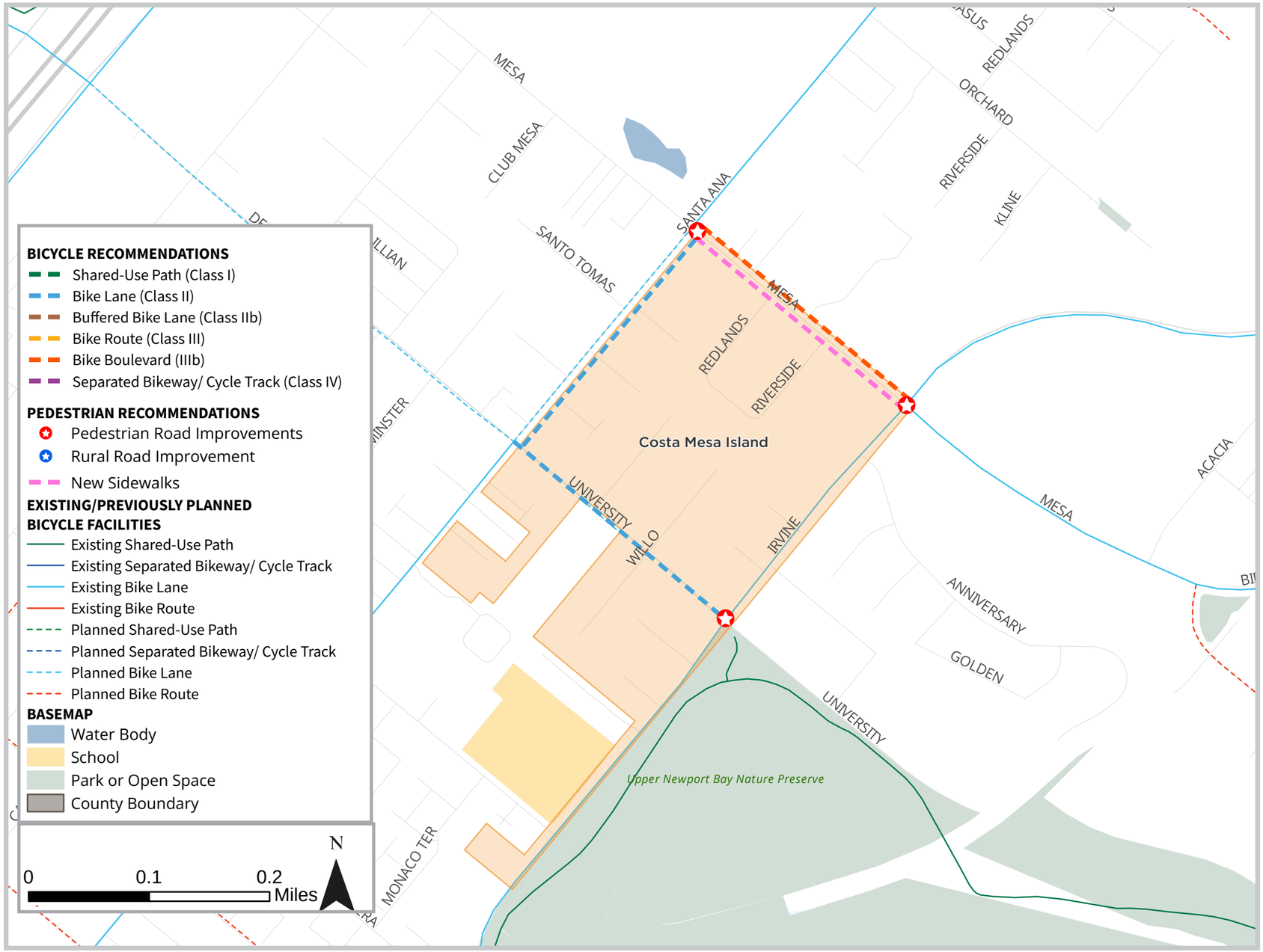
Recommended pedestrian infrastructure in Costa Mesa includes:

- High visibility crosswalks
- Curb extensions
- Sidewalk improvements

BICYCLE RECOMMENDATIONS

Bicycle recommendations in Costa Mesa Island include:

- Class II 0.5 miles total including:
  - University Dr between Santa Ana Ave and Irvine Ave connecting the existing Class II facilities
- Class IIIb 0.25 miles total including:
  - Mesa Dr between Santa Ana Ave and Irvine Ave connecting the existing Class II on Irvine Ave and the proposed Class II on Santa Ana Ave



Country Club Island

SUPERVISORIAL DISTRICT 1

Context and Background

Country Club Island is surrounded by the City of Yorba Linda and is within the sphere of influence of Yorba Linda. This unincorporated area spans approximately 222 acres and is home to 781 residents as of 2019. The community is entirely made up of single-family detached homes.

Country Club Island is served by Placentia-Yorba Linda Unified School District. Residents have access to Buena Vista Equestrian Park, Fairmont Knolls Park, Jessamyn West Park, and Roland E. Bigoner Park in Yorba Linda, all within a half-mile radius of the community. Country Club Island currently does not have any OCFCD-owned flood control channels that are suitable for pathway development.

COMMUTE TRENDS

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of current commute mode trends was conducted at the census block group level for Country Club Island. Of the Country Club Island residents 16 or older officially in the workforce, the ACS estimates that none walk to work and 0.9% use a bicycle to commute. However, bicycle ridership and rates of walking could be higher than this, as the ACS does not factor recreational trips or trips where commuters use more than one mode when traveling to work, such as taking a bus part way then riding a bicycle to the final destination.

ACCESS TO VEHICLES

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of households without access to a personal vehicle was conducted at the census tract level for Country Club Island. The average percentage of Country Club Island residents without access to vehicles is 1.3%, which varies across Census tracts.

HEALTH + EQUITY

The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to identify communities that are disproportionately burdened by pollution. It combines multiple sources of pollution data (e.g., ozone concentrations and drinking water contaminants) with population indicators (e.g., birth weight and educational attainment). Communities that score in the most burdened 25% of the state are considered to be disadvantaged and receive a small advantage in California's competitive funding process, such as through the State's Active Transportation Program. Per the tool, Country Club Island does not meet this threshold for disadvantaged communities.

Additionally, public health is shaped by other "non-health" policies and community characteristics, such as housing, education, economic, and social factors. These factors are included in the California Healthy Places Index (HPI) tool, developed by Public Health Alliance of Southern California, which determines how healthy a census tract is compared to others in the state. Per the HPI tool, Country Club Island is considered healthier than approximately 83% of other California communities. Maps showing HPI and CalEnviroScreen scoring for Country Club Island are included in Appendix C.

At a Glance

SIZE

222 Acres

POPULATION

781 Residents

COMMUNITY TYPE

Single-Family Detached Homes

LOCAL SCHOOLS

Placentia-Yorba Linda Unified School District

Walk Audit

The project team facilitated two audits to evaluate existing conditions in Country Club Island, one desktop audit in Fall 2020 and one combined community audit with Fairlynn Island in December 2020. During the audits, participants observed that Fairlynn Boulevard is a busy corridor that often experiences faster automobile speeds than posted by law. Community members are interested in exploring design features that will slow down vehicles not only along Fairlynn Boulevard but near other community destinations such as Esperanza High School. In addition, wayfinding signage along Fairlynn Boulevard would highlight the El Cajon Trail for cyclists traveling along the boulevard. More details about audit observations can be found in Appendix B.

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 34** and described in the following sections.

BICYCLE NETWORK

As shown in **Figure 34** and **Table 17**, Country Club Island's existing bike network is made up of 0.55 miles of Class II bicycle lanes and Class III bicycle routes. Kellogg Drive has bicycle lanes on both sides of the street for the length of the community. According to our data, Mountain View Avenue is classified as a Class III bicycle route; however, while Mountain View Avenue features signage and sharrows in the City of Yorba Linda, it does not have any signage or pavement markings in the Country Club Island portion.

TABLE 17 Existing Bicycle Network

Facility Type	Existing
Class II Bicycle Lanes	0.36
Class III Bicycle Route	0.19
Total	**0.55**

PEDESTRIAN FACILITIES

Sidewalks do not exist on many roads in Country Club Island. The central and southern parts of the community instead feature private pedestrian pathways through the golf courses, which are gated during some hours of the day. These pathways run throughout the length of Country Club Island, including a marked crossing to connect users north and south of Kellogg Drive and Parkside Drive.

Additionally, the County has an on-going sidewalk gap closure project and plans to remove the existing asphalt concrete sidewalk along 800 feet of Kellogg Drive, replacing it with a concrete sidewalk. This proposed project also involves the reconstruction of four driveway approaches at the crosswalks, construction of retaining curbs, adjustment of utilities, and the relocation of signage and rectangular rapid flashing beacons (RRFBs). These upgrades would improve pedestrian safety and connectivity/circulation by providing an ADA-compliant pedestrian path of travel.



Orange County Unincorporated Area

Active Transportation Plan

Country Club + Fairlynn Islands

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

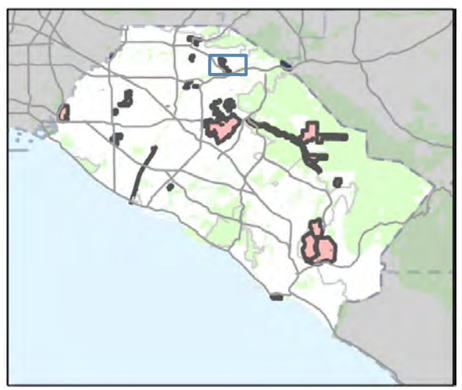
- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Rail Stop
- Bus Route
- Rail

BASEMAP

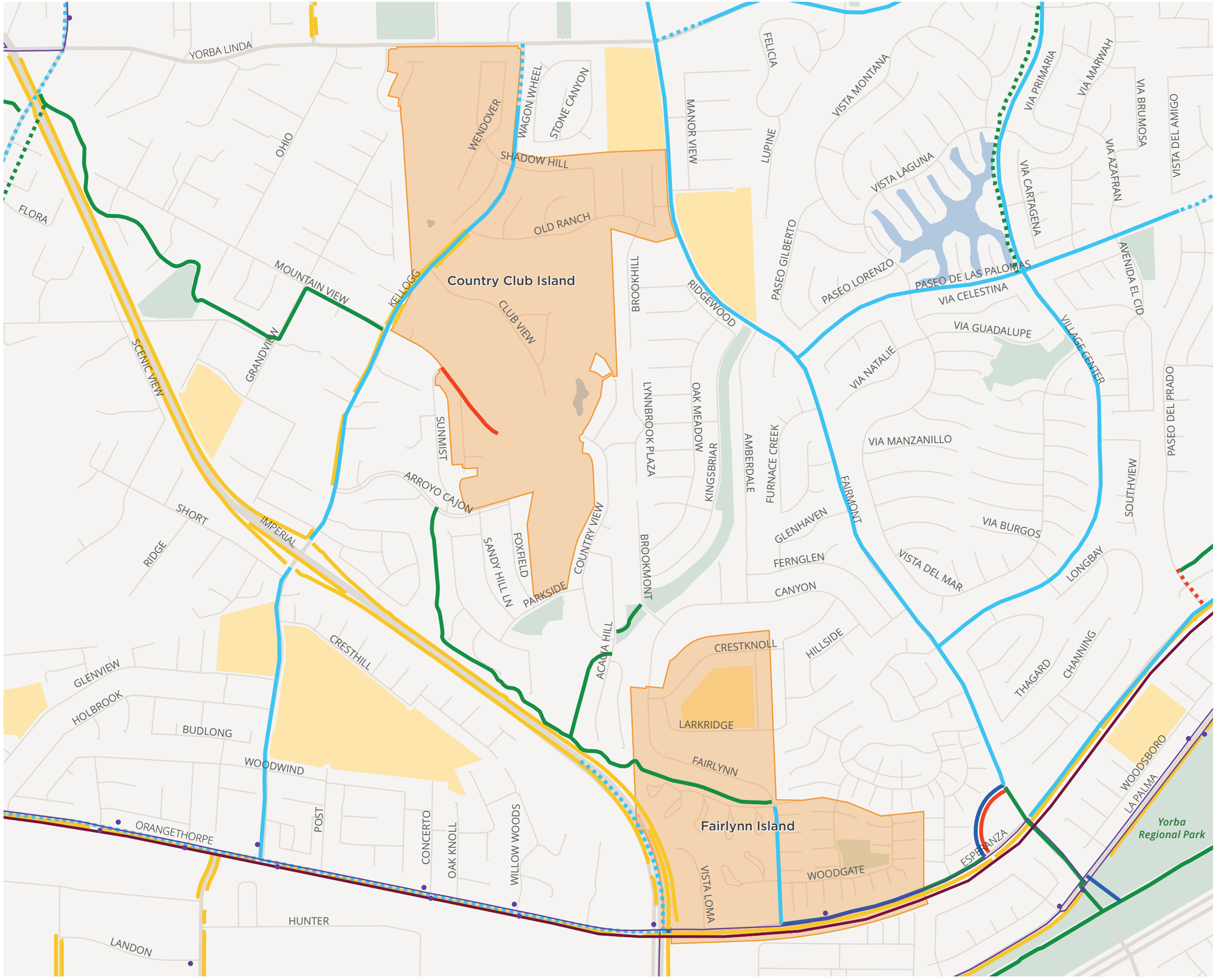
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 0.15 0.3 Miles

N



Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, there were no collisions that involved a pedestrian or bicyclist in Country Club Island.

Network Gap Analysis

Figure 35 analyzes the bicycle and pedestrian connectivity of existing low-stress areas of Anaheim Island based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the city could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of Country Club Island where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis demonstrates that there are several unconnected areas within Country Club Island severed by major arterials like Kellogg Dr. Intersection and crossing improvements across this major thoroughfare will better facilitate pedestrian and bicycle travel between the various areas.

Based on the Needs and Gaps analysis, there are 8 low stress networks within Country Club Island.



Orange County Unincorporated Area

Active Transportation Plan

Country Club + Fairlynn Islands

LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

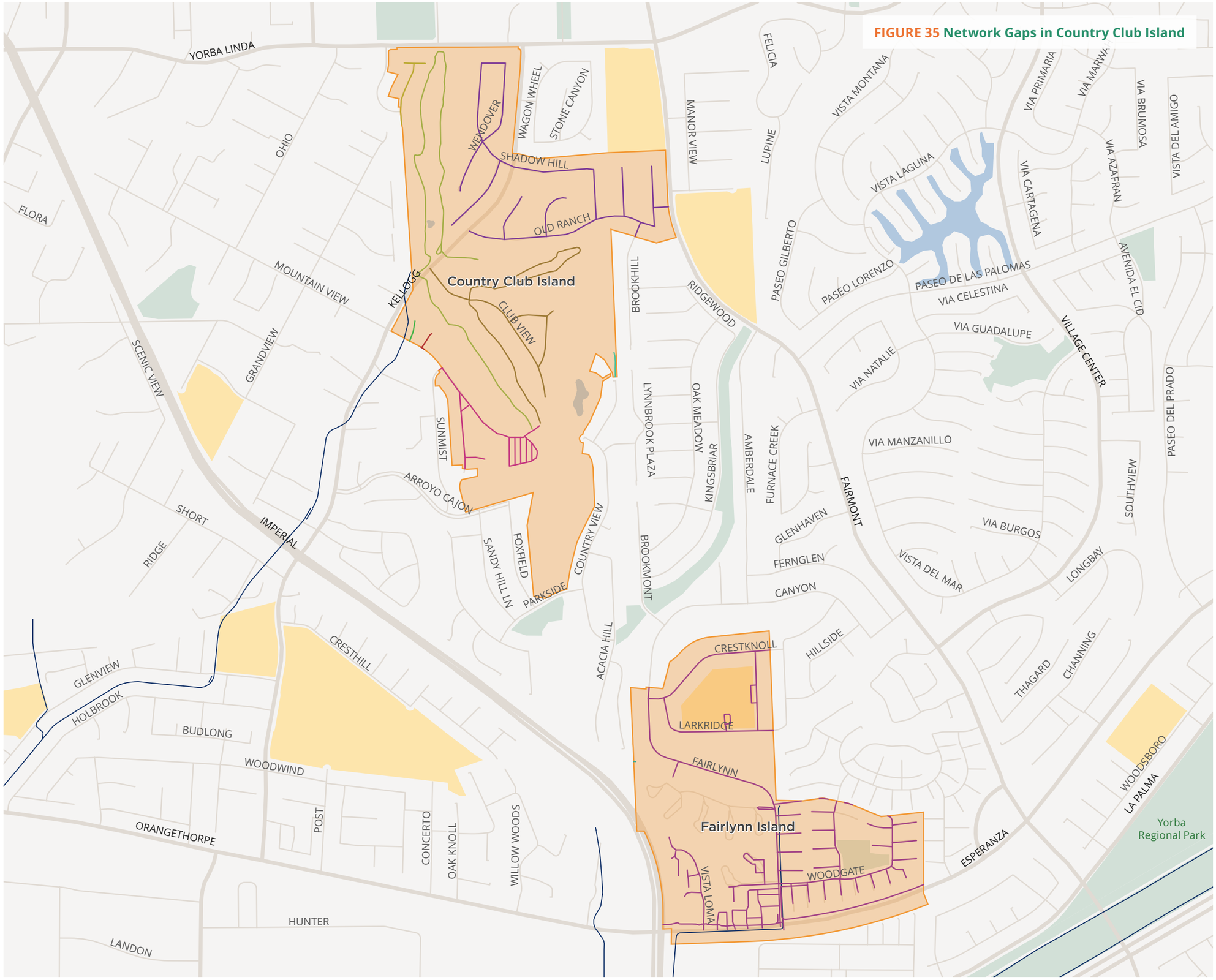
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.15 0.3 Miles

FIGURE 35 Network Gaps in Country Club Island



Recommendations

WHAT DID WE HEAR?

Public input comments stated that the missing sidewalk on Kellogg Drive makes walking difficult, particularly because cars tend to speed on this street. Survey results showed that Kellogg Drive and Yorba Linda Boulevard were frequently chosen as streets that needed pedestrian or bicycle improvements.

PEDESTRIAN RECOMMENDATIONS

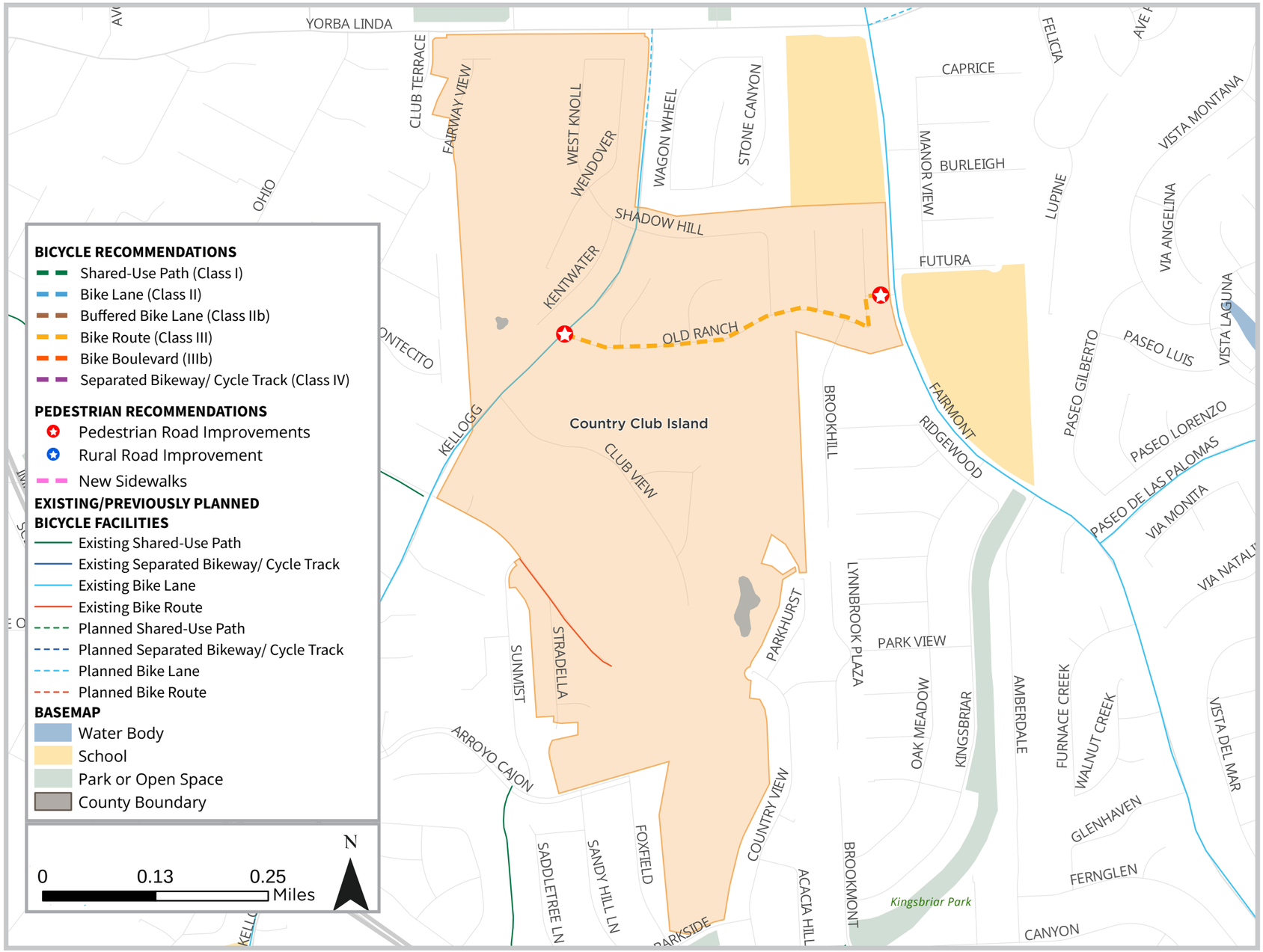
Recommended pedestrian infrastructure in Country Club Island includes:

- High visibility crosswalks
- Curb extensions
- Curb ramps

BICYCLE RECOMMENDATIONS

Bicycle recommendations in Country Club Island include:

- Class III 0.46 miles total including:
  - Old Ranch Road connecting the existing Class II facilities on Kellogg Dr and Fairmont Dr



Dale/Augusta Island

SUPERVISORIAL DISTRICT 1

Context and Background

Dale/Augusta Island is surrounded by the City of Stanton and within the sphere of influence of Stanton. This unincorporated area spans approximately 99 acres and is home to 2,180 residents as of 2019. The community is entirely made up of single-family detached homes.

Dale/Augusta Island is served by Westminster School District. Residents have access to Magnolia Park in the City of Garden Grove and Premier and Stanton Parks in the City of Stanton, all within a half-mile radius of the community. Dale/Augusta Island currently does not have any OCFCD-owned flood control channels that are suitable for pathway development.

COMMUTE TRENDS

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of current commute mode trends was conducted at the census block group level for Dale/Augusta Island. Of the Dale/Augusta Island residents 16 or older officially in the workforce, the ACS estimates that none walk to work and 1.8% use a bicycle to commute. However, bicycle ridership and rates of walking could be higher than this, as the ACS does not factor recreational trips or trips where commuters use more than one mode when traveling to work, such as taking a bus part way then riding a bicycle to the final destination.

ACCESS TO VEHICLES

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of households without access to a personal vehicle was conducted at the census tract level for Dale/Augusta Island. The percentage of people without access to a motor vehicle ranges between 2% to nearly 11% of residents across varying Census tracts. The average percentage of Dale/Augusta Island residents without access to vehicles is 7.7%.

HEALTH + EQUITY

The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to identify communities that are disproportionately burdened by pollution. It combines multiple sources of pollution data (e.g., ozone concentrations and drinking water contaminants) with population indicators (e.g., birth weight and educational attainment). Communities that score in the most burdened 25% of the state are considered to be disadvantaged and receive a small advantage in California's competitive funding process, such as through the State's Active Transportation Program. Per the tool, Dale/Augusta Island does not meet this threshold for the most disadvantaged communities, but does experience more pollution burden than other areas.

Additionally, public health is shaped by other "non-health" policies and community characteristics, such as housing, education, economic, and social factors. These factors are included in the California Healthy Places Index (HPI) tool, developed by Public Health Alliance of Southern California, which determines how healthy a census tract is compared to others in the state. Per the HPI tool, Dale/Augusta Island experiences worse health than approximately 70% of other California communities. Maps showing HPI and CalEnviroScreen scoring for Dale/Augusta are included in Appendix C.

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 36** on the next page and described in the following sections.

BICYCLE NETWORK

As shown in **Figure 36**, there are currently no existing bikeways in the Dale/Augusta Island. However, in a previous plan, OCTA proposed 0.4 miles of Class III bike routes and 0.25 miles of Class II bicycle lanes.

At a Glance

SIZE

99 Acres

POPULATION

2,180 Residents

COMMUNITY TYPE

Single-Family Detached Homes

LOCAL SCHOOLS

Westminster School District

PEDESTRIAN FACILITIES

Sidewalks exist on both sides of roadways in Dale/Augusta Island and ADA-compliant curb ramps are located at most corners. Marked crosswalks exist at major intersections along Chapman Avenue and Orangewood Avenue. However, the distance between the marked crosswalks at Dale/Orangewood and Dale/Chapman is quite long. An additional marked crosswalk across Dale Street, such as at Hopi Road or Augusta Drive, could provide a safe crossing option and encourage people to cross at legal intersections.

Orange County Unincorporated Area

Active Transportation Plan

Anaheim, Dale/Augusta, Katella/ Rustic, + Mac/Syracuse Islands

FIGURE 36 Dale/Augusta Island Existing Conditions

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

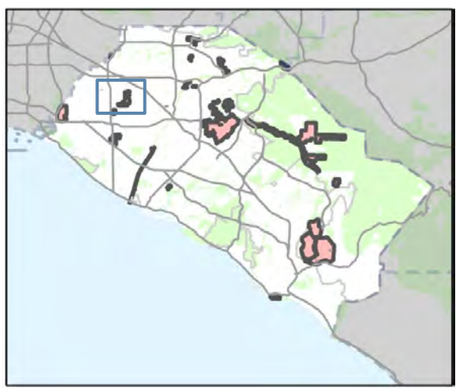
- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Rail Stop
- Bus Route
- Rail

BASEMAP

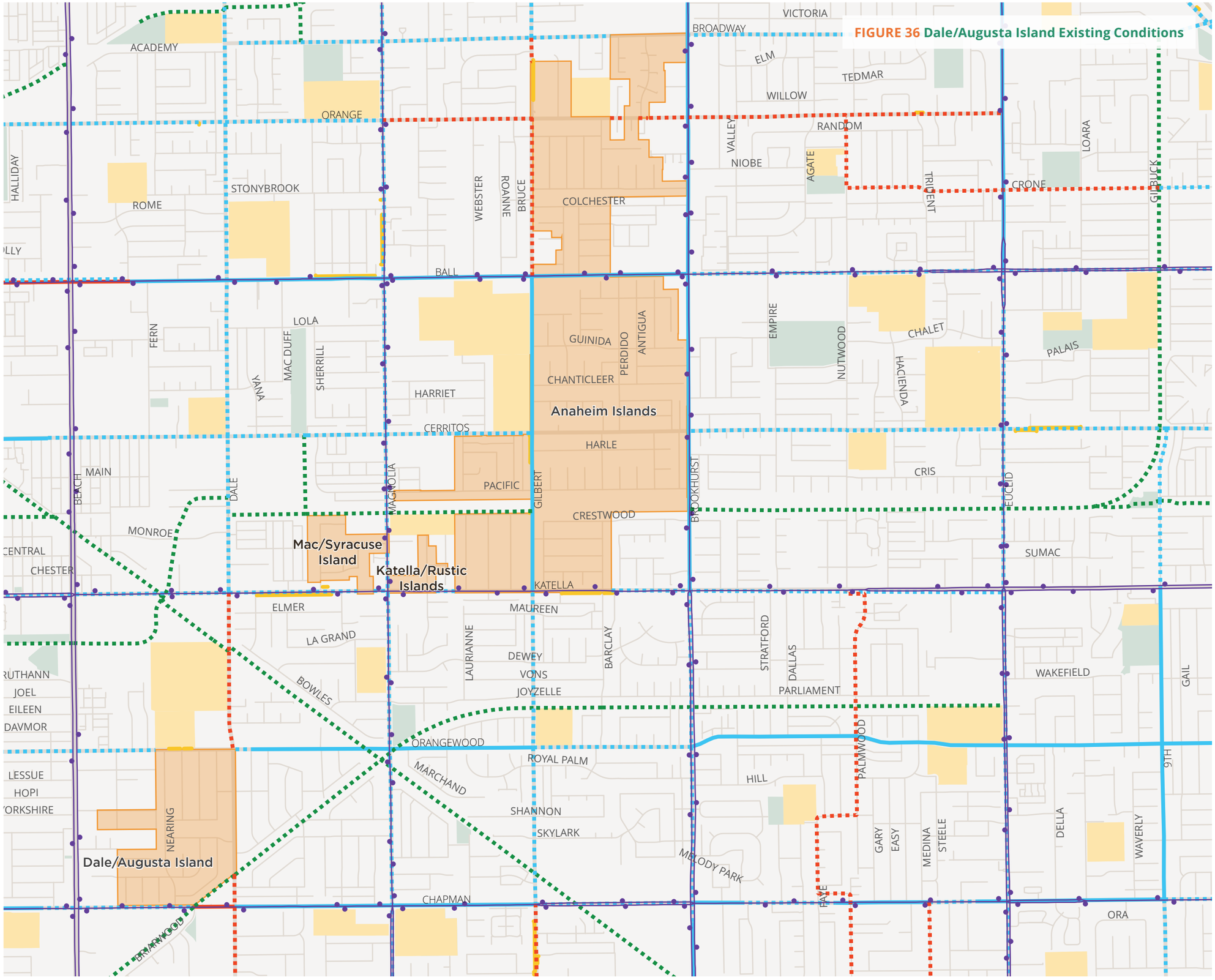
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 0.25 0.5 Miles

N



Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, a total of 9 collisions involving bicyclists and pedestrians were reported in Dale/Augusta Island during the study period, 78% of which involved people bicycling and 22% of which involved people walking.

PEDESTRIAN-INVOLVED COLLISIONS

Between 2009 to 2018, 2 collisions occurred in Dale/Augusta Island that involved a person walking. None of these collisions resulted in a fatal or severe injury.

Crash violations were due to pedestrian right of way (50%) and pedestrian violation (50%). No pedestrian collisions occurred at an intersection. The absence or quality of pedestrian crossings throughout Orange County may lead to pedestrians to cross in unsafe conditions as they attempt to navigate vehicle traffic.

The pedestrian related collisions occurred during the daylight. Collisions involving pedestrians occurred on Dale St (**Figure 38**).

BICYCLE-INVOLVED COLLISIONS

During the same study period (2009 to 2018), 7 collisions in Dale/August Island involved a person riding a bicycle. 0 (0%) of these were fatal collisions, 0 (0 %) resulted in severe injury, and 3 (43%) bicycle collisions resulted in a visible injury.

The highest crash violation was due to wrong side of road (43%) followed by improper turning (29%) and unsafe speed (14%). 1 (14%) of all bicycle collisions occurred at an intersection.

The majority of these bicycle collisions occurred during the daylight (43%) and dusk/dawn (43%). **Figure 38** provides an overview of all bicycle-involved collisions in Dale/Augusta Island between 2009-2018 and demonstrates a concentration of collisions along Dale St.

Network Gap Analysis

Figure 39 analyzes the bicycle and pedestrian connectivity of existing low-stress areas of Dale/Augusta Island based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the city could include:

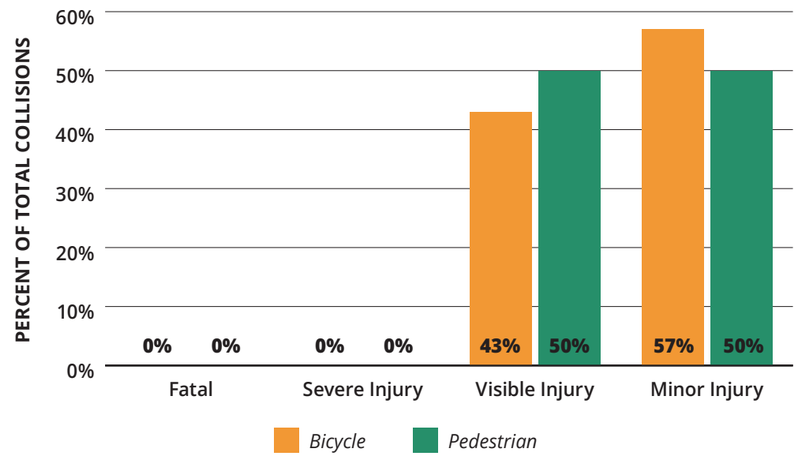
- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of Dale/Augusta Island where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis shows that Dale/Augusta functions as one large connected pocket within the same residential neighborhood, indicating a good network of low-stress streets within the unincorporated area. However, the analysis shows that there are barriers crossing high-stressful roadways like Chapman Ave or Dale St. This suggests that this part of the community will require intersection and crossing improvements to better facilitate pedestrian and bicycle travel between areas.

Based on the Needs and Gaps analysis, there are 3 low stress networks within Dale/Augusta Island.

FIGURE 37 Crash Severity in Dale/Augusta Island



Orange County Unincorporated Area

Active Transportation Plan

Anaheim, Dale/Augusta, Katella/ Rustic, + Mac/Syracuse Islands

PEDESTRIAN INVOLVED CRASHES

- Fatal
- Severe Injury
- Minor Injury
- No Injury

BICYCLIST INVOLVED CRASHES

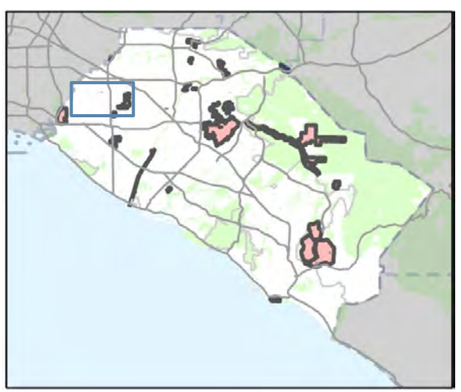
- Fatal
- Severe Injury
- Minor Injury
- No Injury

EXISTING BICYCLE FACILITIES

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

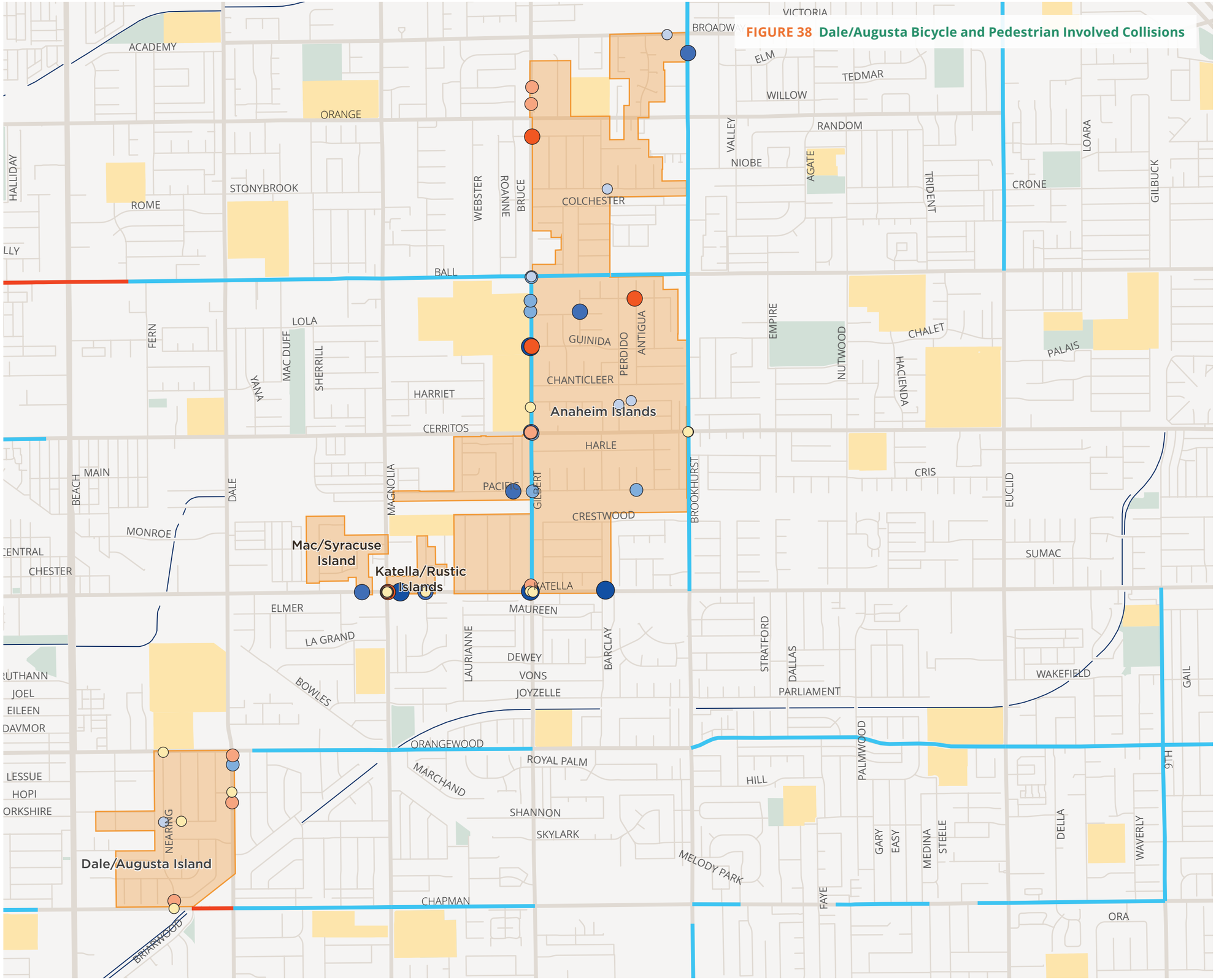
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas



0 0.25 0.5 Miles

FIGURE 38 Dale/Augusta Bicycle and Pedestrian Involved Collisions



Orange County Unincorporated Area

Active Transportation Plan

Anaheim, Dale/Augusta, Katella/ Rustic, + Mac/Syracuse Islands

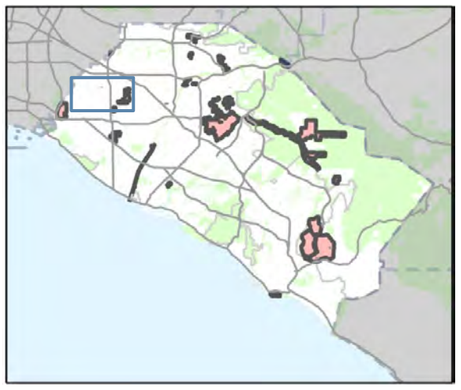
LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

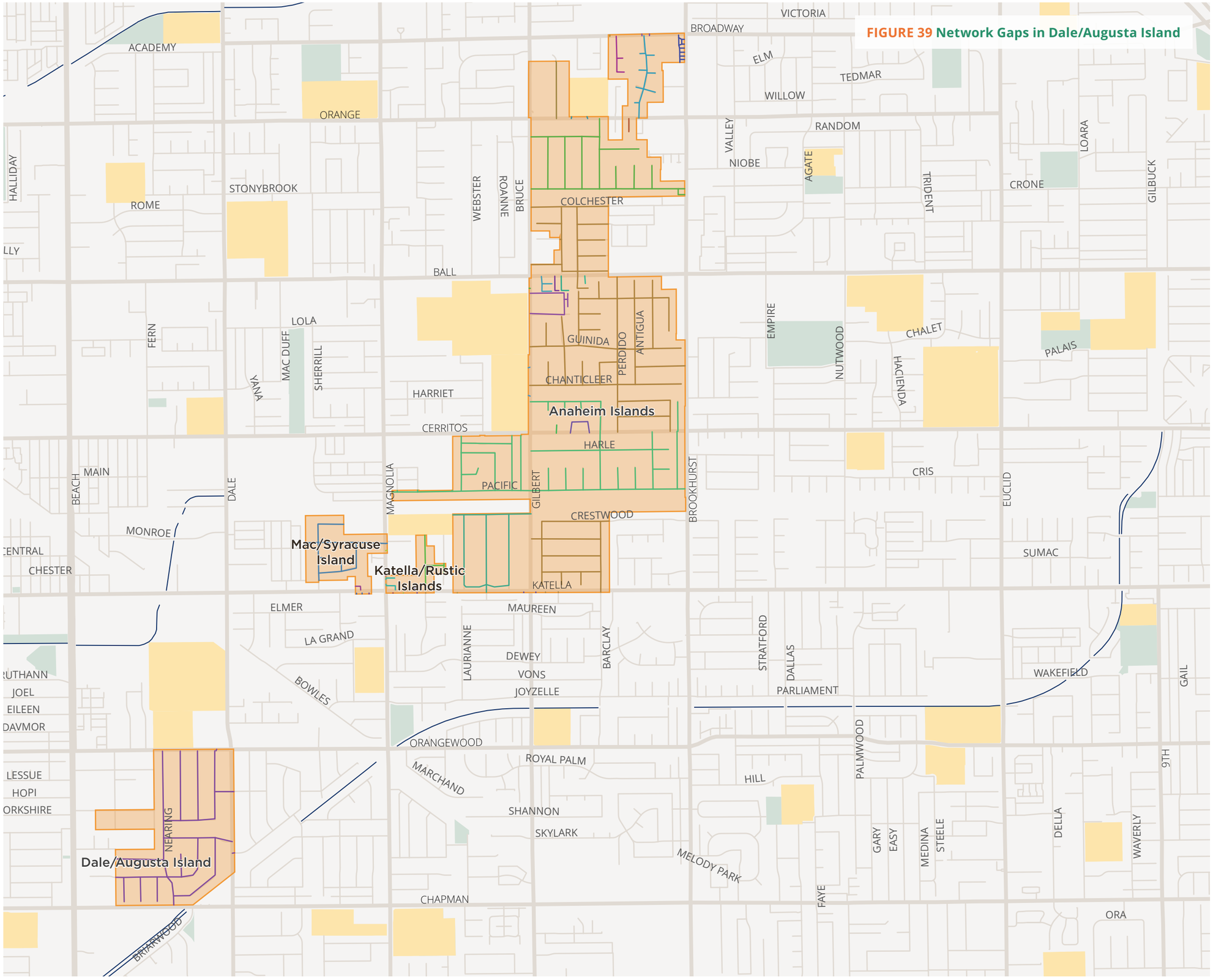
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas



0 0.25 0.5 Miles

FIGURE 39 Network Gaps in Dale/Augusta Island



Recommendations

WHAT DID WE HEAR?

Community members commented that separated bike paths, particularly at the flood control channel in Dale/Augusta Island would make biking feel safer. Additionally, Chapman Avenue was chosen as a street that most needs active transportation improvements in the area.

PEDESTRIAN RECOMMENDATIONS

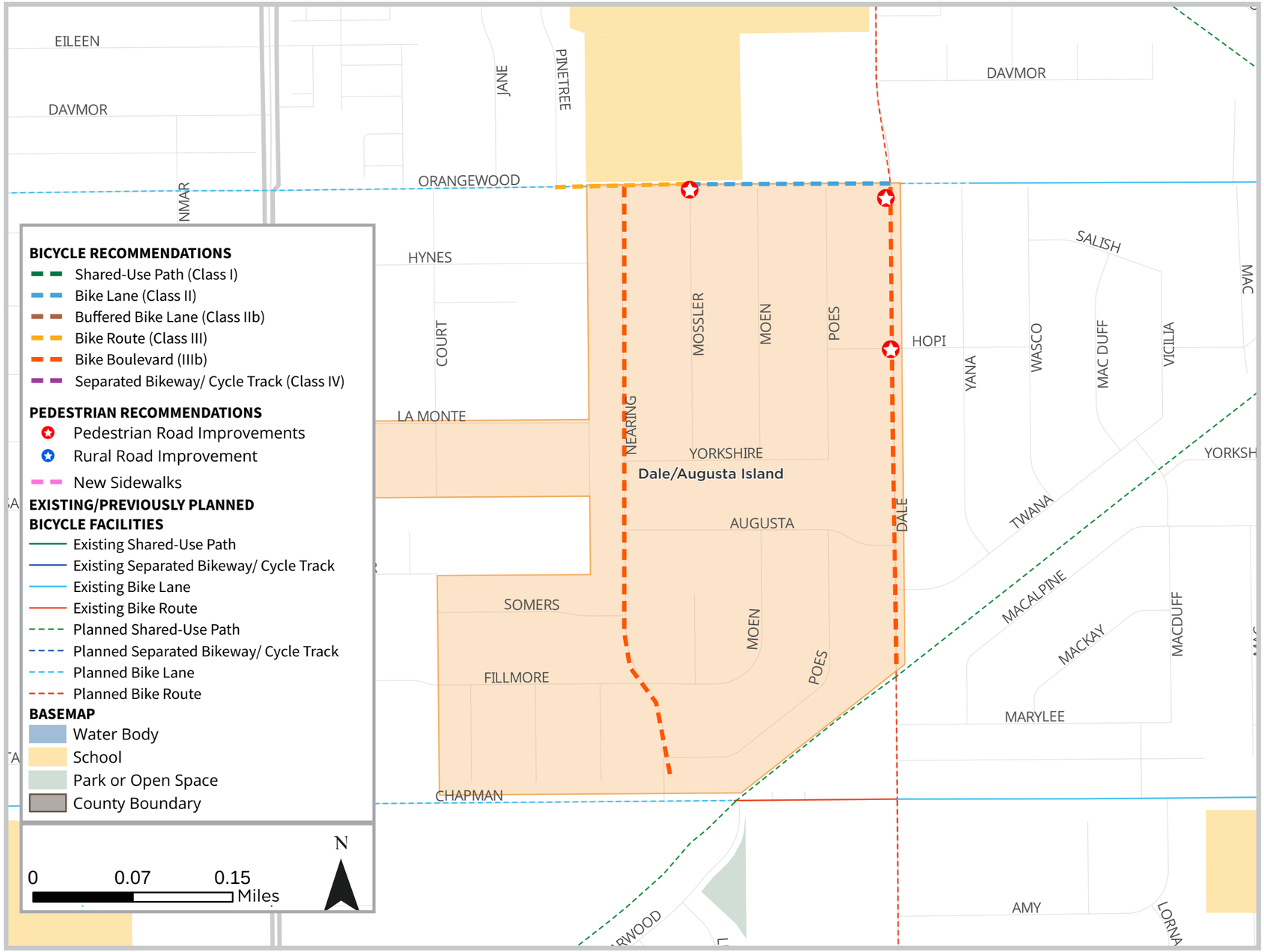
Recommended pedestrian infrastructure in Dale/Augusta Island includes:

- High visibility crosswalks
- Curb extensions
- Curb ramps

BICYCLE RECOMMENDATIONS

Bicycle recommendations in Dale/Augusta Island include:

- Class II 0.16 miles total
- Class III 0.10 miles total
- Class IIIb 0.88 miles total, including:
  - Nearing Dr, creating a low stress bikeway between the proposed bike lanes on Orangewood Ave and Chapman Ave
  - Dale St, connecting the proposed Class III bike routes outside of the area boundary



Dana Point Harbor

SUPERVISORIAL DISTRICT 5

Context and Background

Dana Point Harbor is a County-owned recreational harbor and marina in southern Orange County. It is adjacent to the City of Dana Point, near the Cities of San Juan Capistrano and Laguna Niguel. The harbor is predominantly for boat docking, with numerous car parking lots abutting the marinas. In the northeast part of Dana Point Harbor, there are multiple restaurants and retail stores. Dana Point Harbor also has County-operated beaches, scenic outlooks, and playgrounds. Dana Point Harbor does not have any OCFCD-owned flood control channels that are suitable for pathway development.

WALK AUDIT

The project team facilitated a desktop audit in Fall 2020 to evaluate existing conditions in Dana Point Harbor. The team observed that biking conditions could feel unsafe or uncomfortable along Dana Point Harbor Drive, particularly near the existing traffic circle. Additionally, pedestrian crossings exist at many intersections and parking lots throughout the area, but they could be updated so they are high-visibility. More details about audit observations can be found in Appendix B.

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 40** on the next page and described in the following sections.

BICYCLE NETWORK

Dana Point Harbor's existing bikeway network comprises of 4.46 miles of Class II bicycle lanes on both sides of Dana Point Harbor Drive. The bicycle lanes have numerous pavement markings and signage, though the striping drops off at the existing traffic circle. This could cause conflicts between bicyclists and drivers, as could the numerous driveways and side streets along this main road.

PEDESTRIAN FACILITIES

Sidewalks exist on the south side of Dana Point Harbor Drive, as well as on side streets that lead to the many scenic outlooks, playgrounds, commercial activity, and parking lots in the area. There are no sidewalks on the north side of Dana Point Harbor Drive. Marked crossings exist at signalized intersections along Dana Point Harbor Drive and at major intersections of the parking lots.

TABLE 18 Existing Bicycle Network (Miles)

Facility Type	Existing
Class II Bicycle Lanes	4.46
Total	**4.46**



Orange County Unincorporated Area

Active Transportation Plan

Dana Point Harbor

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

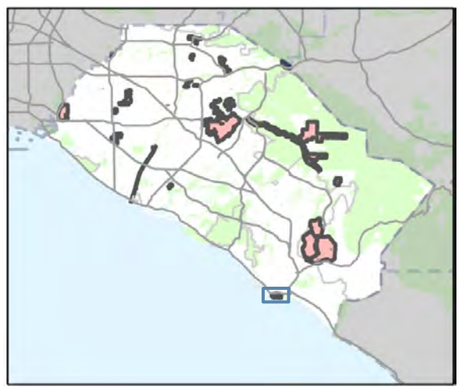
- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Rail Stop
- Bus Route
- Rail

BASEMAP

- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 0.1 0.2 Miles

N



Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, there were no collisions that involved a pedestrian or bicyclist in Dana Point Harbor.

Network Gap Analysis

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the city could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of Dana Point Harbor where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis demonstrates that most of the community is well networked with low stress connections. However, there are some links that connect to Puerto Pl that are isolated from the rest of the network in Dana Point Harbor.



Recommendations

WHAT DID WE HEAR?

Survey results from Dana Point Harbor showed that more crosswalks and separated bikeways would encourage increased active transportation use around the harbor.

PEDESTRIAN RECOMMENDATIONS

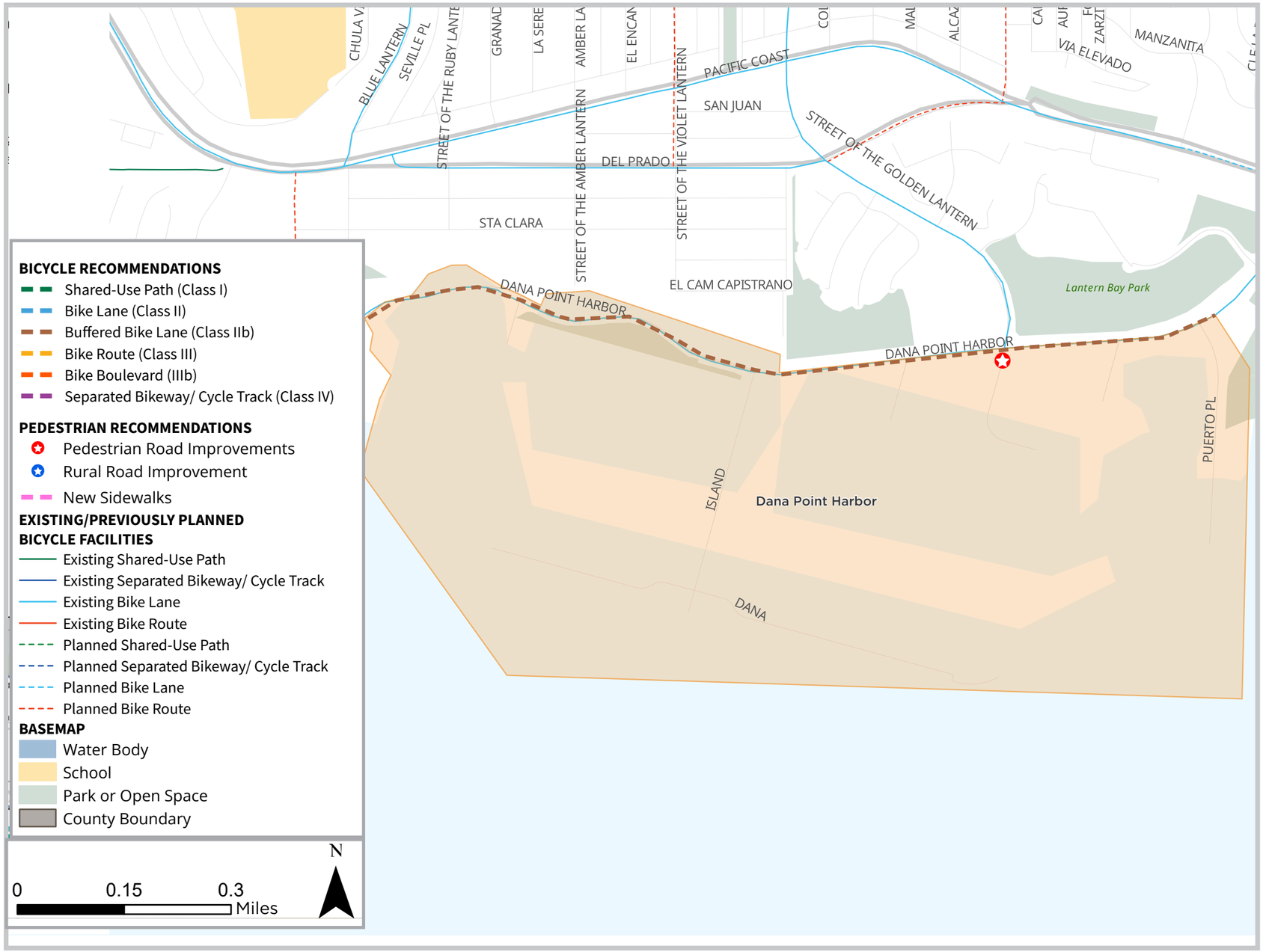
Recommended pedestrian infrastructure in Dana Point Harbor includes:

- High visibility crosswalks
- Curb extensions

BICYCLE RECOMMENDATIONS

Bicycle recommendations in Dana Point Harbor Island include:

- Class IIb 1 mile total, including:
  - Dana Point Harbor Dr, separating bicyclists from vehicles near a popular destination.



El Modena Island

SUPERVISORIAL DISTRICT 5

Context and Background

The El Modena Islands are surrounded by the City of Orange and are within the sphere of influence of the City of Orange. Combined, these unincorporated areas span approximately 135 acres and are home to 3,680 residents as of 2019. The community is made up of single-family detached homes and multifamily housing.

El Modena is served by Orange Unified School District, and La Purisima Catholic School (private) is located within its boundaries. Residents have access to El Modena Park and La Veta Park in the City of Orange, both of which are within a half-mile radius of the community. El Modena Islands currently do not have any OCFCD-owned flood control channels that are suitable for pathway development.

COMMUTE TRENDS

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of current commute mode trends was conducted at the census block group level for El Modena Islands. Of the El Modena Island residents 16 or older officially in the workforce, the ACS estimates that 1.9% walk and 1% use a bicycle to commute. However, bicycle ridership and rates of walking could be higher than this, as the ACS does not factor recreational trips or trips where commuters use more than one mode when traveling to work, such as taking a bus part way then riding a bicycle to the final destination.

ACCESS TO VEHICLES

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of households without access to a personal vehicle was conducted at the census tract level for the El Modena Islands. The percentage of people without access to a motor vehicle ranges between 0.6% to nearly 3.4% of residents, depending on the Census tract. The average percentage of the El Modena Islands residents without access to vehicles is 1.9%.

HEALTH + EQUITY

The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to identify communities that are disproportionately burdened by pollution. It combines multiple sources of pollution data (e.g., ozone concentrations and drinking water contaminants) with population indicators (e.g., birth weight and educational attainment). Communities that score in the most burdened 25% of the state are considered to be disadvantaged and receive a small advantage in California's competitive funding process, such as through the State's Active Transportation Program. Per the tool, thee El Modena Islands do not meet this threshold for the most disadvantaged communities.

Additionally, public health is shaped by other "non-health" policies and community characteristics, such as housing, education, economic, and social factors. These factors are included in the California Healthy Places Index (HPI) tool, developed by Public Health Alliance of Southern California, which determines how healthy a census tract is compared to others in the state. Per the HPI tool, the El Modena Islands are considered healthier than approximately 57% of other California communities. Maps showing HPI and CalEnviroScreen scoring for the El Modena Islands are included in Appendix C.

At a Glance

SIZE

135 Acres

POPULATION

3,680 Residents

COMMUNITY TYPE

Single-Family Detached Homes

Multifamily Housing

LOCAL SCHOOLS

Orange Unified School District

La Purisima Catholic School

Walk Audit

The project team facilitated two audits to evaluate existing conditions in El Modena Islands, one County staff audit in November 2020 and one virtual community audit in October 2020. Eleven El Modena residents attended the virtual audit, sharing that cars often speed along major corridors such as Hewes Street, making it unsafe for students and parents to walk to and from school. Community members also noted that various pedestrian crossing features (stop signs, curb extensions, high-visibility crosswalk) would make intersections that lead to school feel safer. Existing bicycle facilities can greatly benefit from additional signage and protection. More details about audit observations can be found in Appendix B.

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 41** on the next page and described in the following sections.

BICYCLE NETWORK

El Modena Island's existing bike network is made up of 0.25 miles of Class II bicycle lanes and 0.12 miles of Class I shared-use path, for a total of 0.37 miles. Rancho Santiago Boulevard has bicycle lanes on both sides, from Pearl Street to Sycamore Boulevard. However, there is consistent on-street parking that bicyclists must weave in and out of the shoulder around the parked cars, which could cause a risk of being doored by people getting out of their cars. Additionally, **Table 19** includes 0.78 miles of Class II bicycle lanes and Class III bike routes proposed by OCTA in a previous plan.

PEDESTRIAN FACILITIES

Most streets in El Modena Island have sidewalks on both sides. Though existing sidewalks along Vine Street are narrow, they are in good condition and have no major obstructions. ADA-compliant curb ramps exist at corners throughout the community and marked crosswalks exist at all signalized intersections. The existing crosswalk at the intersection of Hewes Street and Bond Avenue could be upgraded to continental striping so that it is more visible. Similarly, the existing yellow school crossings at the intersection of Hewes Street and Spring Street could also be restriped as continental so they are more visible to drivers. Additionally, the existing bus stops on Hewes Street and Spring Street currently lack any shelter or seating. At the unsignalized intersection of Hewes Street and Center Avenue, there is an existing rectangular rapid flashing beacon (RRFB). However, the existing on-street parking may make it difficult for drivers to see pedestrians stepping into the street.

TABLE 19 Existing Bicycle Network

Facility Type	Existing	Proposed by OCTA
Class I Shared-Use Path	0.12	0.00
Class II Bicycle Lanes	0.25	0.65
Class III Bike Route	0.00	0.13
Total	**0.37**	**0.78**



Orange County Unincorporated Area

Active Transportation Plan

El Modena, Orange Park Acres, + Santiago Creek Islands

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Rail Stop
- Bus Route
- Rail

BASEMAP

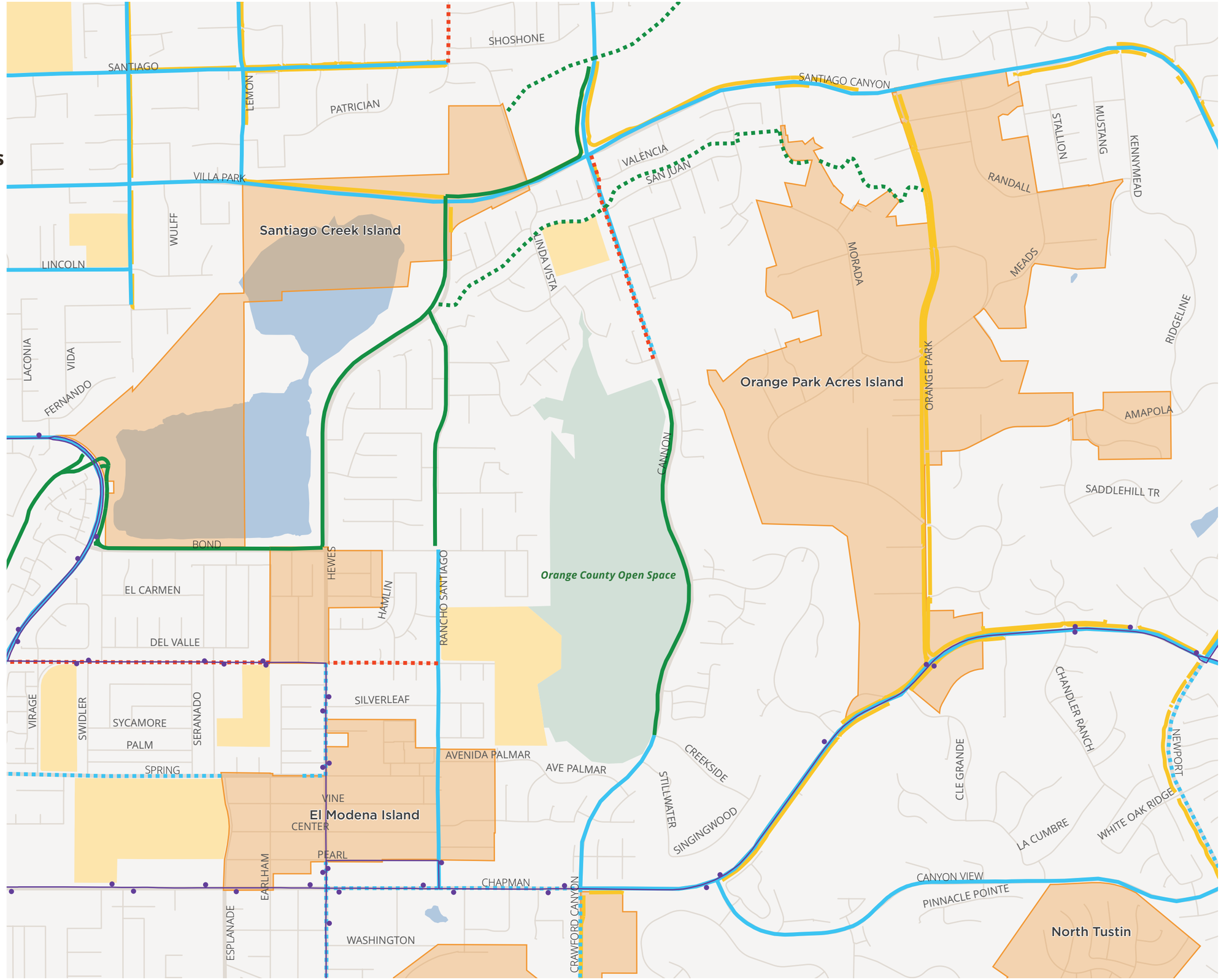
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 0.2 0.4 Miles

N



Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, a total of 18 collisions involving bicyclists and pedestrians were reported in El Modena Island during the study period, 33% of which involved people bicycling and 67% of which involved people walking.

PEDESTRIAN-INVOLVED COLLISIONS

Between 2009 to 2018, 12 collisions occurred in El Modena Island that involved a person walking. Of these, 1 (8%) resulted in a severe injury.

Crash violations were highest due to pedestrian violation (42%), followed by pedestrian right of way (17%). 50% of pedestrian collisions occurred at an intersection.

The pedestrian related collisions mostly occurred during the daylight (75%), followed by at night with streetlights present (25%). Collisions involving pedestrians occurred on Hewes St and Spring St (**Figure 42**).

BICYCLE-INVOLVED COLLISIONS

During the same study period (2009 to 2018), 6 collisions in El Modena Island involved a person riding a bicycle. 0 (0%) of these were fatal collisions, 1 (17 %) resulted in severe injury, and 2 (33%) bicycle collisions resulted in a visible injury.

The highest crash violation was due to automobile right of way (50%) followed by wrong side of road (33%) and other improper driving (17%). 2 (33%) bicycle collisions occurred at an intersection.

The bicycle collisions occurred during the daylight (83%) and at night with streetlights present (17%). **Figure 42** provides an overview of all bicycle-involved collisions in El Modena Island between 2009-2018 and demonstrates a concentration of collisions along Hewes St and Spring St.

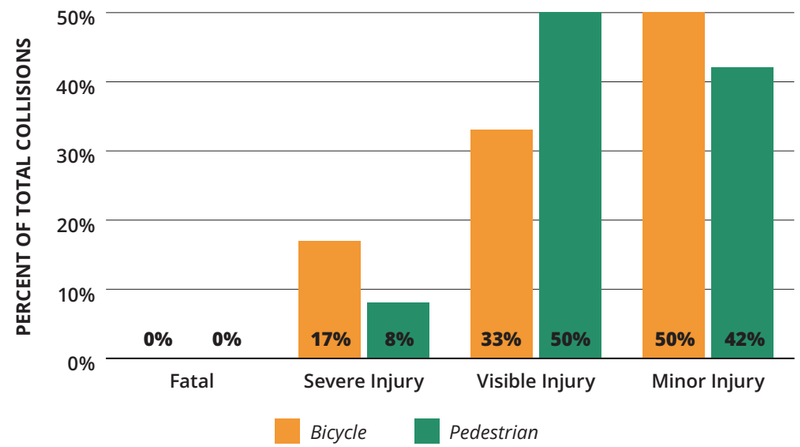
Network Gap Analysis

Figure 43 analyzes the bicycle and pedestrian connectivity of existing low-stress areas of El Modena Island based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the city could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

TABLE 20 Crash Severity in El Modena Island



Complete connections are displayed in the same color and create "low stress networks". When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of El Modena Island where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis shows that there are major barriers to cycling comfortably within El Modena. LTS 1 and 2 streets and links are isolated from each other, creating a disconnected, uncomfortable bicycle network that requires users to cross high-stress arterials.

Based on the Needs and Gaps analysis, there are 31 low stress networks within El Modena Island.

Orange County Unincorporated Area

Active Transportation Plan

El Modena, Orange Park Acres, + Santiago Creek Islands

PEDESTRIAN INVOLVED CRASHES

- Fatal
- Severe Injury
- Minor Injury
- No Injury

BICYCLIST INVOLVED CRASHES

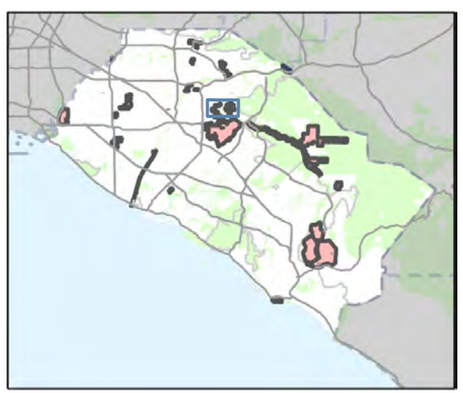
- Fatal
- Severe Injury
- Minor Injury
- No Injury

EXISTING BICYCLE FACILITIES

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

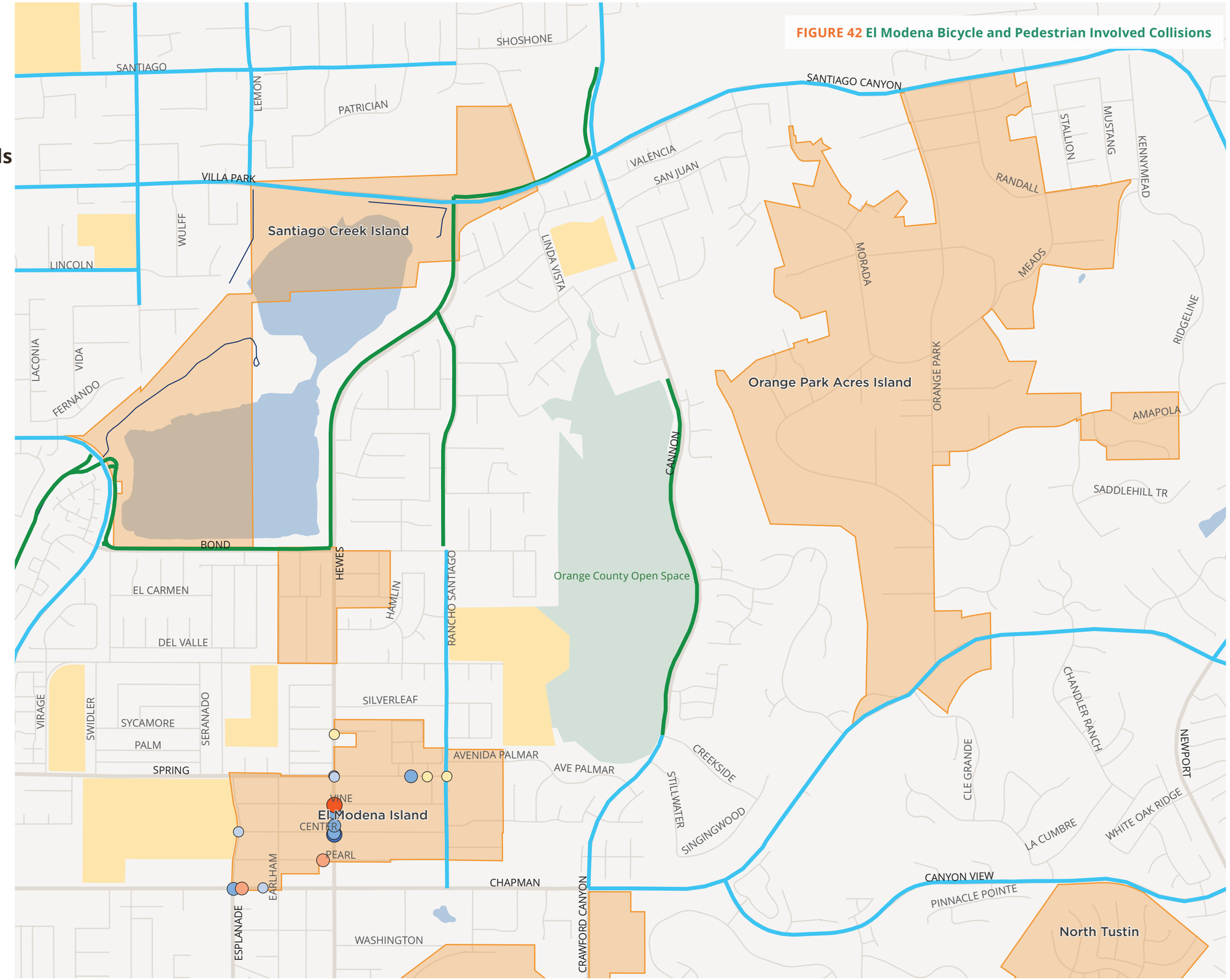
BASEMAP

- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.2 0.4 Miles

FIGURE 42 El Modena Bicycle and Pedestrian Involved Collisions



Orange County Unincorporated Area

Active Transportation Plan

El Modena, Orange Park Acres, + Santiago Creek Islands

FIGURE 43 Network Gaps in El Modena Island

LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

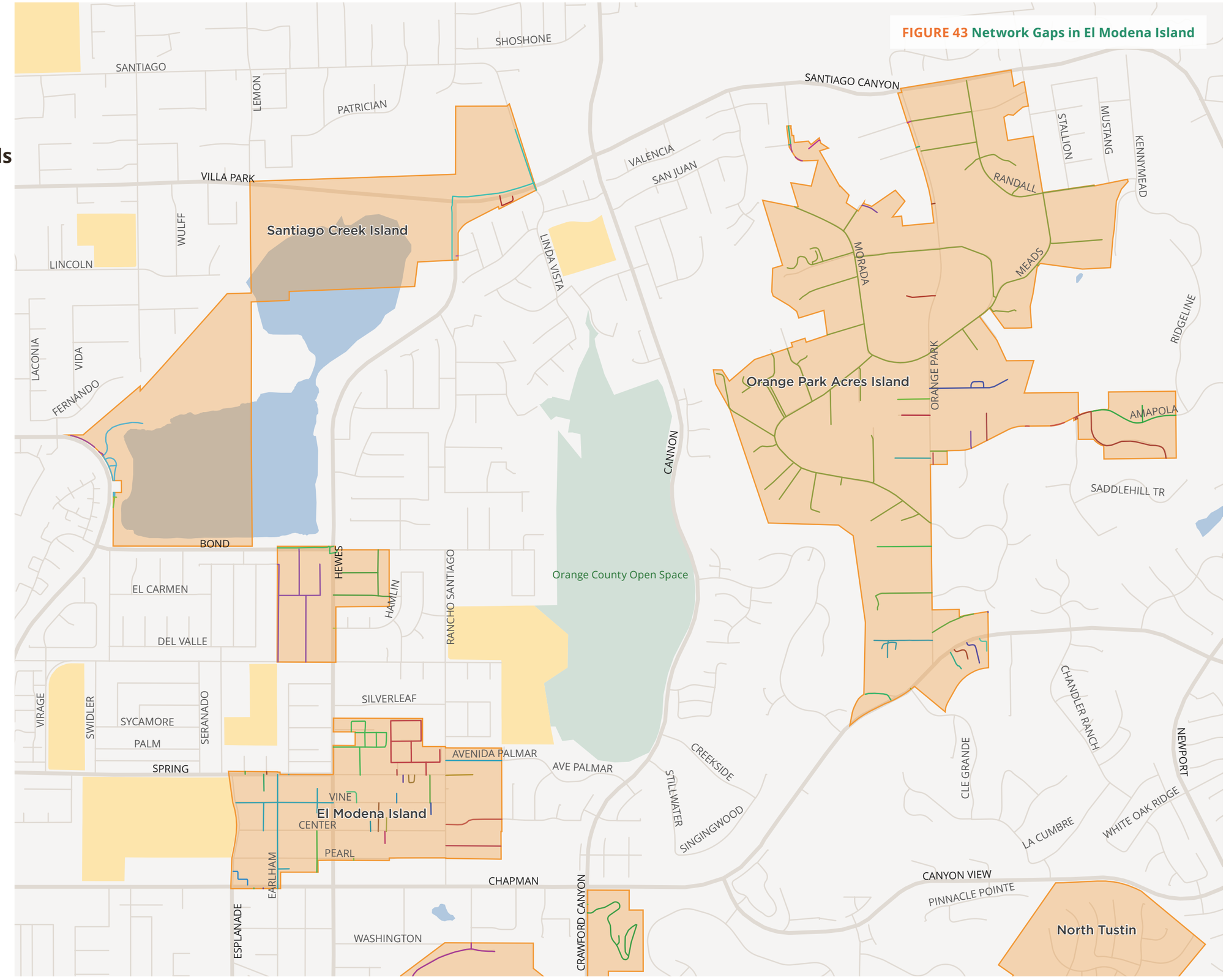
The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

BASEMAP

- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.2 0.4 Miles



Recommendations

WHAT DID WE HEAR?

Comments in El Modena asked for improved crossing infrastructure throughout the area, including restriped crosswalks and flashing crossing signals. Bicycle infrastructure was requested on Spring Street, Hewes Street, and Esplanade Street.

PEDESTRIAN RECOMMENDATIONS

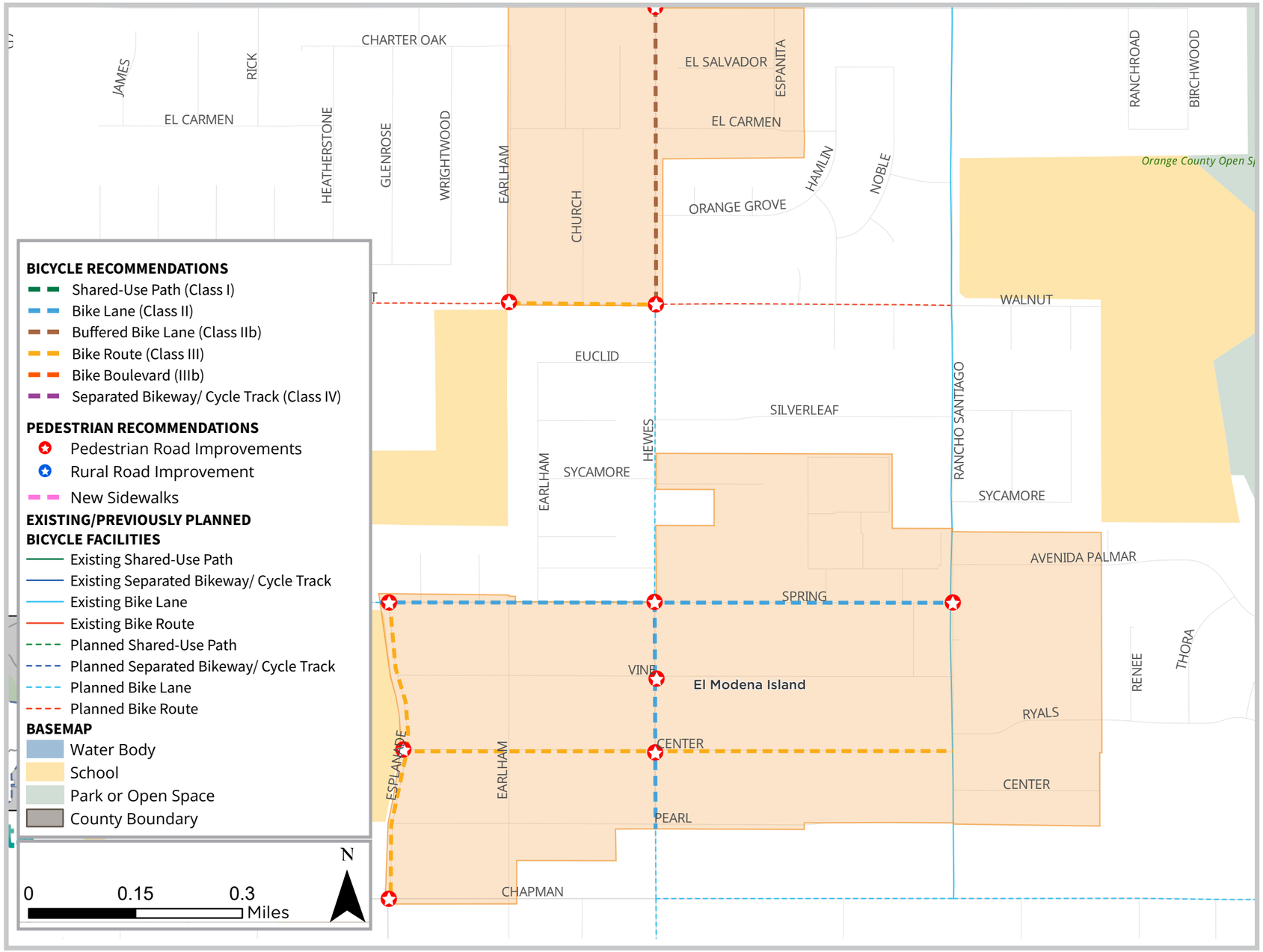
Recommended pedestrian infrastructure in El Modena includes:

- High visibility crosswalks
- Curb extensions
- Pedestrian-scale lighting

BICYCLE RECOMMENDATIONS

Bicycle recommendations in El Modena Island include:

- Class II 0.89 miles total, including:
  - Spring St from Esplanade St to Rancho Santiago Blvd connecting to the previously planned Class II outside of the area boundary
- Class IIb 0.25 miles total
- Class III 0.86 miles total, including:
  - Esplanade St between Spring St and Chapman Ave connecting to the planned Class II routes



Fairlynn Island

SUPERVISORIAL DISTRICT 3

Context and Background

Fairlynn Island is surrounded by the City of Yorba Linda to the north and the City of Anaheim to the north. It is within the sphere of influence of Yorba Linda. This unincorporated area spans approximately 147 acres and is home to 1,625 residents as of 2019. The community is predominantly made up of single-family detached homes and multifamily housing.

Fairlynn Island is served by Placentia-Yorba Linda Unified School District, with Glenknoll Elementary School[1] located within its boundaries. Residents have access to Eucalyptus Park in the City of Anaheim and Kingbriar and Bigoner Parks in the City of Yorba Linda, each of which are within a half-mile radius of the community. Fairlynn Island currently does not have any OCFCD-owned flood control channels that are suitable for pathway development.

COMMUTE TRENDS

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of current commute mode trends was conducted at the census block group level for Fairlynn Island. Of the Fairlynn Island residents 16 or older officially in the workforce, the ACS estimates that none walk to work and 3.2% use a bicycle to commute. However, bicycle ridership and rates of walking could be higher than this, as the ACS does not factor recreational trips or trips where commuters use more than one mode when traveling to work, such as taking a bus part way then riding a bicycle to the final destination.

ACCESS TO VEHICLES

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of households without access to a personal vehicle was conducted at the census tract level for Fairlynn Island. The percentage of people without access to a motor vehicle is up to 1.3% of residents, depending on the Census tract. The average percentage of Fairlynn Island residents without access to vehicles is 0.7%.

HEALTH + EQUITY

The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to identify communities that are disproportionately burdened by pollution. It combines multiple sources of pollution data (e.g., ozone concentrations and drinking water contaminants) with population indicators (e.g., birth weight and educational attainment). Communities that score in the most burdened 25% of the state are considered to be disadvantaged and receive a small advantage in California's competitive funding process, such as through the State's Active Transportation Program. Per the tool, Fairlynn Island does not meet this threshold for disadvantaged communities.

Additionally, public health is shaped by other "non-health" policies and community characteristics, such as housing, education, economic, and social factors. These factors are included in the California Healthy Places Index (HPI) tool, developed by Public Health Alliance of Southern California, which determines how healthy a census tract is compared to others in the state. Per the HPI tool, Fairlynn Island is considered healthier than approximately 78% of other California communities. Maps showing HPI and CalEnviroScreen scoring for Fairlynn Island are included in Appendix C.

At a Glance

SIZE

147 Acres

POPULATION

1,625 Residents

COMMUNITY TYPE

Single-Family Detached Homes

Multifamily Housing

LOCAL SCHOOLS

Placentia-Yorba Linda Unified School District

Glenknoll Elementary School

1 As of 2021, 15.4% of students attending Glenknoll Elementary are eligible for free and reduced-price meals through the National School Lunch Program.

Walk Audit

The project team facilitated two audits to evaluate existing conditions in Fairlynn Island, a community audit in December 2020 and a desktop audit in Fall 2020. The audits showed that Fairlynn Boulevard is a busy corridor where people often drive faster than the posted speed limit. Audit participants noted that they are interested in exploring design features that will slow down vehicles not only along Fairlynn Boulevard, but near other community destinations such as Esperanza High School. They also observed wayfinding signage along Fairlynn Boulevard would highlight the El Cajon Trail for cyclists traveling along the boulevard. More details about audit observations can be found in Appendix B.

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 44** on the next page and described in the following sections.

BICYCLE NETWORK

Fairlynn Island's existing bike network is made up of 1.9 miles of Class II bicycle lanes on Fairlynn Boulevard and 0.3-miles of Class I shared-use path, the El Cajon Bike Trail. This existing path runs from the community boundary to Esperanza Road and is paved, with room for both bicyclists and pedestrians. Existing wayfinding signage for the trail could be improved along Fairlynn Boulevard. The existing bicycle lanes along Fairlynn Boulevard do not have pavement markings and do not have dedicated space separate from the existing on-street parking. Additionally, **Table 21** includes proposed Class II bicycle lanes on Fairlynn Boulevard and a Class IV Separated Bikeway along Esperanza Road proposed by OCTA in a previous plan.

PEDESTRIAN FACILITIES

Sidewalks exist along most major streets in Fairlynn Island, but are lacking on some residential streets. The private Fairgreen Homes community has paved paths between its homes, but no sidewalks along Woodgate Drive. Where paved sidewalks do exist, ADA-compliant curb ramps also exist. Marked crossings are currently limited to the intersections of Fairlynn Boulevard and Esperanza Road, as well as Fairlynn Boulevard and Crestknoll Drive, Crestknoll and Larkridge Drive, Larkridge and Glenknoll Drive, and Crestknoll Drive and Glenknoll Drive near Glenknoll Elementary School. Many of these existing crosswalks are not high-visibility. The crossing at Fairlynn and Crestknoll also features advanced yield markings. However, the west side of the crosswalk does not have an ADA-compliant curb ramp, but rather partially abuts a driveway and partially abuts a curb. Currently, no marked crossing exists where Fairlynn Boulevard intersects with Oakvale Drive, across from the El Cajon Trail entrance.

TABLE 21 Existing Bicycle Network

Facility Type	Existing
Class I Shared-Use Path	0.30
Class II Bicycle Lanes	0.24
Class III Bicycle Route	0.24
Class IV Separated Bikeway	0.30
Total	**1.08**



Orange County Unincorporated Area

Active Transportation Plan

Country Club + Fairlynn Islands

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

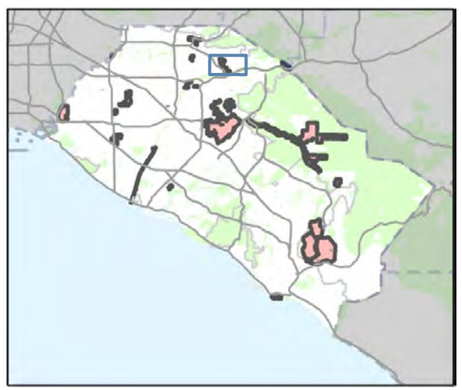
- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Rail Stop
- Bus Route
- Rail

BASEMAP

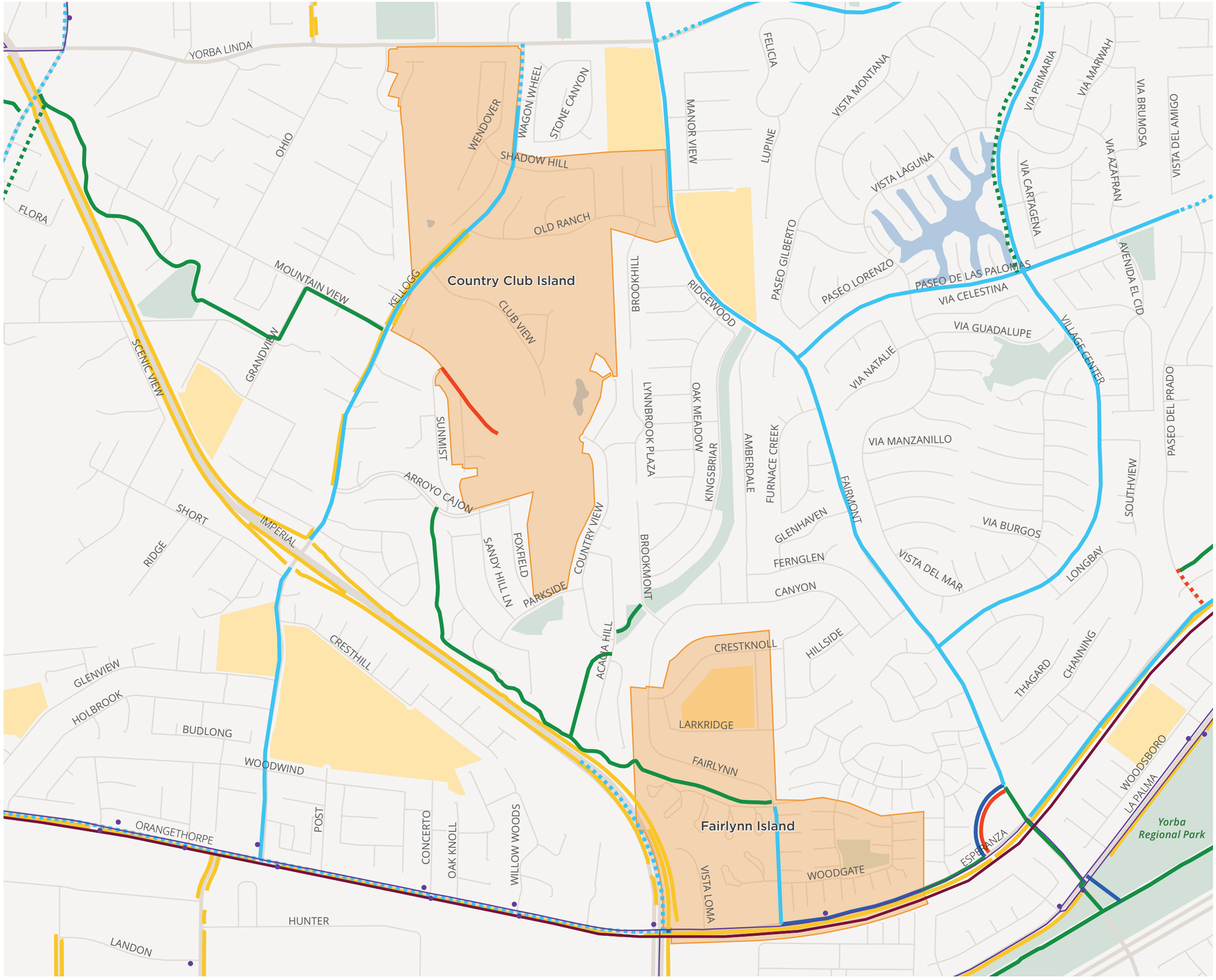
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 0.15 0.3 Miles

N



Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, there were no collisions that involved a pedestrian or bicyclist in Fairlynn Island.

Network Gap Analysis

Figure 45 analyzes the bicycle and pedestrian connectivity of existing low-stress areas of Fairlynn Island based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

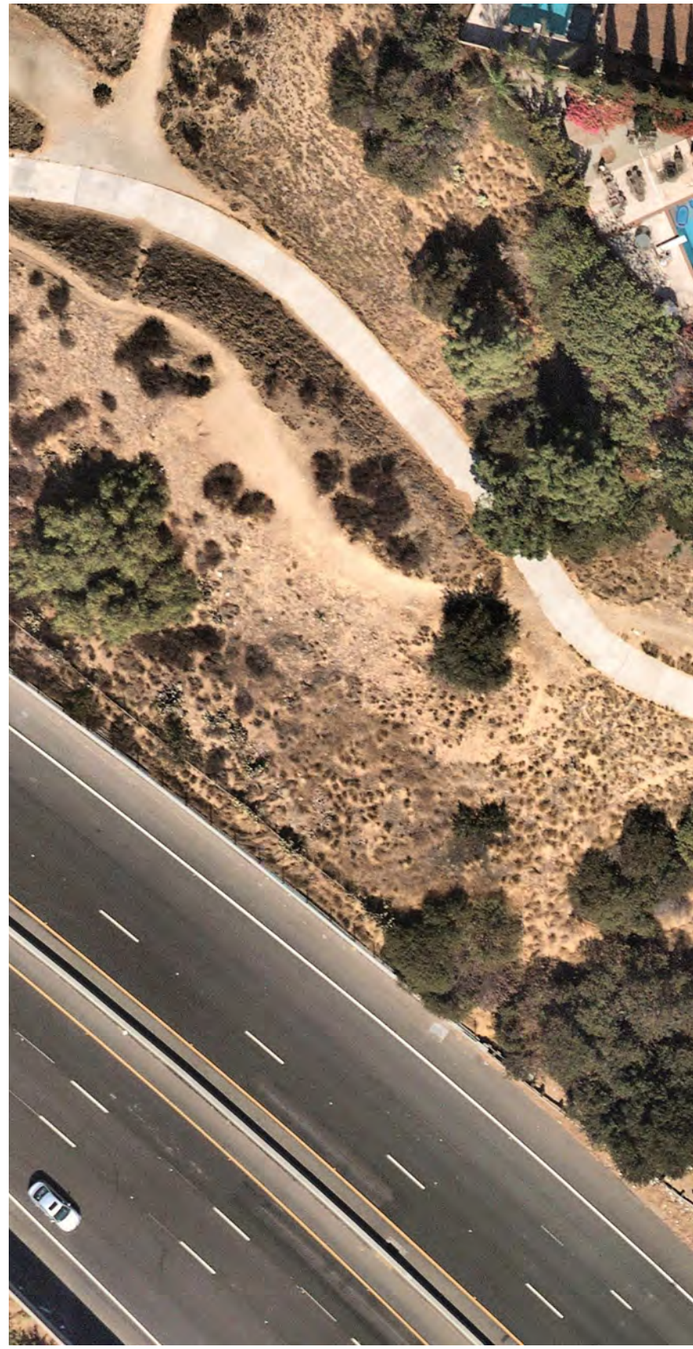
A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the city could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of Fairlynn Island where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis demonstrates that most of the community is well networked with low stress connections. However, crossing to other communities requires crossing the high-stress arterial Esperanza Rd. This will likely be improved with the installation of the new Class IV bikeway as part of the OC Loop project, although connections to the west of Fairlynn Blvd will remain high-stress.

Based on the Needs and Gaps analysis, there are 2 low stress networks within Fairlynn Island.



Orange County Unincorporated Area

Active Transportation Plan

Country Club + Fairlynn Islands

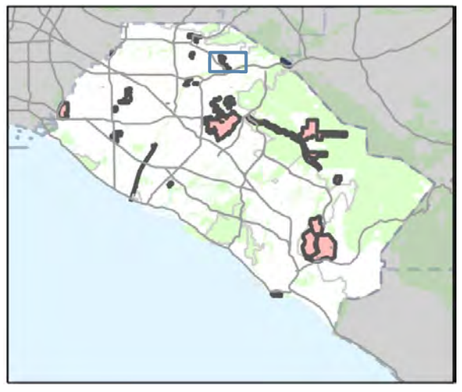
LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

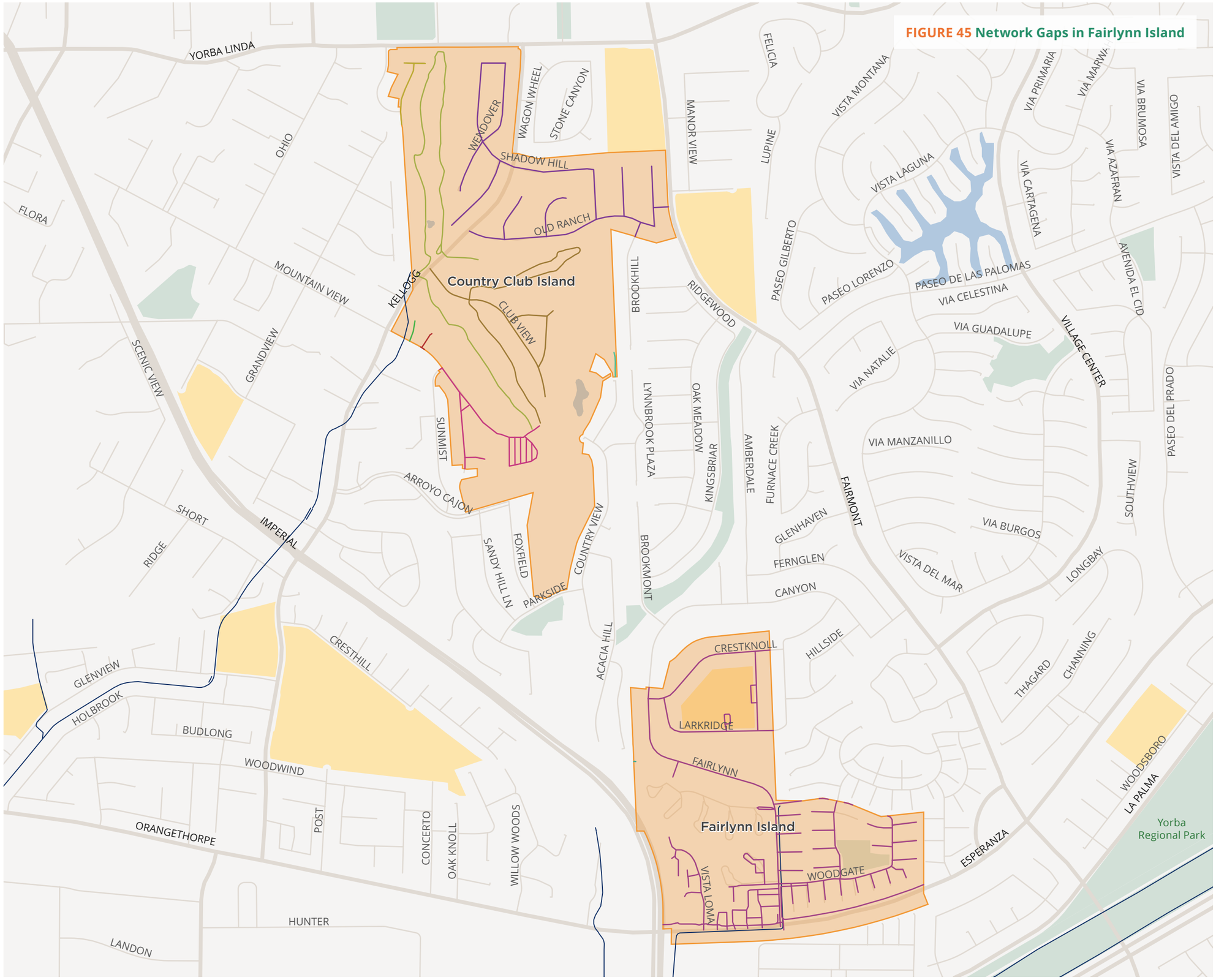
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.15 0.3 Miles

FIGURE 45 Network Gaps in Fairlynn Island



Recommendations

WHAT DID WE HEAR?

Community members requested traffic calming on Fairlynn Boulevard and near the El Cajon trail entrances on Fairlynn Boulevard and Lindafair Lane. Comments also mentioned a lack of lighting near OCTA bus stops on Esperanza Road.

PEDESTRIAN RECOMMENDATIONS

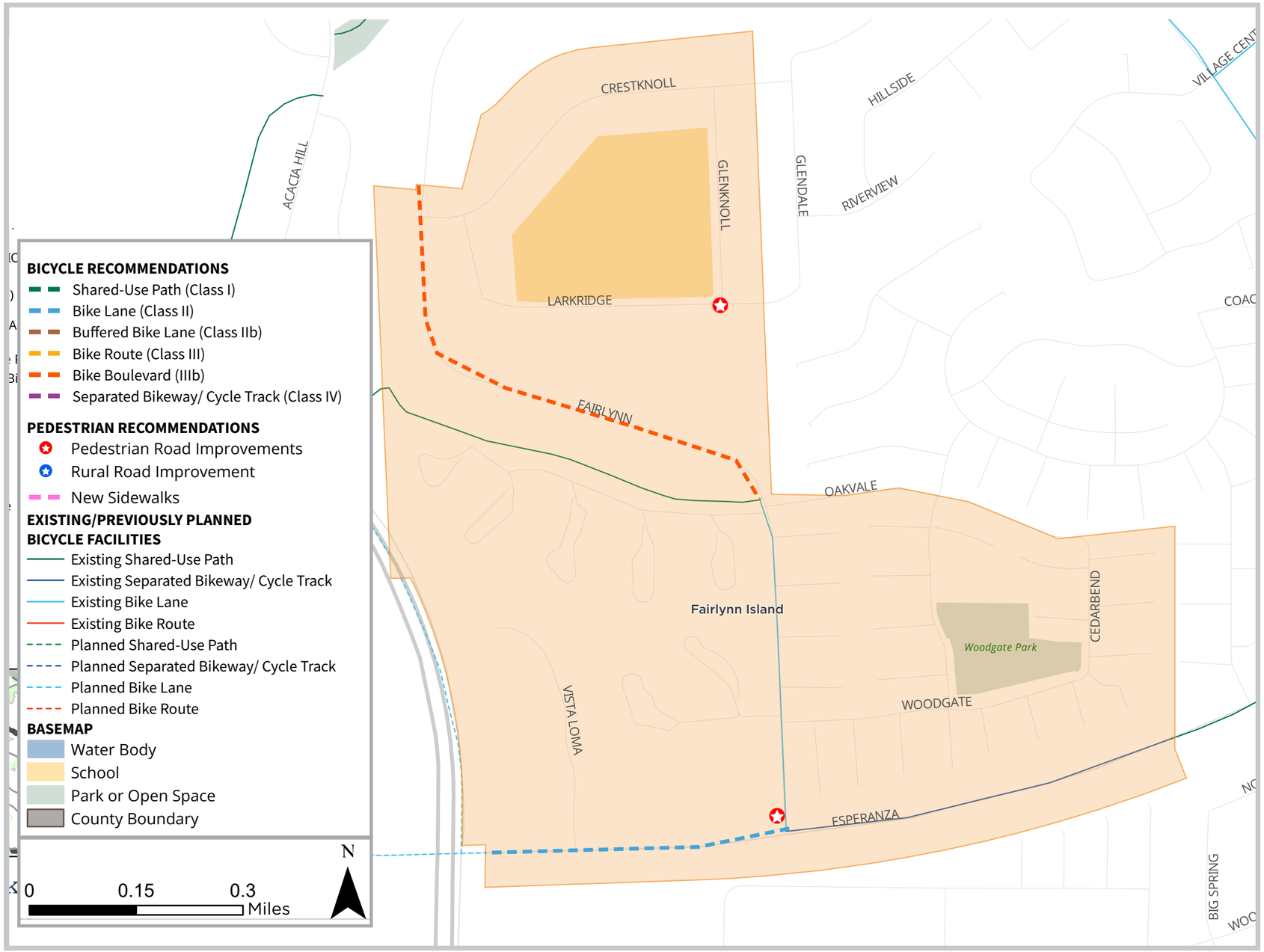
Recommended pedestrian infrastructure in Fairlynn Island includes:

- High visibility crosswalks
- Enhanced pavement markings and signage
- Pedestrian-scale lighting

BICYCLE RECOMMENDATIONS

Bicycle recommendations in Fairlynn Island include:

- Class II 0.23 miles total, including:
  - Esperanza Rd, connecting to the existing Class IV east of Fairlynn Blvd
- Class IIIb 0.40 miles total, including:
  - Fairlynn Boulevard connecting to the El Cajon Trail as a part of the OC Loop El Cajon Bikeway



Fountain Valley Island

SUPERVISORIAL DISTRICT 1

Context and Background

Fountain Valley Island is surrounded by the City of Fountain Valley and the Santa Ana River and is within the sphere of influence of Fountain Valley. This unincorporated area spans approximately 21 acres and is home to 912 residents as of 2019. The community is predominantly made up of single-family detached homes.

Fountain Valley Island is served by the Garden Grove Unified School District. Residents have access to Windsor Park in Santa Ana, which is within a half-mile radius of the community. Fountain Valley Island currently does not have any OCFCD-owned flood control channels that are suitable for pathway development, though it is adjacent to the Santa Ana River Trail.

COMMUTE TRENDS

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of current commute mode trends was conducted at the census block group level for Fountain Valley Island. Of the Fountain Valley Island residents 16 or older officially in the workforce, the ACS estimates that none walk to work and 0.3% use a bicycle to commute. However, bicycle ridership and rates of walking could be higher than this, as the ACS does not factor recreational trips or trips where commuters use more than one mode when traveling to work, such as taking a bus part way then riding a bicycle to the final destination.

ACCESS TO VEHICLES

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of households without access to a personal vehicle was conducted at the census tract level for Fountain Valley Island. The average percentage of Fountain Valley Island residents without access to vehicles is 5.1%.

HEALTH + EQUITY

The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to identify communities that are disproportionately burdened by pollution. It combines multiple sources of pollution data (e.g., ozone concentrations and drinking water contaminants) with population indicators (e.g., birth weight and educational attainment). Communities that score in the most burdened 25% of the state are considered to be disadvantaged and receive a small advantage in California's competitive funding process, such as through the State's Active Transportation Program. Per the tool, Fountain Valley Island does not meet this threshold for the most disadvantaged communities, though the area along the Santa Ana River is slightly more disadvantaged than the rest of the area.

Additionally, public health is shaped by other "non-health" policies and community characteristics, such as housing, education, economic, and social factors. These factors are included in the California Healthy Places Index (HPI) tool, developed by Public Health Alliance of Southern California, which determines how healthy a census tract is compared to others in the state. Per the HPI tool, Fountain Valley Island experiences worse health than approximately 55% of other California communities. Maps showing HPI and CalEnviroScreen scoring for Fountain Valley Island are included in Appendix C.

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 46** on the next page and described in the following sections.

BICYCLE NETWORK

Fountain Valley Island currently does not have any existing bicycle facilities, though OCTA proposed Class II bicycle lanes were proposed along Edinger Avenue in a previous plan. The community is adjacent to the Santa Ana River Trail, though there are no existing access points within Fountain Valley Island.

PEDESTRIAN FACILITIES

Sidewalks exist along Edinger Avenue and Harbor Boulevard, and there are pathways through the apartment complex that makes up most of this area. There are marked crosswalks at the intersection of Edinger and Harbor, though they could be updated to be high-visibility. The corners at this intersection feature ADA-compliant curb ramps.

At a Glance

SIZE
21 Acres

POPULATION
912 Residents

COMMUNITY TYPE
Single-Family Detached Homes

LOCAL SCHOOLS
Garden Grove Unified School District

Orange County Unincorporated Area

Active Transportation Plan

Fountain Valley Island

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

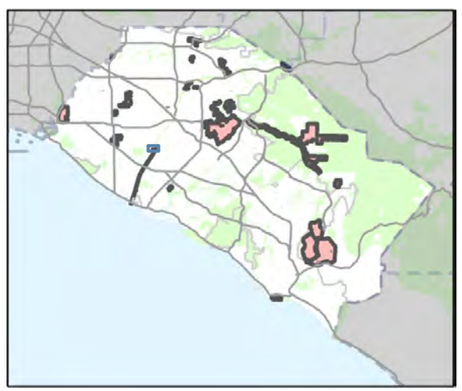
- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Bus Route
- Rail Stop
- Rail

BASEMAP

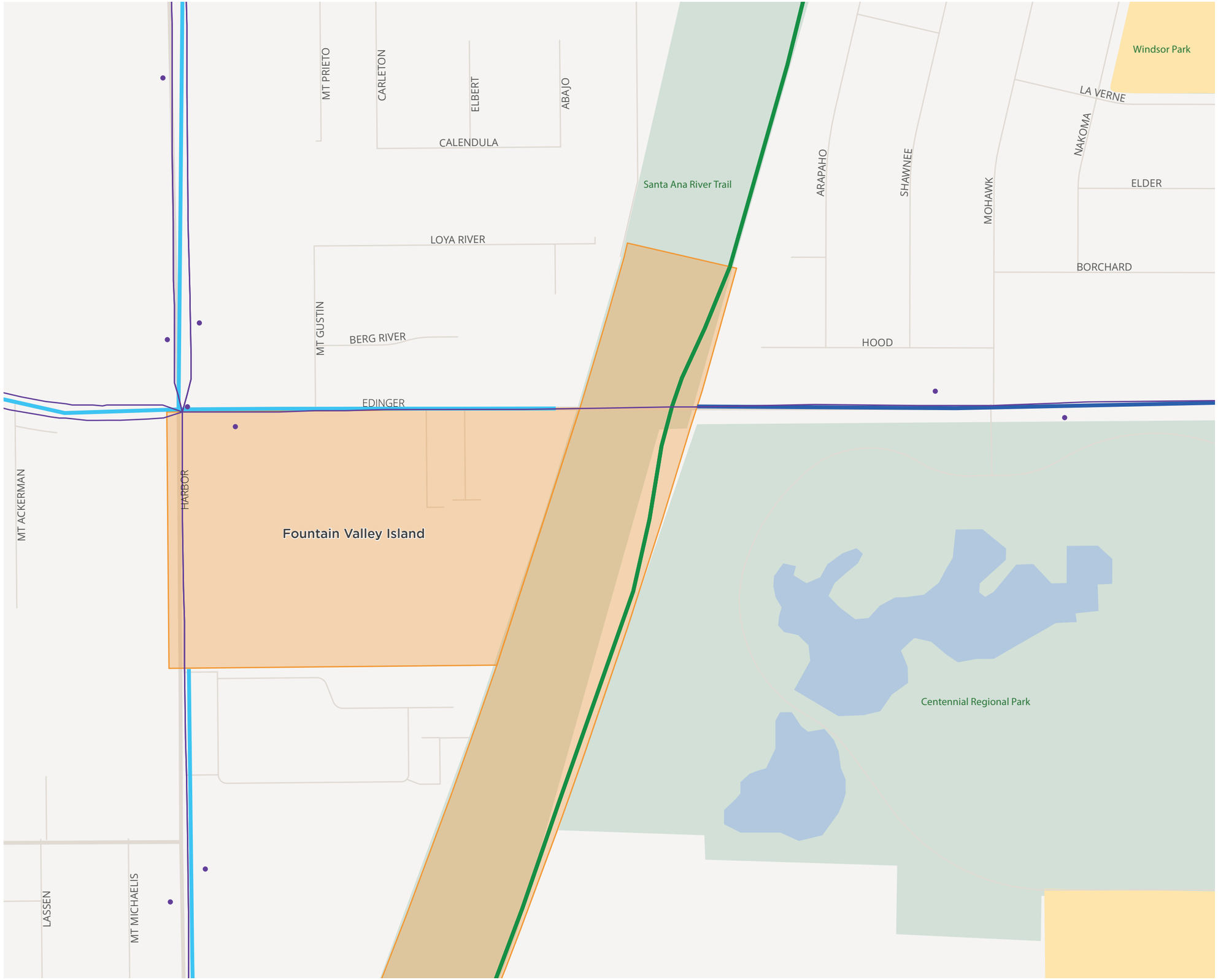
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 0.04 0.07 Miles

N



Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, a total of 2 collisions involving bicyclists and pedestrians were reported in Fountain Valley during the study period, 50% of which involved people bicycling and 50% of which involved people walking.

PEDESTRIAN-INVOLVED COLLISIONS

Between 2009 to 2018, 1 collision occurred in Fountain Valley Island that involved a person walking. This collision was fatal. The collision occurred due to unsafe speed. It occurred at an intersection.

The collision occurred during the night with streetlights present. The collision occurred on Edinger Ave **Figure 47**.

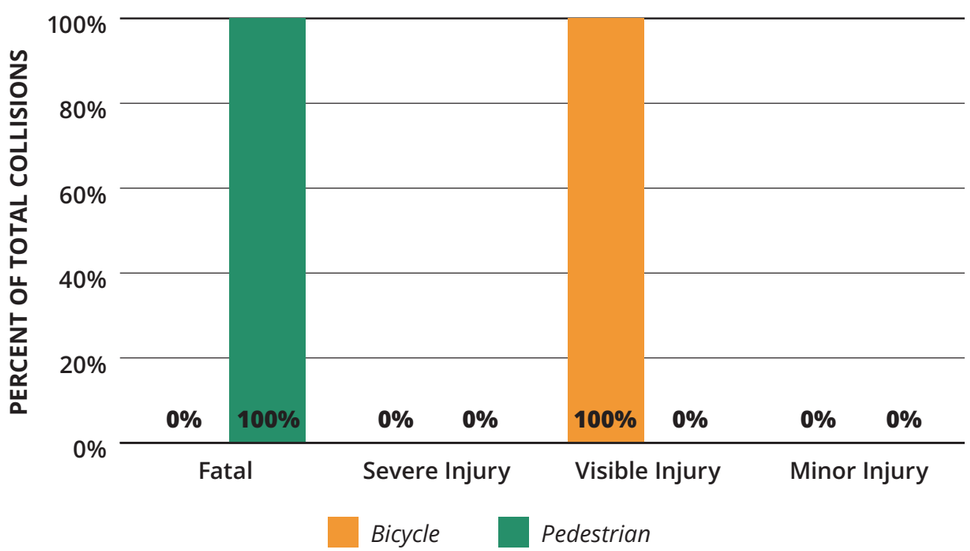
BICYCLE-INVOLVED COLLISIONS

During the same study period (2009 to 2018), 1 collision in Fountain Valley Island involved a person riding a bicycle. The collision resulted in a visible injury.

The collision occurred due to a wrong side of road violation. It did not occur at an intersection.

The majority of these bicycle collisions occurred during the night with no streetlights present. **Figure 47** provides an overview of all bicycle-involved collisions in Fountain Valley Island between 2009-2018 and demonstrates that the collision occurred on Harbor Blvd.

TABLE 22 Crash Severity in Fountain Valley Island



Network Gap Analysis

Figure 48 analyzes the bicycle and pedestrian connectivity of existing low-stress areas of Fountain Valley Island based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the city could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of Fountain Valley Island where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis shows that Fountain Valley Island has very poor connectivity. Within the area, there are several different pockets that require connections on Edinger Ave and Harbor Blvd that are high-stress in order to reach both each other and other destinations.

Based on the Needs and Gaps analysis, there are 10 low stress networks within Fountain Valley Island.

Orange County Unincorporated Area

Active Transportation Plan

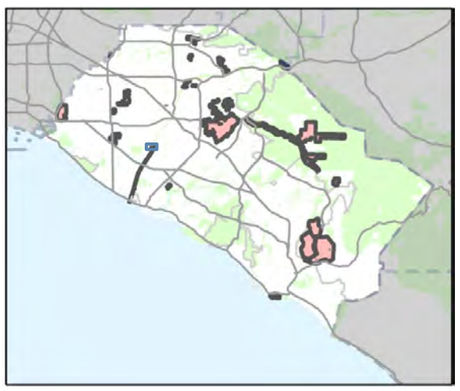
Fountain Valley Island

PEDESTRIAN INVOLVED CRASHES
- Fatal
- Severe Injury
- Minor Injury
- No Injury

BICYCLIST INVOLVED CRASHES
- Fatal
- Severe Injury
- Minor Injury
- No Injury

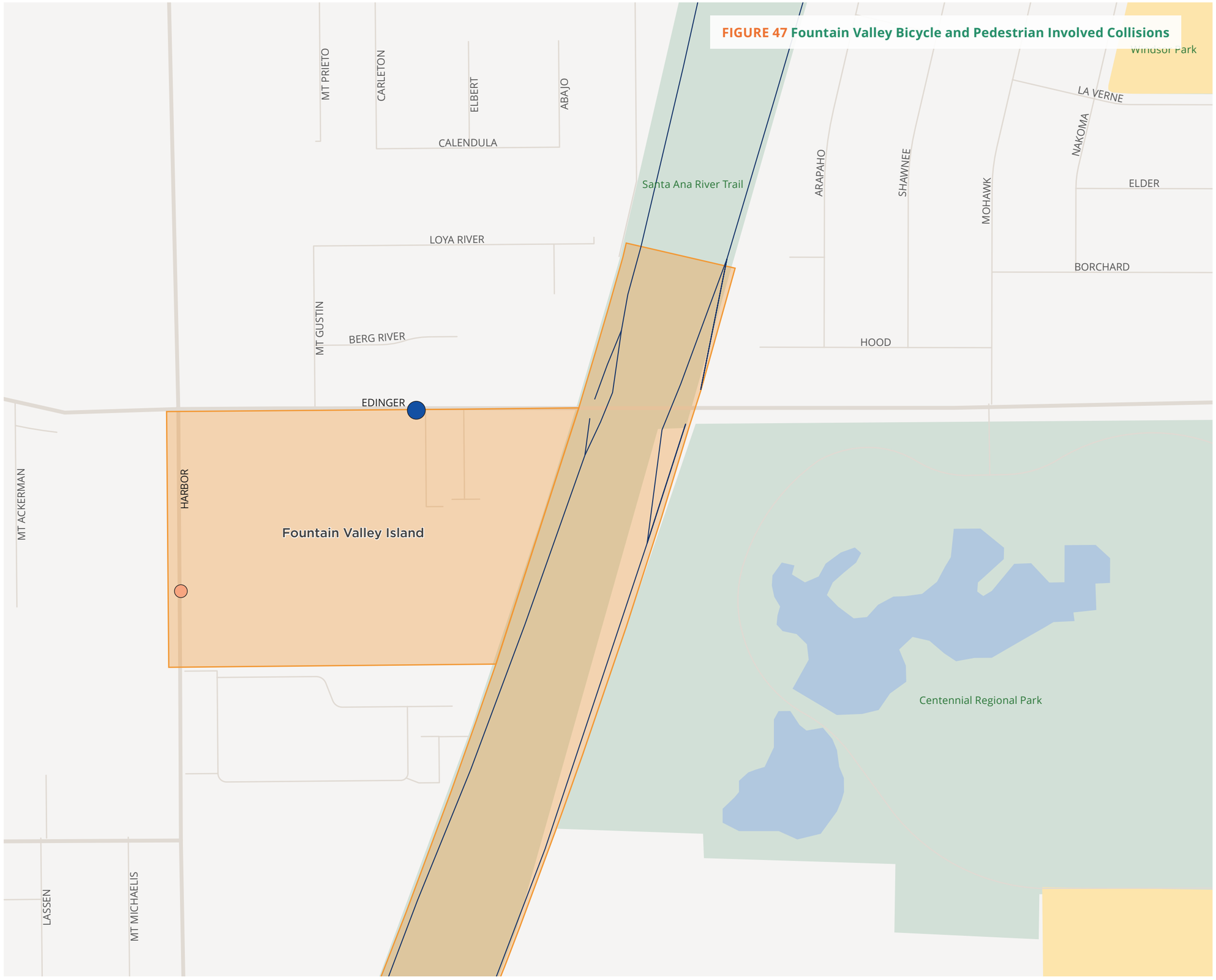
EXISTING BICYCLE FACILITIES
- Shared Use Path
- Bike Lane
- Bike Route
- Separated Bike Lane

BASEMAP
- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.04 0.07 Miles

FIGURE 47 Fountain Valley Bicycle and Pedestrian Involved Collisions



Orange County Unincorporated Area

Active Transportation Plan

Fountain Valley Island

FIGURE 48 Network Gaps in Fountain Valley

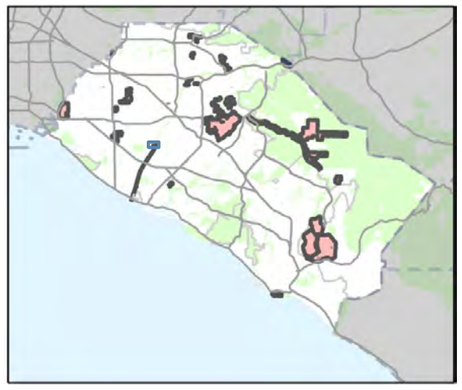
LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

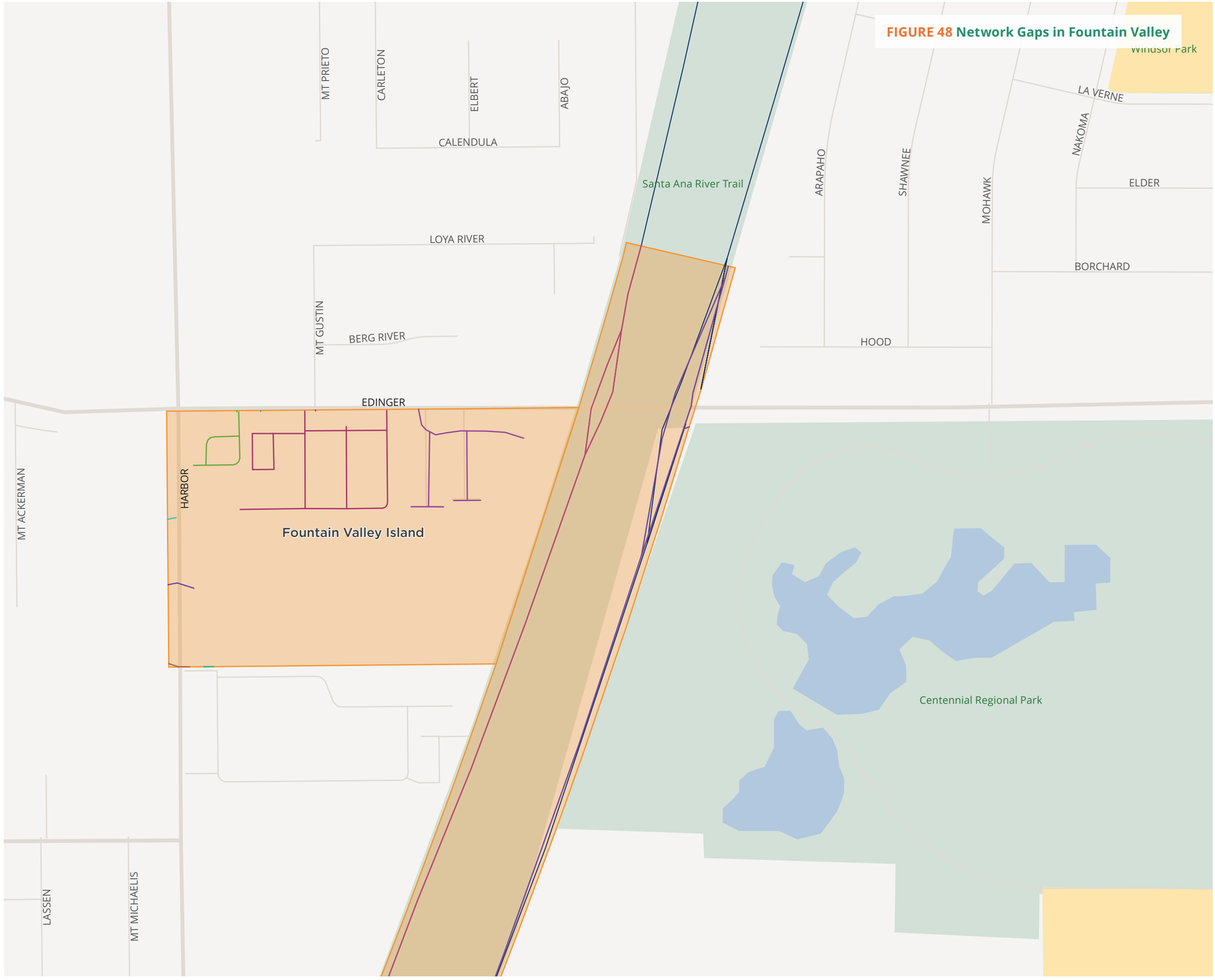
The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.04 0.07 Miles



Recommendations

WHAT DID WE HEAR?

Public input comments requested bikeways on Edinger Avenue and Harbor Boulevard. Community members stated that bicycling through Fountain Valley is not safe and have requested improved wayfinding and access to the Santa Ana River Trail.

PEDESTRIAN RECOMMENDATIONS

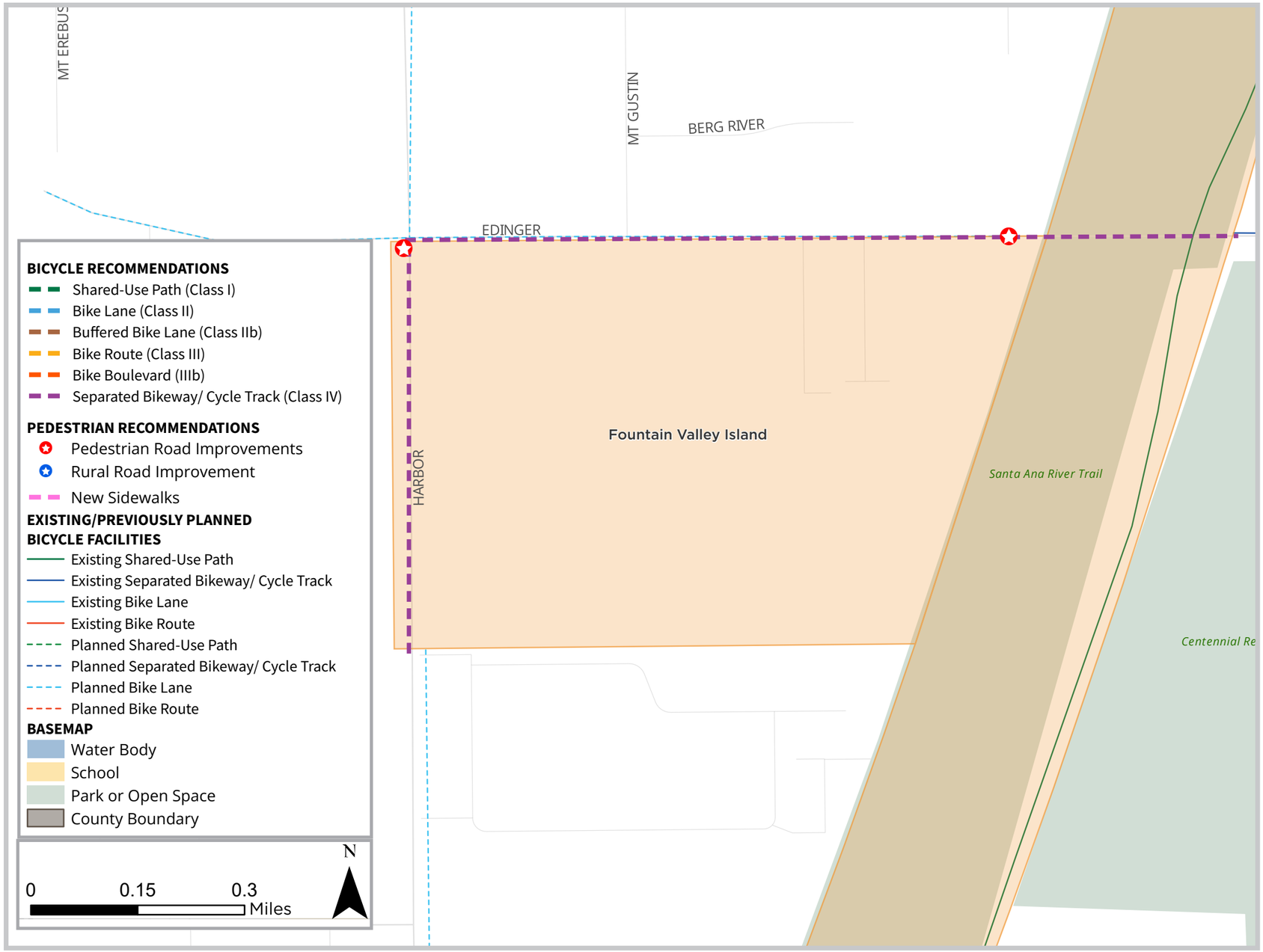
Recommended pedestrian infrastructure in Fountain Valley Island includes:

- High visibility crosswalks
- Signal timing improvements
- Enhanced pavement markings and signage

BICYCLE RECOMMENDATIONS

Bicycle recommendations in Fountain Valley Island include:

- Class IV 0.46 miles total, including:
  - Harbor Blvd connecting to the proposed Class II on either end of the area boundary
  - Edinger Ave connecting to the proposed Class II on either end of the area boundary and Santa Ana River Trail access points



Hamer Island*

SUPERVISORIAL DISTRICT 4

Context and Background

Hamer Island is surrounded by the City of Placentia and is within the sphere of influence of Placentia. This unincorporated area spans approximately 76 acres and is home to 1,045 residents as of 2019. The community is predominantly made up of single-family detached homes.

Hamer Island is served by Placentia-Yorba Linda Unified School District. Residents have access to Wagner Park and Parque Arroyo Verde in Placentia, both within a half-mile radius of the community. Hamer Island currently does not have any OCFCD-owned flood control channels that are suitable for pathway development.

COMMUTE TRENDS

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of current commute mode trends was conducted at the census block group level for Hamer Island. Of the Hamer Island residents 16 or older officially in the workforce, the ACS estimates that 0.9% walk and 3.0% use a bicycle to commute. However, bicycle ridership and rates of walking could be higher than this, as the ACS does not factor recreational trips or trips where commuters use more than one mode when traveling to work, such as taking a bus part way then riding a bicycle to the final destination.

ACCESS TO VEHICLES

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of households without access to a personal vehicle was conducted at the census tract level for Hamer Island. The average percentage of Hamer Island residents without access to vehicles is 2.9%.

HEALTH + EQUITY

The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to identify communities that are disproportionately burdened by pollution. It combines multiple sources of pollution data (e.g., ozone concentrations and drinking water contaminants) with population indicators (e.g., birth weight and educational attainment). Communities that score in the most burdened 25% of the state are considered to be disadvantaged and receive a small advantage in California's competitive funding process, such as through the State's Active Transportation Program. Per the tool, Hamer Island does not meet this threshold for disadvantaged communities.

Additionally, public health is shaped by other "non-health" policies and community characteristics, such as housing, education, economic, and social factors. These factors are included in the California Healthy Places Index (HPI) tool, developed by Public Health Alliance of Southern California, which determines how healthy a census tract is compared to others in the state. Per the HPI tool, Hamer Island is considered healthier than approximately 75% of other California communities. Maps showing HPI and CalEnviroScreen scoring for Hamer Island are included in Appendix C.

At a Glance

SIZE

76 Acres

POPULATION

1,045 Residents

COMMUNITY TYPE

Single-Family Detached Homes

LOCAL SCHOOLS

Placentia-Yorba Linda Unified School District

**At the time of writing this Plan, Hamer Island is in the process of being incorporated into the City of Placentia.*

Walk Audit

The project team facilitated a virtual community walk audit in December 2020 to evaluate existing conditions in Hamer. Three Hamer residents attended the virtual audit and noted that most walking in the neighborhood is recreational. Hamer's major streets, Yorba Linda Boulevard and Palm Drive, are wide streets and participants reported that drivers often speed. Hamer residents observed that sidewalks throughout the area need repair, due to tree roots. In addition, bicyclists often ride on Yorba Linda Boulevard and residents noted it would be a good location for a bikeway. More details about audit observations can be found in Appendix B.

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 49** on the next page and described in the following sections.

BICYCLE NETWORK

Hamer Island currently has 0.11 miles of existing Class II bicycle lanes along Palm Drive, as shown in **Figure 49** and **Table 23**. However, the existing bicycle lanes do not have pavement markings or signage to indicate to drivers that people may be riding here. Additionally, **Table 23** includes a proposal for 0.17 miles of Class II bicycle lanes along Yorba Linda Boulevard proposed by OCTA in a previous plan.

PEDESTRIAN FACILITIES

Sidewalks exist on streets throughout Hamer Island, though some need repair due to tree roots. There are marked crossings at the intersections of Yorba Linda Boulevard and McCormack Lane, and Yorba Linda Boulevard and Kite Avenue. The crosswalks at Yorba Linda/McCormack are not high-visibility and the east leg is not marked, despite two OCTA bus stops located on this side of the intersection. The marked crossing at Yorba Linda and Kite, outside of Wagner Elementary School, also features advanced yield markings and school crossing signage. There is no marked crosswalk across Yorba Linda Boulevard at Hamer Lane/Drive, though it appears a rectangular rapid flashing beacon (RRFB) does exist. Additionally, an existing brick wall on the north side of Yorba Linda Boulevard at Hamer Drive makes it difficult to see oncoming pedestrians, bikes, or cars traveling down Yorba Linda.



TABLE 23 Existing Bicycle Network (Miles)

Facility Type	Existing	Proposed by OCTA
Class II Bicycle Lanes	0.11	0.17
Total	**0.11**	**0.17**

Orange County Unincorporated Area

Active Transportation Plan

Hamer Island

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

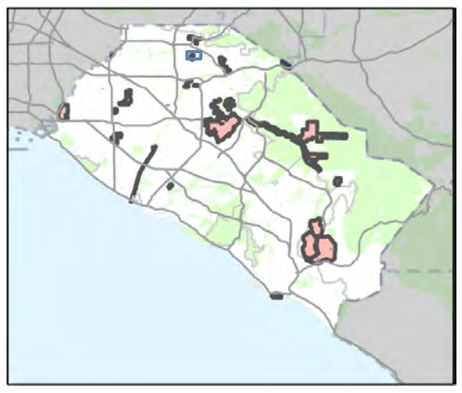
- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Rail Stop
- Bus Route
- Rail

BASEMAP

- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 0.05 0.1 Miles

N

TRUMPET
HUGGINS
SHADY
SHADBURN
MEADOWVIEW
JEANEAN
ORANGE
SHERWOOD VILLAGE CIR
OAKHURST
LAWN
SEVILLE
CARTLEN
HAMER
MCCORMACK
KERMATH
SANBERT
LYMAN
LAVELL
LESA
BROOKWAY
SAGA
CARTHAGE
Hamer Island
YORBA LINDA
YORBA PL
HEATHER
KINGSWOOD
HIGHLANDER
MC KENZIE
SKYMEADOW
RICHMOND
ROSE
ROCKAWAY
LINDA VISTA
BARBARA
SAO PAULO
ARROWHEAD
CEDARLAWN
MONTEVIDEO
KENOAK
ROXBOROUGH
PALM
BRIAN
WARREN
VALPARAISO
GALWAY
Parque del Arroyo Verde
SALVADOR
PUERTO NATALES
LASTERBROOK
DESOTO
OMAHA
BRUNSWICK
VENICE
VINA DEL MAR

Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, a total of 2 collisions involving bicyclists and pedestrians were reported in Hamer Island during the study period, 50% of which involved people bicycling and 50% of which involved people walking.

PEDESTRIAN-INVOLVED COLLISIONS

Between 2009 to 2018, 1 collision occurred in Hamer Island that involved a person walking. This collision resulted in a minor injury.

The collision occurred due to improper passing. It occurred at an intersection.

The collision occurred during the night with streetlights present. The collision occurred at the Yorba Linda Blvd/Hamer Dr intersection, as shown in **Figure 50**.

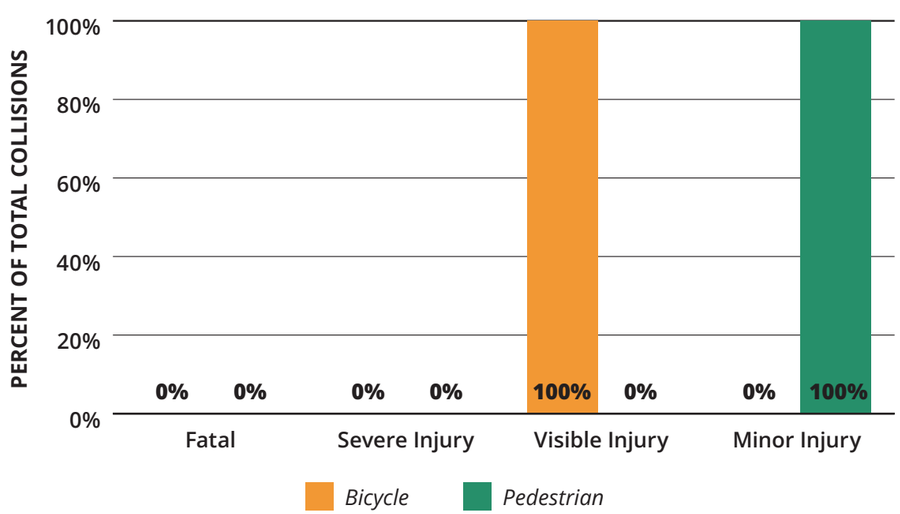
BICYCLE-INVOLVED COLLISIONS

During the same study period (2009 to 2018), 1 collision in Hamer Island involved a person riding a bicycle. The collision resulted in a visible injury.

The collision occurred due to a wrong side of road violation. It did not occur at an intersection.

The collision occurred during the night with no streetlights present. **Figure 50** provides an overview of all bicycle-involved collisions in Hamer Island between 2009-2018 and demonstrates that the collision occurred at the Hamer Dr/Yorba Linda Blvd intersection.

TABLE 24 Crash Severity in Hamer Island



Network Gap Analysis

Figure 51 analyzes the bicycle and pedestrian connectivity of existing low-stress areas of Hamer Island based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the city could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of Hamer Island where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis shows that Hamer Island has relatively strong connectivity, with both portions of the area being connected across Yorba Linda Blvd for both pedestrians and bicyclists. However, some gaps remain in the western portion of the area, where Yorba Linda Blvd severs the area as a high stress arterial.

Based on the Needs and Gaps analysis, there are 2 low stress networks within Hamer Island.

**At the time of writing this Plan, Hamer Island is in the process of being incorporated into the City of Placentia.*

Orange County Unincorporated Area

Active Transportation Plan

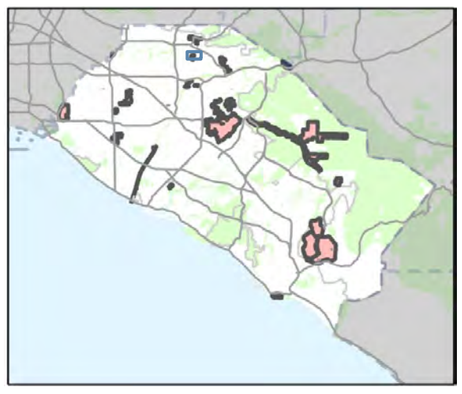
Hamer Island

PEDESTRIAN INVOLVED CRASHES
- Fatal
- Severe Injury
- Minor Injury
- No Injury

BICYCLIST INVOLVED CRASHES
- Fatal
- Severe Injury
- Minor Injury
- No Injury

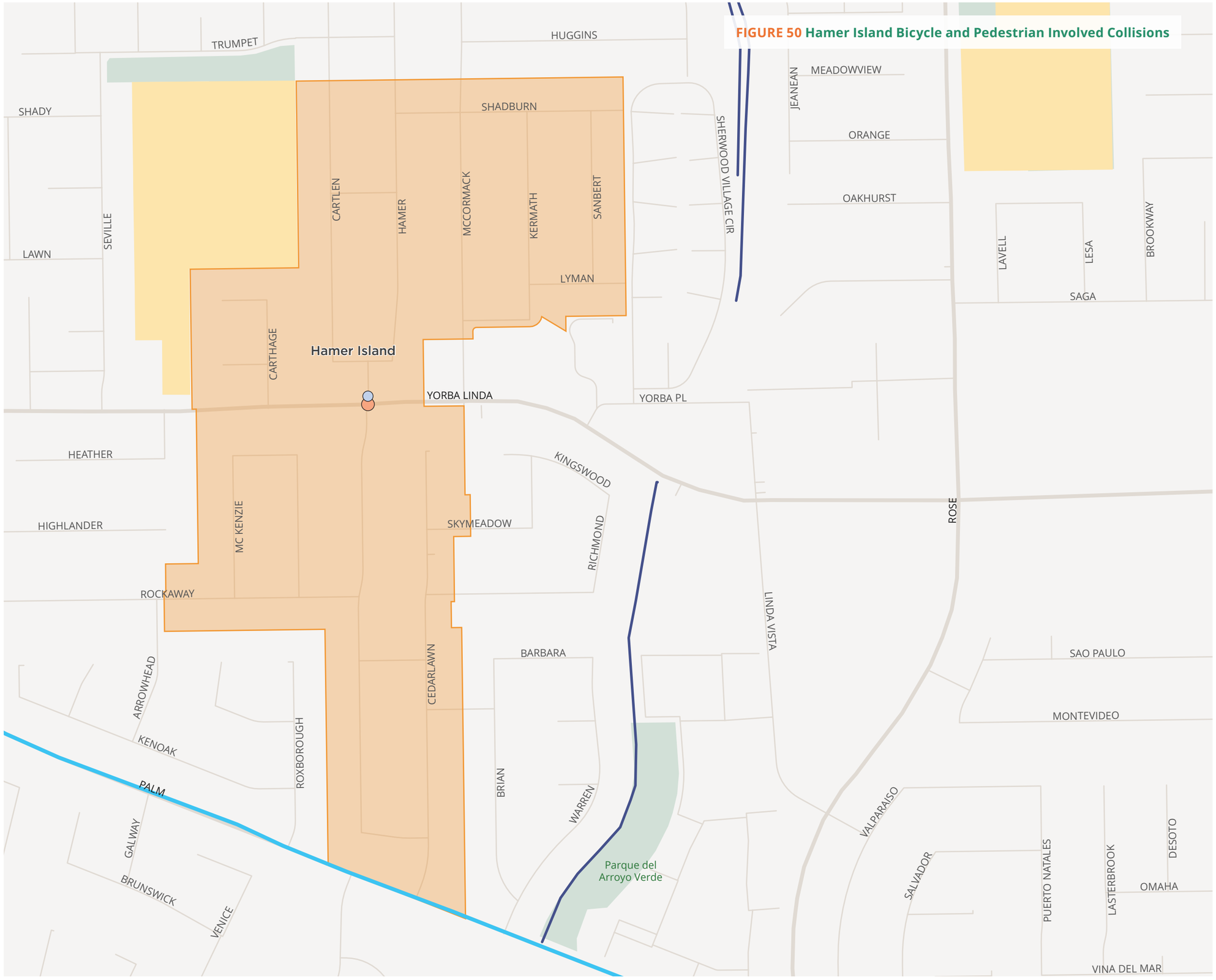
EXISTING BICYCLE FACILITIES
- Shared Use Path
- Bike Lane
- Bike Route
- Separated Bike Lane

BASEMAP
- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.05 0.1 Miles

FIGURE 50 Hamer Island Bicycle and Pedestrian Involved Collisions



Orange County Unincorporated Area

Active Transportation Plan

Hamer Island

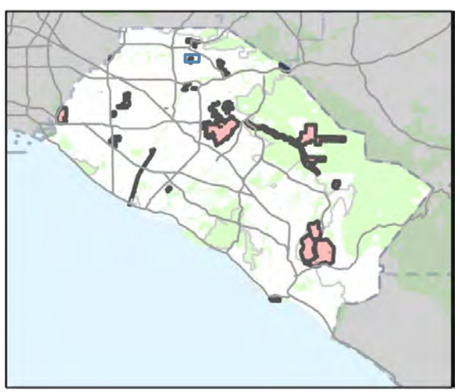
LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

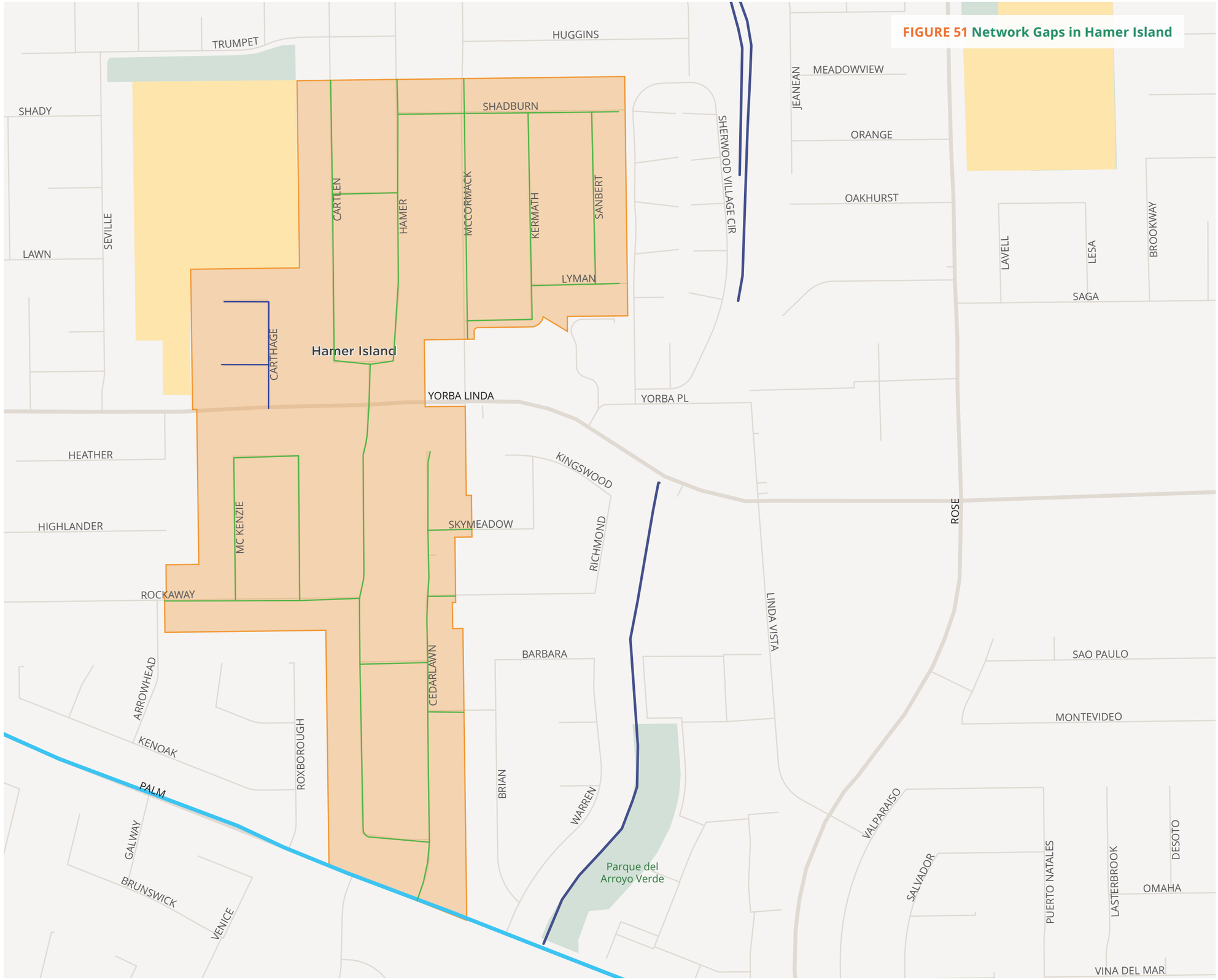
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.05 0.1 Miles

FIGURE 51 Network Gaps in Hamer Island



Katella/Rustic Islands

SUPERVISORIAL DISTRICT 4

Context and Background

Katella/Rustic Island is surrounded by the City of Stanton to the north and west and the City of Garden Grove to the south and east. It is within the sphere of influence of Stanton. This unincorporated area spans approximately 11 acres and is home to 234 residents as of 2019. The community is predominantly made up of single-family detached homes and multifamily housing.

Katella/Rustic Island is served by Westminster School District. Residents have access to Hollenbeck Lane in the City of Stanton and Magnolia Park in the City of Garden Grove, both within a half-mile radius of the community. Katella/Rustic Island currently does not have any OCFCD-owned flood control channels that are suitable for pathway development.

COMMUTE TRENDS

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of current commute mode trends was conducted at the census block group level for Katella/Rustic Island. Of the Katella/Rustic Island residents 16 or older officially in the workforce, the ACS estimates that none walk to work and 0.5% use a bicycle to commute. However, bicycle ridership and rates of walking could be higher than this, as the ACS does not factor recreational trips or trips where commuters use more than one mode when traveling to work, such as taking a bus part way then riding a bicycle to the final destination.

ACCESS TO VEHICLES

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of households without access to a personal vehicle was conducted at the census tract level for the Katella/Rustic Islands. The percentage of people without access to a motor vehicle ranges between 2% to nearly 9% of residents, depending on the Census tract. The average percentage of Katella/Rustic Island residents without access to vehicles is 5.8%.

HEALTH + EQUITY

The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to identify communities that are disproportionately burdened by pollution. It combines multiple sources of pollution data (e.g., ozone concentrations and drinking water contaminants) with population indicators (e.g., birth weight and educational attainment). Communities that score in the most burdened 25% of the state are considered to be disadvantaged and receive a small advantage in California's competitive funding process, such as through the State's Active Transportation Program. Per the tool, the northern parts of Katella/Rustic Island meet this threshold for the most disadvantaged communities.

Additionally, public health is shaped by other "non-health" policies and community characteristics, such as housing, education, economic, and social factors. These factors are included in the California Healthy Places Index (HPI) tool, developed by Public Health Alliance of Southern California, which determines how healthy a census tract is compared to others in the state. Per the HPI tool, Katella/Rustic Island experiences worse health than approximately 65% of other California communities. Maps showing HPI and CalEnviroScreen scoring for Katella/Rustic Island are included in Appendix C.

At a Glance

SIZE
11 Acres

POPULATION
234 Residents

COMMUNITY TYPE
Single-Family Detached Homes

LOCAL SCHOOLS
Westminster School District

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 52** on the next page and described in the following sections.

BICYCLE NETWORK

Katella/Rustic Island does not have any existing bicycle facilities. However, previous plans have proposed the addition of 0.15 miles of Class II bicycle lanes along Magnolia Avenue and Katella Avenue. Additionally, OCTA proposed a Class I shared-use path along the rail right-of-way north of the community in a previous plan.

PEDESTRIAN FACILITIES

Sidewalks exist on Rustic Lane and Regal Avenue within Katella/Rustic Island and corners feature ADA-compliant curb ramps. Currently, crosswalks are marked at the intersection of Katella Avenue and Magnolia Avenue. Because this area includes an entrance to Walter Elementary School, it could benefit from additional school zone improvements such as school signage and pavement markings and/or marked yellow crosswalks.



Orange County Unincorporated Area

Active Transportation Plan

Anaheim, Dale/Augusta, Katella/ Rustic, + Mac/Syracuse Islands

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

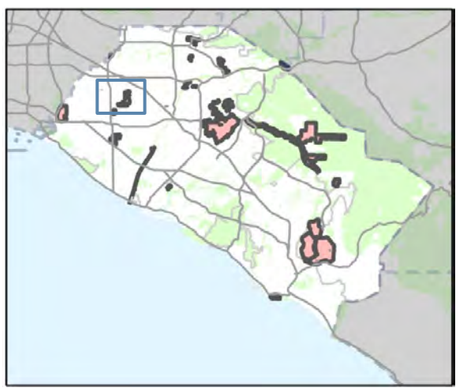
- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Rail Stop
- Bus Route
- Rail

BASEMAP

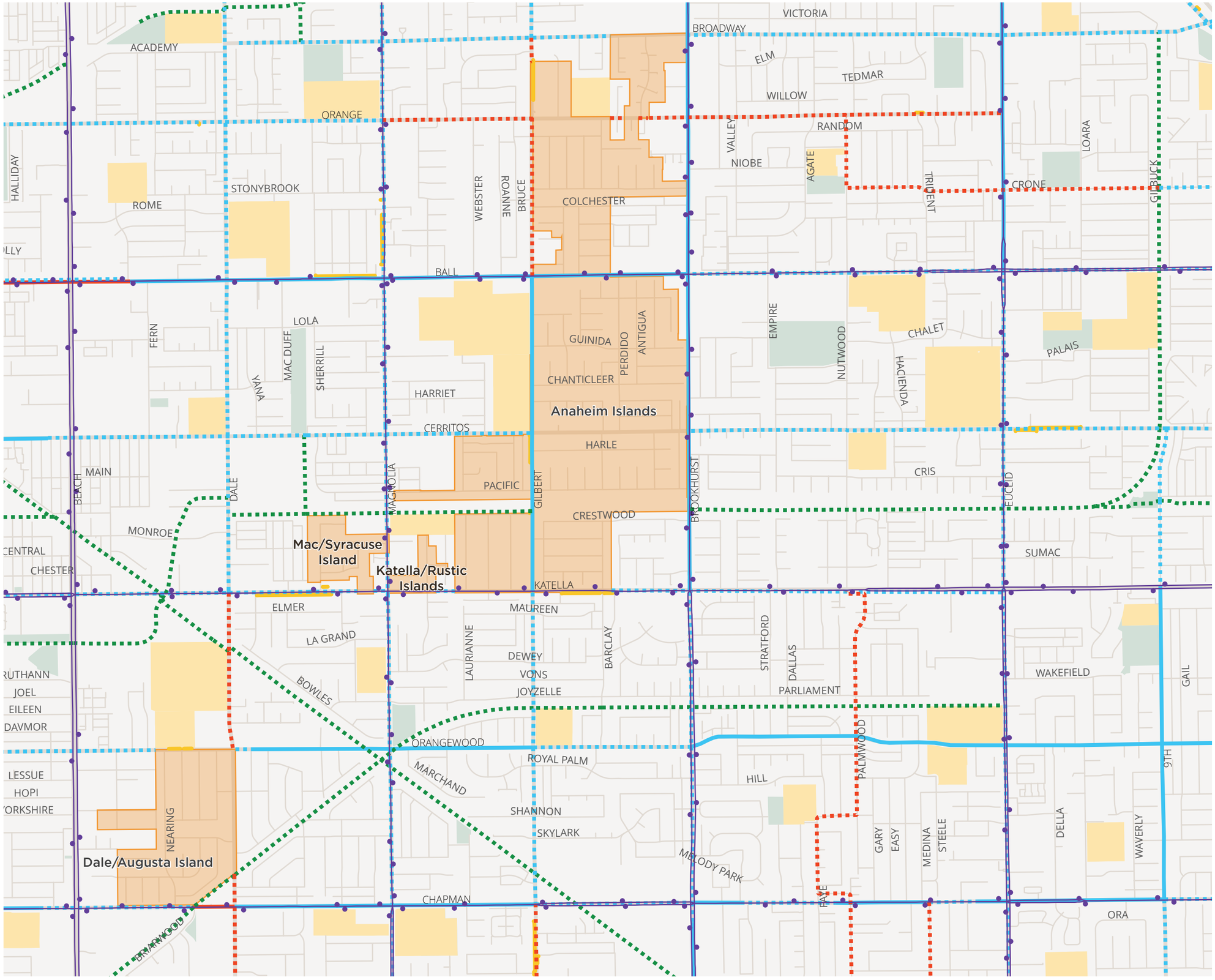
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 0.25 0.5 Miles

N



Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, a total of 10 collisions involving bicyclists and pedestrians were reported in the Katella/Rustic Islands during the study period, 70% of which involved people bicycling and 30% of which involved people walking.

PEDESTRIAN-INVOLVED COLLISIONS

Between 2009 to 2018, 3 collisions occurred in the Katella/Rustic Islands that involved a person walking. One of these collisions were fatal, one resulted in a severe injury, and one resulted in a visible injury.

Two of these collisions occurred due to pedestrian violations, while the third has an unknown cause. No collisions occurred at an intersection.

The collisions occurred during the night with streetlights present. The collisions occurred on Katella Ave.

BICYCLE-INVOLVED COLLISIONS

During the same study period (2009 to 2018), 7 collision in the Katella/Rustic Islands involved a person riding a bicycle. 14% of these collisions resulted in a severe injury, 29% in a visible injury, and 57% in a minor injury.

The highest crash violation was due to traffic signals and signs (29%). 4 (57%) bicycle collisions occurred at an intersection.

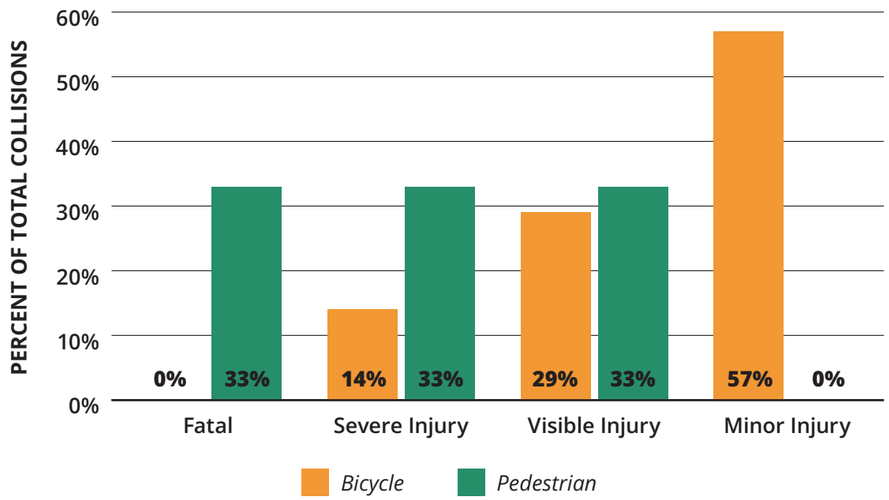
The majority of these collisions occurred during the daylight (71%), followed by at night with streetlights present (29%). **Figure 53** provides an overview of all bicycle-involved collisions in the Katella/Rustic Islands between 2009-2018 and demonstrates that the collisions all occurred on Katella Ave.

Network Gap Analysis

Figure 54 analyzes the bicycle and pedestrian connectivity of existing low-stress areas of the Katella/Rustic Islands based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor

TABLE 25 Crash Severity in Katella/Rustic Islands



is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the city could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection.

In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of the Katella/Rustic Islands where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis shows that the islands consist of a series of disconnected low stress networks that are severed from each other by the high stress arterials of Cerritos Ave and Katella Ave. In order to reach other portions of the islands and the surrounding communities, residents must cross these high stress arterials.

Based on the Needs and Gaps analysis, there are 12 low stress networks within Katella/Rustic Islands.

Orange County Unincorporated Area

Active Transportation Plan

Anaheim, Dale/Augusta, Katella/ Rustic, + Mac/Syracuse Islands

PEDESTRIAN INVOLVED CRASHES

- Fatal
- Severe Injury
- Minor Injury
- No Injury

BICYCLIST INVOLVED CRASHES

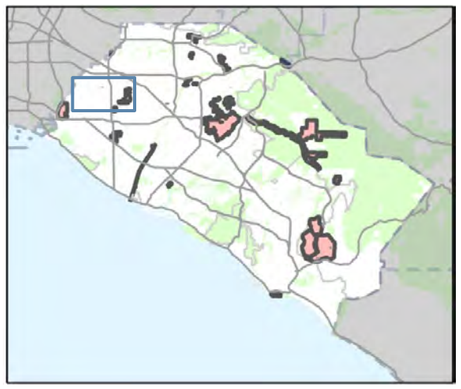
- Fatal
- Severe Injury
- Minor Injury
- No Injury

EXISTING BICYCLE FACILITIES

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

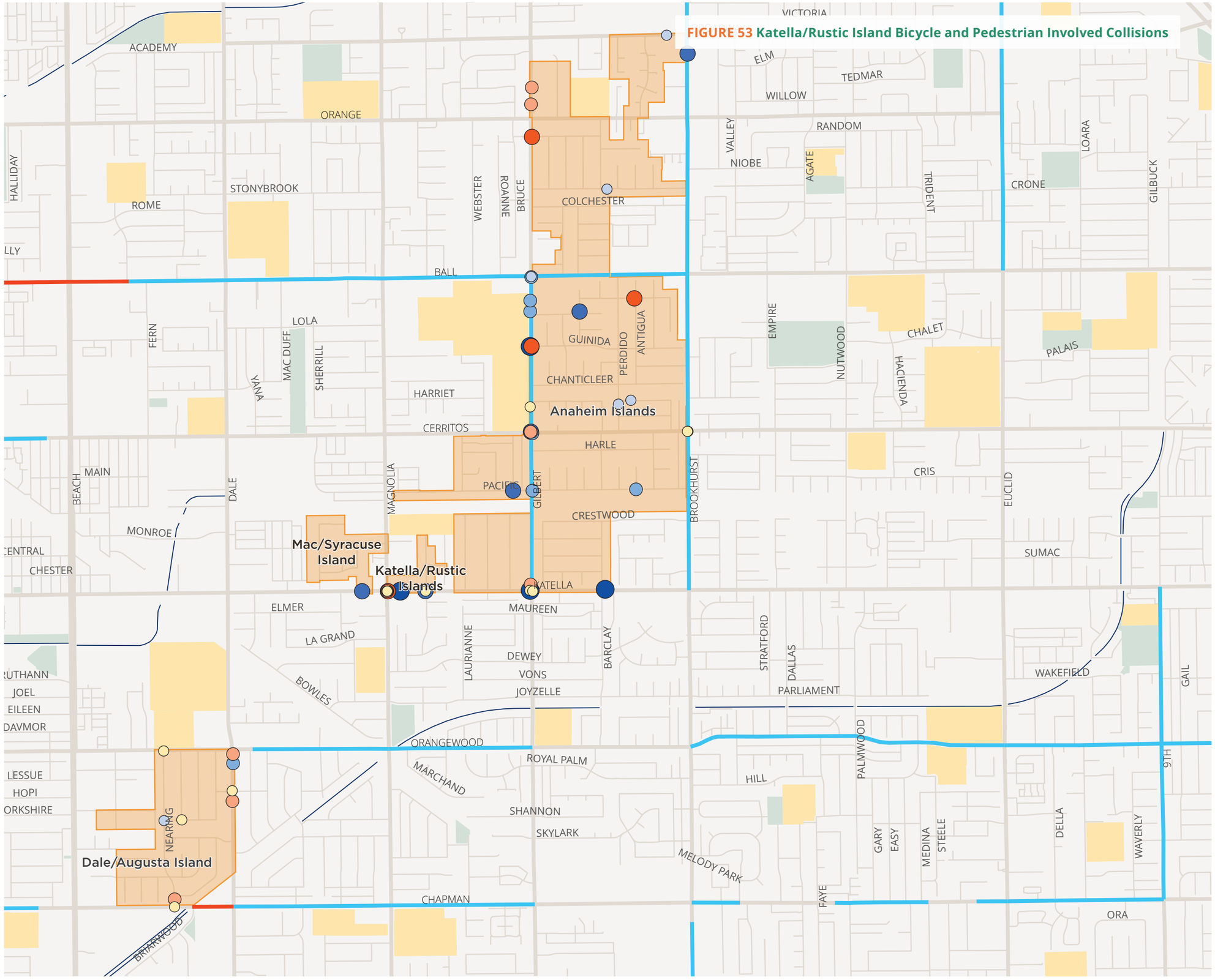
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas



0 0.25 0.5 Miles

FIGURE 53 Katella/Rustic Island Bicycle and Pedestrian Involved Collisions



Orange County Unincorporated Area

Active Transportation Plan

Anaheim, Dale/Augusta, Katella/ Rustic, + Mac/Syracuse Islands

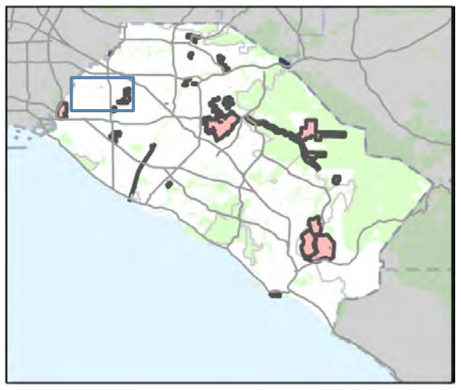
LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

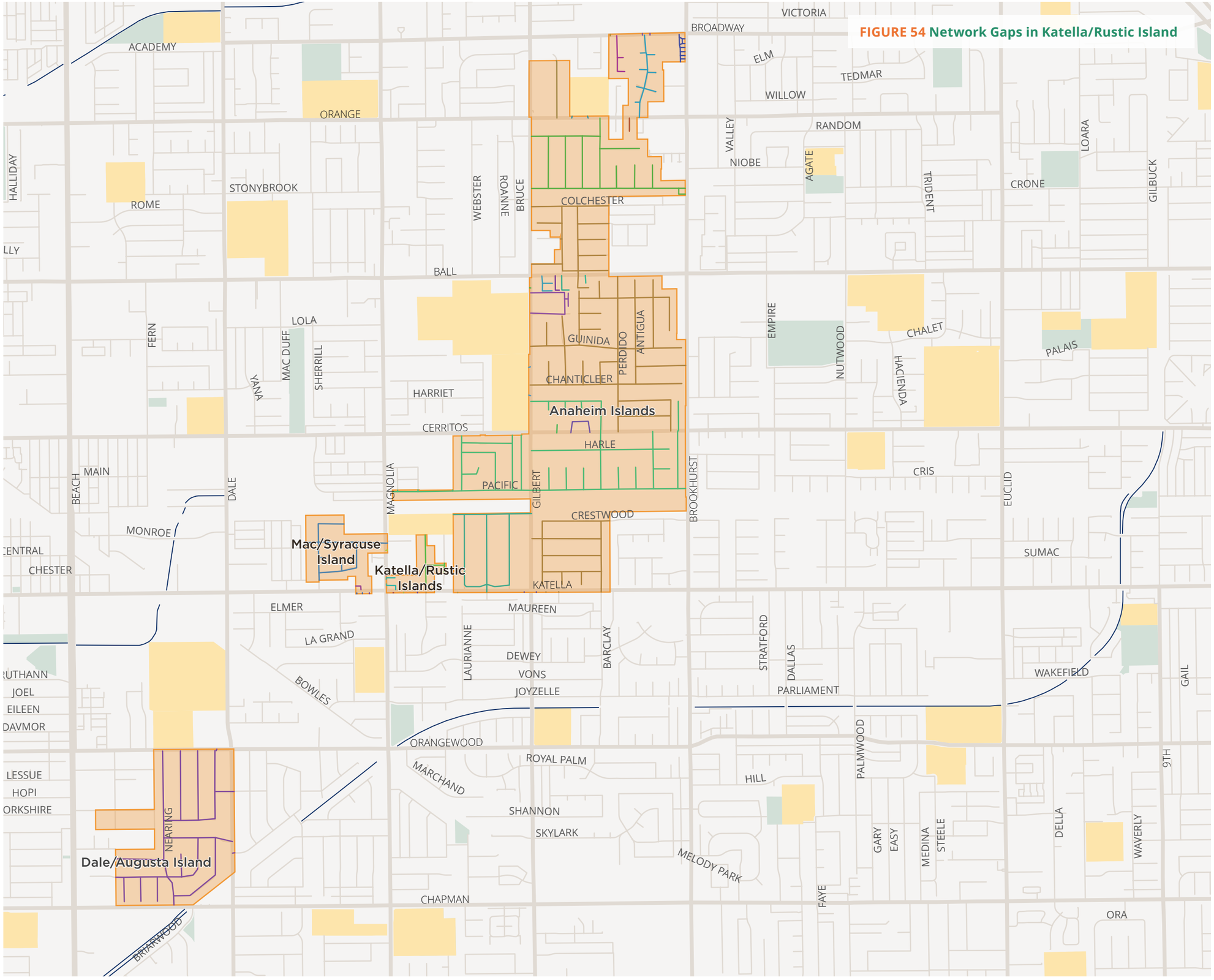
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas



0 0.25 0.5 Miles

FIGURE 54 Network Gaps in Katella/Rustic Island



Recommendations

WHAT DID WE HEAR?

Members of the public identified Katella Avenue as a street in need of bike infrastructure, and requested future considerations for transit improvements.

PEDESTRIAN RECOMMENDATIONS

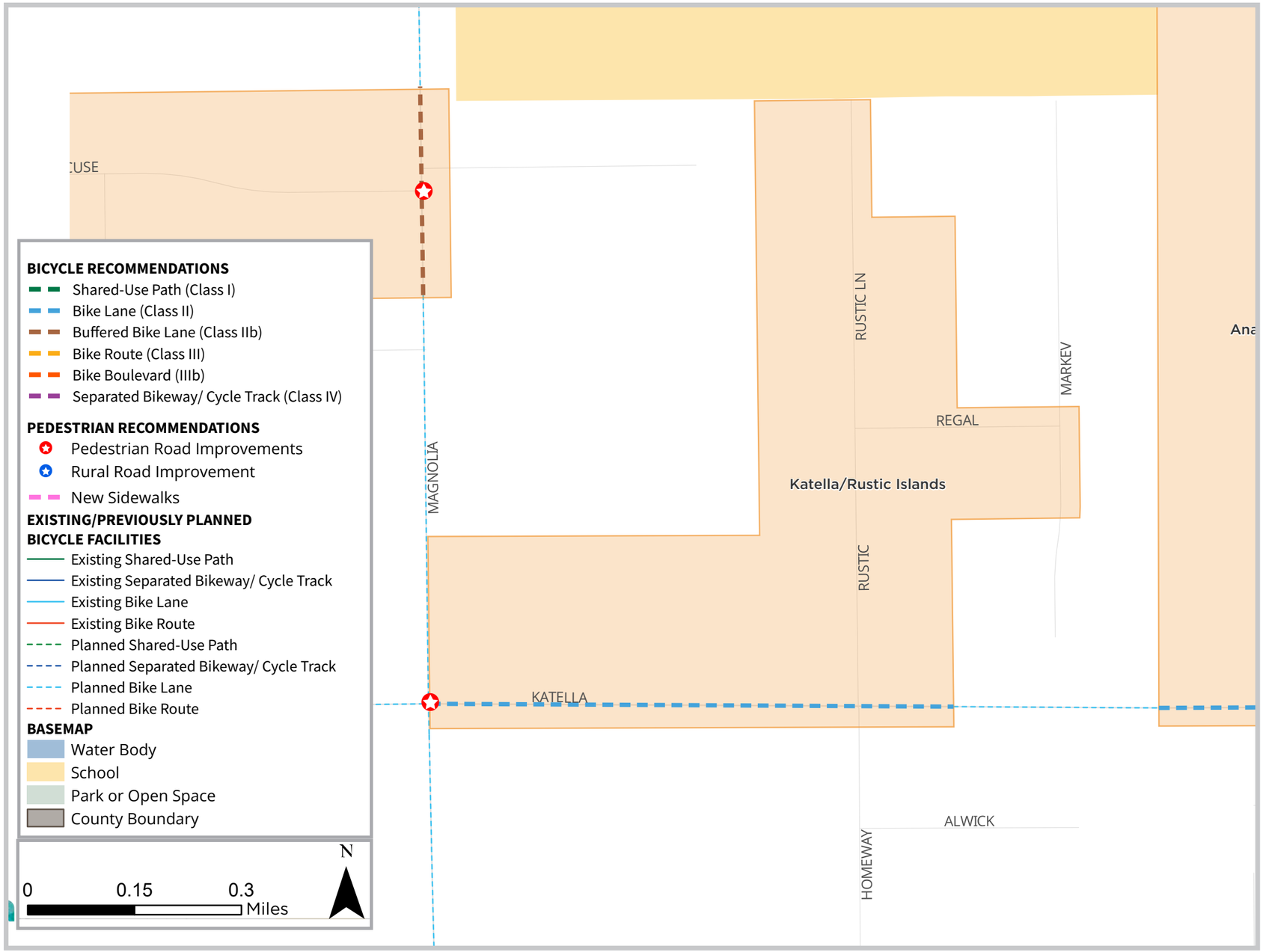
Recommended pedestrian infrastructure in Katella/Rustic Island includes:

- High visibility crosswalks
- Corner radii reductions

BICYCLE RECOMMENDATIONS

Bicycle recommendations in Katella/Rustic include:

- Class II 0.15 miles total, including:
  - Katella Ave, in response to the high number of cyclist collisions in the area within the jurisdictional boundaries of Katella/Rustic and to connect to the proposed Class II in Anaheim Island



Ladera Ranch

SUPERVISORIAL DISTRICT 5

Context and Background

Ladera Ranch is a 4,000-acre Census Designated Place adjacent to the cities of Mission Viejo, Rancho Santa Margarita, and San Juan Capistrano. It is home to approximately 30,000 residents. Ladera Ranch is served by the Capistrano Unified School District, with the following schools in its boundaries:[1]

- Chaparral Elementary School (public)
- Ladera Ranch Elementary and Middle School (public)
- Montessori of Ladera Ranch (private)
- Oso Grande Elementary School (public)

A branch of the Orange County Public Library is also located on the campus of Ladera Ranch School.

The community of Ladera Ranch is made up of nine "villages," each with their own architectural styles and parks, pools, and open spaces. Ladera Ranch has its own Specific Plan (1995), which provides design and development guidelines for the community as a whole. Additionally, Ladera Ranch has 0.89 miles of OCFCD-owned flood maintenance roads.

COMMUTE TRENDS

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of current commute mode trends was conducted at the census block group level for Ladera Ranch. Of the Ladera Ranch residents 16 or older officially in the workforce, the ACS estimates that 0.6% walk and 1.4% use a bicycle to commute. However, bicycle ridership and rates of walking could be higher than this, as the ACS does not factor recreational trips or trips where commuters use more than one mode when traveling to work, such as taking a bus part way then riding a bicycle to the final destination.

ACCESS TO VEHICLES

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of households without access to a personal vehicle was conducted at the census tract level for Ladera Ranch. The percentage of people without access to a motor vehicle ranges is up to nearly 6.5% of residents, depending on the Census tract. The average percentage of Ladera Ranch residents without access to vehicles is 4.3%.

HEALTH + EQUITY

The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to identify communities that are disproportionately burdened by pollution. It combines multiple sources of pollution data (e.g., ozone concentrations and drinking water contaminants) with population indicators (e.g., birth weight and educational attainment). Communities that score in the most burdened 25% of the state are considered to be disadvantaged and receive a small advantage in California's competitive funding process, such as through the State's Active Transportation Program. Per the tool, Ladera Ranch does not meet this threshold for disadvantaged communities.

Additionally, public health is shaped by other "non-health" policies and community characteristics, such as housing, education, economic, and social factors. These factors are included in the California Healthy Places Index (HPI) tool, developed by Public Health Alliance of Southern California, which determines how healthy a census tract is compared to others in the state. Per the HPI tool, Ladera Ranch is considered healthier than approximately 92% of other California communities. Maps showing HPI and CalEnviroScreen scoring for Ladera Ranch are included in Appendix C.

At a Glance

SIZE

4,000 Acres

POPULATION

30,000 Residents

LOCAL SCHOOLS

Chaparral Elementary School

Oso Grande Elementary School

Ladera Ranch School

Montessori of Ladera Ranch

1 As of 2021, some students attending schools in Ladera Ranch are eligible for free and reduced-price meals through the National School Lunch Program. The percentages eligible per school are: Chaparral Elementary (9.4%), Ladera Elementary and Middle School (15.5%), Oso Grande Elementary (6.1%).

Walk Audit

The project team facilitated a virtual community audit to evaluate existing conditions in Ladera Ranch. The community audit, held in November 2020, also included the nearby communities of Las Flores and Rancho Mission Viejo. Overall, 14 community members attended the audit. Participants noted that the existing trail and bicycle facilities in Las Flores require smoother connectivity for cyclists traveling along Oso Parkway. They also observed that a lot of people walk in the area and additional pedestrian crossing features such as longer pedestrian intervals would make walking more comfortable. More details about audit observations can be found in Appendix B.

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 55** on the next page and described in the following sections.

BICYCLE NETWORK

Currently, 11.21 miles of bikeways exist in Ladera Ranch, including over 10 miles of Class II bicycle lanes along Antonio Parkway, O'Neill Drive, Sienna Parkway, Crown Valley Parkway, and Benjamin Drive. Along these streets, however, the bicycle lane markings drop off when approaching existing traffic circles throughout the community. Additionally, the Trabuco Creek Trail runs through the northern part of the community and multiple shared paths run throughout the community.

TABLE 26 Existing Bicycle Network (Miles)

Facility Type	Existing
Class I Shared-use Path	0.79
Class II Bicycle Lanes	10.45
Total	**11.21**

PEDESTRIAN FACILITIES

Sidewalks exist on both sides of all streets in Ladera Ranch. Along major corridors like Antonio Parkway and O'Neill Drive, sidewalks are often buffered from traffic lanes by a greenway strip, often with shade trees. Landscaped medians also exist along these major corridors. Marked crosswalks exist at most major intersections along Antonio Parkway, O'Neill Drive, Sienna Parkway, Crown Valley Parkway, and Benjamin Drive. Many of these marked crosswalks are high-visibility ladder markings, especially at existing traffic circles. However, crosswalks at major signalized intersections such as Crown Valley Parkway/O'Neill Drive, Crown Valley Parkway/ Antonio Parkway, and Antonio Parkway/O'Neill Drive would be more visible if restriped as continental. Additionally, at O'Neill Drive and Benjamin Drive, overgrown landscaping makes it difficult to see pedestrians crossing.



Orange County Unincorporated Area

Active Transportation Plan

Ladera Ranch, Las Flores, + Rancho Mission Viejo

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

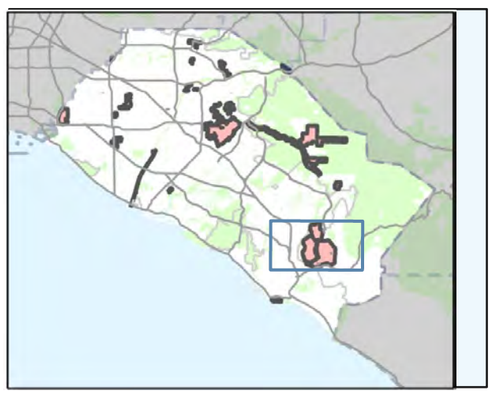
- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Rail Stop
- Bus Route
- Rail

BASEMAP

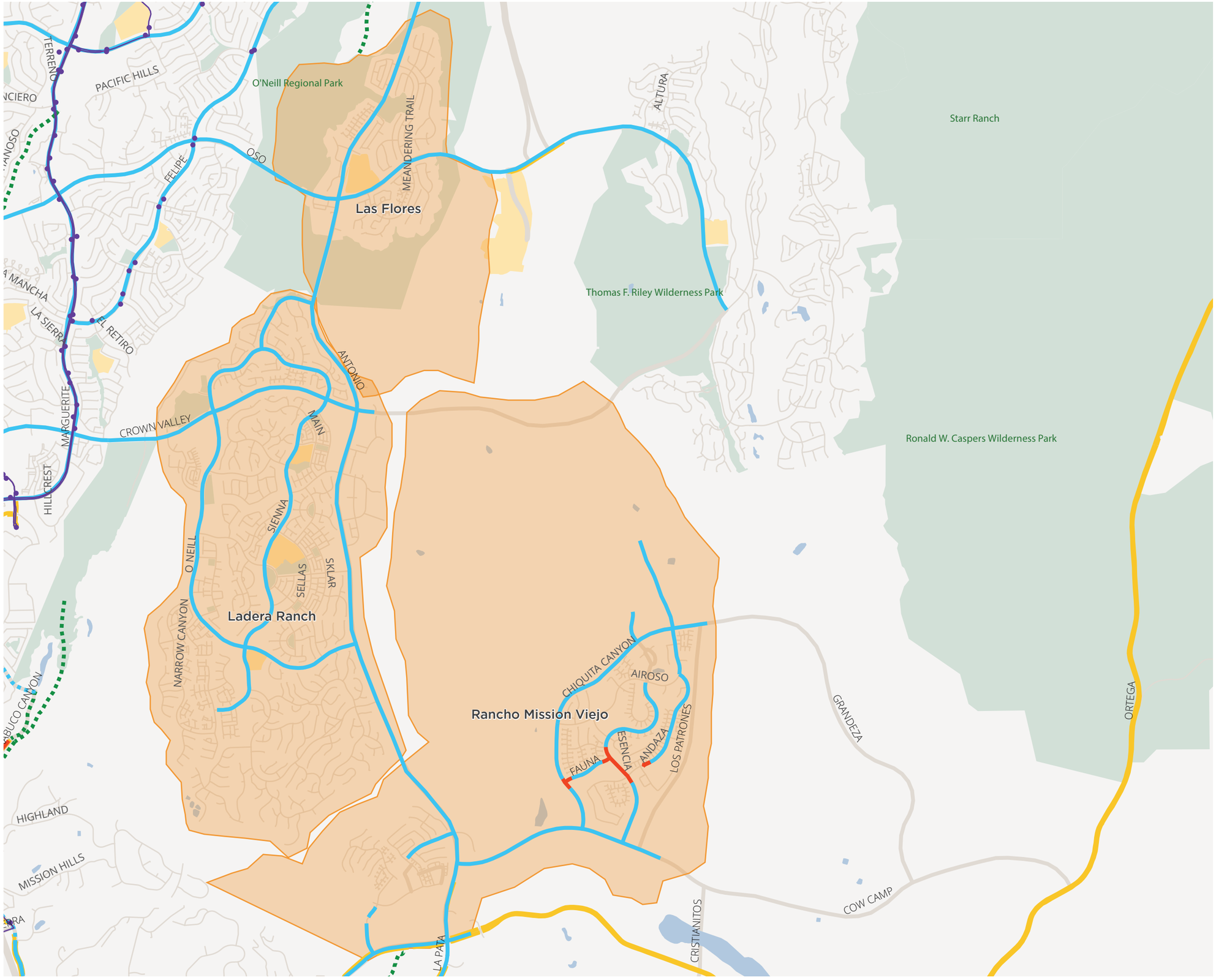
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 0.5 1 Miles

N



Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, a total of 27 collisions involving bicyclists and pedestrians were reported in Ladera Ranch during the study period, 59% of which involved people bicycling and 41% of which involved people walking.

PEDESTRIAN-INVOLVED COLLISIONS

Between 2009 to 2018, 11 collisions occurred in Ladera Ranch that involved a person walking. 45% of these collisions resulted in a visible injury, while 55% resulted in a minor injury.

The highest crash violation was due to pedestrian right of way (45%) followed by pedestrian violations (36%). 27% of pedestrian collisions occurred at an intersection.

The majority of these pedestrian related collisions occurred during the daylight (73%) followed by the night time in areas with no existing street lights (18%). Many collisions involving pedestrians occurred on Sienna Parkway and O'Neill Drive **Figure 56**.

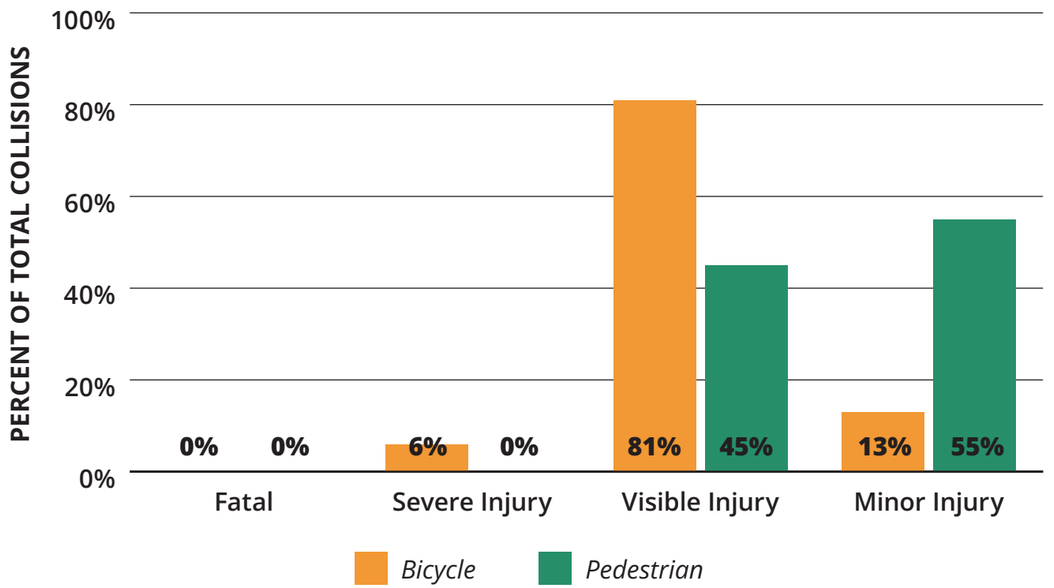
BICYCLE-INVOLVED COLLISIONS

During the same study period (2009 to 2018), 16 collisions in Ladera Ranch involved a person riding a bicycle. None of these were fatal collisions, 1 (6%) resulted in severe injury, and 13 (81%) bicycle collisions resulted in a visible injury.

The highest crash violation categories were wrong side of road (25%) and automobile right of way (25%), followed by unsafe speed (13%), improper turning (13%), and unsafe starting or backing (13%). 6 (38%) bicycle collisions occurred at an intersection.

The majority of these bicycle collisions occurred during the daylight (94%) followed by the dusk-dawn (6%). **Figure 56** provides an overview of all bicycle-involved collisions in Ladera Ranch between 2009-2018 and demonstrates a concentration of collisions along Sienna Parkway, Crown Valley Parkway, and Antonio Parkway.

TABLE 27 Crash Severity in Ladera Ranch





Network Gap Analysis

Figure 57 analyzes the bicycle and pedestrian connectivity of existing low-stress areas of Ladera Ranch based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the city could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of Ladera Ranch where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis shows that despite the presence of stressful major arterials throughout Ladera Ranch, the majority of the network in the community can be reached through low stress connections for both pedestrians and bicyclists. This is likely due to the proliferation of trails through the community and low-stress residential streets. Some portions of the area, especially to the south, are more dependent on connections to major arterials, particularly Narrow Canyon.

Based on the Needs and Gaps analysis, there are 34 low stress networks within Ladera Ranch.



Orange County Unincorporated Area

Active Transportation Plan

Ladera Ranch, Las Flores, + Rancho Mission Viejo

PEDESTRIAN INVOLVED CRASHES

- Fatal
- Severe Injury
- Minor Injury
- No Injury

BICYCLIST INVOLVED CRASHES

- Fatal
- Severe Injury
- Minor Injury
- No Injury

EXISTING BICYCLE FACILITIES

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

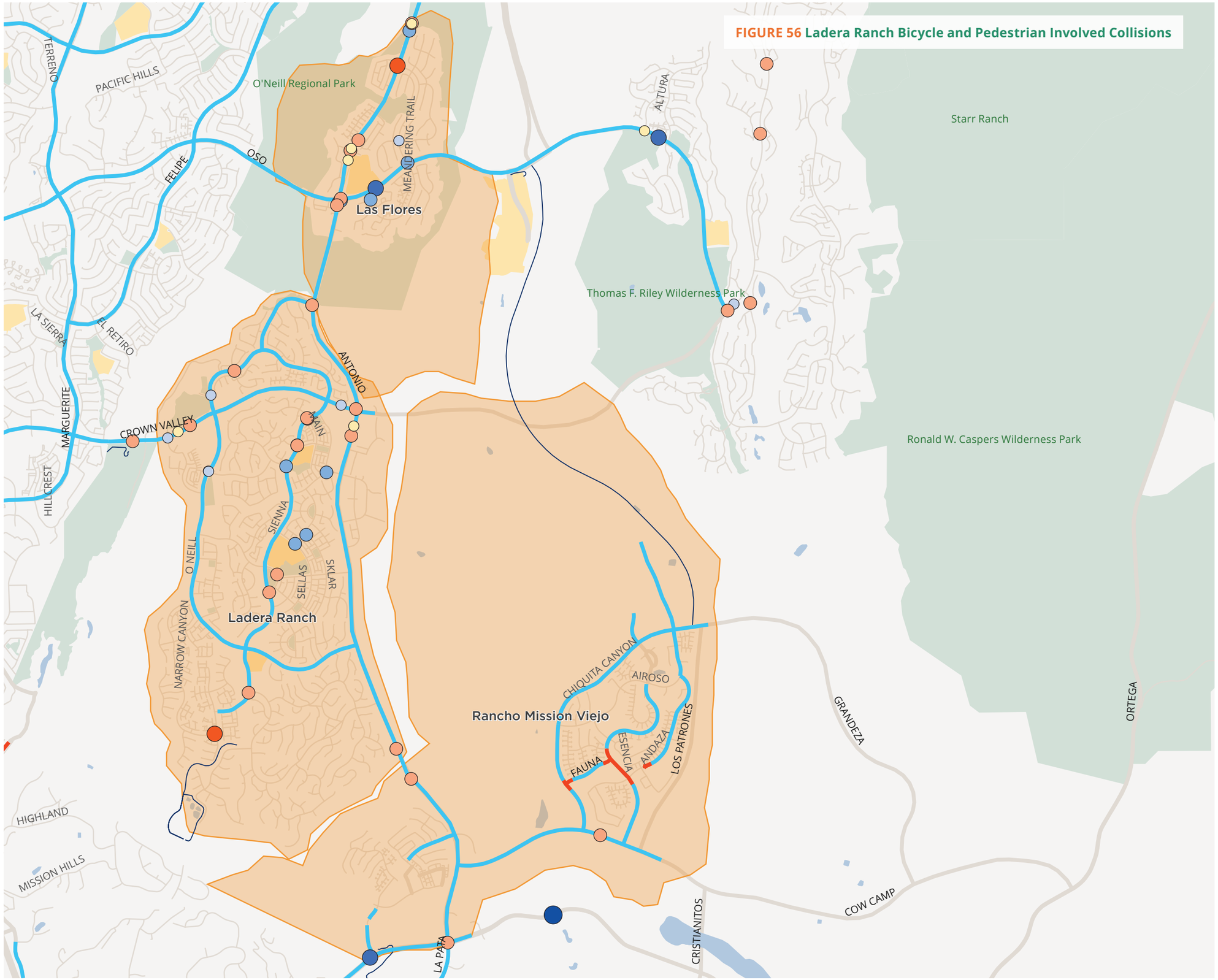
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.5 1 Miles

FIGURE 56 Ladera Ranch Bicycle and Pedestrian Involved Collisions



Orange County Unincorporated Area

Active Transportation Plan

Ladera Ranch, Las Flores, + Rancho Mission Viejo

LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

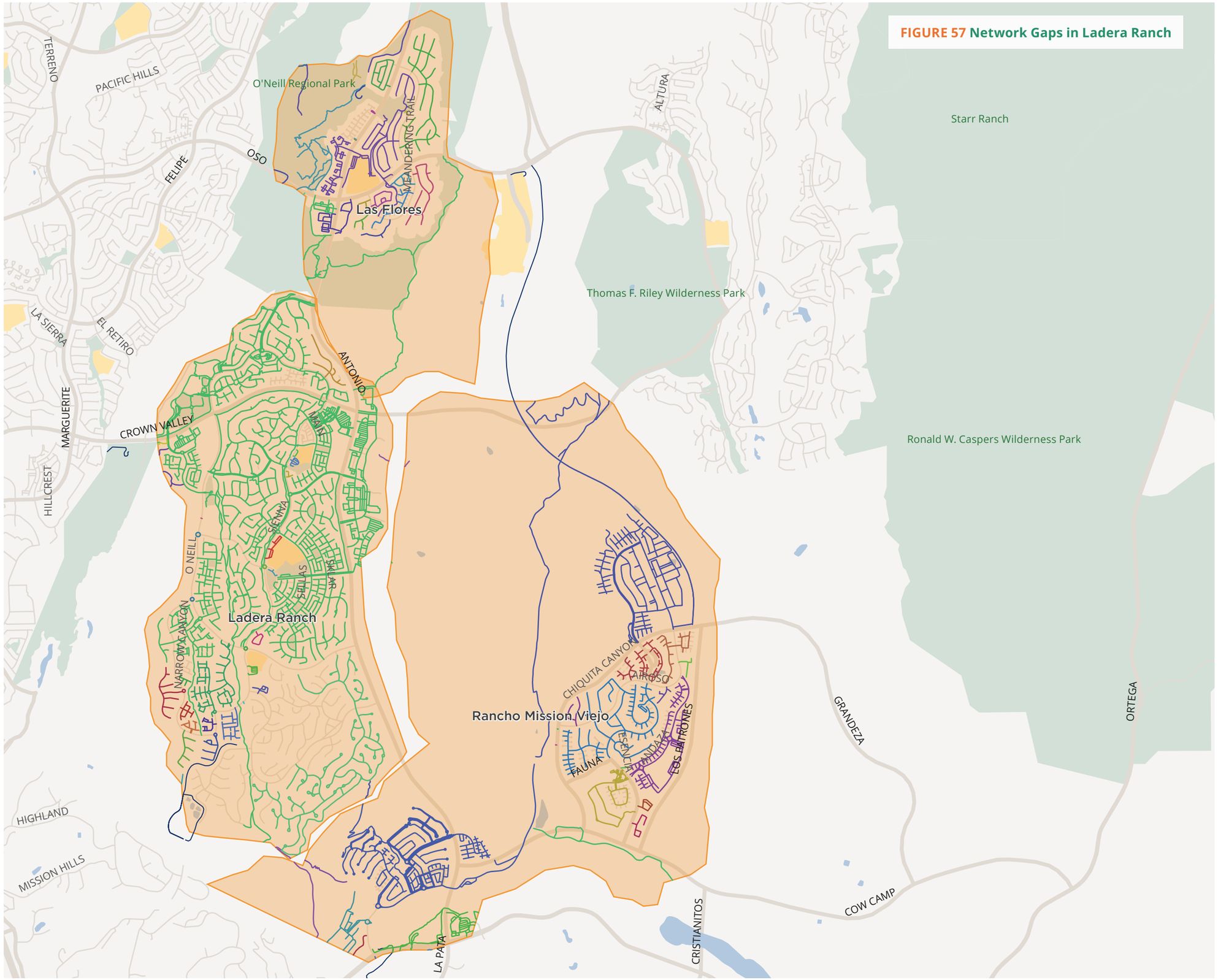
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.5 1 Miles

FIGURE 57 Network Gaps in Ladera Ranch



Recommendations

WHAT DID WE HEAR?

Community members requested bicycle connections between Sienna Parkway and Antonio Parkway. Comments noted dangerous routes and routes that need improvements for bicyclists including Crown Valley Parkway, O'Neill Parkway, Sienna Parkway and Antonio Parkway.

PEDESTRIAN RECOMMENDATIONS

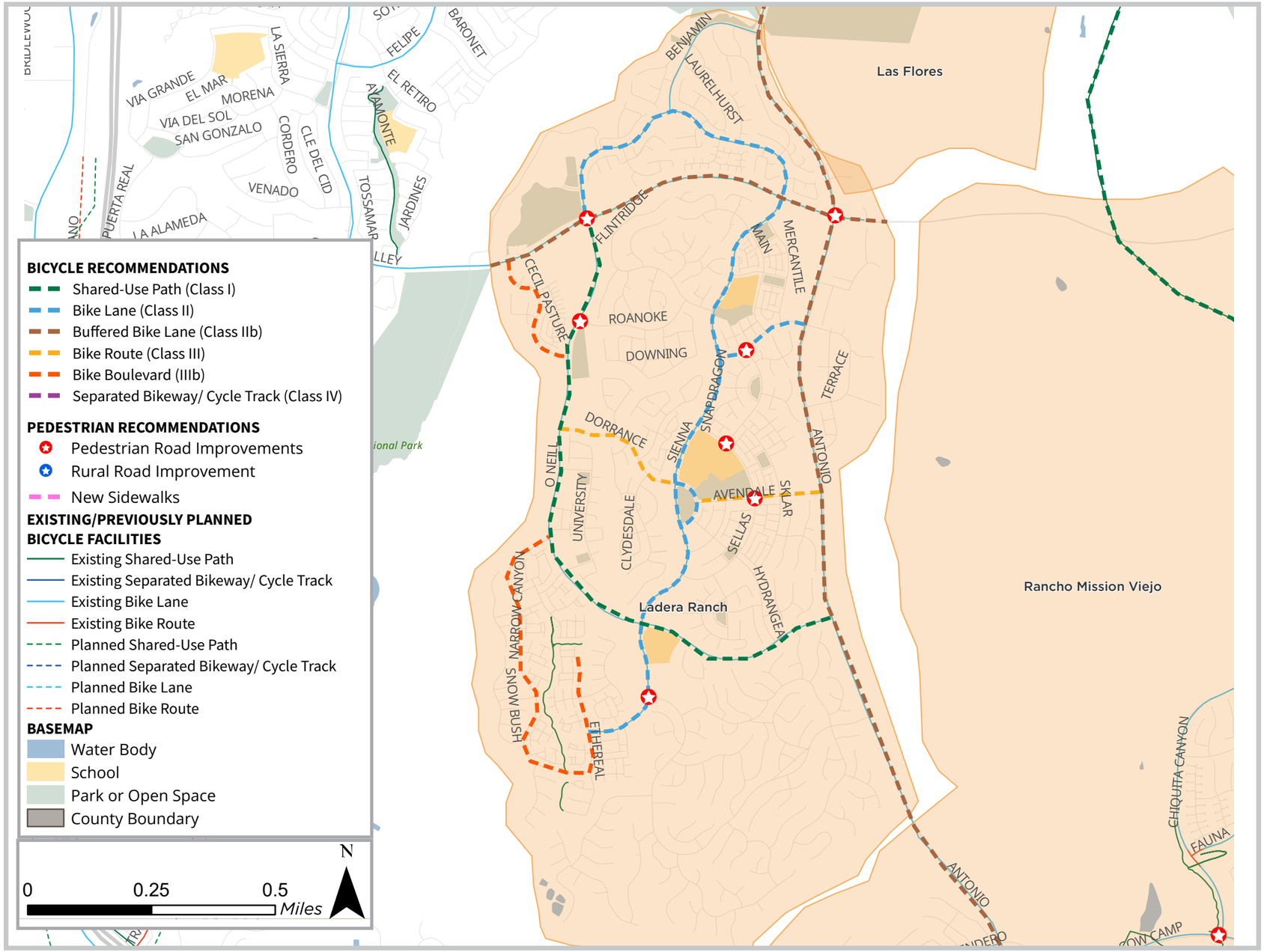
Recommended pedestrian infrastructure in Ladera Ranch Island includes:

- High visibility crosswalks
- Pedestrian hybrid beacons
- Pedestrian refuge islands
- Signal timing improvements

BICYCLE RECOMMENDATIONS

Bicycle recommendations in Ladera Ranch Island include:

- Class I 2.3 miles total
- Class II 3.88 miles total
- Class IIb 7.33 miles total, including:
  - Enhancements to existing Class II bikeways on Antonio Pkwy, which travels through Las Flores and Rancho Mission Viejo
- Class III 0.91 miles total
- Class IIIb 1.99 miles total



Las Flores

SUPERVISORIAL DISTRICT 5

Context and Background

Las Flores is adjacent to the city of Rancho Santa Margarita and the communities of Wagon Wheel and Ladera Ranch. The two-square-miles community is home to approximately 6,000 residents (as of 2010). Las Flores is served by Capistrano Unified School District and is the home to the adjoined campuses of Las Flores Elementary and Las Flores Middle School, as well as Tesoro High School.[1] The community has two parks, Oak Tree Park and Starlight Park, and is near multiple regional open spaces and trails. Las Flores has a specific plan (1990) that defines the community's land use and development procedures. Los Flores currently does not have any OCFCD-owned flood control channels that are suitable for pathway development.

COMMUTE TRENDS

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of current commute mode trends was conducted at the census block group level for Las Flores. Of the Las Flores residents 16 or older officially in the workforce, the ACS estimates that 0.5% walk and 1.7% use a bicycle to commute. However, bicycle ridership and rates of walking could be higher than this, as the ACS does not factor recreational trips or trips where commuters use more than one mode when traveling to work, such as taking a bus part way then riding a bicycle to the final destination.

ACCESS TO VEHICLES

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of households without access to a personal vehicle was conducted at the census tract level for Las Flores. The percentage of people without access to a motor vehicle is up to nearly 6.5% of residents, depending on the Census tract. The average percentage of Las Flores residents without access to vehicles is 4.1%.

HEALTH + EQUITY

The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to identify communities that are disproportionately burdened by pollution. It combines multiple sources of pollution data (e.g., ozone concentrations and drinking water contaminants) with population indicators (e.g., birth weight and educational attainment). Communities that score in the most burdened 25% of the state are considered to be disadvantaged and receive a small advantage in California's competitive funding process, such as through the State's Active Transportation Program. Per the tool, Las Flores does not meet this threshold for disadvantaged communities.

Additionally, public health is shaped by other "non-health" policies and community characteristics, such as housing, education, economic, and social factors. These factors are included in the California Healthy Places Index (HPI) tool, developed by Public Health Alliance of Southern California, which determines how healthy a census tract is compared to others in the state. Per the HPI tool, Las Flores is considered healthier than approximately 90% of other California communities. Maps showing HPI and CalEnviroScreen scoring for Las Flores are included in Appendix C.

At a Glance

SIZE

2 sq. mi.

POPULATION

6,000 Residents

LOCAL SCHOOLS

Las Flores Elementary

Las Flores Middle School

Tesoro High School

1 As of 2021, 17.4% of students attending Las Flores Elementary and 10.6% of students at Tesoro High are eligible for free and reduced-price meals through the National School Lunch Program.

Walk Audit

The project team facilitated two audits to evaluate existing conditions in Las Flores, one desktop audit in Fall 2020 and one virtual community audit in November 2020. The community audit also included the nearby communities of Ladera Ranch and Rancho Mission Viejo and had 14 total participants. Participants noted that existing trail and bicycle facilities in Las Flores require smoother connectivity for cyclists traveling along Oso Parkway, according to community members. Residents also noted that pedestrians often walk in the area and would benefit from additional pedestrian features such as longer pedestrian crossing intervals. More details about audit observations can be found in Appendix B.

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 58** on the next page and described in the following sections.

BICYCLE NETWORK

Las Flores' existing bikeway network is made up of 9.83 miles of Class II bicycle lanes along Antonio Parkway and Oso Parkway. The bicycle lane markings stop when approaching intersections with right-turn lanes, which could create conflicts between bicyclists and drivers. The intersection of Antonio Parkway and Oso Parkway, in particular, has right-turn lanes at all legs including a pocket at the northwest corner separated from through traffic by a concrete median. Additionally, Antonio Parkway is a very wide street with posted speed limits of 55mph, and could feel safer for bicyclists if a buffer or physical barrier was present.

Additionally, one mile of Class I shared-use path, which would continue the Trabuco Creek Trail and create an off-street connection to Ladera Ranch through O'Neill Regional Park, was proposed by OCTA in a previous plan.

PEDESTRIAN FACILITIES

Sidewalks exist on both sides of all streets in Las Flores. Along major corridors like Antonio Parkway and Oso Parkway, sidewalks are often buffered from traffic lanes by a greenway strip, often with shade trees. Landscaped medians also exist along these corridors. Crosswalks are marked at major intersections throughout the community, but are currently not high-visibility. This could cause conflicts between turning drivers and people crossing the street at busy intersections, such as at the intersection of Oso Parkway and Antonio Parkway. Here, pedestrians may also have a hard time crossing due the right turn lane creating a two-pronged crosswalk. This intersection is also very wide, so some pedestrians like older people or people using mobility devices may not have enough time to cross the long distance.

West of Antonio Parkway is a shared-use trail that can be used to get through the community and to connect to Trabuco Creek Trail, allowing users to walk or bike to Ladera Ranch without having to cross any major intersections. The trail entrance off of Antonio has signage posted, but the entrance off of Oso Parkway is hard to see and there is a lack of signage.

TABLE 28 Existing Bicycle Network (Miles)

Facility Type	Existing	Proposed by OCTA
Class I Shared-use Path	0.00	1.00
Class II Bicycle Lanes	9.83	0.00
Total	**9.83**	**0.00**



Orange County Unincorporated Area

Active Transportation Plan

Ladera Ranch, Las Flores, + Rancho Mission Viejo

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

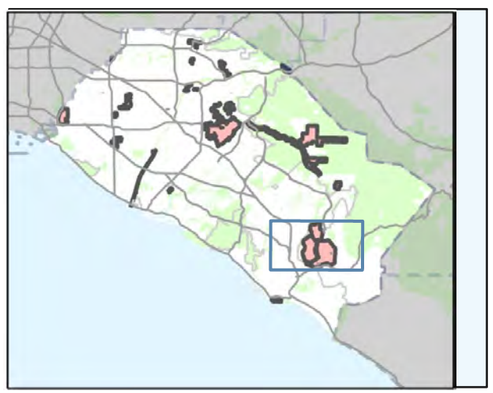
- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Rail Stop
- Bus Route
- Rail

BASEMAP

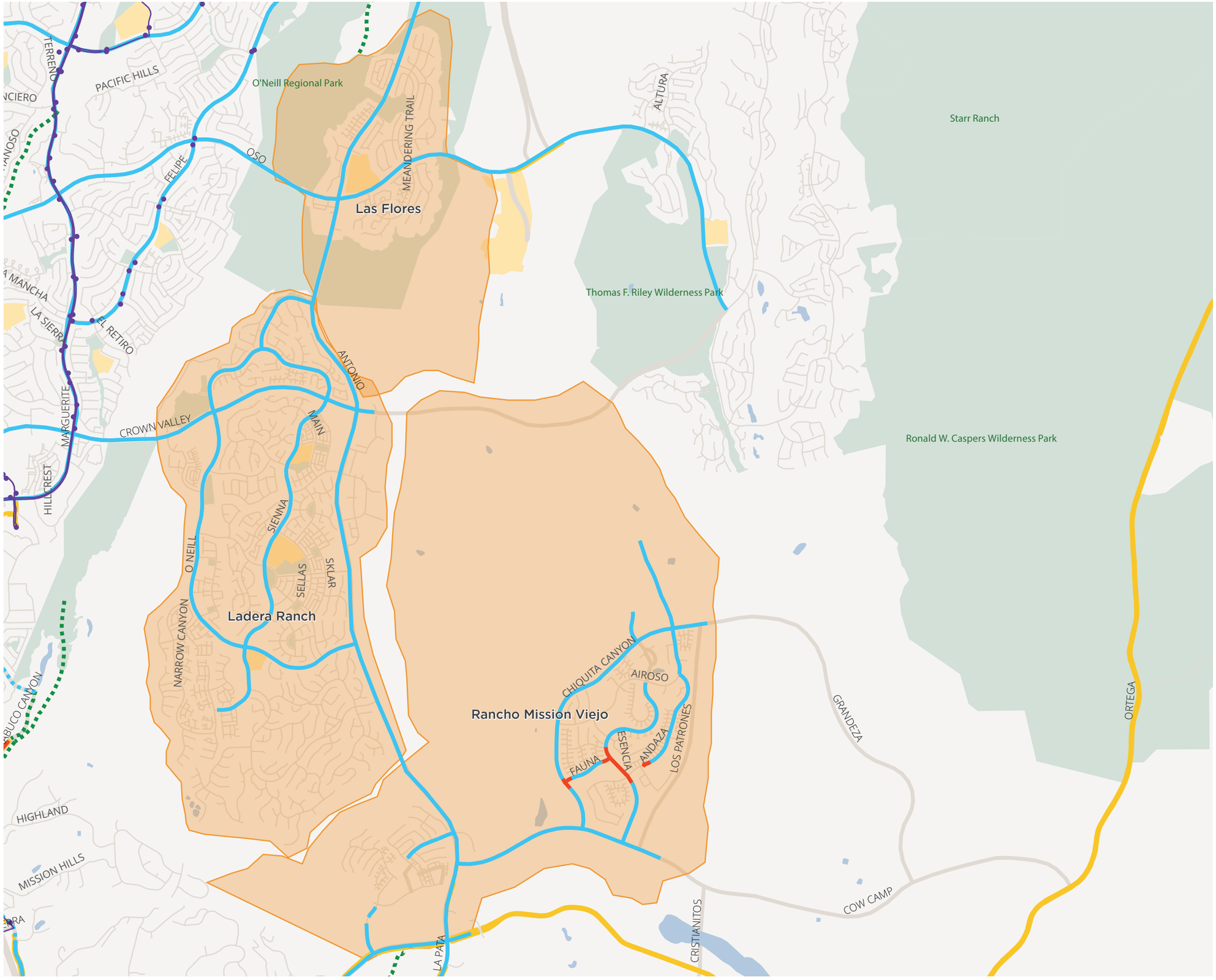
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 0.5 1 Miles

N



Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, a total of 17 collisions involving bicyclists and pedestrians were reported in Las Flores during the study period, 53% of which involved people bicycling and 47% of which involved people walking.

PEDESTRIAN-INVOLVED COLLISIONS

Between 2009 to 2018, 8 collisions occurred in Las Flores that involved a person walking. 13% of these collisions resulted in a severe injury, 50% resulted in a visible injury, and 38% resulted in a minor injury.

The highest crash violation was due to pedestrian right of way (25%) and pedestrian violation (25%) followed by unsafe lane change (13%), traffic signals and signs (13%), other than driver or pedestrian (13%), and unsafe starting or backing (13%). 50% of pedestrian collisions occurred at an intersection.

The majority of these pedestrian related collisions occurred during the daylight (63%) followed by the night time in areas with existing street lights (38%). Many collisions involving pedestrians occurred on Oso Parkway and Antonio Parkway **Figure 59**.

BICYCLE-INVOLVED COLLISIONS

During the same study period (2009 to 2018), 9 collisions in Las Flores involved a person riding a bicycle. None of these were fatal collisions, 1 (11%) resulted in severe injury, and 5 (56%) bicycle collisions resulted in a visible injury.

The highest crash violation categories were improper turning (44%), followed by unsafe speed (22%). 2 (22%) bicycle collisions occurred at an intersection.

The majority of these bicycle collisions occurred during the daylight (89%) followed by the dusk-dawn (11%). **Figure 59** provides an overview of all bicycle-involved collisions in Las Flores between 2009-2018 and demonstrates a concentration of collisions along Antonio Parkway.

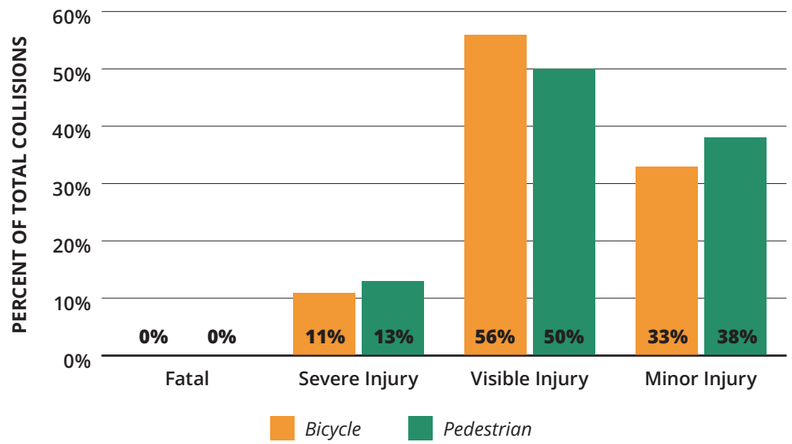
Network Gap Analysis

Figure 60 analyzes the bicycle and pedestrian connectivity of existing low-stress areas of Las Flores based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the city could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

TABLE 29 Crash Severity in Las Flores



Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of Las Flores where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis shows that the pedestrian and bicycle networks are isolated from one another by high stress arterials. In order to travel between one part of Las Flores to another, a pedestrian or cyclist must cross Oso Parkway and Antonio Parkway, two high-stress arterials that necessitate safe and accessible crossings.

Based on the Needs and Gaps analysis, there are 25 low stress networks within Las Flores.

Orange County Unincorporated Area

Active Transportation Plan

Ladera Ranch, Las Flores, + Rancho Mission Viejo

PEDESTRIAN INVOLVED CRASHES

- Fatal
- Severe Injury
- Minor Injury
- No Injury

BICYCLIST INVOLVED CRASHES

- Fatal
- Severe Injury
- Minor Injury
- No Injury

EXISTING BICYCLE FACILITIES

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

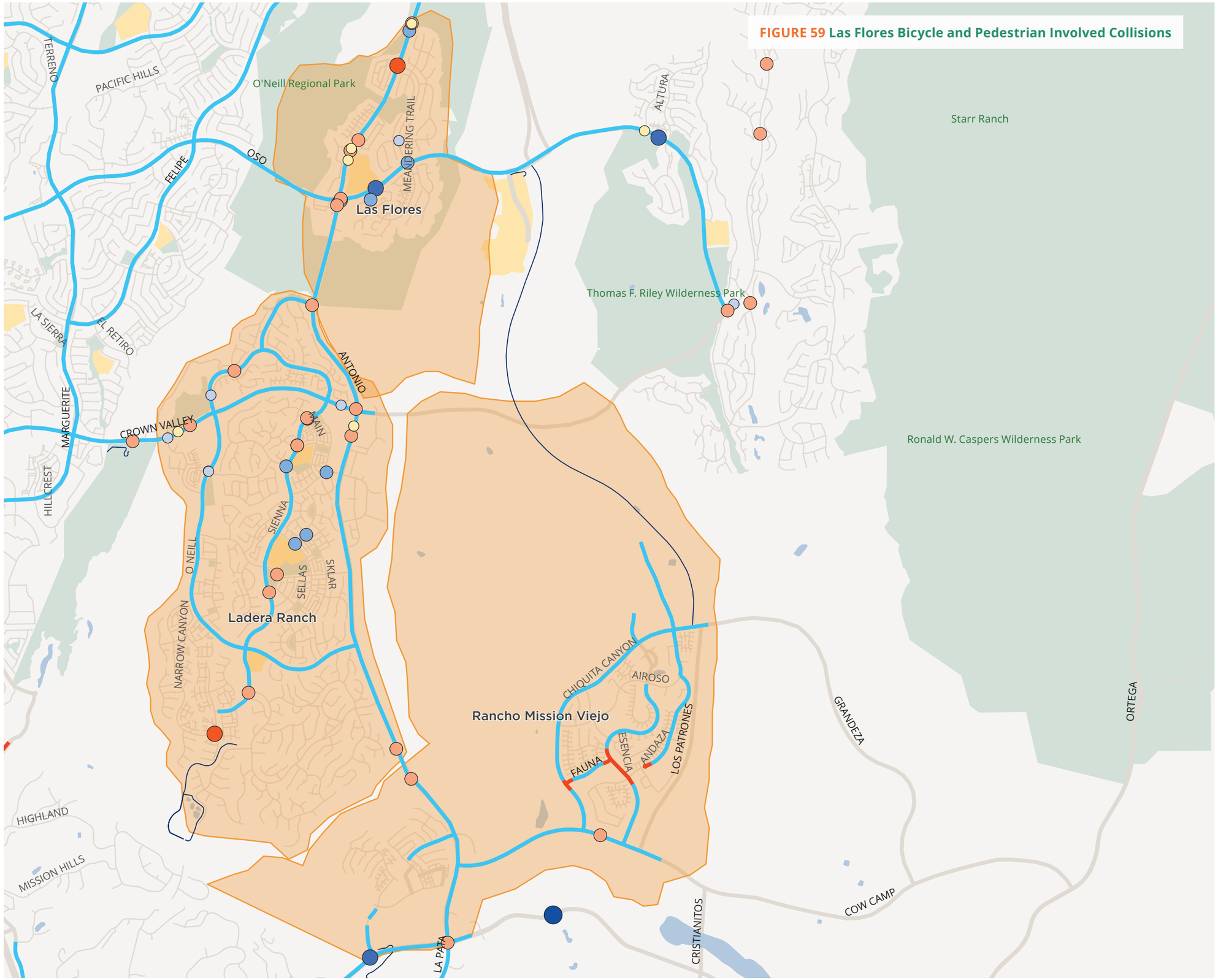
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.5 1 Miles

FIGURE 59 Las Flores Bicycle and Pedestrian Involved Collisions



Orange County Unincorporated Area

Active Transportation Plan

Ladera Ranch, Las Flores, + Rancho Mission Viejo

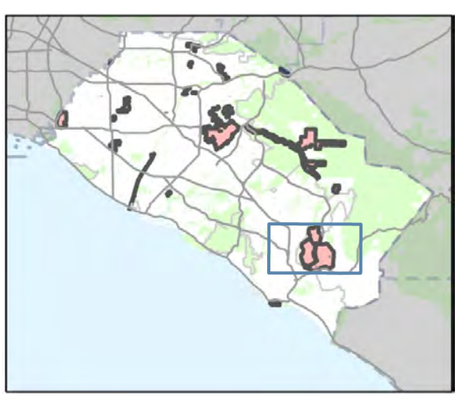
LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

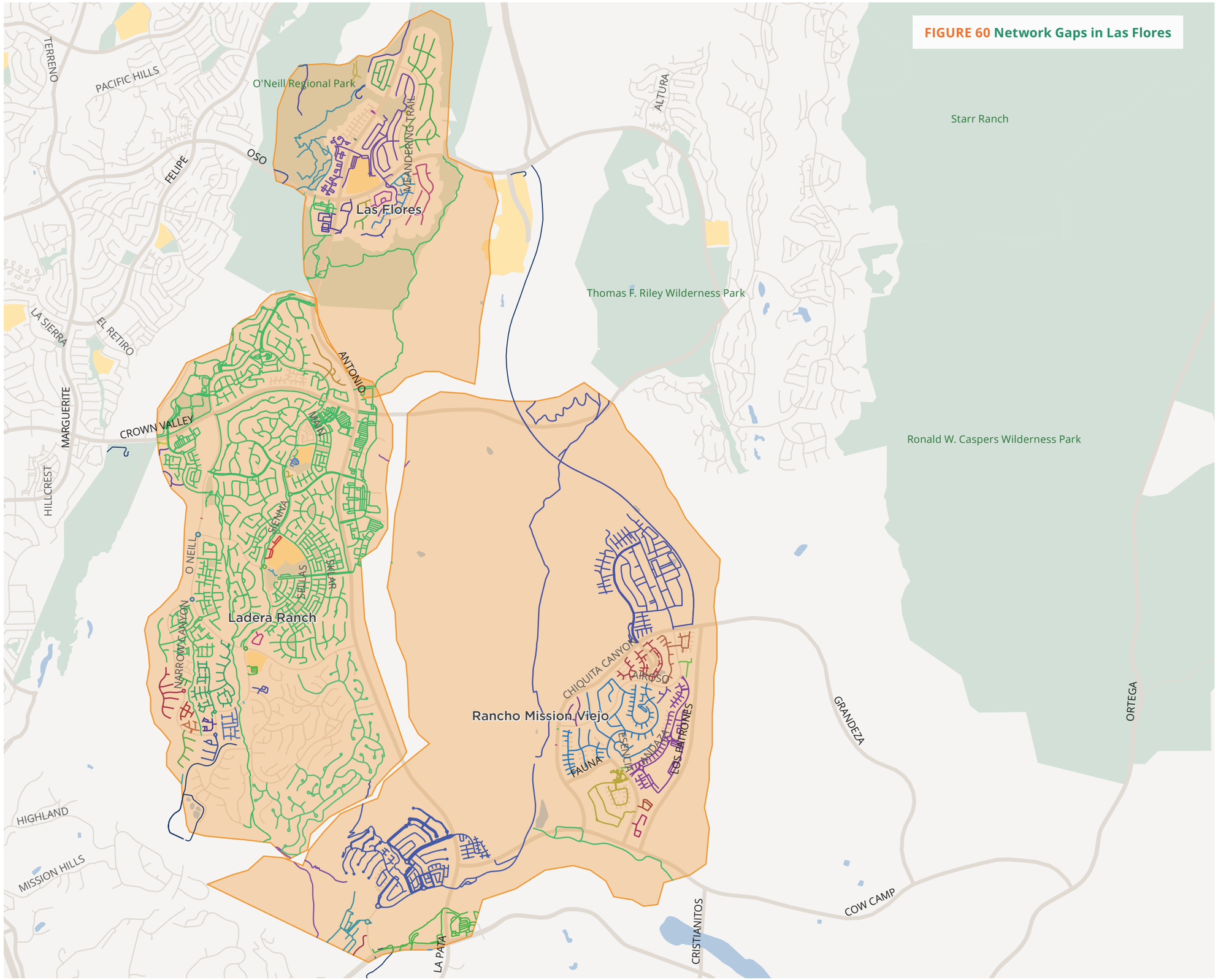
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.5 1 Miles

FIGURE 60 Network Gaps in Las Flores



Recommendations

WHAT DID WE HEAR?

Community input was focused on the high stress streets Oso Parkway and Antonio Parkway. Comments requested traffic calming at intersections where drivers tend to speed, and safer access to trails.

PEDESTRIAN RECOMMENDATIONS

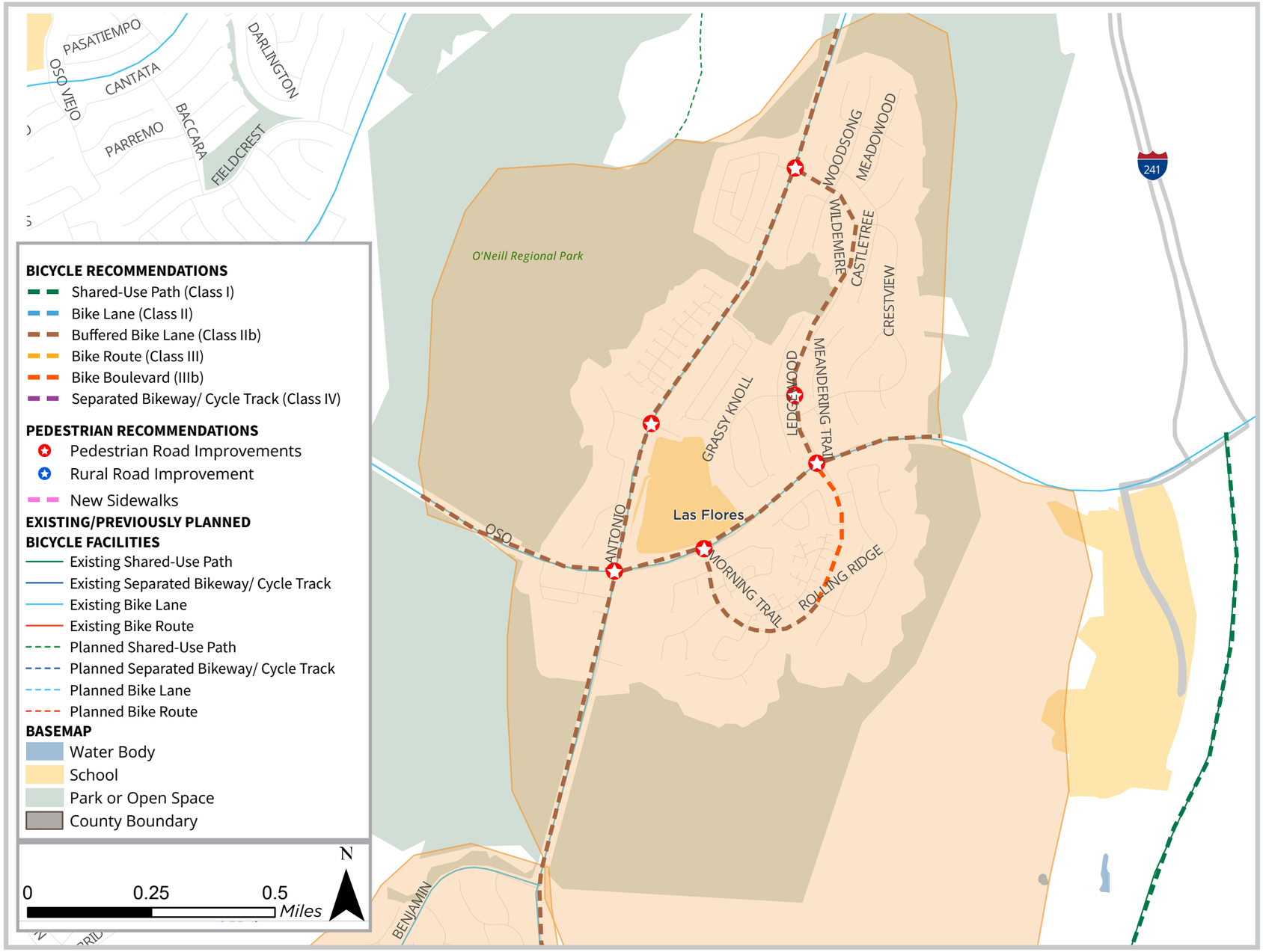
Recommended pedestrian infrastructure in Las Flores Island includes:

- High visibility crosswalks
- Curb ramps
- Pedestrian refuge islands
- Signal timing improvements
- Curb extensions
- Traffic calming

BICYCLE RECOMMENDATIONS

Bicycle recommendations in Las Flores Island include:

- Class IIb 2.16 miles total, including:
  - Meandering Trail, creating an alternative, lower stress route than the higher speed Antonio Parkway
  - Oso Parkway, enhancing the existing Class II
- Class IIIb 0.29 miles total



Lincoln/Glassell Island

SUPERVISORIAL DISTRICT 4

Context and Background

Lincoln/Glassell Island is surrounded by the City of Orange to the east and the City of Anaheim to the west and is within the sphere of influence of Orange. This unincorporated area spans approximately 102 acres and is home to 9 residents as of 2019. Lincoln/Glassell Island is served by Orange Unified School District. Residents have access to Olive Park in Orange and Rio Vista Park in Anaheim, both within a half-mile radius of the community. Additionally, 2.03 miles of OCFCD-owned flood control channels run through Lincoln/Glassell Island, which comprises much of the land in this area.

COMMUTE TRENDS

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of current commute mode trends was conducted at the census block group level for Lincoln/Glassell Island. Of the Lincoln/Glassell Island residents 16 or older officially in the workforce, the ACS estimates that 1.4% walk and 2.4% use a bicycle to commute. However, bicycle ridership and rates of walking could be higher than this, as the ACS does not factor recreational trips or trips where commuters use more than one mode when traveling to work, such as taking a bus part way then riding a bicycle to the final destination.

ACCESS TO VEHICLES

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of households without access to a personal vehicle was conducted at the census tract level for Lincoln/Glassell Island. The percentage of people without access to a motor vehicle ranges between 1.8% to nearly 6.8% of residents, varying by Census tract. The average percentage of Lincoln/Glassell Island residents without access to vehicles is 3.4%.

HEALTH + EQUITY

The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to identify communities that are disproportionately burdened by pollution. It combines multiple sources of pollution data (e.g., ozone concentrations and drinking water contaminants) with population indicators (e.g., birth weight and educational attainment). Communities that score in the most burdened 25% of the state are considered to be disadvantaged and receive a small advantage in California's competitive funding process, such as through the State's Active Transportation Program. Per the tool, Lincoln/Glassell Island does not meet this threshold for the most disadvantaged communities, though the area around the Santa Ana River shows as disadvantaged.

Additionally, public health is shaped by other "non-health" policies and community characteristics, such as housing, education, economic, and social factors. These factors are included in the California Healthy Places Index (HPI) tool, developed by Public Health Alliance of Southern California, which determines how healthy a census tract is compared to others in the state. Per the HPI tool, Lincoln/Glassell Island is considered healthier than approximately 57% of other California communities. Maps showing HPI and CalEnviroScreen scoring for Lincoln/Glassell Island are included in Appendix C.

At a Glance

SIZE

102 Acres

POPULATION

9 Residents

LOCAL SCHOOLS

Orange Unified School District



Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 61** on the next page and described in the following sections.

BICYCLE NETWORK

Lincoln/Glassell Island has 0.87 miles of existing bikeways. This includes the Class II bicycle lanes along Lincoln Avenue west of Batavia Street, which connects to the Class I shared-use path along the Santa Ana River Trail (SART) that are within community boundaries. Lincoln/Glassell residents can access the SART entrances on both sides of Lincoln Avenue just west of Batavia Street. There are also existing bicycle lanes on Glassell Street, which crosses over the Santa Ana River. Additionally, **Table 30** includes 0.32 miles of Class II bicycle lanes along Lincoln Avenue proposed by OCTA in a previous plan.

PEDESTRIAN FACILITIES

Sidewalks exist on streets throughout Lincoln/Glassell Island, but there is one unpaved segment on the south side of Lincoln Avenue, east of Berkeley Street. The intersection of Lincoln and Batavia has marked crosswalks, though they are not highly visible to drivers. Additionally, multiple poles and utility boxes on the corners of this intersection may create some accessibility issues. Crosswalks are also striped across Riverbend Parkway where it meets Lincoln Avenue, as well as outside the entrance to Ambriz Memorial Park.

TABLE 30 Existing Bicycle Network (Miles)

Facility Type	Existing	Proposed by OCTA
Class I Shared-use Path	0.66	0.00
Class II Bicycle Lanes	0.21	0.32
Total	**0.87**	**0.32**



Orange County Unincorporated Area

Active Transportation Plan

Lincoln/Glassell + Olive Heights Islands

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

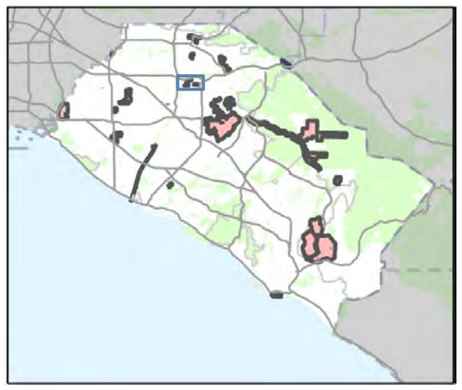
- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Rail Stop
- Bus Route
- Rail

BASEMAP

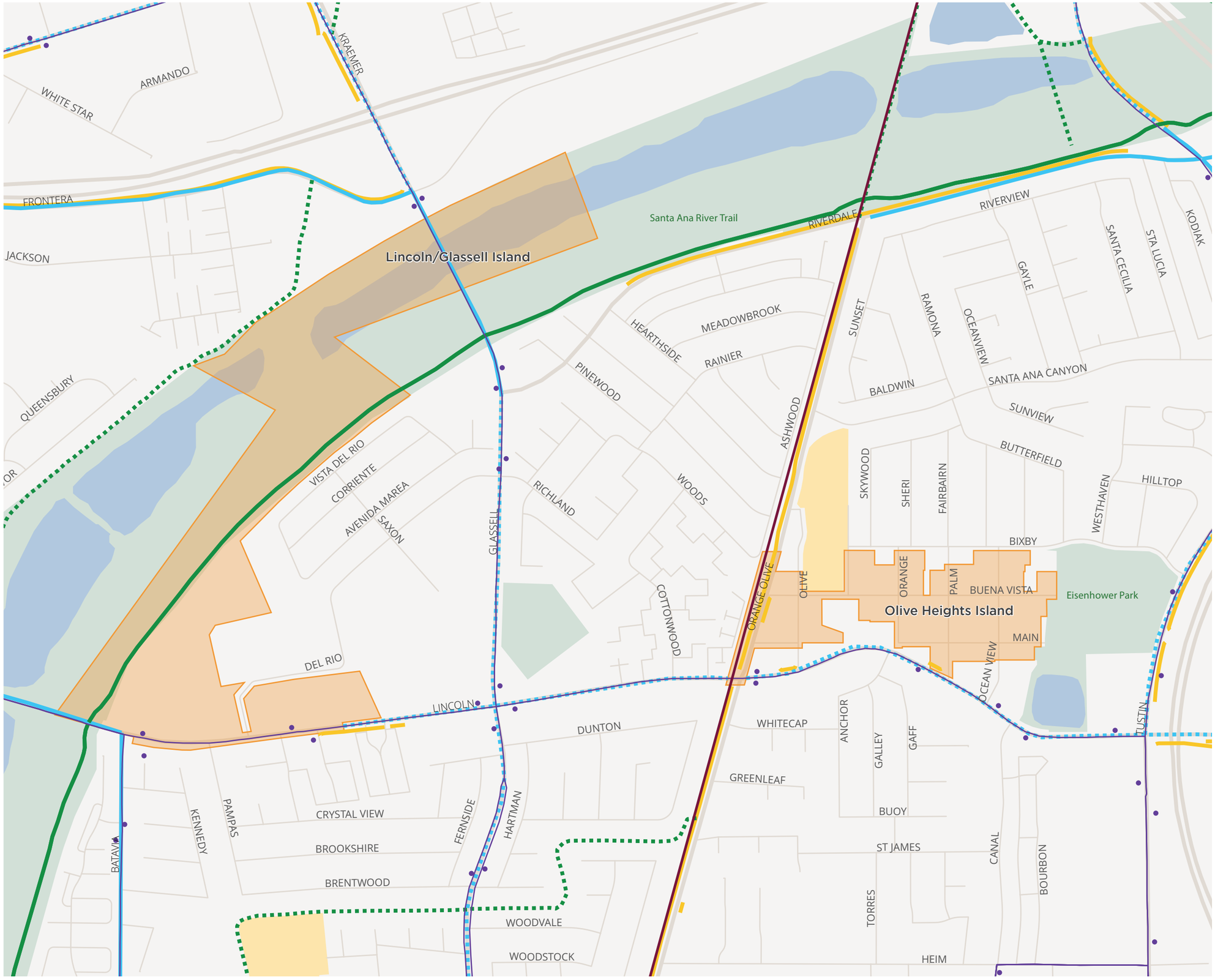
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 0.1 0.2 Miles

N



Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, a total of 2 collisions involving bicyclists and pedestrians were reported in Lincoln/Glassell Island during the study period, none of which involved people bicycling.

PEDESTRIAN-INVOLVED COLLISIONS

Between 2009 to 2018, 2 collisions occurred in Lincoln Glassell that involved a person walking. 50% of these collisions resulted in a fatal injury and 50% resulted in a severe injury.

The crash violations were due to pedestrian violations. Neither collision occurred at an intersection.

The pedestrian related collisions occurred during the night with no streetlights present and during the night with streetlights present. The collisions occurred on Lincoln Ave (**Figure 62**).

Network Gap Analysis

Figure 63 analyzes the bicycle and pedestrian connectivity of existing low-stress areas of Lincoln/Glassell Island based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the city could include:

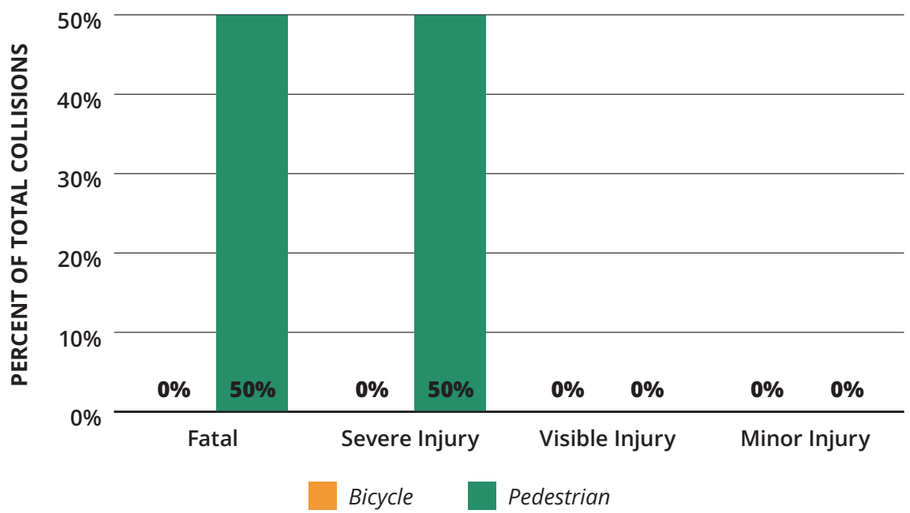
- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of Las Flores where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis shows that the pedestrian and bicycle networks are isolated from one another by high stress arterials. In order to travel between one part of Las Flores to another, a pedestrian or cyclist must cross Oso Parkway and Antonio Parkway, two high-stress arterials that necessitate safe and accessible crossings.

Based on the Needs and Gaps analysis, there are 10 low stress networks within Lincoln/Glassell Island.

TABLE 31 Crash Severity in Lincoln/Glassell Island



Orange County Unincorporated Area

Active Transportation Plan

Lincoln/Glassell + Olive Heights Islands

PEDESTRIAN INVOLVED CRASHES

- Fatal
- Severe Injury
- Minor Injury
- No Injury

BICYCLIST INVOLVED CRASHES

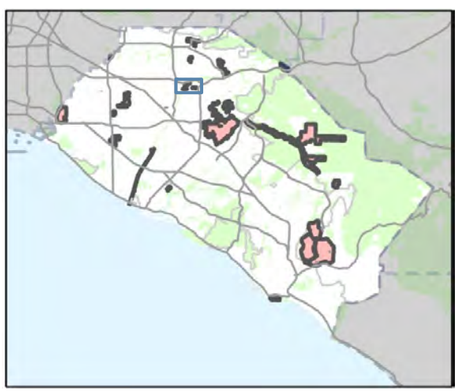
- Fatal
- Severe Injury
- Minor Injury
- No Injury

EXISTING BICYCLE FACILITIES

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

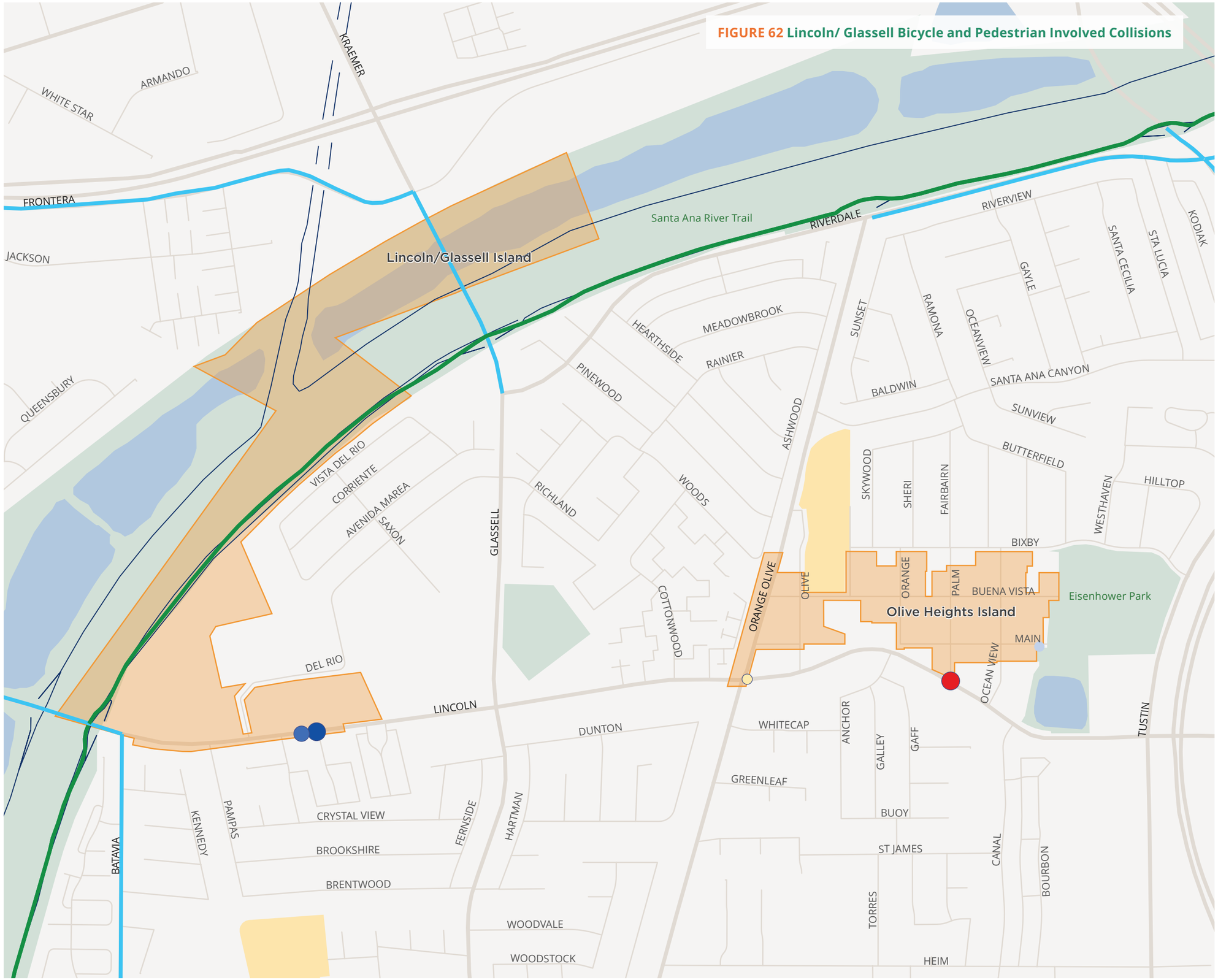
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.1 0.2 Miles

FIGURE 62 Lincoln/ Glassell Bicycle and Pedestrian Involved Collisions



Orange County Unincorporated Area

Active Transportation Plan

Lincoln/Glassell + Olive Heights Islands

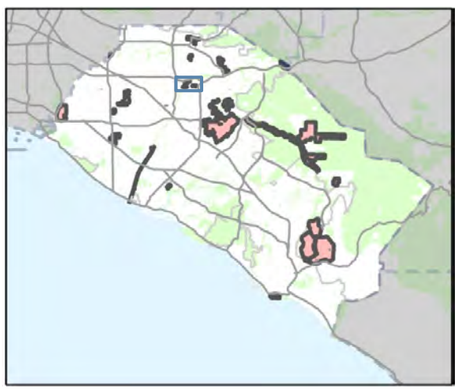
LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.1 0.2 Miles

FIGURE 63 Network Gaps in Lincoln/Glassell

Recommendations

WHAT DID WE HEAR?

Community input identified key destinations in the west of the area and identified the need for improved bike facilities.

PEDESTRIAN RECOMMENDATIONS

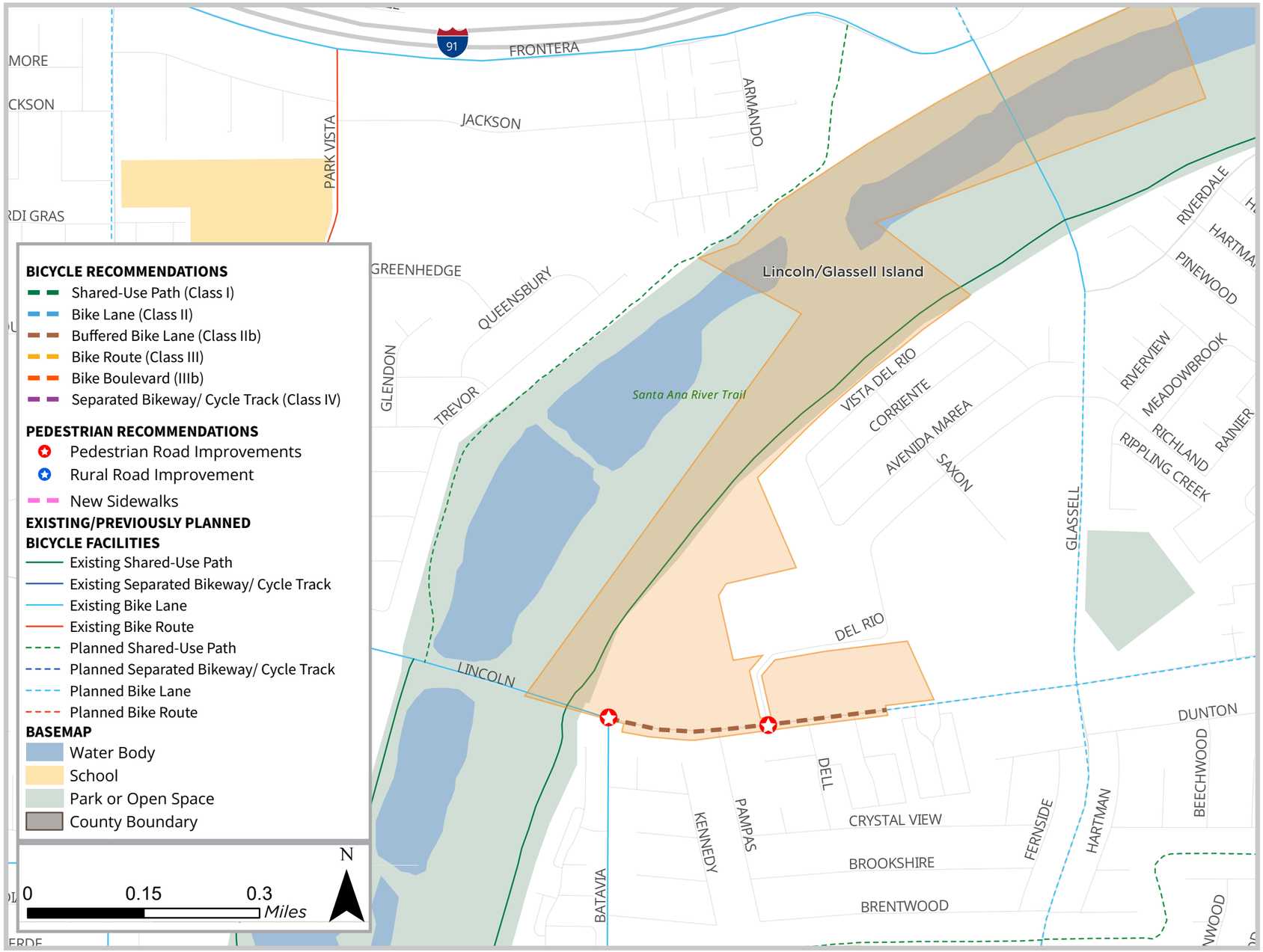
Recommended pedestrian infrastructure in Lincoln/Glassell Island includes:

- Pedestrian hybrid beacon (e.g., HAWK)
- High visibility crosswalks
- Pedestrian refuge islands

BICYCLE RECOMMENDATIONS

Bicycle recommendations in Lincoln/Glassell Island include:

- Class IIb 0.32 miles total, including:
  - Lincoln Ave, creating an appropriate bikeway connection between a proposed and existing OCTA Class II bike lane leading to the Santa Ana River Trail.



Mac/Syracuse Island

SUPERVISORIAL DISTRICT 4

Context and Background

Mac/Syracuse Island is surrounded by the City of Stanton to the north, west, and east and the City of Garden Grove to the south and is within the sphere of influence of Stanton. This unincorporated area spans approximately 27 acres and is home to 461 residents as of 2019. The community is predominantly made up of single-family detached homes and multifamily housing.

Mac/Syracuse Island is served by Westminster School District. Residents have access to Hollenbeck Lane in the City of Stanton and Magnolia Park in the City of Garden Grove, both within a half-mile radius of the community. Mac/Syracuse Island currently does not have any OCFCD-owned flood control channels that are suitable for pathway development.

HEALTH + EQUITY

The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to identify communities that are disproportionately burdened by pollution. It combines multiple sources of pollution data (e.g., ozone concentrations and drinking water contaminants) with population indicators (e.g., birth weight and educational attainment). Communities that score in the most burdened 25% of the state are considered to be disadvantaged and receive a small advantage in California's competitive funding process, such as through the State's Active Transportation Program. Per the tool, Mac/Syracuse Island falls within the threshold for what is considered a disadvantaged community.

Additionally, public health is shaped by other "non-health" policies and community characteristics, such as housing, education, economic, and social factors. These factors are included in the California Healthy Places Index (HPI) tool, developed by Public Health Alliance of Southern California, which determines how healthy a census tract is compared to others in the state. Per the HPI tool, Mac/Syracuse Island experiences worse health than approximately 65% of other California communities. Maps showing HPI and CalEnviroScreen scoring for Mac/Syracuse Island are included in Appendix C.

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 64** on the next page and described in the following sections.

BICYCLE NETWORK

Mac/Syracuse Island currently does not have any existing or previously proposed bicycle facilities. OCTA proposed Class II bicycle lanes in the adjacent City of Stanton, along Magnolia Avenue and Katella Avenue in a previous plan.

PEDESTRIAN FACILITIES

All streets in Mac/Syracuse Island have sidewalks on both sides, and all corners feature ADA-compliant curb ramps. There is an existing marked midblock crossing on Katella Avenue north of Syracuse Avenue. This midblock crossing, which connects students to Walter Elementary School, is signalized and features stop bars that are set back from the crosswalk. There are also school crossing pavement markings and signage along Magnolia Avenue leading up the marked crosswalk.

At a Glance

SIZE

27 Acres

POPULATION

461 Residents

COMMUNITY TYPE

Single-Family Detached Homes

Multifamily Housing

LOCAL SCHOOLS

Westminster School District

Orange County Unincorporated Area

Active Transportation Plan

Anaheim, Dale/Augusta, Katella/ Rustic, + Mac/Syracuse Islands

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

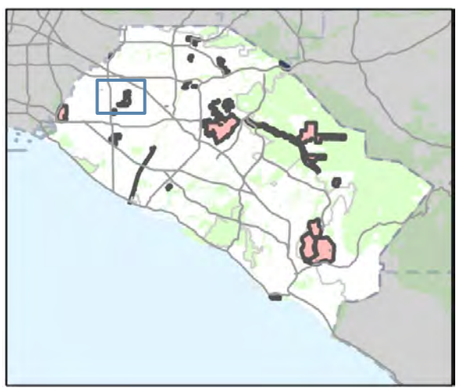
- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Rail Stop
- Bus Route
- Rail

BASEMAP

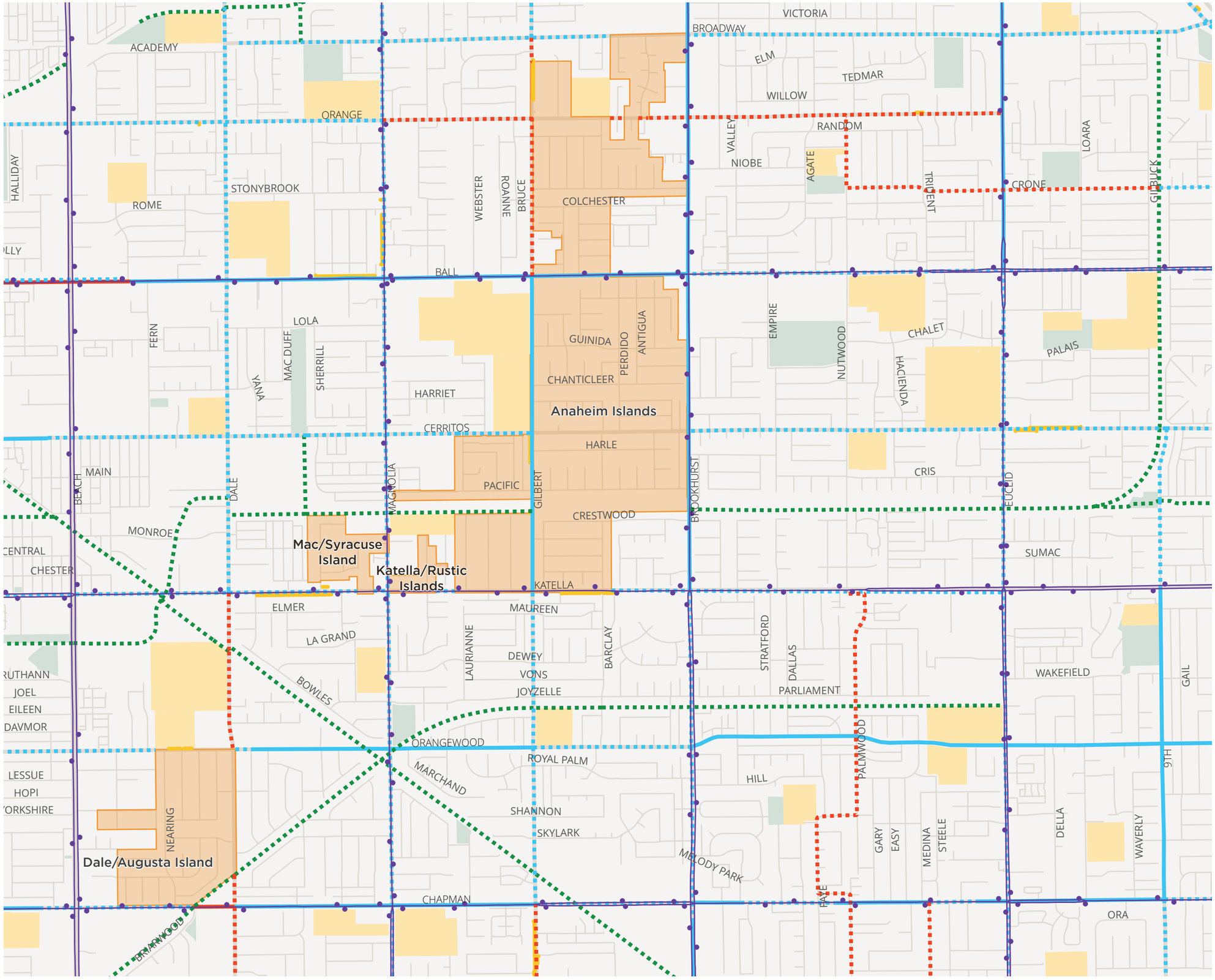
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 0.25 0.5 Miles

N



Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, there was 1 collision that involved a pedestrian or bicyclist in Mac/Syracuse Island.

PEDESTRIAN-INVOLVED COLLISION

Between 2009 to 2018, 1 collisions occurred in Mac/Syracuse Island that involved a person walking. The collision results in a severe injury.

The crash violation was a pedestrian violation. The collision occurred at night with streetlights present on Katella Avenue (**Figure 65**).

Network Gap Analysis

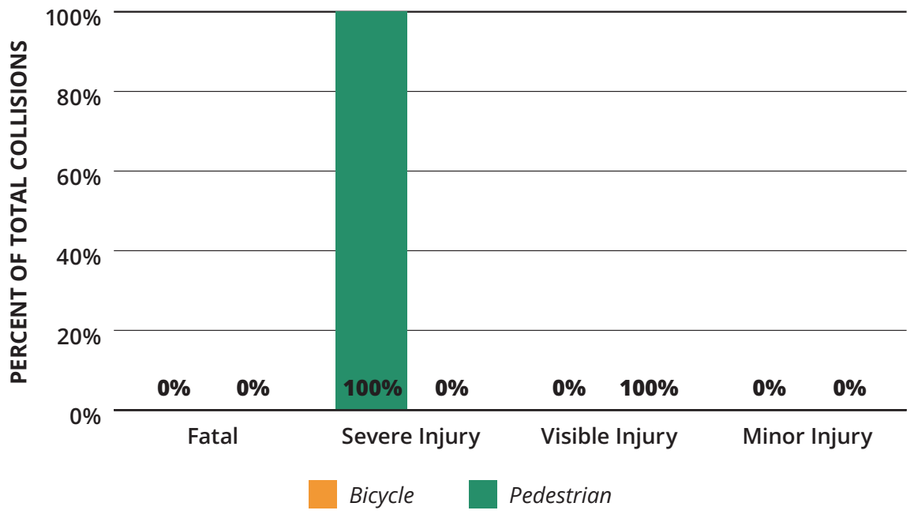
Figure 66 analyzes the bicycle and pedestrian connectivity of existing low-stress areas of Mac/Syracuse Island based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the city could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of Mac/Syracuse Island where internal travel is low-stress, but crossing to another network is likely more stressful.

TABLE 32 Crash Severity in Mac/Syracuse Island



This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis shows there is good internal connectivity within Mac/Syracuse Island. Intersection and crossing improvements across these major thoroughfares will better facilitate pedestrian and bicycle travel between the two areas.

Based on the Needs and Gaps analysis, there are 3 low stress networks within Mac/Syracuse Island.

Orange County Unincorporated Area

Active Transportation Plan

Anaheim, Dale/Augusta, Katella/ Rustic, + Mac/Syracuse Islands

PEDESTRIAN INVOLVED CRASHES

- Fatal
- Severe Injury
- Minor Injury
- No Injury

BICYCLIST INVOLVED CRASHES

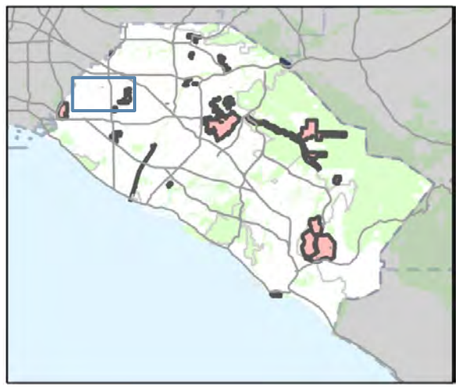
- Fatal
- Severe Injury
- Minor Injury
- No Injury

EXISTING BICYCLE FACILITIES

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

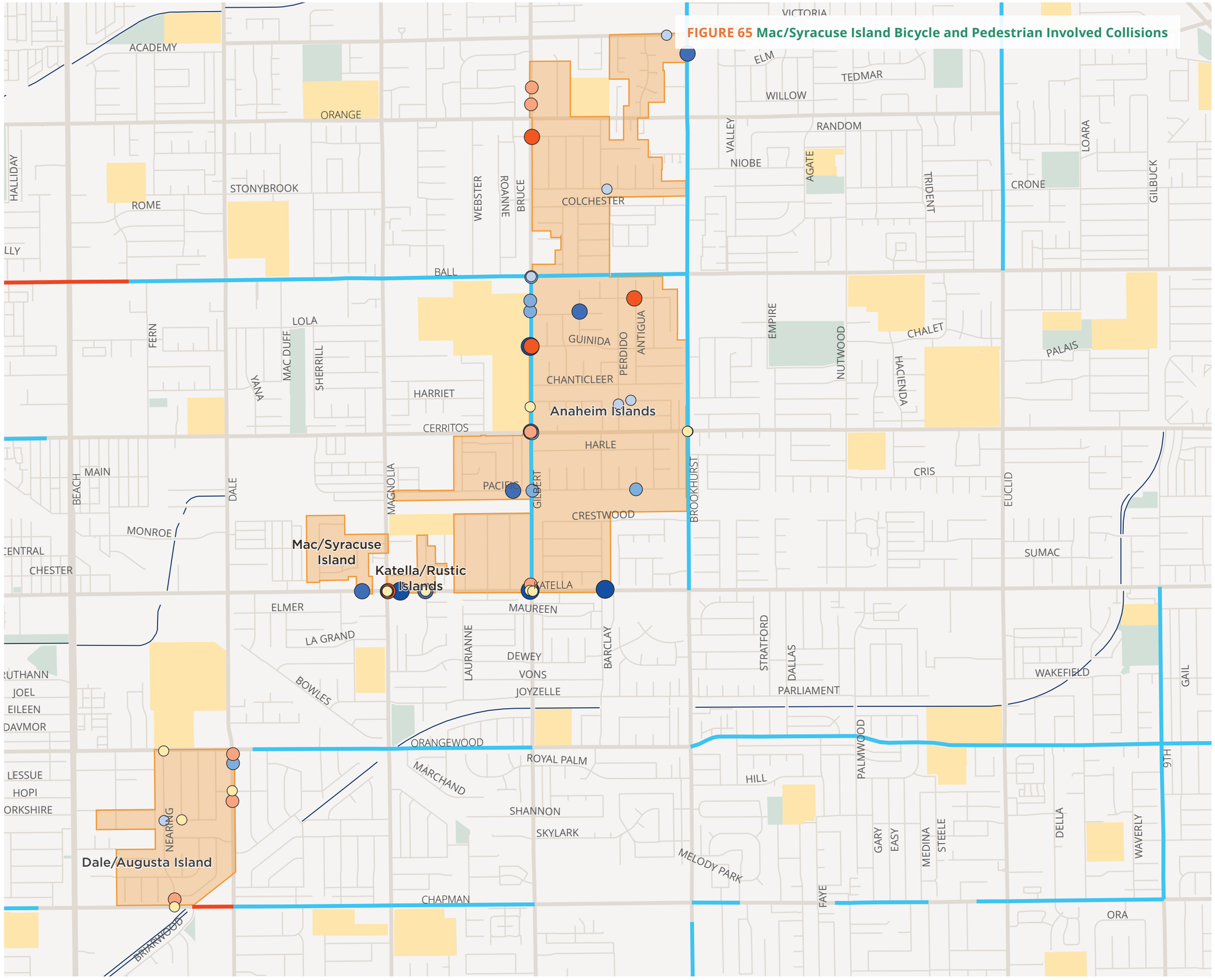
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas



0 0.25 0.5 Miles

FIGURE 65 Mac/Syracuse Island Bicycle and Pedestrian Involved Collisions



Orange County Unincorporated Area

Active Transportation Plan

Anaheim, Dale/Augusta, Katella/ Rustic, + Mac/Syracuse Islands

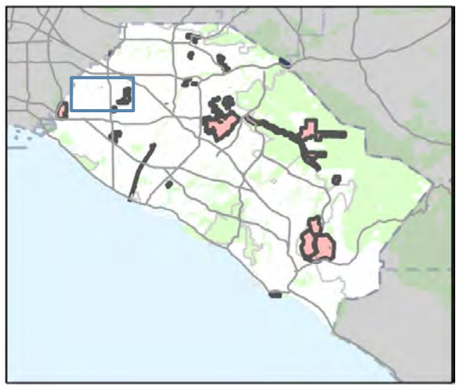
LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

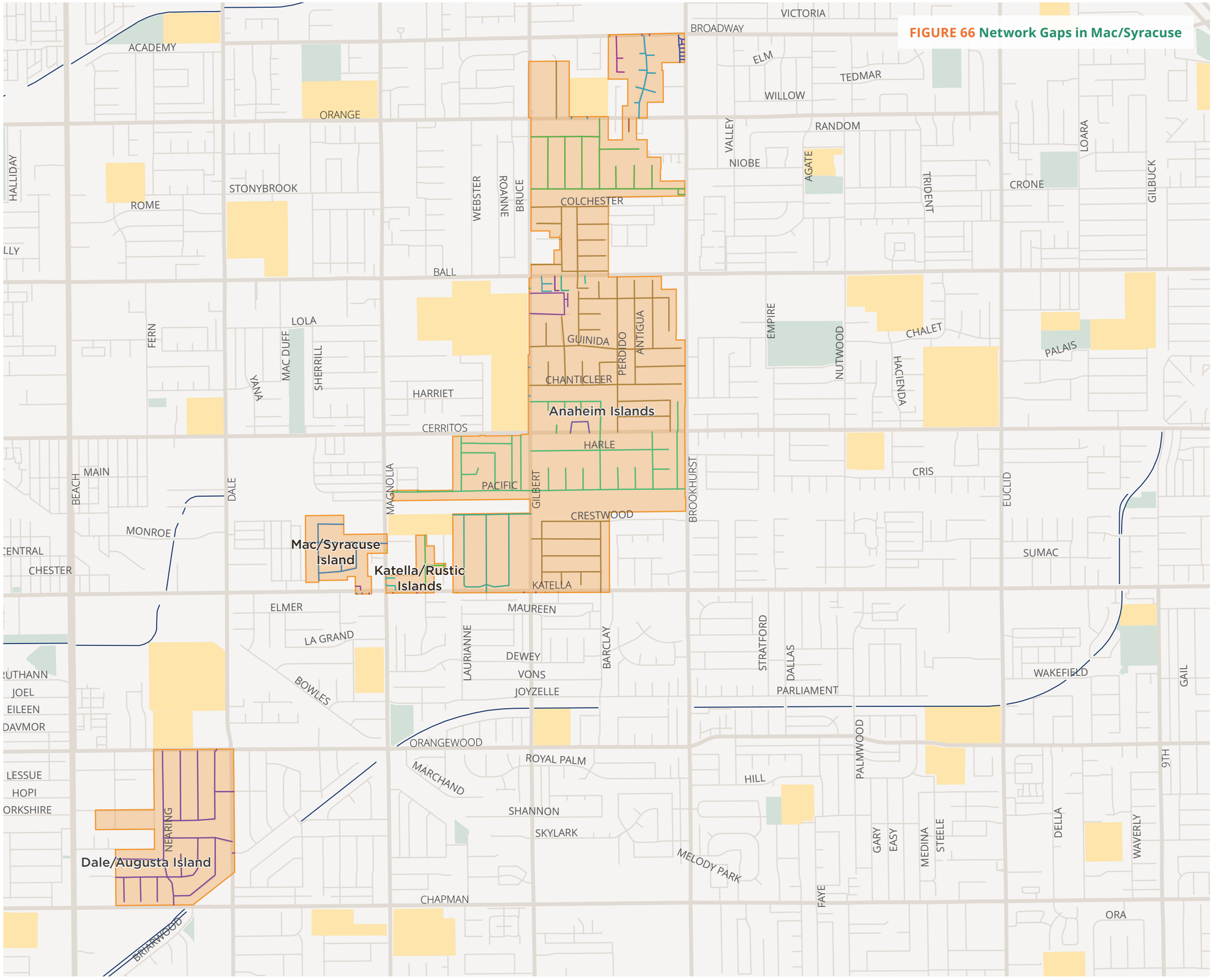
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas



0 0.25 0.5 Miles

FIGURE 66 Network Gaps in Mac/Syracuse



Recommendations

WHAT DID WE HEAR?

Bicycle infrastructure within Mac/Syracuse Island was requested on Katella Avenue.

PEDESTRIAN RECOMMENDATIONS

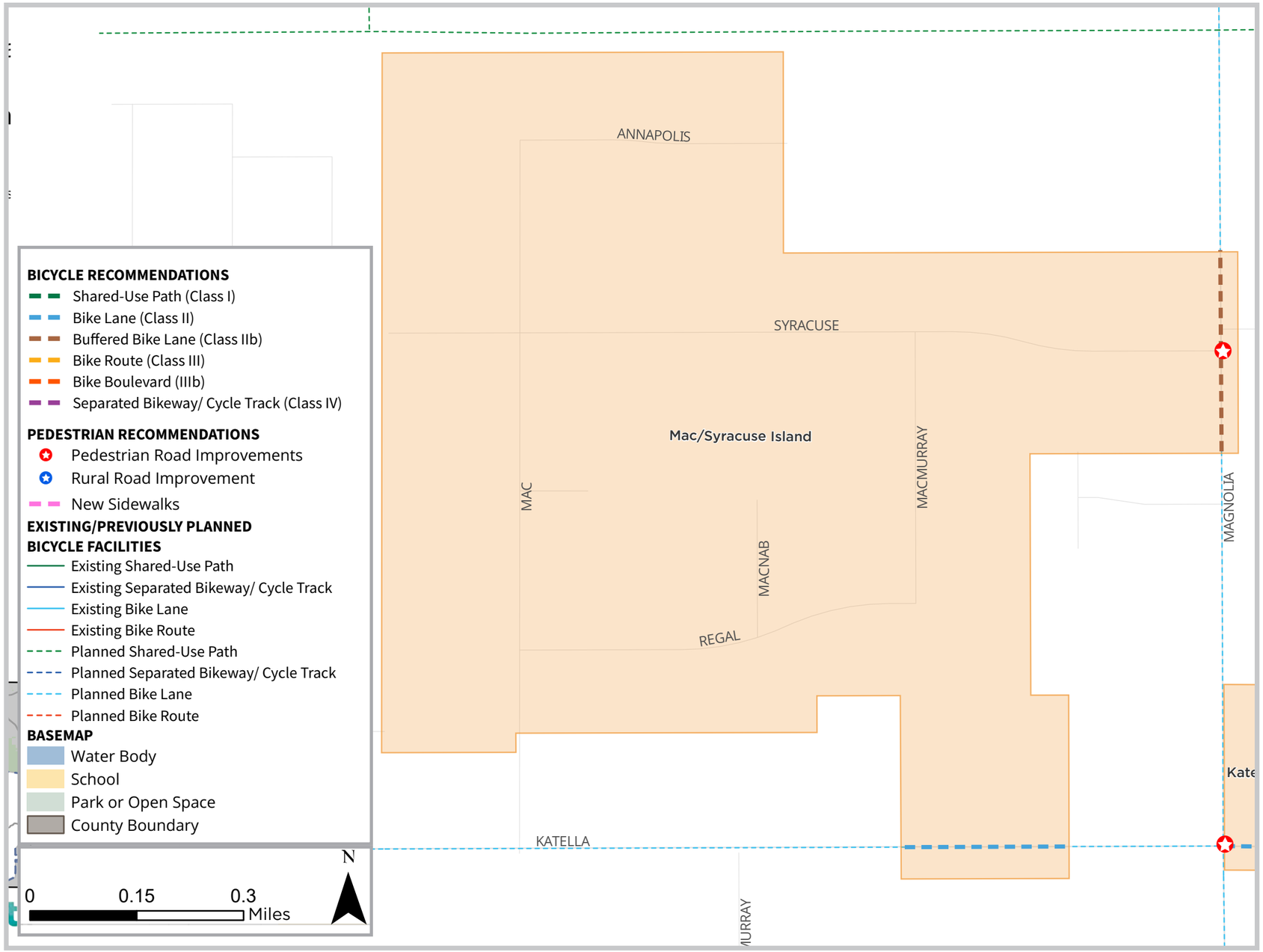
Recommended pedestrian infrastructure in Mac/Syracuse Island includes:

- Pedestrian refuge islands
- High visibility crosswalks

BICYCLE RECOMMENDATIONS

Major bicycle recommendations in Mac/Syracuse Island include:

- Class II 0.05 miles total including:
  - Katella Ave within the area's boundary to connect to the proposed Class II bicycle lanes within the City of Anaheim
- Class IIb 0.06 miles total including:
  - Magnolia Ave within the area's boundary to connect to the proposed Class II bicycle lanes within the City of Anaheim



Midway City Island

SUPERVISORIAL DISTRICT 1

Context and Background

In this document, Midway City refers to four unincorporated islands surrounded by the City of Westminster and are within the sphere of influence of Westminster. In total, the Midway City Islands span approximately 392 acres and is home to 8,593 residents as of 2019. The islands are made up of a mix of single-family detached homes and multifamily housing.

The Midway City Islands are served by Westminster School District and Huntington Beach Union High School District. Residents have access to Park West, Russell Paris, Blakely, Heritage, Land, Oasis, Goldstein Freedom, and College Parks in Westminster, all within a half-mile radius of the community. Midway City Islands currently do not have any OCFCD-owned flood control channels that are suitable for pathway development.

COMMUTE TRENDS

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of current commute mode trends was conducted at the census block group level for the Midway City Islands. Of the Midway City Islands residents 16 or older officially in the workforce, the ACS estimates that 0.9% walk and 1.5% use a bicycle to commute. However, bicycle ridership and rates of walking could be higher than this, as the ACS does not factor recreational trips or trips where commuters use more than one mode when traveling to work, such as taking a bus part way then riding a bicycle to the final destination.

ACCESS TO VEHICLES

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of households without access to a personal vehicle was conducted at the census tract level for the Midway City Islands. The percentage of people without access to a motor vehicle ranges between 1.8% to nearly 6.8% of residents, varying by Census district. The average percentage of the Midway City Islands residents without access to vehicles is 3.4%.

HEALTH + EQUITY

The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to identify communities that are disproportionately burdened by pollution. It combines multiple sources of pollution data (e.g., ozone concentrations and drinking water contaminants) with population indicators (e.g., birth weight and educational attainment). Communities that score in the most burdened 25% of the state are considered to be disadvantaged and receive a small advantage in California's competitive funding process, such as through the State's Active Transportation Program. Per the tool, most areas of the Midway City Islands do face pollution burden but do not meet the threshold for disadvantaged communities.

Additionally, public health is shaped by other "non-health" policies and community characteristics, such as housing, education, economic, and social factors. These factors are included in the California Healthy Places Index (HPI) tool, developed by Public Health Alliance of Southern California, which determines how healthy a census tract is compared to others in the state. Per the HPI tool, the Midway City Islands experience worse health than approximately 55% of other California communities. Maps showing HPI and CalEnviroScreen scoring for the Midway City Islands are included in Appendix C.

At a Glance

SIZE

293 Acres

POPULATION

8,593 Residents

COMMUNITY TYPE

Single-Family Detached Homes

Multifamily Housing, Condos, + Townhomes

LOCAL SCHOOLS

Westminster School District

Huntington Beach Union High School District

Walk Audit

The project team facilitated two audits to evaluate existing conditions in Midway City, one audit with County staff in October 2020 and one desktop community audit in December 2020. The community audit had three residents participate, who noted that several sidewalks in the community are in poor condition and are not comfortable to walk on. At some locations, such as along Newland Street, ADA-compliant curb ramps are needed and several existing pedestrian push buttons are not currently to standard (they are too high or too low). Overall, sidewalk conditions and crossing improvements were among the most common feedback shared during the walk audit. More details about audit observations can be found in Appendix B.

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 67** on the next page and described in the following sections.

BICYCLE NETWORK

Midway City has 0.5 miles of existing Class II bicycle lanes along Newland Street. However, there is no striped line separating the bicycle lanes from the parking lanes, so bicyclists may have to weave in and out of parked vehicles.

PEDESTRIAN FACILITIES

Sidewalks exist on most streets in Midway City, though there are gaps on the north side of Hazard Avenue (east of Beach Boulevard), the north side of Bolsa Avenue (west of Beach Boulevard), and the west side of Beach Boulevard (north of McFadden). Additionally, sidewalk conditions are poor at Rockwell Avenue/Beach Boulevard.

Crosswalks are marked at most signalized intersections, but could be updated to be higher-visibility. At the intersection of Madison Avenue and Enid Lane, near Hayden Elementary School, on-street parking is permitted close to the intersection which could make it difficult to see students cross. Additionally, curb ramps at this intersection do not meet current ADA standards as they have no truncated domes. Nearby, at Madison Avenue and Newland Street, pedestrian push buttons are not up to code - some are too high or too low to be ADA-accessible.

Along Newland Street, driveways are also an ADA issue and might need to be repaved so that there is a flat space for people using mobility devices. At the intersection of Newland Street and Bolsa Avenue, traffic poles are in the middle of the sidewalk, which makes it difficult for people using wheelchairs and strollers to navigate the path. At Worthy Drive/ Wilson Street, the existing crosswalk does not connect to the curb ramp, forcing pedestrians into the street in order to get to the sidewalk.



Orange County Unincorporated Area

Active Transportation Plan

Midway City Islands

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

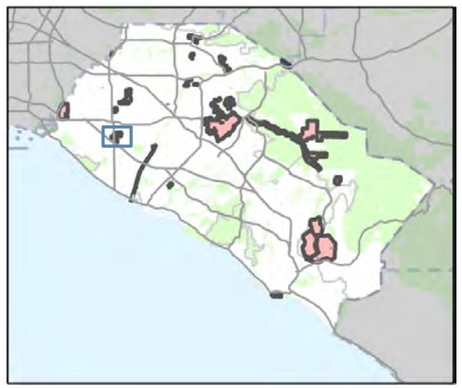
- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Rail Stop
- Bus Route
- Rail

BASEMAP

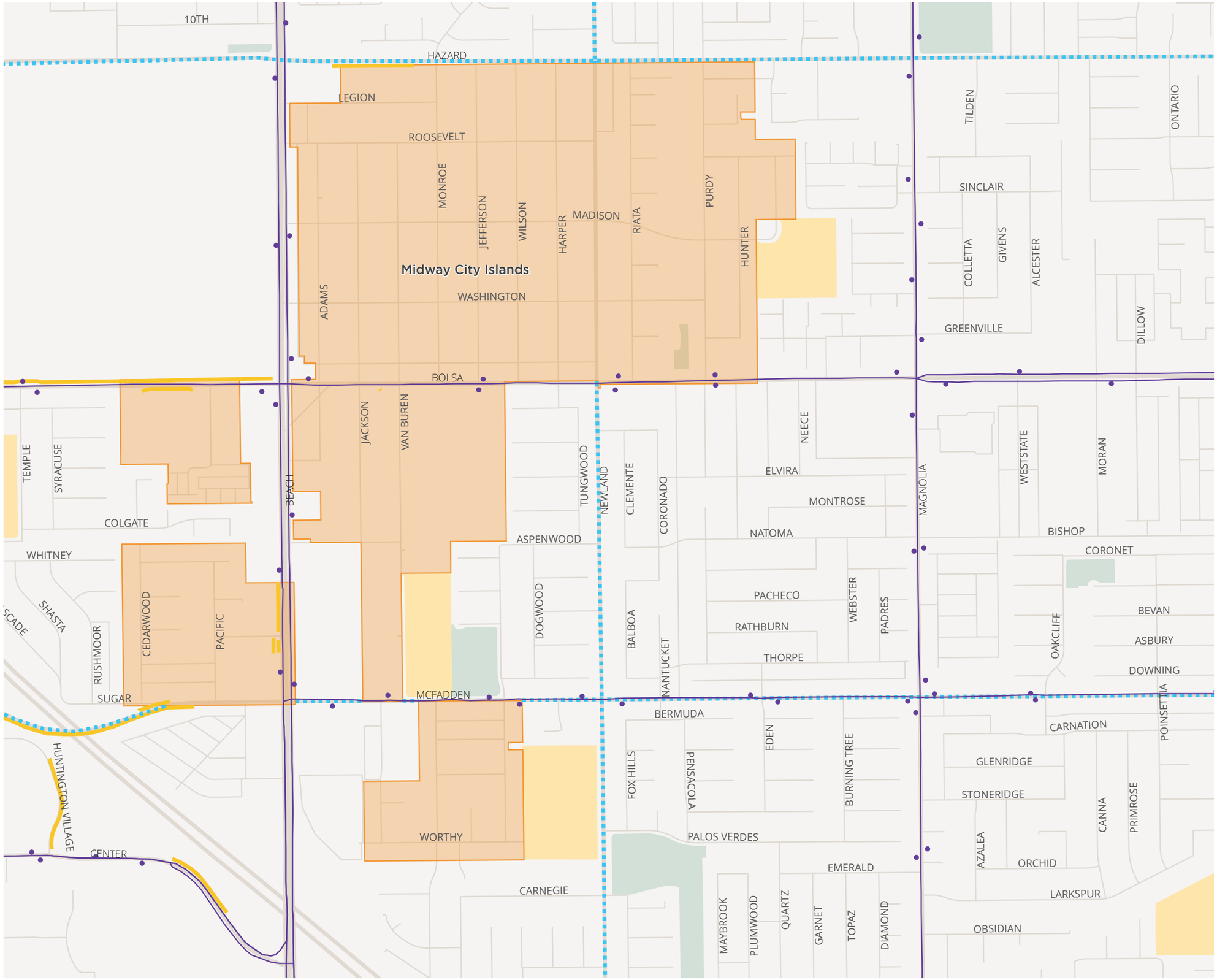
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 0.15 0.3 Miles

N



Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, a total of 41 collisions involving bicyclists and pedestrians were reported in Midway City during the study period, 49% of which involved people bicycling and 51% of which involved people walking.

PEDESTRIAN-INVOLVED COLLISIONS

Between 2009 to 2018, 21 collisions occurred in Midway City that involved a person walking. 10% of these collisions resulted in a fatal injury, 25% resulted in a severe injury, 29% resulted in a visible injury, and 38% resulted in a minor injury.

The highest crash violation was due to pedestrian violation (38%) followed by pedestrian violation (33%). 10% of pedestrian collisions occurred at an intersection. The absence or quality of pedestrian crossings throughout Orange County may lead to pedestrians to cross in unsafe conditions as they attempt to navigate vehicle traffic.

The majority of these pedestrian related collisions occurred during the daylight (57%) followed by the dark with streetlights present (19%). Many collisions involving pedestrians occurred on Beach Blvd, Bolsa Ave, and Madison Ave (**Figure 68**).

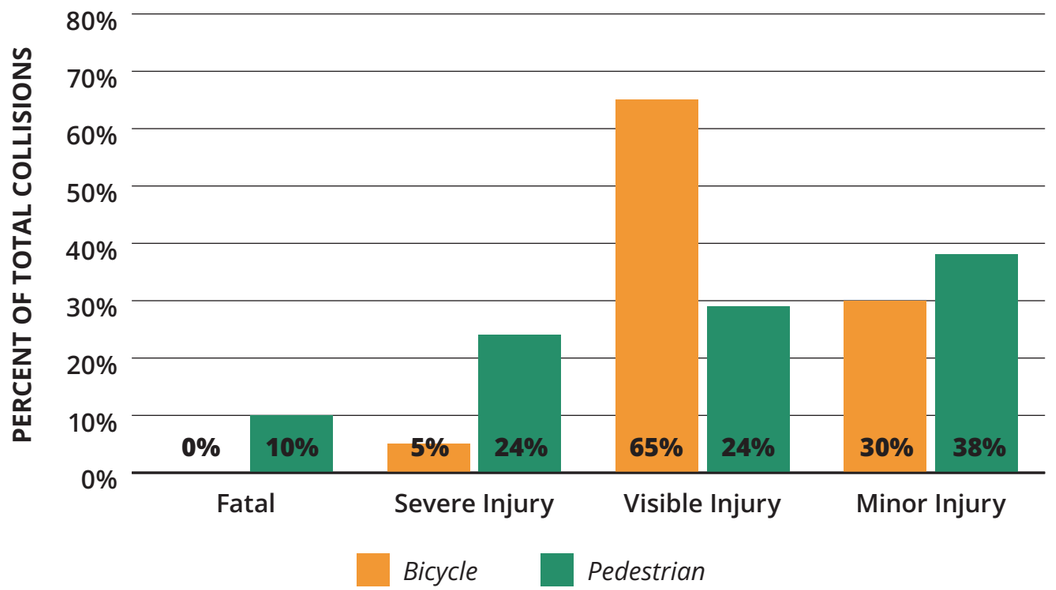
BICYCLE-INVOLVED COLLISIONS

During the same study period (2009 to 2018), 20 collisions in Midway City involved a person riding a bicycle. None of these were fatal collisions, 1 (5%) resulted in severe injury, and 13 (65%) bicycle collisions resulted in a visible injury.

The highest crash violation categories were automobile right of way (30%), followed by wrong side of road (25%). 7 (35%) bicycle collisions occurred at an intersection.

The majority of these bicycle collisions occurred during the daylight (74%) followed by the night with streetlights present (26%). **Figure 68** provides an overview of all bicycle-involved collisions in Midway City between 2009-2018 and demonstrates a concentration of collisions along Bolsa Ave and Newland St**.**

TABLE 33 Crash Severity in Midway City Island





Network Gap Analysis

Figure 69 analyzes the bicycle and pedestrian connectivity of existing low-stress areas of Midway City based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the city could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of Midway City where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis shows that the bicycle network provides relatively stressful connections across most of Midway City, with pockets of unconnected network concentrated in the west of the area and throughout. The pedestrian network shows further segmentation, with a large portion of the area still being accessible via low-stress connections but more severance along Bolsa Ave and Beach Blvd.

Based on the Needs and Gaps analysis, there are 30 low stress networks within Midway City Island.



Orange County Unincorporated Area

Active Transportation Plan

Midway City Islands

PEDESTRIAN INVOLVED CRASHES

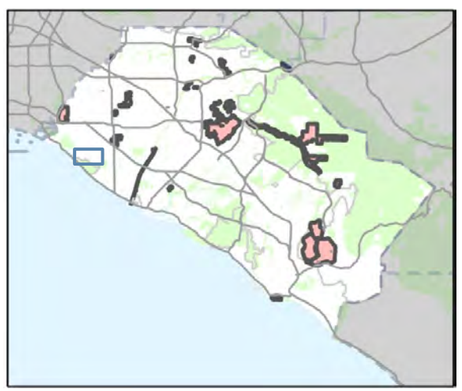
- Fatal
- Severe Injury
- Minor Injury
- No Injury

BICYCLIST INVOLVED CRASHES

- Fatal
- Severe Injury
- Minor Injury
- No Injury

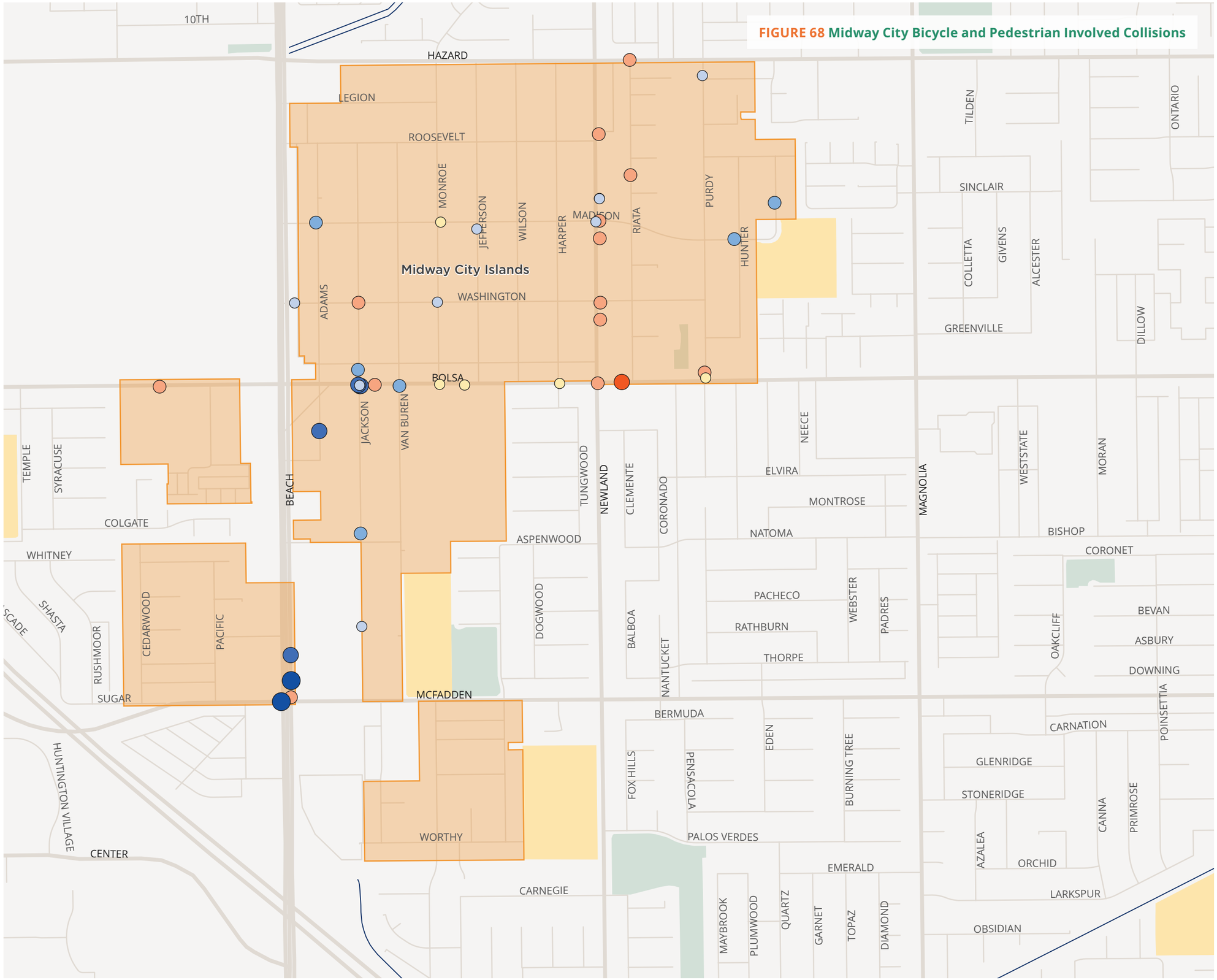
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.15 0.3 Miles

FIGURE 68 Midway City Bicycle and Pedestrian Involved Collisions



Orange County Unincorporated Area

Active Transportation Plan

Midway City Islands

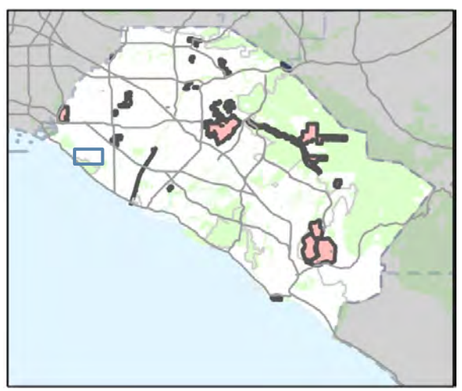
LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

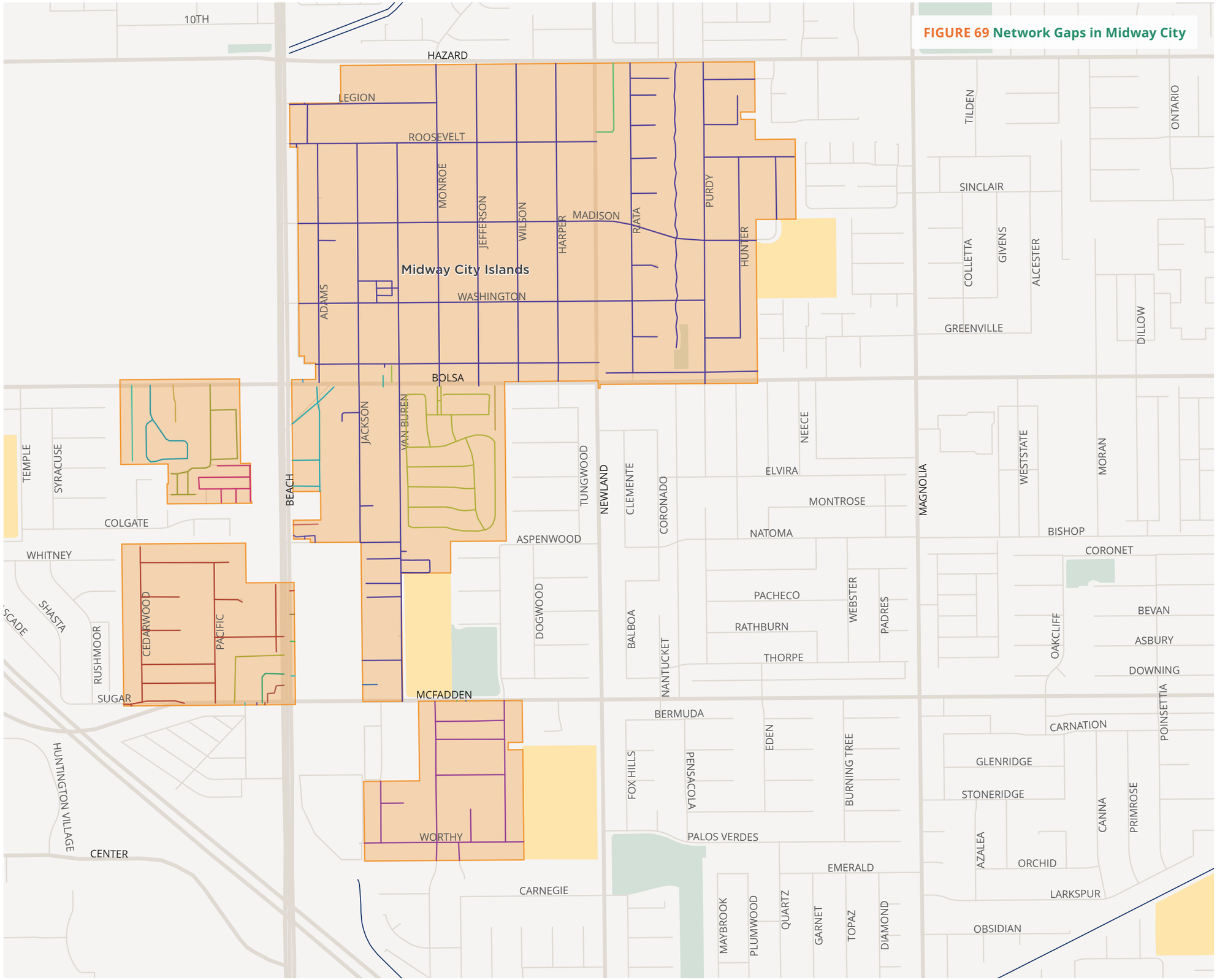
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.15 0.3 Miles

FIGURE 69 Network Gaps in Midway City



Recommendations

WHAT DID WE HEAR?

Community members requested traffic calming elements to prevent speeding in Midway City. Comments said proposed bike lanes should connect to each other, and on street parking near bikeways should be eliminated where possible to provide a more comfortable bicycling experience.

PEDESTRIAN RECOMMENDATIONS

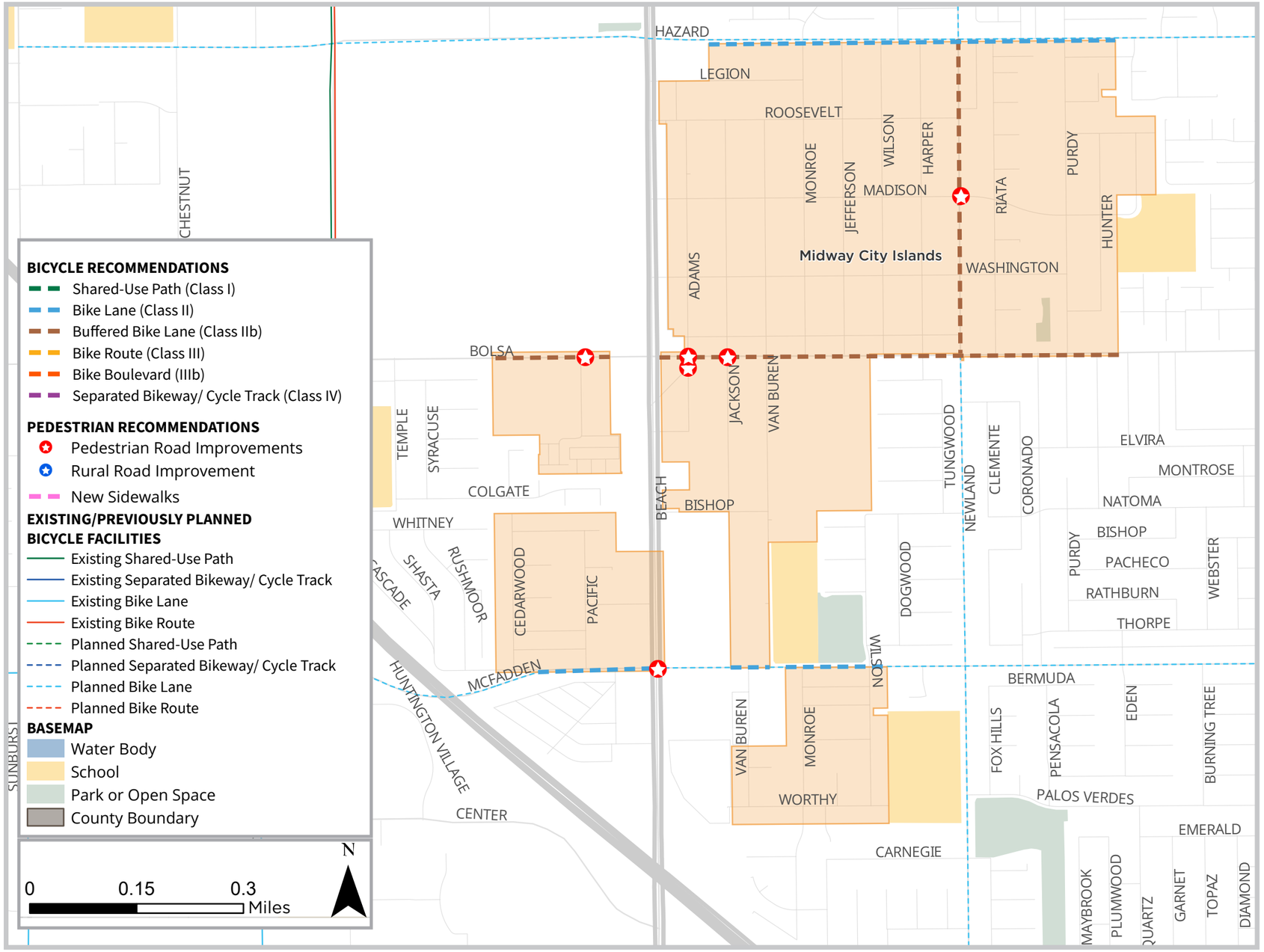
Recommended pedestrian infrastructure in Midway City includes:

- Curb extensions
- High visibility crosswalks
- Pedestrian refuge islands
- Pedestrian-scale lighting
- Sidewalk improvements

BICYCLE RECOMMENDATIONS

Major bicycle recommendations in Midway City include:

- Class II 1.07 miles total
- Class IIb 1.43 miles total including:
  - Bolsa Ave between Beach Blvd and Hunter Ln addressing the concentration of collisions on Bolsa Ave
  - Newland St between Hazard Ave and Bolsa Ave connecting to the previously planned Class II on Hazard Ave



Modjeska Canyon

SUPERVISORIAL DISTRICT 3

Context and Background

Modjeska Canyon is an unincorporated community on the western slope of the Santa Ana Mountains in eastern Orange County, on the border of Riverside County. The community is predominantly made up of single-family detached homes.

Modjeska Canyon is served by Orange Unified School District. Residents have access to Modjeska Community Park in the eastern part of the community, as well as the numerous trails and open spaces surrounding it. The community also features Tucker Wildlife Sanctuary, Santiago Peak, and the Helena Modjeska House. Modjeska Island currently does not have any OCFCD-owned flood control channels that are suitable for pathway development.

COMMUTE TRENDS

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of current commute mode trends was conducted at the census block group level for Modjeska Canyon. Of the Modjeska Canyon residents 16 or older officially in the workforce, the ACS estimates that 5.9% walk and 1.4% use a bicycle to commute. However, bicycle ridership and rates of walking could be higher than this, as the ACS does not factor recreational trips or trips where commuters use more than one mode when traveling to work, such as taking a bus part way then riding a bicycle to the final destination.

ACCESS TO VEHICLES

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of households without access to a personal vehicle was conducted at the census tract level for Modjeska Canyon. The percentage of people without access to a motor vehicle is up to nearly 5.5% of residents, depending on the Census tract. The average percentage of Modjeska Canyon residents without access to vehicles is 2.5%.

HEALTH + EQUITY

The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to identify communities that are disproportionately burdened by pollution. It combines multiple sources of pollution data (e.g., ozone concentrations and drinking water contaminants) with population indicators (e.g., birth weight and educational attainment). Communities that score in the most burdened 25% of the state are considered to be disadvantaged and receive a small advantage in California's competitive funding process, such as through the State's Active Transportation Program. Per the tool, Modjeska Canyon does not meet this threshold for disadvantaged communities.

Additionally, public health is shaped by other "non-health" policies and community characteristics, such as housing, education, economic, and social factors. These factors are included in the California Healthy Places Index (HPI) tool, developed by Public Health Alliance of Southern California, which determines how healthy a census tract is compared to others in the state. Per the HPI tool, Modjeska Canyon is considered healthier than approximately 84% of other California communities. Maps showing HPI and CalEnviroScreen scoring for Modjeska Canyon are included in Appendix C.

At a Glance

COMMUNITY TYPE

Single-Family Detached Homes

LOCAL SCHOOLS

Orange Unified School District



Walk Audit

The project team facilitated an in-person audit with County staff (October 2020) to evaluate existing conditions in Modjeska Canyon, as well as desktop audits (Fall 2020) and a virtual community audit (December 2020) in combination with the three other canyon communities: Silverado, Trabuco, and Santiago. In total, 63 residents of the canyon communities participated in the virtual audit event.

Modjeska Canyon Road is a residential corridor that leads to the Harding Truck Trailhead. Participants noted that although the road doesn't have paved sidewalks, the narrow and single lane road feels safe for pedestrians, cyclists, and equestrians. Residents also stated that they like the existing conditions as they are and want to preserve the character of the community, but would prefer less signage in the area. More details about audit observations can be found in Appendix B.

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 70** on the next page and described in the following sections.

BICYCLE NETWORK

Modjeska Canyon currently does not have any existing bicycle facilities within its boundaries. However, Class II bicycle lanes exist along Santiago Canyon Road, connecting to Modjeska and nearby trails. Though no existing Class I paved paths exist, the community is surrounded by numerous unpaved trails that are used by bicyclists, hikers, and equestrians. In a previous plan, OCTA proposed 1.25 miles of Class I shared-use path along the western boundary of Modjeska Canyon, also within Santiago Canyon boundaries.

PEDESTRIAN FACILITIES

Modjeska Canyon does not have any sidewalks or marked crosswalks and residents prefer to keep it this way to preserve the local rural character of the community. Modjeska residents have access to numerous unpaved trails that are reportedly used by bicyclists, hikers, and equestrians.



Orange County
Unincorporated Area

Active Transportation Plan

Modjeska, Santiago, + Silverado Canyons

FIGURE 70 Modjeska Canyon Existing Conditions

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

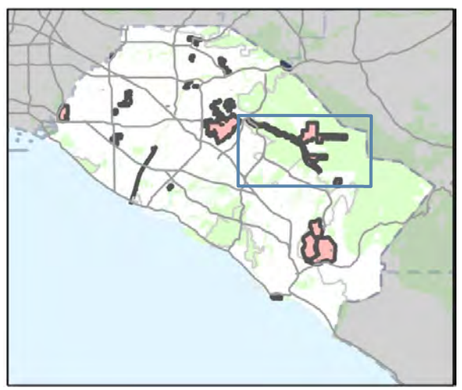
- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Bus Route
- Rail Stop
- Rail

BASEMAP

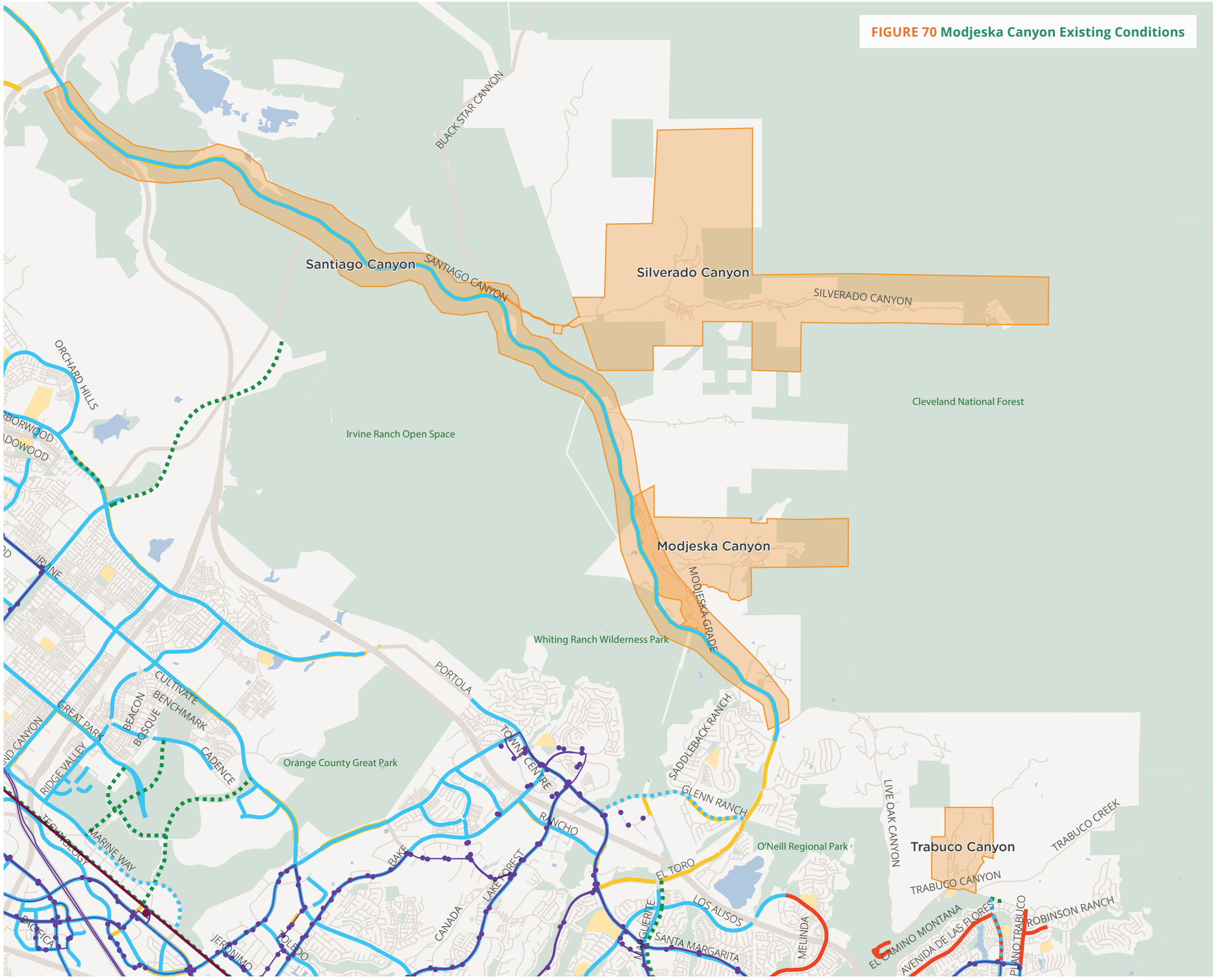
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 15 30 Miles

N



Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, there were no collisions that involved a pedestrian or bicyclist in Modjeska Canyon.

Network Gap Analysis

Figure 71 analyzes the bicycle and pedestrian connectivity of existing low-stress areas of Modjeska Canyon based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the city could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of Modjeska Canyon where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis shows there is good internal connectivity within Modjeska Canyon.

Based on the Needs and Gaps analysis, there are 5 low stress networks within Modjeska Canyon.



Orange County Unincorporated Area

Active Transportation Plan

Modjeska, Santiago, Silverado, + Trabuco Canyons

FIGURE 71 Network Gaps in Modjeska Canyon

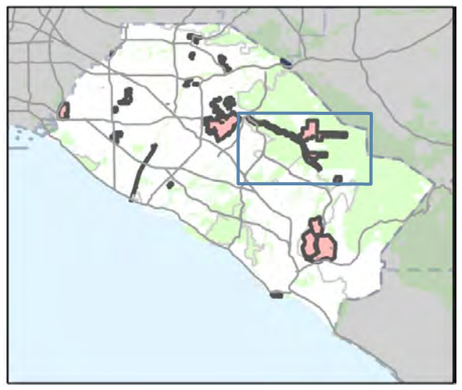
LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

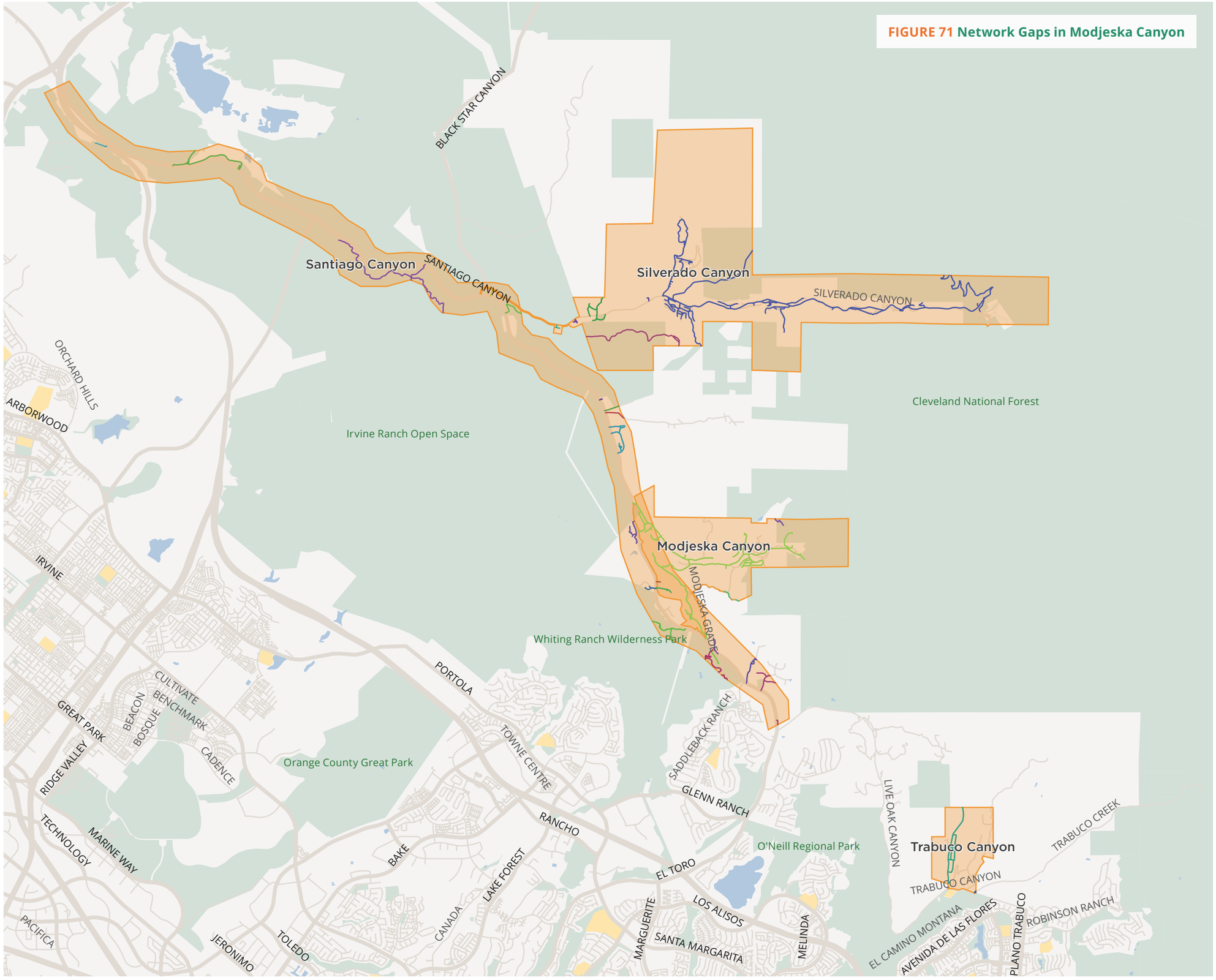
The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 15 30 Miles



Recommendations

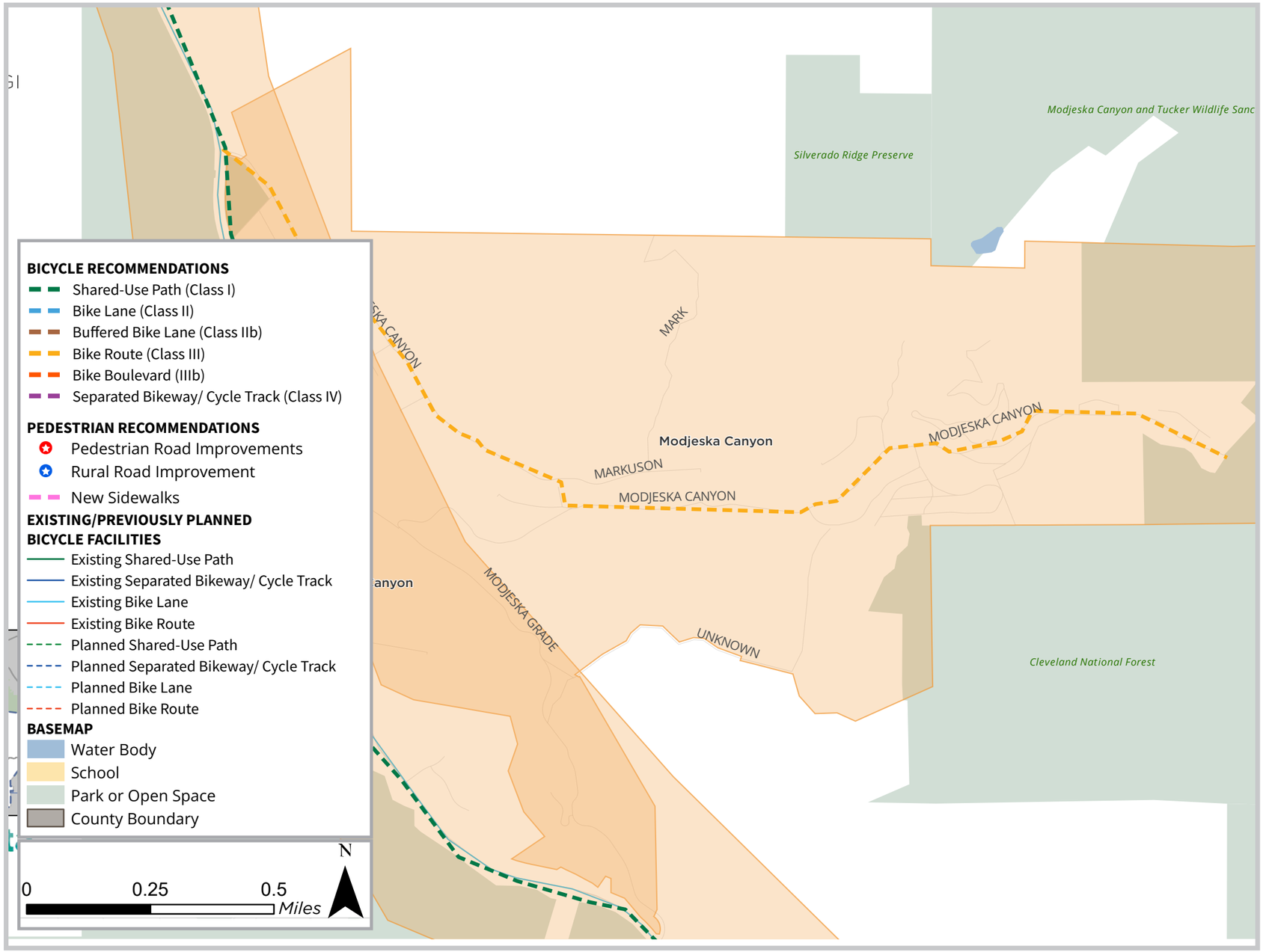
WHAT DID WE HEAR?

Public comments requested bike route signage and sharrows on Modjeska Canyon Road because some perceive the road to be too narrow for a bike lane. Comments also noted concerns about equestrian interactions between pedestrians, bicyclists, and drivers.

BICYCLE RECOMMENDATIONS

Major bicycle recommendations in Modjeska Canyon include:

- Class III 2.13 miles total including:
  - Modjeska Canyon Rd between Santiago Canyon Rd and the end of the street connecting to the existing Class II on Santiago Canyon Rd



North Tustin Island

SUPERVISORIAL DISTRICT 2,3

Context and Background

In this document, North Tustin refers to two unincorporated islands adjacent to the City of Orange to the north and the City of Tustin to the south. The majority of the community is within the sphere of influence of Tustin and the northern portions are within the sphere of influence of Orange. In total, the North Tustin Islands span approximately 4,608 acres and is home to over 28,200 residents as of 2019. The islands are made up of predominantly single-family detached homes, as well as some multifamily housing.

The North Tustin Islands are served by Tustin Unified School District and Orange Unified School District, with multiple public and private schools located within the community's boundaries:[1]

- Arroyo Elementary School
- Panorama Elementary School
- Foothill High School
- Red Hill Elementary School
- Hewes Middle School
- Loma Vista Elementary School
- Tustin Memorial Academy
- Benson Elementary School
- Guin Foss Elementary School
- The Prentice School (private)
- Foothill Montessori School Ltd (private)
- Fairmont Private Schools - North Tustin Campus (private)

Within North Tustin, there are multiple parks including Bent Tree, Esplanade, and Holderman Parks. Within a half-mile radius of the community, North Tustin residents also have access to Camino Real, Cedar Grove, Pepper Tree, Citrus Ranch, Columbus Tustin, Heritage, Greenway, and Frontier Parks in Tustin; El Modena, La Veta, and Santiago Hills Parks in Orange; and Fairhaven Park in Santa Ana. Additionally, North Tustin has 2.68 miles of OCFCD-owned flood control channels running through it, including the Tustin Branch Bike Trail.

COMMUTE TRENDS

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of current commute mode trends was conducted at the census block group level for the North Tustin Islands. Of the North Tustin residents 16 or older officially in the workforce, the ACS estimates that 0.7% walk and 1.0% use a bicycle to commute. However, bicycle ridership and rates of walking could be higher than this, as the ACS does not factor recreational trips or trips where commuters use more than one mode when traveling to work, such as taking a bus part way then riding a bicycle to the final destination.

ACCESS TO VEHICLES

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of households without access to a personal vehicle was conducted at the census tract level for the North Tustin Islands. The percentage of people without access to a motor vehicle is up to nearly 15% of residents, depending on the Census tract. The average percentage of the North Tustin Islands residents without access to vehicles is 2.9%.

HEALTH + EQUITY

The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to identify communities that are disproportionately burdened by pollution. It combines multiple sources of pollution data (e.g., ozone concentrations and drinking water contaminants) with population indicators (e.g., birth weight and educational attainment). Communities that score in the most burdened 25% of the state are considered to be disadvantaged and receive a small advantage in California's competitive funding process, such as through the State's Active Transportation Program. Per the tool, the North Tustin Islands do not meet this threshold for disadvantaged communities.

Additionally, public health is shaped by other "non-health" policies and community characteristics, such as housing, education, economic, and social factors. These factors are included in the California Healthy Places Index (HPI) tool, developed by Public Health Alliance of Southern California, which determines how healthy a census tract is compared to others in the state. Per the HPI tool, the North Tustin Islands are considered healthier than approximately 80% of other California communities. Maps showing HPI and CalEnviroScreen scoring for the North Tustin Islands are included in Appendix C.

1 As of 2021, some students attending schools in North Tustin are eligible for free and reduced-price meals through the National School Lunch Program. The percentages eligible per school are: Arroyo Elementary (8.5%), Panorama Elementary (17.5%), Foothill High (30.6%), Red Hill Elementary (14.1%), Hewes Middle (24.9%), Loma Vista Elementary (54.5%), Tustin Memorial (9.3%), Benson Elementary (49.1%), Guin Foss Elementary (45.9%).

Walk Audits

The project team facilitated two walk audits to evaluate existing conditions in North Tustin, one desktop audit in Fall 2020 and one virtual community audit in November 2020. The virtual community audit had four participants from North Tustin, who observed that existing North Tustin bike lanes and trails could further accommodate various types of users. They also observed that in the eastern part of the community, equestrian signage and trails exist. According to residents, the Peters Canyon Regional Trail & Bikeway draws a mix of users potentially traveling through this area and they emphasized that recommendations must reflect various types of users of trails. Furthermore, in order to mitigate speeding vehicles, community residents requested safer crossing features (e.g., high-visibility crosswalks, curb extensions, etc.). Residents also noted that street lighting is poor along many corridors in North Tustin, particularly along Omega Drive. Finally, participants stated that additional and enhanced crossings are needed near Arroyo Elementary, Barbara Benson Elementary, Tustin Memorial Elementary, Hughes Middle School, and Foothill High School. More details about audit observations can be found in Appendix B.

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 72** on the next page and described in the following sections.

BICYCLE NETWORK

North Tustin's existing bike network is made up of 13.38 miles of Class I shared-use paths, Class II bicycle lanes, and Class III bicycle routes. There is an existing Class I shared-use path along the Tustin Branch Trail Esplanade, which connects to the City of Orange, the Santiago Creek Trail, and other regional destinations. Throughout the length of North Tustin, Newport Avenue features bicycle lanes on both sides of the street. Bike lanes also exist on Foothill Boulevard, Dodge Avenue, Santa Clara Avenue, 17th Street, La Colina Drive, Irvine Boulevard, and Browning Avenue. At the intersection of Newport Boulevard and Foothill Boulevard, the southbound right-turn lane on Newport is dashed around the bicycle lane, but the bicycle lane on Foothill disappears in the right-turn lane. Class III bicycle routes currently exist on Santa Clara Avenue and La Colina Drive. Although Dodge Avenue is listed as a Class III bicycle route, the dashed lines on the shoulder make it confusing for bicyclists because it looks like a Class II. Additionally, **Table 34** includes a proposal for 4.47 miles of Class I shared-use paths, Class II bicycle lanes, and Class III bike routes proposed by OCTA in a previous plan.

PEDESTRIAN FACILITIES

Sidewalks exist on most streets in North Tustin, though there are multiple gaps. Most major intersections in North Tustin feature marked crossings, though many are faded or not very visible to drivers. Along major corridors, street lighting exists but may not be adequate for people walking, particularly along Omega Drive. Existing marked crosswalks along 17th Street are not very visible to drivers and could be improved. On the westbound side of Foothill Boulevard at Old Foothill Boulevard, there is a raised sidewalk with a post in the middle of it, which may cause accessibility issues. The Esplanade Trail provides an off-street connection through North Tustin for people walking and biking, though certain locations where the trail crosses other corridors could use improvements. For example, at the east leg of the intersection of Esplanade Avenue and Dodge Avenue, the trail does not line up with the existing marked crosswalk. Though signage on the trail tells people to use the crosswalk, they may not divert from their path of travel to access the crosswalk. The entrance to the Esplanade Trail at Warren Avenue does not connect to a marked crosswalk or sidewalks.

TABLE 34 Existing Bicycle Network (Miles)

Facility Type	Existing	Proposed by OCTA
Class I Shared-use Path	0.62	0.10
Class II Bicycle Lane	9.37	4.34
Class III Bicycle Route	3.39	0.03
Total	**13.38**	**4.47**



Orange County Unincorporated Area

Active Transportation Plan

North Tustin

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

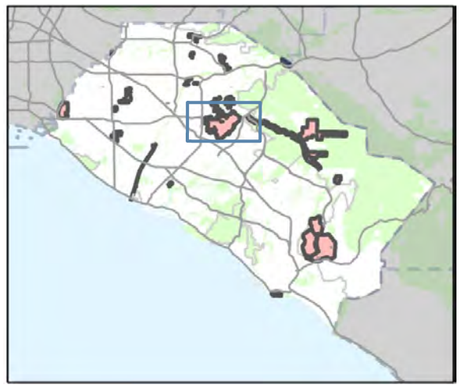
- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Rail Stop
- Bus Route
- Rail

BASEMAP

- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 0.5 1 Miles

N

FIGURE 72 North Tustin Islands Existing Conditions

Santiago Creek Island
Orange Park Acres Island
El Modena Island
North Tustin
Irvine Ranch Open Space
Irvine Regional Park
Peters Canyon Regional Park
Santiago Canyon
Santiago Oaks Regional Park
VILLA PARK
RANDALL
KENNYMEAD
MEADS
ORANGE PARK
CANNON
WANDA
HANDY
BOND
RANCHO SANTIAGO
SPRING
PROSPECT
CHAPMAN
HEWES
WHITE OAK RIDGE
CANYON VIEW
CRAIG
PALMYRA
JAMES
ESPLANADE
BAJA PANORAMA
CRAWFORD CANYON
BARRETT
RANGEVIEW
HANDY CREEK
SANTIAGO CANYON
COWAN HEIGHTS
OVERHILL
NEWPORT
CORONEL
FOOTHILL
DODGE
ARROYO
LA LOMA
SKYLINE
LA CUESTA
LEMON HEIGHTS
PIONEER
JAMBOREE
YORBA
FAIRHAVEN
SANTA CLARA
LORETTA
17TH
VANDERLIP
LIVINGSTON
HOLT
IRVINE
OLD IRVINE
LA COLINA
BROWNING
TUSTIN RANCH
PORTOLA
EL CAMINO REAL
BRYAN
RED HILL
6TH
CABRILLO PARK
TUSTIN

Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, a total of 68 collisions involving bicyclists and pedestrians were reported in North Tustin during the study period, 69% of which involved people bicycling and 31% of which involved people walking.

PEDESTRIAN-INVOLVED COLLISIONS

Between 2009 to 2018, 21 collisions occurred in North Tustin that involved a person walking. None of these collisions resulted in a fatal injury, 5% resulted in a severe injury, 48% resulted in a visible injury, and 48% resulted in a minor injury.

The highest crash violation was due to pedestrian right of way (38%) followed by pedestrian violation (29%). 43% of pedestrian collisions occurred at an intersection. The absence or quality of pedestrian crossings throughout Orange County may lead to pedestrians to cross in unsafe conditions as they attempt to navigate vehicle traffic.

The majority of these pedestrian related collisions occurred during the daylight (90%) followed by the dark with streetlights present (5%) and dark with no streetlights present (5%). Many collisions involving pedestrians occurred on Santa Clara Ave and 17th St (**Figure 73**).

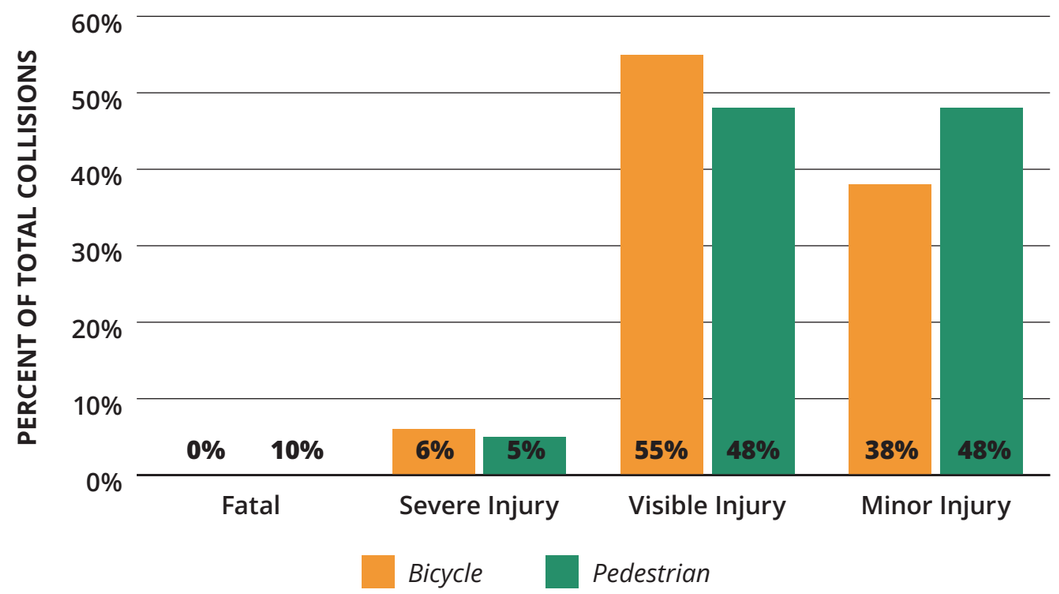
BICYCLE-INVOLVED COLLISIONS

During the same study period (2009 to 2018), 47 collisions in North Tustin involved a person riding a bicycle. None of these were fatal collisions, 3 (6%) resulted in severe injury, and 26 (55%) bicycle collisions resulted in a visible injury.

The highest crash violation categories were unsafe speed (28%), followed by improper turning (23%). 10 (21%) bicycle collisions occurred at an intersection.

The majority of these bicycle collisions occurred during the daylight (81%) followed by the night with streetlights present (13%). **Figure 73** provides an overview of all bicycle-involved collisions in North Tustin between 2009-2018 and demonstrates a concentration of collisions along Newport Ave and 17th St.

TABLE 35 Crash Severity in North Tustin Island





Network Gap Analysis

Figure 74 analyzes the bicycle and pedestrian connectivity of existing low-stress areas of North Tustin based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

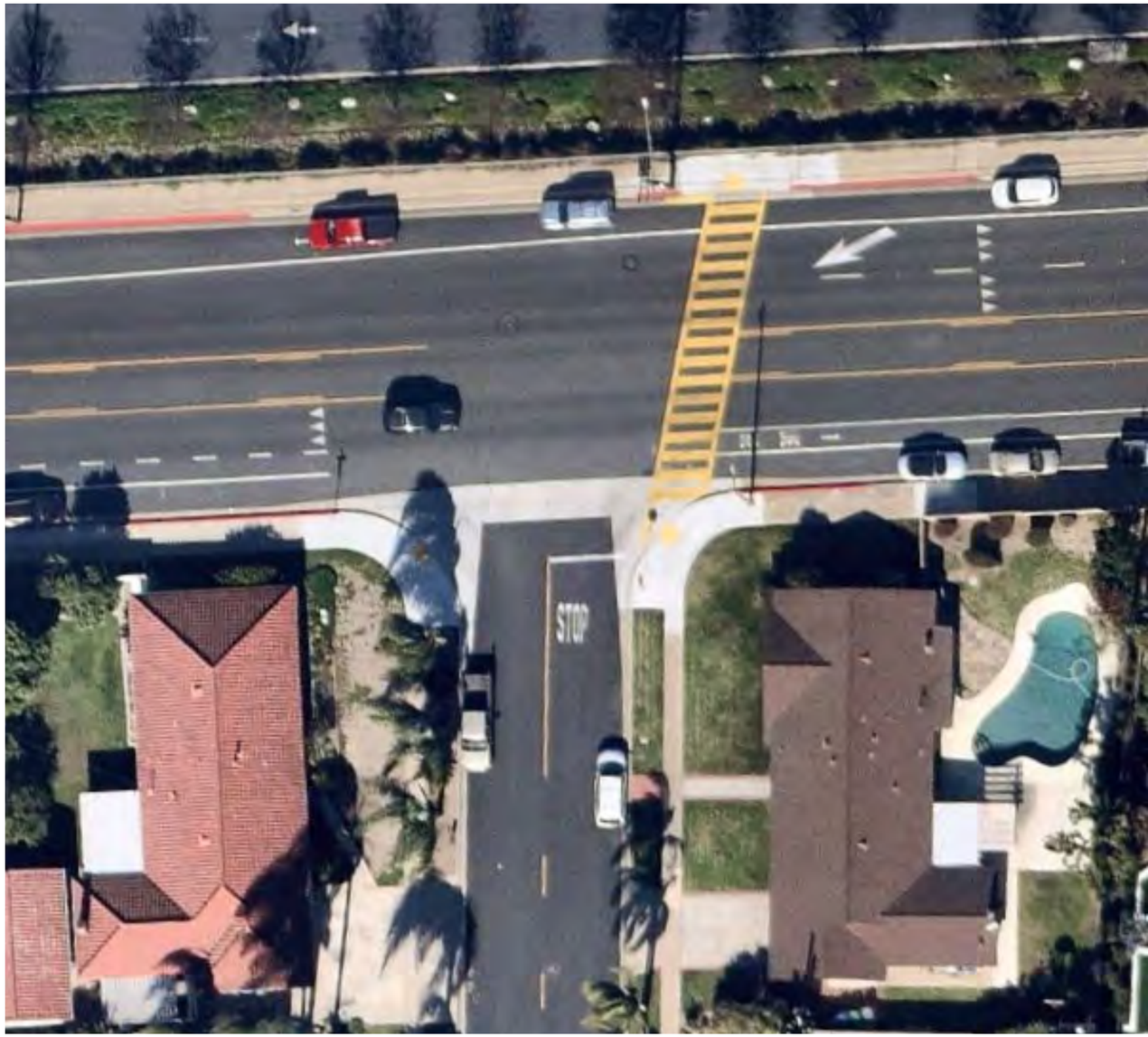
A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the city could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of North Tustin where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis shows that North Tustin requires pedestrians and bicyclists to cross high-stress arterials to reach destinations. The community is segmented into a series of many low stress streets, creating a disconnected and fragmented low stress network. Sections to the northeast represent the most continuous stretch of continuous low stress streets, but most of the area consists of small, disconnected fragments of low stress streets.

Based on the Needs and Gaps analysis, there are 286 low stress networks within North Tustin Island.



Orange County Unincorporated Area

Active Transportation Plan

North Tustin

PEDESTRIAN INVOLVED CRASHES

- Fatal
- Severe Injury
- Minor Injury
- No Injury

BICYCLIST INVOLVED CRASHES

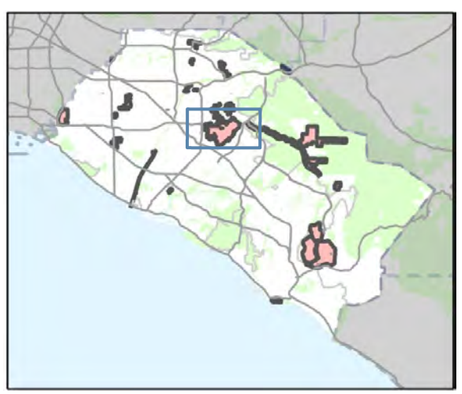
- Fatal
- Severe Injury
- Minor Injury
- No Injury

EXISTING BICYCLE FACILITIES

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

BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.5 1 Miles

FIGURE 73 North Tustin Bicycle and Pedestrian Involved Collisions

Orange County Unincorporated Area

Active Transportation Plan

North Tustin

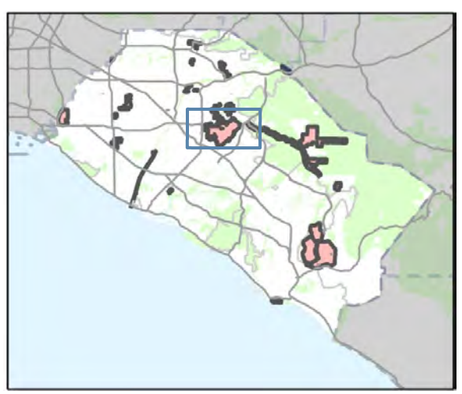
LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.5 1 Miles

FIGURE 74 Network Gaps in North Tustin

Recommendations

WHAT DID WE HEAR?

Comments requested wider connecting sidewalks, improved crosswalks with flashing lights, curb extensions to shorten crossing distances, and new bikeways connecting to existing facilities.

PEDESTRIAN RECOMMENDATIONS

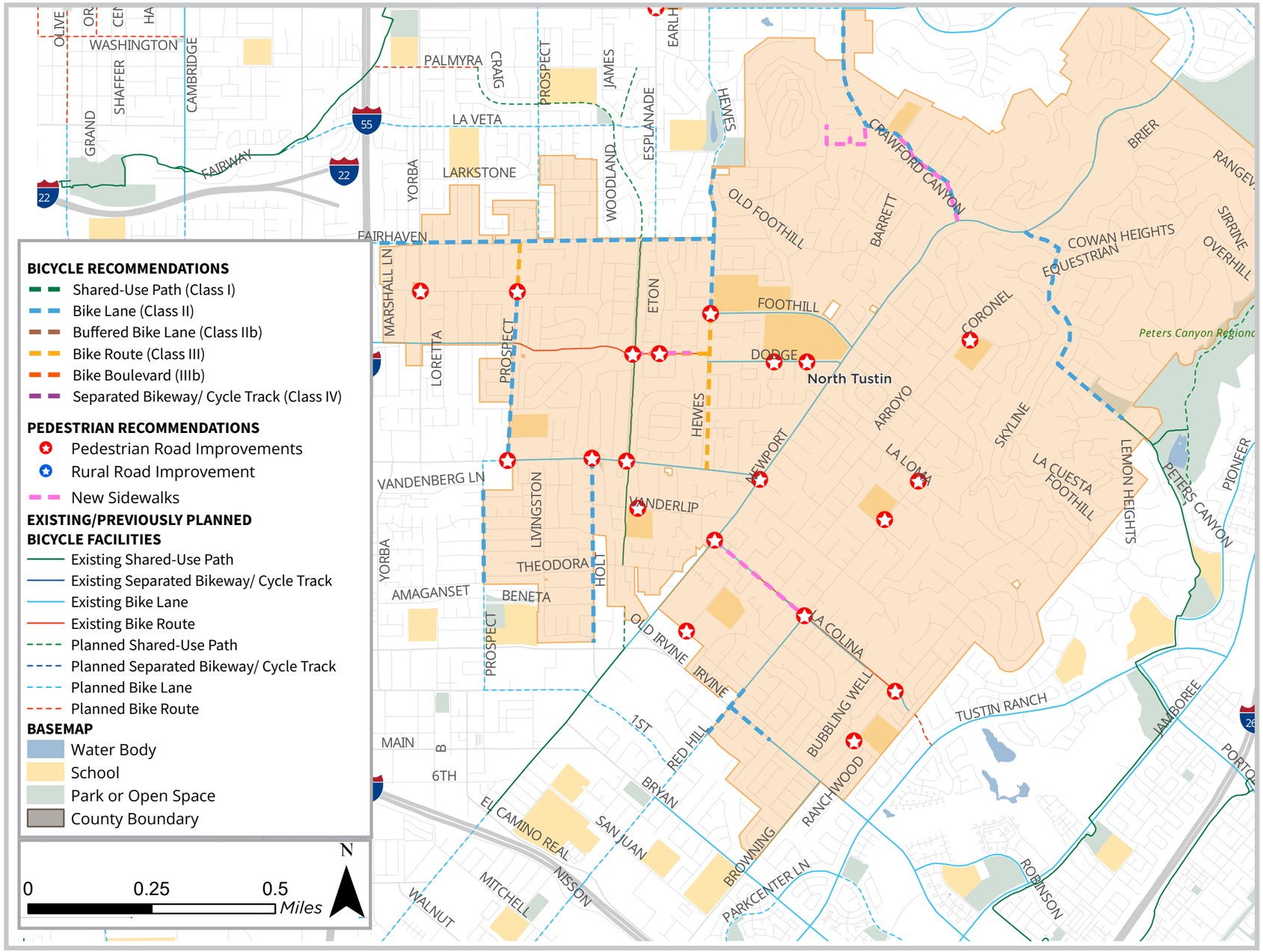
Recommended pedestrian infrastructure in North Tustin includes:

- Curb ramps
- Curb extensions
- High visibility crosswalks
- Pedestrian hybrid beacons
- Pedestrian refuge islands
- Sidewalk improvements

BICYCLE RECOMMENDATIONS

Major bicycle recommendations in North Tustin include:

- Class II 6.57 miles total including:
  - Fairhaven Ave between I-55 and Hewes Ave connecting to the existing Class I near Esplanade Ave
- Class III 1.21 miles total, including:
  - Skyline Dr and Lemon Heights Dr connecting to Newport Ave, which addresses public input comments requesting access in this area



Olive Heights Island

SUPERVISORIAL DISTRICT 2

Context and Background

Olive Heights Island is surrounded by and is within the sphere of influence of the City of Orange. This unincorporated area spans approximately 33 acres and is home to 42 residents as of 2019. The community is made up of single-family detached homes and multifamily housing.

Olive Heights Island is served by Orange Unified School District. Residents have access to Eisenhower Park and Oliver Park in Orange, both within a half-mile radius of the community. Olive Heights Island currently does not have any OCFCD-owned flood control channels that are suitable for pathway development.



COMMUTE TRENDS

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of current commute mode trends was conducted at the census block group level for Olive Heights Island. Of the Olive Heights Island residents 16 or older officially in the workforce, the ACS estimates that 0.6% walk and 3.4% use a bicycle to commute. However, bicycle ridership and rates of walking could be higher than this, as the ACS does not factor recreational trips or trips where commuters use more than one mode when traveling to work, such as taking a bus part way then riding a bicycle to the final destination.

ACCESS TO VEHICLES

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of households without access to a personal vehicle was conducted at the census tract level for Olive Heights Island. The average percentage of Olive Heights Island residents without access to vehicles is 3%.

HEALTH + EQUITY

The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to identify communities that are disproportionately burdened by pollution. It combines multiple sources of pollution data (e.g., ozone concentrations and drinking water contaminants) with population indicators (e.g., birth weight and educational attainment). Communities that score in the most burdened 25% of the state are considered to be disadvantaged and receive a small advantage in California's competitive funding process, such as through the State's Active Transportation Program. Per the tool, Olive Heights Island does not meet this threshold for disadvantaged communities, though it does face some pollution burden.

Additionally, public health is shaped by other "non-health" policies and community characteristics, such as housing, education, economic, and social factors. These factors are included in the California Healthy Places Index (HPI) tool, developed by Public Health Alliance of Southern California, which determines how healthy a census tract is compared to others in the state. Per the HPI tool, Olive Heights Island is considered healthier than approximately 77% of other California communities. Maps showing HPI and CalEnviroScreen scoring for Olive Heights Island are included in Appendix C.

At a Glance

SIZE

33 Acres

POPULATION

42 Residents

COMMUNITY TYPE

Single-Family Detached Homes

Multifamily Housing

LOCAL SCHOOLS

Orange Unified School District

Walk Audit

The project team facilitated a virtual community audit in December 2020 to evaluate existing conditions in Olive Heights. Two Olive Heights residents participated in the audit, noting that they are satisfied with current conditions and want to preserve the existing character of the community. Streets throughout Olive Heights do not have sidewalks, and residents noted that they are okay with this and that some students and residents use alleys to walk around. Participants also noted that due to the community's hilly environment, bicycling is not a commonly-used mode of transportation. Instead of major pedestrian and bicycle networks being built out, community members would like to see more old-fashioned pedestrian-oriented lights. More details about audit observations can be found in Appendix B.

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 75** on the next page and described in the following sections.

BICYCLE NETWORK

There are no existing or previously proposed bikeways within Olive Heights Island. Because Olive Heights is fairly hilly, residents have noted it may not be comfortable to bike in or through. OCTA proposed Class II bicycle lanes along Lincoln Avenue in a previous plan.

PEDESTRIAN FACILITIES

Streets throughout Olive Heights Island do not have sidewalks and most intersections do not have marked crosswalks. However, most intersections do have curb extensions. There is a network of alleyways throughout the community, which could provide a more comfortable path for people walking. Generally, Olive Heights residents wish to preserve the character of the community as is.



Orange County
Unincorporated Area

Active Transportation Plan

Lincoln/Glassell + Olive Heights Islands

FIGURE 75 Olive Heights Island Existing Conditions

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

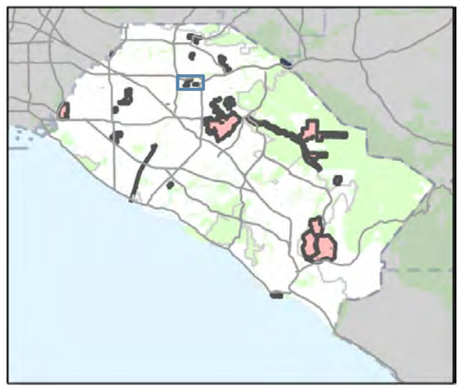
- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Rail Stop
- Bus Route
- Rail

BASEMAP

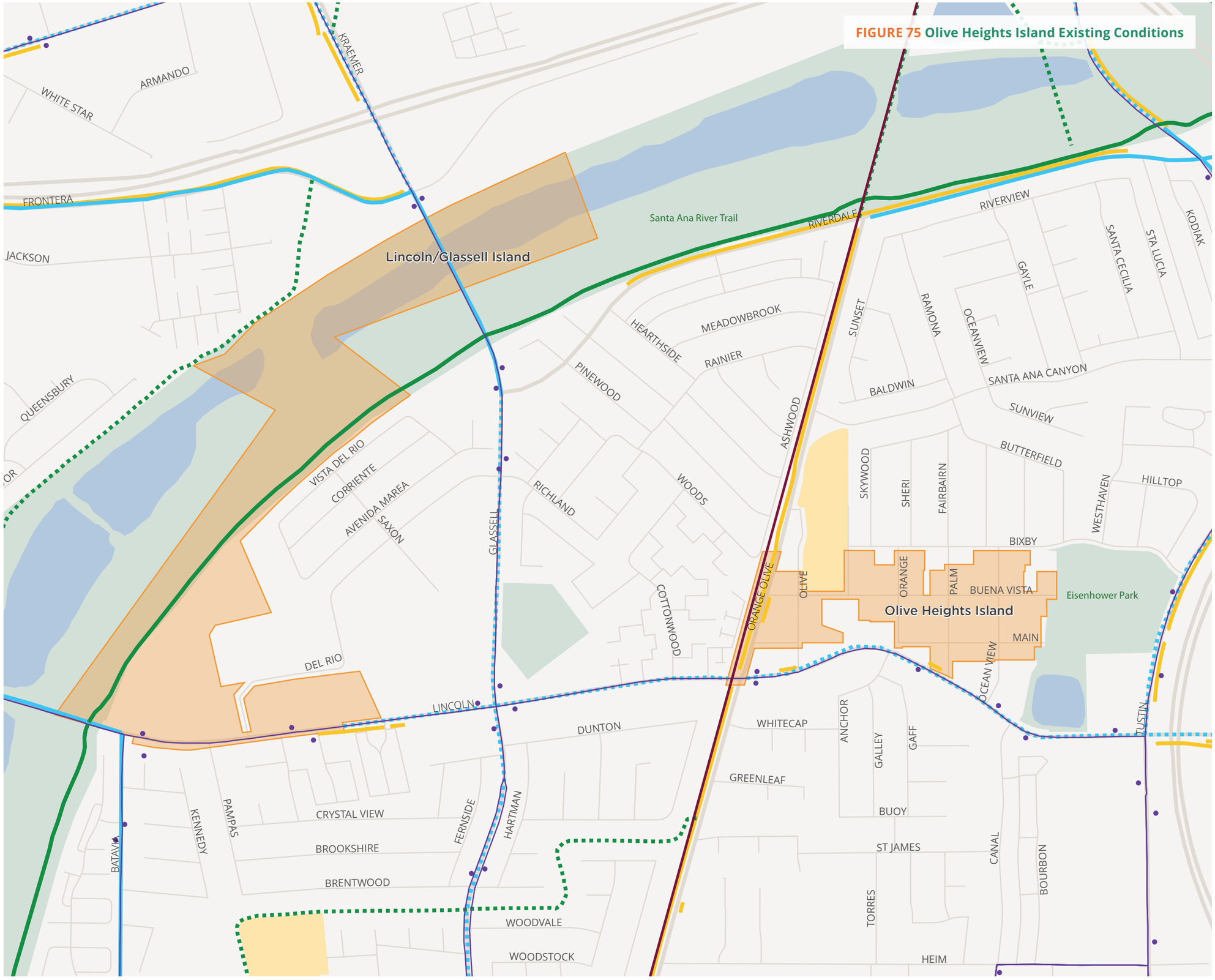
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 0.1 0.2 Miles

N



Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, a total of 3 collisions involving bicyclists and pedestrians were reported in Olive Heights during the study period, 67% of which involved people bicycling and 33% of which involved people walking.

PEDESTRIAN-INVOLVED COLLISIONS

Between 2009 to 2018, 1 collision occurred in Olive Heights that involved a person walking. None of these collisions resulted in a fatal injury, none resulted in a severe injury, none resulted in a visible injury, and 100% resulted in a minor injury. The crash violation was due to unsafe speed.

The pedestrian related collisions occurred during the daylight. The collision involving a pedestrian occurred on Buena Vista Ave near Oceanview Ave (**Figure 76**).

BICYCLE-INVOLVED COLLISIONS

During the same study period (2009 to 2018), 2 collisions in Olive Heights involved a person riding a bicycle. 50% of these were fatal collisions, none resulted in severe injury, and none of the bicycle collisions resulted in a visible injury.

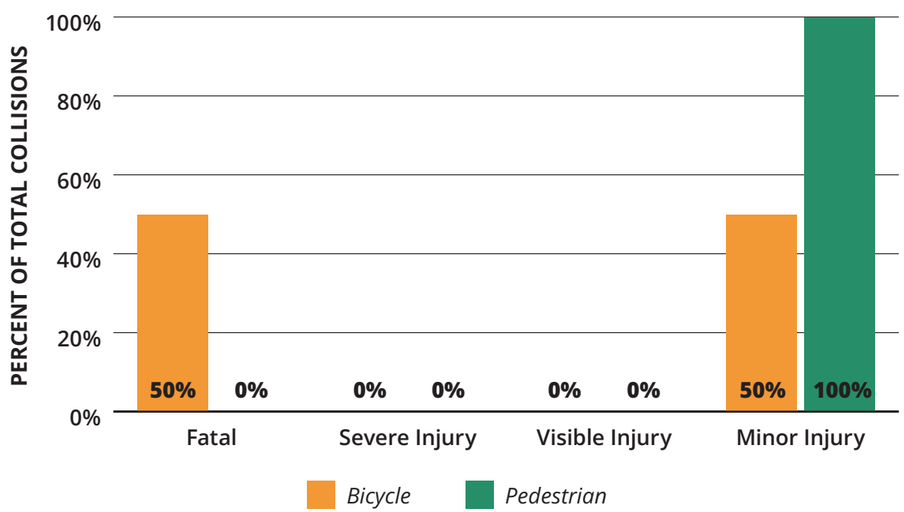
The highest crash violation categories were automobile right of way (50%), and traffic signs and signals (50%). 1 (50%) bicycle collision occurred at an intersection.

The bicycle collisions occurred during the daylight (50%) and at night with no street lights present (50%). **Figure 76** provides an overview of all bicycle-involved collisions in Olive Heights between 2009-2018.

Network Gap Analysis

Figure 77 analyzes the bicycle and pedestrian connectivity of existing low-stress areas of Olive Heights based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section. This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

TABLE 36 Crash Severity in Olive Heights Island



A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the city could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of North Tustin where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis shows that Olive Heights has mostly low stress streets, except for Orange Olive Rd.

Based on the Needs and Gaps analysis, there are 4 low stress networks within Olive Heights Island.

Orange County Unincorporated Area

Active Transportation Plan

Lincoln/Glassell + Olive Heights Islands

PEDESTRIAN INVOLVED CRASHES

- Fatal
- Severe Injury
- Minor Injury
- No Injury

BICYCLIST INVOLVED CRASHES

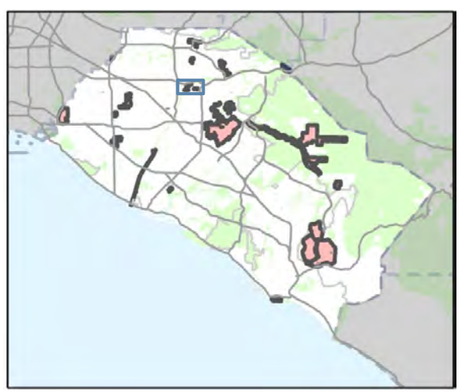
- Fatal
- Severe Injury
- Minor Injury
- No Injury

EXISTING BICYCLE FACILITIES

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

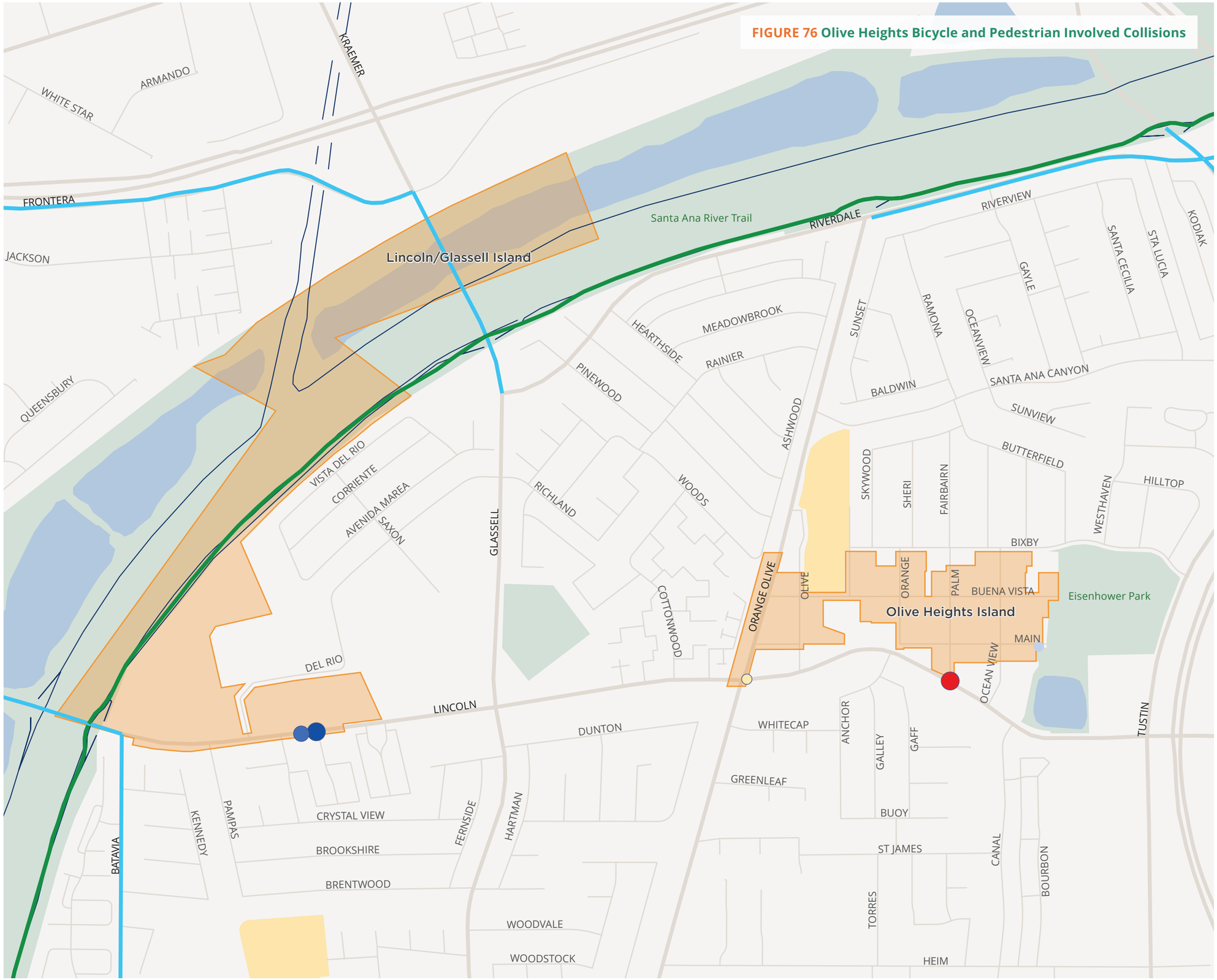
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.1 0.2 Miles

FIGURE 76 Olive Heights Bicycle and Pedestrian Involved Collisions



Orange County Unincorporated Area

Active Transportation Plan

Lincoln/Glassell + Olive Heights Islands

FIGURE 77 Network Gaps in Olive Heights

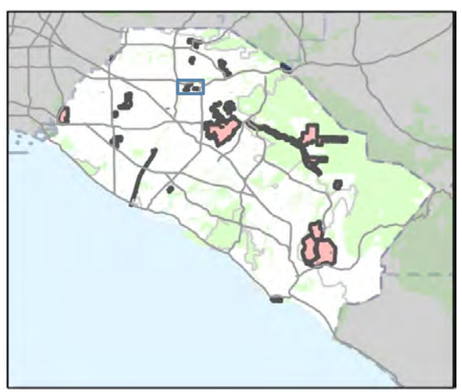
LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

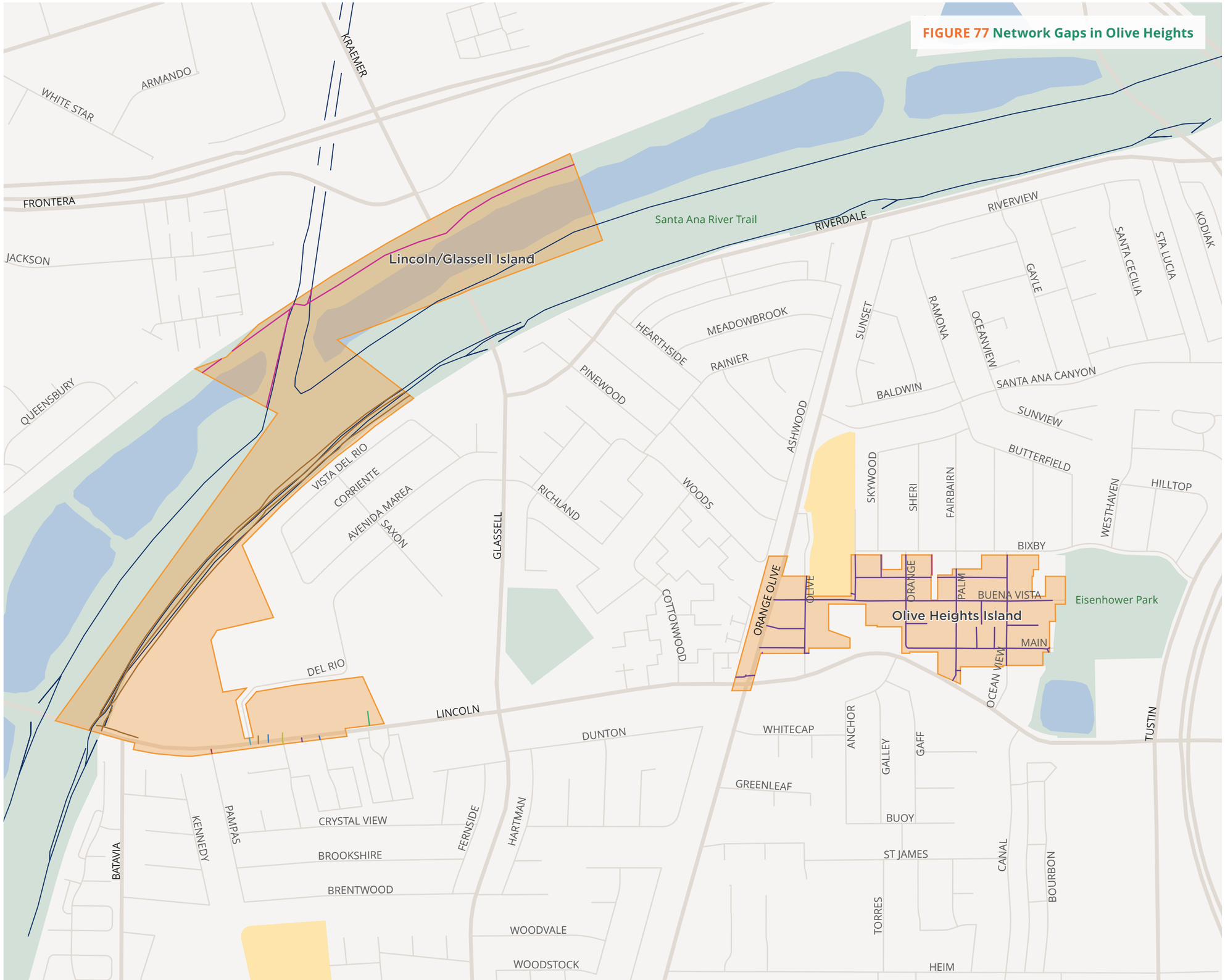
The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.1 0.2 Miles



Recommendations

WHAT DID WE HEAR?

There are no existing or previously proposed bikeways within Olive Heights Island. Because Olive Heights is hilly, residents have noted it may not be comfortable to bike in or through. Some residents requested access to the Santa Ana River bike trail from East Riverdale Street, and others noted inadequate crossing infrastructure along Buena Vista Avenue.

PEDESTRIAN RECOMMENDATIONS

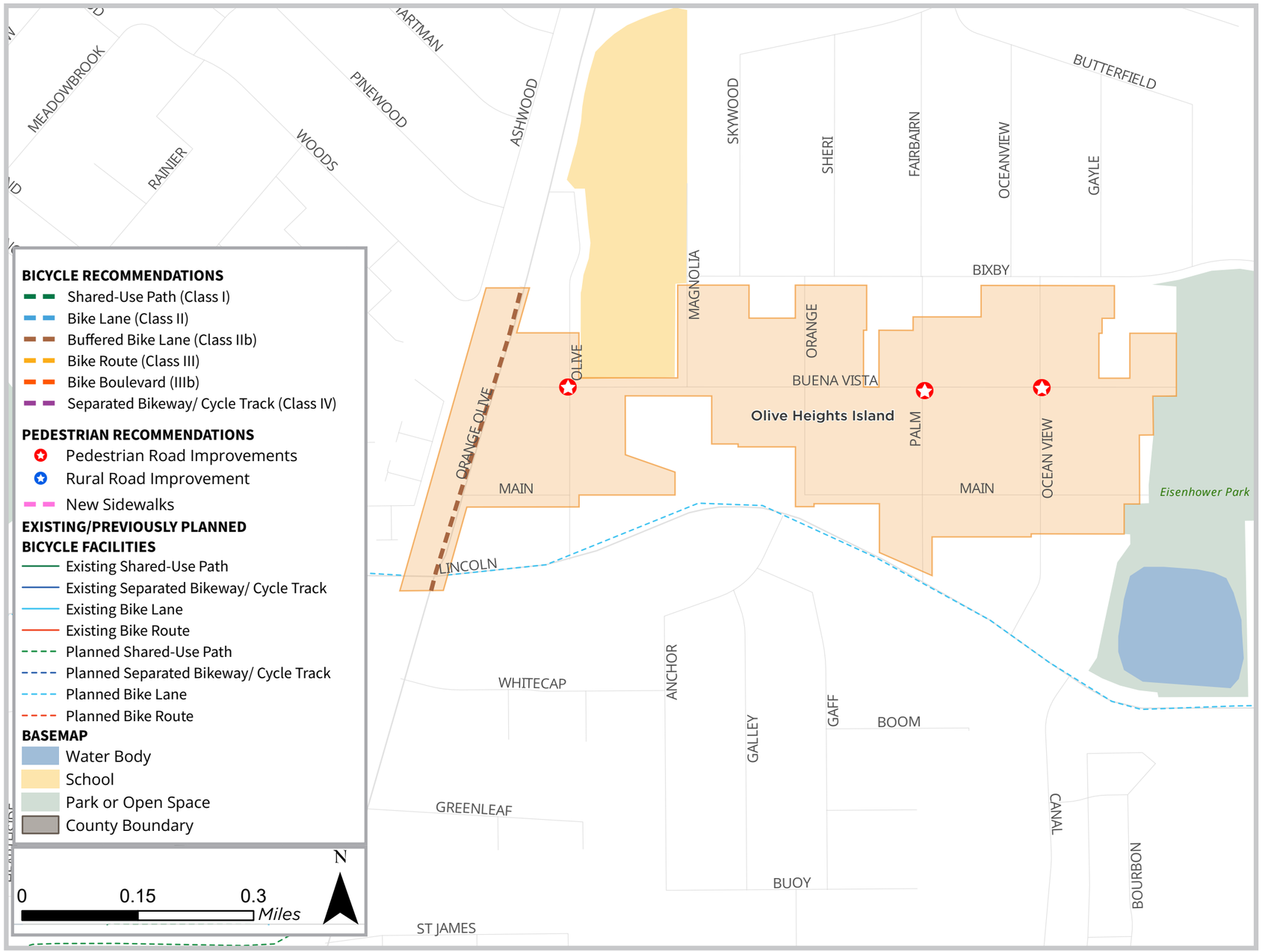
Recommended pedestrian infrastructure in Olive Heights Island includes:

- Curb ramp
- Enhanced pavement markings and signage
- High visibility crosswalks

BICYCLE RECOMMENDATIONS

Bicycle recommendations in Olive Heights Island include:

- Class IIb 0.2 miles total including:
  - Orange Olive Rd, which will connect to the proposed Class II bike lanes in the City of Orange



Orange Park Acres

SUPERVISORIAL DISTRICT 3

Context and Background

Orange Park Acres is surrounded by and within the sphere of influence of the City of Orange. This unincorporated area spans approximately 394 acres and is home to 1,095 residents as of 2019. The community is almost entirely made up of single-family detached homes.

Orange Park Acres is served by Orange Unified School District, and Salem Lutheran School is located near the community's northwest border. There are no existing parks within a half-mile radius of the community, though residents have access to nearby El Modena Open Space and trails, including the Santiago Creek Trail. Orange Park Acres currently does not have any OCFCD-owned flood control channels that are suitable for pathway development.

COMMUTE TRENDS

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of current commute mode trends was conducted at the census block group level for Orange Park Acres. Of the Orange Park Acres residents 16 or older officially in the workforce, the ACS estimates that 0.8% walk and none use a bicycle to commute. However, bicycle ridership and rates of walking could be higher than this, as the ACS does not factor recreational trips or trips where commuters use more than one mode when traveling to work, such as taking a bus part way then riding a bicycle to the final destination.

ACCESS TO VEHICLES

Using data obtained from the 2017 American Community Survey (ACS) Five-Year Estimates, an analysis of households without access to a personal vehicle was conducted at the census tract level for Orange Park Acres. The percentage of people without access to a motor vehicle is up to nearly 8% of residents, varying by Census tract. The average percentage of Orange Park Acres residents without access to vehicles is 2.7%.

HEALTH + EQUITY

The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to identify communities that are disproportionately burdened by pollution. It combines multiple sources of pollution data (e.g., ozone concentrations and drinking water contaminants) with population indicators (e.g., birth weight and educational attainment). Communities that score in the most burdened 25% of the state are considered to be disadvantaged and receive a small advantage in California's competitive funding process, such as through the State's Active Transportation Program. Per the tool, Orange Park Acres does not meet this threshold for disadvantaged communities.

Additionally, public health is shaped by other "non-health" policies and community characteristics, such as housing, education, economic, and social factors. These factors are included in the California Healthy Places Index (HPI) tool, developed by Public Health Alliance of Southern California, which determines how healthy a census tract is compared to others in the state. Per the HPI tool, Orange Park Acres is considered healthier than approximately 89% of other California communities. Maps showing HPI and CalEnviroScreen scoring for Orange Park Acres are included in Appendix C.

At a Glance

SIZE

394 Acres

POPULATION

1,095 Residents

COMMUNITY TYPE

Single-Family Detached Homes

LOCAL SCHOOLS

Orange Unified School District

Salem Lutheran School

Walk Audit

The project team facilitated a virtual community walk audit in November 2020 to evaluate existing conditions in Orange Park Acres. Overall, there were 8 participants from the community, who noted that it is a proud equestrian community. Most streets do not feature sidewalks but do have shared equestrian paths, which the community feels strongly about keeping as is. Participants noted that many locals use these paths to bicycle and/or ride horses for recreation. Community members would like the project team to consider how cyclists and equestrians interact and how to make it clear to visitors that they are entering Orange Park Acres. More details about audit observations can be found in Appendix B.



Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 78** on the next page and described in the following sections.

BICYCLE NETWORK

Orange Park Acres' existing bike network is made up of 1.79 miles of Class II bicycle lanes. Bicycle lanes currently exist on Santiago Canyon Road at the north end of the community and Chapman Avenue at the south end of the community. Unpaved trails exist along Orange Park Boulevard; though they are meant for equestrian use, residents may choose to use these as an off-street bike path.

PEDESTRIAN FACILITIES

Sidewalks exist outside of Salem Lutheran School, but most other streets do not feature sidewalks. However, many streets, including Orange Park Boulevard, do have unpaved shared equestrian paths. Aside from the major corridors on the outer edges of Orange Park Acres, intersections do not have marked crossings or signals. The intersection of Orange Park Boulevard and Chapman Avenue has marked crosswalks, but is missing ADA-compliant curb ramps.

TABLE 37 Existing Bicycle Network (Miles)

Facility Type	Existing
Class II Bicycle Lanes	0.63
Total	**0.63**



Orange County Unincorporated Area

Active Transportation Plan

El Modena, Orange Park Acres, + Santiago Creek Islands

FIGURE 78 Orange Park Acres Existing Conditions

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

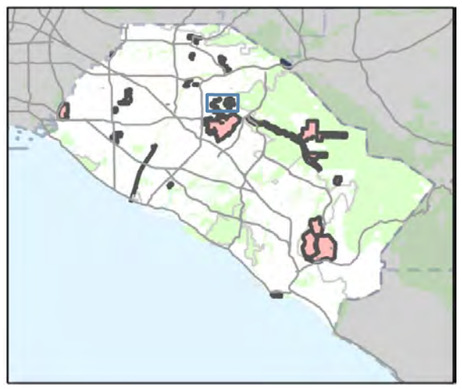
- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Rail Stop
- Bus Route
- Rail

BASEMAP

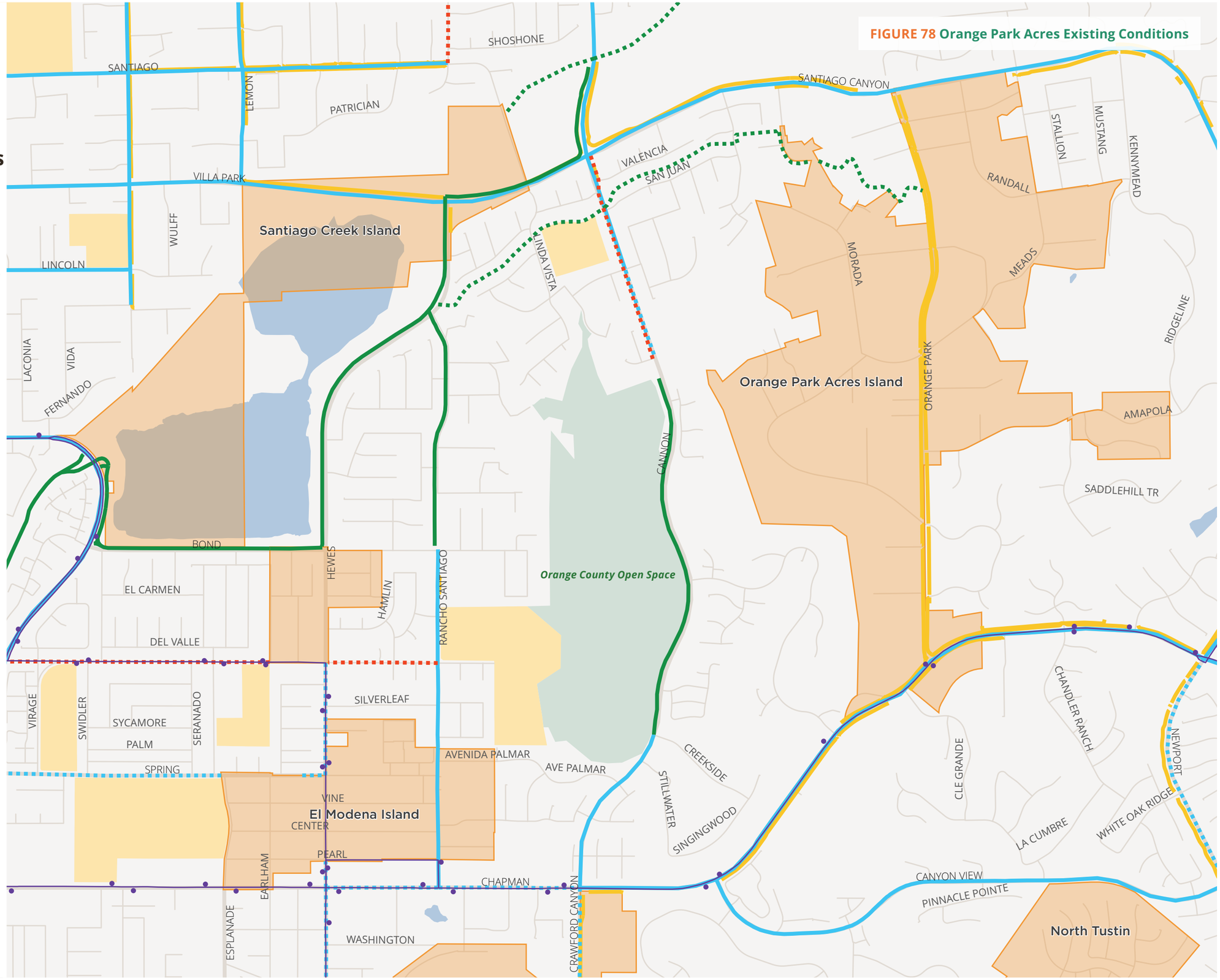
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 0.2 0.4 Miles

N



Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, there were no collisions that involved a pedestrian or bicyclist in Orange Park Acres.

Network Gap Analysis

Figure 79 analyzes the bicycle and pedestrian connectivity of existing low-stress areas of Orange Park Acres based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the city could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of Orange Park Acres where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis shows there is good internal connectivity within Orange Park Acres for the most part, although links connected to Orange Park Blvd remain isolated. Furthermore, to leave the community requires crossing the high stress arterials of Santiago Canyon Rd and Chapman Ave.

Based on the Needs and Gaps analysis, there are 30 low stress networks within Orange Park Acres.



Orange County Unincorporated Area

Active Transportation Plan

El Modena, Orange Park Acres, + Santiago Creek Islands

FIGURE 79 Network Gaps in Orange Park Acres

LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

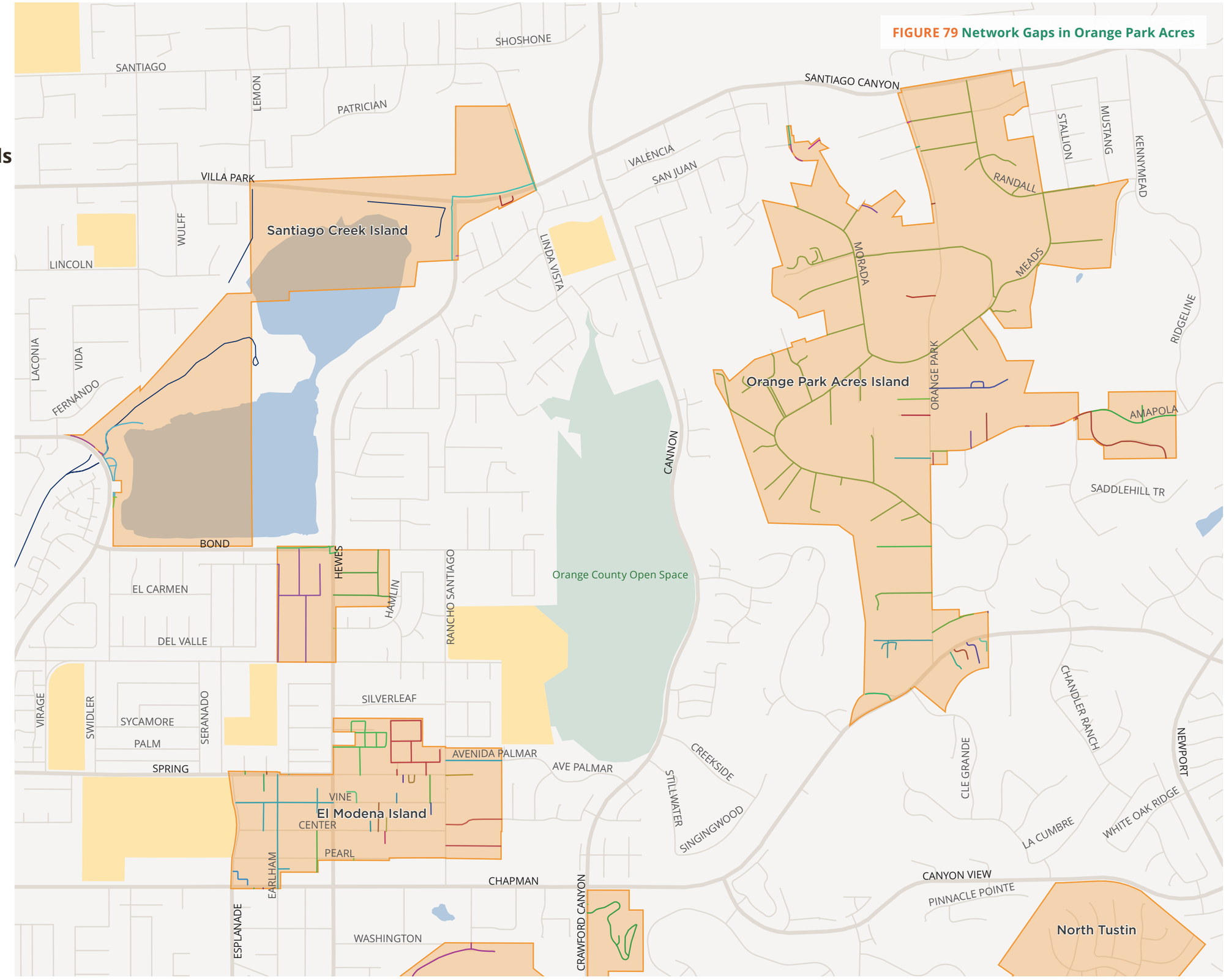
The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

BASEMAP

- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.2 0.4 Miles



Recommendations

WHAT DID WE HEAR?

Some community members requested a bikeway connection through the area, while others want to preserve the rural, equestrian nature of the community. Community members requested a safer crossing at Chapman Avenue, and traffic calming on Santiago Canyon Road.

PEDESTRIAN RECOMMENDATIONS

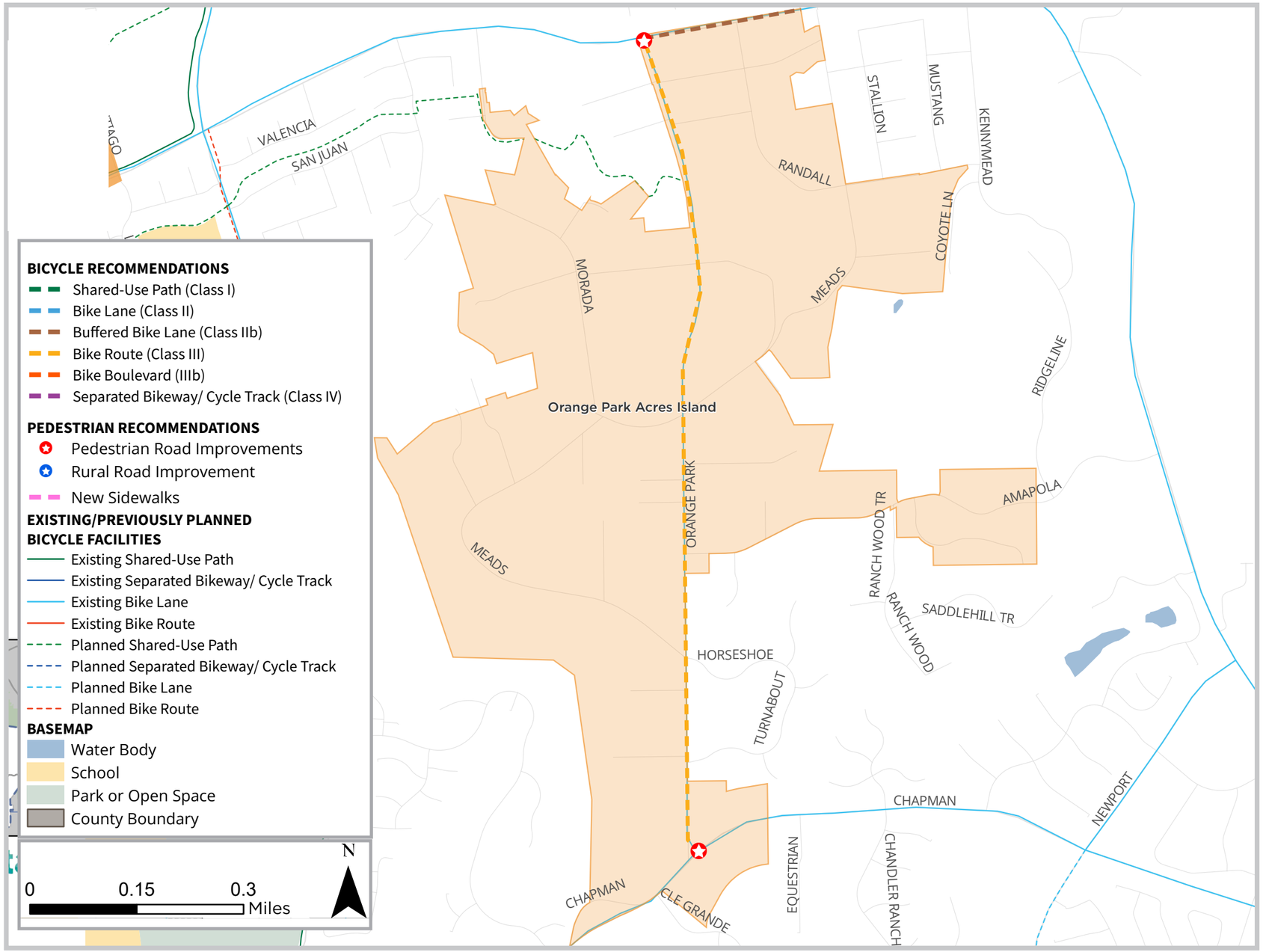
Recommended pedestrian infrastructure in Orange Park Acres includes:

- Curb ramps
- Curb extensions
- High visibility crosswalks

BICYCLE RECOMMENDATIONS

Bicycle recommendations in Orange Park Acres Island include:

- Class IIb 0.25 miles total including:
  - Santiago Canyon Rd connecting to the proposed Class II outside of the area boundaries
- Class III 1.3 miles total including:
  - Orange Park Blvd which will connect to the existing Class II facilities on either end and alert drivers that bicyclists may be in the area, while still respecting the rural feel of the boulevard



Rancho Mission Viejo

SUPERVISORIAL DISTRICT 5

Context and Background

Rancho Mission Viejo is a 23,000-acre ranch and farm, habitat reserve, and community adjacent to the City of San Juan Capistrano to the south, unincorporated Ladera Ranch to the west, and Caspers Wilderness Park to the east. It is made up of multiple unique villages, with a total population of 37,457 as of 2018.

Rancho Mission Viejo is served by Capistrano Unified School District, including Esencia School within community boundaries. The community also has multiple parks and playgrounds including The Backyard (a 5.5-acre linear park), South Paw Dog Park, The Campout (open campgrounds), The Pavilion (park and playground), Esencia Sports Park, and multiple neighborhood parks. It is also near multiple regional open spaces and trails. Additionally, 1.92 miles of OCFCD-owned flood control channels run through Rancho Mission Viejo.

COMMUTE TRENDS

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of current commute mode trends was conducted at the census block group level for Rancho Mission Viejo. Of the Rancho Mission Viejo residents 16 or older officially in the workforce, the ACS estimates that 0.8% walk and 1.2% use a bicycle. However, bicycle ridership and rates of walking could be higher than this, as the ACS does not factor recreational trips or trips where commuters use more than one mode when traveling to work, such as taking a bus part way then riding a bicycle to the final destination.

ACCESS TO VEHICLES

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of households without access to a personal vehicle was conducted at the census tract level for Rancho Mission Viejo. The percentage of people without access to a motor vehicle is up to nearly 6.5% of residents, depending on the Census tract. The average percentage of Rancho Mission Viejo residents without access to vehicles is 3%.

HEALTH + EQUITY

The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to identify communities that are disproportionately burdened by pollution. It combines multiple sources of pollution data (e.g., ozone concentrations and drinking water contaminants) with population indicators (e.g., birth weight and educational attainment). Communities that score in the most burdened 25% of the state are considered to be disadvantaged and receive a small advantage in California's competitive funding process, such as through the State's Active Transportation Program. Per the tool, Rancho Mission Viejo does not meet this threshold for disadvantaged communities.

Additionally, public health is shaped by other "non-health" policies and community characteristics, such as housing, education, economic, and social factors. These factors are included in the California Healthy Places Index (HPI) tool, developed by Public Health Alliance of Southern California, which determines how healthy a census tract is compared to others in the state. Per the HPI tool, Rancho Mission Viejo is considered healthier than approximately 93% of other California communities. Maps showing HPI and CalEnviroScreen scoring for Rancho Mission Viejo are included in Appendix C.

At a Glance

SIZE

23,000 Acres

POPULATION

37,457 Residents

COMMUNITY TYPE

Single-Family Detached Homes

Multifamily Housing

LOCAL SCHOOLS

Capistrano Unified School District

Esencia School

Walk Audit

The project team facilitated a virtual community walk audit in November 2020 to evaluate existing conditions in Rancho Mission Viejo. The community audit also included the nearby communities of Ladera Ranch and Las Flores. In total, 14 community members participated in the audit. Participants noted that the existing bikeways in Rancho Mission Viejo need improvements for better visibility and safety for bicyclists. Residents have also observed that although bicyclists tend to stay along local trails, existing infrastructure would highly benefit from wayfinding signage. Additionally, participants noted that speeding is common along Rancho Mission Viejo's major roads and think that more visible infrastructure could help curb this behavior. More details about audit observations can be found in Appendix B.



Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 80** on the next page and described in the following sections.

BICYCLE NETWORK

Rancho Mission Viejo's existing bikeway network currently totals 11.48 miles, which are shown in **Figure 80** and **Table 38**. A Class I shared-use path exists near the southern boundary of the community, which features signage indicating it is for bicyclists and Neighborhood Electric Vehicles (NEVs). This path connects the two residential areas of Rancho Mission Viejo on either side of Antonio Parkway. Rancho Mission Viejo also has a network of existing bicycle lanes and bicycle routes that connect users to numerous community parks and the adjacent community of Ladera Ranch. Additionally, **Table 38** includes a proposal for 2.1 miles of Class I shared-use paths proposed by OCTA in a previous plan.

PEDESTRIAN FACILITIES

Sidewalks exist on streets throughout Rancho Mission Viejo. On many streets, such as Chiquita Canyon Drive and Andaza Street, sidewalks are buffered from traffic lanes by a greenway strip, often with shade trees. Landscaped medians also exist along Chiquita Canyon Drive, providing space for additional greenery. Many streets throughout the community's residential areas also feature pedestrian-scale lighting.

Crosswalks are marked at major intersections throughout the community, but are currently not high-visibility. Landscaped traffic circles exist at many intersections throughout the residential areas of Rancho Mission Viejo. At these locations, existing marked crosswalks are typically high-visibility ladder markings. However, crosswalks at major signalized intersections along Chiquita Canyon, Cow Camp Road, and Antonio Parkway would be more visible if restriped as continental. Near Esencia Elementary School, intersections feature yellow ladder-style crosswalks, as well as school crossing signage and pavement markings.

TABLE 38 Existing Bicycle Network (Miles)

Facility Type	Existing	Proposed by OCTA
Class I Shared-use Path	2.72	2.10
Class II Bicycle Lane	8.23	0.00
Class III Bicycle Route	0.53	0.00
Total	**11.48**	**2.10**



Orange County
Unincorporated Area

Active Transportation Plan

Ladera Ranch, Las Flores, + Rancho Mission Viejo

FIGURE 80 Rancho Mission Viejo Existing Conditions

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

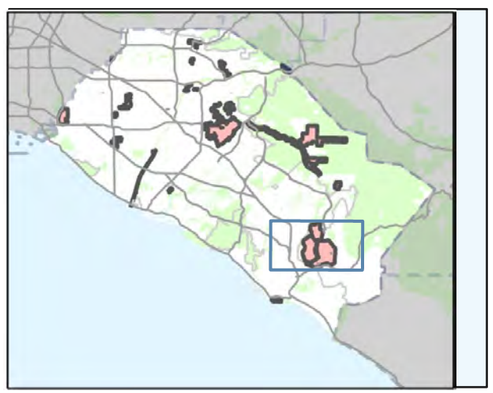
- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Bus Route
- Rail Stop
- Rail

BASEMAP

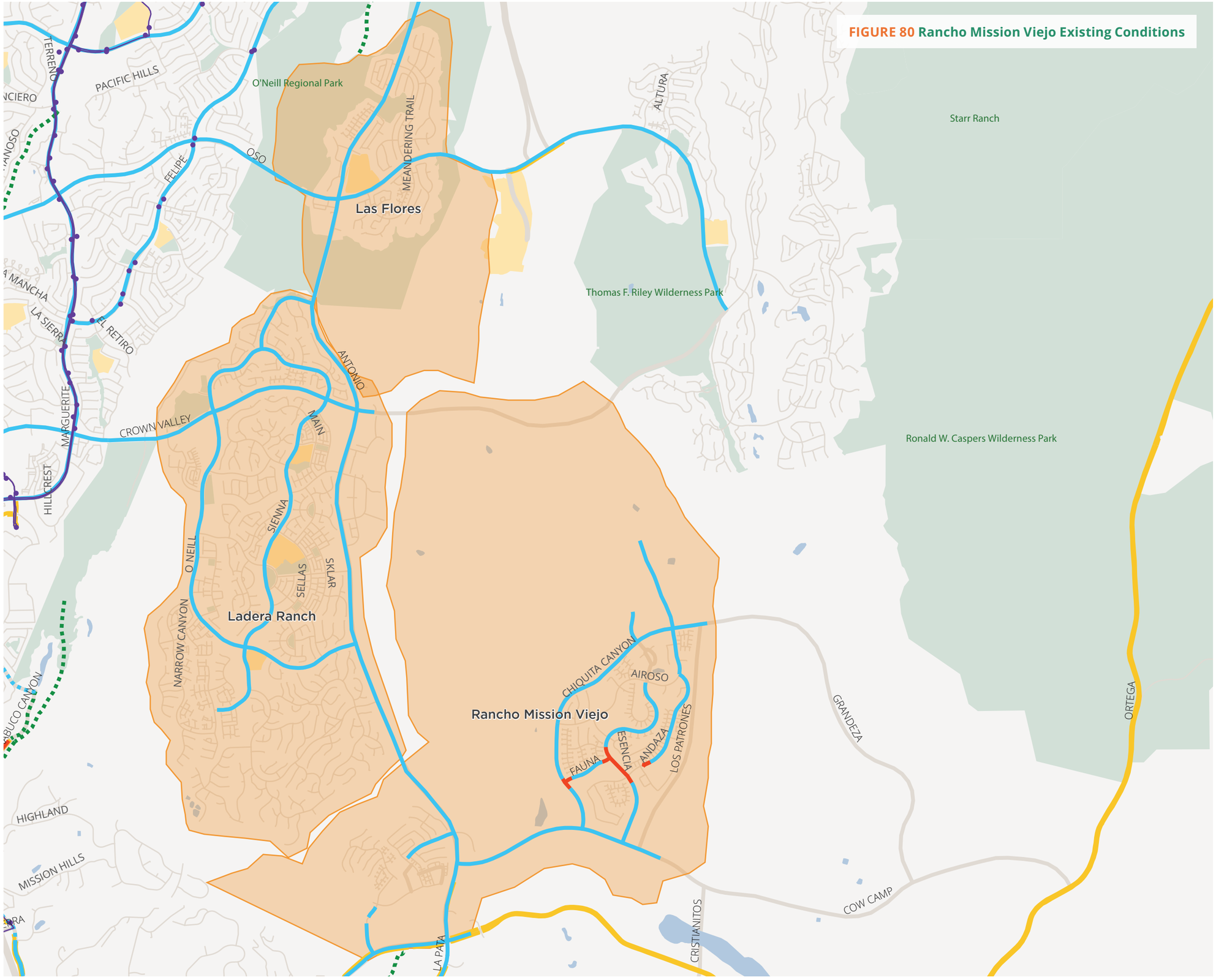
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 0.5 1 Miles

N



Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, a total of 4 collisions involving bicyclists and pedestrians were reported in Rancho Mission Viejo during the study period, 75% of which involved people bicycling and 25% of which involved people walking.

PEDESTRIAN-INVOLVED COLLISIONS

Between 2009 to 2018, 1 collision occurred in Rancho Mission Viejo that involved a person walking. This collision resulted in a severe injury.

The crash violation was due to a pedestrian violation. It did not occur at an intersection.

The collision occurred during the dark with no streetlights present. The collision occurred on Ortega Highway (**Figure 81**).

BICYCLE-INVOLVED COLLISIONS

During the same study period (2009 to 2018), 3 collisions in Rancho Mission Viejo involved a person riding a bicycle. All collisions resulted in a visible injury.

The highest crash violation categories were unsafe speed (67%), followed by improper turning (33%). No bicycle collisions occurred at an intersection.

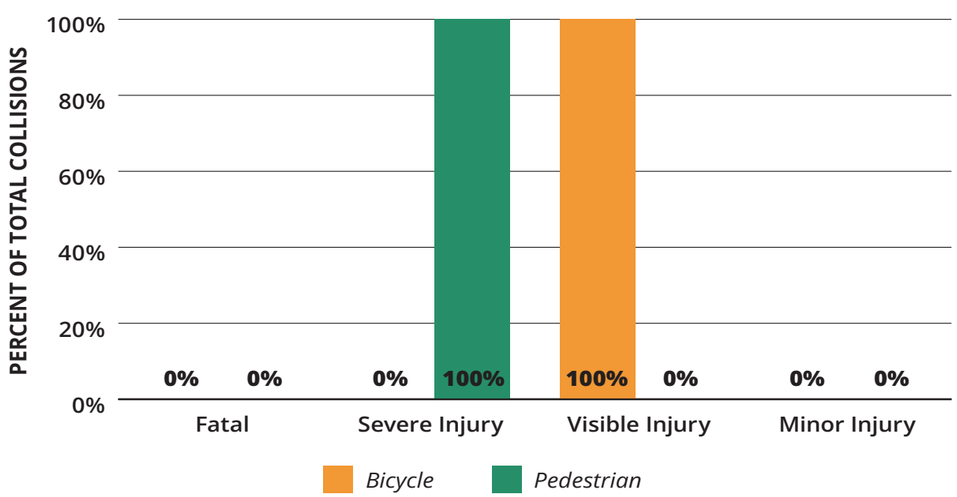
The majority of these bicycle collisions occurred during the daylight (67%) followed by the dark with no streetlights present (33%). **Figure 81** provides an overview of all bicycle-involved collisions in Rancho Mission Viejo between 2009-2018 and demonstrates the collisions occurred on Antonio Parkway and Cow Camp Rd.

Network Gap Analysis

Figure 82 analyzes the bicycle and pedestrian connectivity of existing low-stress areas of Rancho Mission Viejo based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for

TABLE 39 Crash Severity in Rancho Mission Viejo



cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the community could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of Rancho Mission Viejo where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis shows that the pedestrian and bicycle networks are isolated from one another by high stress arterials. In order to travel between one part of Rancho Mission Viejo to another, a pedestrian or cyclist must cross one of the major high-stress arterials, such as Cow Camp Rd and Airoso St.

Based on the Needs and Gaps analysis, there are 23 low stress networks within Rancho Mission Viejo.

Orange County Unincorporated Area

Active Transportation Plan

Ladera Ranch, Las Flores, + Rancho Mission Viejo

PEDESTRIAN INVOLVED CRASHES

- Fatal
- Severe Injury
- Minor Injury
- No Injury

BICYCLIST INVOLVED CRASHES

- Fatal
- Severe Injury
- Minor Injury
- No Injury

EXISTING BICYCLE FACILITIES

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

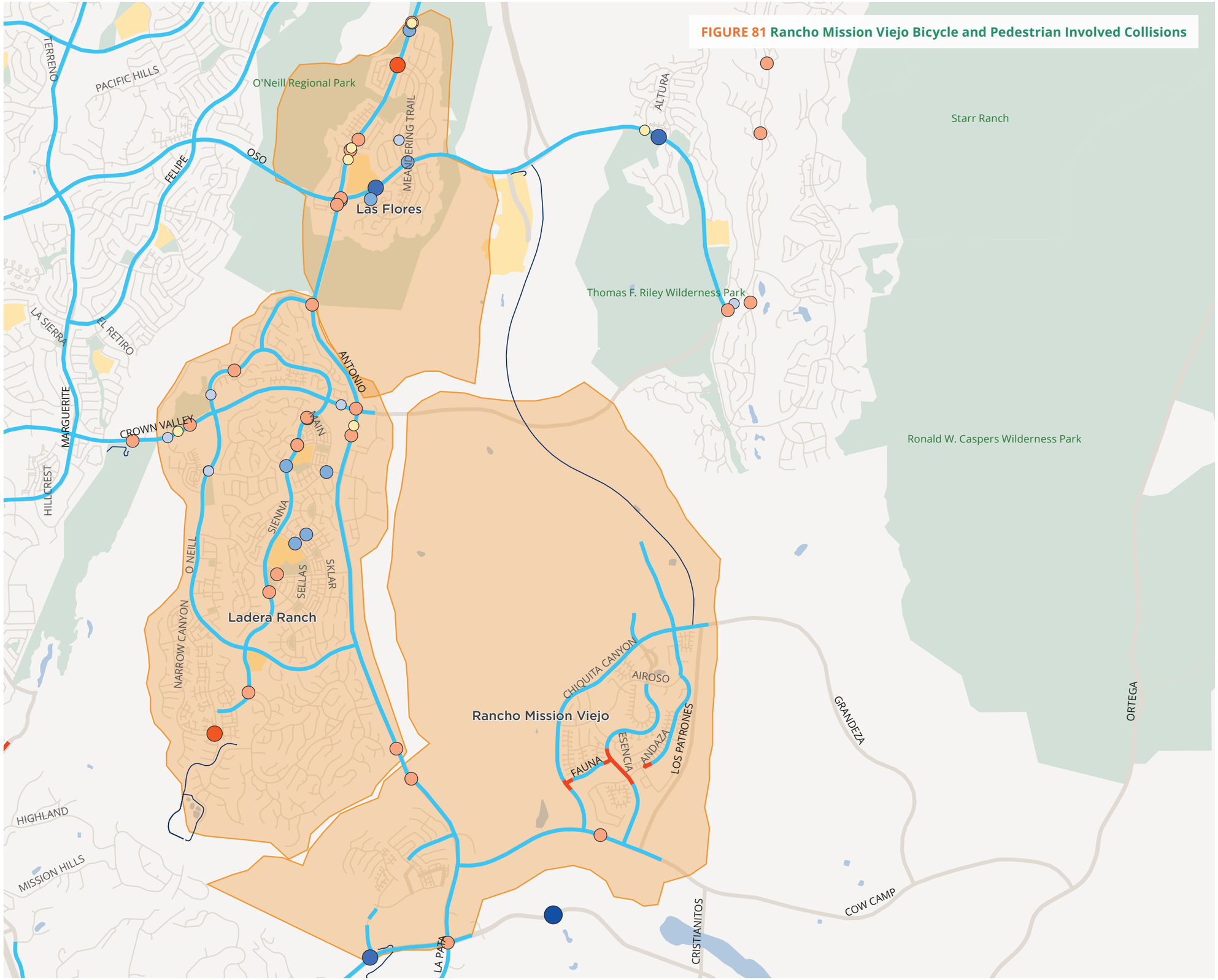
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.5 1 Miles

FIGURE 81 Rancho Mission Viejo Bicycle and Pedestrian Involved Collisions



Orange County Unincorporated Area

Active Transportation Plan

Ladera Ranch, Las Flores, + Rancho Mission Viejo

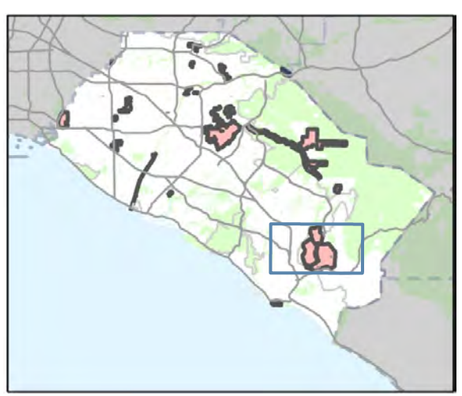
LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.5 1 Miles

FIGURE 82 Network Gaps in Rancho Mission Viejo

Recommendations

WHAT DID WE HEAR?

There are several trails in Rancho Mission Viejo, however community members requested better connections and safer intersection treatments to access the trails.

PEDESTRIAN RECOMMENDATIONS

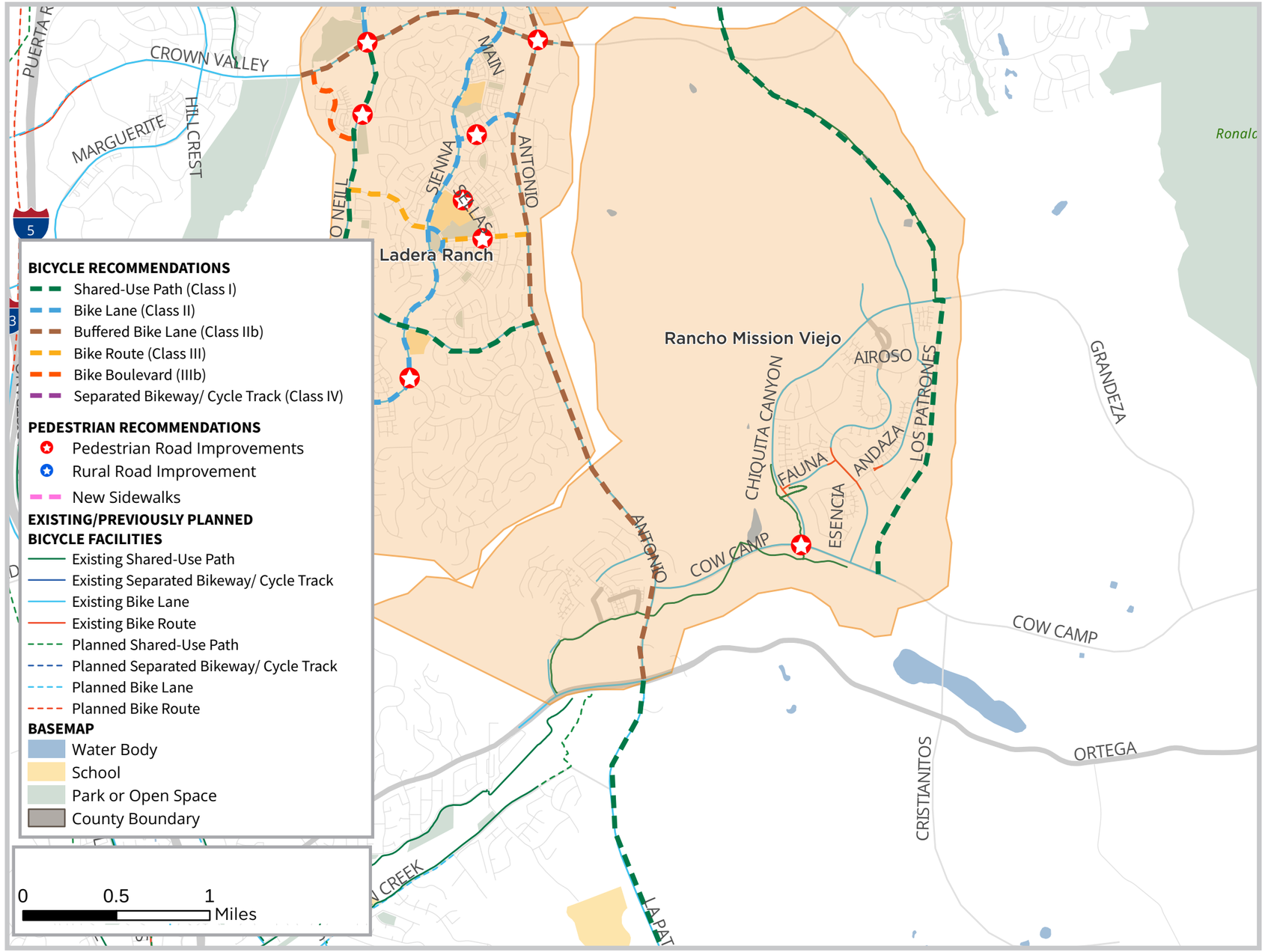
Recommended pedestrian infrastructure in Rancho Mission Viejo Island includes:

- Enhanced pavement markings and signage
- Curb extensions
- High visibility crosswalks

BICYCLE RECOMMENDATIONS

Bicycle recommendations in Rancho Mission Viejo Island include:

- Class I 7.5 miles total including:
  - The extension of the Los Patrones Bike Path from Chiquita Canyon Dr to Oso Pkwy
  - Enhancing the Class II bike lane on Avenida La Pata to a lower stress off street bikeway



Rossmoor Island

SUPERVISORIAL DISTRICT 1

Context and Background

Rossmoor Island is adjacent to the City of Los Alamitos to the east, the City of Seal Beach to the south, and Los Angeles County to the west. It is within the sphere of influence of Los Alamitos. This unincorporated area spans approximately 988 acres and is home to 11,128 residents as of 2019. The community is predominantly made up of single-family detached homes, as well as smaller amounts of multifamily housing.

Rossmoor Island is served by Los Alamitos Unified School District, with Rossmoor Elementary, Weaver Elementary, Hopkinson Elementary, and Lee Elementary Schools within its boundaries.[1] Residents have access to Rush and Rossmoor Parks within the community, as well as Edison Park in Seal Beach and Lewis and Sterns Parks in Los Alamitos within a half-mile radius of Rossmoor. Additionally, 3.64 miles of OCFCD-owned flood control channels run through Rossmoor Island.

1 As of 2021, some students attending schools in Rossmoor Island are eligible for free and reduced-price meals through the National School Lunch Program. The percentages eligible per school are: Hopkinson Elementary (11%), Lee Elementary (17.7%), Rossmoor Elementary (18.1%), and Weaver Elementary (8%).

COMMUTE TRENDS

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of current commute mode trends was conducted at the census block group level for Rossmoor Island. Of the Rossmoor Island residents 16 or older officially in the workforce, the ACS estimates that none walk to work and 0.4% use a bicycle. However, bicycle ridership and rates of walking could be higher than this, as the ACS does not factor recreational trips or trips where commuters use more than one mode when traveling to work, such as taking a bus part way then riding a bicycle to the final destination.

ACCESS TO VEHICLES

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of households without access to a personal vehicle was conducted at the census tract level for Rossmoor Island. The percentage of people without access to a motor vehicle is up to nearly 5.5% of residents, varying across Census tracts. The average percentage of Rossmoor Island residents without access to vehicles is 3.9%.

HEALTH + EQUITY

The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to identify communities that are disproportionately burdened by pollution. It combines multiple sources of pollution data (e.g., ozone concentrations and drinking water contaminants) with population indicators (e.g., birth weight and educational attainment). Communities that score in the most burdened 25% of the state are considered to be disadvantaged and receive a small advantage in California's competitive funding process, such as through the State's Active Transportation Program. Per the tool, Rossmoor Island does not meet this threshold for disadvantaged communities.

Additionally, public health is shaped by other "non-health" policies and community characteristics, such as housing, education, economic, and social factors. These factors are included in the California Healthy Places Index (HPI) tool, developed by Public Health Alliance of Southern California, which determines how healthy a census tract is compared to others in the state. Per the HPI tool, Rossmoor Island is considered healthier than approximately 80% of other California communities. Maps showing HPI and CalEnviroScreen scoring for Rossmoor Island are included in Appendix C.

At a Glance

SIZE

922 Acres

POPULATION

11,128 Residents

COMMUNITY TYPE

Single-Family Detached Homes

Multifamily Housing

LOCAL SCHOOLS

Los Alamitos Unified School District

Rossmoor Elementary

Weaver Elementary

Hopkinson Elementary

Lee Elementary

Walk Audit

The project team facilitated a virtual community audit in November 2020 to evaluate existing conditions in Rossmoor. Overall, 6 Rossmoor residents attended the audit, noting that walking and bicycling in Rossmoor feels comfortable and safe for the most part. However, they also observed several barriers during the walk audit that discourage people from walking and biking more. The absence of good crossing facilities was cited as a walkability challenge, especially near schools in Rossmoor. Several corridors near schools - such as Montecito Road, Foster Road, and Gertrude Road - are considered busy streets that need crossing improvements such as curb extensions, high-visibility crosswalks, and rectangular rapid flash beacons (RRFBs). In addition to enhanced pedestrian facilities, participants also shared a desire to improve the visibility of existing bicycle facilities. Existing bicycle routes are not consistently marked throughout the community and lack of signage along existing routes makes it challenging to identify the most direct and comfortable routes. More details about audit observations can be found in Appendix B.

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 83** on the next page and described in the following sections.

BICYCLE NETWORK

Rossmoor's existing bike network is made up of 2.23 miles of Class II bicycle lanes along Bradbury Road and Foster/Hedwig Roads. These existing bicycle lanes are inconsistently marked throughout the community and lack of signage makes it challenging to identify the most direct and comfortable routes. Additionally, the bicycle lanes on Foster Road are shared with on-street parking, causing bicyclists to have to weave in and out of vehicle travel lanes.

TABLE 40 Existing Bicycle Network (Miles)

Facility Type	Existing
Class II Bicycle Lane	0.23
Class III Bicycle Route	2.00
Total	**2.23**

PEDESTRIAN FACILITIES

Throughout Rossmoor, there are sidewalks on both sides of the street. Many of the curb ramps along residential streets are outdated and can be updated to meet current ADA requirements. There are also marked crosswalks at multiple intersections, particularly near schools, such as along Orangewood Avenue/Montecito Road and Foster Road. Many of these existing marked crosswalks could be enhanced to be more visible to drivers, such as with continental striping and RRFBs. School crossing signage and pavement markings exist along streets that connect to Rossmoor's multiple schools, such as along Montecito Road, Piedmont Avenue, and Kensington Road.



Orange County Unincorporated Area

Active Transportation Plan

Rossmoor Island

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bike Lane - *Class IV*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

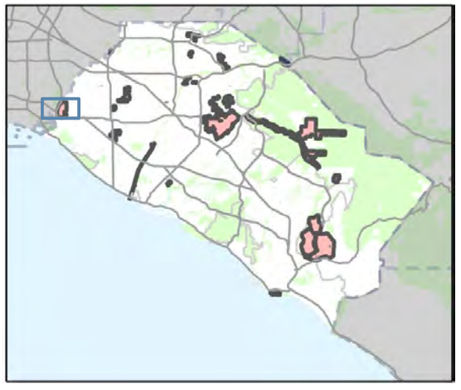
- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Rail Stop
- Bus Route
- Rail

BASEMAP

- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary

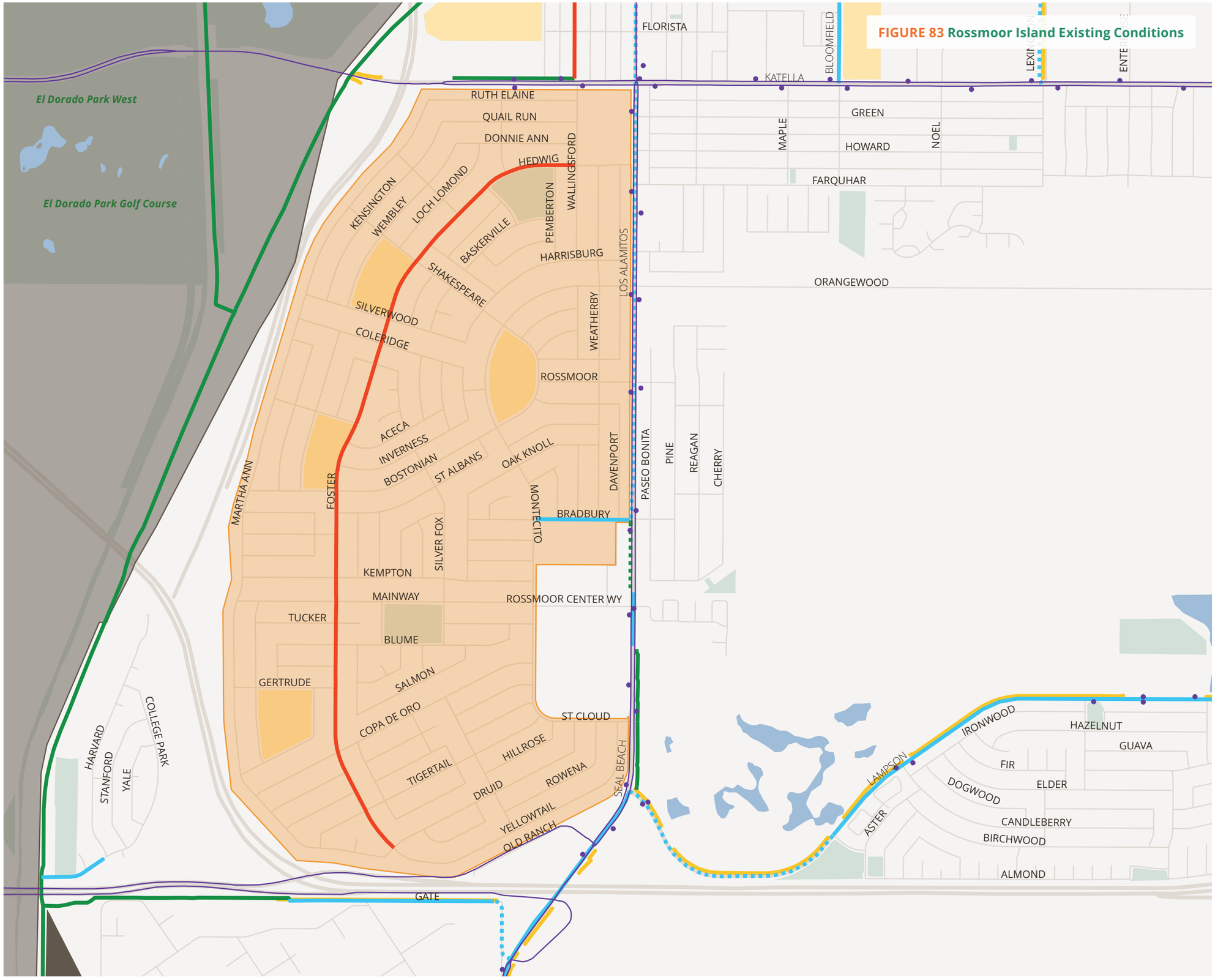


OC Public Works

0 0.2 0.4 Miles

N

FIGURE 83 Rossmoor Island Existing Conditions



Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, a total of 24 collisions involving bicyclists and pedestrians were reported in Rossmoor Island during the study period, 67% of which involved people bicycling and 33% of which involved people walking.

PEDESTRIAN-INVOLVED COLLISIONS

Between 2009 to 2018, 8 collisions occurred in Rossmoor Island that involved a person walking. 1 (13%) of these were fatal collisions and 1 (13%) resulted in a severe injury.

The highest crash violation was due to pedestrian right of way (38%) and pedestrian violation (38%). 13% of pedestrian collisions occurred at an intersection.

The majority of these pedestrian related collisions occurred during the daylight (88%) followed by the night time in areas with existing street lights (13%). Many collisions involving pedestrians occurred on Montecito Rd (**Figure 84**).

BICYCLE-INVOLVED COLLISIONS

During the same study period (2009 to 2018), 16 collisions in Rossmoor Island involved a person riding a bicycle. 0 (0%) of these were fatal collisions, 0 (0%) resulted in severe injury, and 9 (56%) bicycle collisions resulted in a visible injury.

The highest crash violation was due to automobile right of way (31%) followed by wrong side of the road (19%) and traffic signals and signs (19%). 5 (31%) bicycle collisions occurred at an intersection.

The majority of these bicycle collisions occurred during the day (88%) followed by dusk or dawn (6%) and at night with existing street lights present (6%). **Figure 84** provides an overview of all bicycle-involved collisions in Rossmoor Island between 2009-2018 and demonstrates a concentration of collisions along Foster Rd.

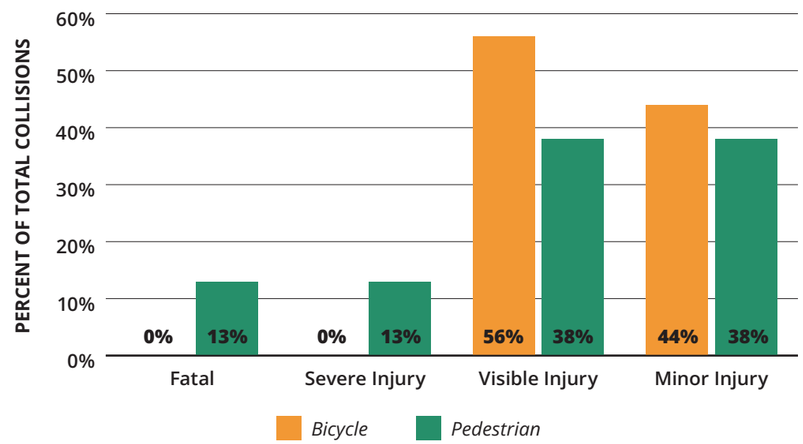
Network Gap Analysis

Figure 85 analyze the bicycle and pedestrian connectivity of existing low-stress areas of Rossmoor Island based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the community could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

TABLE 41 Crash Severity in Rossmoor Island



Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of Rossmoor Island where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis shows that the bicycle network provides relatively low stress connections across most of Rossmoor Island. Similarly, the pedestrian network is well connected, with a large portion of the area being accessible via low-stress connections.

Based on the Needs and Gaps analysis, there is 1 low stress network within Rossmoor Island.

Orange County Unincorporated Area

Active Transportation Plan

Rossmoor Island

PEDESTRIAN INVOLVED CRASHES

- Fatal
- Severe Injury
- Minor Injury
- No Injury

BICYCLIST INVOLVED CRASHES

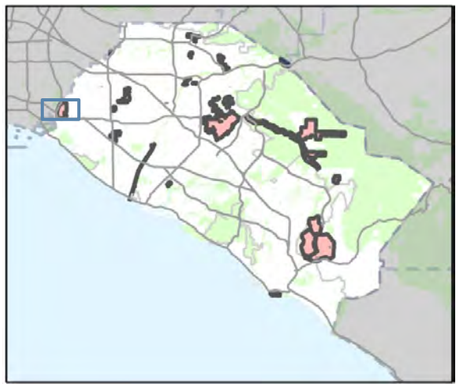
- Fatal
- Severe Injury
- Minor Injury
- No Injury

EXISTING BICYCLE FACILITIES

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

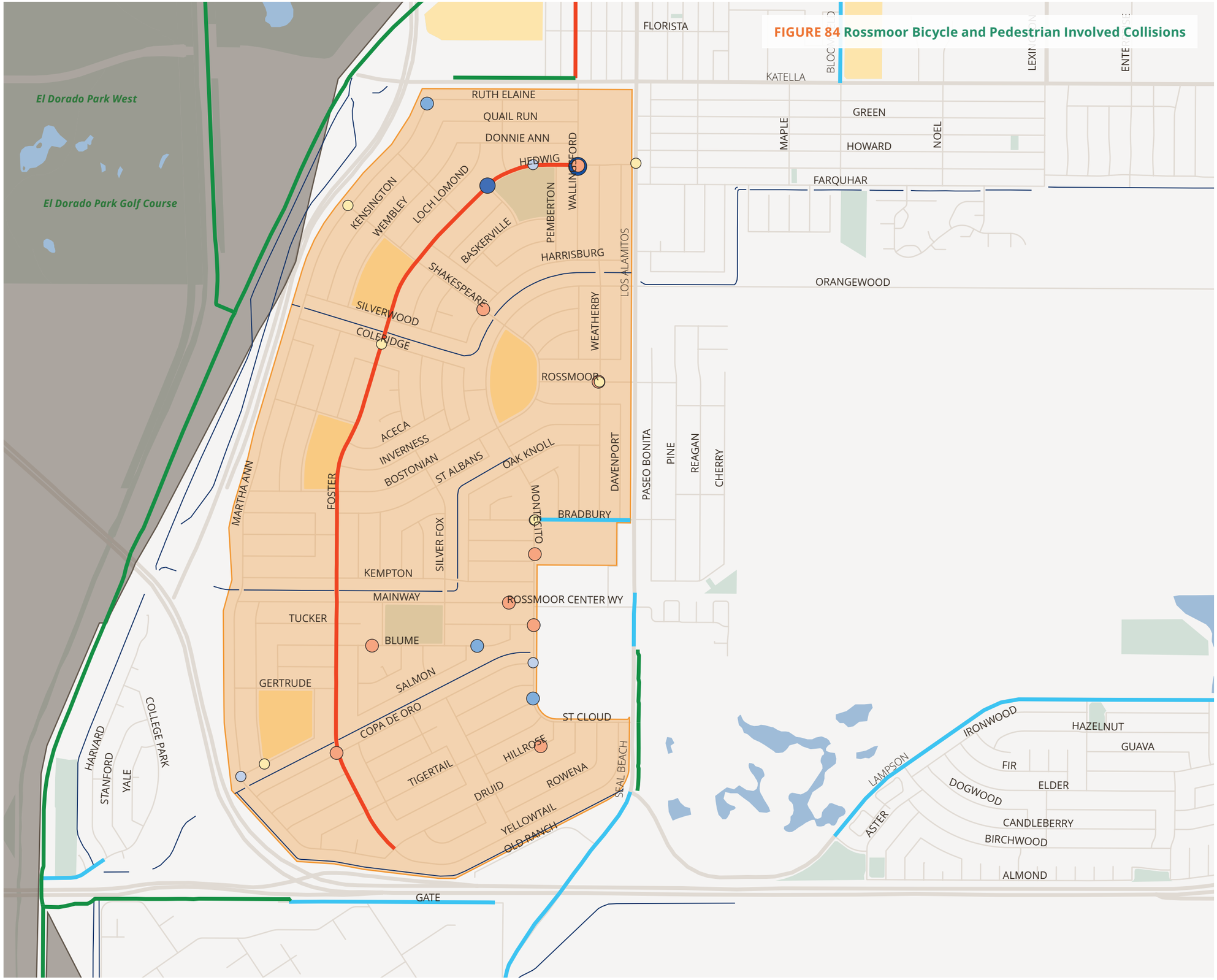
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.2 0.4 Miles

FIGURE 84 Rossmoor Bicycle and Pedestrian Involved Collisions



Orange County Unincorporated Area

Active Transportation Plan

Rossmoor Island

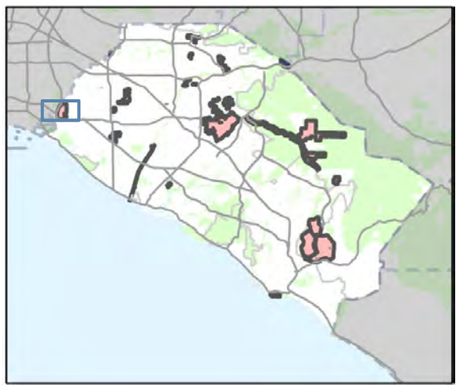
LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

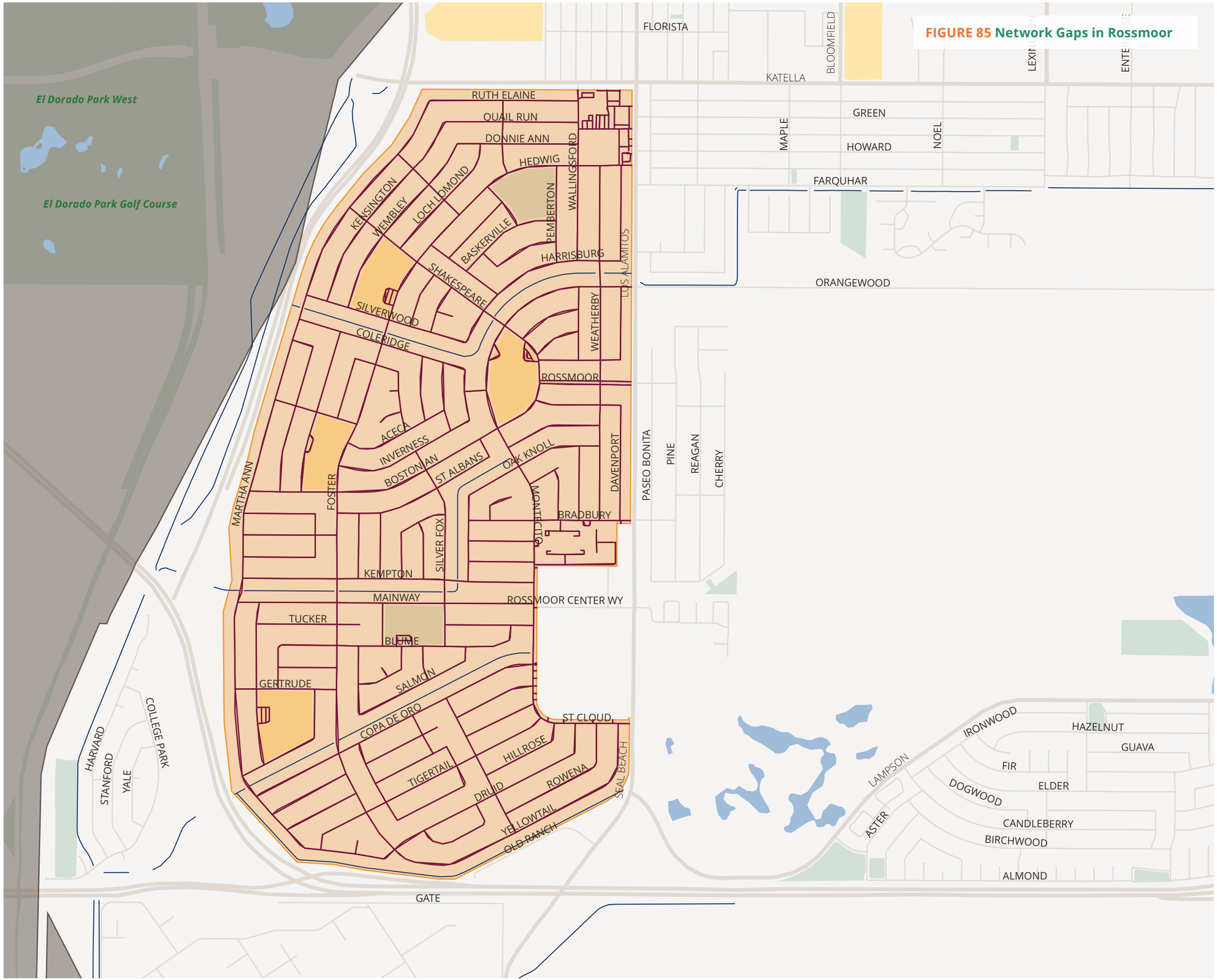
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.2 0.4 Miles

FIGURE 85 Network Gaps in Rossmoor



Recommendations

WHAT DID WE HEAR?

Community members requested an upgrade to the existing bicycle route along Foster Road and added bikeway connections through the area. Comments also noted the need for safer crossings near Montecito Road, Foster Road, and Katella Avenue.

PEDESTRIAN RECOMMENDATIONS

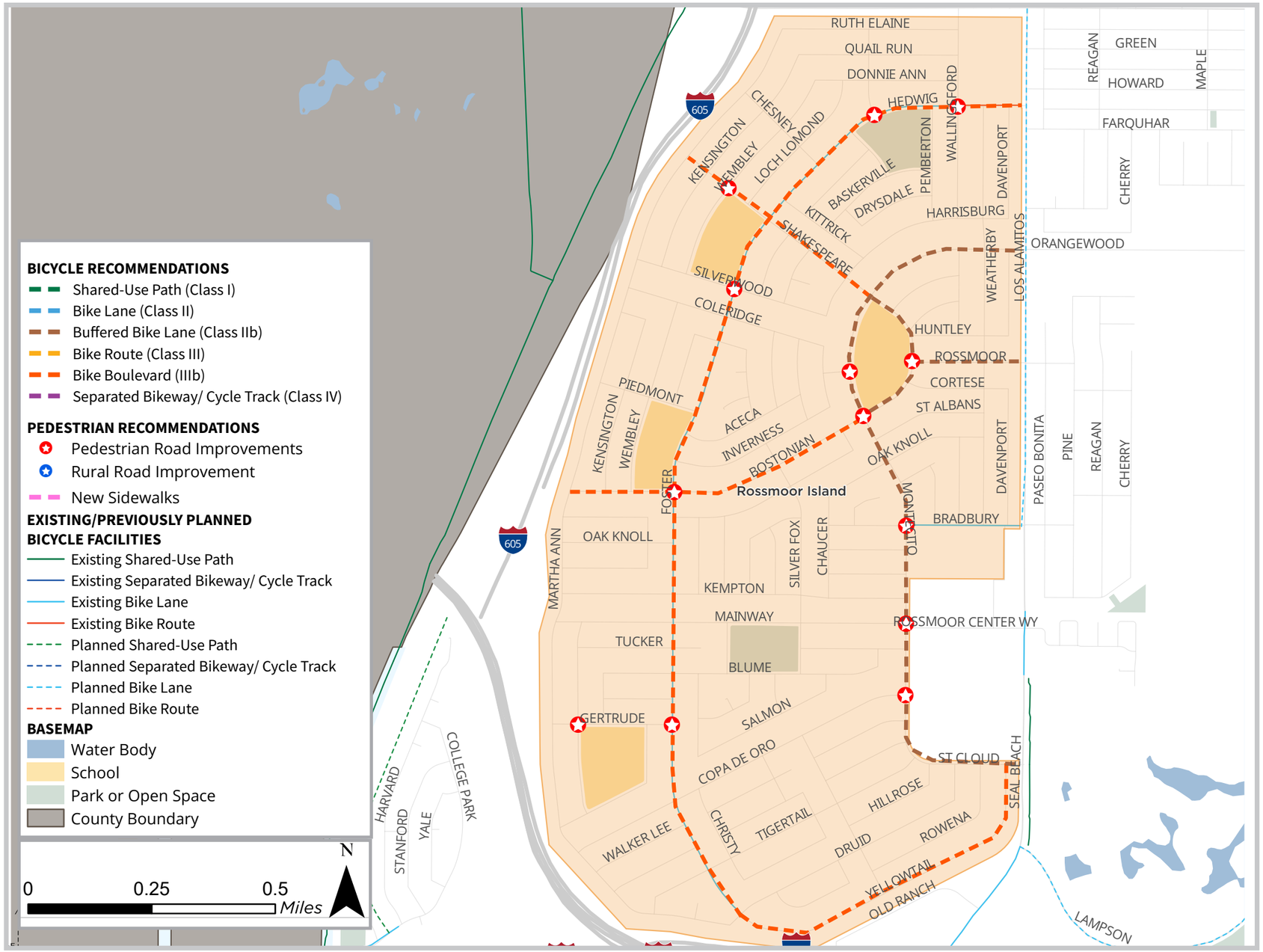
Recommended pedestrian infrastructure in Rossmoor Island includes:

- Enhanced pavement markings and signage
- Curb extensions
- Signal timing improvements
- High visibility crosswalks
- Pedestrian hybrid beacons
- Traffic Calming

BICYCLE RECOMMENDATIONS

Bicycle recommendations in Rossmoor Island include:

- Class IIb 2.09 miles total including:
  - Montecito Rd, creating a connection to key destinations and the proposed Class II on Los Alamitos Blvd
- Class IIIb 4.02 miles total including:
  - Foster Rd, adding traffic calming elements to the existing bikeway and creating bikeway connections to three schools.



Santiago Canyon

SUPERVISORIAL DISTRICT 3

Context and Background

Santiago Canyon is an unincorporated area near Silverado and Modjeska Canyons. The area is predominantly made up of Santiago Canyon Road, as well as some trailheads and adjacent parking lots. Santiago Canyon currently does not have any OCFCD-owned flood control channels.



Walk Audit

The project team facilitated three walk audits to evaluate existing conditions in four canyon communities: Silverado Canyon, Modjeska Canyon, Trabuco Canyon, and Santiago Canyon. These included a desktop audit (Fall 2020), an audit with County staff (October 2020), and a virtual community audit (December 2020). In total, the community audit had 63 participants. Community members noted that Santiago Canyon Road features a Class II Bike Lane. The existing bike lane is narrow with faded striping along multiple segments. Drivers often speed along this area, making it uncomfortable to bike safely. Although considered a dangerous location to bike by community members, visibility (e.g., restriping) to the bike lane would benefit cyclists. More details about audit observations can be found in Appendix B.

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 86** on the next page and described in the following sections.

BICYCLE NETWORK

Santiago Canyon features 12.27 miles Class II bicycle lanes on both sides of Santiago Canyon Road, from State Route 261 at the north end to its intersection with Live Oak Canyon Road at the south end. The existing bicycle lanes are narrow with faded striping along certain segments. Along this road, the bicycle lanes are not marked through intersections, which may cause conflict between bicyclists and drivers turning onto or off of Santiago Canyon Road and Silverado Canyon Road, the bicycle lanes drop off, with no clear through path for bicyclists continuing north. Additionally, **Table 42** includes a proposal for 11.2-miles of Class I shared-use paths adjacent to Santiago Canyon Road proposed by OCTA in a previous plan.

PEDESTRIAN FACILITIES

There are no existing sidewalks or marked crossings along Santiago Canyon Road. However, because this road functions as a regional connection through and between the canyon communities, pedestrian activity is not expected. Further, residents of the adjacent communities wish to preserve the rural nature of the area, including the lack of formal sidewalks.

TABLE 42 Existing Bicycle Network (Miles)

Facility Type	Existing	Proposed by OCTA
Class I Shared-use Path	0.00	11.20
Class II Bicycle Lane	12.27	0.00
Total	**12.27**	**11.20**

Orange County
Unincorporated Area

Active Transportation Plan

Modjeska, Santiago, + Silverado Canyons

FIGURE 86 Santiago Canyon Existing Conditions

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

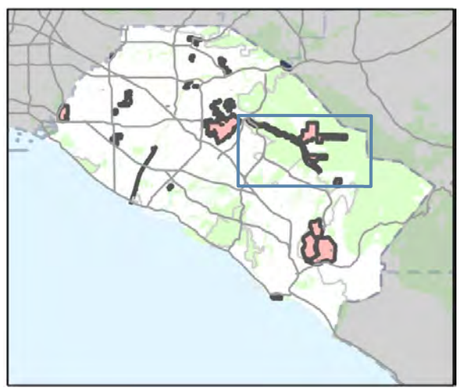
- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Bus Route
- Rail Stop
- Rail

BASEMAP

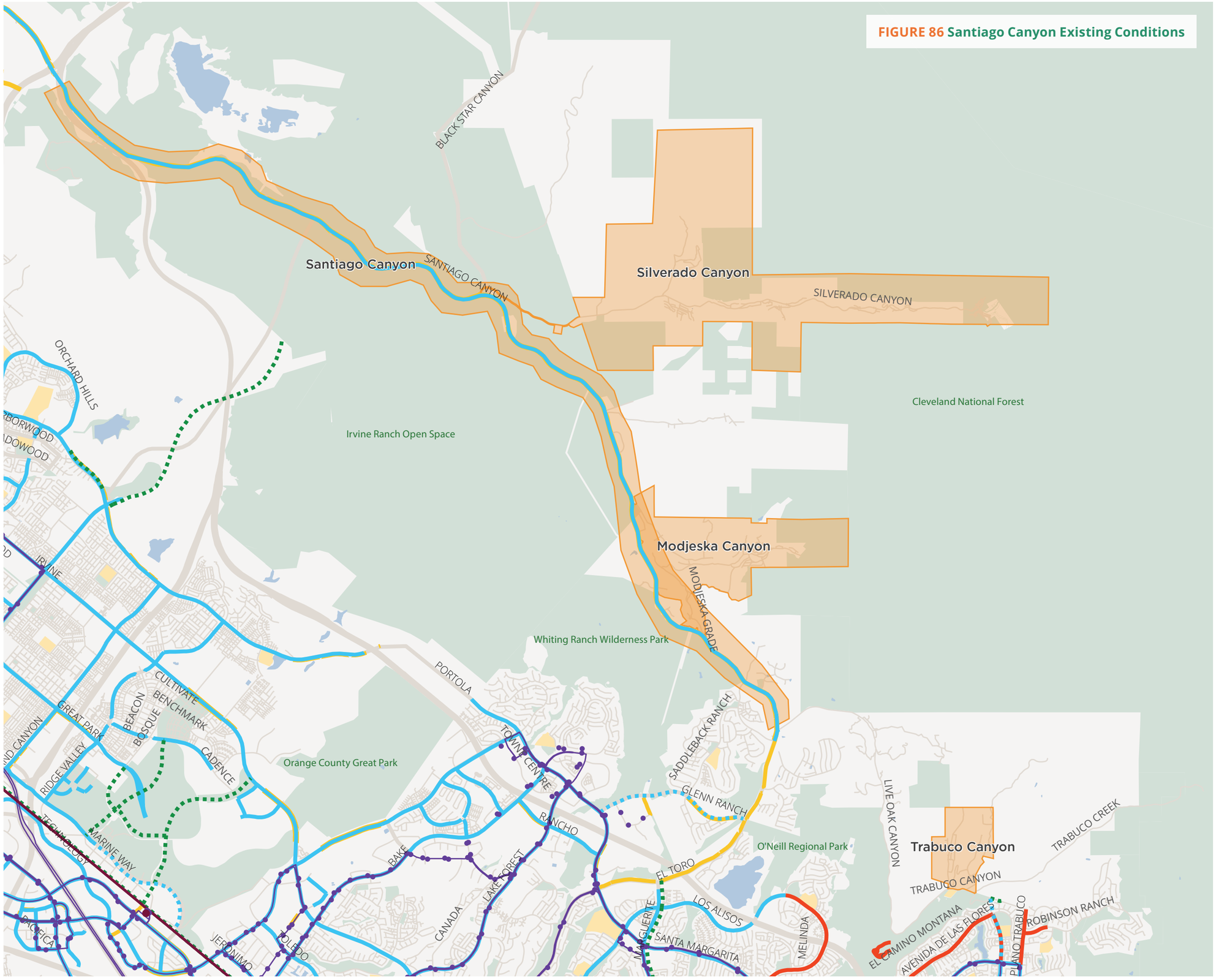
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 15 30 Miles

N



Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, a total of 26 collisions involving bicyclists and pedestrians were reported in Santiago Canyon during the study period, 88% of which involved people bicycling and 12% of which involved people walking.

PEDESTRIAN-INVOLVED COLLISIONS

Between 2009 to 2018, 3 collisions occurred in Santiago Canyon that involved a person walking. 33% of these collisions resulted in a fatal injury and 67% resulted in a severe injury.

The highest crash violation was due to improper turning (67%) followed by other than a driver or pedestrian (33%). No pedestrian collisions occurred at an intersection.

The majority of these pedestrian related collisions occurred during the daylight (67%) followed by the dark in areas with no streetlights present (33%). The collisions involving pedestrians occurred on Santiago Canyon Rd (**Figure 87**).

BICYCLE-INVOLVED COLLISIONS

During the same study period (2009 to 2018), 23 collisions in Santiago Canyon involved a person riding a bicycle. 1 (4%) of these were fatal collisions, 8 (35%) resulted in severe injury, and 12 (52%) bicycle collisions resulted in a visible injury.

The highest crash violation categories were improper turning (39%), followed by automobile right of way (26%). 7 (30%) bicycle collisions occurred at an intersection.

All of these bicycle collisions occurred during the daylight. **Figure 87** provides an overview of all bicycle-involved collisions in Santiago Canyon between 2009-2018 and demonstrates a concentration of collisions along Santiago Canyon Rd.

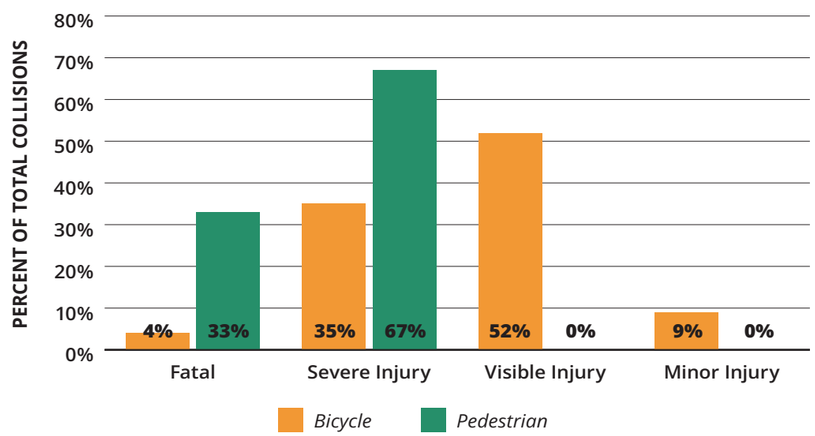
Network Gap Analysis

Figure 88 analyzes the bicycle and pedestrian connectivity of existing low-stress areas of Santiago Canyon based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the community could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

TABLE 43 Crash Severity in Santiago Canyon



Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of Santiago Canyon where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis shows that the pedestrian and bicycle networks of Santiago Canyon are severed from each other by Santiago Canyon Rd. Santiago Canyon Rd is the primary corridor in the community and the only link between the various areas of Santiago Canyon. In order to reach any other part of the canyon, travel along the high-stress LTS 4 Santiago Canyon Rd is required.

Based on the Needs and Gaps analysis, there are 18 low stress networks within Santiago Canyon.

Orange County Unincorporated Area

Active Transportation Plan

Modjeska, Santiago, Silverado, + Trabuco Canyons

PEDESTRIAN INVOLVED CRASHES

- Fatal
- Severe Injury
- Minor Injury
- No Injury

BICYCLIST INVOLVED CRASHES

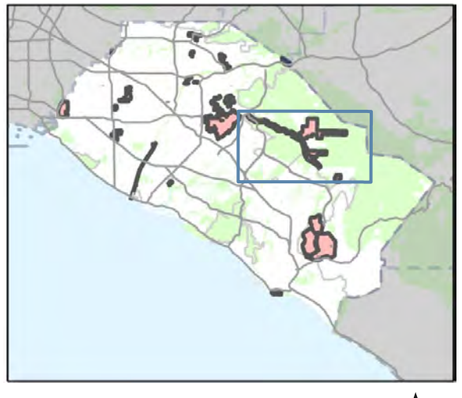
- Fatal
- Severe Injury
- Minor Injury
- No Injury

EXISTING BICYCLE FACILITIES

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

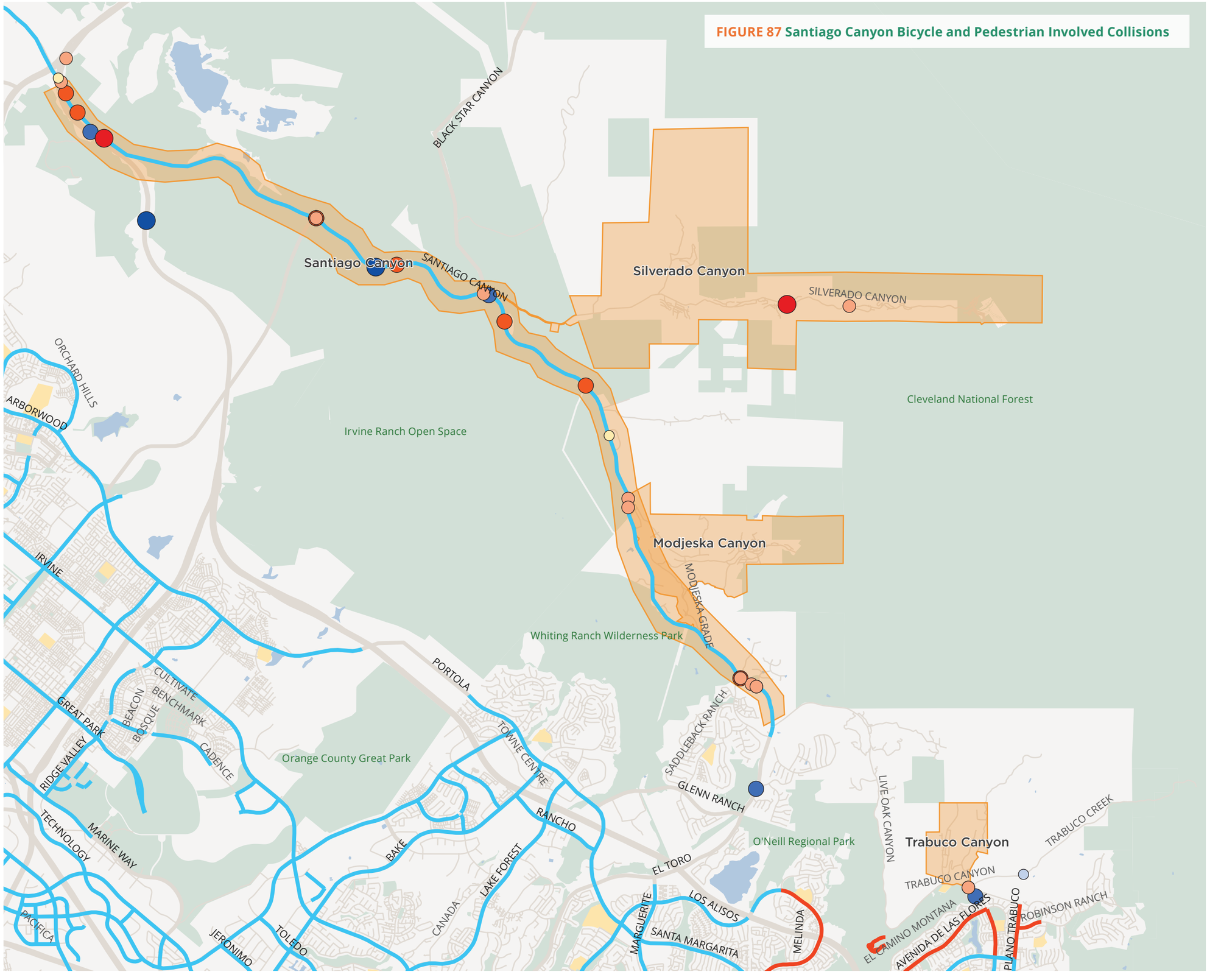
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 15 30 Miles

FIGURE 87 Santiago Canyon Bicycle and Pedestrian Involved Collisions



Orange County Unincorporated Area

Active Transportation Plan

Modjeska, Santiago, Silverado, + Trabuco Canyons

FIGURE 88 Network Gaps in Santiago Canyon

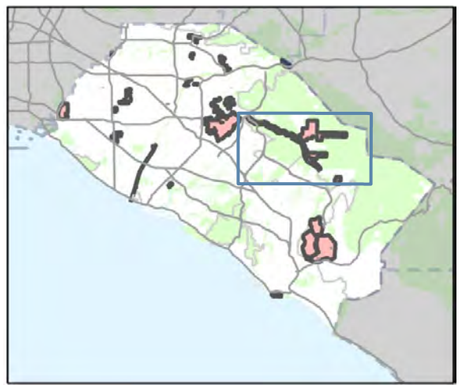
LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

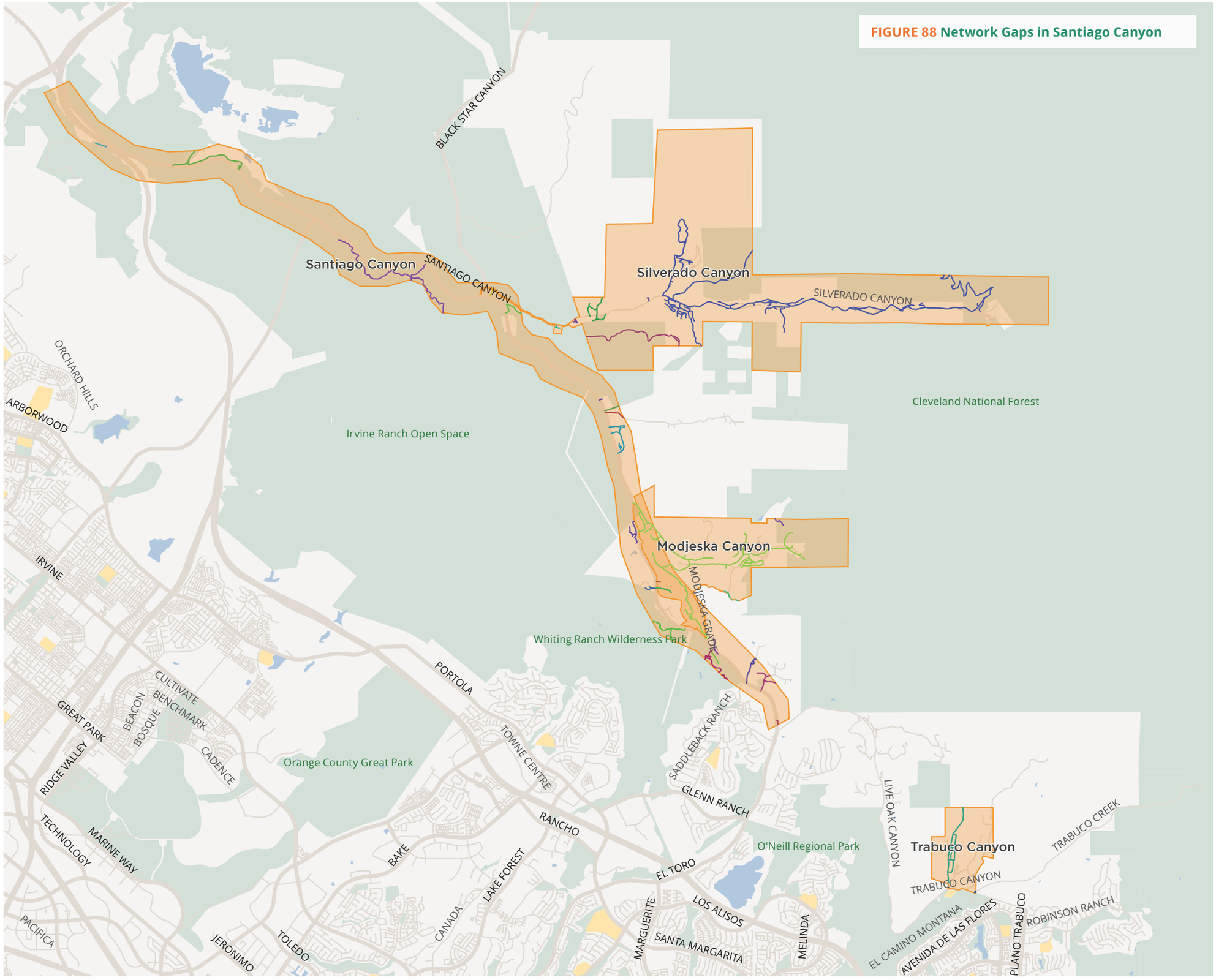
The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 15 30 Miles



Recommendations

WHAT DID WE HEAR?

Comments from community members requested safer bicycle infrastructure including bicycle separation, removal of on street parking, vegetation maintenance, and more bicycle signage. Community members also voiced concerns about equestrians sharing the road with other users.

PEDESTRIAN RECOMMENDATIONS

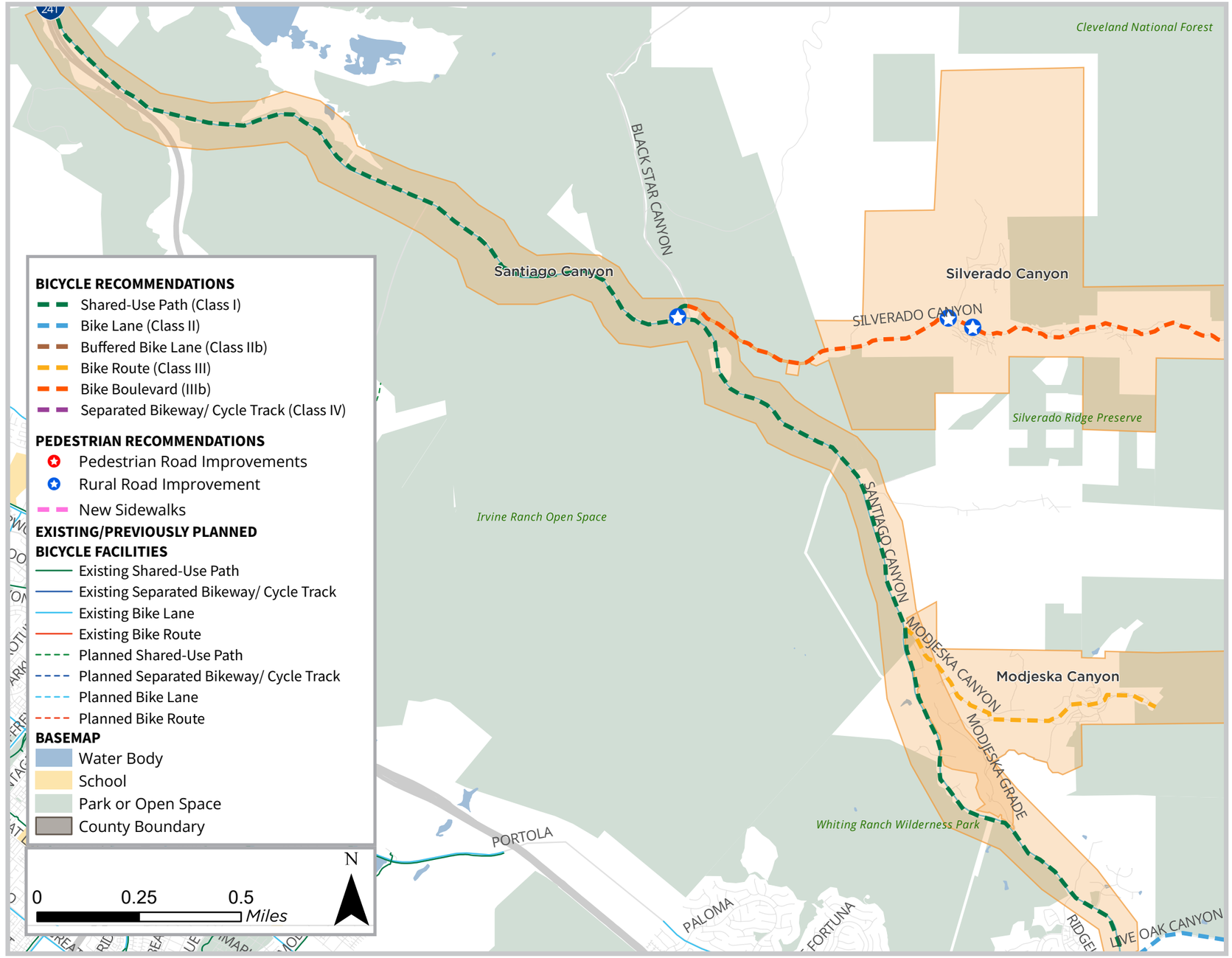
Recommended pedestrian infrastructure along the entire length of Santiago Canyon includes:

- Traffic calming

BICYCLE RECOMMENDATIONS

Bicycle recommendations in Santiago Canyon include:

- Class I 11 miles total including:
  - Santiago Canyon Rd between the area's boundaries, replacing the existing Class II and connecting to proposed bikeways in Modjeska Canyon and Silverado Canyon.



Santiago Creek Island

SUPERVISORIAL DISTRICT 3

Context and Background

Santiago Creek is within the sphere of influence of the City of Orange, adjacent to Orange to the east and south and Villa Park to the west and north. This unincorporated area is approximately 187 acres, almost entirely made up of the Santiago Creek Recharge Basin. Additionally, this area has 0.82 miles of OCFCD-owned flood control channels running through it.

Walk Audit

The project team facilitated a walk audit with County staff in October 2020 to evaluate existing conditions in Santiago Creek. Although the Santiago Creek area generally feels safe to walk in and crosswalks exist at most signalized intersections, sidewalks do not exist in many locations. Where they do exist, sidewalk conditions are fair with some utility obstructions that could cause accessibility issues. Additionally, the existing Class I shared-use path is in good condition, but could be expanded along Villa Park Road to further accommodate cyclists. More details about audit observations can be found in Appendix B.

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 89** on the next page and described in the following sections.

BICYCLE NETWORK

Santiago Creek Island's existing bikeway network is made up of 1.92 miles of Class I shared-use paths and Class II bicycle lanes. A shared-use path currently exists on the north side of Villa Park Road (east of Hewes Street) and bicycle lanes exist on both sides of Villa Park Road. Another Class I facility exists on the west side of Hewes Street. Marked crosswalks at the intersection of Villa Park and Hewes provide connections between these existing facilities.

PEDESTRIAN FACILITIES

Currently, there are no paved sidewalks along Villa Park Road or Hewes Street in Santiago Creek Island. However, both of these roads feature Class I shared-use paths on one side of the street, providing a walkway that is separate from vehicle traffic. At the intersection of Villa Park and Hewes, there are marked crosswalks on two legs, though they could be restriped as continental to improve visibility.

TABLE 44 Existing Bicycle Network (Miles)

Facility Type	Existing
Class I Shared-use Path	27
Class II Bicycle Lane	65
Total	**90**



Orange County Unincorporated Area

Active Transportation Plan

El Modena, Orange Park Acres, + Santiago Creek Islands

FIGURE 89 Santiago Creek Existing Conditions

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Rail Stop
- Bus Route
- Rail

BASEMAP

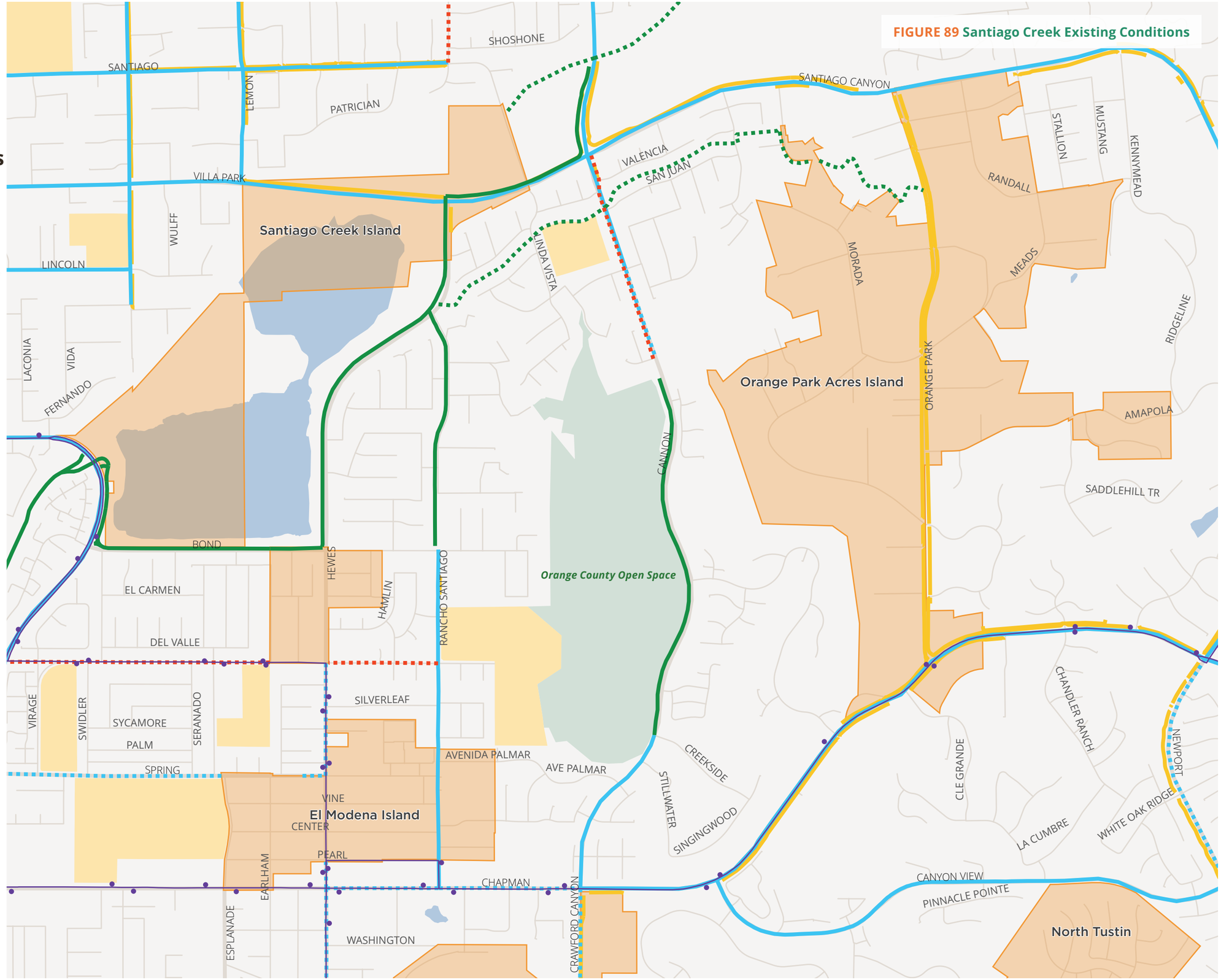
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 0.2 0.4 Miles

N



Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, no collisions involving bicyclists and pedestrians were reported in Santiago Creek Island.

Network Gap Analysis

Figure 90 analyze the bicycle and pedestrian connectivity of existing low-stress areas of Santiago Creek Island based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the community could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of Santiago Creek Island where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis shows that Santiago Creek Island requires pedestrians and bicyclists to cross high-stress arterials to reach destinations. The community is segmented into a series of many low stress streets, creating a series of disconnected low stress networks. Sections to the south represent the most continuous stretch of continuous low stress streets, but most of the area consists of small fragments of low stress streets.

Based on the Needs and Gaps analysis, there are 6 low stress networks within Santiago Creek Island.



Orange County Unincorporated Area

Active Transportation Plan

El Modena, Orange Park Acres, + Santiago Creek Islands

FIGURE 90 Network Gaps in Santiago Creek

LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

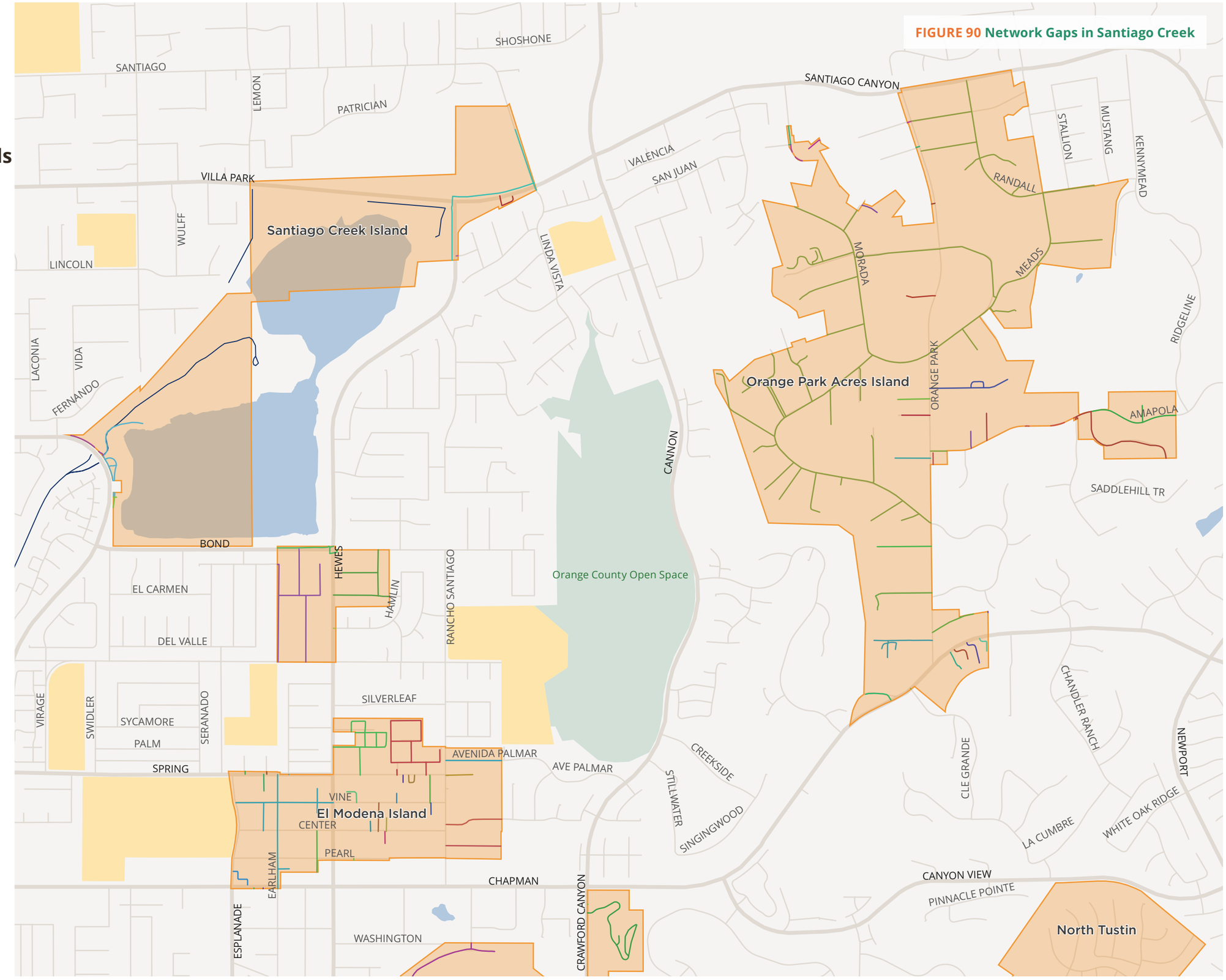
The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

BASEMAP

- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 0.2 0.4 Miles



Recommendations

WHAT DID WE HEAR?

Public input identified Santiago Creek basin as a key destination for active transportation in the area. Comments also identified several biking facilities that need improvement in the area, including on Villa Park Road and Hewes Street.

PEDESTRIAN RECOMMENDATIONS

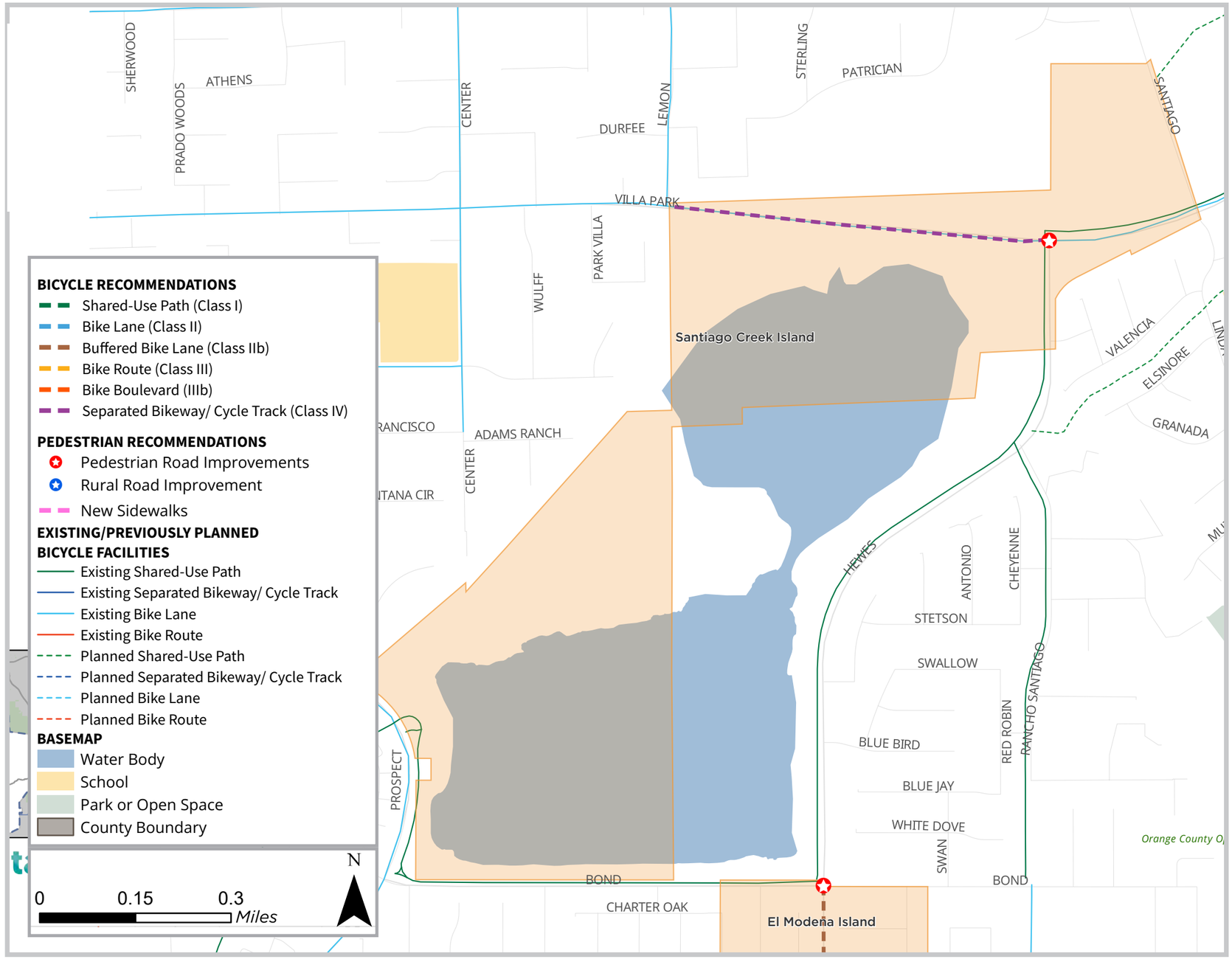
Recommended pedestrian infrastructure in Santiago Creek includes:

- Traffic calming
- High visibility crosswalks
- Pedestrian refuge islands

BICYCLE RECOMMENDATIONS

Bicycle recommendations in Santiago Creek include:

- Class IV 0.46 miles total including:
  - Villa Park Rd between Lemon St and the existing Class I shared- use path, providing a separated bikeway on a high speed street



Scully Ridge*

SUPERVISORIAL DISTRICT 3

Context and Background

Scully Ridge is an unincorporated open space on the border of Orange County and Riverside County. Scully Ridge is adjacent to the City of Yorba Linda to the west and the City of Anaheim to the south. Scully Ridge currently has 0.63 miles of OCFCD-owned flood maintenance roads that are suitable for pathway development, which accounts for a portion of the existing paved Santa Ana River Trail. Additionally, a portion of the Burlington Northern Santa Fe (BNSF) Railway bisects Scully Ridge.

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 91** on the next page and described in the following sections.

BICYCLE NETWORK

Scully Ridge's existing bikeway network is made up of 0.53 miles of the Santa Ana River Trail (SART), a Class I shared-use path that runs along the area's southern border. This path provides regional connections to nearby Yorba Linda, ending to the east of Scully Ridge outside of Green River Golf Club.

PEDESTRIAN FACILITIES

Because it is primarily an open space, Scully Ridge does not currently have any existing pedestrian facilities aside from the aforementioned Santa Ana River Trail.

TABLE 45 Existing Bicycle Network (Miles)

Facility Type	Existing
Class I Shared-use Path	.53
Total	**.53**

Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, no collisions involving bicyclists and pedestrians were reported in Scully Ridge.

Network Gap Analysis

Figure 92 analyzes the bicycle and pedestrian connectivity of existing low-stress areas of Scully Ridge based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the community could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

Complete connections are displayed in the same color and create "low stress networks". When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of Scully Ridge where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis shows that Scully Ridge has good connectivity.

Based on the Needs and Gaps analysis, there are 6 low stress networks within Scully Ridge.

**Due to the lack of active transportation network connections, this Plan does not include recommendations for Scully Ridge.*

Orange County Unincorporated Area

Active Transportation Plan

Scully Ridge

FIGURE 91 Scully Ridge Existing Conditions

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Rail Stop
- Bus Route
- Rail

BASEMAP

- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 0.1 0.2 Miles

N

Orange County Unincorporated Area

Active Transportation Plan

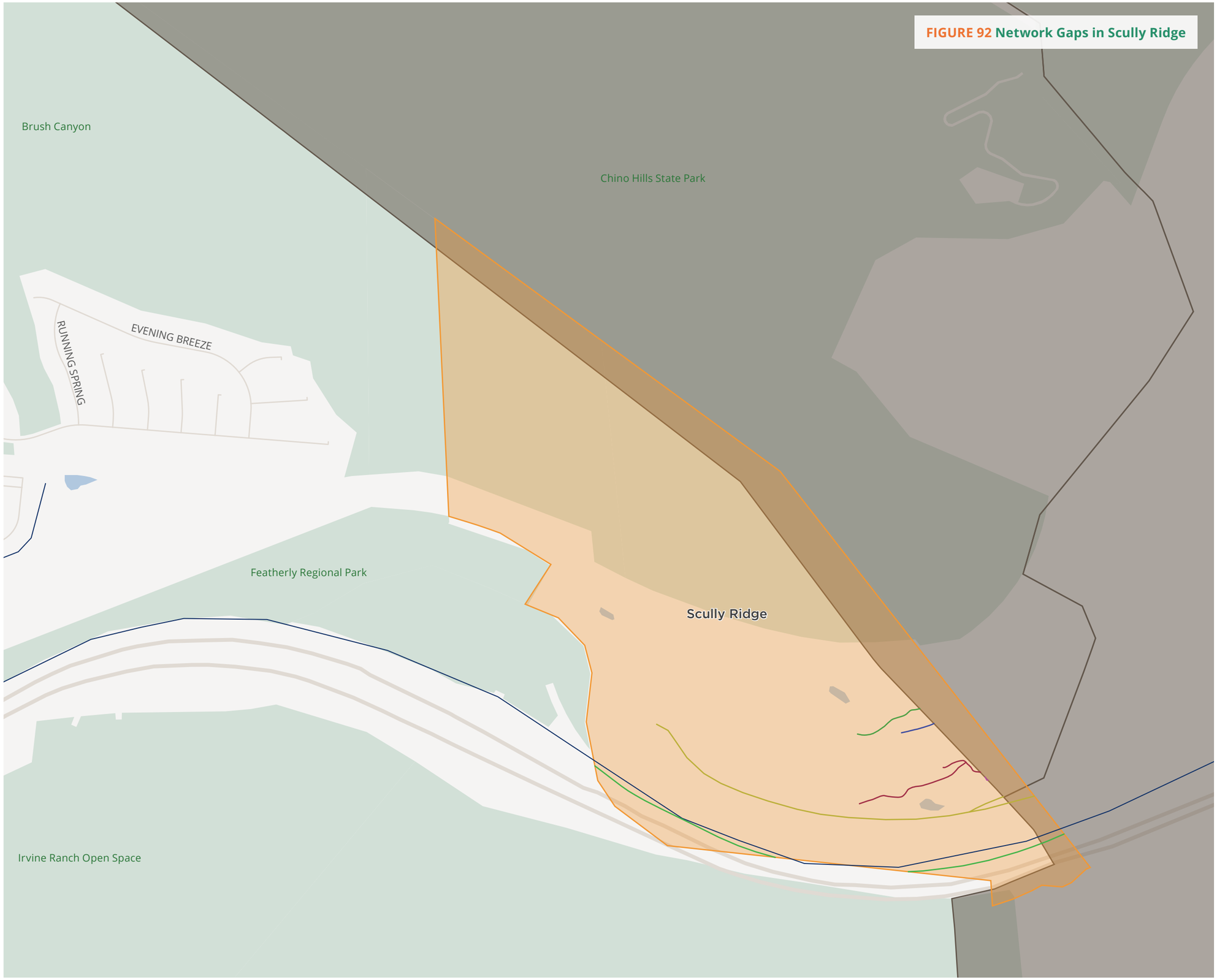
Scully Ridge

LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

FIGURE 92 Network Gaps in Scully Ridge



BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



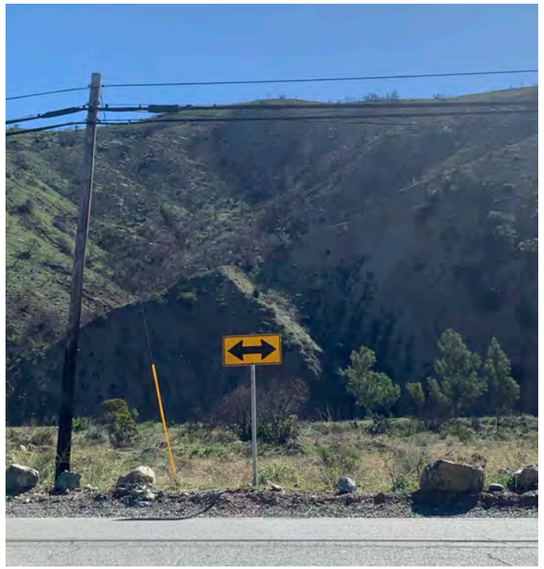
0 0.1 0.2 Miles

Silverado Canyon

SUPERVISORIAL DISTRICT 3

Context and Background

Silverado Canyon is an unincorporated community in eastern Orange County, at the boundary of the Cleveland National Forest and adjacent to Santiago Canyon. It is home to 2,650 residents, according to the 2019 Census. The community is predominantly made up of single-family detached homes. Silverado Canyon is served by Orange Unified School District, and private St. Michael's Preparatory School is located within its boundaries. Silverado Canyon currently does not have any OCFCD-owned flood control channels that are suitable for pathway development.



COMMUTE TRENDS

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of current commute mode trends was conducted at the census block group level for Silverado Canyon. Of the Silverado Canyon residents 16 or older officially in the workforce, the ACS estimates that 0.2% walk and 2.4% use a bicycle to commute. However, bicycle ridership and rates of walking could be higher than this, as the ACS does not factor recreational trips or trips where commuters use more than one mode when traveling to work, such as taking a bus part way then riding a bicycle to the final destination.

ACCESS TO VEHICLES

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of households without access to a personal vehicle was conducted at the census tract level for Silverado Canyon. The percentage of people without access to a motor vehicle is up to nearly 1.5% of residents, depending on the Census tract. The average percentage of Silverado Canyon residents without access to vehicles is 0.5%.

HEALTH + EQUITY

The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to identify communities that are disproportionately burdened by pollution. It combines multiple sources of pollution data (e.g., ozone concentrations and drinking water contaminants) with population indicators (e.g., birth weight and educational attainment). Communities that score in the most burdened 25% of the state are considered to be disadvantaged and receive a small advantage in California's competitive funding process, such as through the State's Active Transportation Program. Per the tool, Silverado Canyon does not meet this threshold for disadvantaged communities.

Additionally, public health is shaped by other "non-health" policies and community characteristics, such as housing, education, economic, and social factors. These factors are included in the California Healthy Places Index (HPI) tool, developed by Public Health Alliance of Southern California, which determines how healthy a census tract is compared to others in the state. Per the HPI tool, Silverado Canyon is considered healthier than approximately 88% of other California communities. Maps showing HPI and CalEnviroScreen scoring for Silverado Canyon are included in Appendix C.

At a Glance

POPULATION

2,650 Residents

COMMUNITY TYPE

Single-Family Detached Homes

LOCAL SCHOOLS

Orange Unified School District

St. Michael's Preparatory School

Walk Audit

The project team facilitated three walk audits to evaluate existing conditions in four canyon communities: Silverado Canyon, Modjeska Canyon, Trabuco Canyon, and Santiago Canyon. These included a desktop audit (Fall 2020), an audit with County staff (October 2020), and a virtual community audit (December 2020). In total, the community audit had 63 participants. Participants noted that Silverado Canyon Road, the main road in the community, is challenging to walk or bike safely on because vehicles often speed. Many residents noted that they've placed homemade "slow down" signs outside their homes. They also reported that the existing mid-block crossing is not respected by vehicles. Although these existing conditions are challenging, the community members are hesitant to change Silverado's character, though some residents support traffic calming and educational programs to help make conditions safer. More details about audit observations can be found in Appendix B.

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 93** on the next page and described in the following sections.

BICYCLE NETWORK

There are no existing bicycle facilities within Silverado Canyon, though residents report that recreational bicyclists often ride along Silverado Canyon Road, sharing the road with vehicle traffic.

PEDESTRIAN FACILITIES

There are no paved sidewalks in Silverado Canyon and residents wish to preserve this rural character of the community. Along many segments of Silverado Canyon Road, there is a wide shoulder that accommodates people walking, as well as equestrian use. There is a marked crosswalk with school crossing signage and pavement markings in the town center on Silverado Canyon Road, outside of the post office. A similar marked crossing exists farther east on Silverado Canyon Road, outside of Black-Eyed Mary's Saloon.



Orange County
Unincorporated Area

Active Transportation Plan

Modjeska, Santiago, + Silverado Canyons

FIGURE 93 Silverado Canyon Existing Conditions

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

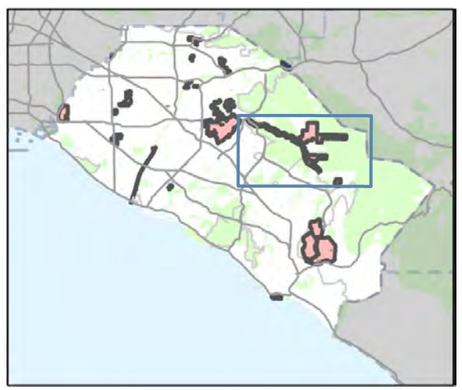
- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Bus Route
- Rail Stop
- Rail

BASEMAP

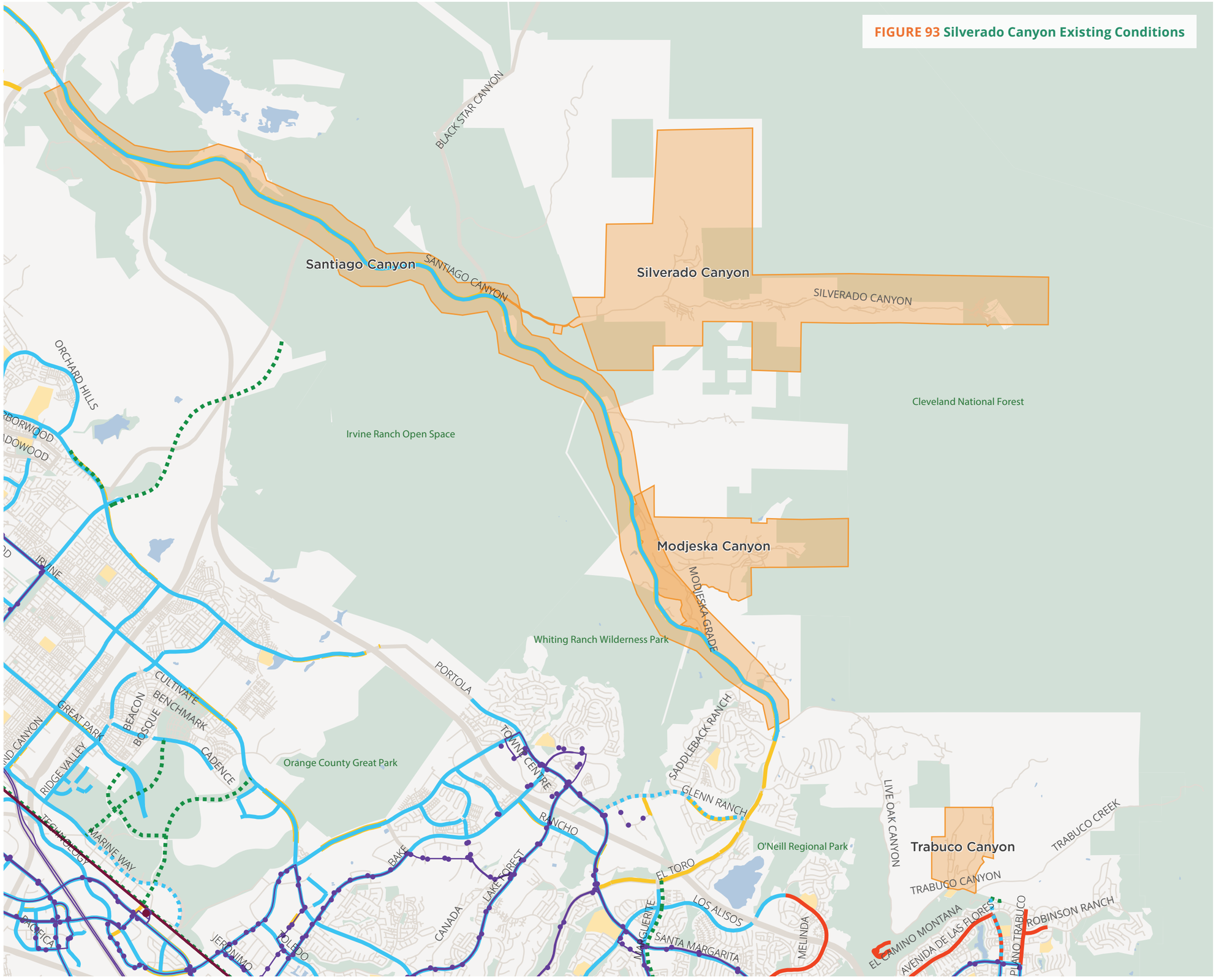
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 15 30 Miles

N



Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, a total of 2 collisions involving bicyclists and pedestrians were reported in Silverado Canyon during the study period, 100% of which involved people bicycling and 0% of which involved people walking.

PEDESTRIAN-INVOLVED COLLISIONS

Between 2009 to 2018, there were no pedestrian-involved collisions in Silverado Canyon.

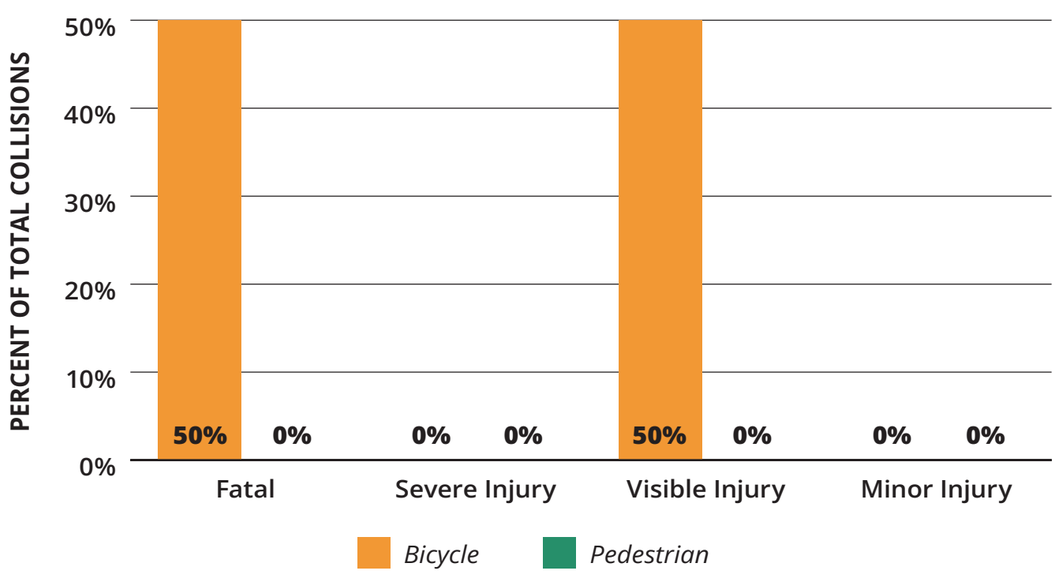
BICYCLE-INVOLVED COLLISIONS

During the same study period (2009 to 2018), 2 collisions in Silverado Canyon involved a person riding a bicycle. 1 (50%) of these was a fatal collision, and 1 (50%) bicycle collision resulted in a visible injury.

The crash violation categories were unsafe speed (50%), and other than driver (or pedestrian) (50%). 2 (100%) of the bicycle collisions occurred at an intersection.

Both of these bicycle collisions occurred during the daylight (100%). **Figure 94** provides an overview of all bicycle-involved collisions in Silverado Canyon between 2009-2018 and demonstrates a concentration of collisions along Silverado Canyon Road.

TABLE 46 Crash Severity in Silverado Canyon



Network Gap Analysis

Figure 95 analyze the bicycle and pedestrian connectivity of existing low-stress areas of Silverado Canyon based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the community could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of Silverado Canyon where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis shows that Silverado Canyon is mostly connected, except in the western portion where the network becomes fragmented.

Based on the Needs and Gaps analysis, there are 7 low stress networks within Silverado Canyon.

Orange County Unincorporated Area

Active Transportation Plan

Modjeska, Santiago, Silverado, + Trabuco Canyons

PEDESTRIAN INVOLVED CRASHES

- Fatal
- Severe Injury
- Minor Injury
- No Injury

BICYCLIST INVOLVED CRASHES

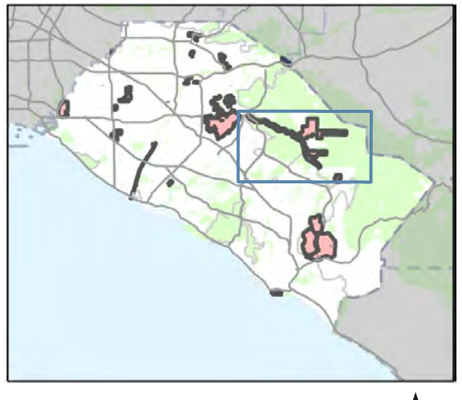
- Fatal
- Severe Injury
- Minor Injury
- No Injury

EXISTING BICYCLE FACILITIES

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

BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 15 30 Miles

FIGURE 94 Silverado Canyon Bicycle and Pedestrian Involved Collisions

Orange County Unincorporated Area

Active Transportation Plan

Modjeska, Santiago, Silverado, + Trabuco Canyons

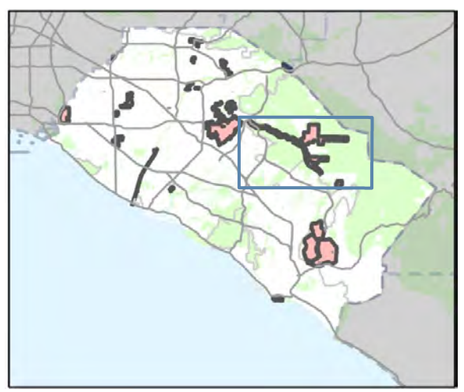
LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

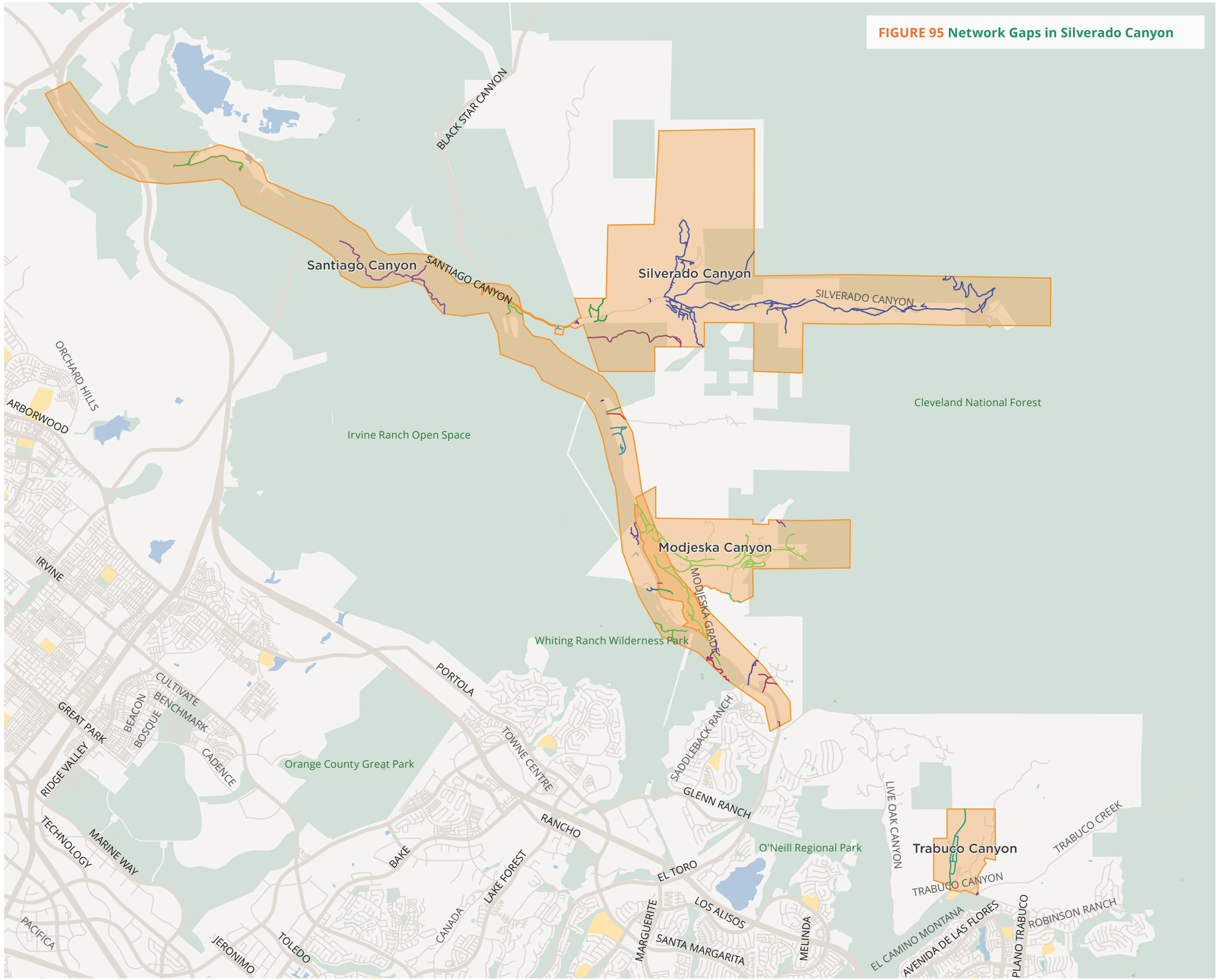
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 15 30 Miles

FIGURE 95 Network Gaps in Silverado Canyon



Recommendations

WHAT DID WE HEAR?

Most comments in Silverado Canyon were residents concerned about bicyclists, pedestrians, equestrians, and drivers sharing Silverado Canyon Road. Drivers tend to reach high speeds on the road, and it is difficult to see bicyclists and pedestrians around blind corners. Community members have also expressed frustration that drivers do not stop at the crosswalk in town.

PEDESTRIAN RECOMMENDATIONS

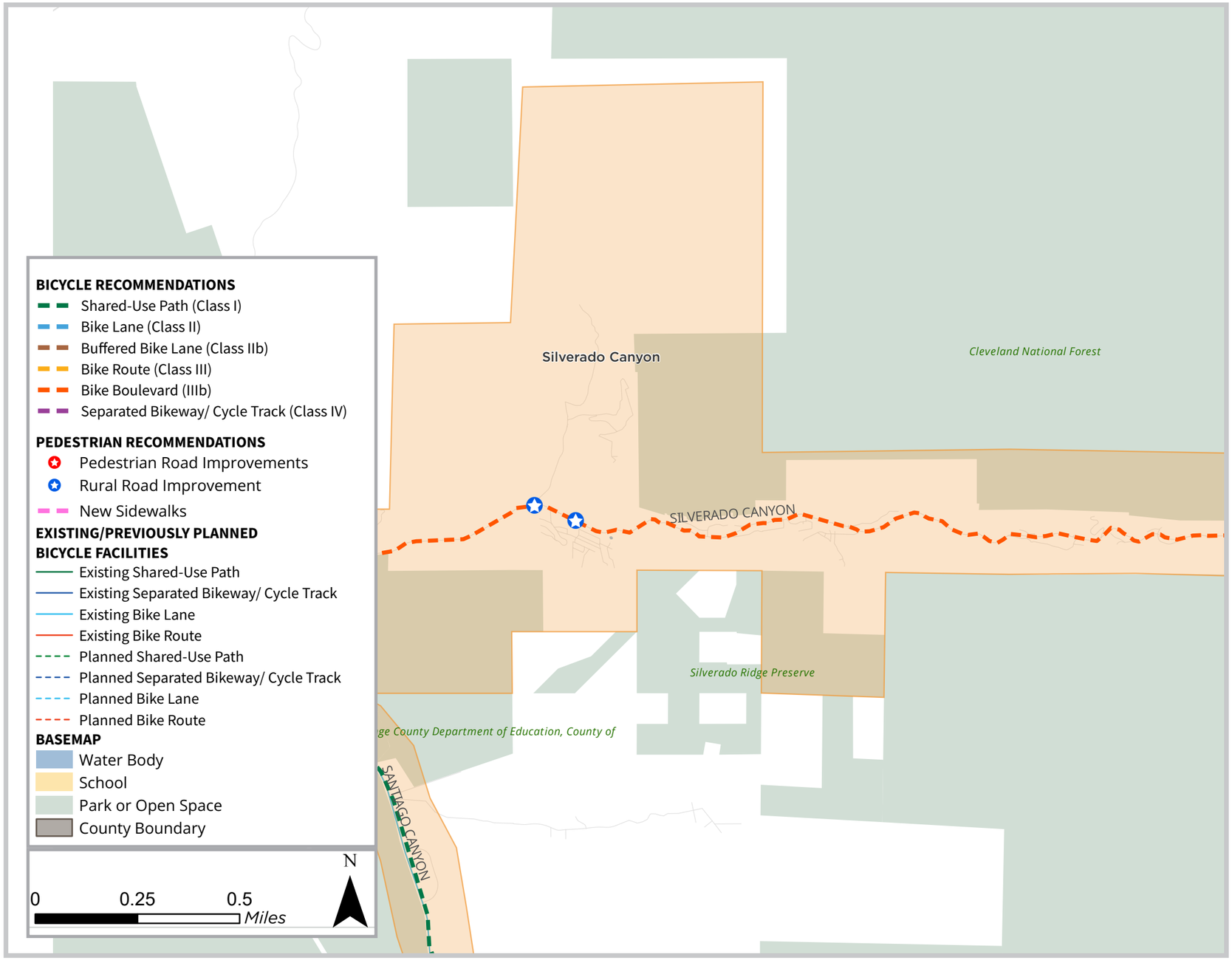
Recommended pedestrian infrastructure in Silverado Canyon includes:

- Pedestrian hybrid beacon
- Enhanced pavement markings and signage

BICYCLE RECOMMENDATIONS

Bicycle recommendations in Silverado Canyon include:

- Class IIIb 5.27 miles total including:
  - Silverado Canyon Rd, better alerting drivers of the presence of bicyclists and pedestrians



Trabuco Canyon

SUPERVISORIAL DISTRICT 3

Context and Background

Trabuco Canyon is located in the foothills of the Santa Ana Mountains north of the City of Rancho Santa Margarita and west of the Cleveland National Forest. The community is predominantly made up of single-family detached homes. Trabuco Canyon is served by Trabuco-Saddleback Valley Unified School District, with Trabuco Elementary School within its boundaries.[1] Residents of Trabuco Canyon have access to O'Neill Regional Park, as well as multiple open spaces and trails in the surrounding foothills and mountains. Trabuco Canyon does not have any OCFCD-owned flood control channels that are suitable for pathway development.

COMMUTE TRENDS

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of current commute mode trends was conducted at the census block group level for Trabuco Canyon. Of the Trabuco Canyon residents 16 or older officially in the workforce, the ACS estimates that 3.8% walk and 0.6% use a bicycle to commute. However, bicycle ridership and rates of walking could be higher than this, as the ACS does not factor recreational trips or trips where commuters use more than one mode when traveling to work, such as taking a bus part way then riding a bicycle to the final destination.

ACCESS TO VEHICLES

Using data obtained from the 2019 American Community Survey (ACS) Five-Year Estimates, an analysis of households without access to a personal vehicle was conducted at the census tract level for Trabuco Canyon. The percentage of people without access to a motor vehicle ranges between 1.1% to nearly 6% of residents, depending on the Census tract. The average percentage of Trabuco Canyon residents without access to vehicles is 2.5%.

HEALTH + EQUITY

The California Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool to identify communities that are disproportionately burdened by pollution. It combines multiple sources of pollution data (e.g., ozone concentrations and drinking water contaminants) with population indicators (e.g., birth weight and educational attainment). Communities that score in the most burdened 25% of the state are considered to be disadvantaged and receive a small advantage in California's competitive funding process, such as through the State's Active Transportation Program. Per the tool, Trabuco Canyon does not meet this threshold for disadvantaged communities.

Additionally, public health is shaped by other "non-health" policies and community characteristics, such as housing, education, economic, and social factors. These factors are included in the California Healthy Places Index (HPI) tool, developed by Public Health Alliance of Southern California, which determines how healthy a census tract is compared to others in the state. Per the HPI tool, Trabuco Canyon is considered healthier than approximately 95% of other California communities. Maps showing HPI and CalEnviroScreen scoring for Trabuco Canyon are included in Appendix C.

At a Glance

POPULATION

2,650 Residents

COMMUNITY TYPE

Single-Family Detached Homes

LOCAL SCHOOLS

Trabuco-Saddleback Valley Unified School District

Trabuco Elementary

1 As of 2021, 21.5% of students attending Trabuco Elementary are eligible for free and reduced-price meals through the National School Lunch Program.

Walk Audit

The project team facilitated three walk audits to evaluate existing conditions in four canyon communities: Silverado Canyon, Modjeska Canyon, Trabuco Canyon, and Santiago Canyon. These included a desktop audit (Fall 2020), an audit with County staff (October 2020), and a virtual community audit (December 2020). In total, the community audit had 63 participants. Participants noted that Trabuco Canyon roads are shared by multiple users: pedestrians, cyclists, and equestrians. Thus, active transportation recommendations must consider all users and help enhance roads and trails to accommodate everyone. Residents noted that there is a need for educational signage such as "Bikes May Use Full Lane " to encourage both drivers and bicyclists to share the road. Residential areas feature narrow roads without sidewalks and some roads, such as Olive Street, are not paved. More details about audit observations can be found in Appendix B.

Existing Facilities

Existing bicycle and pedestrian facilities are shown in **Figure 96** on the next page and described in the following sections.

BICYCLE NETWORK

There are no existing bicycle facilities in Trabuco Canyon, though residents noted that recreational bicyclists do ride through the community to get to many nearby trails, typically along Trabuco Oaks Drive and Live Oak Canyon Road.

PEDESTRIAN FACILITIES

Residential areas feature narrow roads without sidewalks and some roads, such as Olive Street, are not paved. As an equestrian community, Trabuco Canyon residents wish to preserve this existing rural character. A marked crosswalk exists at the intersection of Trabuco Canyon Road and Trabuco Oaks Drive, connecting Trabuco Canyon residents to Trabuco Elementary School and O'Neill Regional Park to the south.



Orange County
Unincorporated Area

Active Transportation Plan

Modjeska, Santiago, + Silverado Canyons

FIGURE 96 Trabuco Canyon Existing Conditions

EXISTING/PROPOSED BICYCLE FACILITIES

- Shared Use Path - *Class I*
- Bike Lane - *Class II*
- Bike Route - *Class III*
- Separated Bikeway/ Cycle Track- *Class IV*

PEDESTRIAN FACILITIES

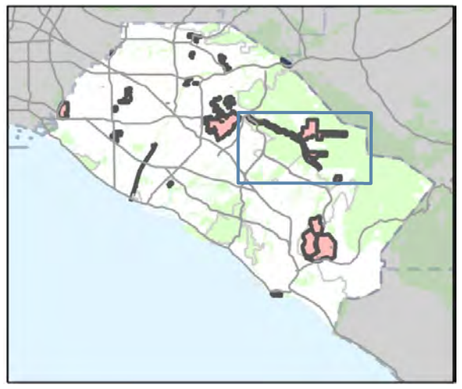
- Missing Sidewalks

PUBLIC TRANSPORTATION

- Bus Stop
- Rail Stop
- Bus Route
- Rail

BASEMAP

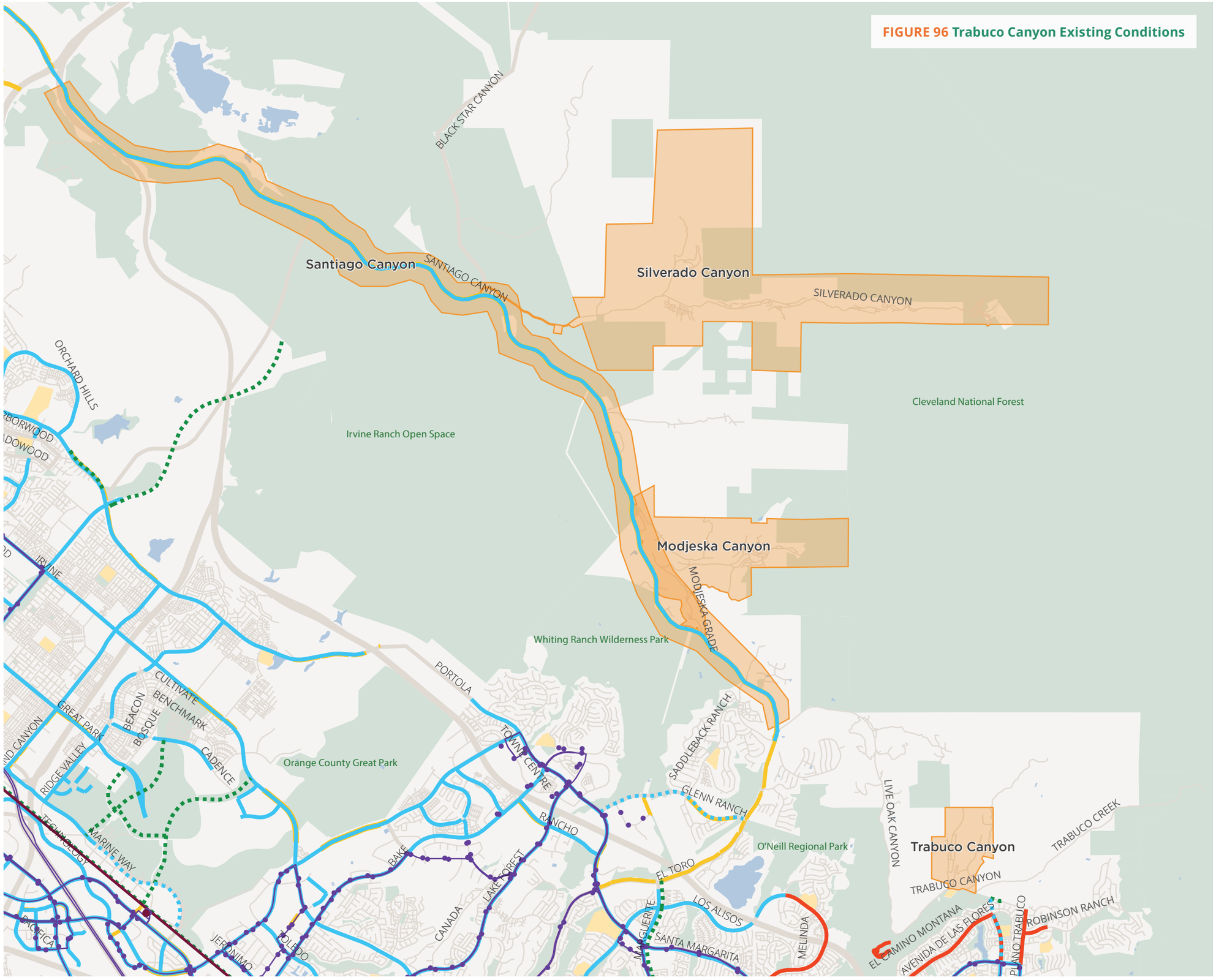
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 15 30 Miles

N



Identifying Safety Concerns Using Data

Data on bicycle and pedestrian involved collisions can provide additional insight into locations or roadways that tend to have higher collision rates. These insights will inform the development of project and programmatic recommendations for unincorporated communities in Orange County to address challenges people bicycling and walking face.

Collision data involving people walking and bicycling was acquired from the Statewide Integrated Traffic Records System (SWITRS). This database includes information on locations, dates, and collision types, allowing for the project team to analyze collisions by various factors.

Between 2009-2018, a total of 3 collisions involving bicyclists and pedestrians were reported in Trabuco Canyon during the study period, 67% of which involved people bicycling and 33% of which involved people walking.

PEDESTRIAN-INVOLVED COLLISIONS

Between 2009 to 2018, 1 collision occurred in Trabuco Canyon that involved a person walking. This collision resulted in a severe injury. The crash violation was due to other than driver (or Pedestrian).

The pedestrian related collision occurred during the night, where there were no streetlights. The collision involving a pedestrian occurred on Trabuco Canyon Rd (**Figure 97**).

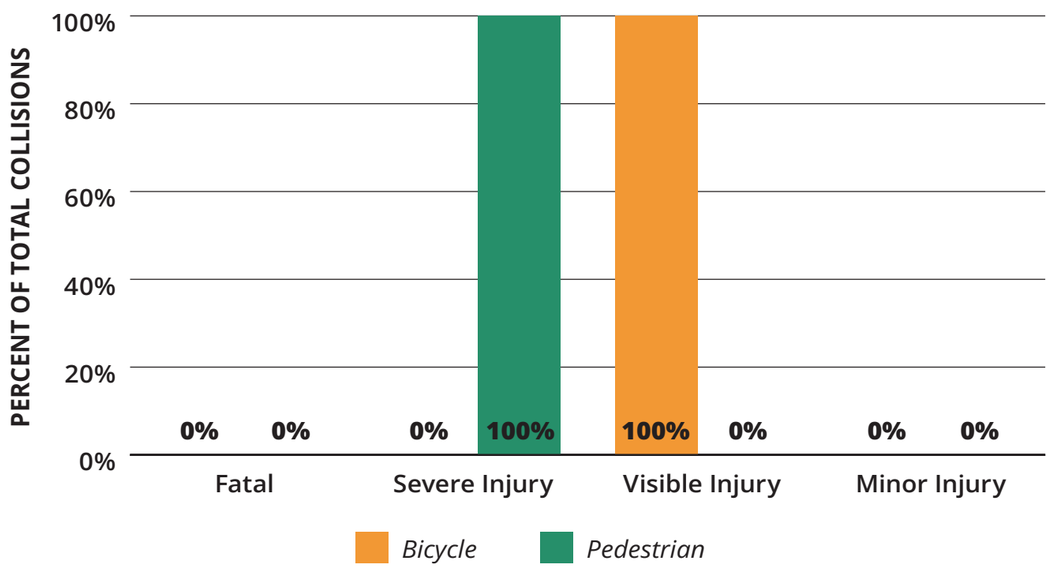
BICYCLE-INVOLVED COLLISIONS

During the same study period (2009 to 2018), 2 collisions in Trabuco Canyon involved a person riding a bicycle. Both of these bicycle collisions resulted in a visible injury.

The crash violation categories were improper turning (50%), and automobile right of way (50%). 1 (50%) of the bicycle collisions occurred at an intersection.

Both of these bicycle collisions occurred during the daylight (100%). **Figure 97** provides an overview of all bicycle-involved collisions in Trabuco Canyon between 2009-2018 and demonstrates a concentration of collisions along Trabuco Creek Road.

TABLE 47 Crash Severity in Trabuco Canyon



Network Gap Analysis

Figure 98 analyze the bicycle and pedestrian connectivity of existing low-stress areas of Trabuco Canyon based on the Bicycle Level of Traffic Stress (BLTS) analysis and Pedestrian Level of Traffic Stress (PLTS) analysis mentioned in the previous section This exercise helps highlight the barriers that high-speed roadways, freeways, and railroad tracks create between neighborhoods.

A low stress connection requires both segments and intersections to accommodate low-stress travel. For example, if a corridor is considered a stressful roadway, enhanced crossings may be needed to provide a comfortable crossing experience for cyclists and pedestrians traveling between neighborhoods. Elements that promote low-stress connectivity between areas of the community could include:

- Signalized Intersections
- High-Visibility Crosswalks with flashing beacons
- Low-speed roadways, bridges, or tunnels bypassing high-speed streets.

Complete connections are displayed in the same color and create “low stress networks”. When the color of the roadways changes, or the color is broken, this indicates that a high-stress roadway is creating a barrier, such as a lack of signalized crossings at the intersection. In this map, colors do not correspond to levels of traffic stress; rather, each color represents a part of Trabuco Canyon where internal travel is low-stress, but crossing to another network is likely more stressful.

This analysis approximates the user experience by visualizing potential barriers when moving from a low-stress LTS 1 or 2 corridor to a LTS 3 or 4 corridor. The connectivity analysis shows that Trabuco Canyon is mostly connected, except in the eastern portion where the network becomes fragmented.

Based on the Needs and Gaps analysis, there are 2 low stress networks within Trabuco Canyon.

Orange County Unincorporated Area

Active Transportation Plan

Modjeska, Santiago, Silverado, + Trabuco Canyons

PEDESTRIAN INVOLVED CRASHES

- Fatal
- Severe Injury
- Minor Injury
- No Injury

BICYCLIST INVOLVED CRASHES

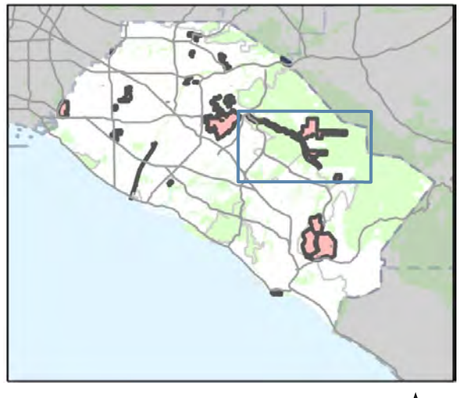
- Fatal
- Severe Injury
- Minor Injury
- No Injury

EXISTING BICYCLE FACILITIES

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

BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 15 30 Miles

FIGURE 97 Trabuco Canyon Bicycle and Pedestrian Involved Collisions

Orange County Unincorporated Area

Active Transportation Plan

Modjeska, Santiago, Silverado, + Trabuco Canyons

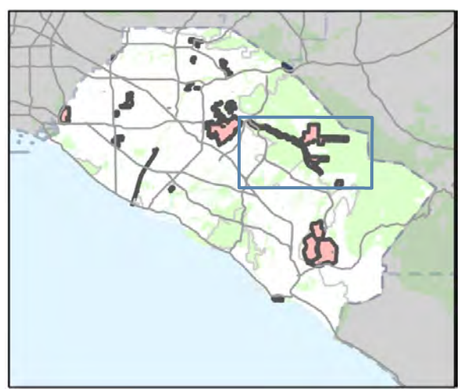
LOW STRESS NETWORKS

Clusters of roads rated Level of Traffic Stress (LTS) 1 or 2 represent clusters of streets that are connected and accessible to each other. Breaks in connectivity, visualized by roadway clusters in unique colors, create "low stress networks" and denote the lack of safe and comfortable crossings to get from one network to another.

The more roadway colors that are shown on the map, the fewer low stress network connections are available in the area.

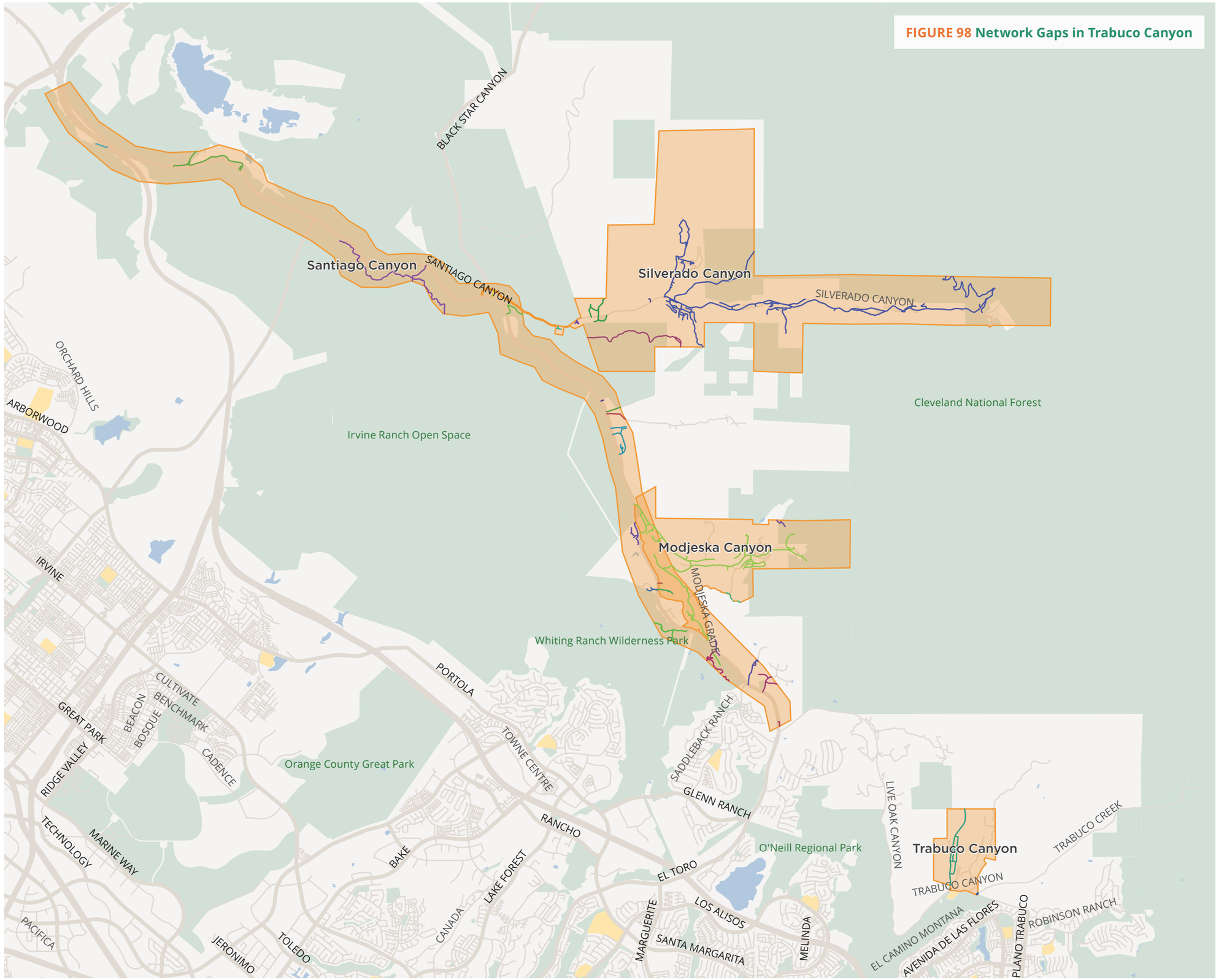
BASEMAP

- OCFCD Flood Maintenance Roads
- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



0 15 30 Miles

FIGURE 98 Network Gaps in Trabuco Canyon



Recommendations

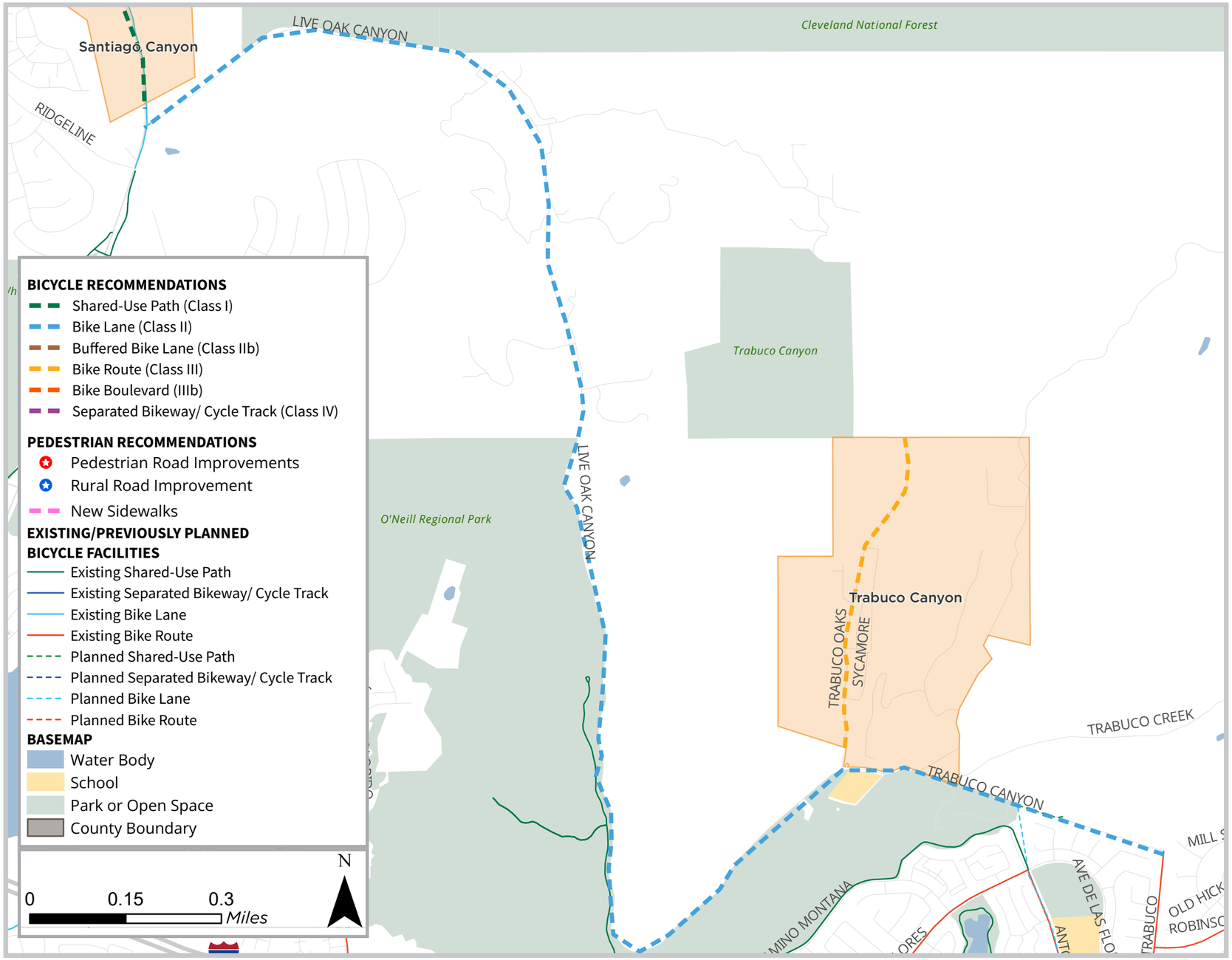
WHAT DID WE HEAR?

Public comments from engagement in the canyon community emphasized the rural character of the community. Pedestrians, bicyclists, drivers, and equestrians share the road in Trabuco Canyon and community members want to ensure all modes of transportation can travel safely.

BICYCLE RECOMMENDATIONS

Bicycle recommendations in Trabuco Canyon include:

- Class II 4.85 miles total including:
  - Live Oak Canyon Rd, connecting bicyclists to O'Neill Regional Park
- Class III .82 miles total including:
  - Trabuco Oaks Dr which will alert drivers of the presence of bicyclists and pedestrians without disturbing the rural feel of the community



Flood Control

Flood Control Channels

Existing Conditions

OCPW coordinates floodplain management services with agencies such as the Federal Emergency Management Agency and others on behalf of the Orange County Flood Control District (OCFCD). In total, Orange County has nearly 700 miles of flood control maintenance roads. However, many of these flood control maintenance roads are not suitable for pathway development due to several factors. First, in order to be suitable for shared-use pathway development, flood control maintenance roads must meet the minimum width considerations for shared-use paths – OCPW's Highway Design Manual requires a minimum paved width of 10 feet for a Class I shared-use path bikeway. Second, some flood control maintenance roads are owned and maintained by local cities, sanitation districts, or other non-county entities. Only flood control maintenance roads that are owned and maintained by the County are reviewed in this exercise. And lastly, flood control maintenance roads that already have a shared-use path on them were also excluded from the analysis, as those roads are discussed in the existing bicycle facilities section. Therefore, this assessment evaluates the 249 miles of existing flood maintenance roads as shown in **Figure 99**.

Figure 100 (Quadrant 1) depicts all of the existing flood control maintenance roads that meet the above criteria in the northeastern quadrant of Orange County. This quadrant includes the unincorporated islands of Carbon Canyon, Country Club Island, Fairlynn Island, Hamer, Orange Park Acres, El Modena, North Tustin, Santiago Canyon, Santiago Creek, Dale / Augusta, Katella / Rustic, Anaheim Islands, and Andora / Fairhope. This quadrant contains many flood control maintenance roads, mainly along the Carbon Canyon Channel, Fullerton Creek Channel, and Coyote Creek flood control channels. Note that this quadrant is one of the more populated areas of Orange County and also an area with a high CalEnviroScreen score (a tool used to identify communities that are disproportionately burdened by multiple sources of pollution), pointing to the area's potential for increased shared-use path development to serve these populations. In addition, many of the flood control maintenance roads in this quadrant connect to some of the existing shared-use paths, such as the Santa Ana River Trail.



*Photo 1: Flood control maintenance road near Hamer Island in the northeast quadrant (**Figure 100**).*



*Photo 2: Flood control maintenance road near Andora / Fairhope Island in the northeast quadrant (**Figure 100**).*

Orange County Unincorporated Areas

Active Transportation Plan

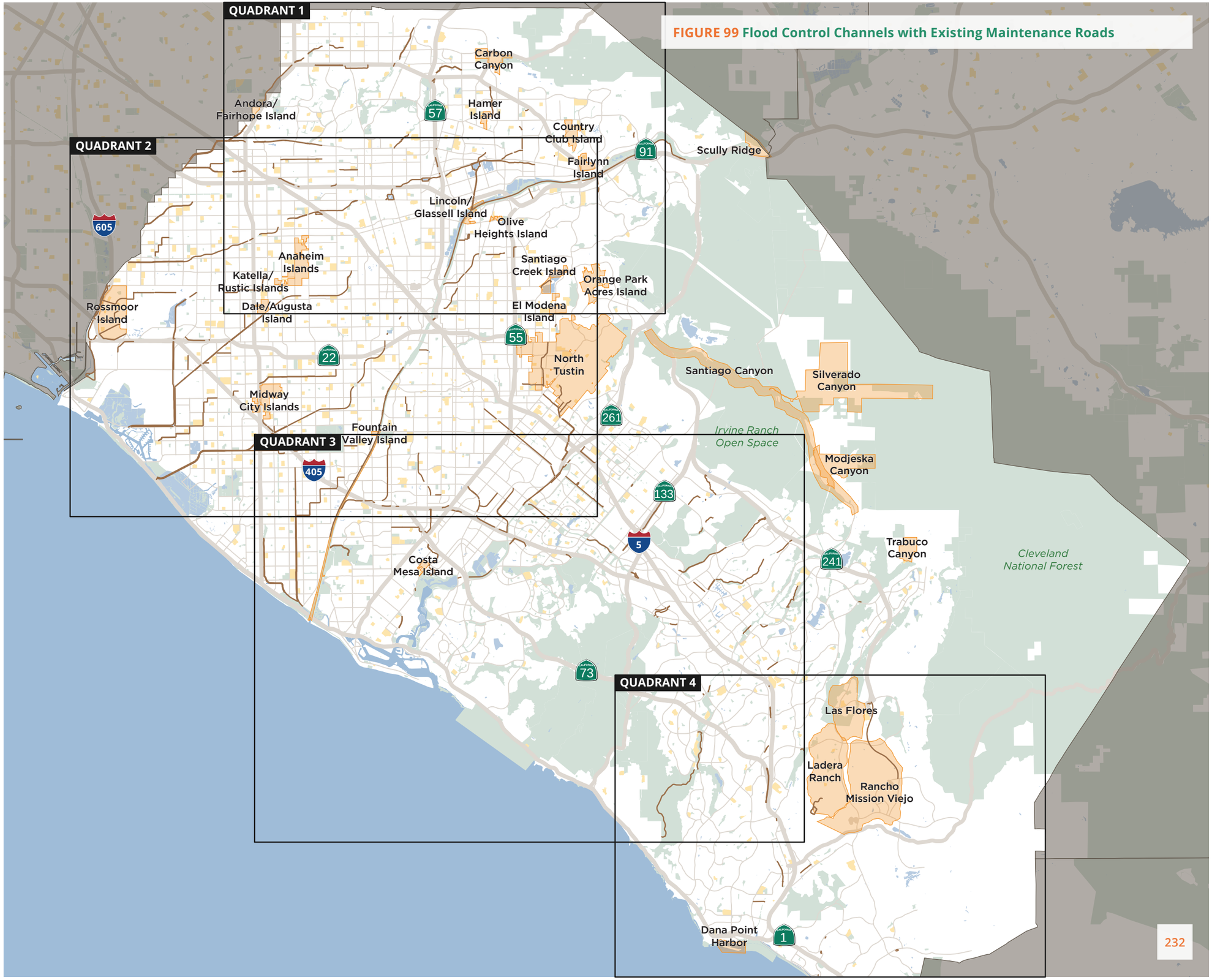
FIGURE 99 Flood Control Channels with Existing Maintenance Roads

OCFCD Flood Maintenance Roads

Includes OCFCD owned and maintained flood control maintenance roads that are >10' wide.

Basemap

- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 2.5 5 Miles

N

Orange County Unincorporated Areas

Active Transportation Plan

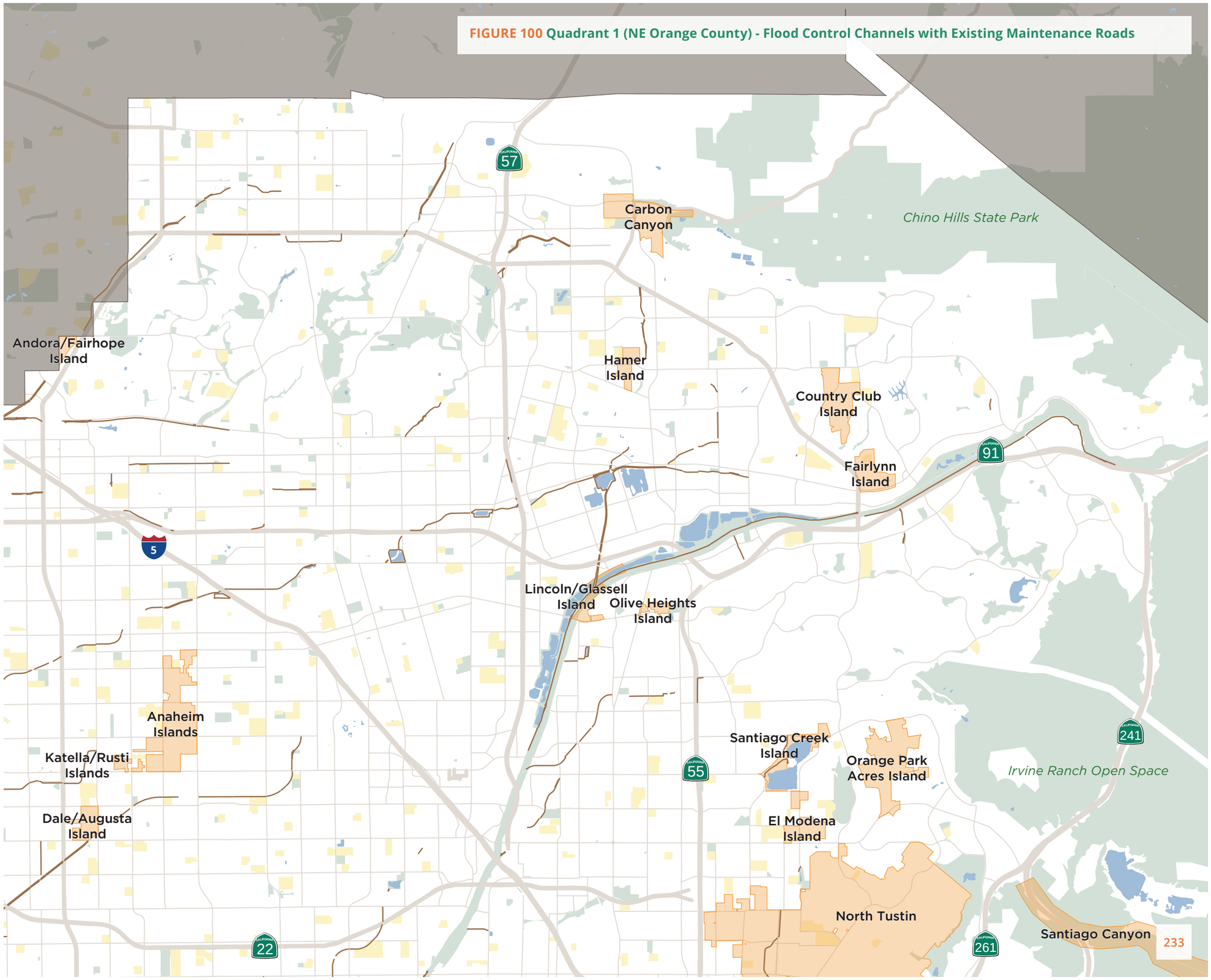
FIGURE 100 Quadrant 1 (NE Orange County) - Flood Control Channels with Existing Maintenance Roads

OCFCD Flood Maintenance Roads

Includes OCFCD owned and maintained flood control maintenance roads that are >10' wide.

Basemap

- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works
ORANGE COUNTY

0 1 2 Miles

N

Figure 101 (Quadrant 2) depicts all of the existing flood control maintenance roads reviewed for the existing conditions analysis in the northwestern quadrant of Orange County. This quadrant includes the incorporated islands of Rossmoor, Midway City, Fountain Valley, North Tustin, Katella / Rustic, Dale / Augusta, Anaheim, El Modena, Santiago Creek, Fairlynn, Country Club, and Hamer. This quadrant contains many flood control maintenance roads, mainly along the Bolsa Chica Channel, Kempton Channel, Rossmoor Channel, Fountain Valley, and Westminster flood control channels. Note that this quadrant also contains one of the more populated areas of Orange County as well as a higher CalEnviroScreen score, highlighting the opportunity for increased shared-use path development. In addition, many of the flood control maintenance roads in this quadrant connect to existing shared-use paths, such as the Santa Ana River Trail.



*Photo 3: Flood control maintenance road near Rossmoor Island in the northwest quadrant (**Figure 101**).*



*Photo 4: Flood control maintenance road along the Bolsa Chica channel near Rossmoor Island in the northwest quadrant (**Figure 101**).*

Figure 102 (Quadrant 3) depicts all of the existing flood control maintenance roads reviewed for the existing conditions analysis in the central quadrant of Orange County. This quadrant includes the incorporated islands of Fountain Valley, Costa Mesa, Santiago Canyon, Modjeska Canyon, and Ladera Ranch. This quadrant contains many flood control maintenance roads, mainly along the San Diego Creek, Como Channel, Serrano Creek, and Borrego Canyon flood control channels. Note that this quadrant is less populated than the northern areas of Orange County and also has a lower CalEnviroScreen score. However, the many flood control maintenance roads still present good opportunities for shared-use path development and connections to existing nearby facilities.



*Photo 5: Flood control maintenance road along the El Modena Channel in North Tustin in the central quadrant (**Figure 102**).*



*Photo 6: Flood control maintenance road near Costa Mesa in the central quadrant (**Figure 102**).*

Orange County Unincorporated Areas

Active Transportation Plan

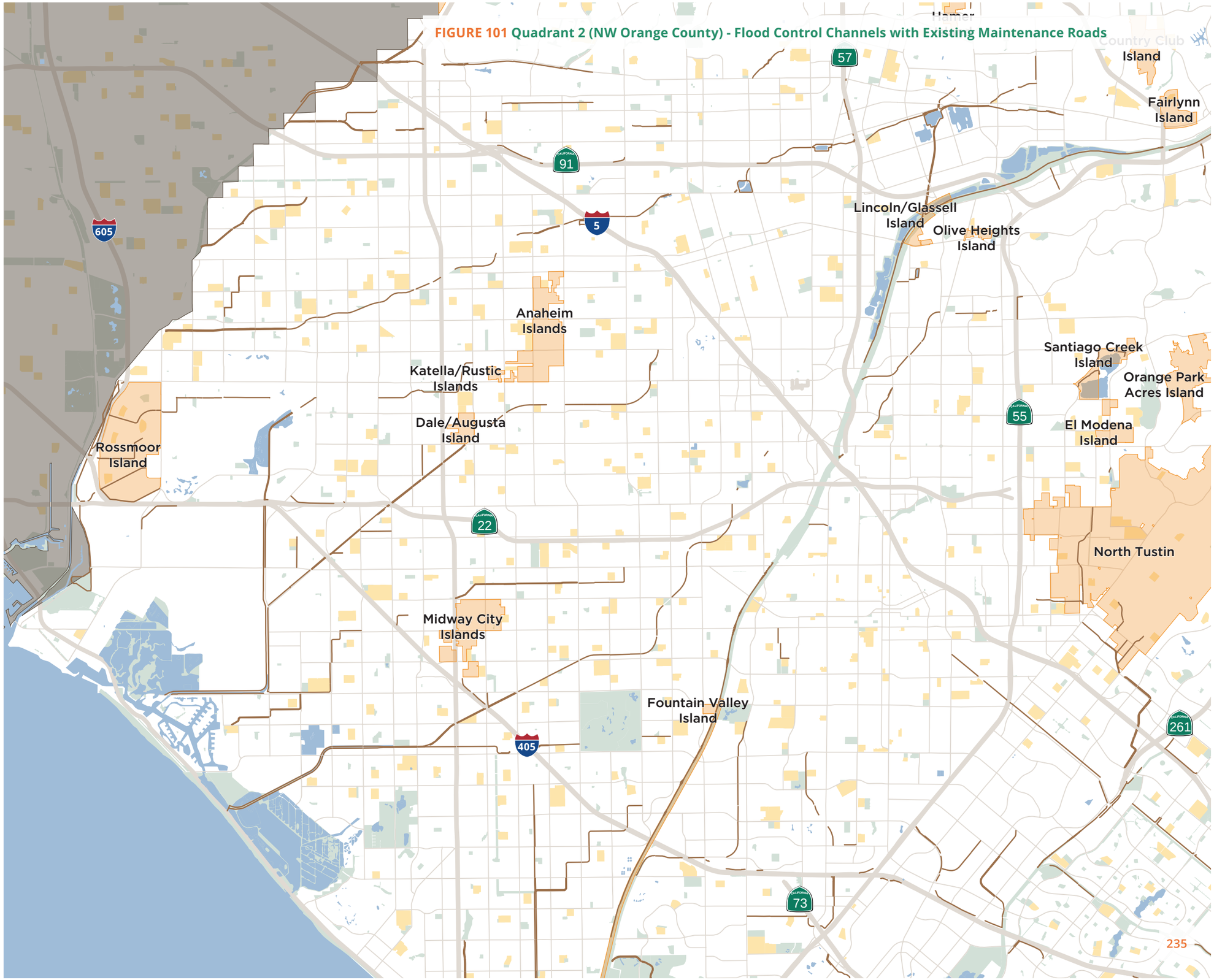
FIGURE 101 Quadrant 2 (NW Orange County) - Flood Control Channels with Existing Maintenance Roads

OCFCD Flood Maintenance Roads

Includes OCFCD owned and maintained flood control maintenance roads that are >10' wide.

Basemap

- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 1 2 Miles

N

Orange County Unincorporated Areas

Active Transportation Plan

OCFCD Flood Maintenance Roads

Includes OCFCD owned and maintained flood control maintenance roads that are >10' wide.

Basemap

- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary

OC Public Works

0 1 2 Miles

N

FIGURE 102 Quadrant 3 (Central Orange County) - Flood Control Channels with Existing Maintenance Roads

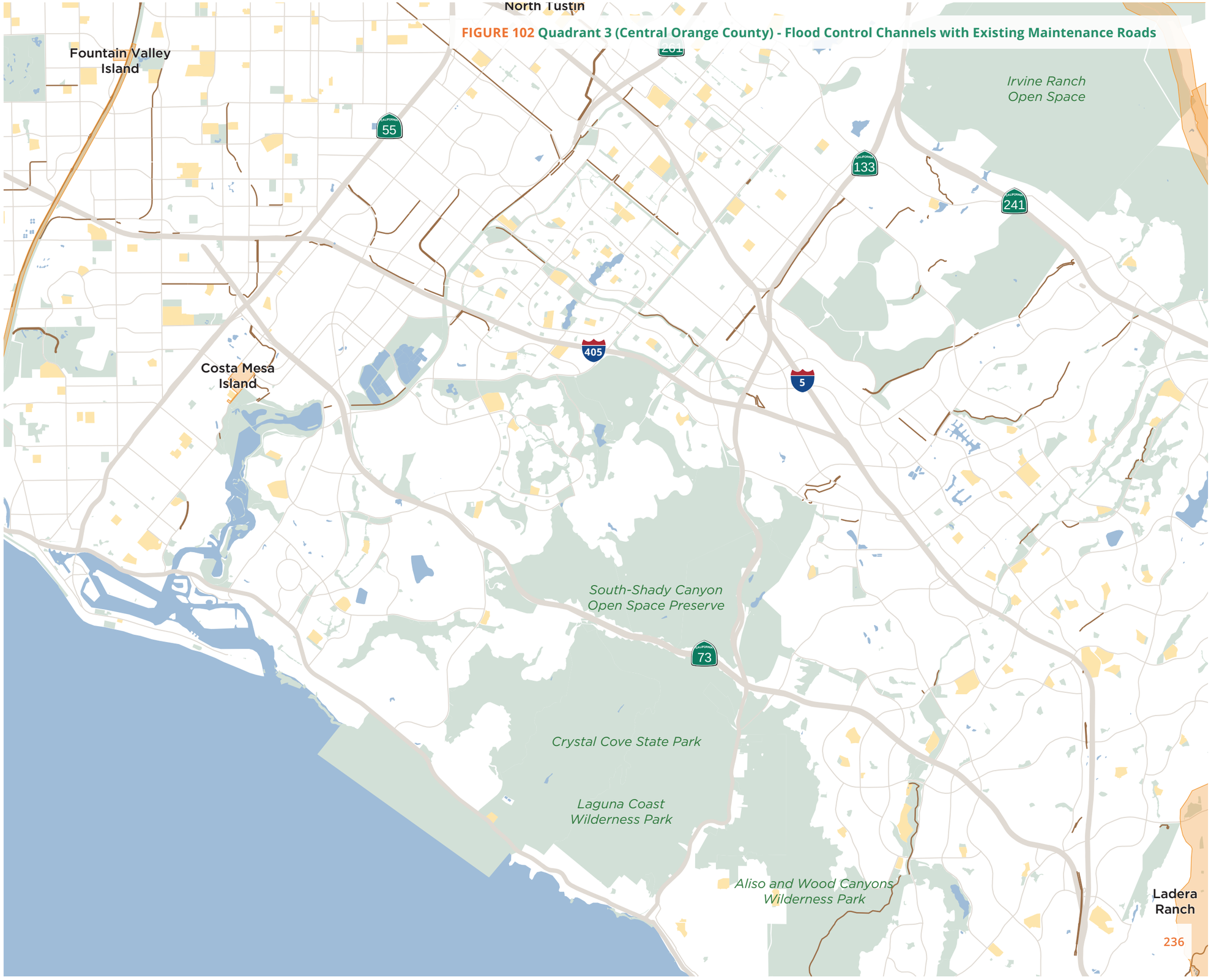


Figure 103 (Quadrant 4) depicts all of the existing flood control maintenance roads reviewed for the existing conditions analysis in the southern quadrant of Orange County. This quadrant includes the incorporated islands of Las Flores, Ladera Ranch, Rancho Mission Viejo, and Dana Point Harbor. This quadrant contains several flood control maintenance roads, mainly along the San Juan Creek, Del Obispo Channel, and Aliso Creek flood control channels. Note that this quadrant is much less populated than the central and northern areas of Orange County and also has some of the lowest CalEnviroScreen scores in all of Orange County. Although, many of the flood control maintenance roads in this region of the county can accommodate shared-use path development, which could provide connectivity to existing residents and potentially serve new ones as the region grows.

One key regional connection among these OCFCD-owned flood control channels is the Santa Ana River Trail (SART), shown in Quadrants 1 and 2, for which OCPW serves as a local sponsor. The full trail spans three counties (Orange, Riverside, and San Bernardino) and connects 17 cities. To date, 68 miles of the Santa Ana River Trail have been completed or are under construction and when the entire project is completed, the SART will be approximately 100 miles long, making it the longest multi-use trail in Southern California. The SART is a great example of how a flood control maintenance road can be transformed into a regional transportation corridor and a destination in its own right.

Within Orange County, the SART is 30 miles long, starting at the Pacific Ocean (Huntington Beach/Newport Beach border) and ending at the Orange–Riverside County line. The SART is paved on at least one side of the river and typically, it is 12 feet wide with a striped divider for two-way travel. The trail is shared by bicyclists, pedestrians, and other non-motorized users. For part of the SART, an unpaved equestrian trail also exists on the other side of the channel. There are several entry points to get onto the SART, including several city and regional parks, as shown in **Figure 104**. Where the trail intersects local streets, crossings are typically separated with bridges or underpasses.

Existing flood control maintenance roads vary from natural surface, coarse gravel, maintained gravel, and paved, as shown in Photos 1 to 8. While the existing roadway surface and surrounding land use context varies significantly from one channel to the next, all channels reviewed in the existing conditions analysis show promise for development of shared-use paths.





*Photo 7: Flood control maintenance road along Camino Capistrano in the southern quadrant (**Figure 103**).*

*Photo 8: Flood control maintenance road along El Camino Real in the southern quadrant (**Figure 103**).*

Orange County Unincorporated Areas

Active Transportation Plan

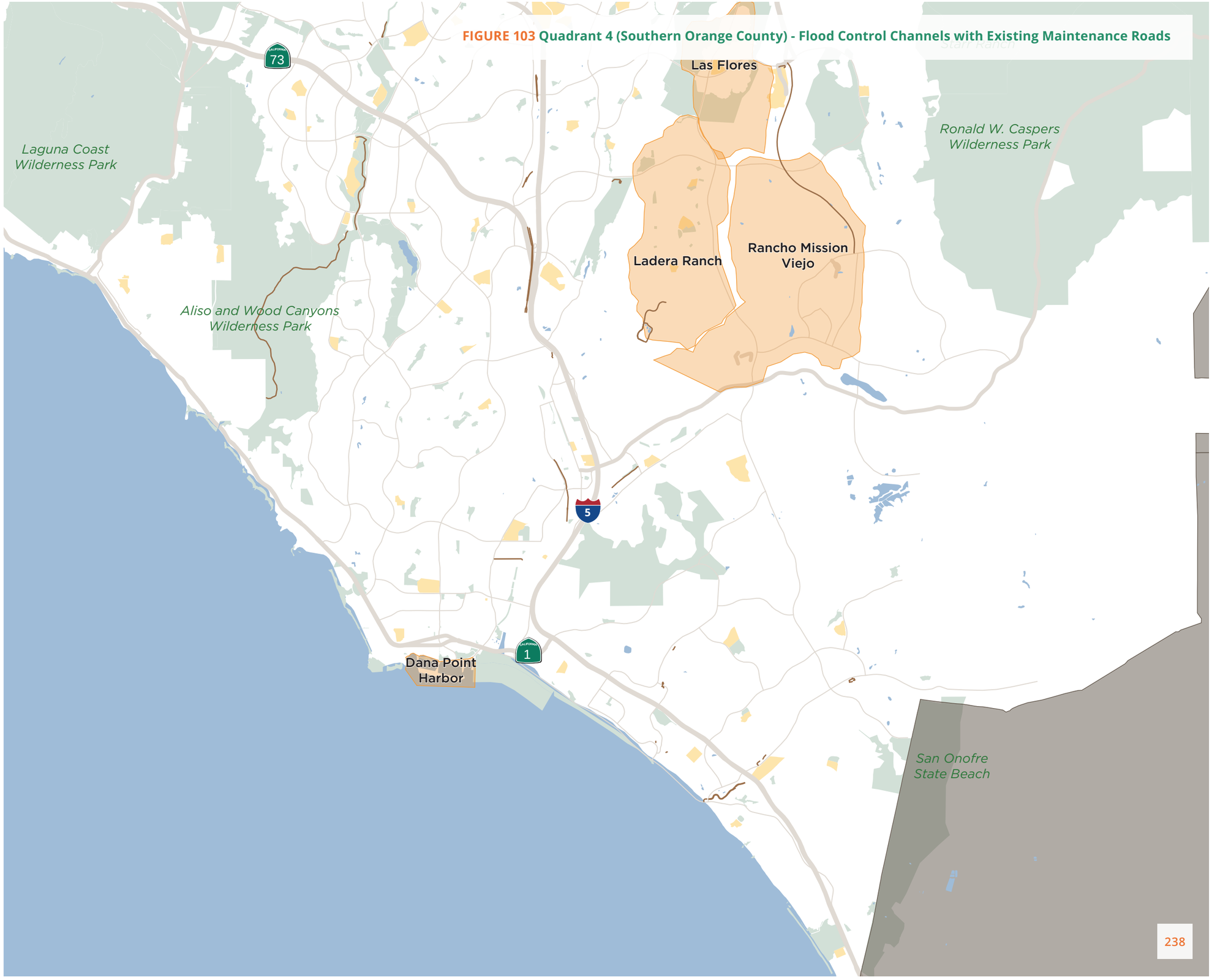
FIGURE 103 Quadrant 4 (Southern Orange County) - Flood Control Channels with Existing Maintenance Roads

OCFCD Flood Maintenance Roads

Includes OCFCD owned and maintained flood control maintenance roads that are >10' wide.

Basemap

- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary



OC Public Works

0 1 2 Miles

N

Orange County Unincorporated Areas

Active Transportation Plan

Santa Ana River Trail

- Santa Ana River Trail
- Santa Ana River Trail - Access Points

Basemap

- Water Body
- School
- Park or Open Space
- Focus Areas
- County Boundary

OC Public Works

0 1.5 3 Miles

N

FIGURE 104 Santa Ana River Trail Access

Carbon Canyon
Andora/Fairhope Island
Hamer Island
Country Club Island
Scully Ridge
Fairlynn Island
Lincoln/Glassell Island
Olive Heights Island
Anaheim Islands
Katella/Rustic Islands
Dale/Augusta Island
Santiago Creek Island
Orange Park Acres Island
El Modena Island
Cleveland National Forest
North Tustin
Santiago Canyon
Silverado Canyon
Midway City Islands
Fountain Valley Island
Irvine Ranch Open Space
Modjeska Canyon
Costa Mesa Island
Trabuco Canyon
Las Flores

5 22 405 55 73 91 241

Flood Control Channel Screening

Orange County has nearly 250 miles of flood control maintenance roads that meet the requirements for potential shared-use path development. These channels went through a screening process which identified the roads that met this set of requirements:

- No existing path
- Owned and maintained by the County and within OCFCD ROW
- Minimum paved width of 10 feet
- At least two feasible access points
- Length (at least ½ mile long, unless within ¼ mile of an existing facility)

Ideally, these flood control channels should also meet the 100 year flood standard. For most of the final channels, this standard was met. However, for some channels, construction is expected in the near future that will bring the channels to the appropriate standards. If a channel met every requirement except the 100 year flood standard, and the standard is expected to be met soon, then the channel was still included in the final list of channels. The standard OCFCD maintenance road width is 20 feet, with 14 feet of paved path and 3 feet of unpaved path on each side. While the County's HDM minimum for a shared-use path is 10 feet, the County is aiming for this 14 feet path configuration.

Figure 106 maps the channels that met these criteria for the screening process.

ON-ROAD CONNECTIONS

One of the goals of recommending shared-use paths on the chosen flood control channel maintenance roads was to create long, connected stretches of paths. In reality, there were several instances in which a flood control channel's characteristics change along the channel. For example, a channel's width may narrow along the length of the channel. In these cases, on-road connections are recommended. These on-road connections can act as temporary solutions to connect multiple parts of the recommended shared-use path. Ideally, these on-road connections would no longer be needed as future upgrades to the flood control maintenance roads make them more appropriate candidates for shared-use paths.

FLOOD CONTROL CHANNEL RECOMMENDATIONS

There are 16 flood control channels which meet a suitable set of criteria. All of these channels are recommended to be Class I shared-use paths. The following pages provide descriptions of the 16 Class I flood controls channels. **Figure 105** provides an example design of these shared-use paths along a channel.

FIGURE 105 Class I: Flood Control





List of Suitable Flood Control Channels

1. ANAHEIM-BARBER CITY CHANNEL

This 0.25 mile segment of the Anaheim-Barber City Channel runs from I-405 to Westminster Boulevard. This segment of channel is surrounded by single family housing. It is near Virginia K. Boos Park. It is connected to the Bolsa Chica Channel, by a potential on-street connection along Rancho Road.



2. BREA CANYON CHANNEL

This approximately 0.5 segment of Brea Canyon Channel runs from Central Avenue in the north to Lambert Road in the south. The primary land uses around this channel are residential, with both single family and multifamily homes, with some industrial buildings to the west of the channel. Some nearby commercial buildings are on Central Avenue and Lambert Road, and Brea Junior High School is also close. The channel is adjacent to Tamarack Park.



3. BREA CREEK CHANNEL

This approximately 1.5 mile segment of Brea Creek Channel runs from Dale Street in the west near the Metrolink Station to Crossroads Way in the east. The land uses around this corridor vary, with single family and multifamily residential north and east of the corridor, industrial uses to the south, and the Amerige Heights Town Center commercial center to the north. The channel runs along Malvern Avenue, a multilane arterial with a 45 mph speed limit. Bastanchury Park is at the eastern end of the segment.



4. BOLSA CHICA CHANNEL

This approximately 1.3 mile segment of Bolsa Chica Channel runs along Bolsa Chica Street from Rancho Road to Edinger Avenue. There are primarily single and multi-family residential buildings along this route. There is also Seal Beach National Wildlife Refuge and old rail depot to the west. This segment terminates at Haven View Park and LePort Montessori School.



5. CARBON CANYON CHANNEL

This approximately 0.25 mile segment of Carbon Canyon Channel runs from Golden Avenue in the north to Bastanchury Road in the south. The primary land use around this segment is single family residential, with some multifamily residential. The corridor is also adjacent to Friends Christian Middle School with several elementary schools also located nearby.



6. CARBON CREEK CHANNEL SEGMENT A

This approximately 2.5 mile segment of Carbon Creek Channel runs from the I-5 to Gilbert Street. The primary land use around this segment of the channel is multi-family residential and commercial. The channel terminates the corridor at the Gilbert Retarding Basin next to the Dad Miller Golf Course and the TGR Learning Lab. The corridor is also adjacent to Brookhurst Junior High School, Savanna High School and near Brookhurst Park. Potential on-street connections along Gilbert Street and Lincoln Avenue connect it to the next segment.



7. CARBON CREEK CHANNEL SEGMENT B

This approximately 5.5 mile segment of Carbon Creek Channel runs from Lincoln Avenue to Los Alamitos Boulevard, where the Carbon Creek Channel combines with the Coyote Creek Channel. The land use along this channel is primarily residential, both single family and multi-family, with pockets of commercial. It passes many major parks including Schweitzer Park and Reid Park. It also passes many schools in the area including Los Alamitos High School, at its western terminus, Western High School and Cypress High school.



8. EAST GARDEN GROVE - WINTERSBURG CHANNEL

This approximately 4.5 mile segment of the East GG Wintersburg Channel runs from Trask Avenue in the north to Edinger Avenue in the south. The land use if primarily single family residential, with some industrial at the northern end of the segment. This channel passes Heritage Elementary School, Rosita Elementary School, La Quinta High School and John Marshall Elementary School.



9. EL MODENA-IRVINE CHANNEL

This approximately 0.25 mile segment of El Modena-Irvine Channel runs from Red Hill Avenue in the north to Bryan Avenue and Browning Avenue in the south. The only land use around the channel segment is single family residential. C.E. Utt Middle School is located at the southern end of the channel.



10. GREENVILLE-BANNING CHANNEL SEGMENT A

This approximately 0.6 mile segment of Greenville-Banning Channel runs from St Andrew Place in the north to Warner Avenue in the south. There are many land uses around the channel segment, including single family residential, industrial, and office uses. Adjacent to the corridor is the Heritage Museum of Orange County and Kenneth E. Mitchell School. At the northern end of the segment is Centennial Regional Park, and the corridor is nearly adjacent to Godinez Fundamental High School. Part of the channel segment runs along the multilane arterial Fairview Street. It is connected to the next segment through potential on-street connections along Warner Avenue, Fairview Avenue, and Alton Avenue.



11. GREENVILLE-BANNING CHANNEL SEGMENT B

This approximately 0.5 mile segment of Greenville-Banning Channel runs from Alton Avenue in the north to Sunflower Avenue in the south. The primary land uses along this channel segment are industrial and office uses. Immediately adjacent to the channel segment is Calvary Chapel High School.



12. GREENVILLE-BANNING CHANNEL SEGMENT C

This approximately 1 mile segment of the Greenville-Banning Channel runs from New Hampshire Drive to Gisler Avenue. The land use is single family residential. The western end of this segment connects with the Santa Ana River trail and Suburbia Park.



13. PAULARINO CHANNEL

This 1.25 segment of Paularino Channel runs from Fairview Road in the west to Bristol Street in the east. The land use is mostly single family residential along the channel. TeWinkle Park, Hammett Sports Complex and Costa Mesa High School are nearby.



14. SAN DIEGO CREEK CHANNEL

This approximately 0.5 mile segment of San Diego Creek Channel runs from Irvine Center Drive in the north to Lake Forest Drive and Bake Parkway in the south. The primary land uses around this segment of the channel are offices and open spaces. Los Olivos Community Park is located at the western terminus of the segment.



15. SANTA ANA GARDENS CHANNEL

This approximately 0.25 mile segment of Santa Ana Gardens Channel runs from Warner Avenue in the north to Adams Street in the south. The sole land use around this channel segment is residential. Located at the southern end of the channel segment are Thomas Jefferson Elementary School, with George Upton Park, Carl Thornton Park, and McFadden Institute of Technology located nearby.



16. SANTA ANA-DELHI CHANNEL

This approximately 1.5 mile segment of Santa Ana-Delhi Channel runs from Bristol Street in the north to Golden Circle in the south. The channel segment is surrounded by a variety of land uses, including residential, hotel, and commercial uses. Nearby are Newport Beach Golf Course and the Santa Ana Country Club. The southern terminus of this segment ends at the Upper Newport Bay Nature Preserve and the Bayview Trail.



Orange County Unincorporated Areas

Active Transportation Plan

Countywide Recommendations

FLOOD CONTROL RECOMMENDATIONS

- Shared-Use Path Along Flood Control Channel (Class I)
- Potential Road Connections

BASEMAP

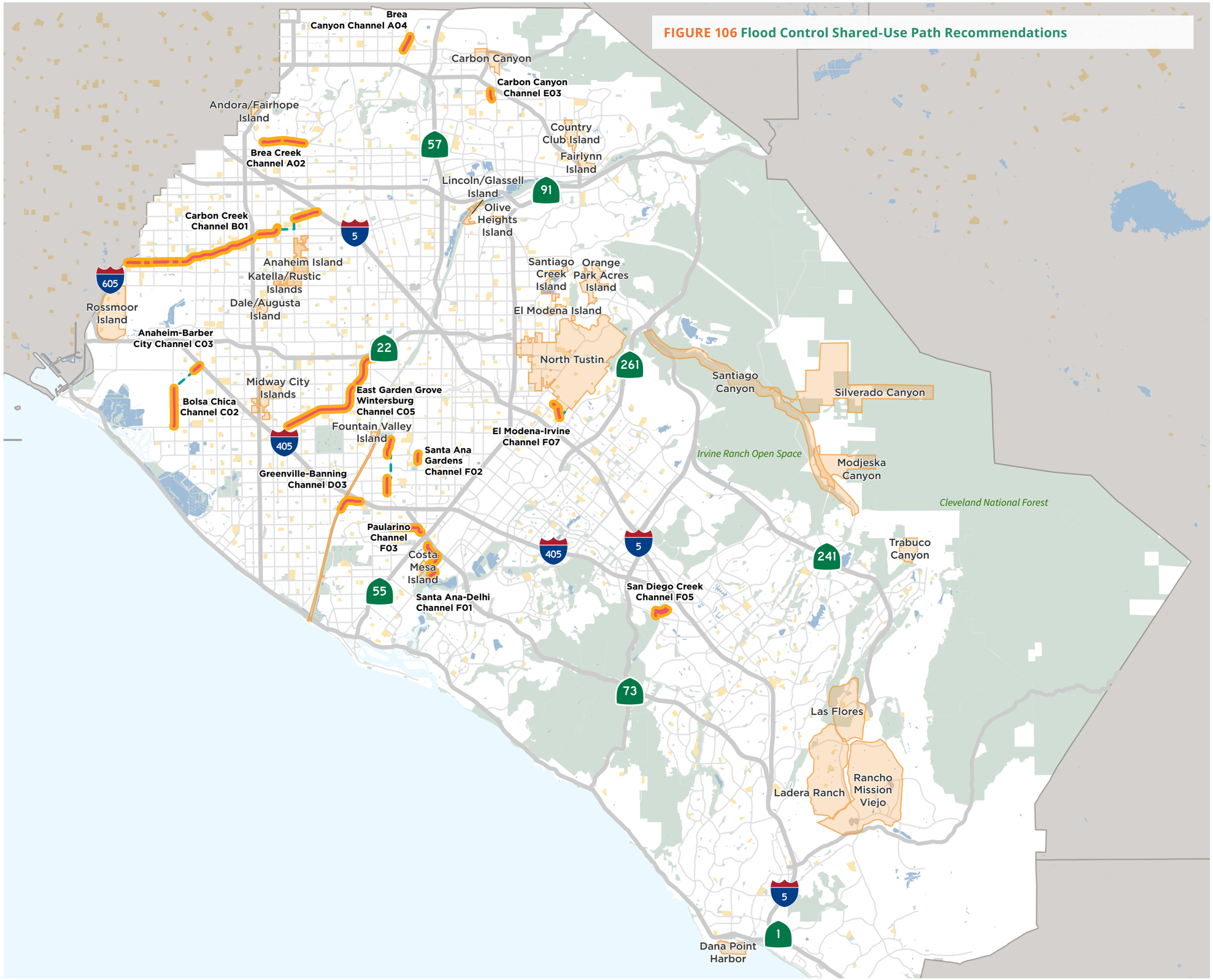
- Water Body
- School
- Park or Open Space
- County Boundary
- Focus Areas

OC Public Works
ORANGE COUNTY

0 3.5 7 Miles

N

FIGURE 106 Flood Control Shared-Use Path Recommendations



Prioritization Project Summary

FLOOD CONTROL CHANNELS

"The county could use more Class I multipurpose paths with good lighting and beautiful landscaping included."

- Community Comment



PRIORITIZATION

Categorical data representing each prioritization factor (e.g., points of interest, population, etc.) were applied to the 16 flood control channel corridors. Each flood control channel corridor was assigned a score based on the distance of the corridor to the various input. Some criteria could not be assigned a point score based on proximity (e.g., previous plan support and community-identified), and was instead assigned a score based on qualitative data. The scores for all criteria were used to generate a composite score to identify the highest priority flood control channels for shared-use path development countywide.

RESULTS

Table 49 shows the results of the flood control prioritization process. **Figure 107**- **Figure 110** shows the top 5 flood control channel corridors in the County.

TABLE 48 Prioritization Criteria for Flood Control Recommendations

Criteria	Criteria Categories	Points
Previously proposed by OCTA/ Agencies	• Yes • No	• 10 (maximum) • 5
Proximity to existing bikeway (within ½ mile)	• Less than ¼ mile from existing bikeway • ¼ to ½ mile away from existing bikeway • More than ½ mile away from existing bikeway	• 20 (maximum) • 10 • 0
Proximity to maintenance road segment with pre-existing pathway (within ½ mile)	• Less than ¼ mile from existing maintenance road • ¼ to ½ mile away from existing maintenance road • More than ½ mile away from existing maintenance road	• 20 (maximum) • 10 • 0
Proximity to point of interest (POI) (within ½ mile)	• Less than ¼ mile from POI • ¼ to ½ mile away from existing POI • More than ½ mile away from existing POI	• 10 (maximum) • 5 • 0
Proximity to transit stop (within 1 mile of a rail station and ½ mile of a bus stop)	• Within 1 mile of a rail station AND ½ mile of a bus stop • Within 1 mile of a rail station OR ½ mile of a bus stop • Other distance from transit	• 10 (maximum) • 5 • 0
Proximity to an unincorporated area (within ½ mile)	• Within or less than ¼ mile from unincorporated area • ¼ to ½ mile away from existing unincorporated area • More than ½ mile away from unincorporated area	• 10 (maximum) • 5 • 0
Community- Identified *Identified in public engagement Identified in public engagement or stated supervisorial*	• Identified by community • Not identified by community	• 20 (maximum) • 0
		TOTAL 100 (maximum)

TABLE 49 Prioritized Flood Control Channels

Facility Name	Facility Number	From	To	Total Score
Greenville-Banning Channel C	D03	New Hampshire Dr	Gisler Ave	95
Santa Ana-Delhi Channel	F01	Bristol St	Golden Circle	85
East Garden Grove Wintersburg Channel	C05	Trask Ave	Edinger Ave	85
Paularino Channel	F03	Fairview Rd	Bristol St	85
Carbon Creek Channel A	B01	I-5	Gilbert St	75
Carbon Creek Channel B	B01	Lincoln Ave	Los Alamitos	75
Greenville-Banning Channel A	D03	St Andrew Pl	Warner Ave	75
Greenville-Banning Channel B	D03	Alton Ave	Sunflower Ave	75
El Modena-Irvine Channel	F07	Red Hill Ave	Bryan Ave/ Browning Ave	65
Carbon Canyon Channel	E03	Golden Ave	Bastanchury Rd	60
Brea Creek Channel	A02	Dale St	Crossroads Wy	60
Bolsa Chica Channel	C02	Rancho Rd	Edinger Ave	55
Brea Canyon Channel	A04	Central Ave	Lambert Rd	55
Santa Ana Gardens Channel	F02	Warner Ave	Adams St	55
San Diego Creek Channel	F05	Irvine Center Dr	Lake Forest Dr	55
Anaheim-Barber Channel	C03	I-405	Westminster Blvd	55



Orange County Unincorporated Areas

Active Transportation Plan **Countywide Recommendations**

TOP 5 PRIORITIZED FLOOD CONTROL CHANNELS RECOMMENDATIONS

Shared-Use Path Along Flood Control Channel (Class I)

TIER 2 FLOOD CONTROL CHANNELS RECOMMENDATIONS

Shared-Use Path Along Flood Control Channel (Class I)

BASEMAP

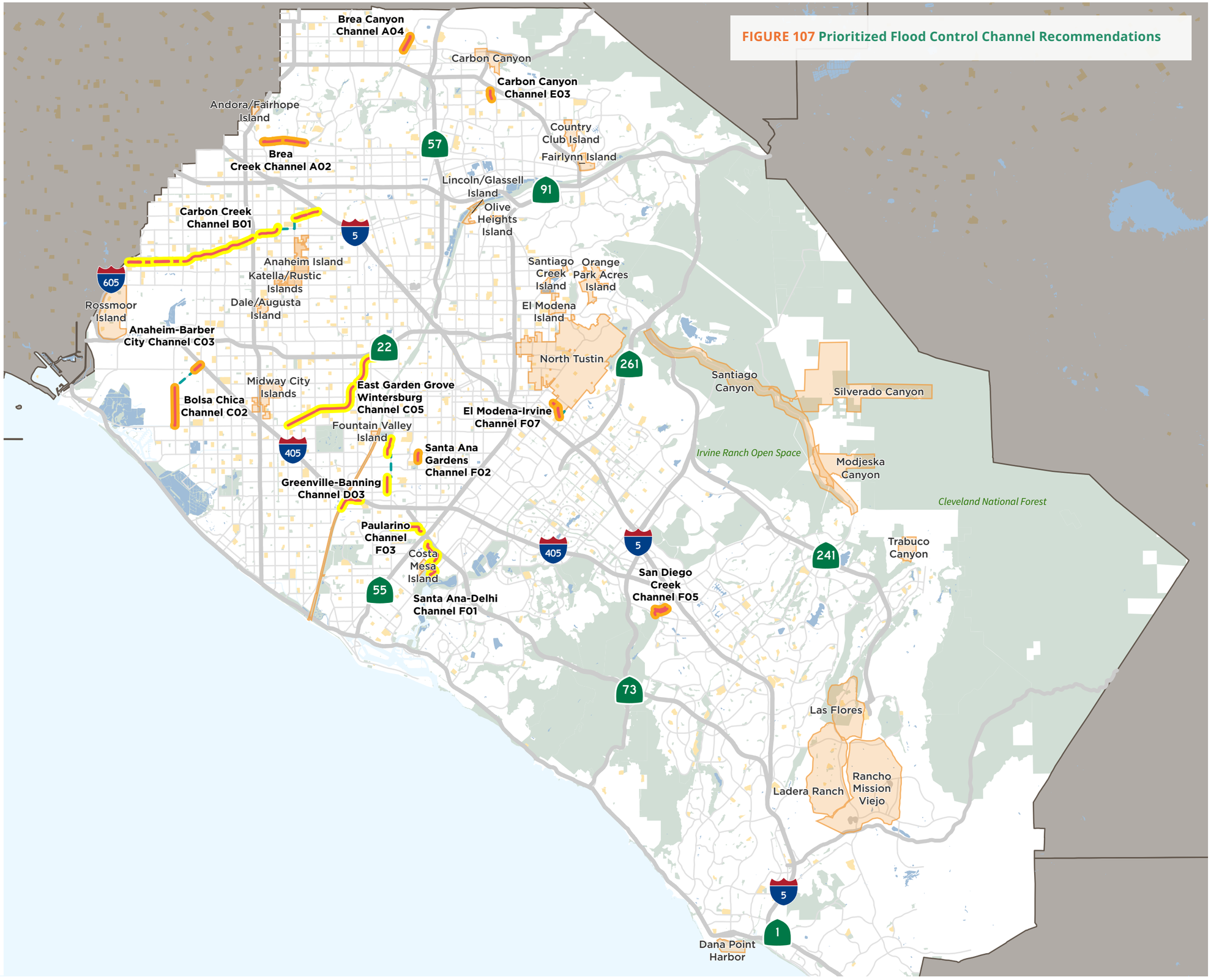
- Water Body
- School
- Park or Open Space
- County Boundary
- Focus Areas

OC Public Works

0 3.5 7 Miles

N

FIGURE 107 Prioritized Flood Control Channel Recommendations



Orange County Unincorporated Areas

Active Transportation Plan
NE Orange County

TOP 5 PRIORITIZED FLOOD CONTROL CHANNELS RECOMMENDATIONS

Shared-Use Path Along Flood Control Channel (Class I)

TIER 2 FLOOD CONTROL CHANNELS RECOMMENDATIONS

Shared-Use Path Along Flood Control Channel (Class I)

BASEMAP

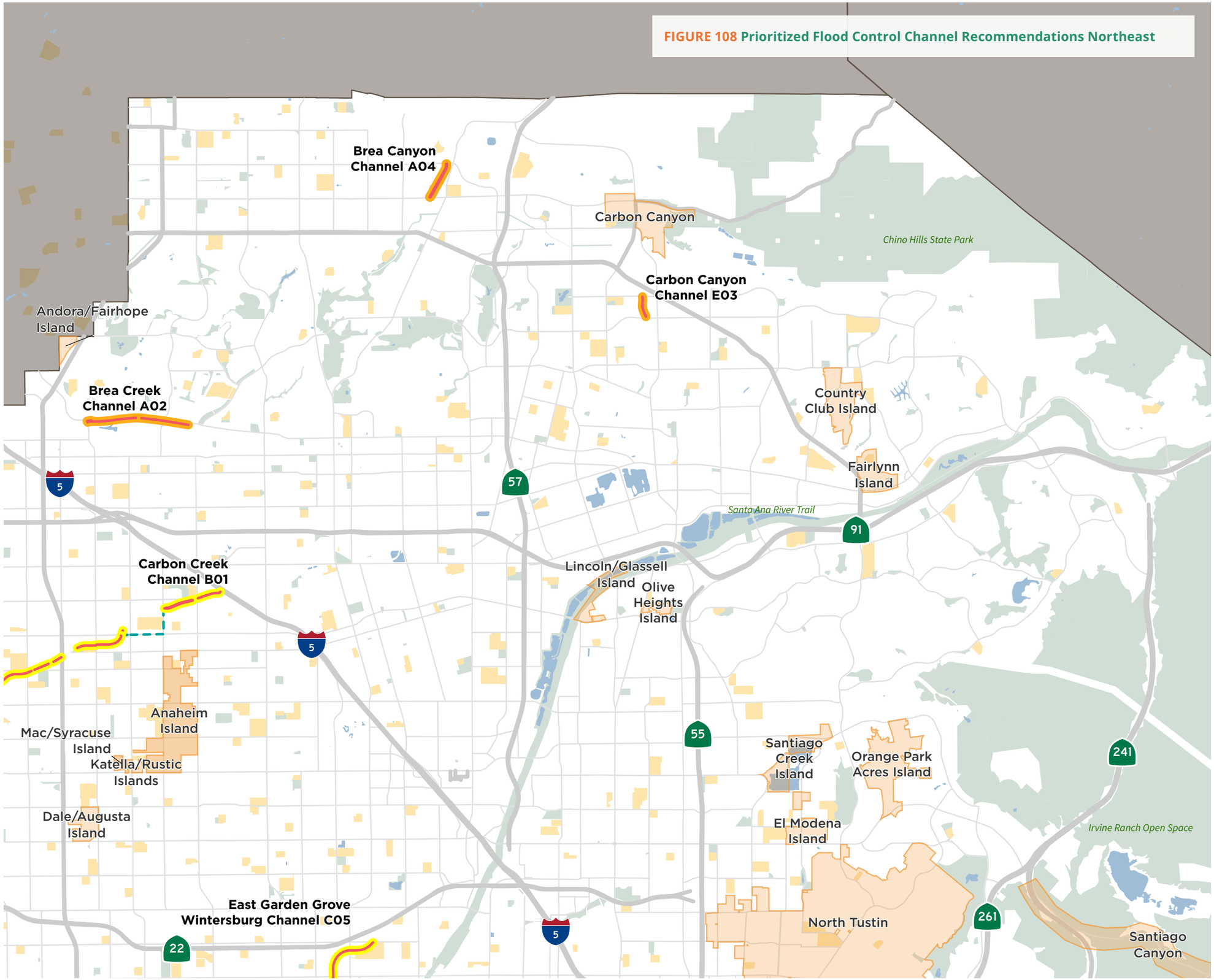
- Water Body
- School
- Park or Open Space
- County Boundary
- Focus Areas

OC Public Works

0 1.5 3 Miles

N

FIGURE 108 Prioritized Flood Control Channel Recommendations Northeast



Orange County Unincorporated Areas

Active Transportation Plan
NW Orange County

TOP 5 PRIORITIZED FLOOD CONTROL CHANNELS RECOMMENDATIONS

Shared-Use Path Along Flood Control Channel (Class I)

TIER 2 FLOOD CONTROL CHANNELS RECOMMENDATIONS

Shared-Use Path Along Flood Control Channel (Class I)

BASEMAP

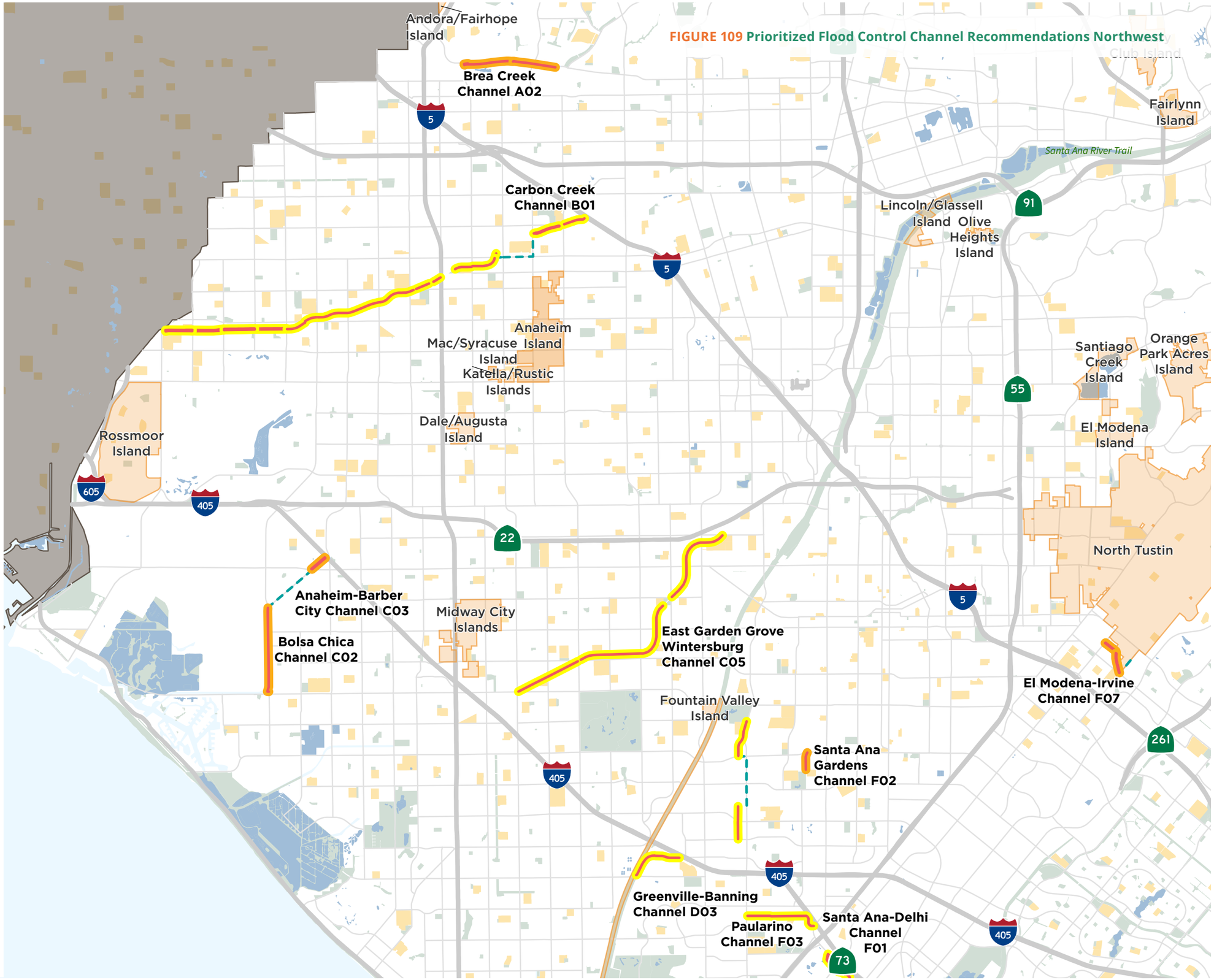
- Water Body
- School
- Park or Open Space
- County Boundary
- Focus Areas

OC Public Works
ORANGE COUNTY

0 1.5 3 Miles

N

FIGURE 109 Prioritized Flood Control Channel Recommendations Northwest



Orange County Unincorporated Areas

Active Transportation Plan
SW Orange County

TOP 5 PRIORITIZED FLOOD CONTROL CHANNELS RECOMMENDATIONS

Shared-Use Path Along Flood Control Channel (Class I)

TIER 2 FLOOD CONTROL CHANNELS RECOMMENDATIONS

Shared-Use Path Along Flood Control Channel (Class I)

BASEMAP

- Water Body
- School
- Park or Open Space
- County Boundary
- Focus Areas

OC Public Works

0 1.5 3 Miles

N

FIGURE 110 Prioritized Flood Control Channel Recommendations Southwest

East Garden Grove Wintersburg Channel C05

Fountain Valley Island

Santa Ana Gardens Channel F02

Greenville-Banning Channel D03

Paularino Channel F03

Santa Ana-Delhi Channel F01

Costa Mesa Island

El Modena-Irvine Channel F07

San Diego Creek Channel F05

Irvine Ranch Open Space

South-Shady Canyon Open Space Preserve

Crystal Cove State Park

Laguna Coast Wilderness Park

Santiago Canyon

405 55 5 241 73

Project Prioritization

Prioritization Project Summary

BICYCLE AND PEDESTRIAN RECOMMENDATIONS

The purpose of prioritization is to create a list of projects for implementation. The project prioritization list included in this Plan is flexible and should be used as a guideline to implementation. While one project may be ranked higher than another in this guide, funding may better align with a lower ranked project to help leverage local money with competitive, regional, state, and federal resources. The high-priority project list, and perhaps the overall project list may change over time as a result of changing bicycle and walking patterns, land use patterns, implementation constraints, and opportunities and the development of other transportation improvements.

Projects were separately prioritized by pedestrian projects and bicycle projects. **Table 50** shows the weighting of the prioritized pedestrian and bicycle projects. The recommendations for the flood control channels were prioritized using a different set of criteria (**page 246**).

PRIORITIZATION TIERS

After the prioritization process was completed, the pedestrian and bicycle projects were categorized into three tiers.

- **Tier 1**: These projects have the highest potential to encourage active transportation use. The County should focus on these projects for implementation.
- **Tier 2**: These have lower potential to increase active transportation use, but are still important in the project list.
- **Tier 3**: These projects have the least potential in increasing active transportation use, however should still be considered for implementation if funding opportunities arise.

While Tier 1 projects are the highest priority, if opportunities arise to implement a project in a lower Tier, the County should still pursue these opportunities.

RESULTS

Table 51- **Table 52** and **Figure 111**-**Figure 122** shows the prioritized list of bicycle and pedestrian projects.

TABLE 50 Prioritization Criteria for Pedestrian and Bicycle Recommendations

Criteria	Criteria Categories	Pedestrian Score	Bicycle Score
Collisions – Severity *Severity of pedestrian or bicyclist-related collisions in the last 10 years within 50 feet of street or 100 feet from intersection*	• Has fatal collisions • Has severe collisions • Other collision • No fatal or severe collisions	• 15 (maximum) • 5 • 2 • 0	• 15 (maximum) • 5 • 2 • 0
Collisions – Frequency *Number of pedestrian or bicyclist-related collisions in the last 10 years within 50 feet of street or 100 feet from intersection*	• More collisions • Fewer collisions • No collisions	• 15 (maximum) • 5 • 0	• 15 (maximum) • 5 • 0
Composite Demand *Average demand score of the 0.25 mile shed surrounding the recommendation*	• Percentile	• 10-0 based on percentile	• 10-0 based on percentile
CalEnviroScreen* *Highest index score of the 0.25 mile shed surrounding the recommendation.*	• Percentile	• 10-0 based on percentile	• 10-0 based on percentile
Roadway Type *The Functional Classification (FC) of the roadway taken from OCTA's Master Plan of Arterial Highways (MPAH) will be used to assign points.*	• Principal Arterial • Major or Primary Collector • Secondary or Collector • Other roadway or facility	• 15 (maximum) • 10 • 5 • 2	N/A
LTS *Level of Traffic Stress Score for bicyclists*	• LTS 4 (highest stress) • LTS 3 • LTS 2 • LTS 1 (lowest stress)	N/A	• 15 (maximum) • 5 • 2 • 0
Zero-car households *The highest zero-car household value from the most recent American Community Survey (ACS) block group level data from the 0.25 mile shed surrounding the recommendation.*	• Percentile	• 5-0 based on percentile	• 5-0 based on percentile
Community-Identified *Identified in public engagement within 50 feet of street or 100 feet from intersection*	• Identified by community • Not identified by community	• 10 (maximum) • 0	• 10 (maximum) • 0
Feasibility *Relative cost to other projects*	• Lowest cost • Medium cost • Highest cost	• 20 (maximum) • 10 • 0	• 10 (maximum) • 10 • 0
Connection to Regional BIkeways *Any portion of the recommendation is on, or connects to a studied OCTA regional bikeway*	• Less than 1/4 mi from bikeway • 1/4 to 1/2 mile from bikeway • More than 1/2 mile from bikeway	N/A	• 10 (maximum) • 5 • 2
	TOTAL	100 (Maximum)	100 (Maximum)

**While this Plan also considered the Healthy Places Index for recommendation planning purposes, it only uses CalEnviroScreen for prioritization. The State of California uses CalEnviroScreen to identify Disadvantaged Communities for funding purposes.*

TABLE 51 Prioritized Bicycle Projects

Street	From	To	Unincorporated Area	Proposed Bikeway Class	Total Score	Tier
Katella Ave	Magnolia St	Rustic Ln	Katella/Rustic	II	85	1
Bolsa Ave	Beach Blvd	Hunter Ln	Midway City	IIb	80	1
Newland St	Hazard Ave	Bolsa Ave	Midway City	IIb	77	1
Santiago Canyon Rd	Area Boundary	Area Boundary	Santiago Canyon	I	74	1
Holt Ave	17th St	Irvine Blvd	North Tustin	II	74	1
Silverado Canyon Rd	Black Star Canyon	End of Street	Silverado Canyon	IIIb	74	1
Dale St	Area Boundary	Orangewood Ave	Dale/Augusta	IIIb	73	1
Gilbert St	Ball Rd	Railroad near Pacific Pl	Anaheim	IIb	73	1
Antonio Pkwy	Area Boundary	Ortega Hwy	Ladera Ranch/ Las Flores/ Rancho Mission Viejo	IIb	72	1
Orangewood Ave	Mossler St	Pine Tree Ln	Dale/Augusta	III	71	1
Katella Ave	Berry Ave	Jean St	Anaheim	II	70	1
Cerritos Ave	Gilbert St	Brookhurst St	Anaheim	IIIb	69	1
Live Oak Canyon Rd	El Toro Rd	Plano Trabuco Rd	Trabuco Canyon	II	69	1
Harbor Blvd	Edinger Ave	Area Boundary	Fountain Valley	IV	68	1
McFadden Ave	Sugar Dr	Beach Blvd	Midway City	II	67	1
Bolsa Ave	Area Boundary	Area Boundary	Midway City	IIb	67	1
Nearing Dr	Chapman Ave	Orangewood Ave	Dale/Augusta	IIIb	67	1
Katella Ave	Mac Murray St	Area Boundary	Mac/Syracuse	II	67	1
Gilbert St	Orange Ave	South of Marian Way	Anaheim Island	IIIb	67	1
Hazard Ave	Area Boundary	Colonial Dr	Midway City	II	66	1
Orangewood Ave	Dale St	Mossler St	Dale/Augusta	II	66	1
Spring St	Esplanade St	Rancho Santiago Blvd	El Modena	II	65	1
Lincoln Ave	Batavia St	Berkeley St	Lincoln/Glassell Island	IIb	65	1
Hewes Ave	Foothill Blvd	17th St	North Tustin	III	64	1
University Dr	Irvine Ave	Santa Ana Ave	Costa Mesa	II	64	1
Orange Olive Rd	Area Boundary	Area Boundary	Olive Heights	IIb	64	1
Sienna Pkwy	Crown Valley Pkwy	Ethereal	Ladera Ranch	II	64	1
Hewes St	Pearl Ave	Spring St	El Modena	II	63	1
Hewes Ave	Fairhaven Ave	Foothill Blvd	North Tustin	II	63	1
Dodge Ave	Esplanade St	Hewes Ave	North Tustin	III	63	1

Prioritized Bicycle Projects Continued

Street	From	To	Unincorporated Area	Proposed Bikeway Class	Total Score	Tier
McFadden Ave	Jackson St	Van Buren St	Midway City	II	60	2
McFadden Ave	Monroe St	Wilson St	Midway City	II	60	2
Edinger Ave	Harbor Blvd	Area Boundary	Fountain Valley	IV	59	2
Magnolia Ave	Railroad	Deira Ln	Mac/Syracuse	IIb	59	2
Oso Parkway	Area Boundary	Area Boundary	Las Flores	IIb	59	2
Ball Rd	Gilbert St	Perdido St	Anaheim	IIb	58	2
Crown Valley Pkwy	Area Boundary	Area Boundary	Ladera Ranch	IIb	58	2
Fairhaven Ave	I-55	Hewes Ave	North Tustin	II	57	2
Prospect Ave	Sherbrook Dr	Vandenberg Ln	North Tustin	II	57	2
Broadway	Greenwich Ln	Brookhurst St	Anaheim	IIb	57	2
Foster Rd	Druid Ln	Los Alamitos Blvd	Rossmoor	IIIb	57	2
Meandering Tl	Antonio Pkwy	Oso Pkwy	Las Flores	IIb	57	2
Esperanza Rd	Fairlynn Blvd	Area Boundary	Fairlynn	II	57	2
Crawford Canyon Rd	Stoller Ln	Newport Blvd	North Tustin	II	56	2
Prospect Ave	Rainier Dr	Fairhaven Ave	North Tustin	III	55	2
Rossmoor Wy	Los Alamitos Blvd	Bostonian Dr	Rossmoor	IIb	55	2
Montecito Rd	Seal Beach Blvd	Seal Beach Blvd	Rossmoor	IIb	55	2
Hewes St	Walnut Ave	Bond Ave	El Modena	IIb	55	2
Daisy St	Sienna Pkwy	Sienna Pkwy	Ladera Ranch	II	53	2
Crawford Canyon Rd	Chapman Ave	Stoller Ln	El Modena	II	51	2
Red Hill Ave	Melvin Way	Kenneth Dr	North Tustin	II	51	2
Valencia Ave	Lambert Rd	Area Boundary	Carbon Canyon	I	51	2
Esplanade St	Spring St	Chapman Ave	El Modena	III	50	2
Prospect Ave	17th St	Rainier Dr	North Tustin	II	50	2
Irvine Blvd	Red Hill Ave	Dean St	North Tustin	II	49	2
Santiago Canyon Rd	Orange Park Blvd	Meads Ave	Urban-Suburban	IIb	49	2
Orange Park Blvd	Santiago Canyon Rd	Chapman Ave	Orange Park Acres	III	48	2
Gilbert St	Ball Rd	Railroad near Pacific Pl	Anaheim Island	IV	48	2
Cowan Heights Dr/ Skyline Dr/Lemon Heights Dr/ Lower Lake Dr	Newport Ave	Bent Tree Rd	North Tustin	II	48	2

Prioritized Bicycle Projects Continued

Street	From	To	Unincorporated Area	Proposed Bikeway Class	Total Score	Tier
Santa Ana Ave	University Ave	Mesa Dr	Costa Mesa	II	47	2
Dana Point Harbor Dr	Area Boundary	Area Boundary	Dana Point Harbor	IIb	47	2
Dorrance	O'Neill Dr	Sienna Pkwy	Ladera Ranch	III	46	3
Shakespeare Dr	Martha Anne Dr	Montecito Rd	Rossmoor	IIIb	46	3
Carbon Canyon Rd	Valencia Ave	Area Boundary	Carbon Canyon	IIb	45	3
Meandering Tl	Rolling Ridge	Oso Pkwy	Las Flores	IIb	43	3
Mesa Dr	Irvine Ave	Santa Ana Ave	Costa Mesa	IIIb	42	3
Ethereal/ Narrow Canyon	O'Neill Dr	Eco Cir	Ladera Ranch	IIIb	42	3
Windmill Ave	Antonio Pkwy	Sienna Pkwy	Ladera Ranch	II	42	3
Walnut Ave	Hewes St	Earlham St	El Modena	III	41	3
Center Ave	Esplanade St	Rancho Santiago Blvd	El Modena	III	40	3
Orange Ave	Greenwich St	Thistle Rd	Anaheim	IIIb	40	3
Orange Ave	Gilbert St	Rosebay St	Anaheim	IIIb	40	3
O'Neill Dr	Crown Valley Pkwy	Antonio Pkwy	Ladera Ranch	I	40	3
Los Patrones Pkwy	Cow Camp Rd	Oso Pkwy	Rancho Mission Viejo	I	40	3
Fairlynn Blvd	El Cajon Trail	Area Boundary	Fairlynn	IIIb	39	3
Avendale Blvd	Antonio Pkwy	Daisy St	Ladera Ranch	III	38	3
Meandering Tl	Oso Pkwy	Rolling Ridge	Las Flores	IIIb	38	3
Avenida La Pata	Ortega Hwy	County Boundary	Rancho Mission Viejo	I	38	3
Bostonian Dr	Martha Anne Dr	Montecito Rd	Rossmoor	IIIb	37	3
Modjeska Canyon Rd	Santiago Canyon Rd	End of Street	Modjeska Canyon	III	36	3
Bostonian Dr	Montecito Rd	Montecito Rd	Rossmoor	IIb	36	3
Silverado Canyon Rd	Santiago Canyon Rd	Black Star Canyon Rd	Rural	I	36	3
Villa Park Rd	Lemon St	Hewes St	Santiago Creek	IV	36	3
Lambert Rd	Valencia Ave	Area Boundary	Carbon Canyon	IIb	35	3
Yellowtail Dr	Montecito Rd	Druid Ln	Rossmoor	IIIb	31	3
Old Ranch Rd/Lynridge Dr	Kellogg Dr	Fairmount Blvd	Country Club	III	28	3
Trabuco Oaks Dr	Trabuco Canyon Rd	Area boundary	Trabuco Canyon	III	27	3
Cecil Pasture Rd	O'Neill Dr	Crown Valley Pkwy	Ladera Ranch	IIIb	26	3

Orange County Unincorporated Areas

Active Transportation Plan

Countywide Recommendations

TIER 1 PRIORITIZED BICYCLE RECOMMENDATIONS

- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway/ Cycle Track (Class IV)

TIER 2 & 3 PRIORITIZED BICYCLE RECOMMENDATIONS

- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway/ Cycle Track (Class IV)

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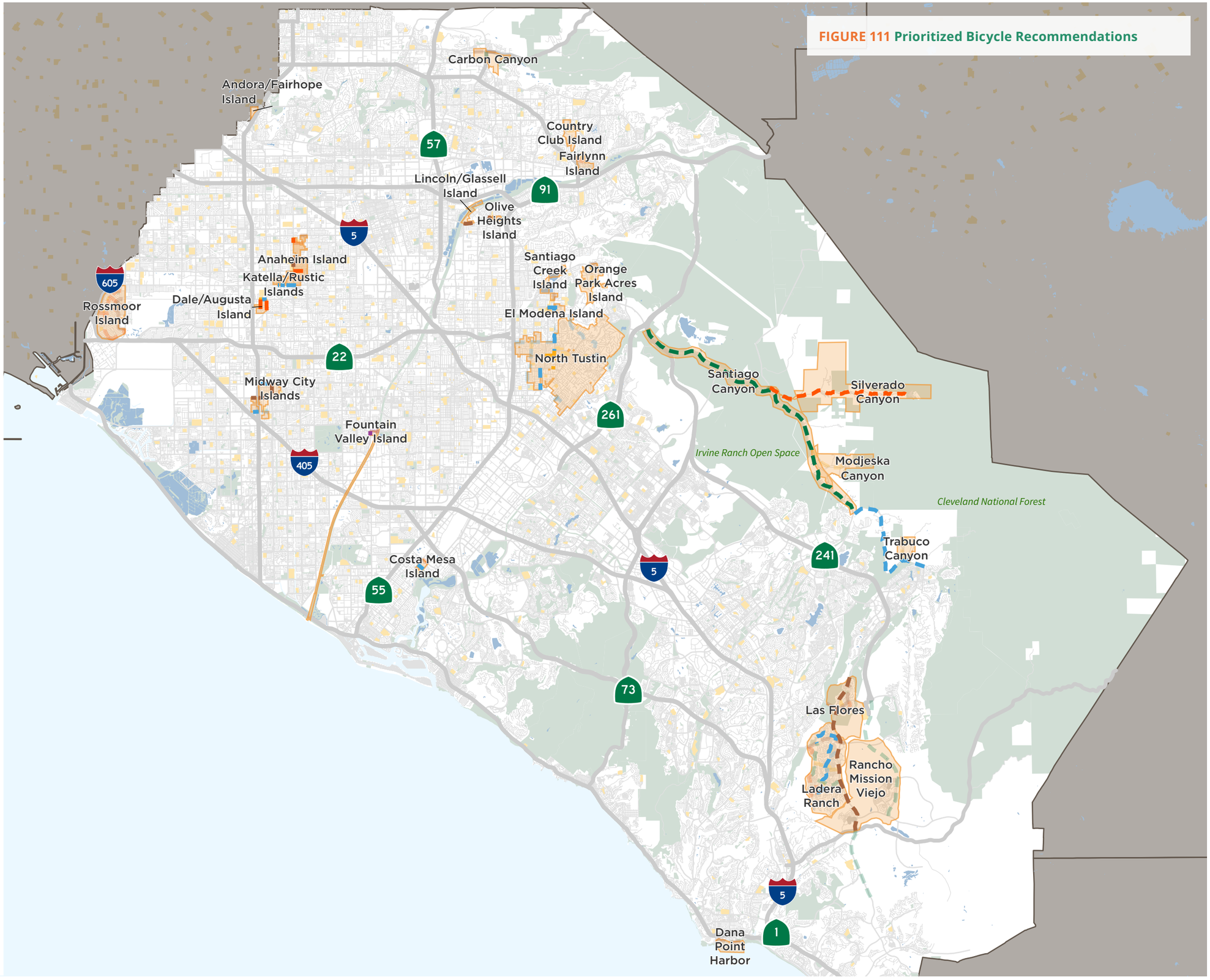
- Water Body
- School
- Park or Open Space
- County Boundary
- Focus Areas

ORANGE COUNTY OC Public Works

0 3.5 7 Miles

N

FIGURE 111 Prioritized Bicycle Recommendations



Orange County Unincorporated Areas

Active Transportation Plan

District 1 Recommendations

TIER 1 PRIORITIZED BICYCLE RECOMMENDATIONS

- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway/ Cycle Track (Class IV)

TIER 2 & 3 PRIORITIZED BICYCLE RECOMMENDATIONS

- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway/ Cycle Track (Class IV)

BASEMAP

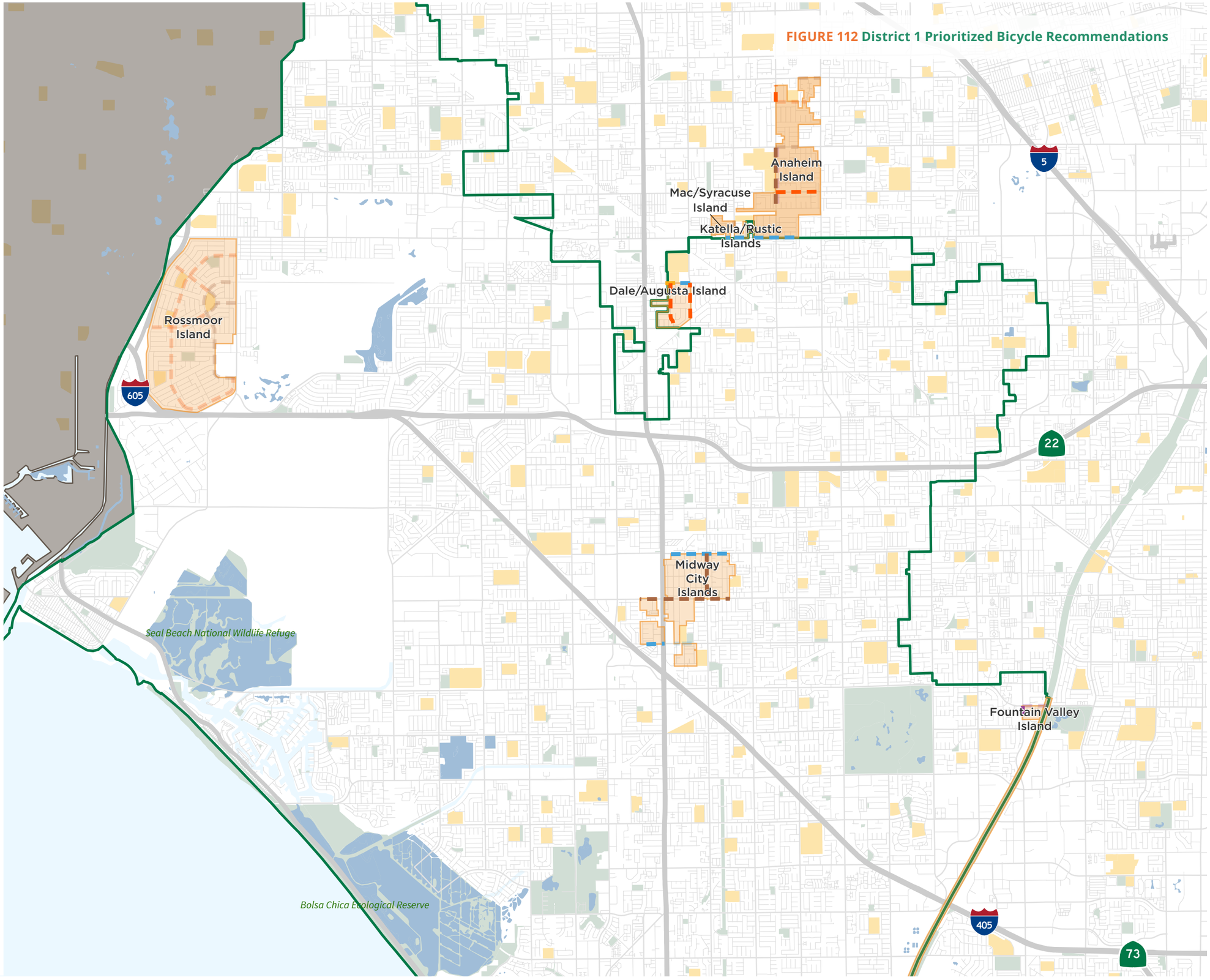
- Water Body
- School
- Park or Open Space
- County Boundary
- Focus Areas
- District 1

ORANGE COUNTY OC Public Works

0 1 2 Miles

N

FIGURE 112 District 1 Prioritized Bicycle Recommendations



Orange County Unincorporated Areas

Active Transportation Plan

District 2 Recommendations

TIER 1 PRIORITIZED BICYCLE RECOMMENDATIONS

- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway/ Cycle Track (Class IV)

TIER 2 & 3 PRIORITIZED BICYCLE RECOMMENDATIONS

- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway/ Cycle Track (Class IV)

BASEMAP

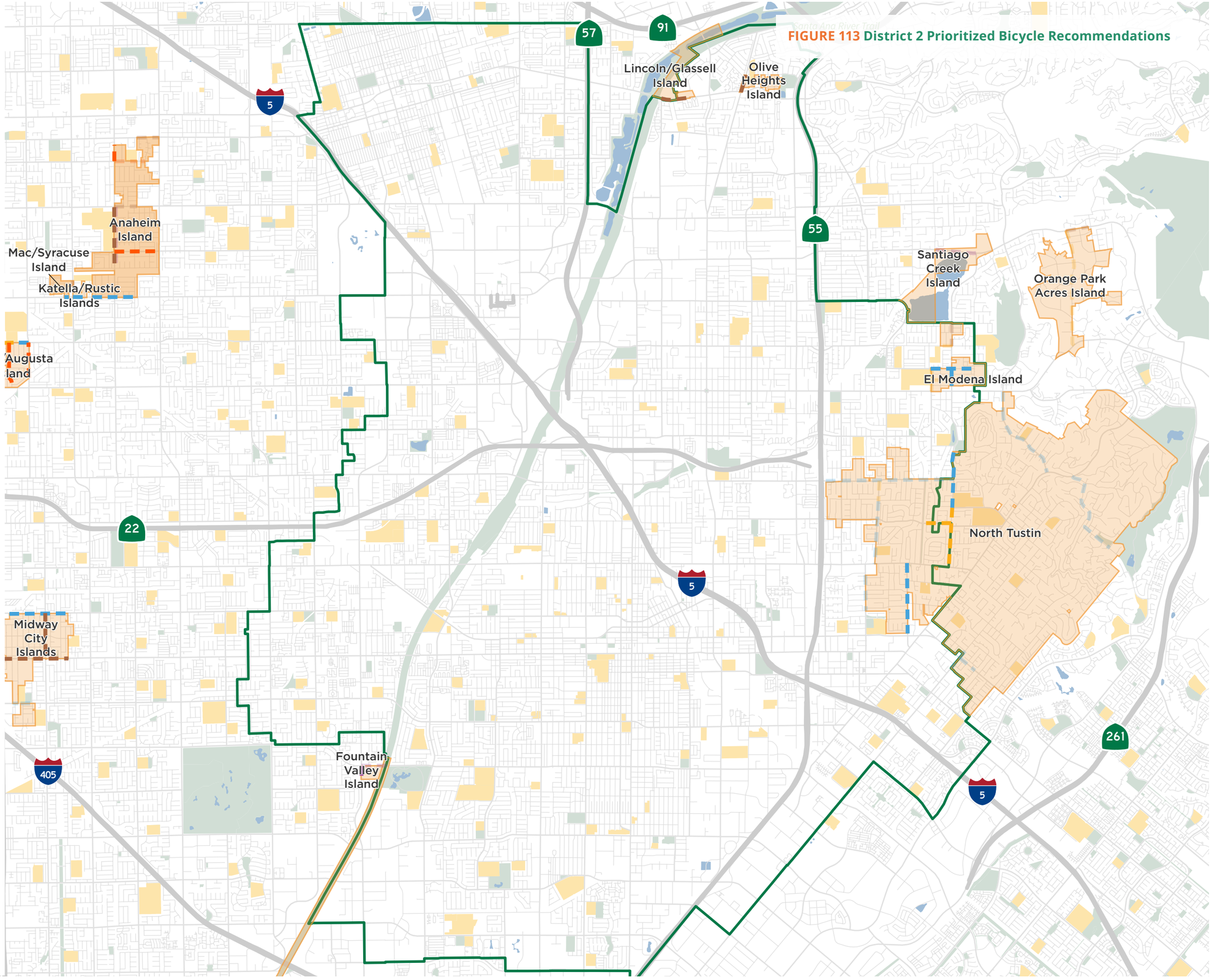
- Water Body
- School
- Park or Open Space
- County Boundary
- Focus Areas
- District 2

OC Public Works
ORANGE COUNTY

0 1 2 Miles

N

FIGURE 113 District 2 Prioritized Bicycle Recommendations



Orange County Unincorporated Areas

Active Transportation Plan

District 3 Recommendations

TIER 1 PRIORITIZED BICYCLE RECOMMENDATIONS

- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway/ Cycle Track (Class IV)

TIER 2 & 3 PRIORITIZED BICYCLE RECOMMENDATIONS

- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway/ Cycle Track (Class IV)

BASEMAP

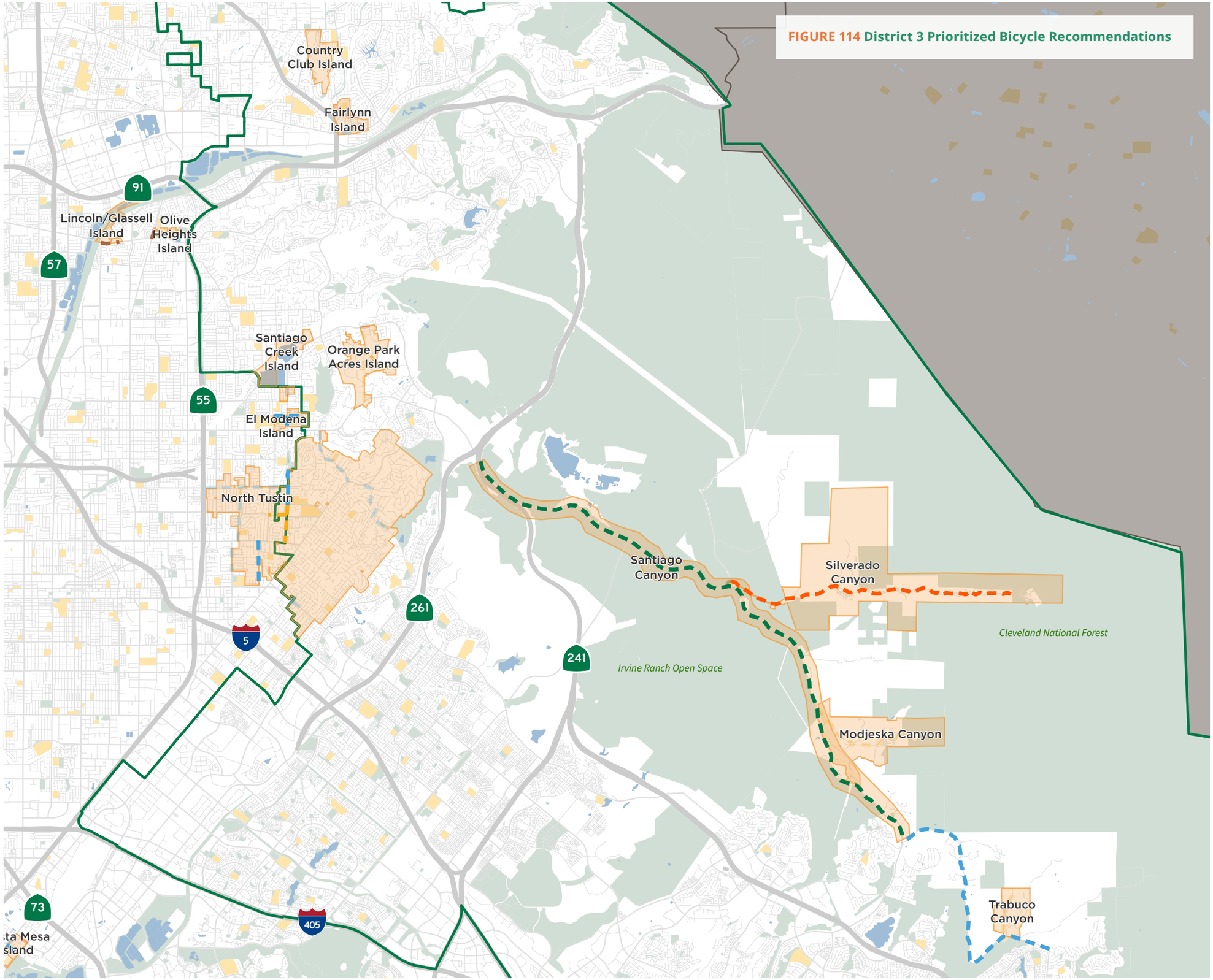
- Water Body
- School
- Park or Open Space
- County Boundary
- Focus Areas
- District 3

ORANGE COUNTY OC Public Works

0 1.75 3.5 Miles

N

FIGURE 114 District 3 Prioritized Bicycle Recommendations



Orange County Unincorporated Areas

Active Transportation Plan

District 4 Recommendations

TIER 1 PRIORITIZED BICYCLE RECOMMENDATIONS

- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway/ Cycle Track (Class IV)

TIER 2 & 3 PRIORITIZED BICYCLE RECOMMENDATIONS

- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway/ Cycle Track (Class IV)

BASEMAP

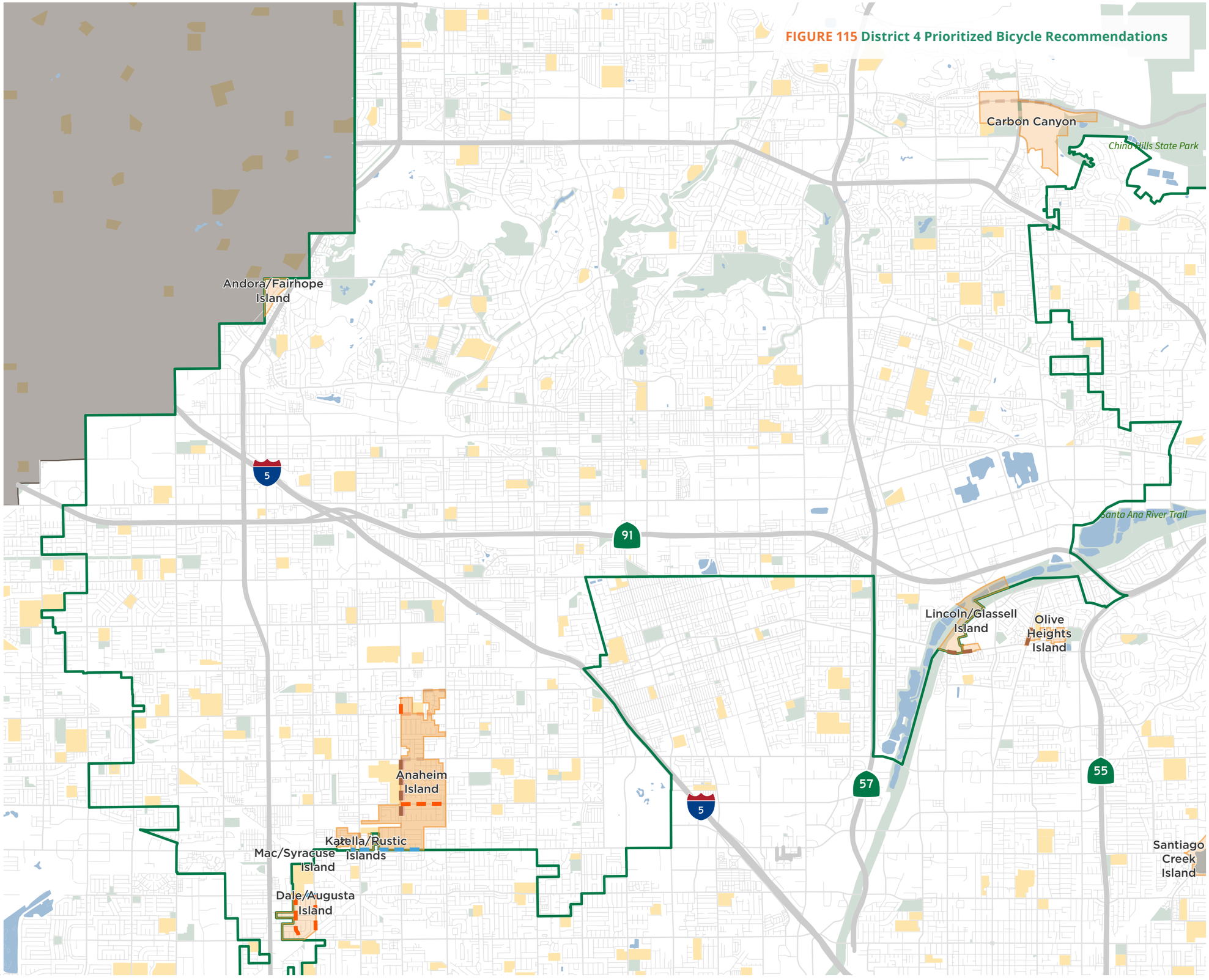
- Water Body
- School
- Park or Open Space
- County Boundary
- Focus Areas
- District 4

OC Public Works

0 1 2 Miles

N

FIGURE 115 District 4 Prioritized Bicycle Recommendations



Orange County Unincorporated Areas

Active Transportation Plan

District 5 Recommendations

TIER 1 PRIORITIZED BICYCLE RECOMMENDATIONS

- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway/ Cycle Track (Class IV)

TIER 2 & 3 PRIORITIZED BICYCLE RECOMMENDATIONS

- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway/ Cycle Track (Class IV)

BASEMAP

- Water Body
- School
- Park or Open Space
- County Boundary
- Focus Areas
- District 5

ORANGE COUNTY PublicWorks

0 1.75 3.5 Miles

N

FIGURE 116 District 5 Prioritized Bicycle Recommendations

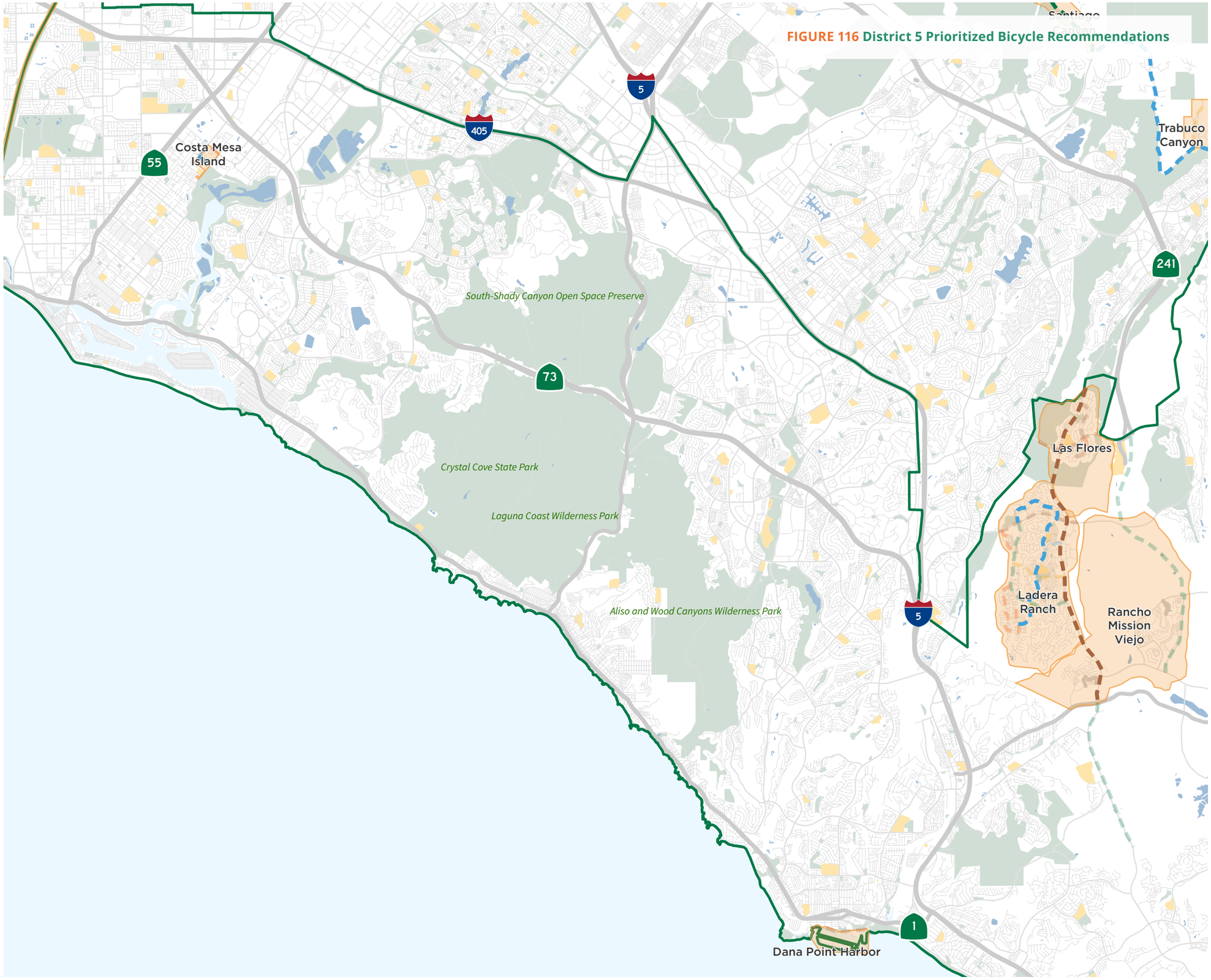


TABLE 52 Prioritized Pedestrian Projects

Cross Street	Cross Street	Unincorporated Area	Proposed Pedestrian Recommendations	Total Score	Tier
McFadden Ave	Beach Blvd	Midway City	Pedestrian Refuge Island; curb extensions; sidewalk improvements	78	1
Guinida Ln	Gilbert St	Anaheim	Curb extensions; high visibility crosswalks; pedestrian scale lighting	74	1
Bolsa Ave	Jackson St	Midway City	Pedestrian Refuge Island; curb extensions; high visibility crosswalks; pedestrian scale lighting	73	1
Edinger Ave	Santa Ana River Trail	Fountain Valley	Enhanced signage	64	1
Center Ave	Esplanade St	El Modena	High Visibility Crosswalks	61	1
Esplanade St	Chapman Ave	El Modena	High visibility crosswalks; leading pedestrian intervals	61	1
University Dr	Irvine Ave	Costa Mesa	Curb extensions; sidewalk improvements	60	1
Wallingsford Rd	Hedwig Rd	Rossmoor	Curb extensions; high visibility crosswalks; enhanced pavement markings and signage	60	1
Esplanade St	Spring St	El Modena	High visibility crosswalks	59	1
Adams St	Bolsa Ave	Midway City	Sidewalk improvements	58	1
Spring St	Hewes St	El Modena	High visibility crosswalks; corner radius reduction	56	1
Oso Pkwy	Antonio Pkwy	Las Flores	High visibility crosswalks; signal timing improvements; curb extensions; slip lane modification	55	1
Gilbert St	Katella Ave	Anaheim	Pedestrian refuge island; corner turn radius reductions; signal timing improvements; high visibility crosswalks	54	1
Palm Ave	Buena Vista Ave	Olive Heights	Enhanced pavement markings and signage; sidewalk improvements	54	1
Newland St	Madison Ave	Midway City	High visibility crosswalks	53	1
Wembley Rd	Shakespeare Dr	Rossmoor	Enhanced pavement markings and signage; high visibility crosswalks	53	1
Pacific Pl	Gilbert St	Anaheim	Pedestrian hybrid beacon; high visibility crosswalks	51	1
Bradbury Rd	Montecito Rd	Rossmoor	Enhanced pavement markings and signage; curb extensions; high visibility crosswalks	50	1
Prospect Ave	17th St	North Tustin	High visibility crosswalks	50	1
Esplanade Ave	17th St	North Tustin	Curb extensions; high visibility crosswalks	49	1
Newport Ave	La Colina Dr	North Tustin	High visibility crosswalks; curb ramps; curb extension	49	1
Gilbert St	Cerritos Ave	Anaheim	Corner radius reductions; signal timing improvements	49	1
Montecito Rd	Bostonian Dr	Rossmoor	Enhanced pavement markings and signage; curb extensions; high visibility crosswalks	49	1
Mesa Dr	Santa Ana Ave	Costa Mesa	High visibility crosswalks; curb extensions	48	1
Meandering Tl	Oso Pkwy	Las Flores	High visibility crosswalks	47	1
Mesa Drive	Irvine Ave/ Santa Ana Ave	Costa Mesa	Sidewalk on east side of street	47	1
La Colina Dr	Newport Ave/ Red Hill Ave	North Tustin	Sidewalk on both sides of street	47	1
Hewes St	Center Ave	El Modena	High visibility crosswalks	46	1
Dodge Ave	Eton Pl	North Tustin	Curb extensions; high visibility crosswalks; pedestrian hybrid beacon	46	1

Prioritized Pedestrian Projects Continued

Cross Street	Cross Street	Unincorporated Area	Proposed Pedestrian Recommendations	Total Score	Tier
Mossler St	Orangewood Ave	Dale/ Augusta	High visibility crosswalks; enhanced signage	46	1
Walnut Ave	Hewes St	El Modena	High visibility crosswalks; enhanced signage	46	1
Rosebay St	Stonybrook Dr	Anaheim	Traffic calming	45	1
Grassy Knoll Ln	Meandering Tl	Las Flores	Traffic calming; pedestrian hybrid beacon	45	1
Midway Pl	Bolsa Ave	Midway City	High visibility crosswalks; pedestrian refuge island; curb extensions	45	1
Oceanview Ave	Buena Vista Ave	Olive Heights	Enhanced pavement markings and signage; curb ramps; sidewalk improvements	44	1
Chanticleer Rd	Gilbert St	Anaheim	Enhanced signage	44	1
Magnolia St	Katella Ave	Katella/Rustic	High visibility crosswalks	43	2
Irvine Ave	Mesa Dr	Costa Mesa	High visibility crosswalk; curb extensions	43	2
Syracuse Ave	Magnolia St	Mac/Syracuse	Pedestrian refuge island; high visibility crosswalk	41	2
Copa De Oro Dr	Montecito Rd	Rossmoor	Enhanced pavement markings and signage; curb extensions; high visibility crosswalk	40	2
Gertrude Dr	Foster Rd	Rossmoor	Enhanced pavement markings and signage; curb ramps	40	2
Batavia St	Lincoln Ave	Lincoln/Glassell Island	High visibility crosswalk; curb ramp	40	2
Prospect Ave	Rainier Dr	North Tustin	Pedestrian hybrid beacon; curb ramps	39	2
Orange Park Blvd	Chapman Ave	Orange Park Acres	High visibility crosswalks; curb extensions; curb ramps	39	2
Carbon Canyon Rd	Valencia Ave	Carbon Canyon	High visibility crosswalks	39	2
Harbor Blvd	Edinger Ave	Fountain Valley	High visibility crosswalks; signal timing improvements	39	2
Hewes St	Vine Ave	El Modena	Pedestrian hybrid beacon; high visibility crosswalks	38	2
Bolsa Ave	Pacific St	Midway City	High visibility crosswalks; pedestrian scale lighting; sidewalk improvements; curb extensions	38	2
El Camino Lane	Newport Ave	North Tustin	High visibility crosswalks; pedestrian refuge island; curb extensions; curb ramps	38	2
O'Neill Dr	Crown Valley Pkwy	Ladera Ranch	High visibility crosswalks; curb ramps; curb extensions; pedestrian refuge island; signal timing improvements	38	2
Gertrude Dr	Kensington Rd	Rossmoor	Enhanced pavement markings and signage; curb ramps; high visibility crosswalks; pedestrian hybrid beacons	38	2
Meandering Tl	Antonio Pkwy	Las Flores	High visibility crosswalks; pedestrian refuge island; curb ramps; curb extensions; signal timing improvements	38	2
Yorba St	Rainier Dr	North Tustin	High visibility crosswalks; pedestrian hybrid beacon; curb ramps; curb extensions	37	2
Windmill Ave	Snapdragon St	Ladera Ranch	High visibility crosswalks; curb ramps; pedestrian hybrid beacon	37	2
Silverado Canyon Rd	Ladd Canyon Rd	Silverado Canyon	Enhanced pavement markings and signage	37	2
Wass St	Elizabeth Wy	North Tustin	High visibility crosswalks	37	2
Lambert Rd	Area Boundary/ Valencia Ave	Carbon Canyon	Sidewalk on south side of street	36	2

Prioritized Pedestrian Projects Continued

Cross Street	Cross Street	Unincorporated Area	Proposed Pedestrian Recommendations	Total Score	Tier
Donnis Rd	Hedwig Rd	Rossmoor	Pedestrian hybrid beacon; enhanced pavement markings, curb extensions	36	2
Mainway Dr	Montecito Rd	Rossmoor	Enhanced pavement markings and signage; curb extensions; high visibility crosswalks	35	2
Bond Ave	Hewes St	El Modena	High visibility crosswalks; enhanced signage; curb extensions	35	2
Fairlynn Blvd	Esperanza Rd	Fairlynn	High visibility crosswalks; pedestrian scale lighting	34	2
Crown Valley Pkwy	Antonio Pkwy	Ladera Ranch	High visibility crosswalks; curb ramps; curb extensions; signal timing improvements; pedestrian refuge island	34	2
Loring Dr	Montecito Rd	Rossmoor	Enhanced pavement markings and signage; curb extensions; pedestrian hybrid beacon	34	2
Chiquita Canyon Dr	Cow Camp Rd	Rancho Mission Viejo	High visibility crosswalk; enhanced signage; curb extensions	34	2
Dana Point Harbor Dr	Golden Lantern	Dana Point Harbor	High visibility crosswalks; curb extension	33	2
Silverwood Dr	Foster Rd	Rossmoor	Enhanced pavement markings and signage; curb extensions; high visibility crosswalks	32	2
Glenknoll Dr	Larkridge Dr	Fairlynn	High visibility crosswalks	32	2
Dodge Ave	Tea House St	North Tustin	Pedestrian hybrid beacon; curb extensions; curb ramps	31	2
Dale St	Hopi Rd	Dale/ Augusta	High visibility crosswalks; curb extensions	31	2
Dale St	Orangewood Ave	Dale/ Augusta	High visibility crosswalks; curb extensions	31	2
Olive Ave	Buena Vista Ave	Olive Heights	Enhanced pavement markings and signage; high visibility crosswalks; curb ramps; sidewalk improvements	31	2
Riverbend Pwy	Lincoln Ave	Lincoln/Glassell Island	Pedestrian hybrid beacon; pedestrian refuge island; high visibility crosswalks	31	2
In front of Arroyo Elementary	Coronel Rd	North Tustin	Enhanced signage	31	2
Dodge Ave	Esplanade Ave/ 690′ east of Eton Pl	North Tustin	Sidewalk on north side of street	31	2
Dodge Ave	Whembly Dr	North Tustin	Pedestrian hybrid beacon; curb extensions; curb ramps	30	3
17th St	Holt Ave	North Tustin	High visibility crosswalks; curb extensions; curb ramps; pedestrian refuge island	29	3
Red Hill Ave	La Colina Dr	North Tustin	High visibility crosswalks; curb ramps; curb extensions	29	3
Roanoke Dr	O'Neill Dr	Ladera Ranch	High visibility crosswalks; curb ramp; curb extension; pedestrian hybrid beacon; traffic calming	29	3
Rainbow Dr	Browning Ave	North Tustin	Curb ramp; enhanced signage	29	3
Harriet Ln	Perdido St	Anaheim	Curb extension; high visibility crosswalk; pedestrian scale lighting	28	3
Perdido St	Bienville Ave	Anaheim	Curb extension; high visibility crosswalk; pedestrian scale lighting	28	3
Mercado Ave	Andora Dr	Andora/Fairhope	High visibility crosswalks	28	3
Delafield Dr	Fairhope Dr	Andora/Fairhope	High visibility crosswalks	28	3
Morning Tl	Oso Pkwy	Las Flores	High visibility crosswalks; curb ramps	28	3
Sweetwater	Antonio Pkwy	Las Flores	High visibility crosswalks; pedestrian refuge island; pedestrian signal improvements; curb ramps	28	3

Prioritized Pedestrian Projects Continued

Cross Street	Cross Street	Unincorporated Area	Proposed Pedestrian Recommendations	Total Score	Tier
Walnut Ave	Earlham St	El Modena	Curb extensions; curb ramps	28	3
Bostonian Dr	Foster Rd	Rossmoor	Enhanced pavement markings and signage; curb extensions	26	3
Brenan Way	Vanderlip Ave	North Tustin	Pedestrian hybrid beacon	26	3
Fairhaven Ext	Barrett Ln/ Circula Panorama Pl	North Tustin	Sidewalk	26	3
Guinida Ln	Perdido St	Anaheim	Pedestrian scale lighting; high visibility crosswalks	25	3
Old Ranch Rd	Kellogg Dr	Country Club	Curb extensions	25	3
Rancho Santiago Blvd	Spring St	El Modena	High visibility crosswalks; curb ramps	24	3
Esplanade Ave	Dodge Ave	North Tustin	Curb ramps; curb extensions; high visibility crosswalks	24	3
Orange Park Blvd	Santiago Canyon Rd	Orange Park Acres	High visibility crosswalks; curb ramps	24	3
La Colina Dr	Browning Ave	North Tustin	High visibility crosswalks	24	3
Foothill Blvd	Hewes Ave	North Tustin	Curb extensions; traffic calming	23	3
Lullaby Ln	Perdido St	Anaheim	High visibility crosswalks; pedestrian scale lighting	23	3
Snapdragon St	Sellas Rd	Ladera Ranch	Pedestrian hybrid beacon; curb ramps; curb extensions	23	3
Hewes St	Villa Park Rd	Santiago Creek	Pedestrian refuge island; high visibility crosswalks; traffic calming	23	3
Crosswalk near Kitterman Dr	Silverado Canyon Rd	Silverado Canyon	Pedestrian hybrid beacon; enhanced pavement markings and signage	22	3
Coto De Caza Dr	Oso Pkwy	Rancho Mission Viejo	Improved intersection	20	3
Santiago Canyon Rd	Silverado Canyon Rd	Santiago Canyon	Traffic calming	19	3
Bostonian Dr	Rossmoor Way	Rossmoor	Enhanced pavement markings and signage; curb extensions	19	3
Crawford Canyon Rd	Willis Ln/ Newport Blvd	North Tustin	Sidewalk	19	3
Fairmount Blvd	Old Ranch Rd	Country Club	High visibility crosswalks; curb ramps	18	3
La Colina Dr	Red Hill Ave	North Tustin	Pedestrian hybrid beacon	17	3
Red Hill Ave	Windhill Wy/ Kensing Ln	North Tustin	Sidewalk	17	3
Avendale Blvd	Sellas Rd	Ladera Ranch	High visibility crosswalk; curb ramps; curb extensions	16	3
La Loma Dr	Red Hill Ave	North Tustin	High visibility crosswalks; curb ramps; pedestrian scale lighting	7	3
Covenant Hills Dr	Sienna Pkwy	Ladera Ranch	High visibility crosswalk; curb ramps curb extensions	7	3

Orange County Unincorporated Areas

Active Transportation Plan

Countywide Recommendations

TIER 1 PRIORITIZED PEDESTRIAN RECOMMENDATIONS

- Pedestrian Road Improvements
- Rural Road Improvement
- Sidewalk Recommendations

TIER 2 & 3 PRIORITIZED PEDESTRIAN RECOMMENDATIONS

- Pedestrian Improvement
- Rural Road Improvement
- Sidewalk Recommendations

BASEMAP

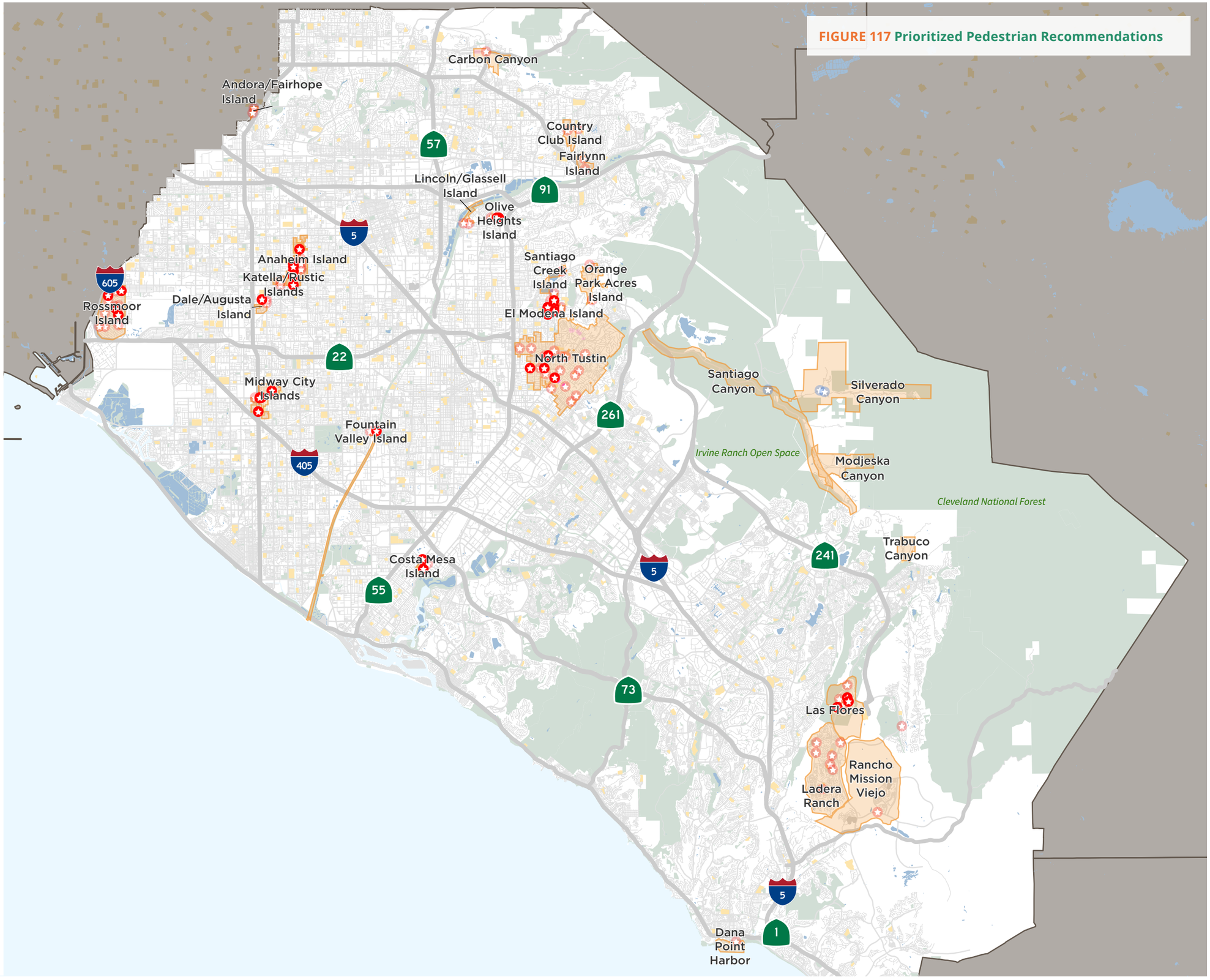
- Water Body
- School
- Park or Open Space
- County Boundary
- Focus Areas

OC Public Works

0 3.5 7 Miles

N

FIGURE 117 Prioritized Pedestrian Recommendations



Orange County Unincorporated Areas

Active Transportation Plan

District 1 Recommendations

TIER 1 PRIORITIZED PEDESTRIAN RECOMMENDATIONS

- Pedestrian Road Improvements
- Rural Road Improvement
- Sidewalk Recommendations

TIER 2 & 3 PRIORITIZED PEDESTRIAN RECOMMENDATIONS

- Pedestrian Improvement
- Rural Road Improvement
- Sidewalk Recommendations

BASEMAP

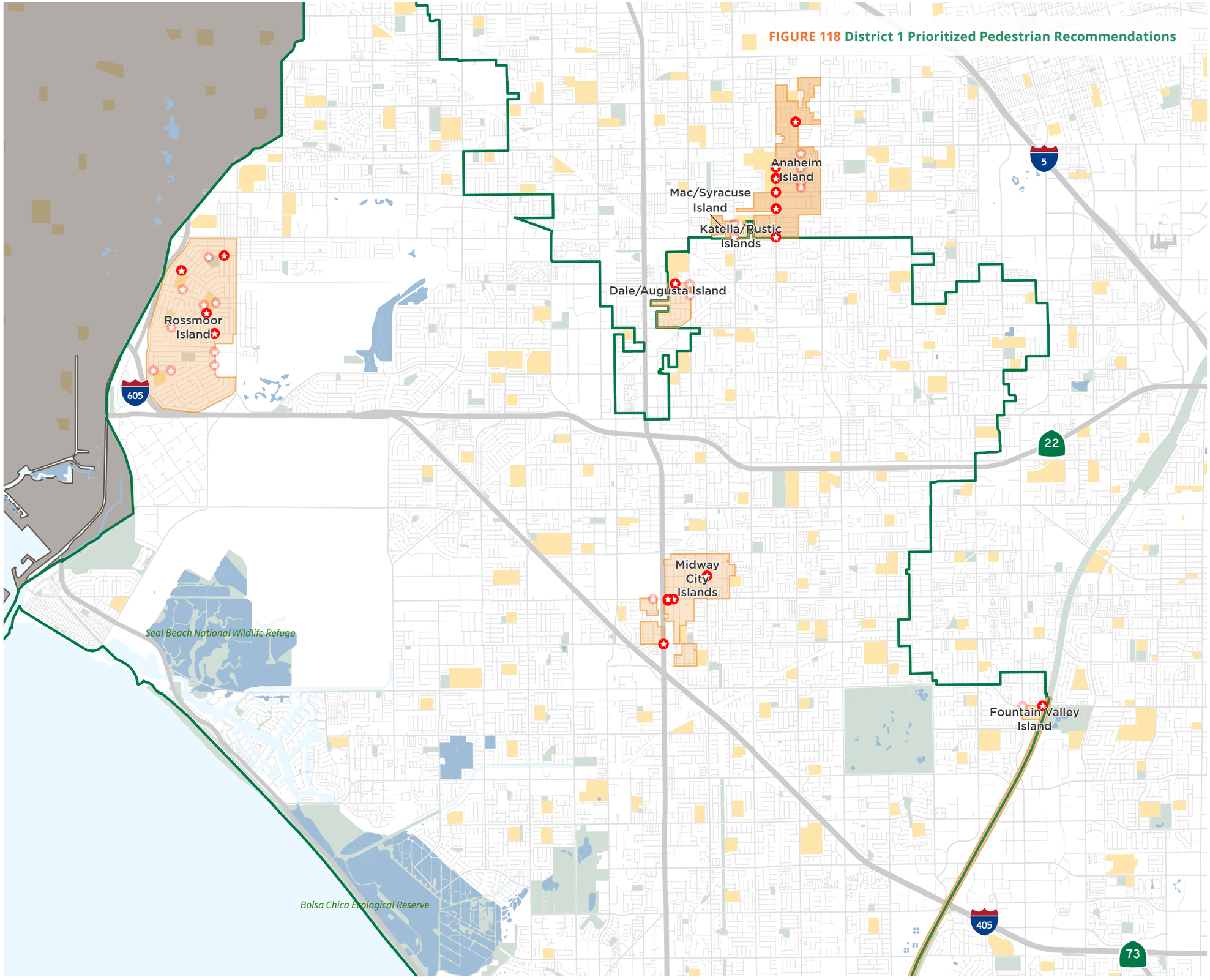
- Water Body
- School
- Park or Open Space
- County Boundary
- Focus Areas
- District 1

ORANGE COUNTY OC Public Works

0 1 2 Miles

N

FIGURE 118 District 1 Prioritized Pedestrian Recommendations



Orange County Unincorporated Areas

Active Transportation Plan

District 2 Recommendations

TIER 1 PRIORITIZED PEDESTRIAN RECOMMENDATIONS

- Pedestrian Road Improvements
- Rural Road Improvement
- Sidewalk Recommendations

TIER 2 & 3 PRIORITIZED PEDESTRIAN RECOMMENDATIONS

- Pedestrian Improvement
- Rural Road Improvement
- Sidewalk Recommendations

BASEMAP

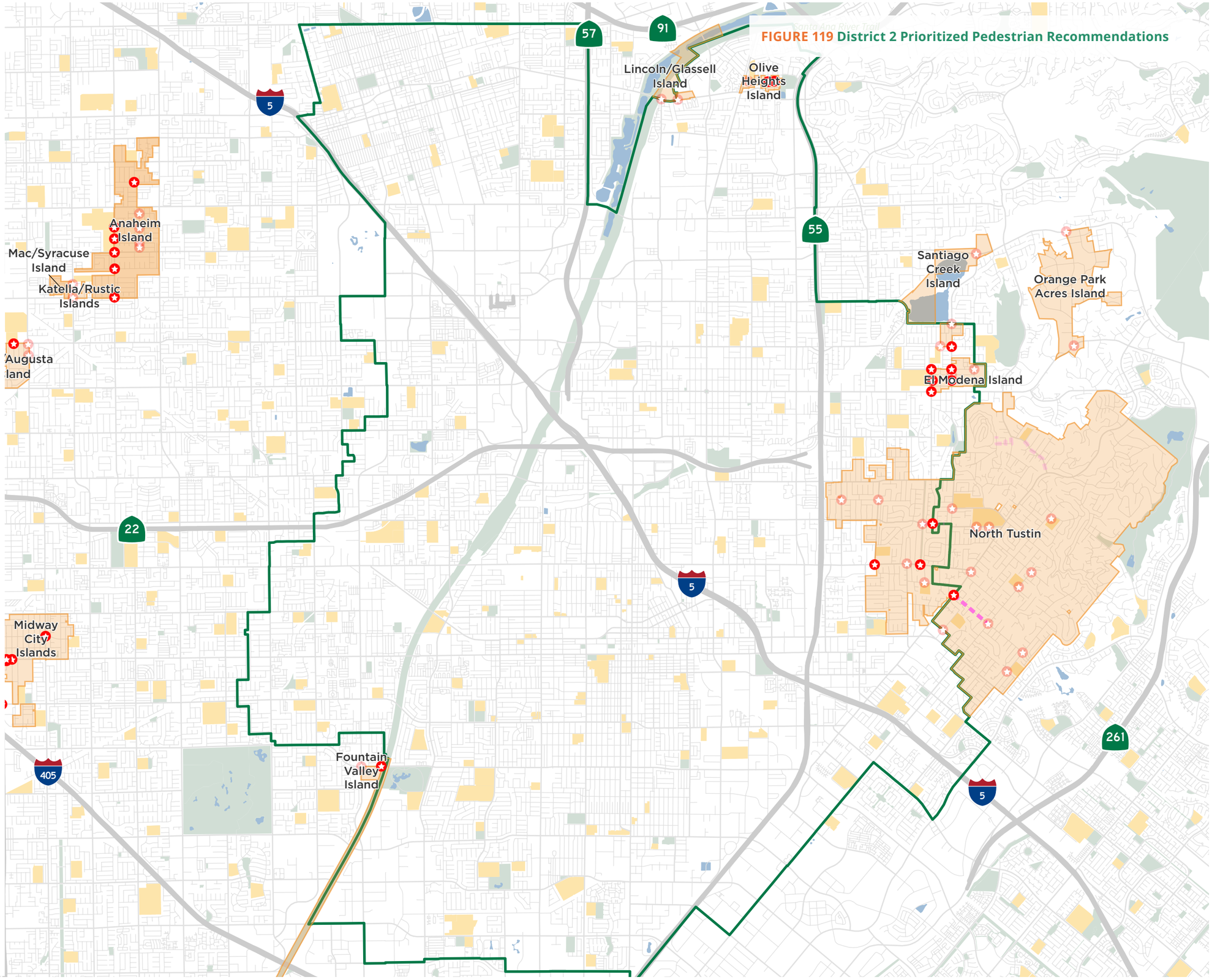
- Water Body
- School
- Park or Open Space
- County Boundary
- Focus Areas
- District 2

ORANGE COUNTY OC Public Works

0 1 2 Miles

N

FIGURE 119 District 2 Prioritized Pedestrian Recommendations



Orange County Unincorporated Areas

Active Transportation Plan

District 3 Recommendations

TIER 1 PRIORITIZED PEDESTRIAN RECOMMENDATIONS

- Pedestrian Road Improvements
- Rural Road Improvement
- Sidewalk Recommendations

TIER 2 & 3 PRIORITIZED PEDESTRIAN RECOMMENDATIONS

- Pedestrian Improvement
- Rural Road Improvement
- Sidewalk Recommendations

BASEMAP

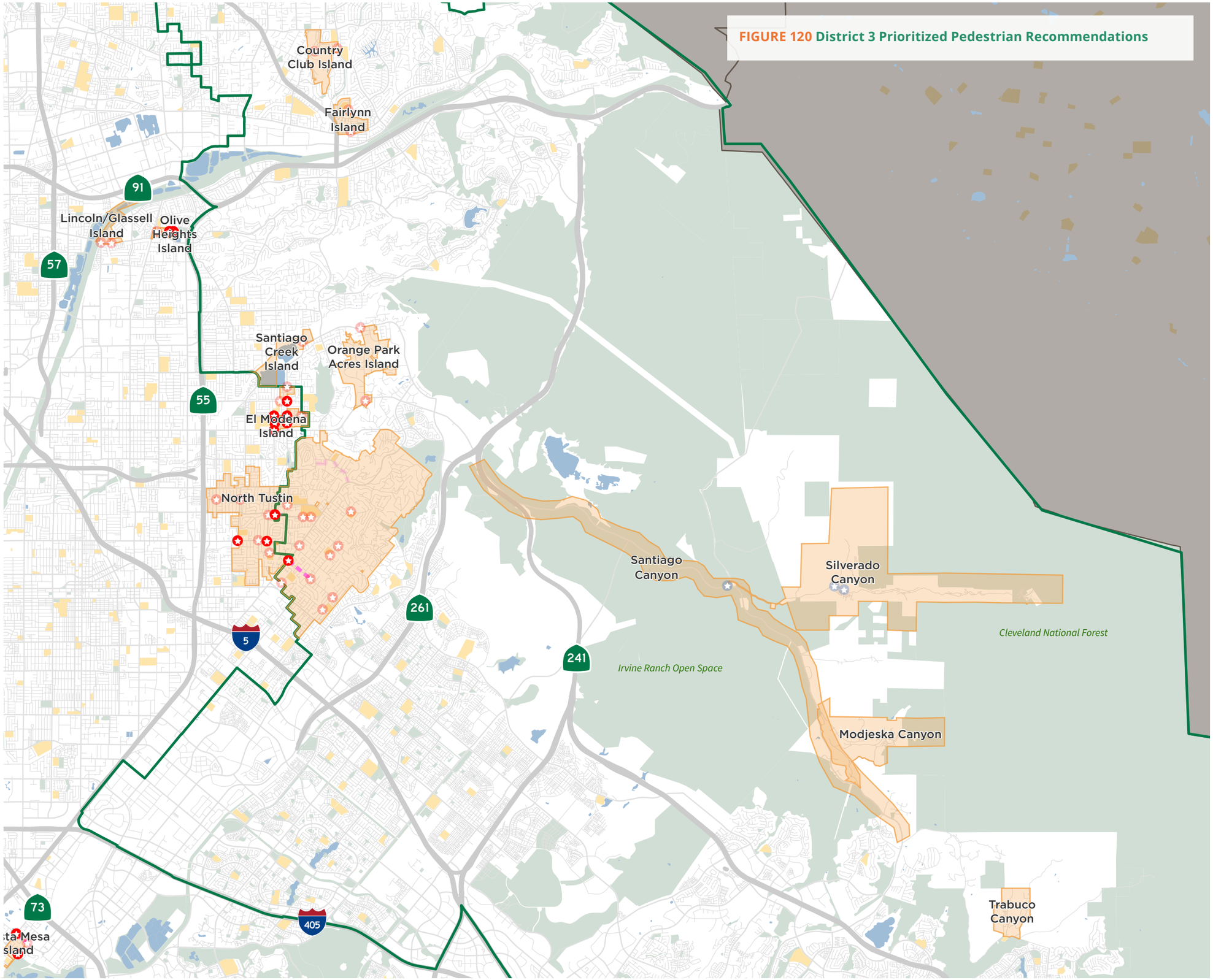
- Water Body
- School
- Park or Open Space
- County Boundary
- Focus Areas
- District 3

ORANGE COUNTY OC Public Works

0 1.75 3.5 Miles

N

FIGURE 120 District 3 Prioritized Pedestrian Recommendations



Orange County Unincorporated Areas

Active Transportation Plan

District 4 Recommendations

TIER 1 PRIORITIZED PEDESTRIAN RECOMMENDATIONS

- Pedestrian Road Improvements
- Rural Road Improvement
- Sidewalk Recommendations

TIER 2 & 3 PRIORITIZED PEDESTRIAN RECOMMENDATIONS

- Pedestrian Improvement
- Rural Road Improvement
- Sidewalk Recommendations

BASEMAP

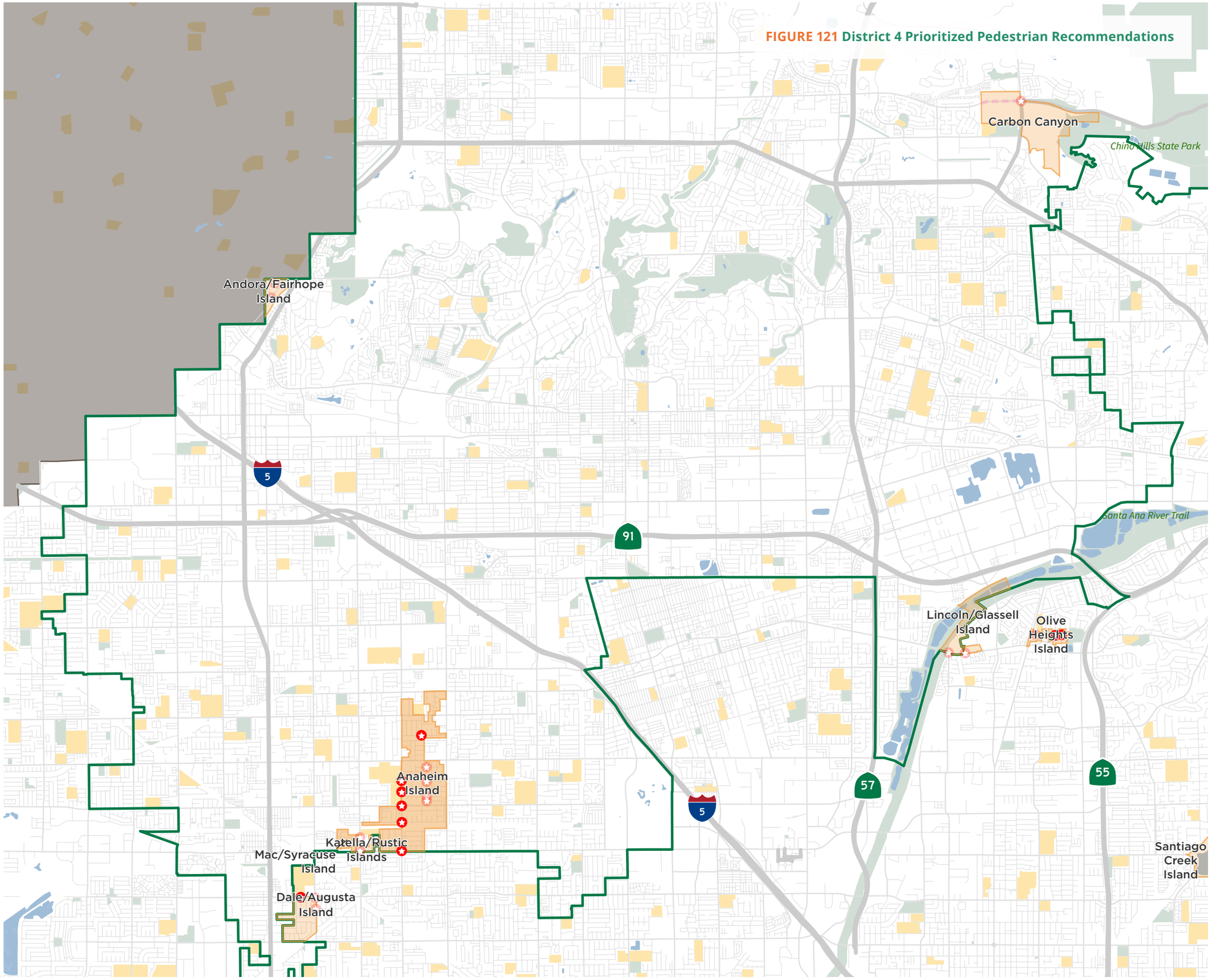
- Water Body
- School
- Park or Open Space
- County Boundary
- Focus Areas
- District 4

ORANGE COUNTY OC Public Works

0 1 2 Miles

N

FIGURE 121 District 4 Prioritized Pedestrian Recommendations



Orange County Unincorporated Areas

Active Transportation Plan

District 5 Recommendations

TIER 1 PRIORITIZED PEDESTRIAN RECOMMENDATIONS

- Pedestrian Road Improvements
- Rural Road Improvement
- Sidewalk Recommendations

TIER 2 & 3 PRIORITIZED PEDESTRIAN RECOMMENDATIONS

- Pedestrian Improvement
- Rural Road Improvement
- Sidewalk Recommendations

BASEMAP

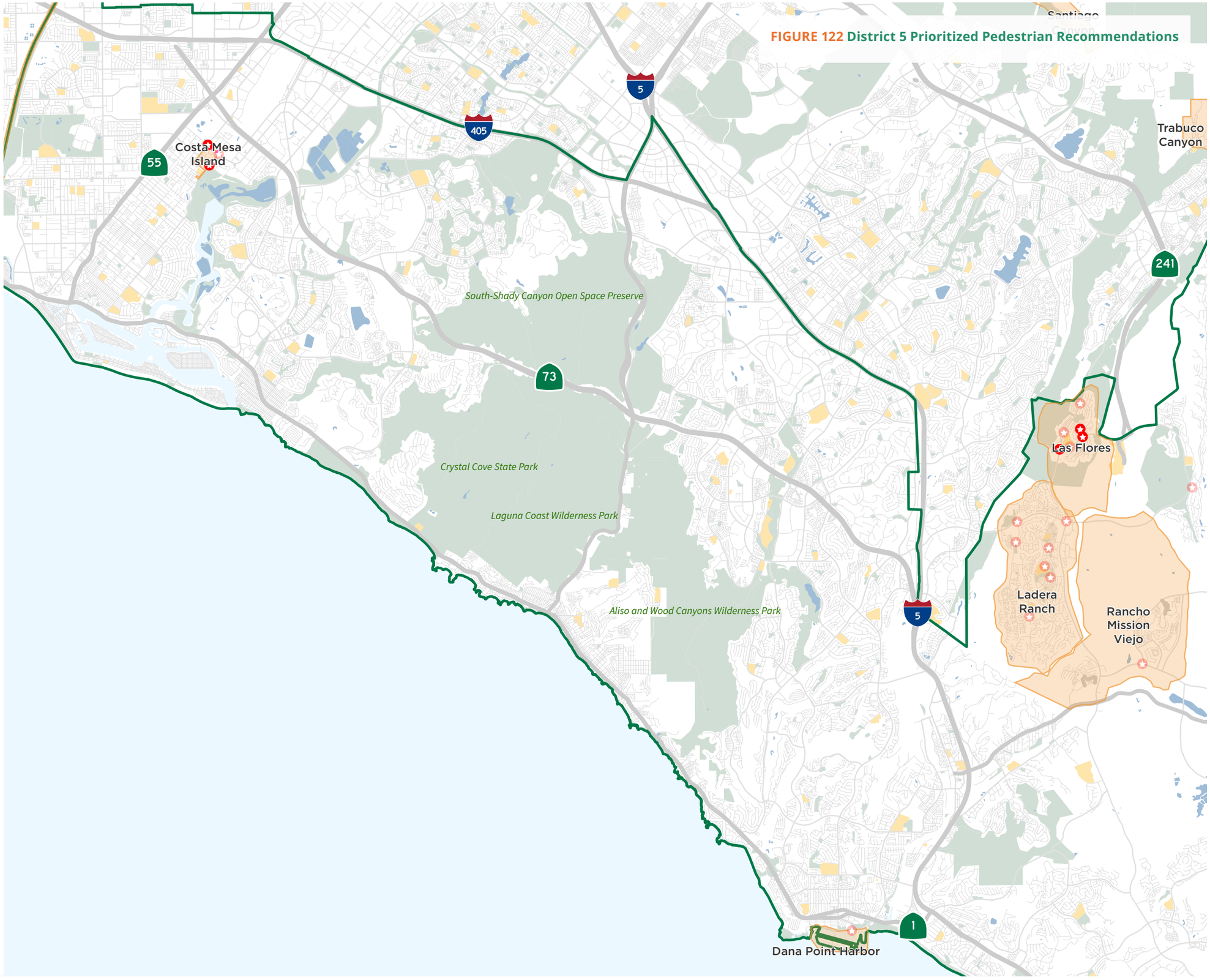
- Water Body
- School
- Park or Open Space
- County Boundary
- Focus Areas
- District 5

OC Public Works

0 1.75 3.5 Miles

N

FIGURE 122 District 5 Prioritized Pedestrian Recommendations



Project Cut Sheets

TIER 1 RECOMMENDATIONS

The following cut sheets illustrate how the top prioritized projects can fit into unincorporated Orange County's existing active transportation network. Cut sheets show the top fifteen prioritized bicycle recommendations and the top five prioritized flood control channel recommendations (**Table 53** and **Figure 123**). Pedestrian recommendations that intersect with these networks are also illustrated, with Tier 1 pedestrian recommendations highlighted.

These cut sheets are not a replacement for additional design and engineering considerations. Instead, they provide insight to how these active transportation recommendations can transform road corridors to better consider bicyclists and pedestrians.

Each of these project cut sheets include expanded recommendations, maps, a description of the existing conditions and expected constraints, and photos. In some cases there are areas where this Plan's recommendations can be revisited or phased in the future. For example, a Class II bike lane could eventually become a Class IV separated bikeway. These suggestions are noted on the cut sheets where appropriate.

TABLE 53 Cut Sheet Projects

	Project Type	Street/ Facility Name	Proposed Recommendations	Unincorporated Area/ City
1	Bicycle	• Katella Avenue	• Class II Bike Lane	• Katella/Rustic
2	Bicycle	• Bolsa Ave	• Class IIb Buffered Bike Lane	• Midway City
3	Bicycle	• Newland Street	• Class IIb Buffered Bike Lane	• Midway City
4	Bicycle	• Santiago Canyon Road	• Class I Shared-Use Path	• Santiago Canyon
5	Bicycle	• Holt Avenue	• Class II Bike Lane	• North Tustin
6	Bicycle	• Silverado Canyon Road	• Class IIIb Bicycle Boulevard	• Silverado Canyon
7	Bicycle	• Dale Street	• Class IIIb Bicycle Boulevard	• Dale/Augusta
8	Bicycle	• Gilbert Street	• Class IIb Buffered Bike Lane	• Anaheim
9	Bicycle	• Antonio Parkway	• Class IIb Buffered Bike Lane	• Ladera Ranch/ Las Flores/Mission Viejo
10	Bicycle	• Orangewood Avenue	• Class III Bike Route	• Dale/Augusta
11	Bicycle	• Cerritos Avenue	• Class IIIb Bicycle Boulevard	• Anaheim
12	Bicycle	• Live Oak Canyon Road	• Class II Bike Lane	• Trabuco Canyon
13	Bicycle	• Harbor Boulevard	• Class IV Separated Bikeway	• Fountain Valley
14	Bicycle	• McFadden Avenue	• Class II Bike Lane	• Midway City
15	Bicycle	• Nearing Drive	• Class IIIb Bicycle Boulevard	• Dale/Augusta
1	Flood Control Channel	• Greenville-Banning Channel	• Class I Shared-Use Path	• Cities of Costa Mesa & Santa Ana
2	Flood Control Channel	• Santa-Ana Delhi Channel	• Class I Shared-Use Path	• Cities of Costa Mesa & Newport Beach
3	Flood Control Channel	• Carbon Creek Channel	• Class I Shared-Use Path	• Cities of Cypress, Buena Park & Anaheim
4	Flood Control Channel	• East Garden Grove Wintersburg Channel	• Class I Shared-Use Path	• Cities of Westminster, Garden Grove & Santa Ana
5	Flood Control Channel	• Paularino Channel	• Class I Shared-Use Path	• City of Costa Mesa

Orange County Unincorporated Areas

Active Transportation Plan

Countywide Recommendations

CUT SHEET PROJECTS

- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway/ Cycle Track (Class IV)
- Shared-Use Path Along Flood Control Channel (Class I)

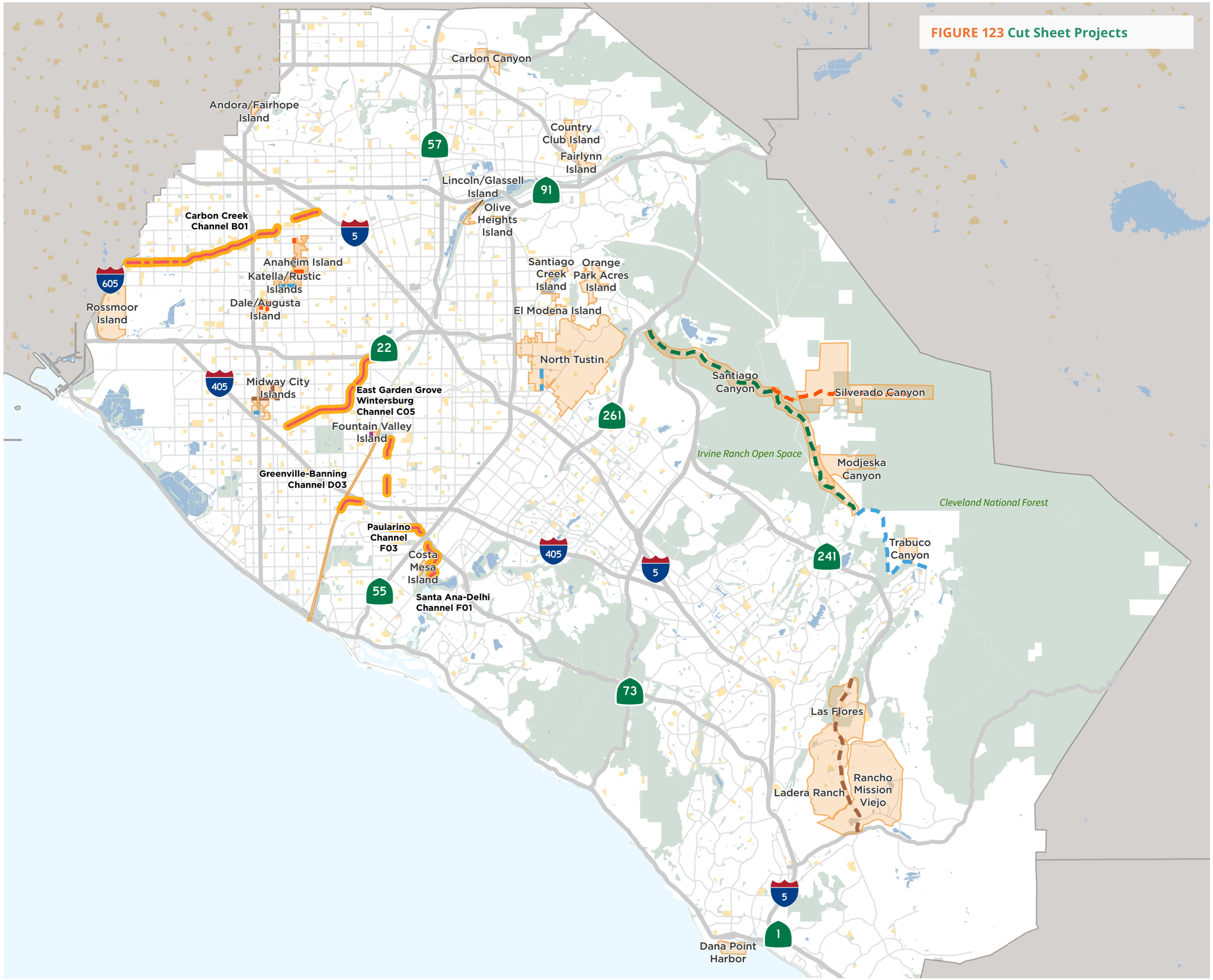
BASEMAP

- Water Body
- School
- Park or Open Space
- County Boundary
- Focus Areas

OC Public Works
ORANGE COUNTY

0 3.5 7 Miles

N



Katella Avenue

MAC MURRAY STREET TO JEAN STREET

Mac/Syracuse Island, Katella/Rustic Island, Anaheim Island- District 4

RECOMMENDATIONS

This recommendation is for Class II bike lanes on Katella Avenue. The bike lanes cross recommended pedestrian improvements at Magnolia Street and Gilbert Street which include high visibility crosswalks and curb extensions or bus bulbouts. These intersection recommendations will require coordination with the City of Anaheim.

EXISTING CONDITIONS

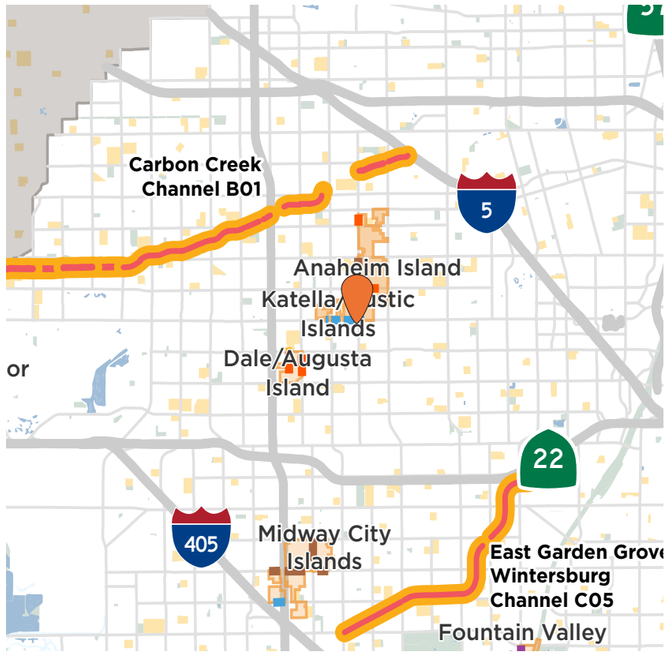
Katella Avenue is split into three segments in three islands. Segment A in Mac/Syracuse Island is from Mac Murray Street to just west of Magnolia Street. Segment B in Katella/Rustic Island is from Magnolia Street to Rustic Lane. Segment C in Anaheim Island is from Berry Avenue to Jean Street. All three of these segments are within the top fifteen prioritized bicycle projects. Katella Avenue is a 40mph road and ranges from seven to nine motor vehicle lanes. A center median separates the direction of motor vehicle travel with cut-outs for turning lanes. There have been sixteen bicycle or pedestrian collisions between the three segments of Katella Avenue, mostly at the intersections of Magnolia Street and Gilbert Street. Both of these intersections have wide crossings with non-high visibility crosswalks. More information about these collisions can be found in the Community Profiles chapter on **page 54**, **page 121**, and **page 149**. Katella Avenue has a level 4 of traffic stress, the highest level possible for bicyclists and pedestrians.

OPPORTUNITIES AND CONSTRAINTS

Installing Class II bike lanes on Katella Avenue will require taking space from a motor vehicle traffic lane and potentially removing on-street parking. There is an opportunity to add a buffer to these bike lanes, as there will be ample space remaining in the lane. There are also opportunities to continue the bike infrastructure into the intersections along Katella Avenue. These segments of Katella Avenue connect to previously planned Class II bike lanes in the City of Anaheim.



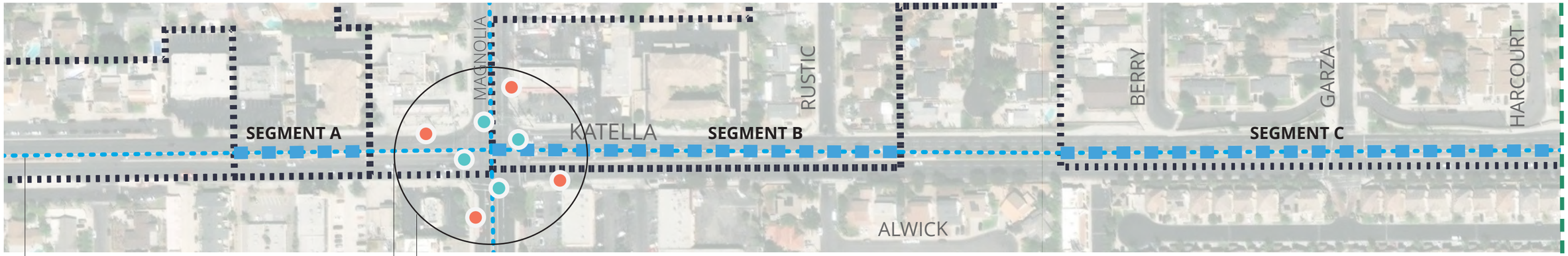
Segment B of Katella Avenue ends at Rustic Lane



Mac/Syracuse Island, Katella/Rustic Island & Anaheim Island

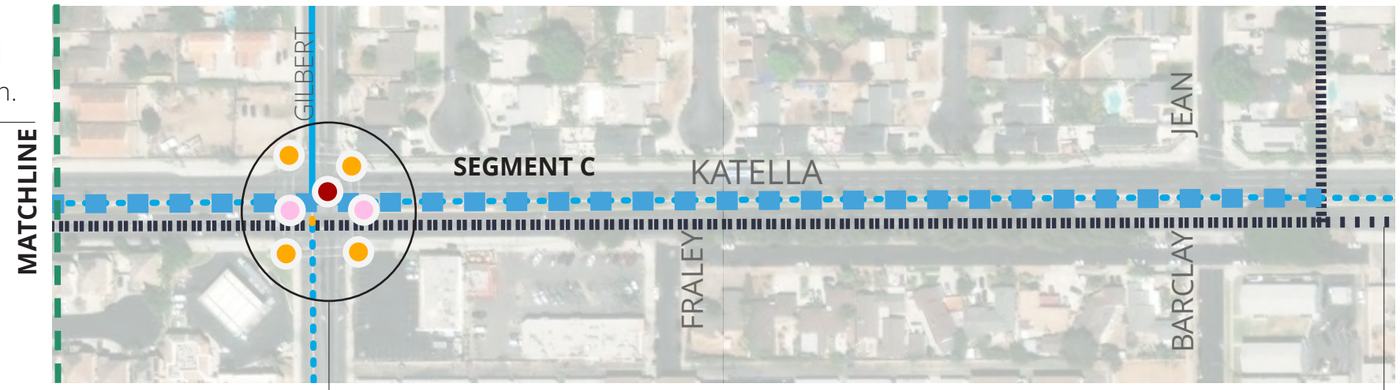


Katella Avenue is a 7-9 lane 40mph high street



Install high visibility crosswalks and curb extensions/ bus bulbouts on each leg of the intersection.

Future design phases can consider conflict striping and bike boxes at this intersection.



County bicycle and pedestrian improvements on Katella Avenue will require coordination with neighboring cities.

Implement pedestrian refuge islands, high visibility crosswalks, and signal timing improvements at Gilbert Street.

Recommended bike lanes in unincorporated Orange County can connect to previously recommended bike lanes in the City of Anaheim.

Recommendations
- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway (Class IV)

Existing Bike Facilities
- Class I Shared Use Path
- Class II Bike Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Previously Proposed Bike Facilities
- Class I
- Class II
- Class III
- Class IV

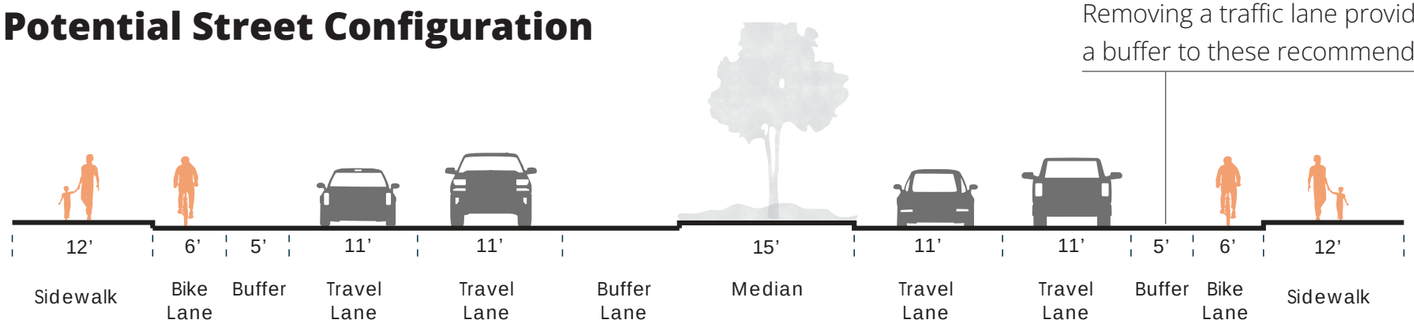
Associated Pedestrian Recommendations
- Bus Bulbout
- Curb Improvements
- Enhanced Signage
- HV Crosswalk
- Ped Refuge Island
- Ped Scale Lighting
- Signal Improvements
- Traffic Calming- Roundabout

Basemap
- Park or Open Space
- School
- County Boundaries
- Flood Control Maintenance Roads

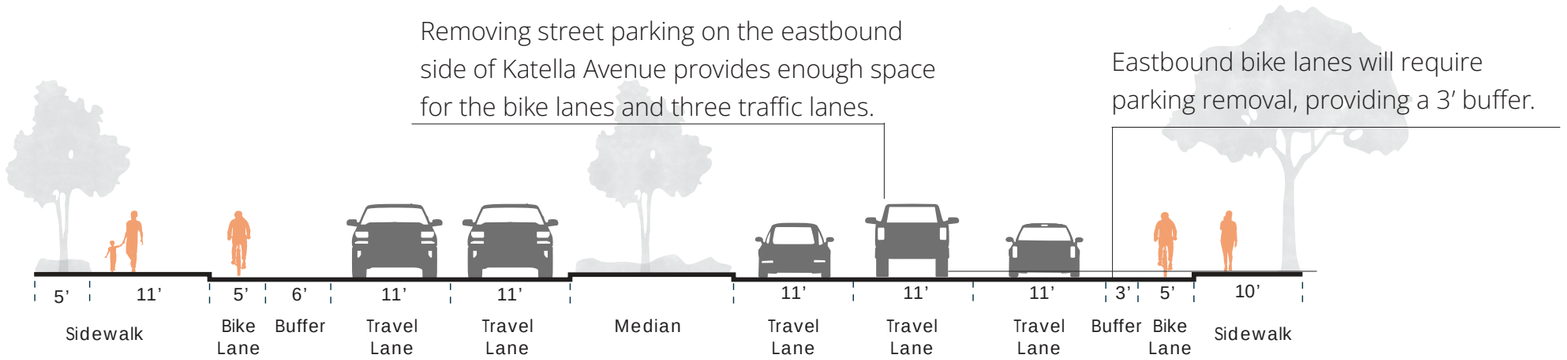
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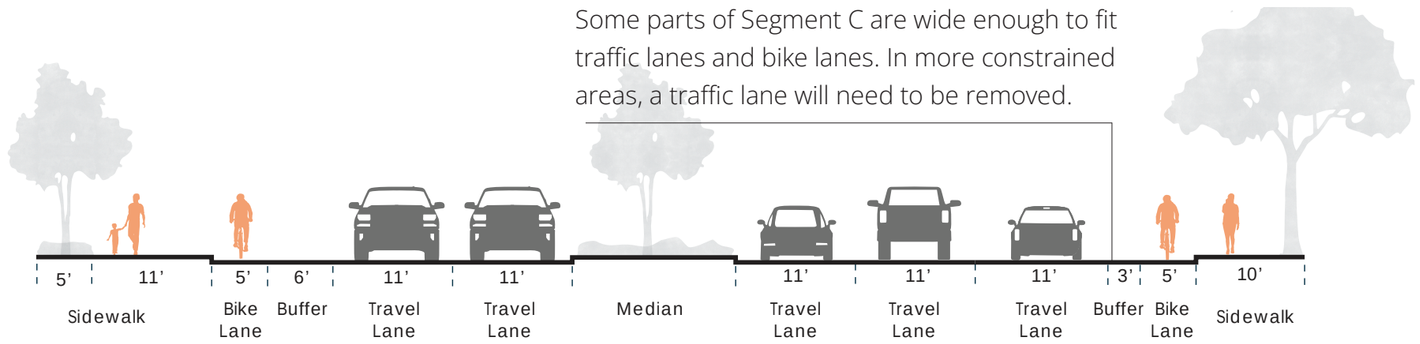
Potential Street Configuration



Segment A potential Class II bike lanes along Katella Avenue between Mac Murray Street and Magnolia Street



Segment B potential Class II bike lanes along Katella Avenue between Magnolia Street and Rustic Lane



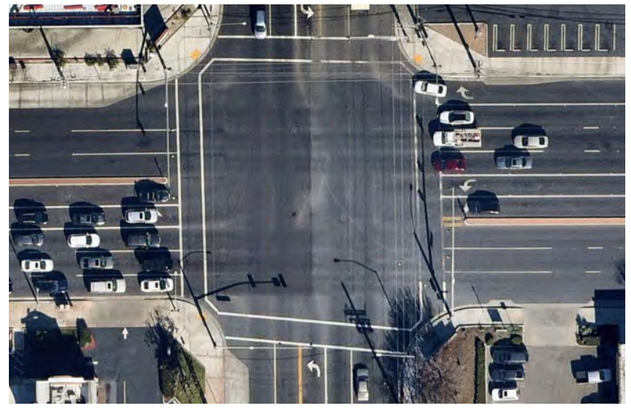
Segment C potential Class II bike lanes along Katella Avenue between Jean Street and Berry Avenue



Segment B eastbound parking or a vehicle lane can be removed on Katella Avenue to fit a Class II bike lane



In all segments, a westbound vehicle lane can be removed on Katella Avenue to fit a Class II bike lane



Improvements will help pedestrians cross this wide intersection at Magnolia Street at Segment B

Bolsa Avenue

7750 BOLSA AVENUE TO HUNTER LANE

Midway City Island- District 1

RECOMMENDATIONS

This recommendation is for Class IIb buffered bike lanes on Bolsa Avenue. These bike lanes will intersect with three Tier 1 pedestrian projects at Adams Street and Jackson Street. These pedestrian projects include high visibility crosswalks, curb extensions, pedestrian islands, and the closure of sidewalk gaps.

EXISTING CONDITIONS

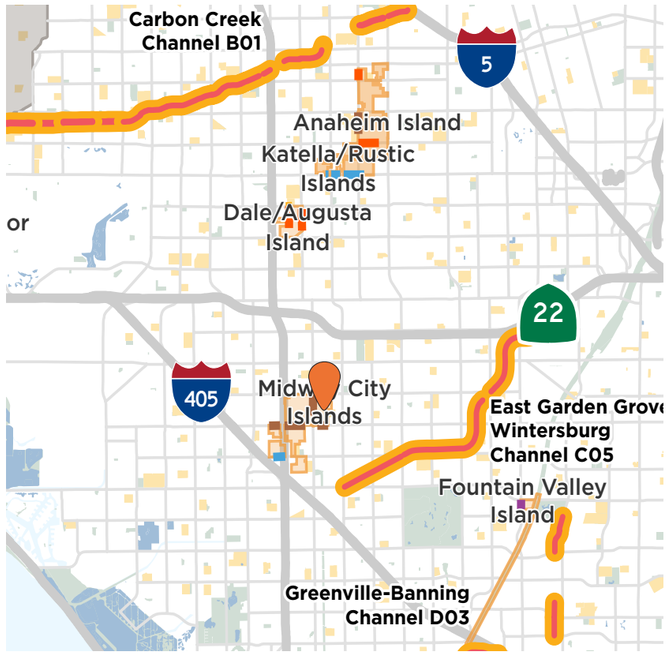
Recommendations along Bolsa Avenue are separated into two segments between two areas of Midway City. Segment A runs from 7750 Bolsa Avenue to Pacific Street. Segment B starts at Beach Boulevard and continues to Hunter Lane. Both of these segments are top fifteen prioritized bicycle projects. Bolsa Avenue is a 35mph street with five motor vehicle lanes. A center median separates the two lanes on either side of the street and center turn lanes cut through the median along the street. Community members requested bicycle infrastructure along this street because it is uncomfortable to use as a bicyclist. There have been multiple fatal bicyclist crashes along these segments Bolsa Avenue as further described on **page 156** in the Community Profiles chapter. Bolsa Avenue has a level 4 of traffic stress, the highest level possible for bicyclists and pedestrians.

OPPORTUNITIES AND CONSTRAINTS

This buffered bike lane would connect to recommended buffered bike lanes on north Newland Street in unincorporated Midway City, and to previously planned bike lanes on south Newland Street in the City of Westminster. Installing Class IIb buffered bike lanes on Bolsa Avenue will require parking removal on the westbound side of the street. Parking removal will require additional input from local businesses and from residents. The width of the vehicle lanes on the eastbound side of Bolsa Avenue varies. Between Van Buren Street and Purdy Street, the traffic lanes are wide enough to accommodate both the buffered bike lanes and motor vehicle traffic. In other segments, the traffic lane can only accommodate a bike lane without a buffer. Alternatively, in the more constrained areas, eastbound motor vehicle travel can be reduced to one lane to accommodate a buffered bike lane.



Segment B of Bolsa Avenue connects to Newland Street which also has bicycle recommendations

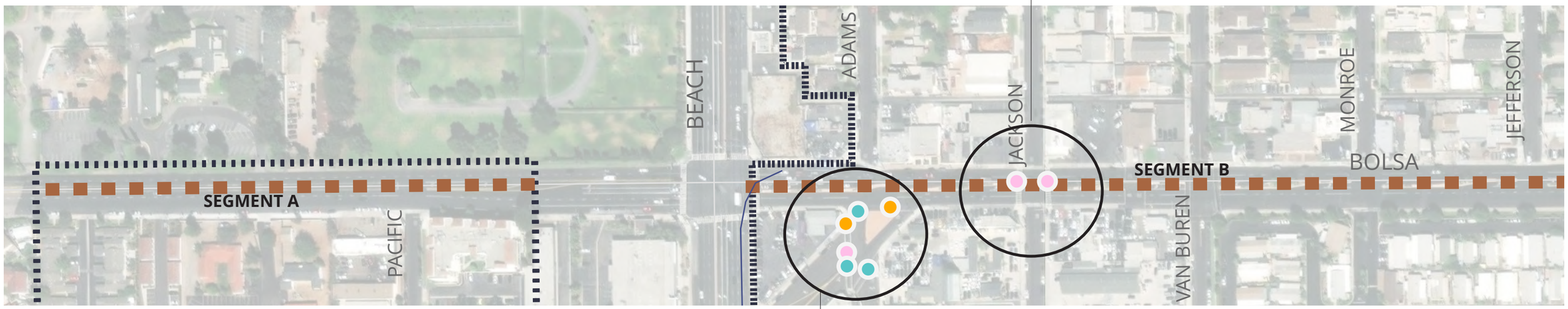


Midway City Island

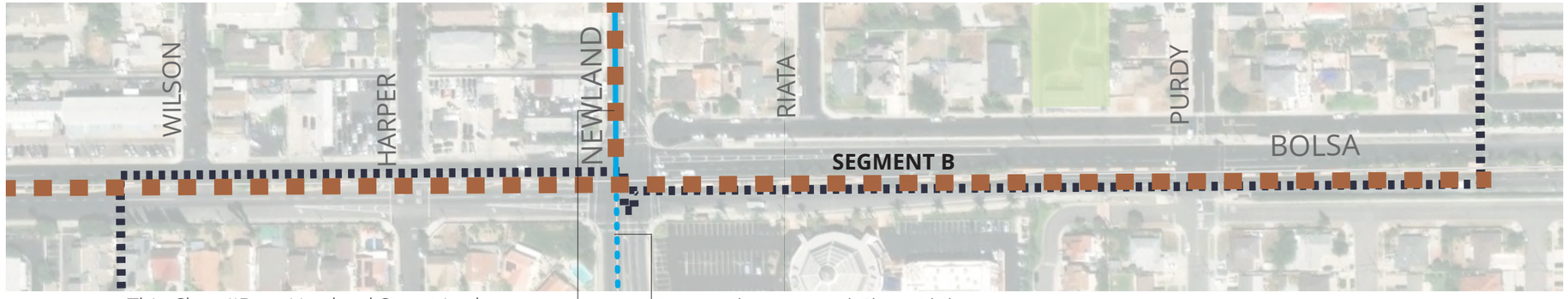


Bolsa Avenue is a 5-lane 35mph street. Some bicyclists prefer to ride on the sidewalk rather than on this high stress street

Install pedestrian refuge islands across Bolsa Avenue. Install curb extensions at each end of the existing crosswalks, and install lighting along Bolsa Avenue, especially at crossing locations. *These are Tier 1 pedestrian projects.*



Install high visibility crosswalks. Install curb extensions between the crosswalk at Adams Street on Bolsa Avenue, and install sidewalk on the south side of Bolsa Avenue at the gap between Adams Street and Midway Place. *These are Tier 1 pedestrian projects.*



This Class IIB on Newland Street is also a top 15 prioritized bicycle project (**page 281**).

Previously proposed Class II bike lane in the City of Westminster.

Recommendations
- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway (Class IV)

Existing Bike Facilities
- Class I Shared Use Path
- Class II Bike Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Previously Proposed Bike Facilities
- Class I
- Class II
- Class III
- Class IV

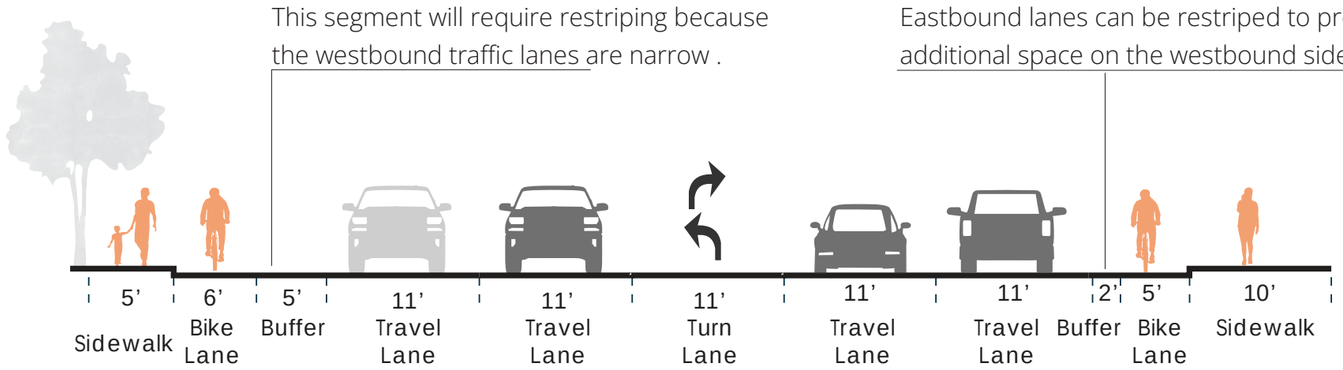
Associated Pedestrian Recommendations
- Bus Bulbout
- Curb Improvements
- Enhanced Signage
- HV Crosswalk
- Ped Refuge Island
- Ped Scale Lighting
- Signal Improvements
- Traffic Calming- Roundabout
- Slip Lane Removal

Basemap
- Park or Open Space
- School
- County Boundaries
- Flood Control Maintenance Roads

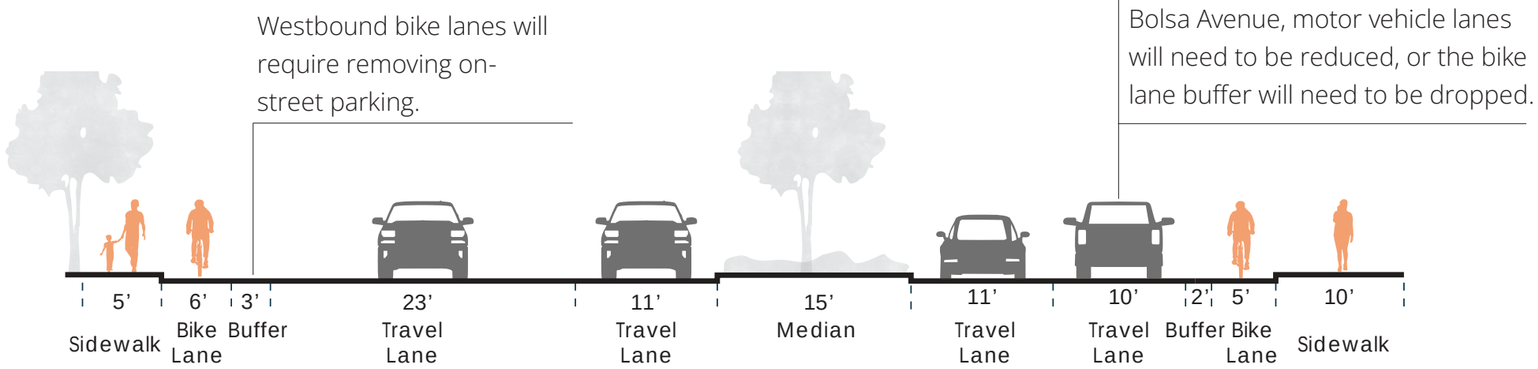
0 0.25 MILES

N

Potential Street Configuration



Segment A potential Class IIb buffered bike lanes along Bolsa Avenue between 7750 Bolsa Avenue and Pacific Street in Midway City Island



Segment B potential Class IIb buffered bike lanes along Bolsa Avenue between Beach Boulevard and Hunter Lane in Midway City Island



Westbound parking in Segment B will need to be removed to fit a buffered bike lane



Wide eastbound lanes in some areas of Segments A and B can accommodate motor vehicle traffic and bicycle lanes



Segment B of Bolsa Avenue intersects with Tier 1 pedestrian recommendations at Jackson Street

Newland Street

BETWEEN HAZARD AVENUE AND BOLSA AVENUE

Midway City Island- District 1

RECOMMENDATIONS

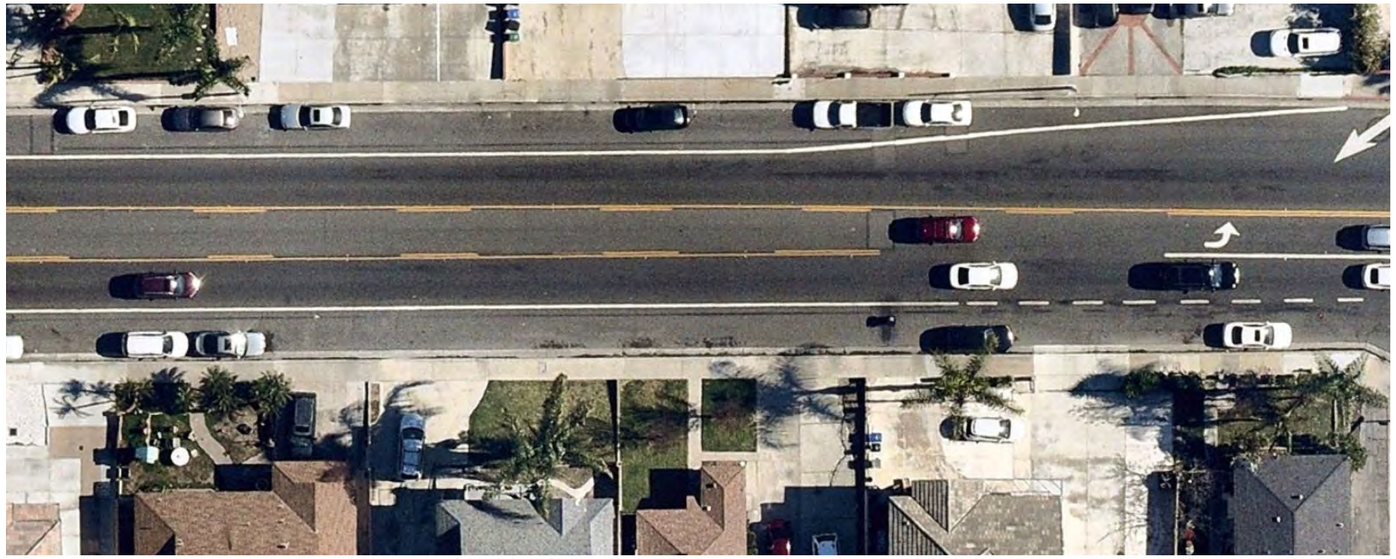
This recommendation is for Class IIb buffered bike lanes on Newland Street. The bike lanes cross Tier 1 high visibility crosswalk pedestrian recommendations at Madison Avenue.

EXISTING CONDITIONS

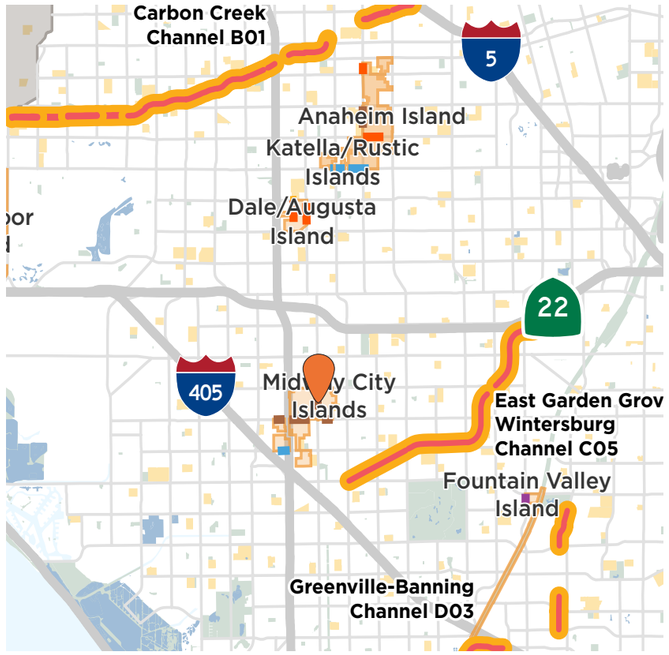
Newland Street has one traffic lane in either direction of the street with a center traffic lane in the middle. There is on-street parking on both sides of the street. As described in the Community Profiles chapter, there have been several bicyclist and pedestrian collisions on this street between 2009-2018, with two fatal pedestrian collisions at Madison Avenue, an intersection without high visibility crosswalks (**page 156**). This street is mostly residential. There are two schools nearby in the City of Westminster. This corridor has the highest level of traffic stress for pedestrians and bicyclists (LTS 4), but is also in an area with high demand for active transportation. Community members marked this street as needing bicycle improvements.

OPPORTUNITIES AND CONSTRAINTS

Installing buffered bike lanes on Newland Street will require taking space from motor vehicle lanes. The County can consider removing the center turn lane, and placing the bike lanes between the vehicle lanes and the on-street parking. The bike lane could also be placed next to the curb, with the on-street parking acting as a buffer. Alternatively, the County can keep the center turn lanes and remove the on-street parking. Future studies can determine parking needs on this street. These bike lanes will connect to the recommended buffered bike lanes on Bolsa Avenue and to the recommended bike lanes on Hazard Avenue. These bike lanes on Newland Street will then extend into the City of Westminster to connect to the City's previously proposed Class II bike lanes.



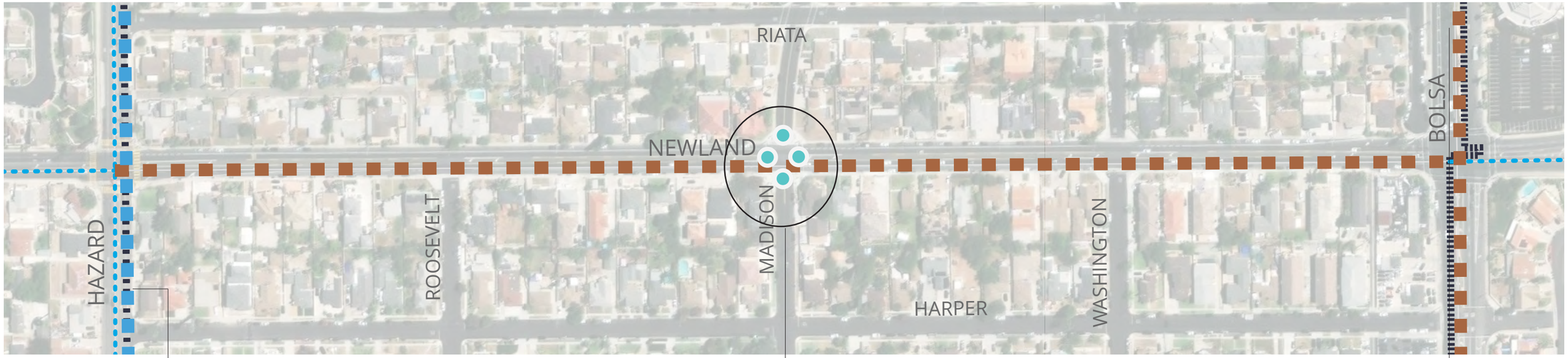
Newland Street connects to previously recommended bike lanes in the City of Westminster



Midway City Island



Newland Street is residential with parking on both sides



This Class II bike lane recommendation on Hazard Avenue is a *Tier 1 prioritized bicycle project.*

Install high visibility crosswalks on all legs of this intersection.

This Class IIB on Bolsa Avenue is also a top 15 prioritized bicycle project (**page 278**) .

Recommendations
- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway (Class IV)

Existing Bike Facilities
- Class I Shared Use Path
- Class II Bike Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Previously Proposed Bike Facilities
- Class I
- Class II
- Class III
- Class IV

Associated Pedestrian Recommendations
- Bus Bulbout
- HV Crosswalk
- Ped Refuge Island
- Curb/SW Extension
- Traffic Calming- Roundabout
- Directional Curb Ramp

Basemap
- Park or Open Space
- School
- County Boundaries
- Flood Control Maintenance Roads

0 0.25 MILES

Potential Street Configuration



North-south Newland Street connects with recommended Class II bike lanes on east-west Hazard Avenue



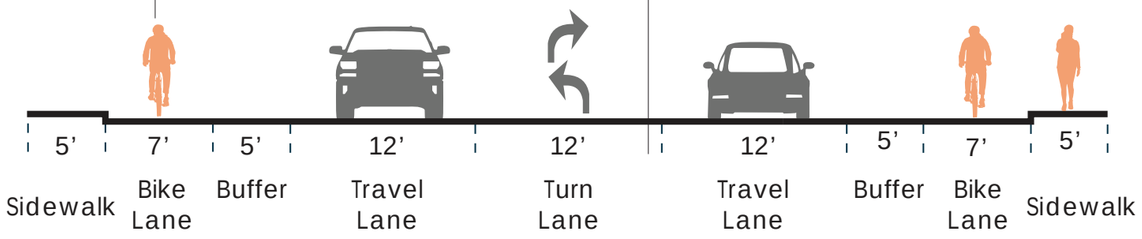
Improvements on Madison Avenue will help pedestrians cross this intersection



Future design studies can determine if removing the center turn lane, or removing on-street parking is most appropriate for this recommendation

The County can remove on-street parking to provide space for buffered bike lanes.

Alternatively, the County can remove the center turn lane and move the travel lanes closer together. This can keep the on-street parking in tact. On-street parking can act as the buffer between the bike lane and the traffic lanes.



Potential Class IIb buffered bike lane along Newland Street in Midway City Island



Newland Street intersects with Bolsa Avenue. Both of these streets have recommended buffered bike lanes.

Santiago Canyon Road

STATE ROUTE 261 TO EL TORO ROAD

Santiago Canyon- District 3

RECOMMENDATIONS

This recommendation is for Class I shared-use path along Santiago Canyon Road. The path will intersect with recommended pedestrian improvements at the intersection of Silverado Canyon Road.

EXISTING CONDITIONS

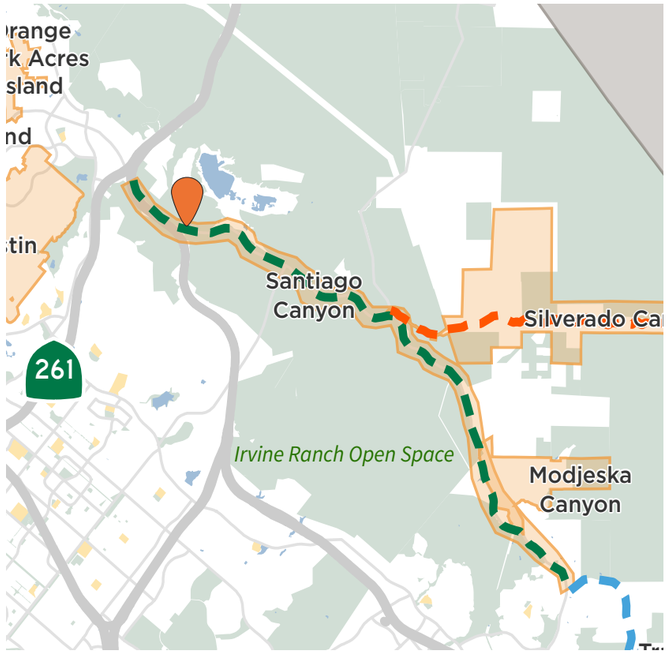
This segment of Santiago Canyon Road is eleven-miles long. Much of this road is only two travel lanes, with areas near intersections widening to include a center turn lane. Speed limits reach 55mph along this windy and narrow canyon road. There are existing Class II bike lanes along Santiago Canyon Road, but there is no pedestrian infrastructure. Community members stated this road is not comfortable to use as a bicyclist or a driver when bicyclists are present. As described in the Community Profiles chapter, there have been twenty four bicycle -involved collisions along this road documented between 2009 to 2018 (**page 204**).

OPPORTUNITIES AND CONSTRAINTS

Constructing a shared-use path along Santiago Canyon Road will provide separated space for bicyclists from motor vehicles. This path will also provide pedestrian space along a road where no pedestrian facilities currently exist. This path will connect to an existing shared-use path on El Toro Road, existing bike lanes on Chapman Avenue, and to recommended bikeways on Silverado Canyon Road, Modjeska Canyon Road, and Live Oak Canyon Road. This path will be more costly than other facilities in this Plan that only requiring restriping roadways. Future design and engineering studies will need to be completed to determine the feasibility of a shared-use path along the length of this corridor. The path will need to navigate difficult geography, including varying elevation.



Much of Santiago Canyon Road is a narrow two-lane road with Class II bike lanes



Santiago Canyon

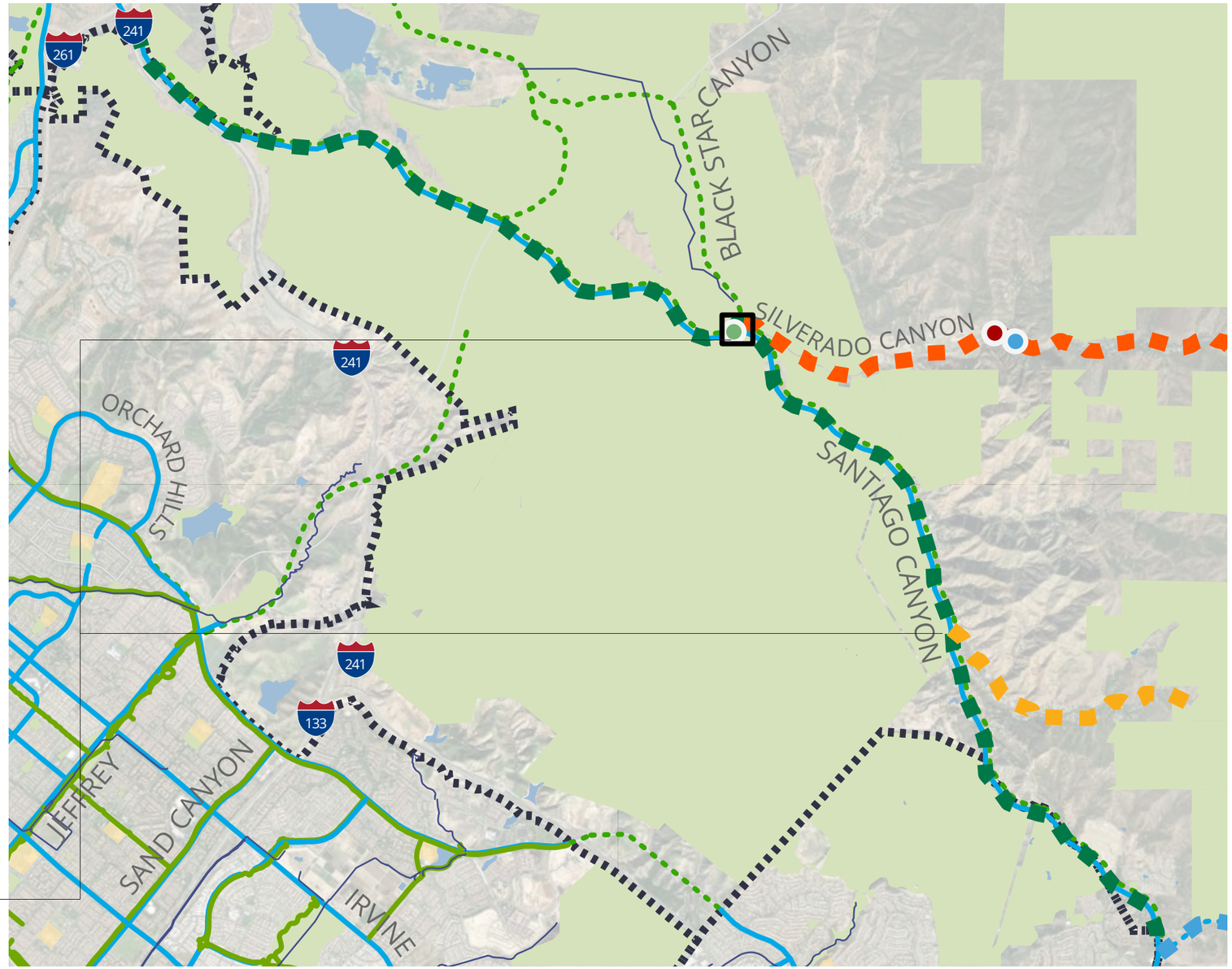


Elevation varies along the length of Santiago Canyon Road



Potential traffic calming at this intersection could include a new roundabout

The recommended shared-use path on Santiago Canyon Road connects with recommended bikeways on Silverado Canyon Road (**page 290**) and Modjeska Canyon Road



Recommendations
- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway (Class IV)

Existing Bike Facilities
- Class I Shared Use Path
- Class II Bike Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Previously Proposed Bike Facilities
- Class I
- Class II
- Class III
- Class IV

Associated Pedestrian Recommendations
- Bus Bulbout
- Curb Improvements
- Enhanced Signage
- HV Crosswalk
- Ped Refuge Island
- Ped Scale Lighting
- Signal Improvements
- Traffic Calming- Roundabout

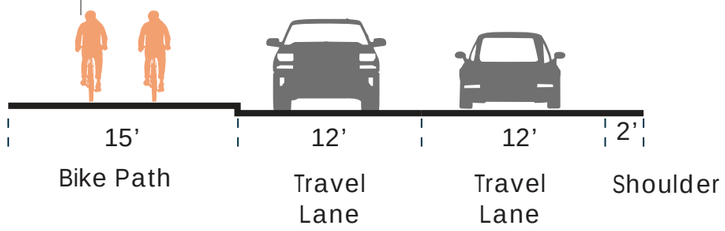
Basemap
- Park or Open Space
- School
- County Boundaries
- Flood Control Maintenance Roads

0 6 MILES N

Potential Street Configuration

The recommended shared-use path can follow Santiago Canyon Road alongside, but separated from, motor vehicle traffic.

Future studies will determine how the path can navigate difficult terrain, or if alternative bikeway options will need to be considered.



Potential Class I shared-use path along Santiago Canyon Road in Santiago Canyon



Traffic calming is recommended for the intersection of Santiago Canyon Road and Silverado Canyon Road



Santiago Canyon Road briefly widens to include a turn lane in front of the public library, one of the few destinations along the road



The recommended shared-use path will need to include bridges to navigate difficult areas like at this stream



Installing a shared-use path will help reduce conflict points, like here where motor vehicles must cross the bike lane to turn right

Holt Avenue

17TH STREET TO IRVINE BOULEVARD

North Tustin- District 2

RECOMMENDATIONS

This recommendation is for Class II bike lanes along Holt Avenue. These bike lanes will intersect with pedestrian recommendations at Holt Avenue and 17th Avenue, and will help bicyclists connect to Tier 1 pedestrian recommendations at 17th Avenue and Esplanade Avenue and the Esplanade Trail.

EXISTING CONDITIONS

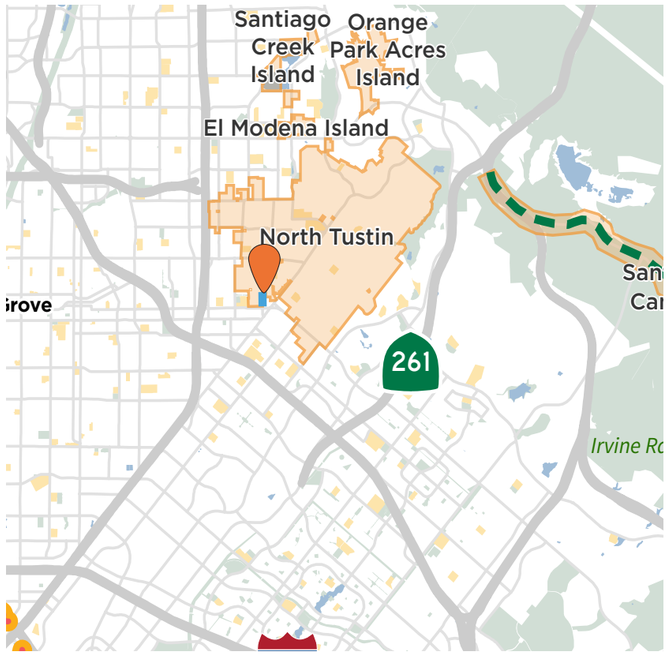
Holt Avenue has no bicycle infrastructure, but connects to Class II bike lanes on 17th Street which then connect to the Esplanade Trail. Holt Avenue has four travel lanes with parking lanes on each side of the street. This .75 mile segment is a 40mph high stress street with no controlled intersections, yet there are two school crossings across Holt Avenue. There is a high demand for active transportation infrastructure along this street, and a higher percentage of residents that do not own a vehicle compared to other unincorporated areas of the County. As described in the Community Profiles chapter of this Plan, between 2009-2018 there have been two bicycle collisions and one pedestrian collision on Holt Avenue (**page 170**).

OPPORTUNITIES AND CONSTRAINTS

A bike lane along Holt Avenue will provide a connection to the off-street Esplanade Trail. These bike lanes can also act as traffic calming to visually narrow the roadway, which may help slow traffic speeds. Adding these bike lanes will require removing parking on both sides of the street, so future public outreach will be required to determine if residents prefer the bike lane over the on-street parking. Alternatively, a traffic lane can be removed and the on-street parking can be maintained. This bike lane was originally proposed in the 1986 North Tustin Specific Plan, which may indicate that the County has had difficulty implementing this recommendation.



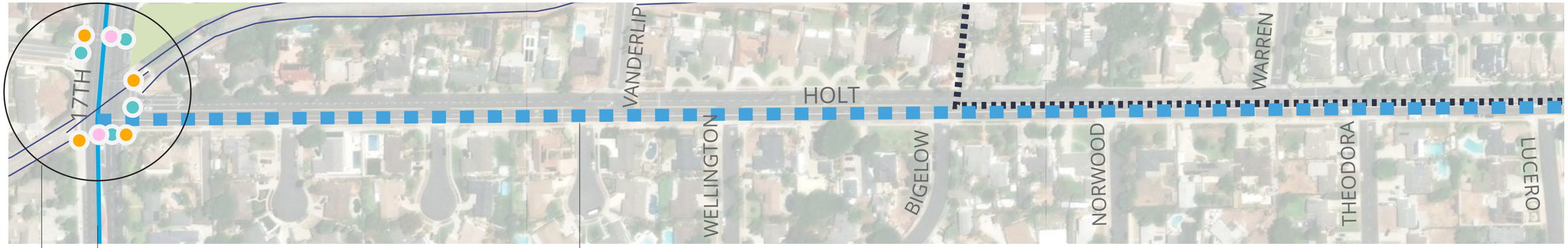
The segment of Holt Avenue in unincorporated Orange County has no signal or stop sign controlled intersections



North Tustin

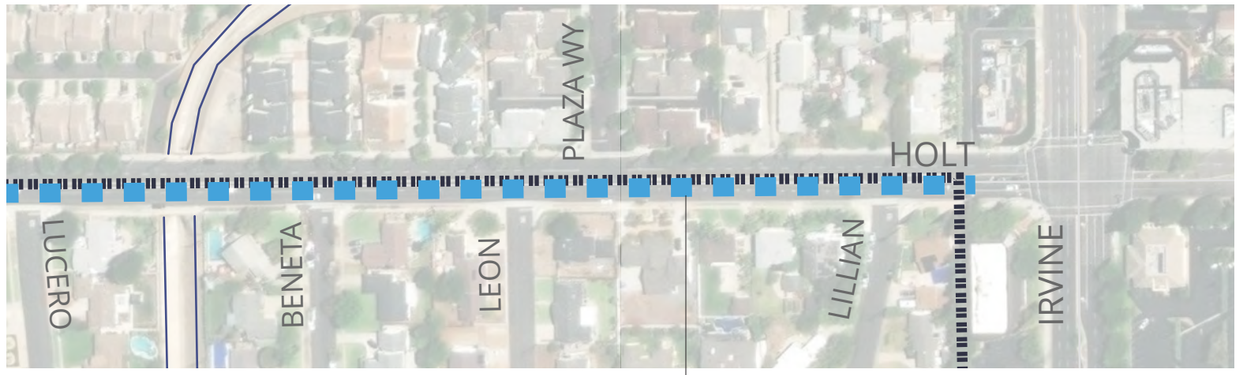


There are two uncontrolled school crosswalks across Holt Avenue



The recommended bike lanes on Holt Avenue connect to existing bike lanes on 17th Street, which lead to the Esplanade Trail.

Pedestrian recommendations at Holt Avenue and 17th Street include high visibility crosswalks, ADA-compliant curb ramps and curb extensions, and pedestrian refuge islands across 17th Street. Future design studies will determine the feasibility of these pedestrian recommendations.



This Class II bike lane recommendation was originally proposed in the 1986 North Tustin Specific Plan. Additional public outreach will need to be conducted prior to implementation of this bike lane.

The entire .75 mile length of Holt Avenue in this unincorporated area does not have controlled stops, which may encourage speeding.

Recommendations
- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway (Class IV)

Existing Bike Facilities
- Class I Shared Use Path
- Class II Bike Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Previously Proposed Bike Facilities
- Class I
- Class II
- Class III
- Class IV

Associated Pedestrian Recommendations
- Bus Bulbout
- Curb Improvements
- Enhanced Signage
- HV Crosswalk
- Ped Refuge Island
- Ped Scale Lighting
- Signal Improvements
- Traffic Calming- Roundabout

Basemap
- Park or Open Space
- School
- County Boundaries
- Flood Control Maintenance Roads

0 0.27 MILES

Potential Street Configuration



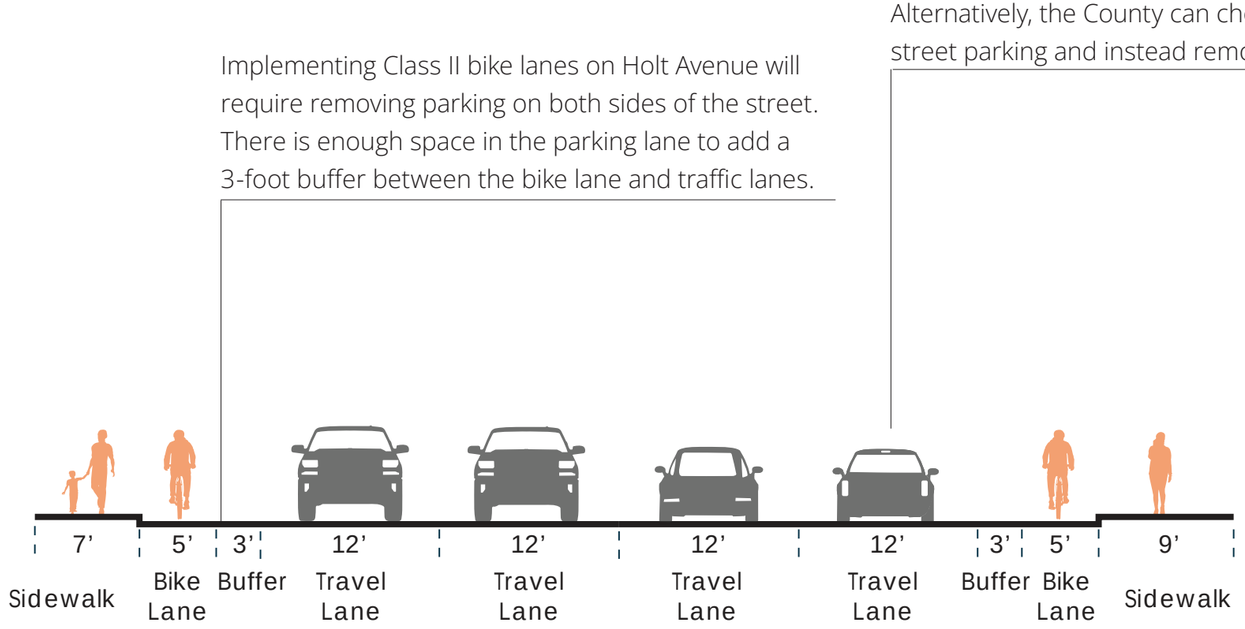
Implementing bike lanes on Holt Avenue may require removing parking on the street



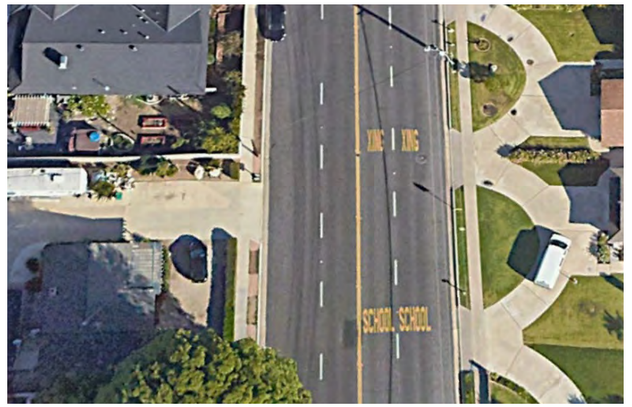
Holt Avenue will connect to this intersection of 17th Street and Esplanade Avenue (including the Esplanade Trail)



The lack of controlled stops along this segment of Holt Avenue may lead to speeding



Potential Class II bike lanes along Holt Avenue in North Tustin



Instead of removing street parking, bike lanes can be installed by removing a traffic lane

Silverado Canyon Road

BLACK STAR CANYON ROAD TO HALFWAY ROAD

Silverado Canyon- District 3

RECOMMENDATIONS

This recommendation is for a Class IIIb bicycle boulevard along Silverado Canyon Road. Traffic calming along this street can also help pedestrians cross Silverado Canyon Road to reach destinations near Ladd Canyon Road.

EXISTING CONDITIONS

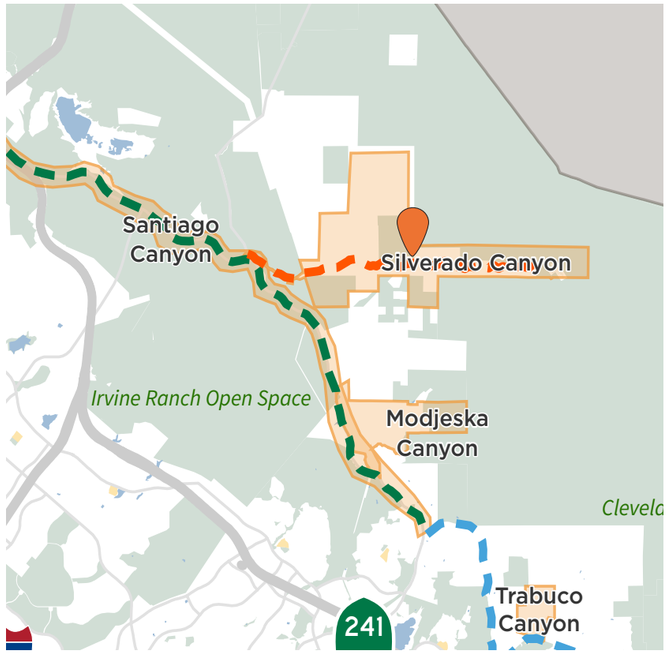
Silverado Canyon Road is a narrow, windy canyon road with one traffic lane in each direction. Speeds are higher between Santiago Canyon Road and Ladd Canyon Road, but decrease east of Ladd Canyon Road. These lower speeds reduce the level of traffic stress from level 4 to level 2 as the road continues eastward. This street connects to mostly low density homes. There is a small segment of businesses near Ladd Canyon Road, which includes a grocery store, a post office, and restaurants. There is no bicycle or pedestrian infrastructure along this road except for a crosswalk near the post office.

OPPORTUNITIES AND CONSTRAINTS

Silverado Canyon Road is too narrow for separated bicycle infrastructure. A bicycle boulevard can include traffic calming elements like bike route signage, sharrows, and flashing pedestrian beacons that alert drivers of the potential presence of bicyclists and pedestrians. Traffic calming can also include infrastructure that physically slows down vehicles such as traffic circles. This bicycle boulevard would connect to the recommended Class I shared-use path on Santiago Canyon Road. Residents can use the bicycle boulevard to connect to destinations in nearby urban areas, and visitors can use this boulevard to connect to trails off of Silverado Canyon Road.



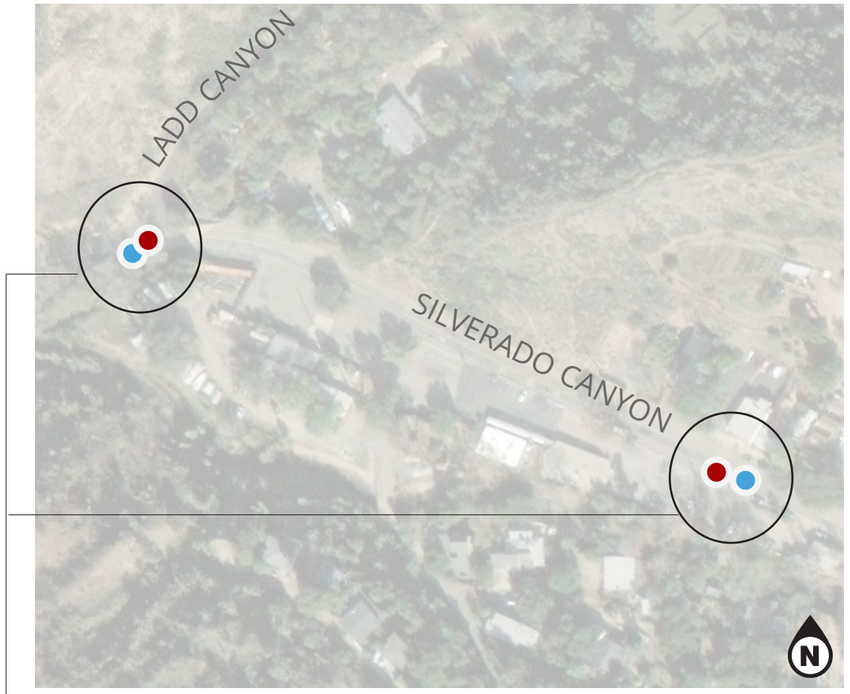
Most of Silverado Canyon Road is narrow without space for separated bicycle infrastructure



Silverado Canyon



Higher speeds west of Ladd Canyon Road create a higher stress environment for bicyclists riding on Silverado Canyon Road



Potential traffic calming on Silverado Canyon Road can include signage, pavement markings, and flashing pedestrian beacons to create a more comfortable environment for bicyclists and pedestrians. Future studies and additional public input will determine the final design of the bicycle boulevard.



The recommended bicycle boulevard on Silverado Canyon Road connects with a recommended shared-use path on Santiago Canyon Road (**page 284**) and a recommended bike route on Modjeska Canyon Road.

Recommendations
- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway (Class IV)

Existing Bike Facilities
- Class I Shared Use Path
- Class II Bike Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Previously Proposed Bike Facilities
- Class I
- Class II
- Class III
- Class IV

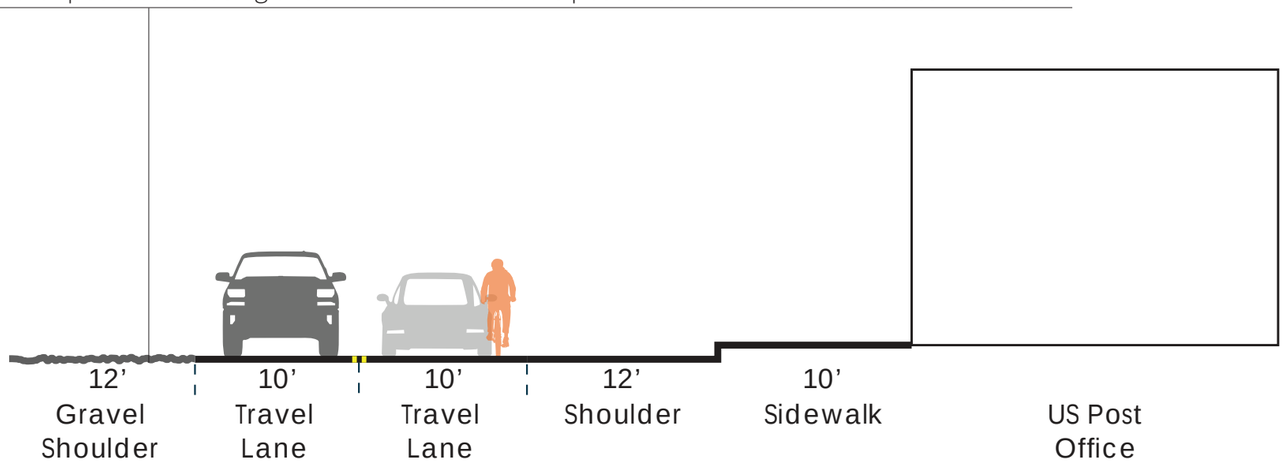
Associated Pedestrian Recommendations
- Bus Bulbout
- Curb Improvements
- Enhanced Signage
- HV Crosswalk
- Ped Refuge Island
- Ped Scale Lighting
- Signal Improvements
- Traffic Calming- Roundabout

Basemap
- Park or Open Space
- School
- County Boundaries
- Flood Control Maintenance Roads

0 6 MILES N

Potential Street Configuration

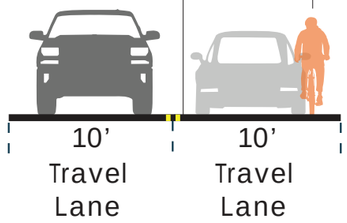
Near Ladd Canyon Road there are sections of unpaved shoulder which can be used as a pedestrian pathway. Traffic calming recommendations along Silverado Canyon Road can create a more comfortable environment for pedestrians using this shoulder to reach the post office and other businesses in the area.



Potential Class IIIb bicycle boulevard in Silverado Canyon near Ladd Canyon Road

Traffic calming like signage and pavement markings can help slow down motor vehicles.

The bicycle boulevard will require that motor vehicles share the road with bicyclists.



Potential Class IIIb bicycle boulevard in Silverado Canyon



Additional signage and pavement markings can alert drivers that bicyclists may be on the road



Traffic calming can also help pedestrians by slowing vehicles, like at the existing crosswalk near the post office



There are sections of unpaved shoulder along Silverado Canyon Road which can be used as a pedestrian pathway

Dale Street

ORANGEWOOD AVENUE TO BARBER CITY FLOOD CONTROL CHANNEL

Dale/Augusta Island- District 1

RECOMMENDATIONS

This recommendation is for a Class IIIb bicycle boulevard along Dale Street. Traffic calming along this street can also help pedestrians use the Hopi Road intersection, which intersects with this bicycle boulevard.

EXISTING CONDITIONS

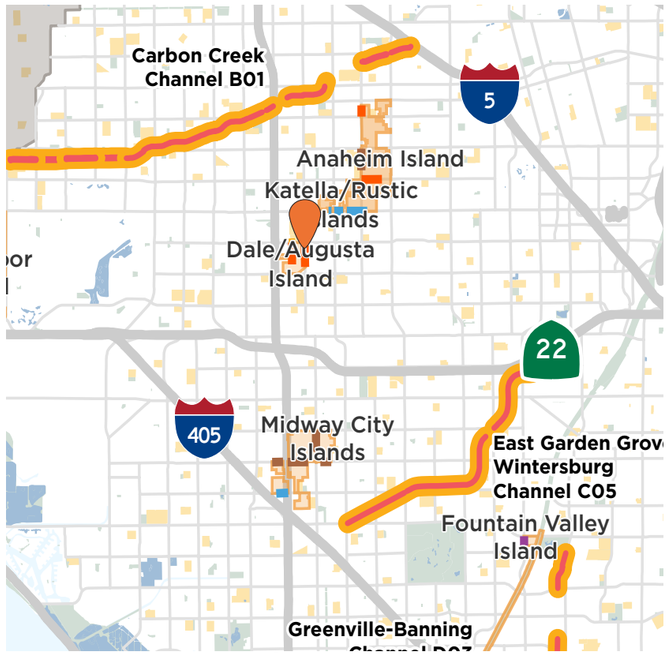
Dale Street has two traffic lanes with one center turn lane south of Twana Drive. There is parking on either side of the street. This 35mph street has a medium level of traffic stress (LTS 3). Dale/Augusta island has a higher percentage of residents that do not own a motor vehicle compared to other areas of unincorporated Orange County, and the island is considered disadvantaged by CalEnviroScreen. Between 2009-2018 there has been 4 bicycle or pedestrian collisions along Dale Street, including a fatality at Hopi Road. More information about these collisions can be found in the Community Profiles chapter on **page 85**. There is an elementary school near the intersection of Orangewood Avenue and Dale Street, but much of the land use along Dale Street is residential.

OPPORTUNITIES AND CONSTRAINTS

A Class IIIb bicycle boulevard on Dale Street would connect to previously planned Class III bike routes on Dale Street in the City of Garden Grove. The boulevard would also connect to existing and proposed bike lanes on Orangewood Avenue, and to a previously recommended shared-use path on the flood control channel just north of Marylee Drive. Traffic calming along Dale Street can include traffic calming elements like bike route signage, sharrows, and flashing pedestrian beacons that alert drivers of the potential presence of bicyclists. Traffic calming can also include infrastructure that physically slows down vehicles such as chicanes. This boulevard can make bicycling safer while still maintaining most of the parking along the street. Future outreach with residents can determine if parking can be removed and Class II bike lanes installed.



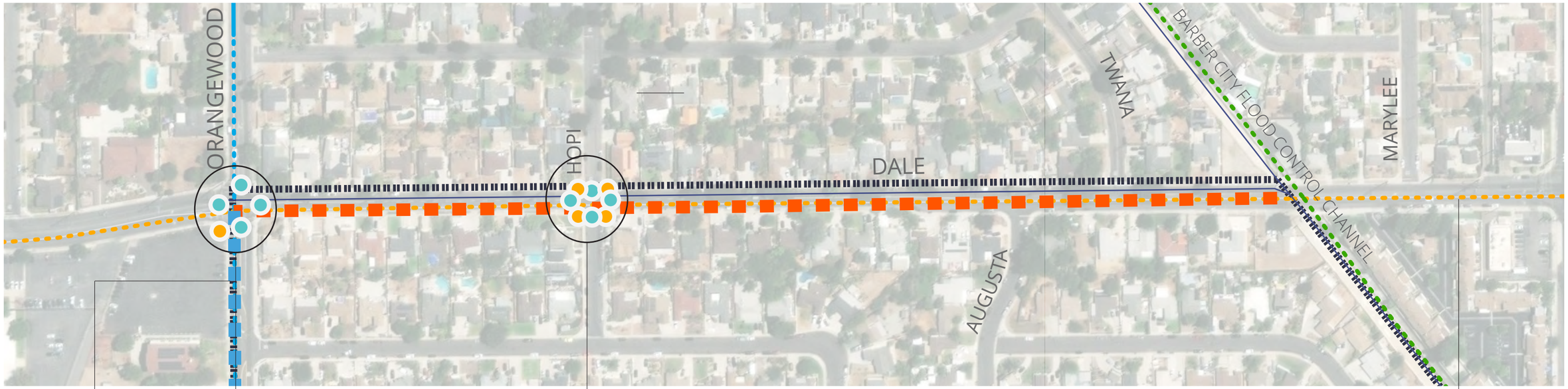
Dale Street is a 35mph street with two traffic lanes



Dale/Augusta Island



There is on-street parking on both sides of Dale Street



Install high visibility crosswalks and curb extensions at the intersections of Orangewood Avenue and Hopi Road.

The recommended Class IIIb bicycle boulevard on Dale Street will connect with previously proposed bike routes in the City of Garden Grove

This Class II bike lane recommendation on Orangewood Avenue is also a *Tier 1 prioritized project.*

Recommendations
- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway (Class IV)

Existing Bike Facilities
- Class I Shared Use Path
- Class II Bike Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Previously Proposed Bike Facilities
- Class I
- Class II
- Class III
- Class IV

Associated Pedestrian Recommendations
- Bus Bulbout
- Curb Improvements
- Enhanced Signage
- HV Crosswalk
- Ped Refuge Island
- Ped Scale Lighting
- Signal Improvements
- Traffic Calming- Roundabout

Basemap
- Park or Open Space
- School
- County Boundaries
- Flood Control Maintenance Roads

0 0.25 MILES

Potential Street Configuration



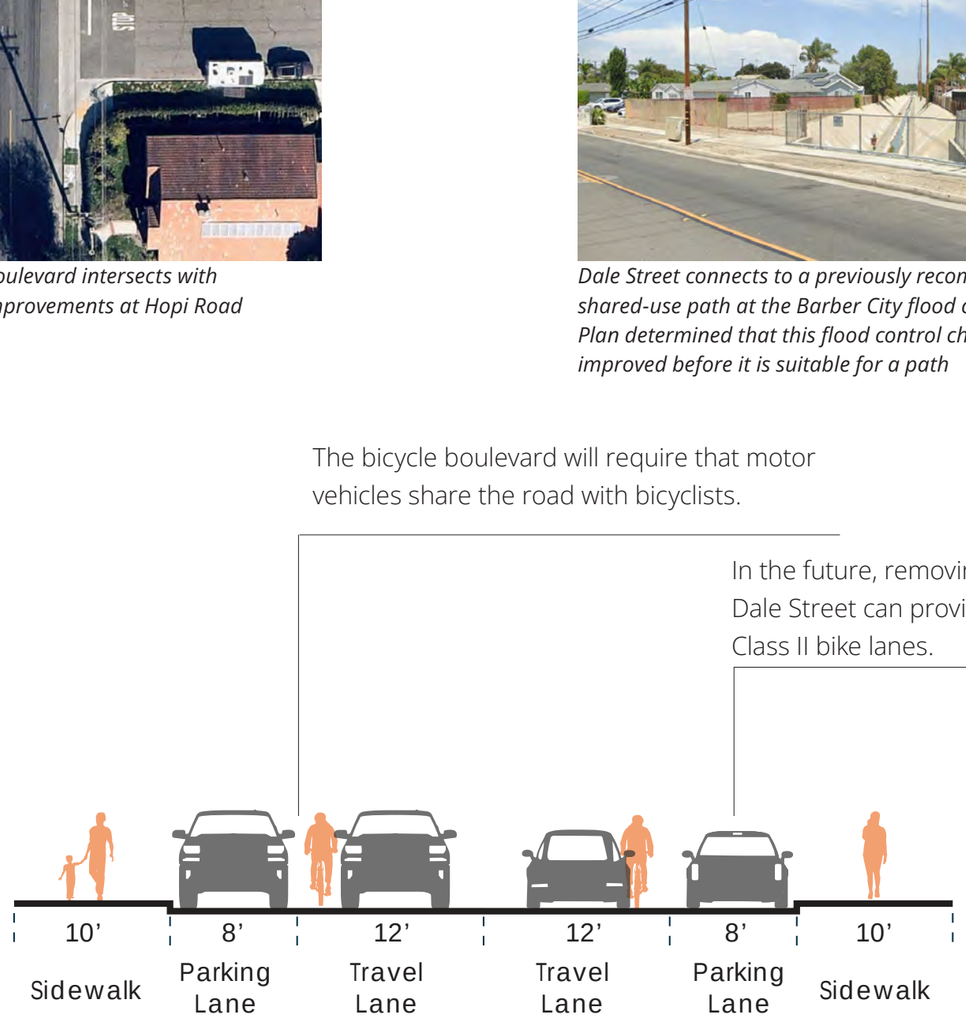
The recommended bicycle boulevard intersects with recommended pedestrian improvements at Hopi Road



Dale Street connects to a previously recommended Class I shared-use path at the Barber City flood control channel. This Plan determined that this flood control channel needs to be improved before it is suitable for a path



Dale Street is mostly residential



Potential Class IIIb bicycle boulevard in Dale/Augusta Island



Dale is a 35mph street with a level 3 of traffic stress

Gilbert Street

BALL ROAD TO PACIFIC PLACE; MARIAN WAY TO ORANGE AVENUE

Anaheim Island- District 4

RECOMMENDATIONS

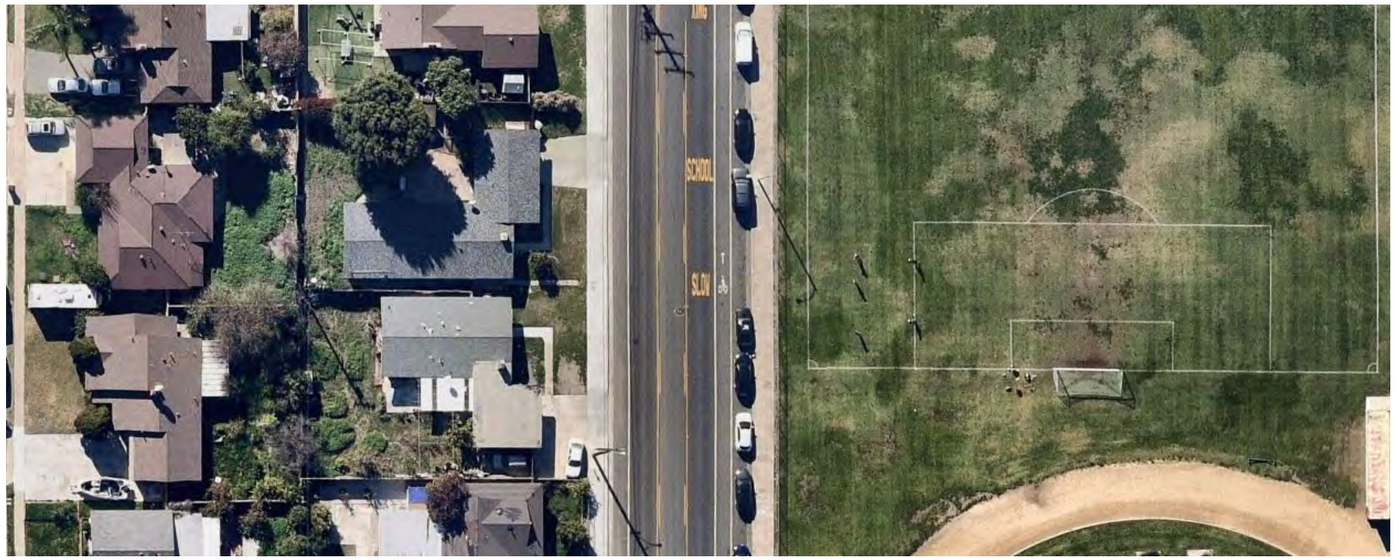
This recommendation is for a Class IIIb bicycle boulevard along Segment A of Gilbert Street and a Class IIb buffered bike lane on the southbound side of Segment B of Gilbert Street. There is also a Tier 2 recommended Class IV separated bikeway on the northbound side of Segment B. There are four Tier 1 pedestrian recommendation along Gilbert Street.

EXISTING CONDITIONS

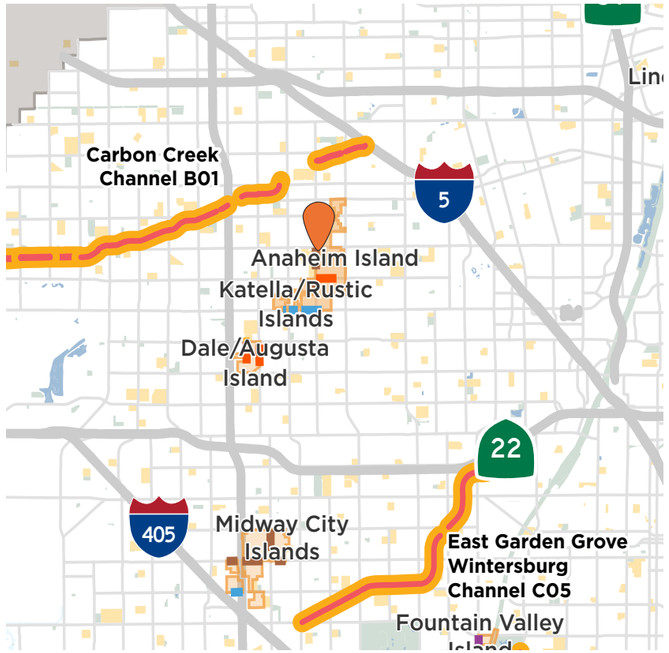
Gilbert Street is split into two segments in Anaheim Island. Segment A is from just south of Marian Way to Orange Avenue. Segment B is from Ball Road to Pacific Place. These segments have different recommendations, but are both top fifteen prioritized bicycle projects. Segment A has two travel lanes with no on-street parking. Segment B has two travel lanes and a center turn lane. There is on-street parking and existing Class II bike lanes on both sides of the street of Segment B. Further described in the Community Profiles chapter on **page 54**, there have been twenty-two pedestrian or bicyclist collisions along the length of Gilbert Street, mostly concentrated between Ball Road and Cerritos Avenue. During community engagement, community members requested additional separation for bicyclists from motor vehicles.

OPPORTUNITIES AND CONSTRAINTS

Gilbert Street connects with several other existing and previously proposed bikeways including: a planned Class I shared-use path along the railroad tracks north of Pacific Place, a planned Class II bike lane on Cerritos Avenue, existing Class II bike lanes on Ball Road, a planned Class III bike route on Orange Avenue, and planned Class II bike lanes on Gilbert Street into the City of Anaheim. The recommended Class IIb buffered bike lanes on Segment B may require parking removal, however there is an opportunity to flip the bike lane with the parking lane to create a parking protected bike lane. The bicycle boulevard on Segment A will require installing traffic calming, but will help slow down vehicles in this residential area.

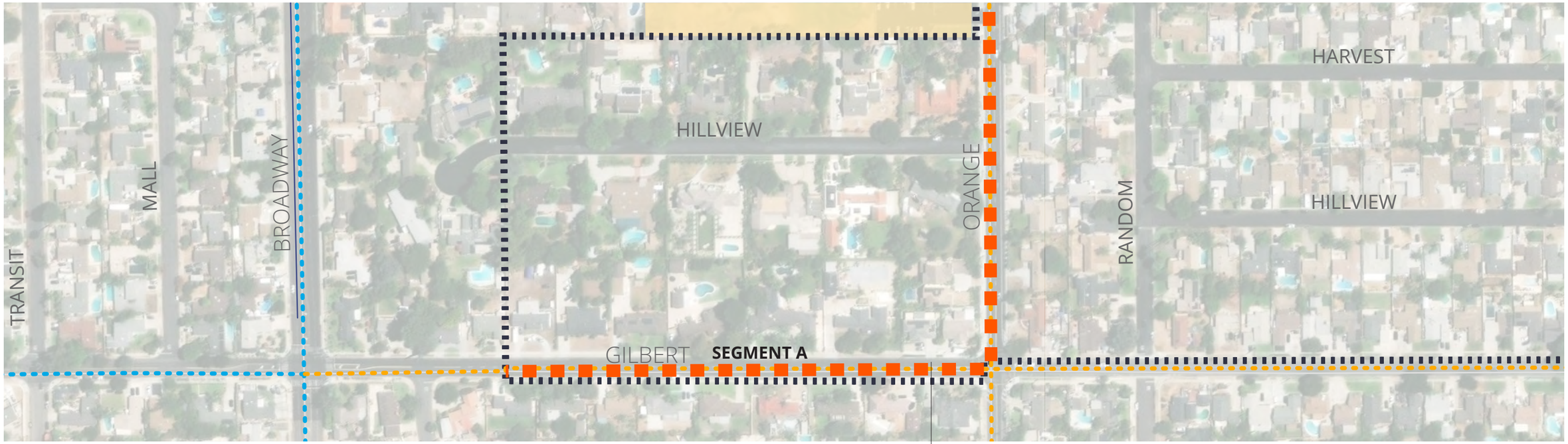


Segment B has parking on either side of the street and existing Class II bike lanes



Anaheim Island


Segment A between Marian Way and Orange Avenue



The recommended Class IIIb bicycle boulevard will connect to previously proposed bike routes in the City of Anaheim.

The traffic calming on this boulevard will make walking and biking more comfortable in this residential area.

Recommendations
- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway (Class IV)

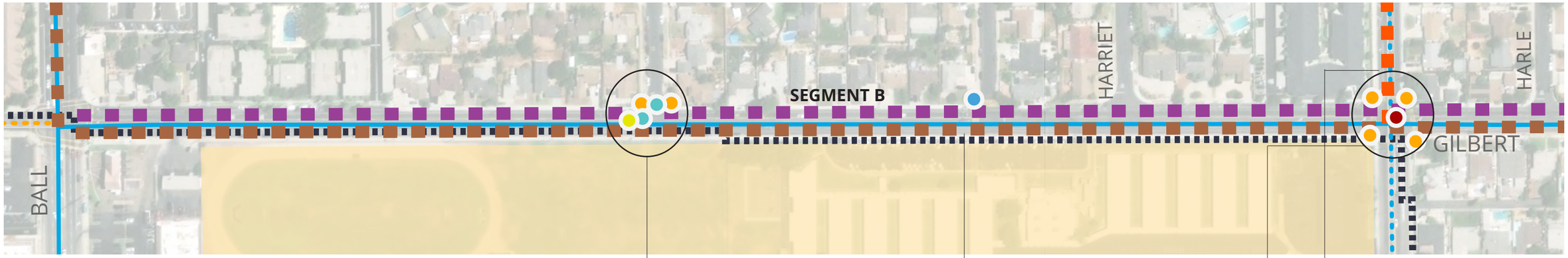
Existing Bike Facilities
- Class I Shared Use Path
- Class II Bike Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Previously Proposed Bike Facilities
- Class I
- Class II
- Class III
- Class IV

Associated Pedestrian Recommendations
- Bus Bulbout
- Curb Improvements
- Enhanced Signage
- HV Crosswalk
- Ped Refuge Island
- Ped Scale Lighting
- Signal Improvements
- Traffic Calming- Roundabout
- Slip Lane Removal

Basemap
- Park or Open Space
- School
- County Boundaries
- Flood Control Maintenance Roads

0 0.25 MILES



Install curb extensions, high visibility crosswalks and pedestrian-scale lighting.

This Plan recommends Class IV separated bikeways on the northbound side of Gilbert Street. This is a Tier 2 prioritized bicycle project.

Install curb extensions and pedestrian signal improvements.

Gilbert Street connects to a Class IIIb bicycle boulevard on Cerritos Avenue (**page 307**).



Install high visibility crosswalks and pedestrian signal improvements.

Recommendations
- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway (Class IV)

Existing Bike Facilities
- Class I Shared Use Path
- Class II Bike Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

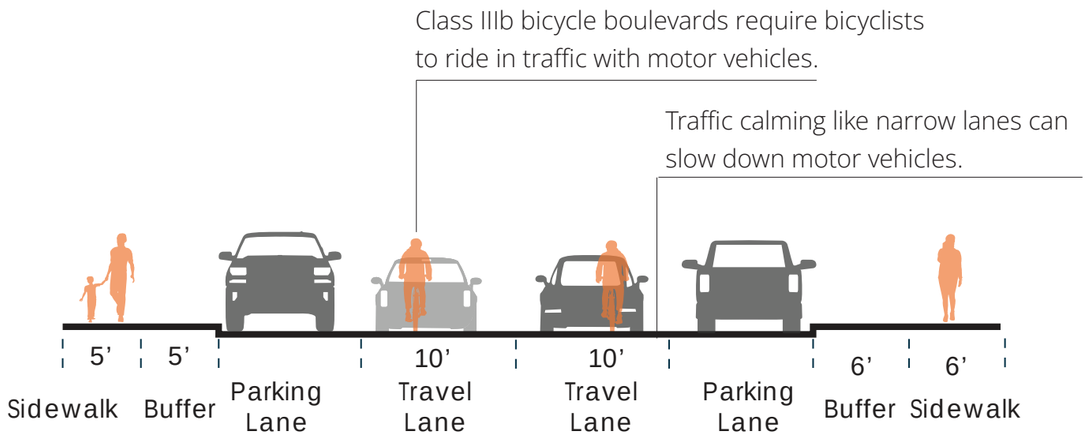
Previously Proposed Bike Facilities
- Class I
- Class II
- Class III
- Class IV

Associated Pedestrian Recommendations
- Bus Bulbout
- Curb Improvements
- Enhanced Signage
- HV Crosswalk
- Ped Refuge Island
- Ped Scale Lighting
- Signal Improvements
- Traffic Calming- Roundabout

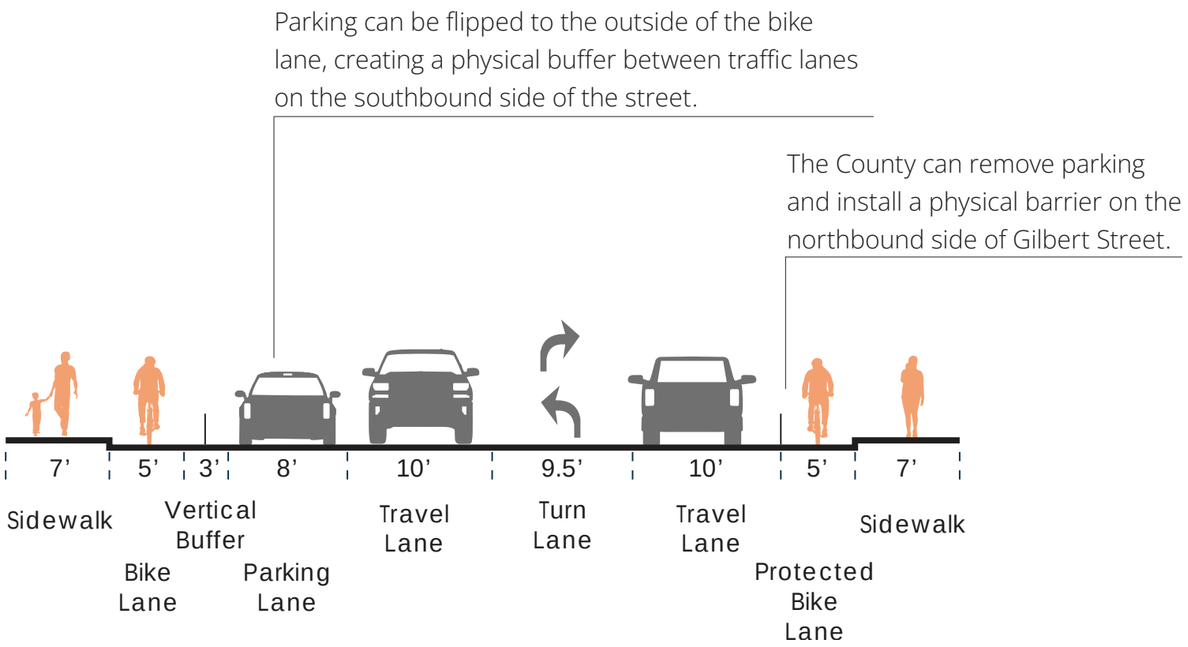
Basemap
- Park or Open Space
- School
- County Boundaries
- Flood Control Maintenance Roads

0 0.27 MILES

Potential Street Configuration



Potential Class IIIb bicycle boulevard along Gilbert Street between just south of Marian Way and Orange Avenue in Anaheim Island



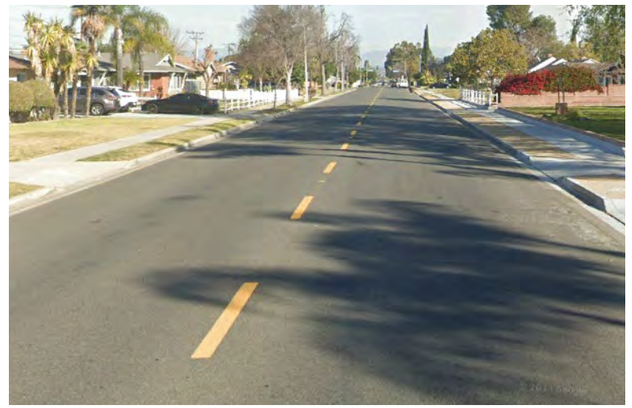
Potential Class IIb buffered bike lanes southbound and potential Class IV separated bikeways northbound along Gilbert Street between Ball Road and Pacific Place in Anaheim Island



If feasible, the parking lane can be flipped to the outside of the bike lane on southbound Segment B



Gilbert Street bikeway recommendations intersect with four Tier 1 pedestrian recommendations, such as at Guinida Lane in Segment B



Restriping Segment A can narrow traffic lanes and act as traffic calming

Antonio Parkway

MEANDERING TRAIL TO ORTEGA HIGHWAY

Las Flores, Ladera Ranch, Rancho Mission Viejo- District 5

RECOMMENDATIONS

This recommendation is for a Class IIb buffered bike lane on Antonio Parkway. These bike lanes connect to a Tier 3 recommended Class I shared-use path on Avenida La Pata. Antonio Parkway intersects with four intersections with pedestrian recommendations, including Tier 1 recommendations at Oso Parkway.

EXISTING CONDITIONS

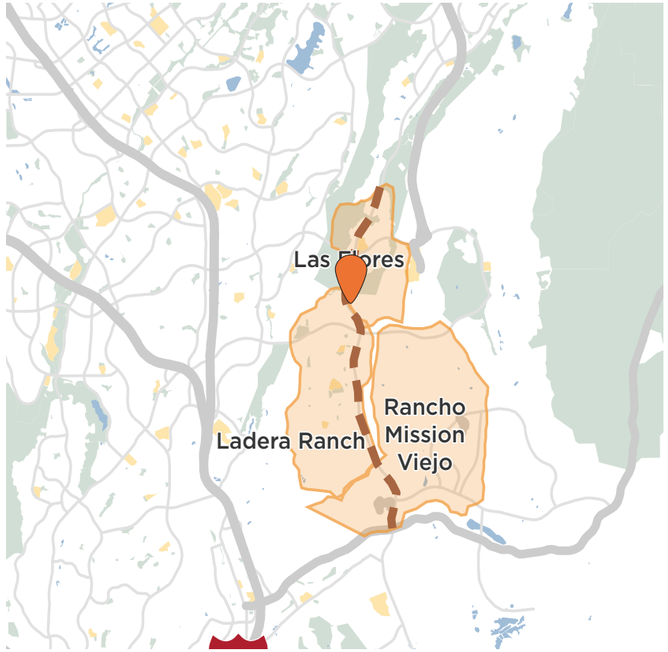
Antonio Parkway has six traffic lanes separated by a center median. There are existing Class II bike lanes on both sides of the street. Community members marked this street as needing improvements, and requested separated bicycle facilities. There have been nineteen bicycle or pedestrian collisions along Antonio Parkway during this Plan's study period. As shown on pages **128**, **136**, and **191** in the Community Profiles chapter, most of these collisions occurred near Oso Parkway or Crown Valley Parkway. Antonio Parkway is a level 4 traffic stress street for bicyclists and motor vehicle speed limits are as high as 55mph.

OPPORTUNITIES AND CONSTRAINTS

Antonio Parkway connects three unincorporated islands and helps to create a network of bikeways in this region of unincorporated Orange County. In addition to connecting to existing bike lanes, like on Crown Valley Parkway and Oso Parkway, Antonio Parkway also connects to recommended off street shared-use paths on O'Neill Parkway and Avenida La Pata, and to an existing shared-use path parallel to Cow Camp Road. Installing buffered bike lanes along Antonio Parkway will require narrowing of motor vehicle travel lanes. In the future, the County can consider removing a traffic lane to provide space for future bikeway enhancements like physical buffers.



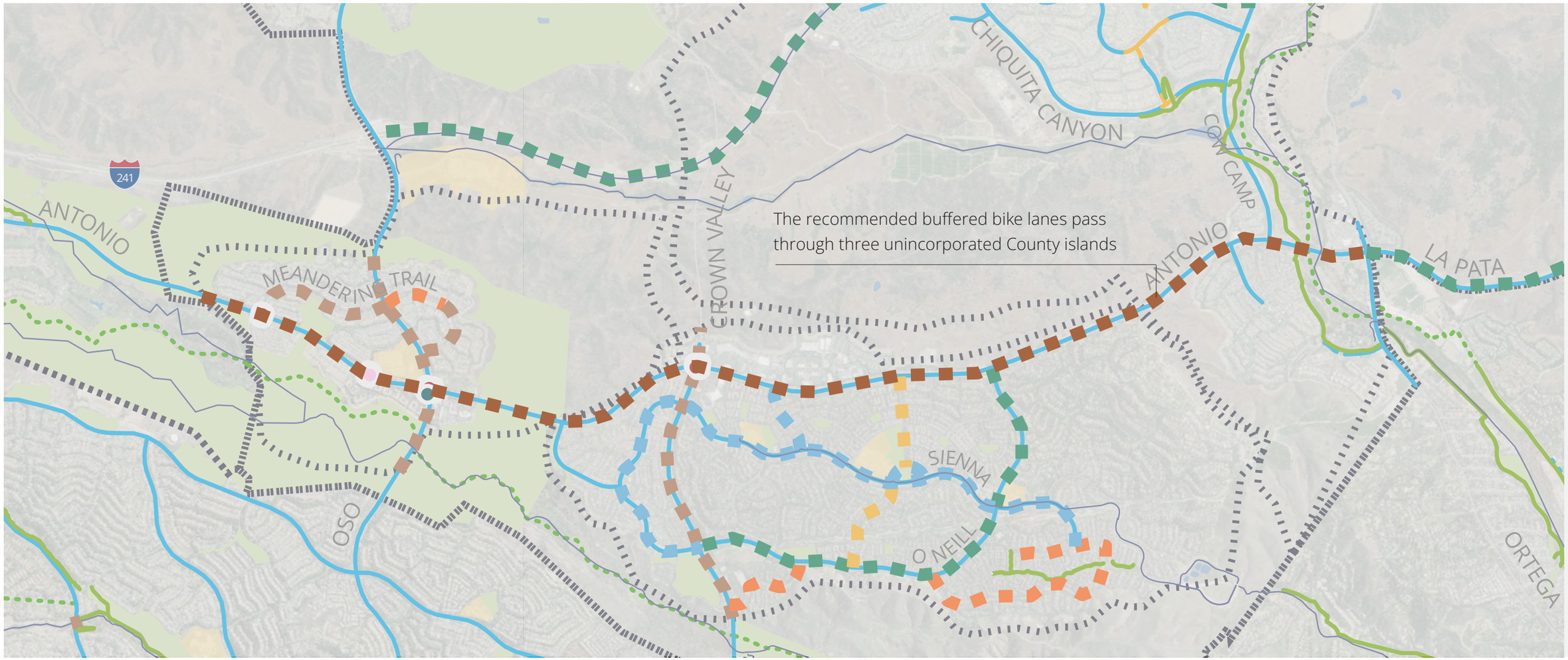
Antonio Parkway has three travel lanes in either direction, and existing Class II bike lanes



Las Flores, Ladera Ranch, Rancho Mission Viejo



The intersection of Antonio Parkway and Oso Parkway has long crossings and a slip lane which can be uncomfortable for pedestrians



Recommendations

- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway (Class IV)

Existing Bike Facilities

- Class I Shared Use Path
- Class II Bike Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Previously Proposed Bike Facilities

- Class I
- Class II
- Class III
- Class IV

Associated Pedestrian Recommendations

- Bus Bulbout
- Curb Improvements
- Enhanced Signage
- HV Crosswalk
- Ped Refuge Island
- Ped Scale Lighting
- Signal Improvements
- Traffic Calming- Roundabout
- Slip Lane Removal

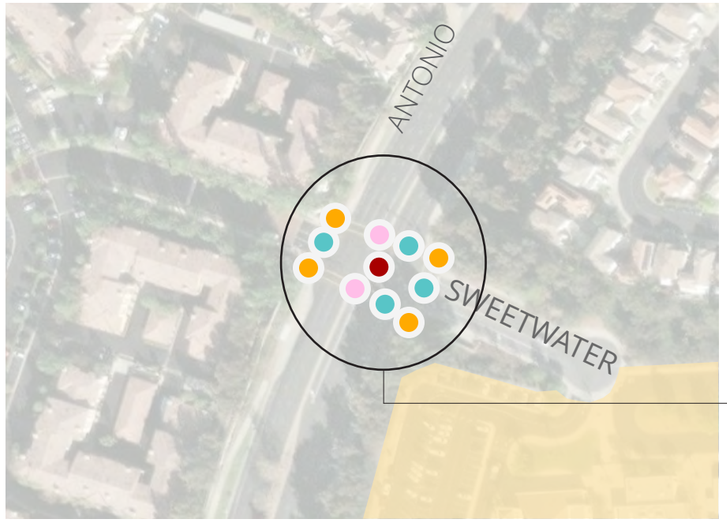
Basemap

- Park or Open Space
- School
- County Boundaries
- Flood Control Maintenance Roads

0 3 MILES



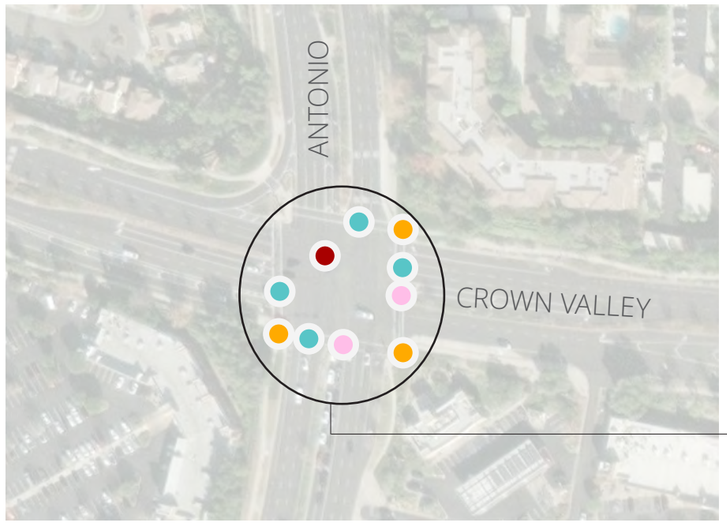
Install high visibility crosswalks, pedestrian refuge islands, curb extensions, and leading pedestrian intervals.



Install high visibility crosswalks, pedestrian refuge islands, leading pedestrian intervals and directional curb ramps.



Install high visibility crosswalks, curb extensions and leading pedestrian intervals. Modify the slip lane if future studies determine it will be safer for active transportation users.
These are Tier 1 prioritized pedestrian recommendations.



Install high visibility crosswalks, curb extensions, leading pedestrian intervals and pedestrian refuge islands.

0 120 240 360 US FEET

N

Recommendations
- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway (Class IV)

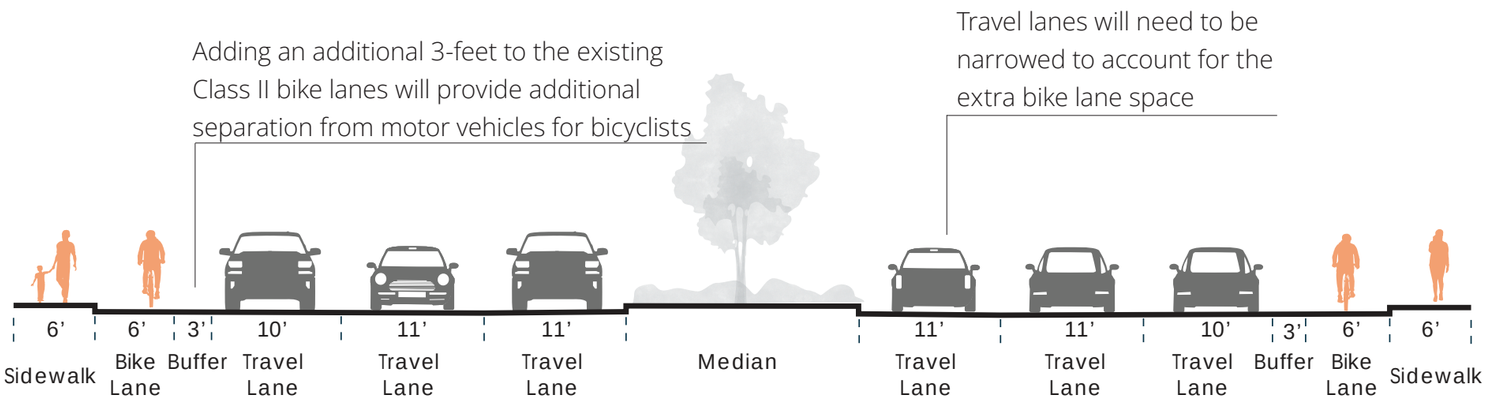
Existing Bike Facilities
- Class I Shared Use Path
- Class II Bike Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Previously Proposed Bike Facilities
- Class I
- Class II
- Class III
- Class IV

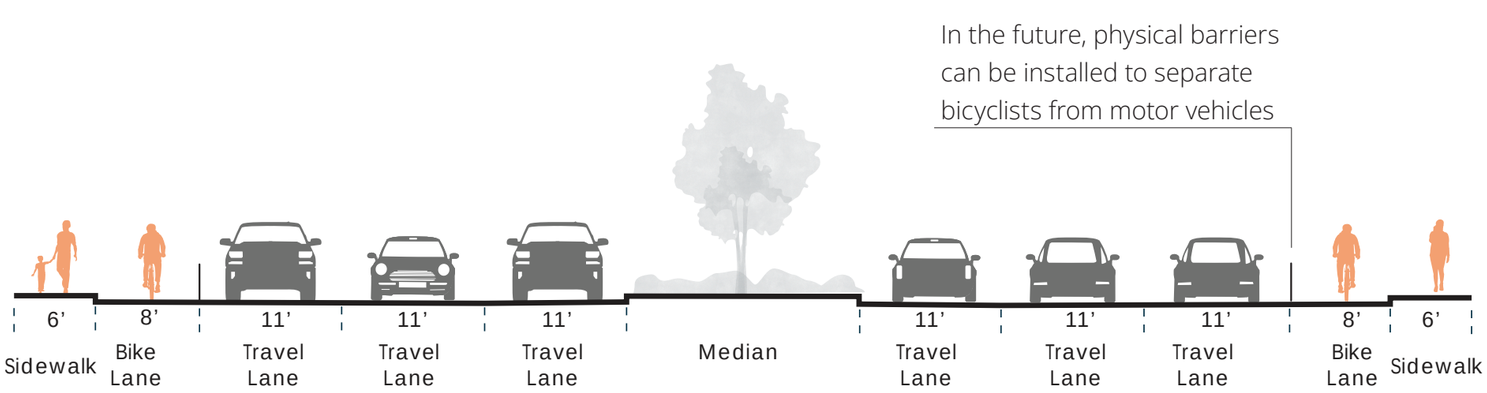
Associated Pedestrian Recommendations
- Bus Bulbout
- Curb Improvements
- Enhanced Signage
- HV Crosswalk
- Ped Refuge Island
- Ped Scale Lighting
- Signal Improvements
- Traffic Calming- Roundabout
- Slip Lane Removal

Basemap
- Park or Open Space
- School
- County Boundaries
- Flood Control Maintenance Roads

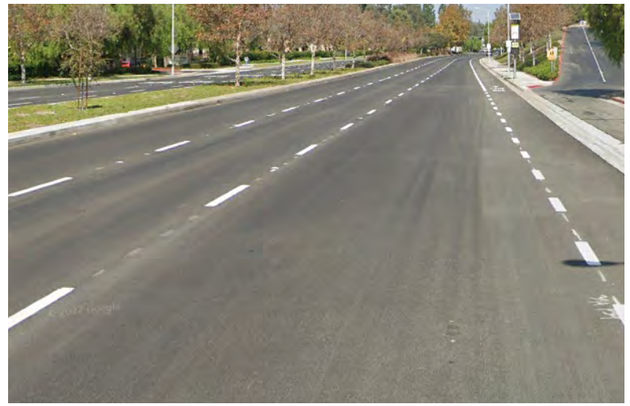
Potential Street Configuration



Potential Class IIb buffered bike lanes on Antonio Parkway in Ladera Ranch, Las Flores, and Rancho Mission Viejo



Potential Class IV separated bike lanes on Antonio Parkway in Ladera Ranch, Las Flores, and Rancho Mission Viejo



Community comments requested increased separation between bike lanes and traffic lanes



Narrowing traffic lanes will provide space for a bike lane buffer



When Antonio Parkway turns into Avenida La Pata, the recommendation changes to a Class I shared-use path

Orangewood Avenue

MOSSLER STREET TO PINE TREE LA

Dale/Augusta Island- District 1

RECOMMENDATIONS

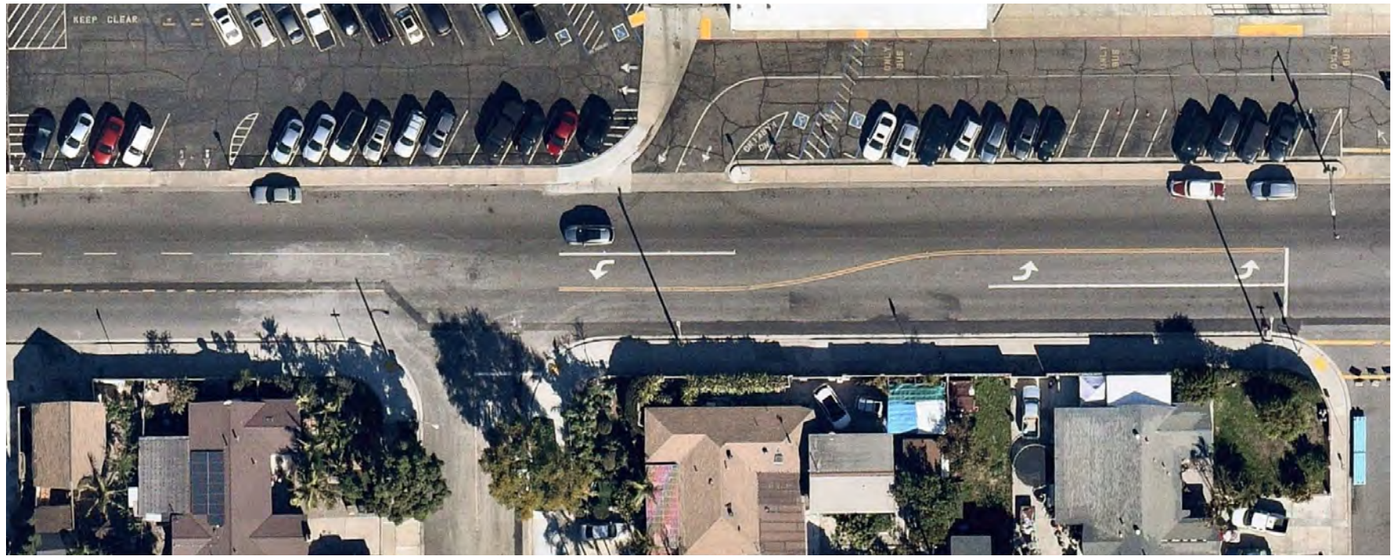
This recommendation is for a Class III bike route on Orangewood Avenue. This bike route connects to a Tier 1 Class II bike lane to the east on Orangewood Avenue from Mossler Street to Dale Street. The bike route intersects with a Tier 1 pedestrian recommendation at Mossler Street.

EXISTING CONDITIONS

This .1 mile recommendation has one traffic lane in both directions and a center turn lane. Parking is allowed on both sides of the street. This segment of Orangewood Avenue is in front of Bryant Elementary School. The speed limit is 40mph, but is reduced to 25mph during school hours. Dale/Augusta Island is considered a disadvantaged community by the State of California, and there is a higher percentage of residents that do no own a motor vehicle compared to other communities in unincorporated Orange County. Between 2009-2018 there has been a fatal bicyclist collision at the intersection of Orangewood Avenue and Nearing Drive. More information about collisions in Dale/Augusta Island can be found on **page 85** in the Community Profiles Chapter of this Plan.

OPPORTUNITIES AND CONSTRAINTS

This recommendation connects to a Tier 1 Class II bike lane recommendation on Orangewood Avenue between Mossler Street at Dale Street. Dropping the bike lane to a bike route in front of Bryan Elementary School will allow parents to drop-off and pick-up students on the curb in front of the school without needing to pull into a bike lane. Orangewood Avenue connects to previously recommended Class II bike lanes in the Cities of Garden Grove and Stanton. There is an opportunity for the County to work with Bryant Elementary School to improve drop-off and pick-up procedures to eliminate the need for parents to park and stop on Orangewood Avenue. This can allow the Class II bike lane to continue on Orangewood Avenue through the area.



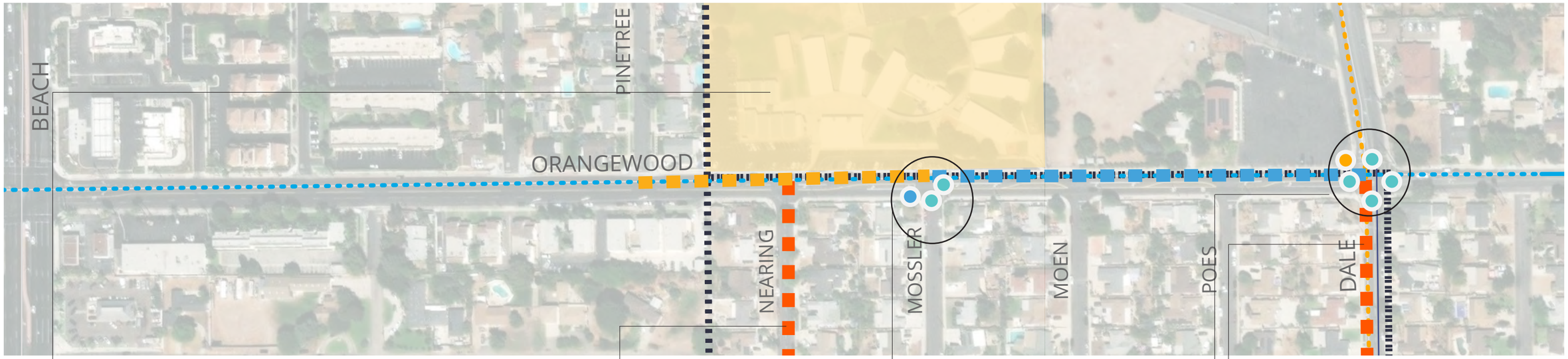
This segment of Orangewood Avenue has two travel lanes and one center turn lane



Dale/Augusta Island



The Orangewood Avenue bike route intersects with Tier 1 pedestrian recommendation at Mossler Street



The recommended bike route allows parents to park in front of Bryant Elementary School. The County can coordinate with the school to create a pick-up/drop-off program that does not require parents to park on Orangewood Avenue. This can allow the County to extend the Class II bike lane through Dale/Augusta Island.

The recommended bike route on Orangewood Avenue connects to a recommended Class IIb bicycle boulevard on Nearing Drive (**page 319**).

Install high visibility crosswalks and school crossing signage.

This recommended bike lanes on Orangewood Avenue connect to a recommended Class IIb bicycle boulevard on Dale Street (**page 293**).

Install high visibility crosswalks and curb extensions.

Recommendations
- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway (Class IV)

Existing Bike Facilities
- Class I Shared Use Path
- Class II Bike Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Previously Proposed Bike Facilities
- Class I
- Class II
- Class III
- Class IV

Associated Pedestrian Recommendations
- Bus Bulbout
- Curb Improvements
- Enhanced Signage
- HV Crosswalk
- Ped Refuge Island
- Ped Scale Lighting
- Signal Improvements
- Traffic Calming- Roundabout
- Slip Lane Removal

Basemap
- Park or Open Space
- School
- County Boundaries
- Flood Control Maintenance Roads

0 0.25 MILES N

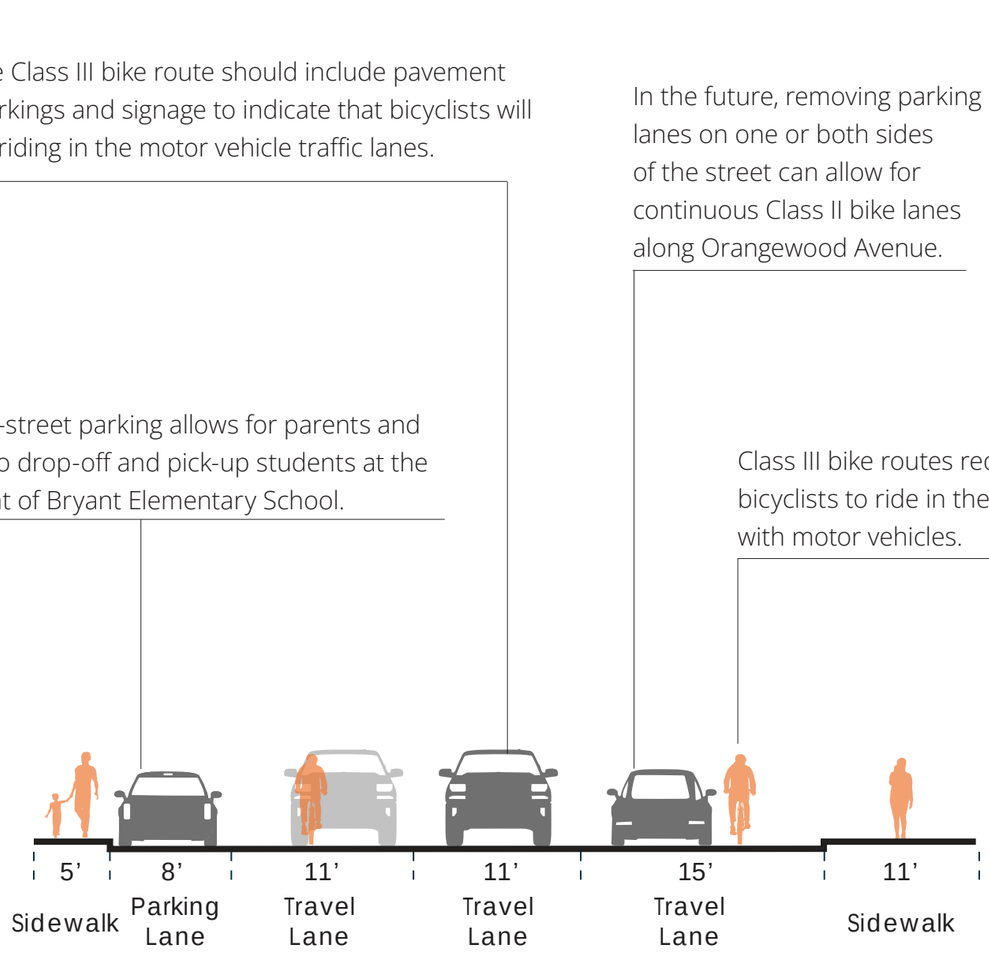
Potential Street Configuration

The Class III bike route should include pavement markings and signage to indicate that bicyclists will be riding in the motor vehicle traffic lanes.

In the future, removing parking lanes on one or both sides of the street can allow for continuous Class II bike lanes along Orangewood Avenue.

Keeping on-street parking allows for parents and guardians to drop-off and pick-up students at the curb in front of Bryant Elementary School.

Class III bike routes require bicyclists to ride in the street with motor vehicles.



Potential Class III bike route on Orangewood Avenue in Dale/Augusta Island



Orangewood Avenue is a 40mph, but speed is reduced to 25mph in the school zone



Bike recommendations in unincorporated Orange County will connect to existing Class II bike lanes in the City of Garden Grove



A Class III bike route allows cars to park in front of Bryant Elementary School

Cerritos Avenue

GILBERT STREET TO BROOKHURST STREET

Anaheim Island- District 4

RECOMMENDATIONS

This recommendation is for a Class IIIb bicycle boulevard on Cerritos Avenue. This bicycle boulevard intersects with Tier 1 pedestrian recommendations at Gilbert Street.

EXISTING CONDITIONS

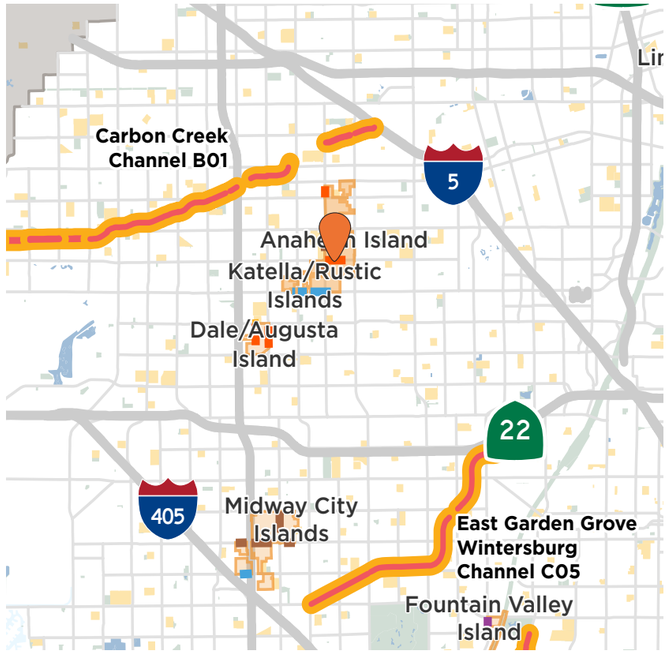
Cerritos Avenue has one traffic lane in either direction and a center turn lane. The street widens between Gilbert Street and Hedlund Drive, but painted chicanes visually narrow the roadway. On-street parking is not allowed along this 35mph street. There have been seven pedestrian or bicyclist collisions along this half-mile segment of Cerritos Avenue, mostly as the intersection of Gilbert Street. These collisions are further described in the Community Profiles chapter on **page 54**. There are no signals or stop signs for drivers on Cerritos Avenue along this segment in unincorporated Orange County.

OPPORTUNITIES AND CONSTRAINTS

This bicycle recommendation connects to previously proposed Class II bike lanes in the City of Anaheim. Cerritos Avenue also intersects with recommended buffered bike lanes on Gilbert Street, which is a top fifteen prioritized bicycle project. Implementing a bicycle boulevard requires bicyclists to share the road with drivers, but will include traffic calming devices to slow down vehicles. Traffic calming on Cerritos Avenue can include traffic circles at intersections and physical chicanes. There is an opportunity to remove the center turn lane and install Class II bike lanes on Cerritos Avenue, but this will depend on future feasibility studies.



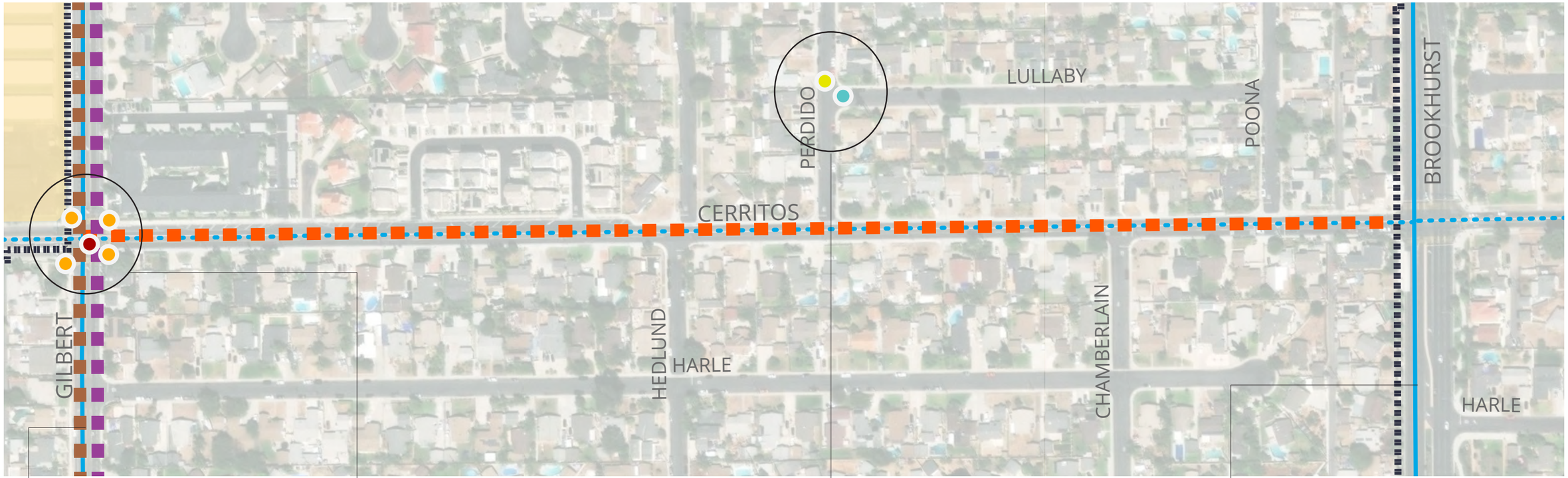
Cerritos Avenue has three traffic lanes, including a center turn lane



Anaheim Island



Cerritos Avenue intersects with Tier 1 pedestrian recommendation at Gilbert Street



Improve pedestrian signal timing and reduce corner radii.

Install high visibility crosswalks and pedestrian- scale lighting.

Cerritos Avenue connects to Tier 1 recommended bikeways on Gilbert Street (**page 296**).

The recommended bicycle boulevard on Cerritos Avenue will connect with existing bike lanes on Brookhurst Street.

Recommendations
- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway (Class IV)

Existing Bike Facilities
- Class I Shared Use Path
- Class II Bike Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Previously Proposed Bike Facilities
- Class I
- Class II
- Class III
- Class IV

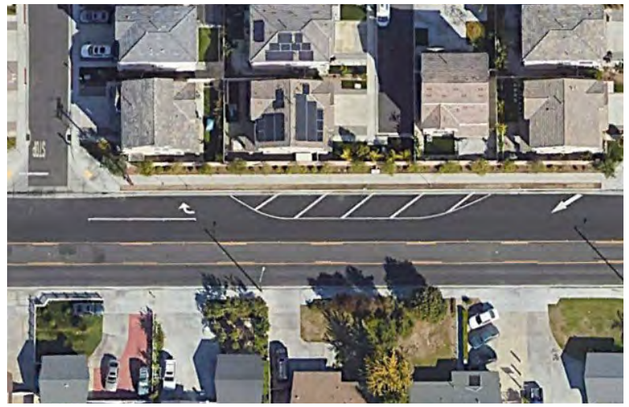
Associated Pedestrian Recommendations
- Bus Bulbout
- Curb Improvements
- Enhanced Signage
- HV Crosswalk
- Ped Refuge Island
- Ped Scale Lighting
- Signal Improvements
- Traffic Calming- Roundabout

Basemap
- Park or Open Space
- School
- County Boundaries
- Flood Control Maintenance Roads

0 0.25 MILES

N

Potential Street Configuration



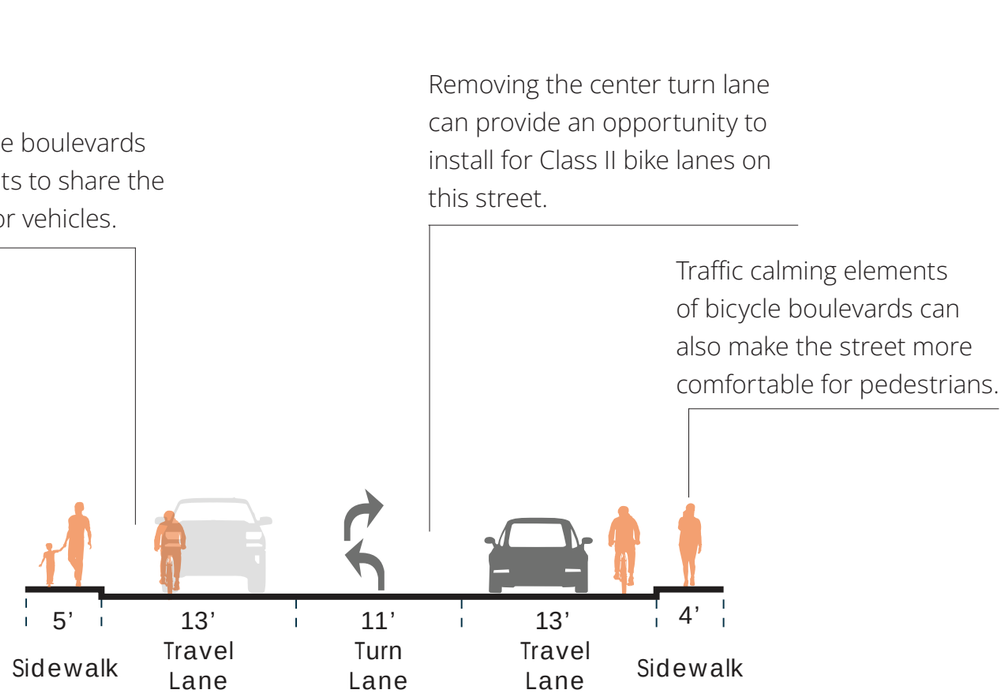
East of Hedlund Drive, Cerritos Avenue widens



Installing physical chicanes on Cerritos Avenue can further reduce traffic speeds by narrowing the roadway



There are no controlled intersections along this half-mile segment of Cerritos Avenue



Potential Class IIIb bicycle boulevard on Cerritos Avenue in Anaheim Island



Future studies and resident outreach can determine if removing the center lane to install Class II bike lanes is feasible

Live Oak Canyon Road

EL TORO ROAD TO PLANO TRABUCO ROAD

Trabuco Canyon- District 3

RECOMMENDATIONS

This recommendation is for Class II bike lanes on Live Oak Canyon Road.

EXISTING CONDITIONS

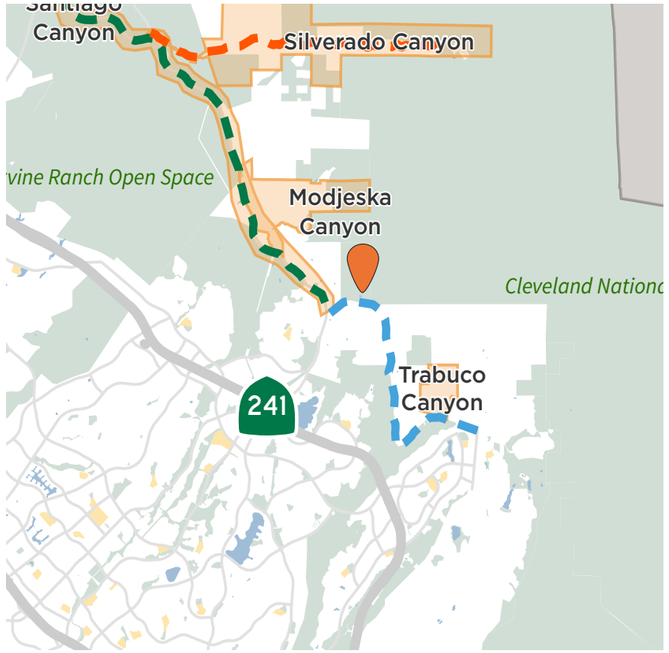
Live Oak Canyon Road is a narrow canyon road connecting to O'Neill Regional Park. The road has one traffic lane in each direction, with an unpaved shoulder. This is a level 4 traffic stress 35mph street, however public input showed that bicyclists want to ride on this street, especially to connect to O'Neill Regional Park. As described in the Community Profiles chapter on **page 226**, there has been one bicyclist collision on Live Oak Canyon Road at Trabuco Creek Road. Although Live Oak Canyon Road is not within an unincorporated County area, the street is still within the County's jurisdiction.

OPPORTUNITIES AND CONSTRAINTS

Live Oak Canyon Road connects to an OC Loop bikeway on El Toro Road, to Live Oak Canyon Trail, to a bike route on Plano Trabuco Road, and to trails in the O'Neill Regional Park. This bike lane would also connect to a recommended bike route on Trabuco Oaks Drive and to the recommended shared-use path on Santiago Canyon Road which is also a top fifteen prioritized bicycle project. The County can work to pave the shoulder along Live Oak Canyon Road to create space for a Class II bike lane. There are constraints along the road however, where utilities and dense forested land will make it more difficult and costly to pave space for a bike lane. In areas where the bike lane is not feasible, traffic calming elements can slow down vehicles so bicyclists can more comfortably share the traffic lane.



Live Oak Canyon Road is a narrow road with two travel lanes



Trabuco Canyon

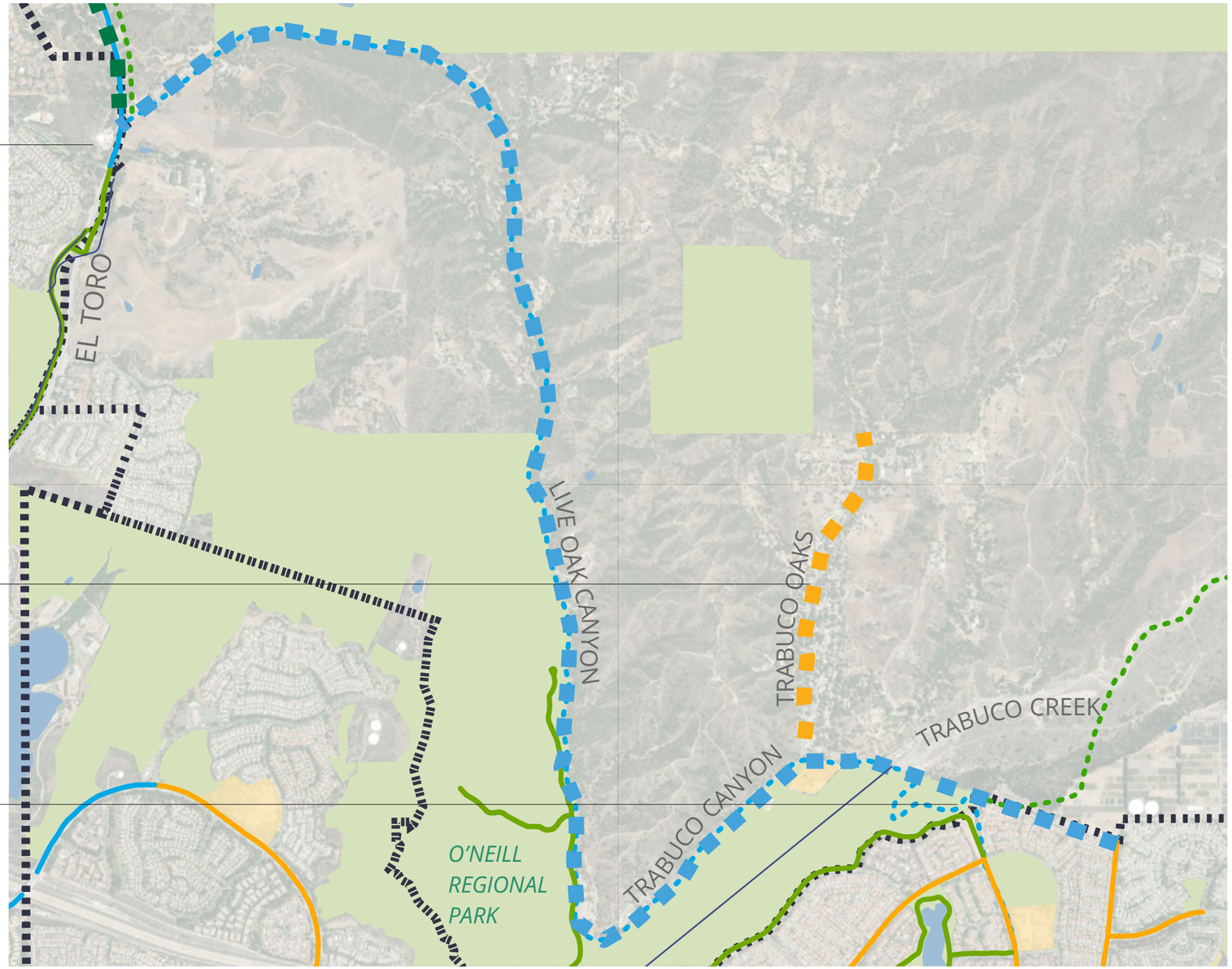


An unpaved shoulder lines Live Oak Canyon Road.

The recommended bike lanes on Live Oak Canyon Road connect to a recommended shared-use path on Santiago Canyon Road (**page 284**) and to an existing shared-use path on El Toro Road.

The recommended bike lanes connect to a recommended bike route on Trabuco Oaks Drive.

The recommended bike lanes also connect to the Live Oak Canyon Trail.



Recommendations
- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway (Class IV)

Existing Bike Facilities
- Class I Shared Use Path
- Class II Bike Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Previously Proposed Bike Facilities
- Class I
- Class II
- Class III
- Class IV

Associated Pedestrian Recommendations
- Bus Bulbout
- Curb Improvements
- Enhanced Signage
- HV Crosswalk
- Ped Refuge Island
- Ped Scale Lighting
- Signal Improvements
- Traffic Calming- Roundabout
- Slip Lane Removal

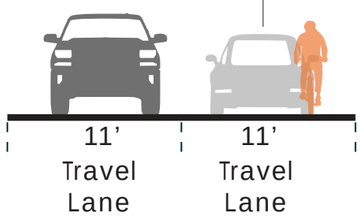
Basemap
- Park or Open Space
- School
- County Boundaries
- Flood Control Maintenance Roads

0 2 MILES

N

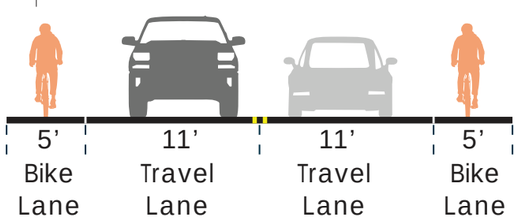
Potential Street Configuration

In physically constrained areas, bicyclists can share the road with motor vehicles. Traffic calming in these areas can slow down motor vehicles and alert drivers that bicyclists may be on the road.



Potential Class III bike route on Live Oak Canyon Road near Trabuco Canyon

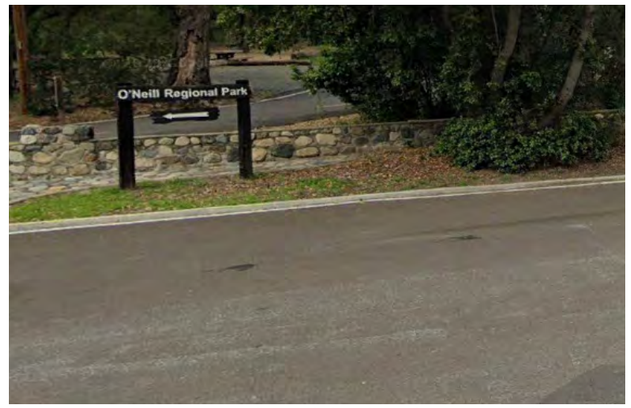
In other areas, the shoulder along Live Oak Canyon Road can be paved to create space for Class II bike lanes.



Potential Class II bike lanes on Live Oak Canyon Road near Trabuco Canyon



Utilities and forested areas will make paving the shoulder difficult in some areas of the street



Community engagement showed that bicyclists would like to use Live Oak Canyon Road to ride to O’Neill Regional Park



The recommended bike lanes on Live Oak Canyon Road would connect to the existing shared-use path on El Toro Road

Harbor Boulevard

EDINGER AVENUE TO SYLVAN RIVER

Fountain Valley Island- District 1

RECOMMENDATIONS

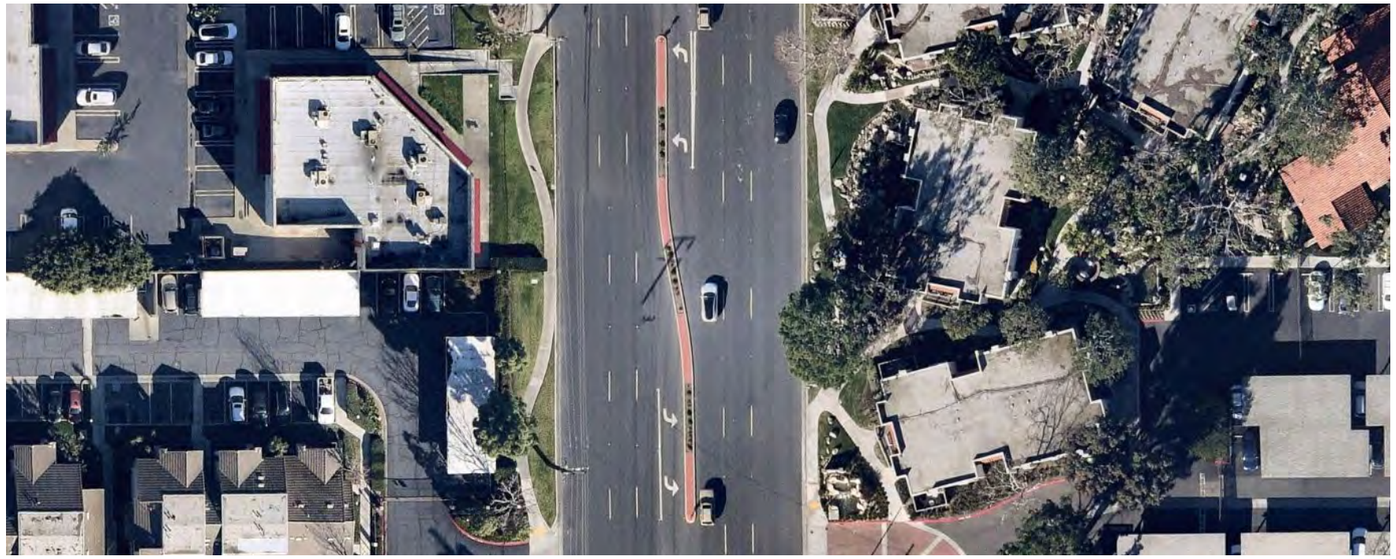
This recommendation is for a Class IV separated bikeway on a .15 mile segment of Harbor Boulevard. This bikeway intersects with a pedestrian recommendation at Edinger Avenue.

EXISTING CONDITIONS

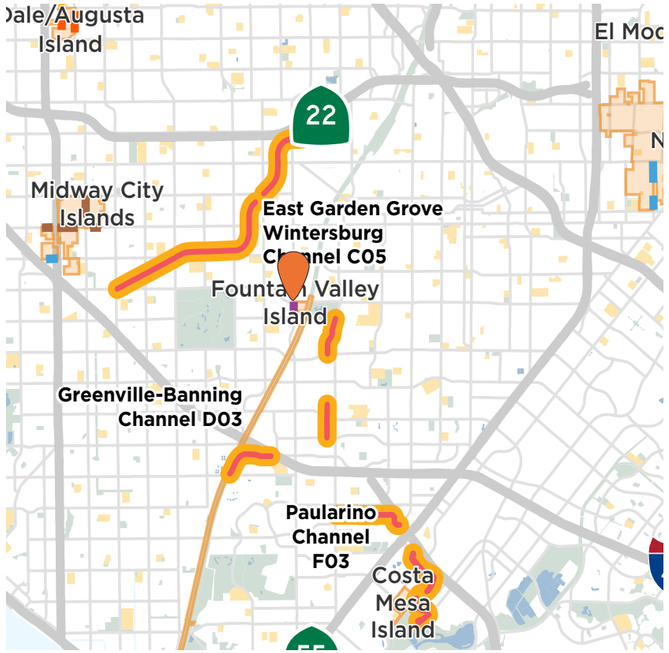
Harbor Boulevard is six lane street with a center median. This is a high stress (LTS 4), 45mph street with no bicycle facilities. Between 2009-2018 there has been one bicyclist collision on Harbor Boulevard, further described in the Community Profiles chapter on **page 108**. There is high demand for active transportation in Fountain Valley, likely due to the proximity to the Santa Ana River Trail. This segment of Harbor Boulevard connects to a retail area and to multi-family residences.

OPPORTUNITIES AND CONSTRAINTS

Harbor Boulevard connects to Edinger Avenue, which also has a recommended Class IV separated bikeway to connect to the existing separated bikeway in the City of Santa Ana. Together, these bikeways connect to the Santa Ana River Trail, a regional shared-use path that will eventually connect to San Bernardino County. There are previously proposed Class II bike lanes on Harbor Boulevard; however, due to Harbor Boulevard's high speeds and multiple lanes, this Plan recommends adding physical separation from the bikeway and the traffic lanes. Future studies will consider the best design for this separated bikeway including determining if the bikeway is on one or both sides of the street, and the type of physical buffer that is installed. Driveway entrances and exits on Harbor Boulevard will be taken into consideration for the bikeway's design. The County can coordinate with the City of Fountain Valley to create a longer Class IV separated bikeway along Harbor Boulevard.



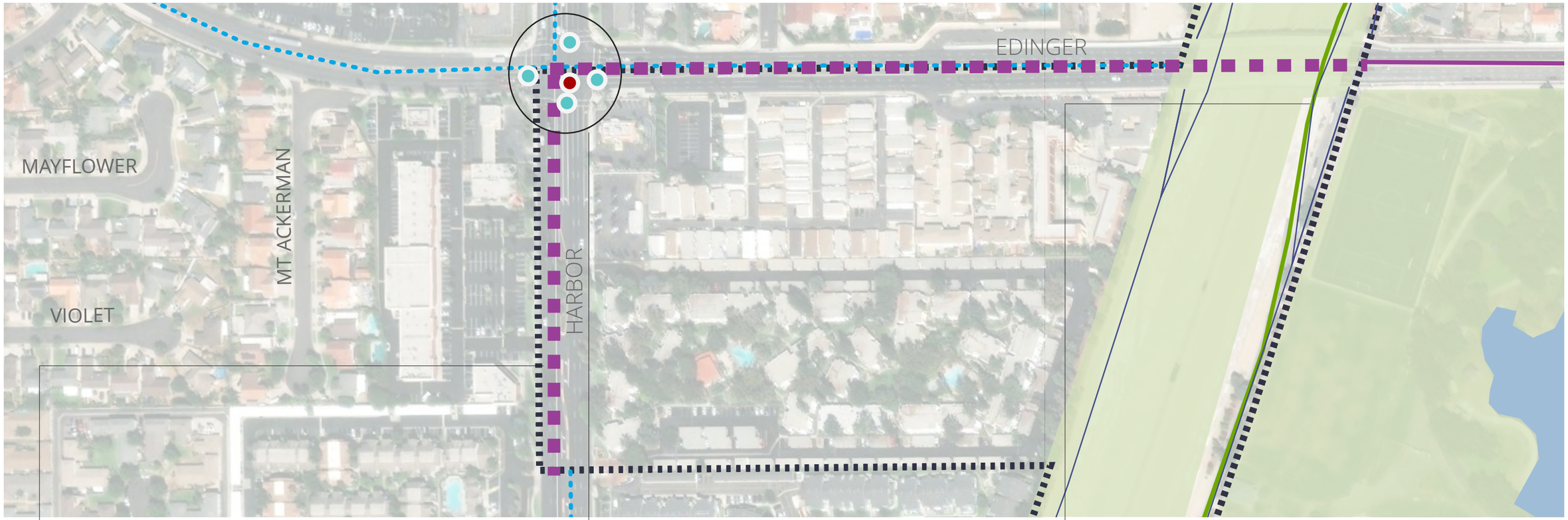
Harbor Boulevard is a six-lane, 45mph street



Fountain Valley Island



This Plan includes pedestrian recommendations for Harbor Boulevard and Edinger Avenue



The County can work with the City of Fountain Valley to extend the separated bikeway further along Harbor Boulevard.

Install high visibility crosswalks and leading pedestrian intervals.

The recommended Class IV separated bikeway on Edinger Avenue connects to the Santa Ana River Trail.

Recommendations
- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway (Class IV)

Existing Bike Facilities
- Class I Shared Use Path
- Class II Bike Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Previously Proposed Bike Facilities
- Class I
- Class II
- Class III
- Class IV

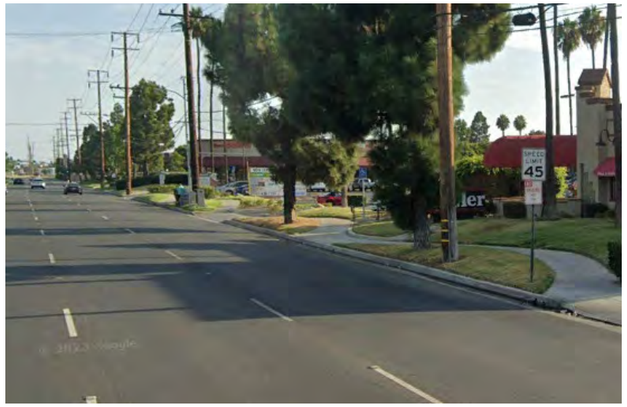
Associated Pedestrian Recommendations
- Bus Bulbout
- Curb Improvements
- Enhanced Signage
- HV Crosswalk
- Ped Refuge Island
- Ped Scale Lighting
- Signal Improvements
- Traffic Calming- Roundabout
- Slip Lane Removal

Basemap
- Park or Open Space
- School
- County Boundaries
- Flood Control Maintenance Roads

0 0.25 MILES

N

Potential Street Configuration



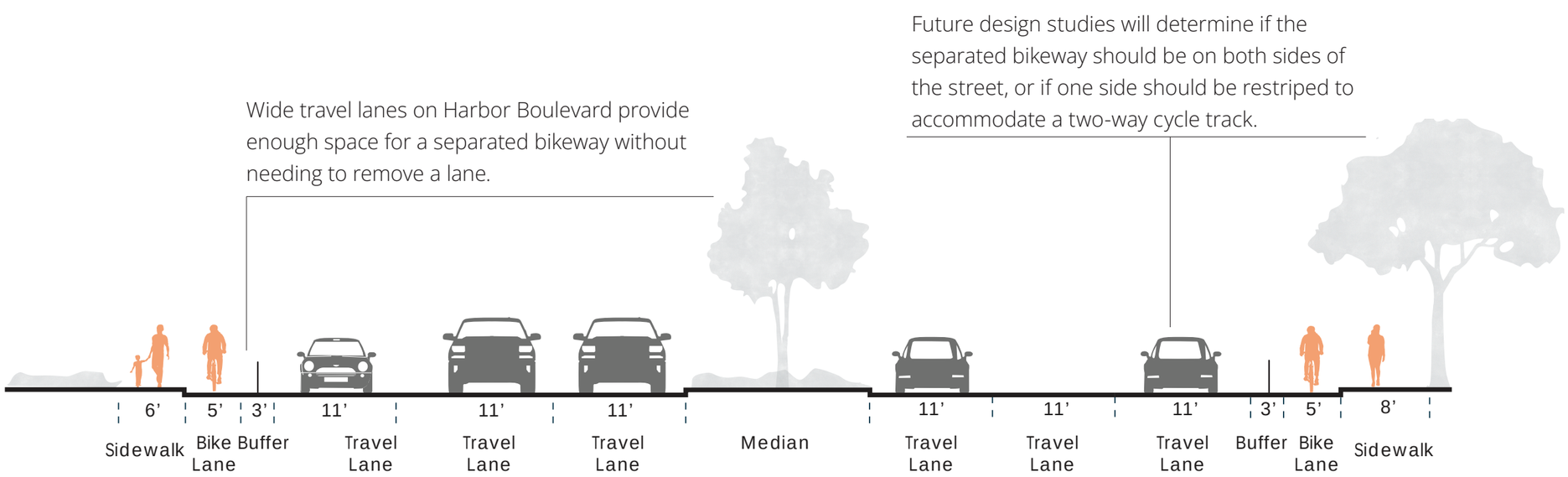
High speeds and multiple traffic lanes make Harbor Boulevard uncomfortable for bicycling



Future studies will consider how to approach the number of driveways on Harbor Boulevard when designing the bikeway



Harbor Boulevard and Edinger Avenue connect to the Santa Ana River Trail



Potential Class IV separated bikeway on Harbor Boulevard in Fountain Valley Island

McFadden Avenue

SUGAR DRIVE TO BEACH BOULEVARD

Midway City Island- District 1

RECOMMENDATIONS

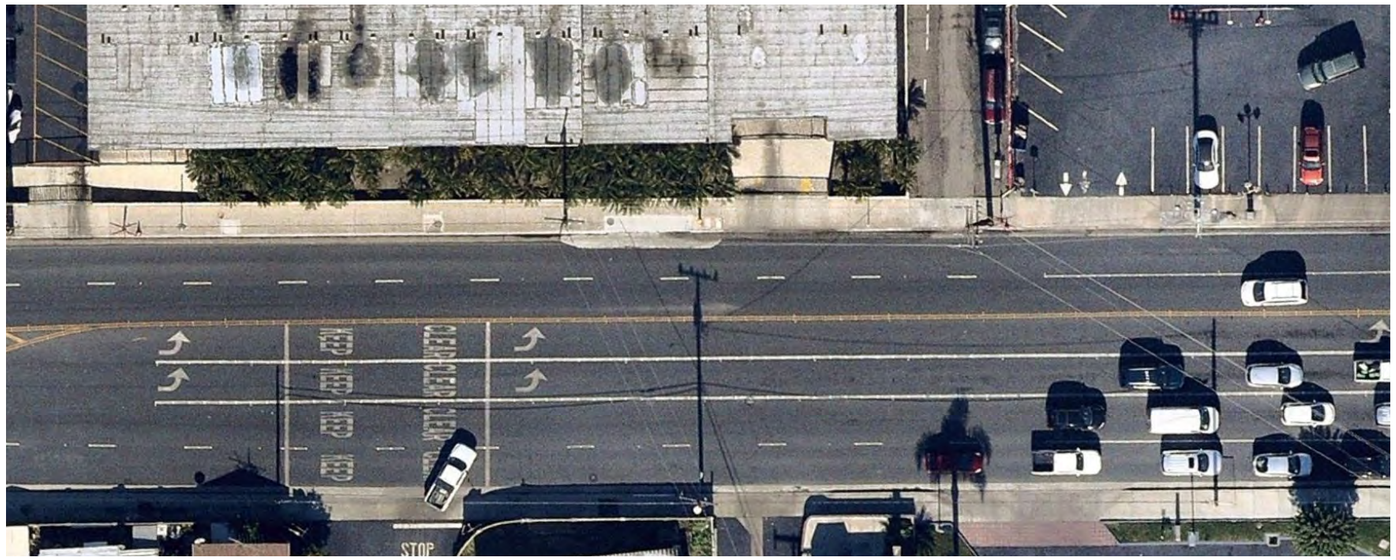
This recommendation is for Class II bike lanes on McFadden Avenue. The bike lane recommendation extends on McFadden Avenue in other parts of Midway City Island, but this segment is the only segment in Tier 1 of the prioritized list due to the collisions on Beach Boulevard. This recommendation intersects with a Tier 1 pedestrian recommendation at Beach Boulevard.

EXISTING CONDITIONS

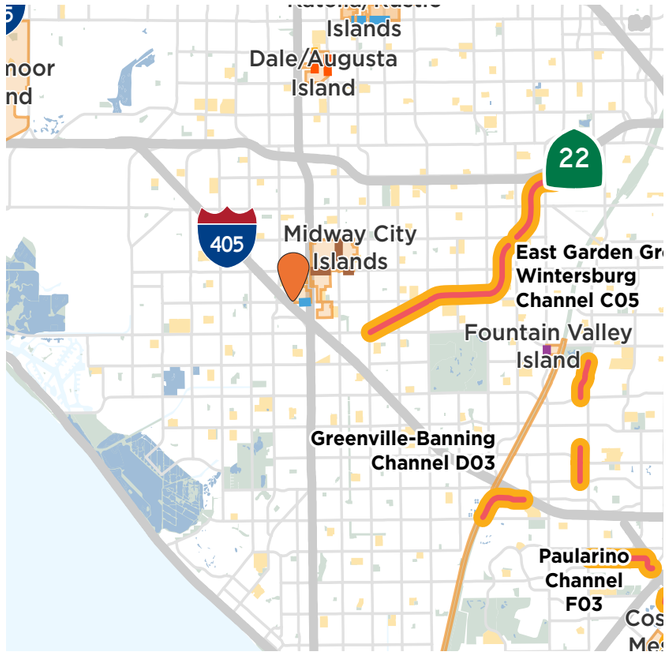
McFadden Avenue has two travel lanes on either side of the street with a center turn lane. Approaching the Beach Boulevard intersection, the lanes increase to six. This is a high stress (LTS 4), 40mph street with no bicycle infrastructure on the County maintained portion of the street. As described on **page 156** in the Community Profiles chapter, there has been a bicycle collision at the intersection of Beach Boulevard, and a pedestrian collision just north of the intersection. A high percentage of residents in this community do not own a vehicle, when compared to residents in the rest of the unincorporated County. This community is also considered disadvantaged by CalEnviroScreen, and there is a high demand for active transportation. Community members marked McFadden Avenue as a street that needs improved active transportation facilities.

OPPORTUNITIES AND CONSTRAINTS

This .2 mile segment of bike lane will connect to existing Class II bike lanes on McFadden Avenue to the west in the City of Huntington Beach, and to previously proposed Class II bike lanes to the east in the City of Westminster. Installing a Class II bike lane on this segment of McFadden Avenue will require removal of a traffic lane. One option is to remove one of the eastbound left turn lanes at the intersection of McFadden Avenue and Beach Boulevard. This will provide the space needed for a bike lane without losing traffic lanes. However, this design would require complete street restriping.



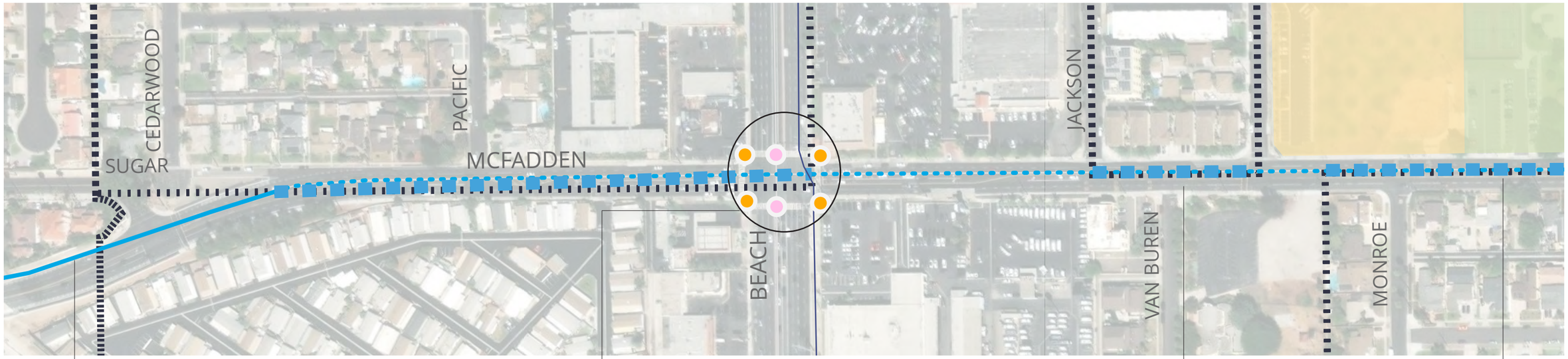
Approaching the Beach Boulevard intersection, McFadden Avenue has six traffic lanes



Midway City Island



McFadden Avenue intersects with Tier 1 pedestrian recommendations at Beach Boulevard



The recommended Class II bike lanes connect to existing bike lanes in the City of Huntington Beach.

Install curb extensions, pedestrian refuge islands, and fill in sidewalk gaps.

These other two recommended segments of Class II bike lanes on McFadden Avenue are Tier 2 prioritized bicycle recommendations.

Recommendations
- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway (Class IV)

Existing Bike Facilities
- Class I Shared Use Path
- Class II Bike Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Previously Proposed Bike Facilities
- Class I
- Class II
- Class III
- Class IV

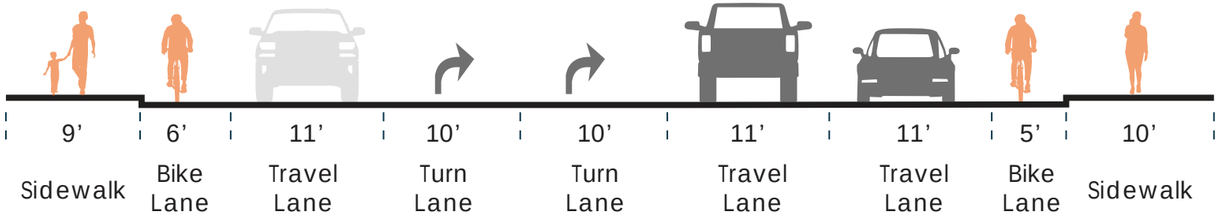
Associated Pedestrian Recommendations
- Bus Bulbout
- Curb Improvements
- Enhanced Signage
- HV Crosswalk
- Ped Refuge Island
- Ped Scale Lighting
- Signal Improvements
- Traffic Calming- Roundabout
- Slip Lane Removal

Basemap
- Park or Open Space
- School
- County Boundaries
- Flood Control Maintenance Roads

0 0.25 MILES

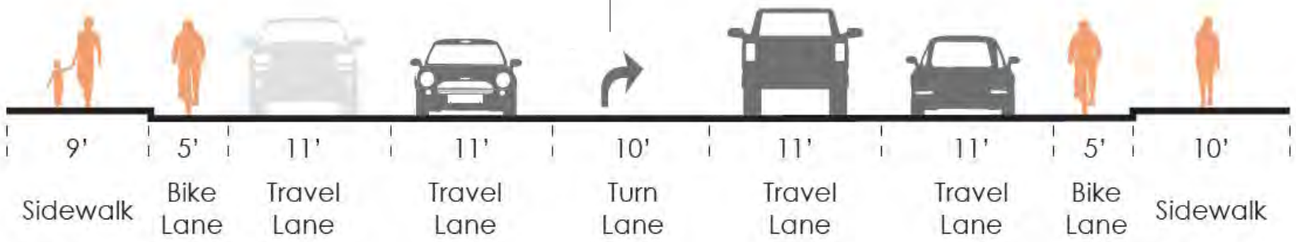
Potential Street Configuration

The County can remove a travel lane on one side of McFadden Avenue to accommodate the bike lane.



Potential Class II bike lanes with travel lane removal on McFadden Avenue in Midway City Island

Alternatively, the County can consider removing one of the eastbound left turn lanes on McFadden Avenue at the Beach Boulevard intersection. This will require restriping the street, but will provide space for the bike lanes.



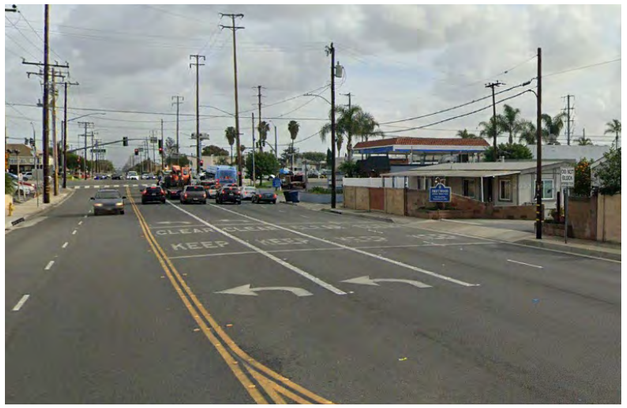
Potential Class II bike lanes with left turn lane removal on McFadden Avenue in Midway City Island



McFadden Avenue is a high stress road with a 40mph speed limit



These recommended bike lanes will connect to existing bike lanes on McFadden Avenue in the City of Huntington Beach



Removing a left turn lane is a potential option for providing space for the Class II bike lane

Nearing Drive

CHAPMAN AVENUE TO ORANGEWOOD AVENUE

Dale/Augusta Island- District 1

RECOMMENDATIONS

This recommendation is for a Class IIIb bicycle boulevard on Nearing Drive.

EXISTING CONDITIONS

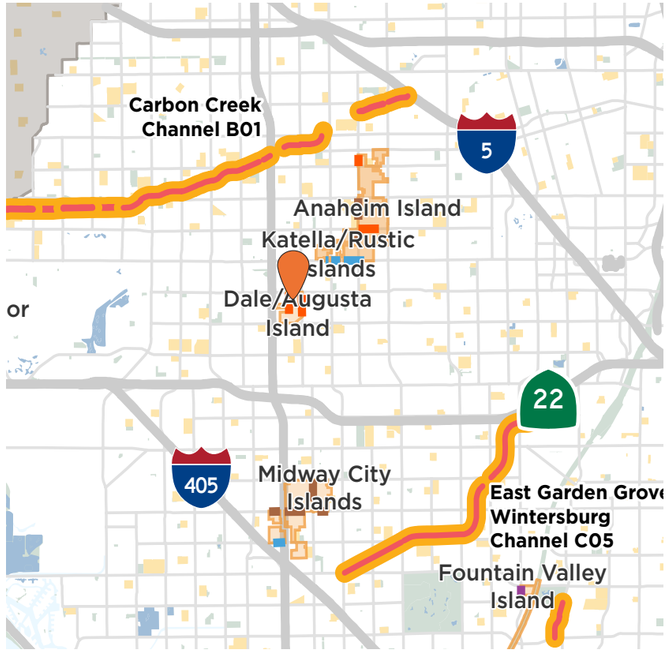
Nearing Drive has two travel lanes with parking on both sides of the street. This residential street connects to Bryant Elementary School on Orangewood Avenue and to Saint Polycarp Catholic School on Chapman Avenue. Dale/Augusta Island is considered a disadvantaged community by CalEnviroScreen, and has a higher proportion of residents that do not own a vehicle compared to other areas of unincorporated Orange County. There have been four pedestrian or bicyclist collisions along this segment of Nearing Drive, including three fatal collisions. More collision information for Dale/Augusta Island can be found on **page 85** in the Community Profiles chapter. Community members requested bicycling and walking improvements along Nearing Drive, and said this street is a popular place to walk. There are no existing bicycle facilities on Nearing Drive. There are sidewalks and curb ramps on both sides of the street, but no crosswalks.

OPPORTUNITIES AND CONSTRAINTS

This bicycle boulevard will provide traffic calming on Nearing Drive. Traffic calming can include infrastructure like chicanes or traffic circles. The .4 mile portion of Nearing Drive from Orangewood Avenue to Filmore Drive does not have any controlled intersections, which may encourage speeding. The recommended traffic calming will slow down vehicles, and may create a more comfortable environment for bicyclists and pedestrians, while maintaining most of the on-street parking. This bicycle boulevard will connect to the Tier 1 recommended Class III bike route and Class II bike lanes on Orangewood Avenue, and to previously proposed Class II bike lanes on Chapman Avenue in the City of Stanton.



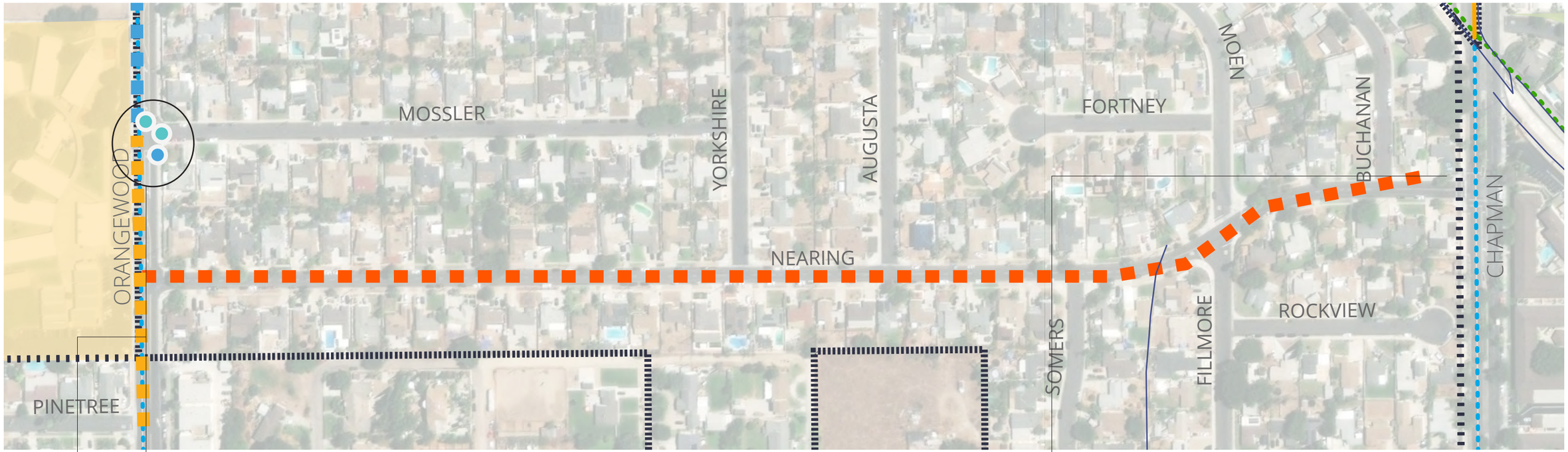
Nearing Drive is a two-lane street with parking on both sides



Dale/Augusta Island



There are sidewalks on both sides of Nearing Drive, but the intersections along the street do not have crosswalks



Install high visibility crosswalks and school crossing signage.

The recommended bikeway on Nearing Drive connects to a recommended Class III bike route on Orangewood Avenue (**page 304**).

Nearing Drive connects to previously proposed Class II bike lanes on Chapman Avenue in the City of Stanton.

Recommendations
- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway (Class IV)

Existing Bike Facilities
- Class I Shared Use Path
- Class II Bike Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Previously Proposed Bike Facilities
- Class I
- Class II
- Class III
- Class IV

Associated Pedestrian Recommendations
- Bus Bulbout
- Curb Improvements
- Enhanced Signage
- HV Crosswalk
- Ped Refuge Island
- Ped Scale Lighting
- Signal Improvements
- Traffic Calming- Roundabout
- Slip Lane Removal

Basemap
- Park or Open Space
- School
- County Boundaries
- Flood Control Maintenance Roads

0 0.25 MILES

Potential Street Configuration



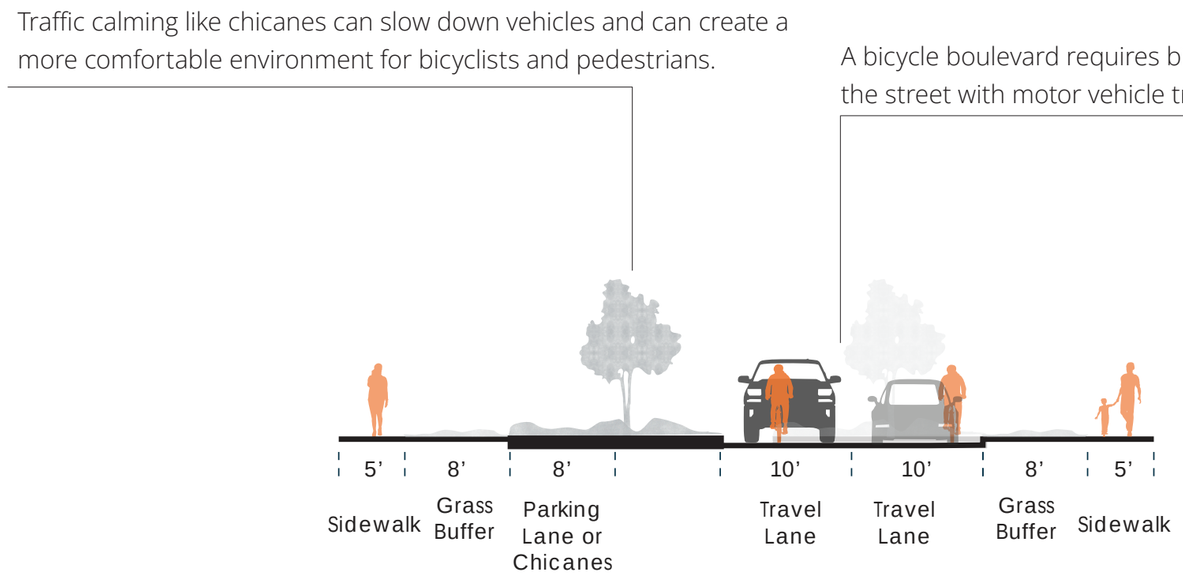
A bicycle boulevard will maintain most of the on-street parking on Nearing Drive



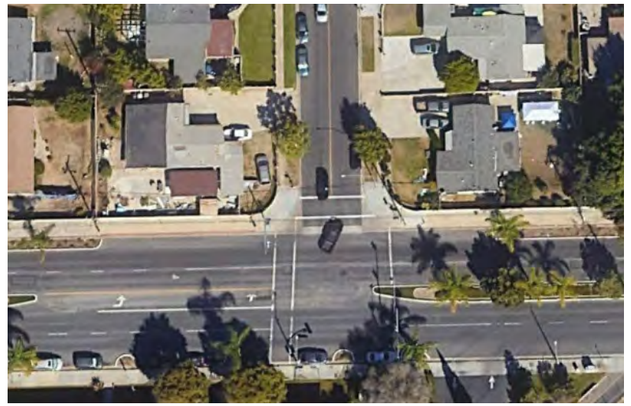
This segment of Nearing Drive connects to Orangewood Avenue near Bryant Elementary School



There is a .4 mile portion of Nearing Drive with no controlled stops, which may encourage speeding



Potential Class IIIb bicycle boulevard on Nearing Drive in Dale/Augusta Island



Nearing Drive connects to Chapman Avenue which has previously proposed Class II bike lanes

Project Cut Sheets

FLOOD CONTROL CHANNELS

The flood control maintenance roads in Orange County traverse a variety of contexts from open space, to industrial zones, to residential areas. Despite these contexts, the characteristics of the prioritized flood control channel maintenance roads do not differ significantly. This page showcases an example channel with a shared-use path along an existing maintenance road. These shared-use paths designs are principally focused on the maintenance roads, rather than the larger flood control channel.

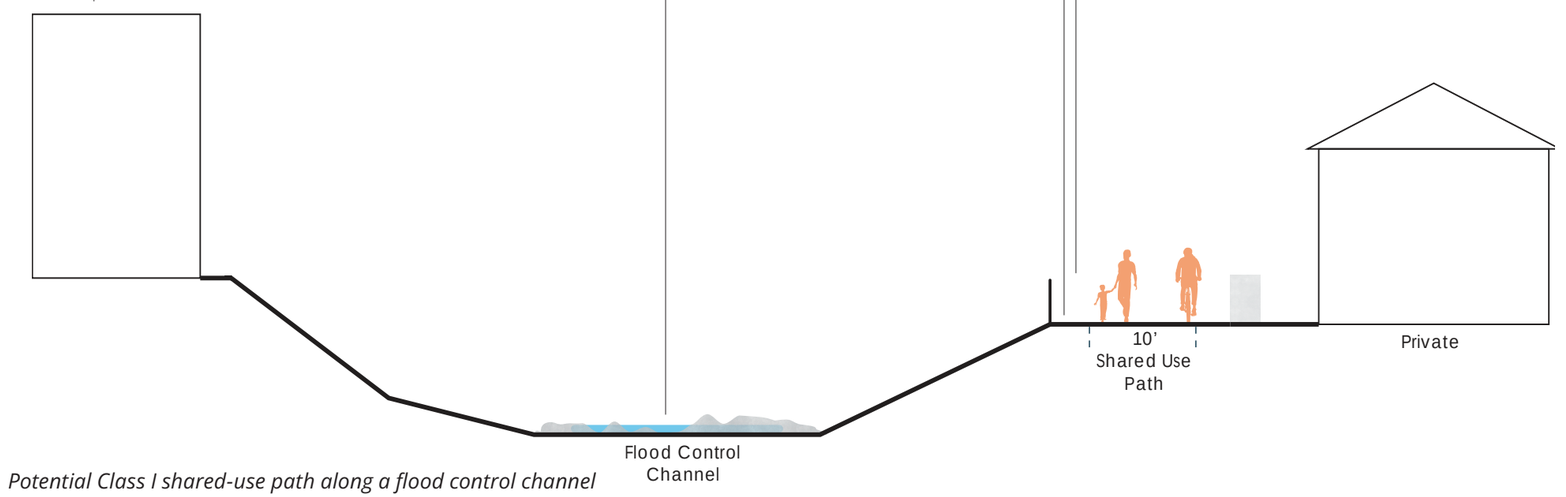


Flood control maintenance roads in Orange County run adjacent to industrial buildings, homes, retail, and open space.

Flood control channels are completely separated from motor vehicles.

Per the County HDM, the minimum shared-use path width is 10 feet. However, most OCFCD maintenance roads have an existing 14 foot path. OCPW will keep the 14 foot width where feasible.

These shared-use paths provide space for people to comfortably walk and bike at any skill level.



Potential Class I shared-use path along a flood control channel

Greenville-Banning Channel

FLOOD CONTROL CHANNEL

Cities of Costa Mesa & Santa Ana- Districts 2 & 5

RECOMMENDATIONS

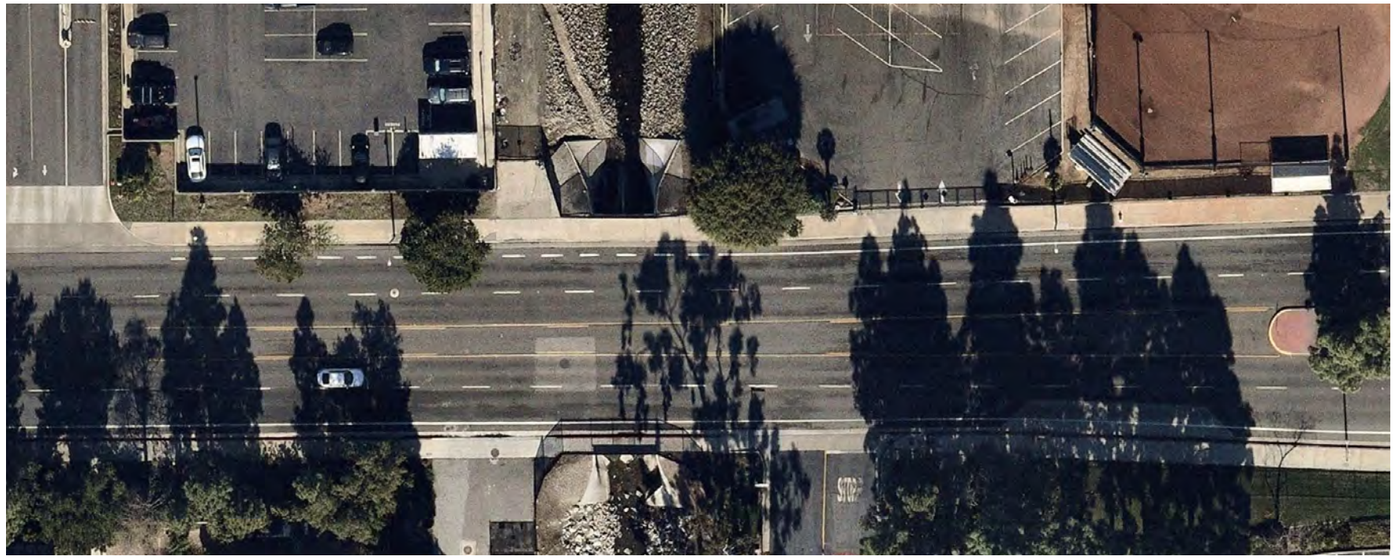
This recommendation is a Class I shared-use path along the Greenville-Banning Channel. Segment C received the highest prioritzation score, however all of the segments are top prioritized projects.

EXISTING CONDITIONS

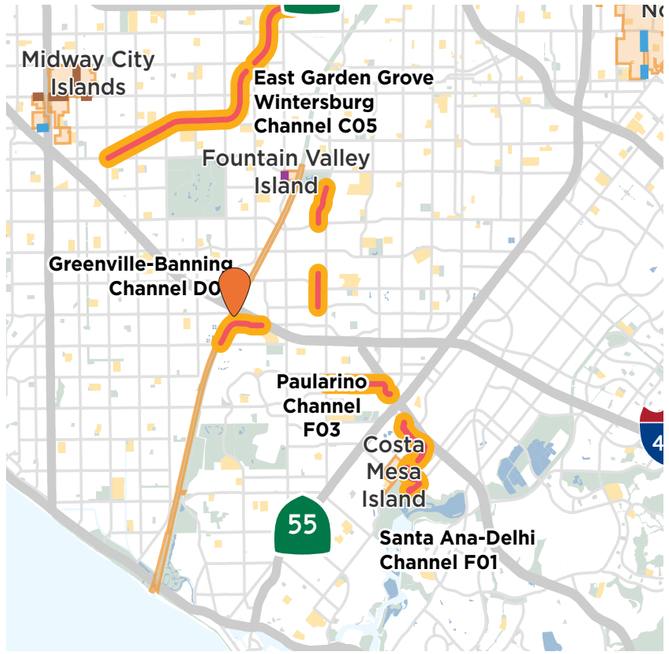
This channel is split into three segments. Segment A runs from St Andrew Place to Warner Avenue. Adjacent to the corridor is the Heritage Museum of Orange County and Kenneth E. Mitchell School. At the northern end of the segment is Centennial Regional Park, and the corridor is nearly adjacent to Godinez Fundamental High School. Segment B runs from Alton Avenue to Sunflower Avenue. Immediately adjacent to the channel segment is Calvary Chapel High School. Segment C runs from New Hampshire Drive to Gisler Avenue and connects to the Santa Ana River Trail and Suburbia Park.

OPPORTUNITIES AND CONSTRAINTS

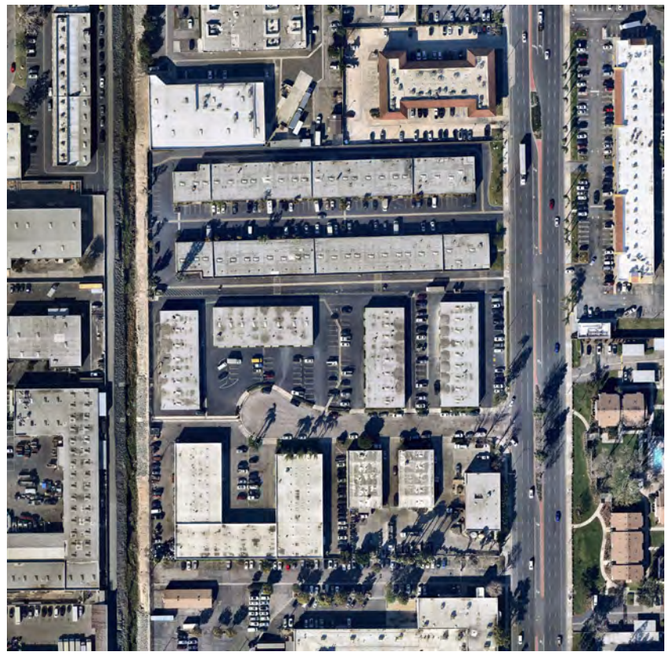
Portions of the Greenville-Banning Channel do not meet the criteria for Class I shared-use path implementation, which has created disconnected segments. The County can review these unsuitable segments and determine if they can be improved in order to create a complete shared-use path that connects to the Santa Ana River Trail. In the interim, the County can consider on-street connections between the suitable segments.



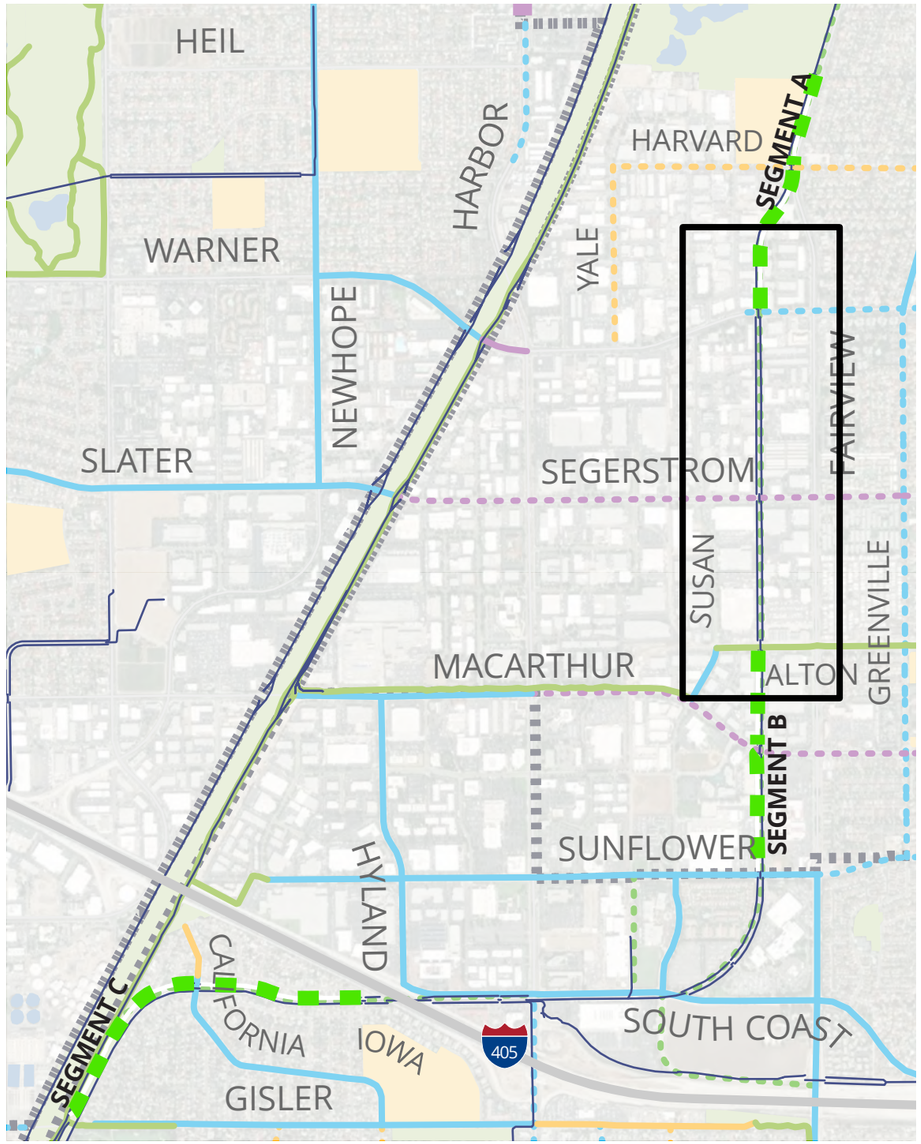
Segment B ends at Sunflower Avenue

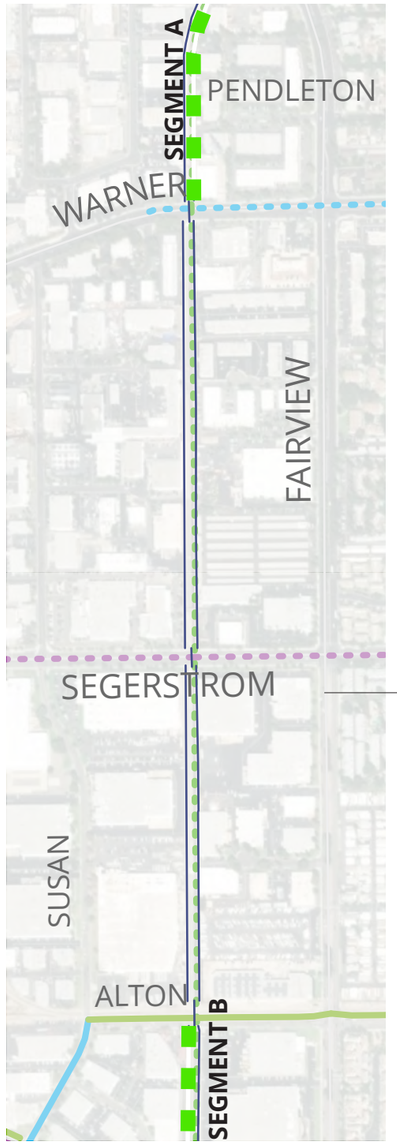


Greenville-Banning Channel

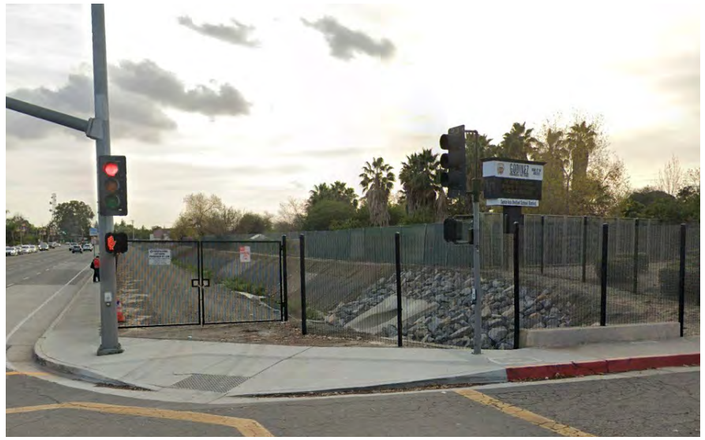


On-street bikeways on Fairview Street (on the right) can provide a temporary connection at an unusable channel segment (left)

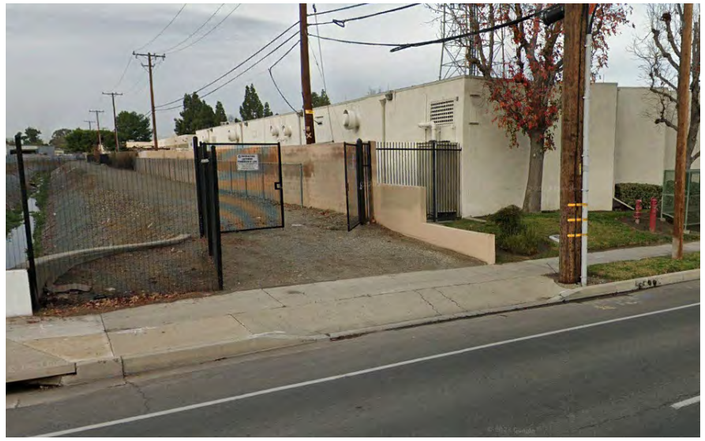




On-road connections on Fairview Street can connect segments A and B while the County works to improve the segments of this channel that do not meet minimum standards to support a Class I facility.



Entry point to Segment A adjacent to Godinez Fundamental High School on St Andrew Place



Entry point to Segment A on Warner Avenue

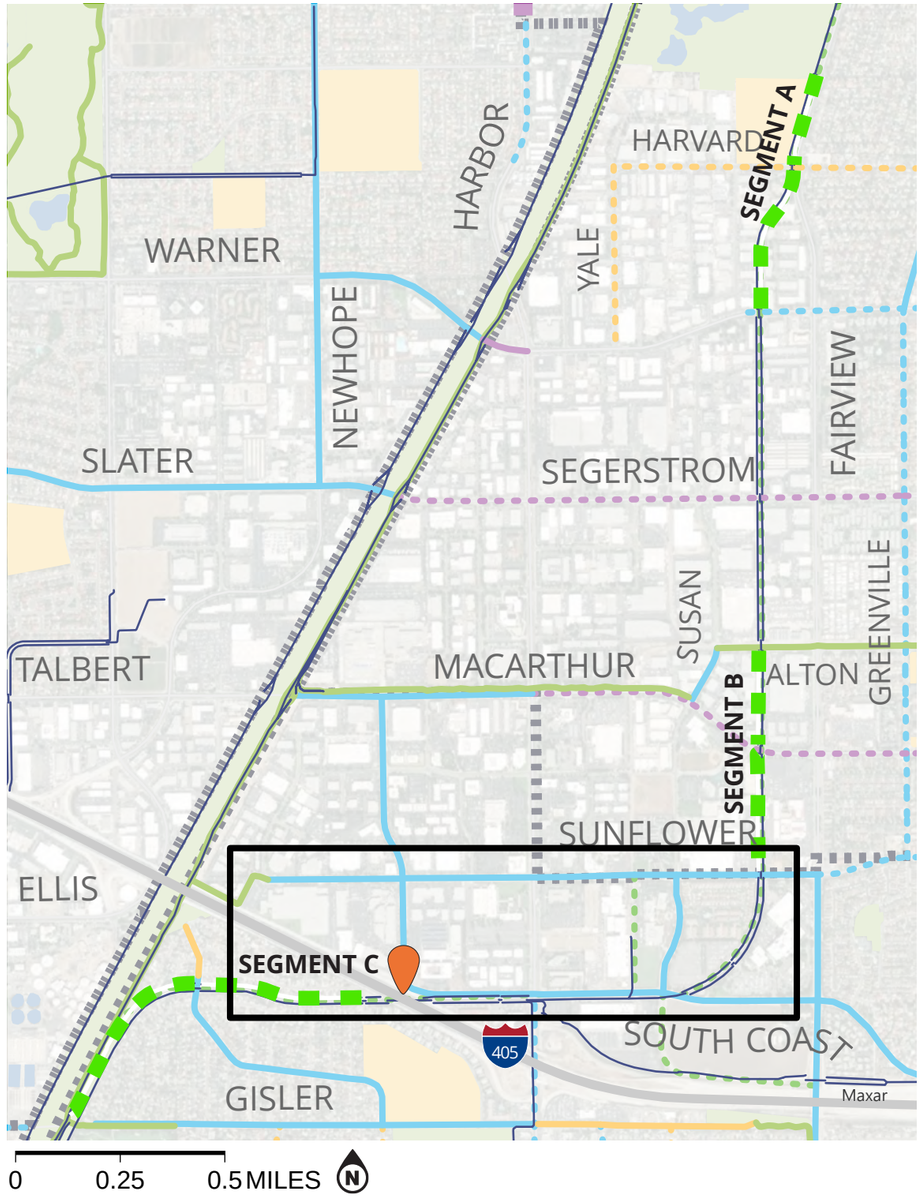
Recommendations
- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway (Class IV)
- Flood Control Channel

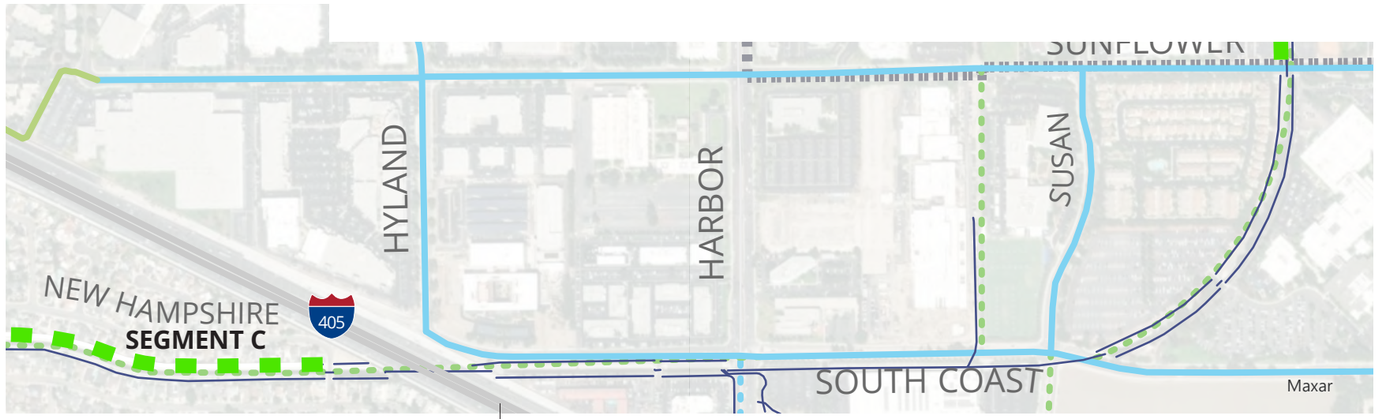
Existing Bike Facilities
- Class I Shared Use Path
- Class II Bike Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Previously Proposed Bike Facilities
- Class I
- Class II
- Class III
- Class IV

Associated Pedestrian Recommendations
- Bus Bulbout
- HV Crosswalk
- Ped Refuge Island
- Curb/SW Extension
- Traffic Calming- Roundabout

Basemap
- Park or Open Space
- School
- County Boundaries





Highway 405 acts as a barrier to connecting segments B and C. On-road connections on Susan Street, South Coast Drive, Harbor Boulevard, and Gisler Avenue can connect segments B and C while the County works to create a Class I connection over the highway.



Entry point to Segment C on New Hampshire Drive

Recommendations
- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway (Class IV)
- Flood Control Channel

Existing Bike Facilities
- Class I Shared Use Path
- Class II Bike Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Previously Proposed Bike Facilities
- Class I
- Class II
- Class III
- Class IV

Associated Pedestrian Recommendations
- Bus Bulbout
- HV Crosswalk
- Ped Refuge Island
- Curb/SW Extension
- Traffic Calming- Roundabout

Basemap
- Park or Open Space
- School
- County Boundaries

Santa-Ana Delhi Channel

FLOOD CONTROL CHANNEL

Cities of Costa Mesa & Newport Beach- District 5

RECOMMENDATIONS

This recommendation is for a Class I shared-use path along the Santa-Ana Delhi Channel.

EXISTING CONDITIONS

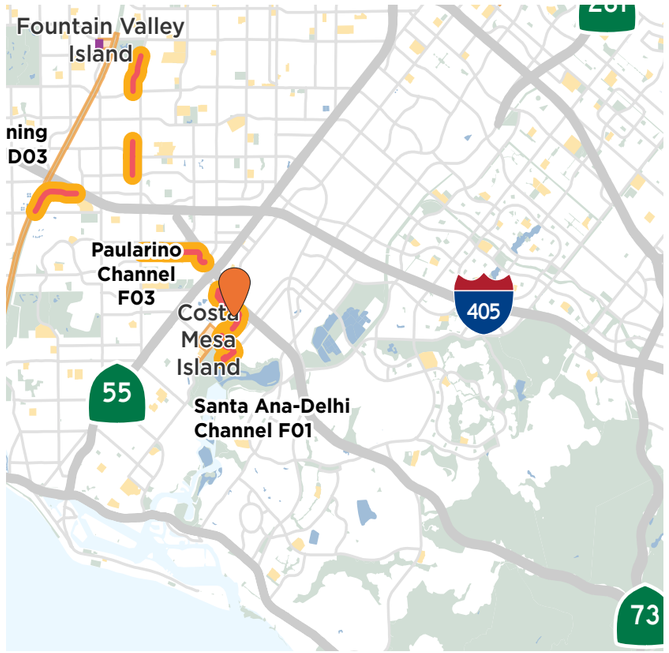
This north-south channel runs from Bristol Street to Golden Circle. The channel connects to neighborhoods, a hotel, the Newport Beach Golf Course and the Newport-Mesa YMCA. This channel is within a half-mile of bus stops, and is within a quarter mile of the unincorporated Costa Mesa Island.

OPPORTUNITIES AND CONSTRAINTS

This channel connects to the existing Bayview Trail shared-use path which travels around the Newport Bay and San Diego Creek. The Santa-Ana Delhi Channel shared-use path will need to cross multiple streets including Santa Ana Avenue, Irvine Avenue and Mesa Drive. Future design studies will determine how the County can create safe path crossings on these streets, whether by an undercrossing, and overcrossing, or an on-street crossing. There are also small gaps in the channel that will need to be improved to meet minimum standards to support a Class I facility.



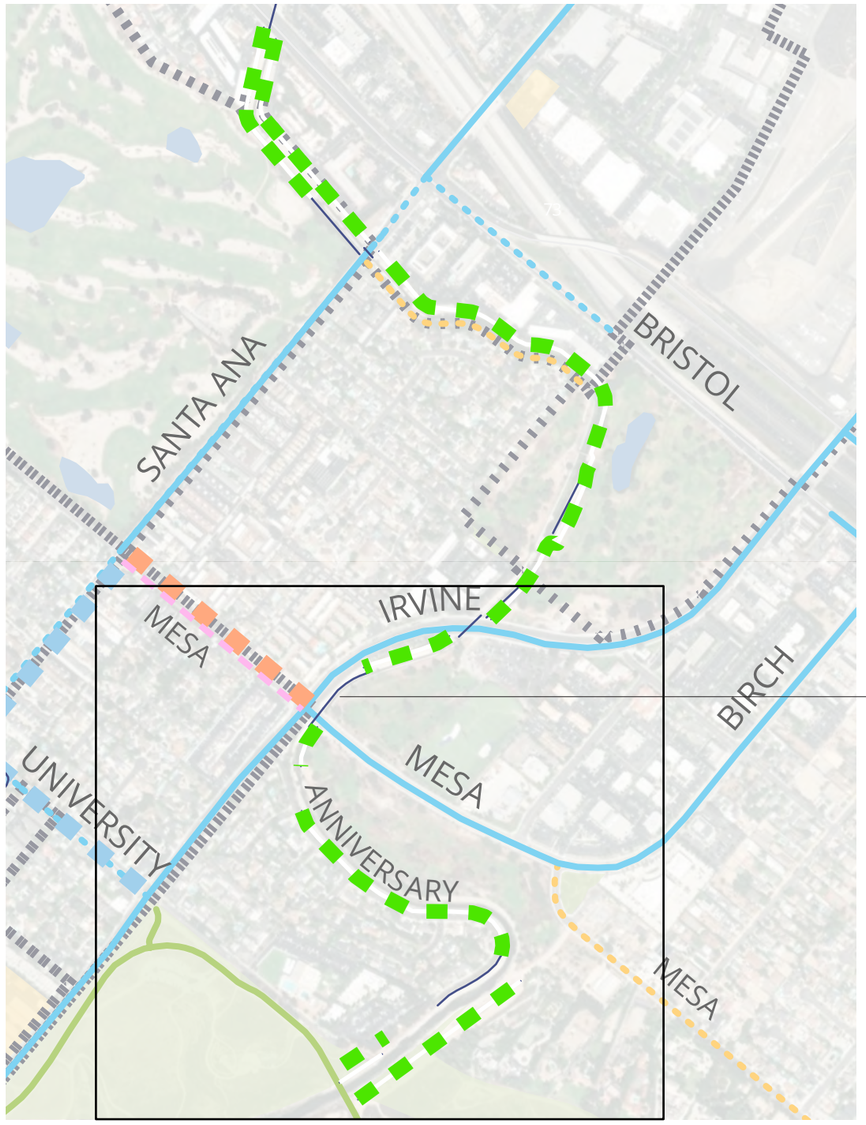
The Santa-Ana Delhi Channel connects to neighborhoods and commercial areas



Santa-Ana Delhi Channel



The Santa-Ana Delhi Channel crosses under Irvine Avenue



There are small gaps in the channel that the County will need to improve to meet minimum standards to support a Class I facility.



The Santa Ana-Delhi Channel connects to the Bayview Trail

Recommendations
- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway (Class IV)
- Flood Control Channel

Existing Bike Facilities
- Class I Shared Use Path
- Class II Bike Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Previously Proposed Bike Facilities
- Class I
- Class II
- Class III
- Class IV

Associated Pedestrian Recommendations
- Bus Bulbout
- HV Crosswalk
- Ped Refuge Island
- Curb/SW Extension
- Traffic Calming- Roundabout

Basemap
- Park or Open Space
- School
- County Boundaries

Carbon Creek Channel

FLOOD CONTROL CHANNEL

Cities of Cypress, Buena Park, & Anaheim- Districts 1, 2, & 4

RECOMMENDATIONS

This recommendation is for a Class I shared-use path along the Carbon Creek Channel.

EXISTING CONDITIONS

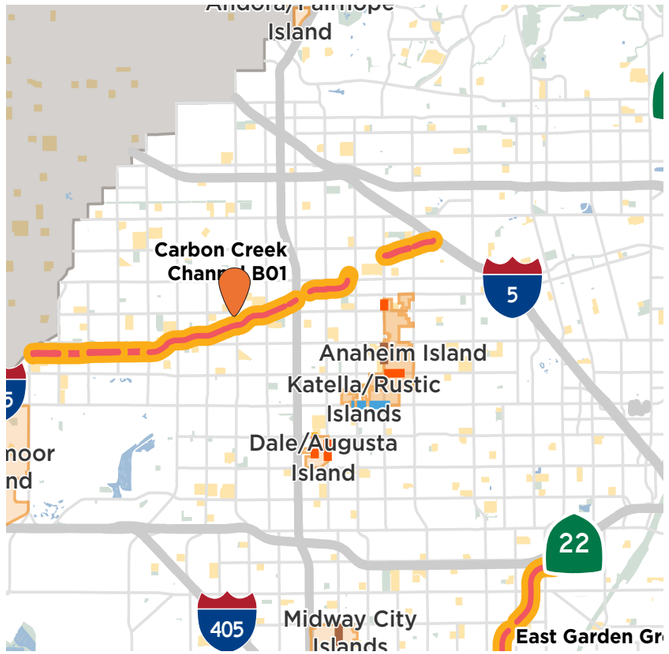
This channel is split into two segments. Segment A runs from Highway I-5 to Gilbert Street. Segment B begins at Lincoln Avenue and ends at Los Alamitos Boulevard, where the Carbon Creek Channel connects with the Coyote Creek Channel. The entire length of Carbon Creek Channel connects with neighborhoods, several schools and parks, commercial areas, and existing bike lanes. This channel is within a half-mile of bus stops, but is further than a half-mile from an unincorporated area.

OPPORTUNITIES AND CONSTRAINTS

Between Segment A and B (between Magnolia Avenue and Gilbert Street) there is a portion of the Carbon Creek Channel that the County needs improve before it meets minimum standards to support a Class I facility. This Plan recommends a temporary on-street connection for that portion. This channel intersects over a dozen streets, and the County will need to coordinate with the cities to create safe crossings for shared-use path users.



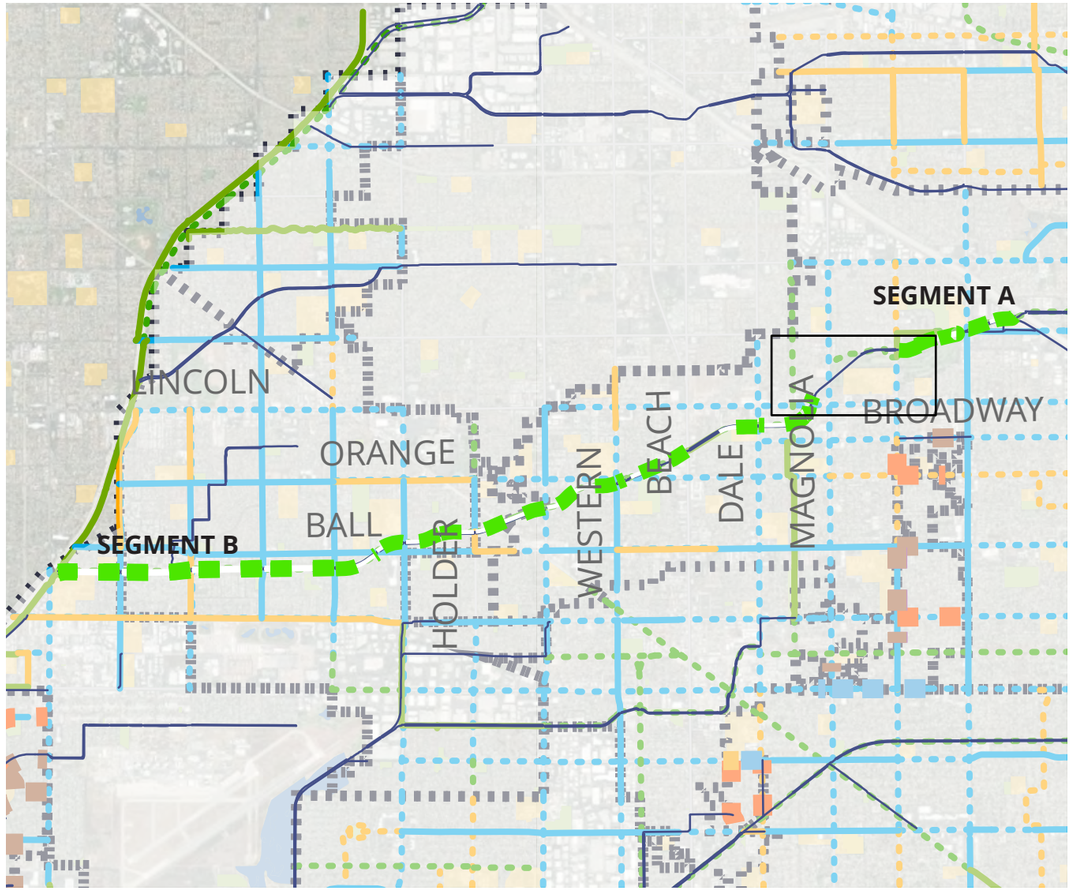
The Carbon Creek Channel connects to neighborhoods and schools, such as the Los Alamitos High School



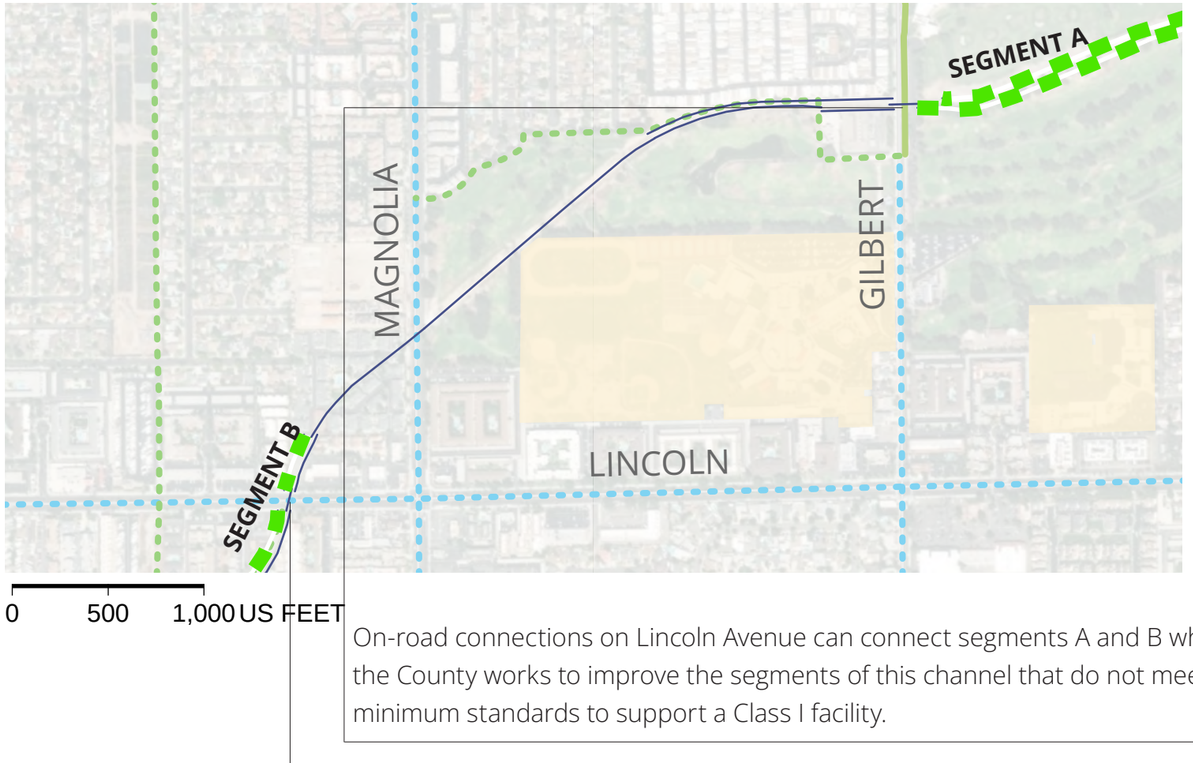
Carbon Creek Channel



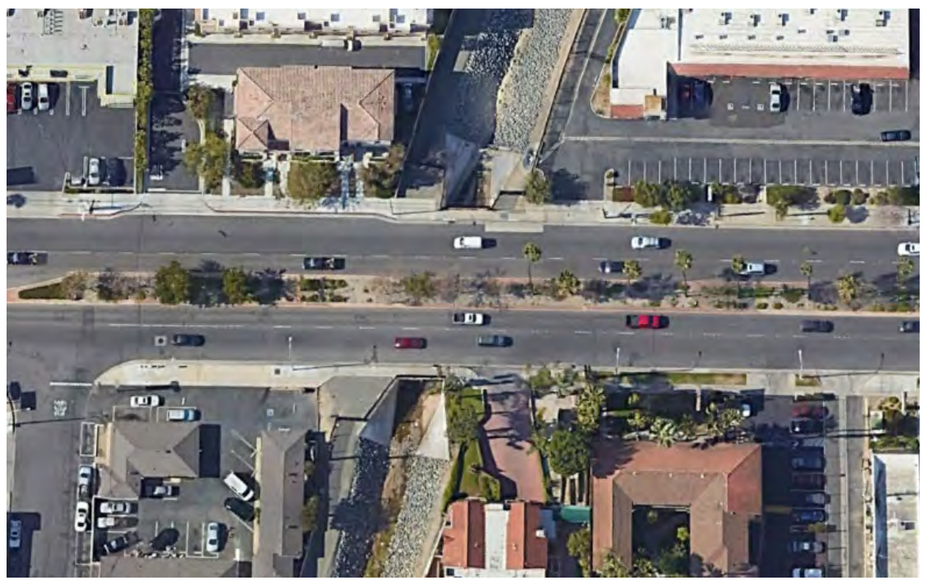
Between Magnolia Avenue and Gilbert Street there is a portion of the channel that is currently unsuitable for a shared-use path



Carbon Creek Channel crosses dozens of streets. The County will need to work with affected cities to create on-street crossings or over/undercrossings.



On-road connections on Lincoln Avenue can connect segments A and B while the County works to improve the segments of this channel that do not meet minimum standards to support a Class I facility.



Segment B travels under Lincoln Avenue

Recommendations
- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway (Class IV)
- Flood Control Channel

Existing Bike Facilities
- Class I Shared Use Path
- Class II Bike Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Previously Proposed Bike Facilities
- Class I
- Class II
- Class III
- Class IV

Basemap
- Park or Open Space
- School
- County Boundaries

East Garden Grove Wintersburg Channel

FLOOD CONTROL CHANNEL

Cities of Westminster, Garden Grove, & Santa Ana- District 1 & 2

RECOMMENDATIONS

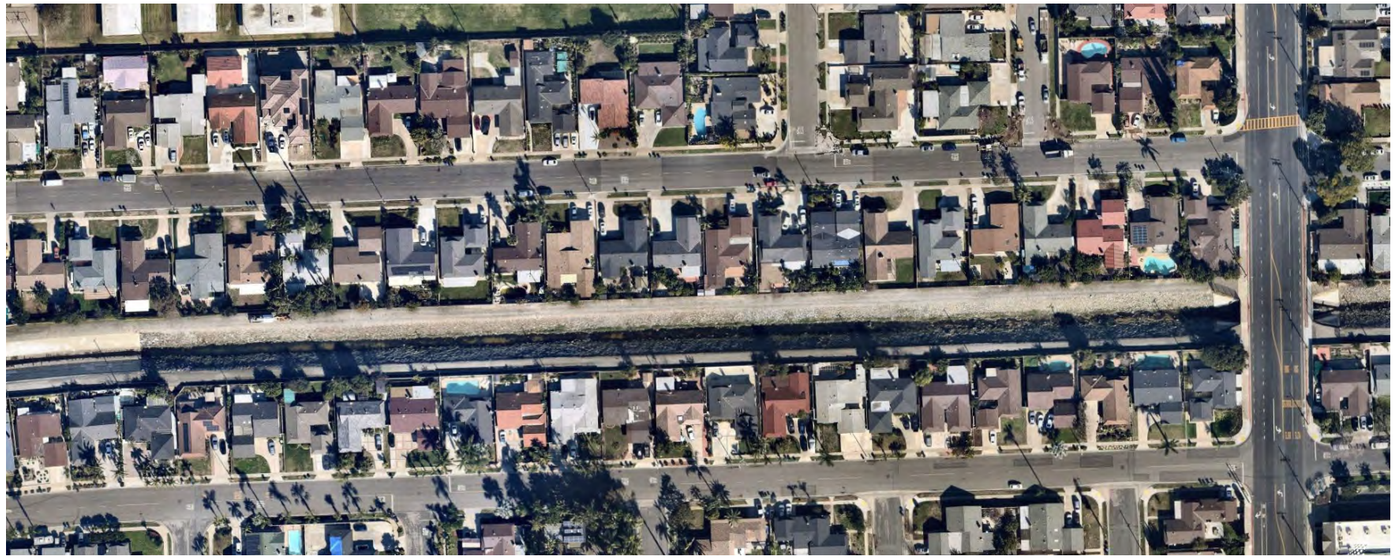
This recommendation is for a Class I shared-use path along the East Garden Grove Wintersburg Channel.

EXISTING CONDITIONS

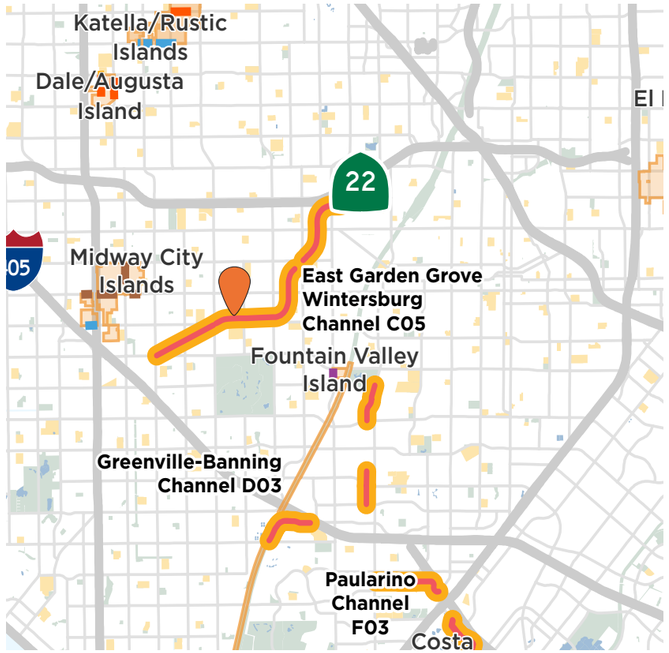
This north-south channel runs from Trask Avenue in the north to Edinger Avenue in the south. This channel connects to residential areas and four schools. This channel is within a half-mile of bus stops, but is further than a half-mile from an unincorporated area.

OPPORTUNITIES AND CONSTRAINTS

This channel connects to many existing Class II bike lanes including on Edinger Avenue, Bushard Street, Ward Street, McFadden Avenue, Hazard Avenue, and Newhope Street. Near the intersection of Hazard Avenue and Newhope Street the channel crosses underground at the Salgado Community Center and Rosita Park. The County may need to coordinate with the Community Center to construct a path through the park to connect the channel. Similarly, the County may need to coordinate with the Orange County Transportation Authority (OCTA) to construct a path where the channel travels underneath an OCTA parking lot off of Harbor Boulevard.



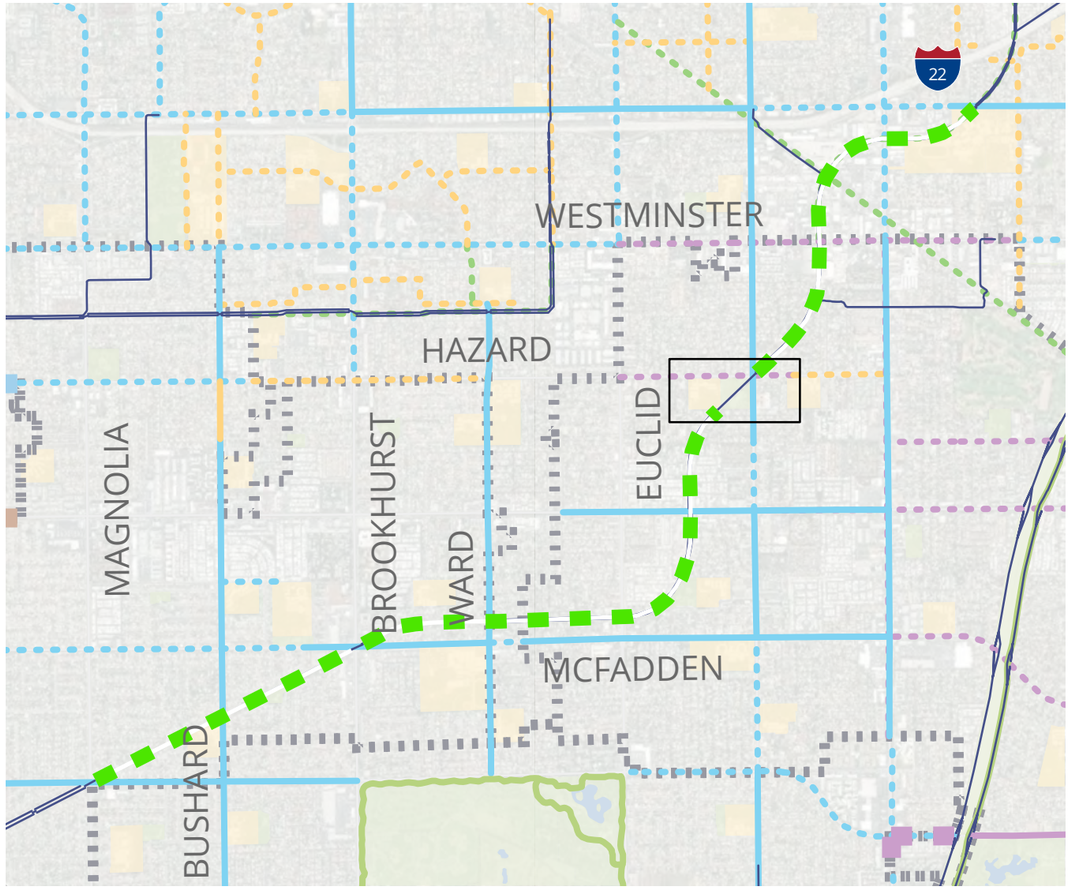
The East Garden Grove Wintersburg Channel connects to many residential areas

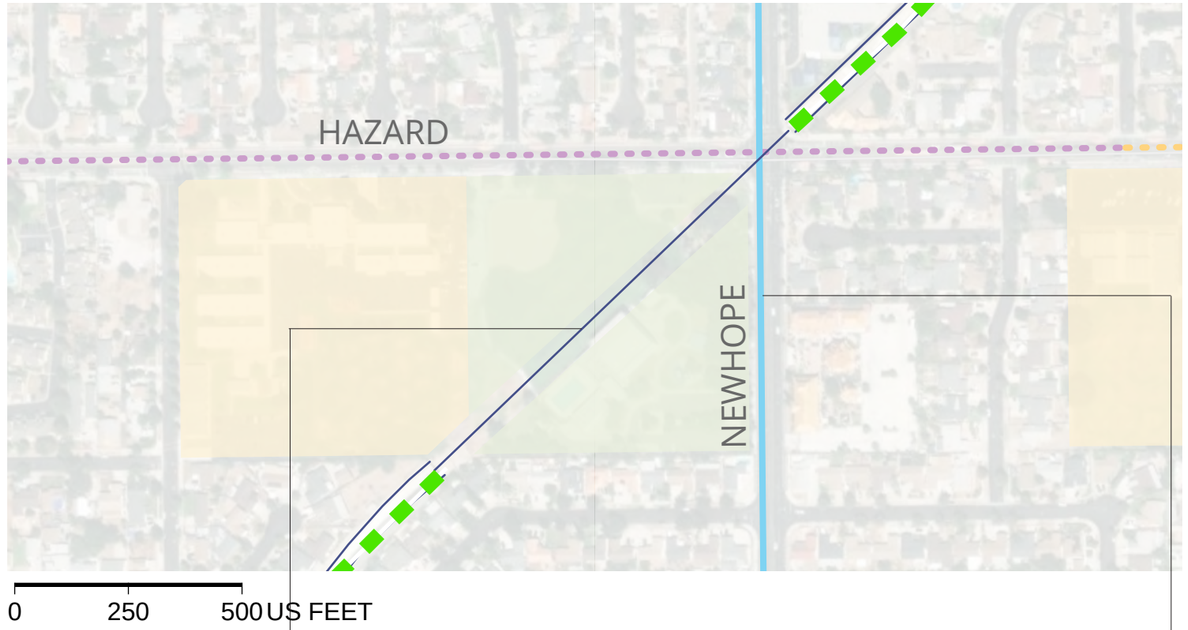


East Garden Grove Wintersburg Channel



The channel moves underground under Rosita Park and the Salgado Community Center





This recommended shared-use path connects with multiple existing bikeways, such as these bike lanes on Newhope Street

Future design studies will determine how the path can travel through Rosita Park.



The channel travels under several streets, such as 1st Street

Recommendations
- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway (Class IV)
- Flood Control Channel

Existing Bike Facilities
- Class I Shared Use Path
- Class II Bike Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Previously Proposed Bike Facilities
- Class I
- Class II
- Class III
- Class IV

Basemap
- Park or Open Space
- School
- County Boundaries

Paularino Channel

FLOOD CONTROL CHANNEL

City of Costa Mesa- District 5

RECOMMENDATIONS

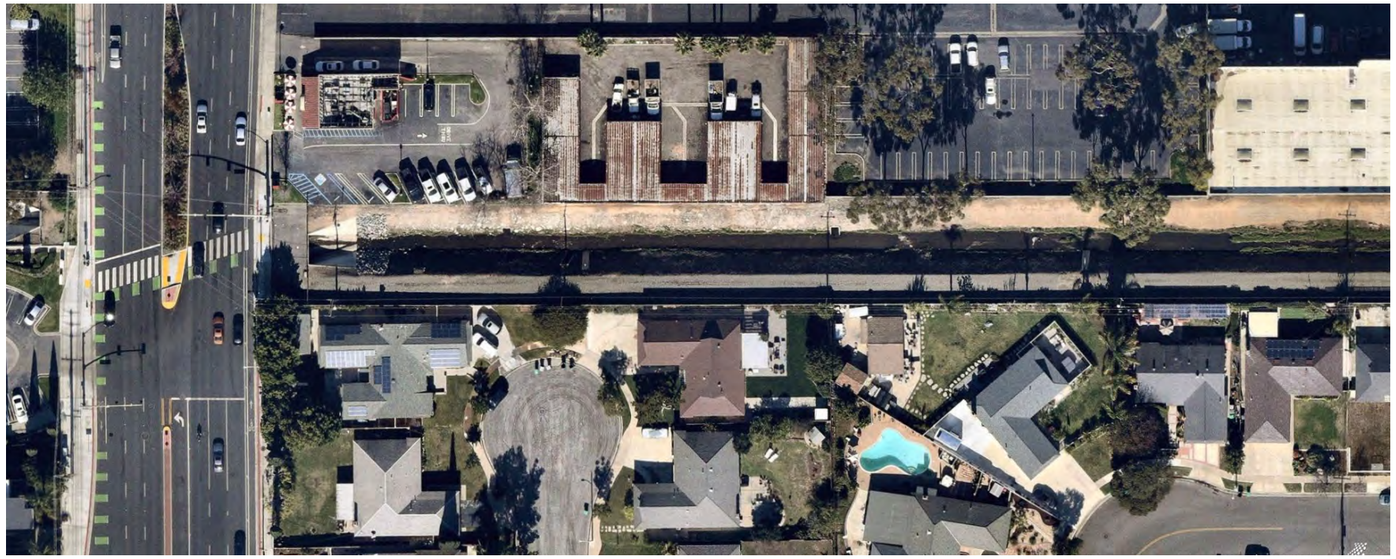
This recommendation is for a Class I shared-use path along the Paularino Channel.

EXISTING CONDITIONS

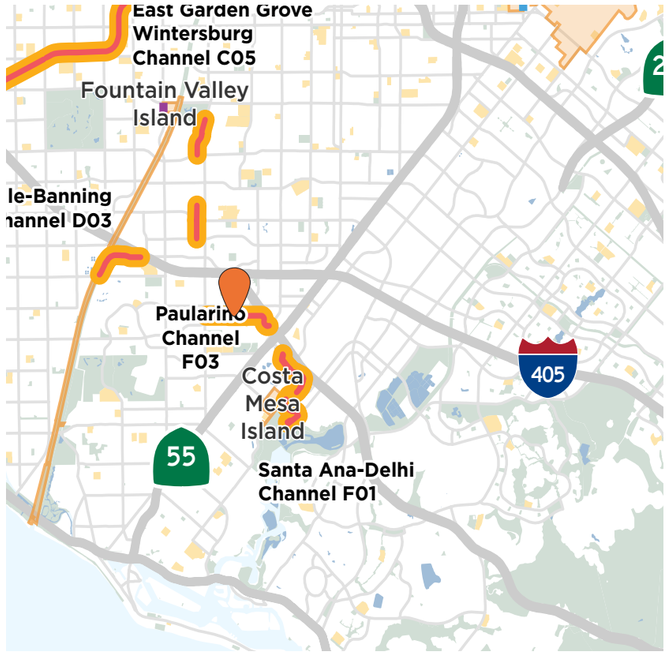
This channel runs from Fairview Road in the west to Bristol Street in the east. This channel connects to residential areas, TeWinkle Park, and Costa Mesa High School. This channel is within a half-mile of bus stops, but is further than a half-mile from an unincorporated area. The shared-use path on this channel has also been recommended in previous County planning efforts.

OPPORTUNITIES AND CONSTRAINTS

The Paularino Channel connects to existing Class II bike lanes on Fairview Road, Mendoza Drive, and Bear Street. The channel crosses a local road at Mendoza Drive, therefore the County will need to coordinate with the City of Costa Mesa to create on-street crossing infrastructure. The County may also need conduct additional public outreach with homeowners where the channel travels behind resident's backyards.



The Paularino Channel connects to existing bike lanes on Fairview Road



Paularino Channel



The channel travels directly behind some homes in the City of Costa Mesa



The County will need to work with the City of Costa Mesa to create on-street crossings or over/undercrossings across Mendoza Drive.

This recommended shared-use path connects to Sonora Elementary School



The channel begins at Fairview Road, which has existing bike lanes and high visibility crosswalks

Recommendations
- Shared-Use Path (Class I)
- Bike Lane (Class II)
- Buffered Bike Lane (Class IIb)
- Bike Route (Class III)
- Bike Boulevard (IIIb)
- Separated Bikeway (Class IV)
- Flood Control Channel

Existing Bike Facilities
- Class I Shared Use Path
- Class II Bike Lane
- Class III Bicycle Route
- Class IV Separated Bikeway

Previously Proposed Bike Facilities
- Class I
- Class II
- Class III
- Class IV

Basemap
- Park or Open Space
- School
- County Boundaries

Implementation

Policy Recommendations

COUNTYWIDE

Strategies and Performance Measures

Adopted active transportation policies play a crucial role in encouraging right of way configurations, land use designations, and programs that are equitable and beneficial to all road users. The following table outlines a policy framework that Orange County Public Works (OCPW) can implement to advance active transportation improvements and programs throughout the County's unincorporated communities and County islands. Throughout this table, the applicability of proposed strategies and performance measures are identified as relevant for urban/suburban communities, and rural communities. In this policy framework, active transportation is defined as human-powered transportation, including walking, biking, and rolling (e.g., using a mobility device such as a wheelchair, skateboarding, skating, or roller blading). Class I bikeway shared-use paths and pathways are defined in this policy as paved paths that are separated from the street, and are available to all active transportation users.

These policies are subject to change. OCPW may choose to revise performance measure goals based on funding availability and County priorities.



TABLE 54 Strategies and Performance Measures

#	Objective	Baseline (Data Source)	Policy / Strategy	Performance Measure	Applicable Context		OCPW Service Area / Partner Agencies
					Urban / Suburban	Rural	
Goal 1: Safety - Reduce the number, rate, and severity of collisions involving people walking, biking, and rolling. Traffic-related and personal safety issues are a barrier for people bicycling and walking in unincorporated communities and islands and along OCFCD maintenance roads. Increase opportunities for people of all ages and abilities to easily access, and safely walk, bike, and roll along County streets and pathways through policy change.							
1.1	Reduce pedestrian and bicyclist related collisions	• Existing bicycle/ pedestrian data, unincorporated county areas average	• Adopt a Vision Zero commitment and action plan, which identifies strategies to eliminate all traffic fatalities and severe injuries • Develop Safe Routes to School plans for schools serving unincorporated communities • Develop an annual review process for bicycle and pedestrian crash data (including causes) to implement ongoing infrastructure improvements throughout the transportation system • Install safety enhancements to improve conditions for the most vulnerable road users, such as people using mobility devices youth, and older people • Prioritize safety improvements, such as high-visibility crosswalks, at intersections and corridors with high numbers of bicycle and pedestrian crashes	• Develop a Vision Zero Action Plan by 2030 • Develop an OCPW Safe Routes to School Plan for schools within unincorporated communities by 2032 • Annual review of pedestrian- and bicycle rider-involved crash data • 50% reduction in pedestrian- and bicycle rider-involved traffic crashes by 2032 • Zero collisions resulting in severe injuries or fatalities among all road users by 2042	X	X	OC Infrastructure Programs; OC Development Services; OC Survey - GIS; OC Sheriff's Department; California Highway Patrol

#	Objective	Baseline (Data Source)	Policy / Strategy	Performance Measure	Applicable Context		OCPW Service Area / Partner Agencies
					Urban / Suburban	Rural	
1.2	Reduce traffic stress for non-motorized roadway users (i.e., Level of Traffic Stress or LTS)[1]	• Percentage of roadways at the highest levels of LTS 3 and 4 (least comfortable) vs those at lowest levels of LTS 1 and 2 (most comfortable) • Percentage of flood control channels with class I bikeway shared-use paths	• Provide more physically separated active transportation facilities, such as class I bikeway shared-use paths, class IV separated bikeways, and sidewalks • Provide alternative facilities on lower-stress neighborhood streets, such as well-connected bicycle boulevards • Design existing OCFCD ROW maintenance roads to accommodate active transportation modes	• Annual construction of new low-stress bicycle facilities, as recommended in this Plan • 100% of eligible flood control channel projects, as recommended in this Plan, with maintenance roads feature shared-use facility by 2047	X	X	OC Infrastructure Programs; OC Development Services; OC Survey - GIS

1 Originally developed by researchers at the Mineta Transportation Institute, Level of Traffic Stress (LTS) assesses the comfort and connectivity of non-motorized networks. Common inputs for the analysis include posted or observed speed limit, presence and width of bikeways, intersection control, proximity to vehicle parking, traffic volumes, and gaps in the non-motorized network. More information about LTS can be found in this Plan's Needs Assessment.

#	Objective	Baseline (Data Source)	Policy / Strategy	Performance Measure	Applicable Context		OCPW Service Area / Partner Agencies
					Urban / Suburban	Rural	
1.3	Follow best practices in transportation facility planning and design	• 2005 OCPW Highway Design Manual • 2018 OCPW Standard Plans • OCFCD Design Manual (2000), for existing or proposed channel maintenance roads conversion to a Class I bikeway/ maintenance road[2]	• Update OCPW documents that guide facility development (e.g., OCPW Highway Design Manual, OCPW Standard Plans, OCFCD Design Manual) every 10 years to reflect current Caltrans, Manual on Uniform Traffic Control Devices (MUTCD), and best practice guidance, such as guidelines from the National Association of City Transportation Officials (NACTO) • Adopt a Complete Streets ordinance and corresponding cross-sections for different street typologies to guide construction of new streets and retrofitting of existing streets • Provide wider class I bikeway shared-use paths (approximately 16' where possible) in areas of high activity • Update Countywide bikeway map • Consider the addition and/or improvement of bikeways, where feasible, when improving existing roads and OCFCD Channels	• Complete Streets Ordinance adopted by the Board of Supervisors by 2026 • Complete Tier 1 projects recommended in this Plan by 2032 and Tier 2 projects by 2042[3]	X	X	OC Infrastructure Programs; OC Development Services

2 Expected to be updated by Summer 2022
3 Subject to funding availability

#	Objective	Baseline (Data Source)	Policy / Strategy	Performance Measure	Applicable Context		OCPW Service Area / Partner Agencies
					Urban / Suburban	Rural	
1.4	Make travel to school via active modes safe, comfortable, and convenient for students and families	• Mode split for students traveling to schools in or serving unincorporated OC communities or islands, via tallies and/or surveys	• Coordinate with OCTA and Orange County Health Care Agency (OCHCA) to expand Safe Transportation Education Program (STEP) for all unincorporated communities and islands • Prioritize active transportation improvements in close proximity of schools throughout unincorporated areas in OC	• At least 75% of schools in or serving unincorporated OC communities or islands are included in STEP efforts by 2032	X	X	OC Infrastructure Programs; OC Development Services; OCTA; OC Healthcare Agency
1.5	Safety among users of busy Class I bikeway shared-use paths	• Existing bicycle/ pedestrian collision data along Class I facilities	• Provide clear separation between pathway users (people on foot, bike, mobility devices) with accompanying signage/markings, and educational materials	• 50% reduction in user collisions along shared-use paths by 2042	X	X	OC Infrastructure Programs; OC Parks
1.6	Develop comprehensive E-bike policy[4]	• N/A	• Establishment of an active transportation committee, comprised of OCPW staff, Supervisorial Districts, and knowledgeable active transportation related stakeholders, that meet regularly to guide active transportation policy, E-bike policy (and consider the inclusion of other electric devices such as e-scooters), and provide guidance on active transportation priorities and improvements. (Refer to Objective 6.2) • Develop novel solutions to e-bike specific challenges such as speed, passing other riders, education and facility access within established active transportation committee	• Development and adoption of E-bike specific policy measures by 2024	X	X	OC Infrastructure Programs; OC Development Services; OCTA; OC Parks; OC Sheriff's Department

4 Motorized vehicles, including electric bicycles, are governed by the California Vehicle Code. Per AB 1096, manufacturers and distributors of electric bicycles shall apply a label that is permanently affixed, in a prominent location, to each electric bicycle. The label shall contain the classification number, top assisted speed, and motor wattage of the electric bicycle, and shall be printed in Arial font in at least 9-point type. The County's existing bikeway plan does not reference electric bicycles, and the scope of this Active Transportation Plan is not intended to address motorized vehicles, such as electric bicycles. Rather, electric bicycles and other motorized vehicles are to be governed by the California Vehicle Code.

#	Objective	Baseline (Data Source)	Policy / Strategy	Performance Measure	Applicable Context		OCPW Service Area / Partner Agencies
					Urban / Suburban	Rural	
Goal 2: Connectivity & Access - Provide a comprehensive, continuous network of safe and convenient active transportation facilities. Implementing bicycle and pedestrian infrastructure allows unincorporated community and island residents to access local and regional destinations safely and comfortably on bicycle or by foot. Creating shared use facilities along OCFCD maintenance roads and providing access to these Right-of-Ways could lower Active Transportation travel stress for users. This framework prioritizes active transportation improvements that connect residents to key destinations and provide accessibility within and across unincorporated communities and islands.							
2.1	Regional and local connectivity	• Number of miles of existing class I bikeway shared-use paths and other active transportation facilities within unincorporated communities and on eligible OCFCD maintenance roads • Number of marked pedestrian crossing opportunities within unincorporated communities and islands	• Develop robust and well-connected active transportation network to provide regional and local connections throughout unincorporated communities and islands • Utilize existing maintenance roads on County-owned flood control channels for building shared-use paths • Identify and track the number of existing and new marked pedestrian crossing locations in unincorporated communities and islands • Identify and develop Mobility Hubs; provide adequate active transportation facilities and wayfinding to connect to Mobility Hubs located within and outside of unincorporated areas	• Complete Tier 1 projects recommended in this Plan by 2032 and Tier 2 projects by 2042 • 100% of eligible OCFCD projects, as recommended in this Plan, with maintenance roads feature shared-use facility by 2047	X		OC Infrastructure Programs; OC Development Services; OC O&M
2.2	Provide access to key destinations such as employment destinations, grocery stores, transit stops, parks, libraries, and other community destinations, as well as bicycle-related resources such as bicycle co-ops, shops, etc.	• Number of key destinations that are within ¼ mile of the active transportation network	• Prioritize implementation of pedestrian and bicycle infrastructure that connects to schools, parks, healthcare, community services, employment centers, grocery stores, and other key destinations	• 95% of schools, parks, and transit stops within ¼ mile of unincorporated communities are connected to active transportation network by 2042	X		OC Infrastructure Programs; OC Development Services

#	Objective	Baseline (Data Source)	Policy / Strategy	Performance Measure	Applicable Context		OCPW Service Area / Partner Agencies
					Urban / Suburban	Rural	
2.3	Provide adequate end-of-trip facilities for active transportation users	• Number of short-term bike parking facilities (e.g., bicycle racks and corrals) • Number of long-term bike parking facilities (e.g., bicycle lockers and storage rooms)	• Install more secure, long-term bicycle parking and storage at major transit hubs • Encourage bike parking facilities in new developments and redevelopment projects beyond those in the California Building Code (CBC) and other applicable standards and guidelines; provide assessment-based incentives, where feasible, on a case-by-case basis • Conduct baseline inventory of end of trip facilities in unincorporated areas	• Double the number of short term and secure long-term bike parking/storage facilities	X		OC Infrastructure Programs; OC Development Services; OC Parks
2.4	Allow for modes of active transportation and electric-powered micromobility to expand options for residents and visitors	• Percentage of county population using active transportation and other travel modes to include emerging trends such as scooters, e-bikes, neighborhood electric vehicles (NEVs), and other non-human powered micro mobility options	• Incorporate design flexibility into public spaces, including bus stops and transit hubs, to allow for new mobility devices in the future	• Increase active transportation and electric-powered micromobility mode share from 3%[5] to 5% of trips by 2032 and 7% by 2042	X		OC Infrastructure Programs; OC Development Services; OC Parks

5 Current mode share: 2% active transportation, 1% other

#	Objective	Baseline (Data Source)	Policy / Strategy	Performance Measure	Applicable Context		OCPW Service Area / Partner Agencies
					Urban / Suburban	Rural	
2.5	• Facilitate access and lighting for active transportation facilities	• Number of shared-use paths with regularly closed/ locked gates, limited lighting, or reported safety concerns	• Conduct baseline inventory of locked gates along shared-use paths • Evaluate factors to implement access and lighting for active transportation facilities	• Increase shared-use path access by 2032 • Reduce shared-use path safety concerns, such as lighting, by 2032	X	X	OC Infrastructure Programs; OC Operations & Maintenance
2.6	Develop comprehensive facility identification and wayfinding program	• Existing network of directional signage directed towards active transportation users	• Inventory existing signage and implement wayfinding program	• Development and implementation of a facility identification and wayfinding program by 2032	X	X	OC Infrastructure Programs; Administrative Services - Strategic Communications; OC Development Services; OC Operations & Maintenance

#	Objective	Baseline (Data Source)	Policy / Strategy	Performance Measure	Applicable Context		OCPW Service Area / Partner Agencies
					Urban / Suburban	Rural	
Goal 3: Social Equity - Ensure that investments are made in historically disadvantaged communities and those dependent on active transportation and transit. Bicycle and pedestrian facilities provide affordable, healthy transportation solutions for unincorporated areas, regardless of ethnicity, age, or income. However, in some communities, access to transportation options may not be equal across all populations. This Plan increases opportunities for the County's active transportation network to address current and historic inequities and improves economic opportunities for residents.							
3.1	Improve opportunities for residents to engage in healthy activities	• Healthy Places Index data[6] • Number of existing programs serving unincorporated county	• Promote existing active transportation facilities through community events and programs, signage, and education campaigns • Provide educational materials on the benefits of physical activity • Implement proposed active transportation improvements throughout unincorporated communities and islands	• 50% of parks and schools within unincorporated islands are within a ½ mile of an active transportation network by 2032 • 95% of parks and schools within unincorporated islands are within a ¼ mile of an active transportation network by 2042	X	X	OC Infrastructure Programs; Administrative Services - Strategic Communications; OC Parks
3.2	Address current and historical inequities in the provision of active transportation infrastructure	• Rates of poverty • Median household income • Employment statistics from most recent 5 years • Mileage of low-stress bikeways in low-income neighborhoods	• Prioritize the implementation of planned projects identified in this AT Plan based on historical lack of investment and current need	• Increase the overall mileage of low-stress bikeways, prioritizing low-income[7] neighborhoods by 50% by 2032, and 95% by 2042 • Reduce the overall mileage of sidewalk gaps in urban/suburban areas, prioritizing low-income neighborhoods, by 50% by 2032, and 95% by 2042	X	X	OC Infrastructure Programs; OC Development Services

6 The California Healthy Places Index provides data on housing, transportation, education, and other factors, and scores a community's healthy conditions based on this data.

7 Per US Department of Housing and Urban Development, low-income falls into three categories: low (80 percent of the median income), very low (50 percent), and extremely low (30 percent of the median income or the federal poverty line, whichever is greater)

#	Objective	Baseline (Data Source)	Policy / Strategy	Performance Measure	Applicable Context		OCPW Service Area / Partner Agencies
					Urban / Suburban	Rural	
3.3	Make the transportation planning and implementation process more transparent and open to all community members	• Number of events and programs related to active transportation • Number of participants in events and programs related to active transportation • Number of staff dedicated to active transportation projects and programs	• Develop outreach materials with context and in languages that are community-specific; host community meetings at locations that are convenient with respect to time and location as well as accessible by multiple forms of transportation • Host engagement events in areas that attract significant numbers of people such as community events, vaccination centers and other related popular events • Ensure information on how to request public services is available online, in multiple languages for access by non-English proficient residents, and that the website is ADA compliant • Develop multilingual education campaigns to communicate the rights and responsibilities of all roadway users • Develop environmental justice components in a bottom-up, collaborative fashion with local groups and stakeholders	• Increase public engagement, educational events and related active transportation programming throughout unincorporated communities, prioritizing disadvantaged communities, by 25% by 2032 • Seek other alternatives, both online and in person, to increase public engagement participation • Increase OCPW staff dedicated to active transportation projects and programs • Integration of community groups and local stakeholders into OCPW-led active transportation planning processes	X	X	OC Infrastructure Programs; OC Sheriff's Department

#	Objective	Baseline (Data Source)	Policy / Strategy	Performance Measure	Applicable Context		OCPW Service Area / Partner Agencies
					Urban / Suburban	Rural	
Goal 4: Sustainability - Facilitate an increase in trips via active travel modes. Creating walkable and bikeable communities can reduce greenhouse gas (GHG) emissions by encouraging people to use active transportation rather than drive, particularly for short trips. Proposed polices for this goal prioritize active transportation improvements that make unincorporated communities and islands more resilient in the face of climate change impacts, and encourages projects to adhere to best practices in sustainability.							
4.1	Align local implementation of regional Sustainable Communities Strategies by tracking transportation-related greenhouse gas emissions at the County level, and conduct cost/benefit analyses of transportation projects using GHG-emissions as a criterion[8]	• Framework and methodology for tracking Greenhouse Gas emissions related to transportation	• Make a public commitment to reducing GHG emissions • Rely upon GHG emission reduction calculations as key metric for guiding investment decisions • Modify cost/benefit analyses to incorporate and consider the GHG emission impact of transportation investments	• By 2032, Board of Supervisors adopts a goal to reduce countywide greenhouse gas emissions • Achievement of GHG reduction goals by 2050 • Achievement of goals set in countywide Sustainable Communities Strategy by 2050	X	X	OC Infrastructure Programs; OC Development Services; SCAG

8 Align with State of California and Southern California Association of Governments emission goals and strategies

#	Objective	Baseline (Data Source)	Policy / Strategy	Performance Measure	Applicable Context		OCPW Service Area / Partner Agencies
					Urban / Suburban	Rural	
4.2	Reduce overall Vehicle Miles Traveled (VMT)	• Number of Vehicle Miles Traveled per capita • ACS Mode share data	• Complete VMT-based traffic impact analysis in compliance with SB743 on residential and office land use projects, when applicable • Support compact growth and integrated transportation / land use planning • Encourage large-scale trip generators, including County facilities, to create and implement Transportation Demand Management programs that emphasize the importance of walking to employees and visitors • Ensure all facilities where County employees work enforce the State's parking cash-out law that requires employers who provide subsidized parking for their employees to also offer a cash allowance in lieu of a parking space • Encourage use of OC Rideshare Program, including carpooling, vanpooling, and public transportation	• Increase active transportation and electric-powered micromobility mode share from 3% to 5% of trips by 2032 and 7% by 2042	X		OC Infrastructure Programs; OC Development Services; OCTA
4.3	Set a goal to increase active mode share of all trips in Orange County's unincorporated areas	• Percentage of active transportation mode share of trips	• Promote active travel as a viable transportation option • Implement proposed active transportation infrastructure improvements via the 7-year CIP to create a better-connected network	• Increase active transportation and electric-powered micromobility mode share from 3% to 5% of trips by 2032 and 7% by 2042	X	X	OC Infrastructure Programs; OC Development Services

#	Objective	Baseline (Data Source)	Policy / Strategy	Performance Measure	Applicable Context		OCPW Service Area / Partner Agencies
					Urban / Suburban	Rural	
4.4	Expand the use of green infrastructure, prioritizing investments in disadvantaged communities which often lack tree canopies	• Percentage of unincorporated community and island streets that have a tree canopy coverage less than 15%	• Incorporate green stormwater infrastructure in active transportation projects as feasible • Conduct baseline inventory of street trees along County Right-of-Way • Expand the urban tree canopy • Utilize Low Impact Development standards, which may include permeable pavement, for construction of sidewalks, public stairs, and paths, where feasible and appropriate	• Utilize Low Impact Development standards, which may include permeable pavement, for construction of sidewalks, public stairs, and paths, where feasible and appropriate • OCPW adopts a policy to incorporate green street facilities into County-funded projects and prioritize tree planting along County-maintained roadways in disadvantaged communities • Consider and provide tree canopy's where feasible for new infrastructure projects to offset urban heat islands and to provide shade within OCPW/OCFCD ROW roadways and pathways	X	X	OC Infrastructure Programs; OC Environmental Resources; OC Operations & Maintenance
4.5	Incorporate sustainable materials and construction practices	• Number of vendors or percentage of materials that are using sustainable materials for construction projects	• Incentivize use of local contractors, suppliers, and manufacturers • Establish guidelines (e.g. via service areas and the QVL/QFP process) that encourage the use of recycled materials in construction practices	• OCPW includes project specifications that encourage project contractors to recycle and reuse materials on-site, when possible • OCPW establishes targets for using recycled materials for site furnishings (e.g., bollards/delineators, playground equipment, benches, trash cans, etc	X	X	OC Infrastructure Programs; OC Development Services; OC Construction; OC Operations & Maintenance

#	Objective	Baseline (Data Source)	Policy / Strategy	Performance Measure	Applicable Context		OCPW Service Area / Partner Agencies
					Urban / Suburban	Rural	
Goal 5: Identity and Preservation - Develop consistent facility design and branding, maintaining a clear identity for residents and visitors. This framework prioritizes active transportation improvements that allow the County's unincorporated communities, islands, and shared-use facilities to present a clear identity to visitors and preserve each community's character.							
5.1	Create a unique brand related to active transportation for use across and within the unincorporated communities and County islands	• Brand and associated collateral materials (including maps) to promote the use of active transportation throughout county communities and beyond	• Work with local stakeholders to develop branding elements for use on wayfinding signs, OC Flood Control Channels, promotional materials, etc. • Promote local and regional tourism to the area with bicycle and public transit tours. Potential themes include a focus on businesses and festivals, coordination with major events, recreational road cycling, and history • Use tree selection, banners, lighting, community children's artwork, and furniture design to express the unique identity of each community • Develop guidelines to work with communities to implement artistic treatments within the public right-of-way • Launch promotional campaigns for active transportation use and safety	• Increased visitor perception and awareness of unincorporated communities and islands as a destination for bicycling, hiking, and other outdoor activities as measured through survey results, social media reach, website traffic, email sign-ups, • Launch at least one promotional campaign annually	X	X	OC Infrastructure Programs; Administrative Services - Strategic Communications

#	Objective	Baseline (Data Source)	Policy / Strategy	Performance Measure	Applicable Context		OCPW Service Area / Partner Agencies
					Urban / Suburban	Rural	
5.2	Develop, brand, and promote high-profile project(s) that serve residents and attract visitors	• Number of miles of existing class I bikeway shared-use paths and other active transportation facilities within unincorporated communities and islands • Percentage of residents living within ¼-mile of low-stress facilities (LTS 1 or 2)	• Reconfigure existing County-owned flood control maintenance roads to accommodate active transportation modes • Provide more physically separated active transportation facilities, such as shared-use paths, separated bikeways, and sidewalks • Provide alternative facilities on lower-stress neighborhood streets, such as well-connected bicycle boulevards • Promote local and regional tourism to the area with bicycle and public transit tours. Potential themes include a focus on businesses and festivals, coordination with major events, recreational road cycling, and history	• 75% of residents in unincorporated islands/areas live within 1/4 mile of low stress bikeway network by 2032 • 20% increase in shared-use facilities along flood control channels by 2042	X	X	OC Infrastructure Programs; OC Development Services; Administrative Services - Strategic Communications

#	Objective	Baseline (Data Source)	Policy / Strategy	Performance Measure	Applicable Context		OCPW Service Area / Partner Agencies
					Urban / Suburban	Rural	
Goal 6: Regional Cooperation - Create a seamless walking and biking network throughout the County. Coordination amongst various agencies in Orange County will help with implementation of the projects, policies, and programs in this Plan, and will help implement a well-connected active transportation network. This framework identifies opportunities for the County to partner with local and regional agencies to accomplish shared mobility goals and objectives.							
6.1	Align OCPW active transportation planning and implementation with regional initiatives	• Number of active transportation projects that are completed through a multiple agency coordination delivery model	• Align with County and regional transportation planning documents and policies, such as the OCTA Safe Routes to School Plan, OCCOG Complete Streets Initiative Design Handbook, and SCAG's Connect SoCal 2020-2045 RTP/SCS • Incorporate pedestrian- and bicycle-related features identified in this Plan into ongoing and future highway improvement projects, as well as private project designs and approvals, where feasible and appropriate • Coordinate with Caltrans District 12 to implement projects proposed in Caltrans' right-of-way when feasible and appropriate • Coordinate with neighboring jurisdictions in places where the County shares authority of traffic control and maintenance of roadways, to seek funding opportunities and implement proposed projects jointly	• Reduce the percentage of streets that are LTS 3 and 4 to 10% or less by 2042 • Encourage collaboration of active transportation projects by multiple agencies • 100% of active transportation projects are consistent with County and regional planning documents and policies • All road construction or expansion projects include active transportation elements when feasible	X	X	OC Infrastructure Programs; OC Development Services; OCTA

#	Objective	Baseline (Data Source)	Policy / Strategy	Performance Measure	Applicable Context		OCPW Service Area / Partner Agencies
					Urban / Suburban	Rural	
6.2	Build and sustain community support	• Presence of a technical and community advisory committee that meets regularly to provide guidance and direction on active transportation improvements • Number of active transportation events in unincorporated islands	• Form a multi-agency advisory committee to provide advice, guidance, and review of ongoing efforts • Establish a community advisory committee made up of residents, business owners, and other non-governmental stakeholders • Host regular events in unincorporated communities that bring together different roadway users and encourage the use and respect of active transportation	• Establishment of an active transportation committee, comprised of OCPW staff, Supervisorial Districts, and knowledgeable active transportation related stakeholders, that meet regularly to guide active transportation policy, E-bike policy (and consider the inclusion of other electric devices such as e-scooters), and provide guidance on active transportation priorities and improvements • At least 1 active transportation event hosted annually in unincorporated communities	X	X	OC Infrastructure Programs; The office of County Counsel for Orange County

#	Objective	Baseline (Data Source)	Policy / Strategy	Performance Measure	Applicable Context		OCPW Service Area / Partner Agencies
					Urban / Suburban	Rural	
Goal 7: Fiscal Responsibility - Pursue local, state, and federal grant funding for new projects, and establish regular facility maintenance strategies. Funding for active transportation projects and programs comes from many sources, such as state grant opportunities and development-related requirements. This goal identifies strategies for active transportation projects to be planned, designed, and implemented in a financially prudent and responsible manner.							
7.1	Identify the most relevant and applicable funding opportunities	• Number of grant applications submitted each year	• Pursue grants from transportation, open space, and green infrastructure sources • Work across County departments, neighboring jurisdictions, and other agencies to submit grant applications for the most competitive projects to regional, state and federal funding sources to implement infrastructure projects and programs identified in this Plan • Obtain consultant assistance services, as needed, to pursue grant opportunities for planned active transportation projects, plans and programs • Participate in training and workshops to learn about available grant programs	• Continually pursue local, state and federal grant funding opportunities for eligible competitive active transportation projects, plans and programs • Increase in overall outside funding received through various grant opportunities • Increase and prioritize active transportation improvements in low-income and disadvantaged communities	X	X	OC Infrastructure Programs; OC Development Services; OC Environmental Resources
7.2	Establish ongoing sources of funding for active transportation projects and programs	• Existence of a dedicated funding source to implement active transportation projects and programs	• Update planning documents and county building code and ordinances to require development projects to construct or contribute to the construction of active transportation projects as conditions of approval through the development review process	• Annual budget dedicated to funding active transportation infrastructure, programs, and planning	X	X	OC Infrastructure Programs; OC Development Services

#	Objective	Baseline (Data Source)	Policy / Strategy	Performance Measure	Applicable Context		OCPW Service Area / Partner Agencies
					Urban / Suburban	Rural	
7.3	Evaluate progress toward achieving objectives of the Active Transportation Plan	• Data related to active transportation use, awareness and overall miles of facilities	• Develop benchmark metrics and establish a timeline for evaluating progress • Track and publish annual bicycle and pedestrian counts to SCAG's Active Transportation Database (ATDB) by 2027 • Reassess every three years on the implementation and goals of the OC On the Move Active Transportation Plan • Apply for recognition of unincorporated communities and islands as a Bicycle Friendly Community through the League of American Bicyclists, as applicable	• Increase active transportation mode share to 5% of trips by 2032 and 10% by 2042 • Improve trends and goals based on triennial assessment of the OC On the Move Active Transportation Plan • Maintain or surpass bronze-level Bicycle Friendly Community designation by the League of American Bicyclists	X	X	OC Infrastructure Programs; OC Development Services
7.4	Develop maintenance strategy	• Creation of a maintenance program for active transportation assets and facilities	• Develop a methodology for prioritizing regular maintenance of active transportation facilities, prioritizing facilities in disadvantaged or low-income communities • Incorporate active transportation improvements into regular CIP / maintenance cycles • Sweep streets regularly, with priority given to those with higher pedestrian and bicycle traffic • Develop an "Adopt a Pathway" program to transfer regular responsibility for cleaning and maintenance from the County to local companies, neighborhood groups, or non-profits	• Improve Pavement Condition Index (PCI) of roads with existing bikeway facilities • Prioritize bikeways in areas that have a higher Pavement Condition Index (PCI) • Sidewalks, transit facilities, and curb ramps meet ADA standards by 2037 to the maximum extent practical • Bike lanes, class I bikeway shared-use paths, and sidewalks are regularly cleared of debris and trash	X	X	OC Infrastructure Programs; OC Construction; OC Operations & Maintenance

#	Objective	Baseline (Data Source)	Policy / Strategy	Performance Measure	Applicable Context		OCPW Service Area / Partner Agencies
					Urban / Suburban	Rural	
7.5	Shared-use facilities along flood control channels	• Linear miles of flood control channels with maintenance road viable for shared-use facilities	• When upgrading or enhancing flood control facilities throughout the County, look for opportunities to implement shared-use pathways as feasible in conjunction with maintenance / access needs	• Increase in linear miles of shared-use facilities on eligible flood control channels with viable maintenance roads	X	X	OC Infrastructure Programs
7.6	Test improvements before full commitment	• Creation of demonstration/pilot project program and guidelines	• Conduct temporary demonstrations, pilots, quick build projects, etc., to test designs and materials before permanent projects are installed • Survey participants, users, and local businesses and community members of the temporary demonstrations to collect their feedback on the treatment and whether they would like any modifications to the design	• Implement demonstrations / pilot projects when feasible • Majority of survey respondents support making a temporary demonstration permanent (track trends year over year)	X	X	OC Infrastructure Programs; Administrative Services - Strategic Communications; OC Operations & Maintenance

Programs

COUNTYWIDE

Existing Programs

The following active transportation programs have been organized into specific categories based from the League of American Bicyclists Essential Elements known as the "Five E's"—Equity, Diversity, & Inclusion; Engineering; Education; Encouragement; Evaluation & Planning. Each "E" is meant to remove barriers that prevent community members from walking and bicycling. The programs below are labeled under a specific "E" associated with the existing program. For the purpose of this report, programs led by law enforcement are categorized under a sixth category: Traffic Safety.



The following section comprises a menu of existing programs that supports walking and rolling across various cities near study areas and throughout the Orange County region as well as new programs that can be considered for future implementation as funding becomes available. Gathering this information helps the County identify gaps that can be addressed when making recommendations for new and continued programs. For example, many existing County programs focus on bicycle safety education, with less emphasis on walking safety programs, which the County can address as part of this effort. While the County is responsible for the implementation of this Plan, several of the programs are also an opportunity to work with stakeholders such as community-based organizations, school districts, neighboring jurisdictions, and transit providers.



Existing City Programs

COUNTYWIDE

Anaheim Fire & Rescue Safety Program

EDUCATION, ENCOURAGEMENT

The Anaheim Fire & Rescue Department's "Wear Your Helmet Like A Pro" Program focuses on helmet safety education for children ages 5 to 14 and works closely with the seven school districts and non-profit organizations serving Anaheim. In addition to its bike educational component, the fire department aims to provide a helmet for every child that needs one across the City. As of 2016, the Fire Department has given away approximately 4,500 safety helmets to Anaheim students. Helmets are also available at each of the City's 11 fire stations.

Anaheim Police Department Traffic Safety Program

EDUCATION, TRAFFIC SAFETY

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 program is to help reduce injury and fatal collisions through traffic safety. The program is made up of age-appropriate curriculum and targets students and senior citizens. Often hosted at schools and community events, the program approximately has reached 28,745 students and 1,853 adults.

In addition to its educational traffic safety program, the police department launched in 2016 a voluntary bicycle registration program as part of National Night Out. The goal of the program is to assist local residents to register their bike so that it is easily available in the event of a bicycle theft and can develop a police report.



Anaheim Safe Routes to School

EDUCATION, ENCOURAGEMENT, ENGINEERING

In 2015, the Orange County Health Care Agency SRTS Program worked with students at Anaheim High School and Benjamin Franklin Elementary School to conduct walk audits and gathered 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. Students advocated for infrastructure improvements which the City has recognized and implemented.

In 2016, the Alliance for a Healthy Orange County (AHOC) launched an Active Transportation Leadership Program which was funded through grants from the Centers for Disease Control and Prevention and the California Endowment. The program engaged students at Anaheim High School and reviewed local, regional, and statewide active transportation policies through a series of workshops.

Buena Park FIT Cities

EDUCATION, ENCOURAGEMENT

The City of Buena Park Fifteen in Twenty-Twenty (FIT) program promotes a healthy lifestyle by focusing on childhood obesity and improving the health of the Buena Park community. As part of the program, the City implemented a FIT Committee Neighborhood Walking Tours within the vicinity of Whitaker Elementary and Gilbert Elementary. In addition to these tours, the City has supported other health campaigns and initiatives such as SCAG's Meet on the Beach Go Human event.

BikeSafe Garden Grove

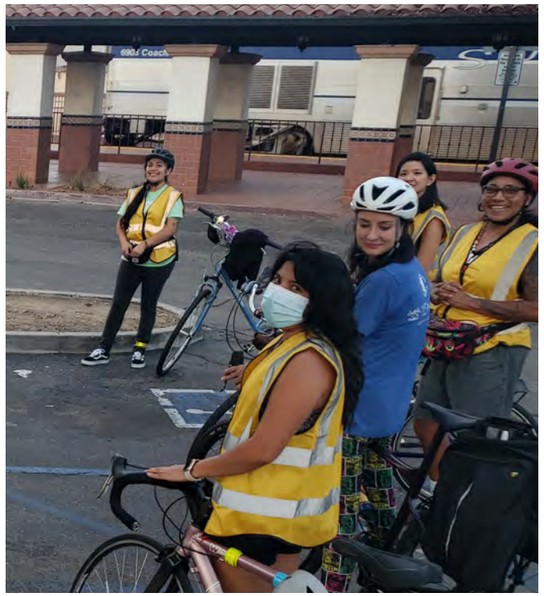
EDUCATION, ENCOURAGEMENT, TRAFFIC SAFETY

The City of Garden Grove BikeSafe program aims to conduct educational programs and encourage healthy lifestyle activities at various elementary and intermediate schools throughout Garden Grove, including parks, low-income neighborhoods, community events, churches, and other bike- and pedestrian-friendly sites. In collaboration with the Garden Grove Police Department, activities and events include bike rodeos, National Bike to School Day, National Walk to School Day, Open Streets, and Safe Moves City bicycle and traffic hazard training exhibits.

Santa Ana Bicycle Basic Classes + ¡Luces Vivas! Lights Alive!

EDUCATION, ENCOURAGEMENT

In collaboration with Santa Ana Active Streets (SAAS), the City of Santa Ana provides free bicycle basic cycling classes for both new and experienced riders. The classes are intended to build habits and skills, and in-depth knowledge to the rights and responsibilities of bicyclists. Classes are provided in both English and Spanish. In addition to these classes, the City continues to host bike light and helmet distribution events called "¡Luces Vivas! Lights Alive!" with the assistance of SAAS.





Existing Regional Programs

COUNTYWIDE

Orange County Safe Routes to School Program

EDUCATION, ENCOURAGEMENT

STEP (Safe Transportation Education Program) provides selected schools with free resources to encourage students and families to walk, roll, or bike to school safely and more often. The Program is a partnership between Orange County Transportation Authority (OCTA) and Orange County Health Care Agency (OCHCA) that will deliver SRTS activities at selected elementary schools throughout the County during 2020-2023. Although no unincorporated schools are currently eligible for STEP, schools can still access free resources online.

The program provides online and in-person learning modules focusing on safe walking, rolling and biking practices that meet the California Department of Education Health Education and Physical Education Standards. In addition, STEP provides Walk to School and Bike to School video tutorials catered for students at different grade levels.

Orange County Transportation Agency – OC Walk

EDUCATION, ENCOURAGEMENT

OCTA's OC Active website contains online resources for residents to learn about pedestrian safety. Some of the resources include traffic safety presentations, pedestrian safety quiz, and additional information about (B)right, a campaign that provides additional safety information for both pedestrians and cyclists.

Orange County Transportation Agency – OC Bike

EDUCATION, ENCOURAGEMENT

OCTA offers online resources for cyclists and arranges bike workshops at various communities throughout the year. These free workshops include bike skills guidance and tips while exploring Orange County. The goal of these workshops is to help teach its residents to ride more safely during everyday travel and recreation. Some of these organized activities include Bike Month Promotions, traffic safety workshops, and free online resources.



Orange County Transportation Agency - Bike to Work Week

ENGAGEMENT, ENCOURAGEMENT

Bike to Work Week is an annual event that promotes biking as an option for commuting to work. In the past, OCTA has organized raffles and has provided employers with resources such as posters highlighting the event. Participants are asked to bike to work at least once a day during the week.

OC Rideshare

ENCOURAGEMENT

For commuters who must drive to work, carpool options limit the number of cars on the road and reduce parking spaces needed. OCTA offers Orange County residents incentives to take and organize carpool and vanpool routes. OCTA also offers employers resources, marketing materials, and rewards for encouraging rideshare programs, active transportation, and transit use. In addition, OCTA has resources for employers who want to implement permanent telecommuting systems.

Safe Kids Orange County

EDUCATION, ENCOURAGEMENT

Led by the Children's Hospital of Orange County, Safe Kids Orange County supports the operation of resources to keep kids safe through programming, such as safety workshops. Regional coordinators are available to assist with workshops on pedestrian and bicycle safety, car seat checkups, and traffic safety workshops geared towards parents.

OC Health Care Agency Walking School Bus Program

EDUCATION, ENCOURAGEMENT

The Orange County Health Care Agency (OCHCA) provides support and resources for Walking School Bus Programs across the County. Some resources include materials on how to train staff, Walking School Tool Kit, and supplies for students to create customized bus shaped banners. The Program is typically organized by students that safely walk to school together with adult supervision.

Adopt a Channel Program

ENCOURAGEMENT

In 2014 OC Public Works established the 'Adopt A Channel' program. The program increases an awareness of and a commitment to keeping our waterways clean and healthy while in turn, providing community stewardship of these valuable resources. To date, the program has 22 Adopters and 24.671 miles of channel that have been adopted by community members. Adopter tasks typically include collecting trash, routinely inspecting the adoption site, painting over graffiti, and identifying hazardous waste for pick up by OC Public Works. Adopters are recognized by the display of their name or logo on a program sign at the Adoption Site.

Orange County Sheriff Stay Safe

EDUCATION, TRAFFIC SAFETY

The OC Sheriff Stay Safe Crime Prevention Unit provides educational resources such as safety videos on their website highlighting road rules, regulations, and safety to drivers, pedestrians, and bicycle riders in an effort to decrease collisions across the County.

In 2020, the Sheriff's Department launched a new safety enforcement operation campaign in the City of Stanton. The program supports bicycle and pedestrian safety enforcement operations aimed at educating bicyclists, drivers, and pedestrians on traffic laws, rules, and responsibilities. Funding for this program is provided by a grant from the California Office of Traffic Safety, through the National Highway Traffic Safety Administration.



Southern California Association of Governments (SCAG) Programs

EDUCATION, ENCOURAGEMENT

Go Human is a community outreach and advertising campaign with the goals of reducing traffic collisions in Southern California and encouraging people to walk and bike more. SCAG also provides regional traffic safety workshops as well as webinars and resources to help cities carry out outreach events and promotional materials.

H2OC Stormwater Program

EDUCATION, ENGAGEMENT

This program is a cooperative stormwater program which includes County of Orange, Orange County Flood Control District (OCFCD) and all 34 cities in Orange County. H2OC Clean beaches and healthy creeks, rivers, bays, and the ocean are important to Orange County.

H2OC provides resources to residents and businesses to prevent water pollution and encourages personal action by working with members of each watershed community to prevent polluted runoff from entering waterways.

Existing Nonprofits

COUNTYWIDE

California Walks (Cal Walks)

EDUCATION, ENCOURAGEMENT, EQUITY

Cal Walks is a nonprofit organization based in Anaheim, San Jose, and Sacramento. They offer various educational programs, such as the Community Safety Ambassador Training program that teaches community members to be local traffic safety advocates. They also do local policy and advocacy work.

Kidworks OC

EDUCATION, ENCOURAGEMENT

KidWorks is a nonprofit organization located in the City of Santa Ana. The organization provides programs for youth to encourage physical activity, as well as for parents of participating youth.

Latino Health Access (LHA)

EDUCATION, ENCOURAGEMENT

LHA is a nonprofit organization located in the City of Santa Ana. In partnership with OCTA, the organization offers health related programs that include safe routes to school programs (e.g., OCTA STEP Program) at local and neighboring schools throughout the County.

Orange County Bicycle Coalition

EDUCATION, ENCOURAGEMENT

The Orange County Bicycle Coalition is a bicycling advocacy group located in Orange County. The organization provides monthly bike safety classes and offers custom workshops and tips on bike safety.

Santa Ana Active Streets (SAAS)

EDUCATION, ENCOURAGEMENT

SAAS is a community-based coalition with a mission to diversify community participation for active transportation in Santa Ana. SAAS offers bicycle safety workshops in both English and Spanish and helps cities, such as Santa Ana with engagement activities that include distribution of helmets and bike lights.







Potential Future Programs

COUNTYWIDE

Bike Rack Sponsorship Program

ENCOURAGEMENT

To help meet the demand for short-term bicycle parking, the County can develop a bike rack sponsorship program where a donor purchases a bike rack for their community and a dedication plaque is personalized with a message or logo from the donor. The location of the bicycle rack is agreed upon by the donor and the county. In addition to the cost of the bicycle rack and dedication plaque, the donor pays for the associated installation and maintenance costs.

Transportation Demand Management

ENCOURAGEMENT

Transportation Demand Management (TDM) strategies can help the unincorporated islands in Orange County reach their active transportation goals by incentivizing businesses who encourage walking and biking, and by disincentivizing driving by limiting parking, implementing rideshare systems, creating active transportation campaigns, and providing active transportation options.

Bicycle and Public Transit Tours

ENCOURAGEMENT

Bicycle and public transit tours can promote local and regional tourism to the area. Potential themes include a focus on businesses and festivals, coordination with major events, recreational road cycling, and history.

Bicycle Friendly Businesses

ENCOURAGEMENT

Awarded by The League of American Bicyclists, bicycle friendly businesses are recognized for their efforts in encouraging employees to bike to work. Employers may offer incentives such as bicycle equipment subsidies, bicycle commuter tax benefits and guaranteed ride home programs. Employers can also encourage bicycling by participating in bike to work days and bicycle events in the community, offering shared bicycles for employees, providing bicycle parking, showers, and repair tools, and inviting instructors to teach employees safe bicycling skills. OCPW should encourage businesses in the County to implement these incentives and apply for the award.

Safe Routes for Seniors

EQUITY, DIVERSITY, & INCLUSION, EDUCATION, ENCOURAGEMENT

A program providing active opportunities for seniors could foster healthy aging and longer years of independent living. A Safe Routes for Senior program will provide tools and services to help seniors find ways to meet their transportation needs through trips that primarily feature walking and transit. The program includes group walks geared towards seniors that encourage social bonding. The program can also include key awareness topics such as education for drivers to pay attention to senior pedestrians and street improvements such as increased crossing times in areas with a high number of walking seniors. Feedback received from the program can inform future infrastructure improvements and other senior needs.



Bicycle Ticket Diversion Program

EQUITY, DIVERSITY, & INCLUSION, EDUCATION, TRAFFIC SAFETY

For those who qualify, individuals who receive a ticket for bicycle violations may take a diversion class led by the local police department. These classes provide an incentive to learn about legal bicycle riding as well as well as reducing the cost burdens on those for whom a ticket may be a heavy financial burden.

Bike Light "Pop-Up" Checkpoint

EDUCATION, TRAFFIC SAFETY

OCPW and local police departments can conduct bike light checkpoints in the fall when the sun sets earlier in the day. Rather than giving bicyclists violations, the program offers bike lights and education to riders, stressing the importance of being seen at night.

Adopt-a-Pathway Program

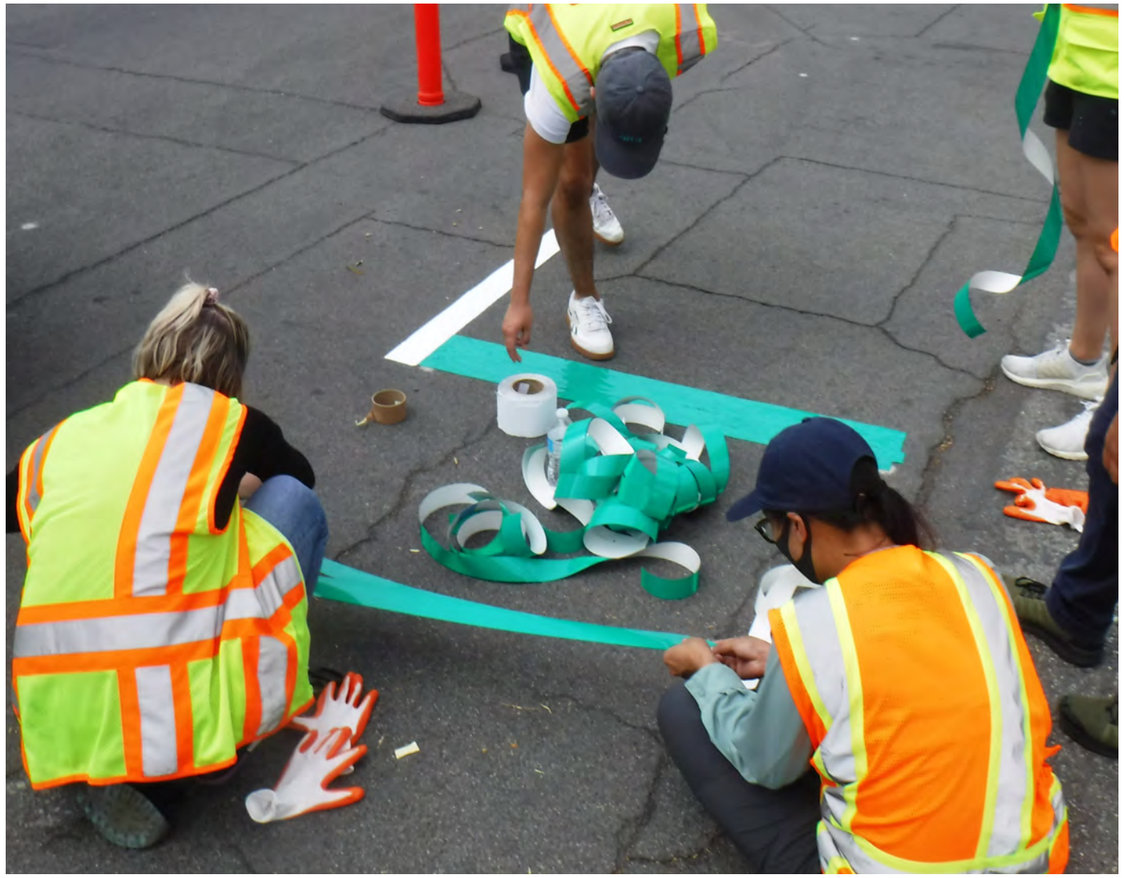
ENCOURAGEMENT

The County can offer opportunities for interested groups to adopt a section of the County's pathways. This program transfers regular responsibility for cleaning and maintenance from the County to local companies, neighborhood groups, or non-profits. In return for the group completing regular clean ups on the street or trail, the County can reward the group with signage located on the pathway.

Mini-Demonstration Projects

EDUCATION, ENCOURAGEMENT, EVALUATION & PLANNING

Mini-demonstration projects allow OCPW to test out new infrastructure temporarily and to collect feedback from community members before permanent installation. Materials for mini-demonstrations can include traffic tape, temporary paint, or cones, and work best for demonstrating projects like bike lanes, curb extensions, traffic circles, parklets, pedestrian islands, and slow streets. These projects can last as short as a few hours during a community event, or can last as long as several weeks.



Surveys and Active Transportation Counts

EVALUATION & PLANNING

Regular surveys and active transportation counts can track walking and biking patterns before and after the installation of bicycle and pedestrian infrastructure, and after a programmatic event to evaluate if the improvement increased active transportation use.

Reduced Parking Demand

ENCOURAGEMENT

In order to deter residents from driving and parking in high traffic areas, parking should be limited or metered. Parking spaces can be time restricted to prevent long term parking, and can require payment which can then be used by the County to maintain and build better active transportation infrastructure.

Vision Zero

EDUCATION, TRAFFIC SAFETY

Vision Zero is a strategy that works to eliminate all traffic fatalities and severe injuries. The program encourages jurisdictions to design roadways that integrate human error to prevent severe crashes. Vision Zero encourages collaboration between planners, engineers, and policymakers to design safe roadways, educate drivers, and create policies that slow motor vehicle speeds.

E-Bike Education

EDUCATION, TRAFFIC SAFETY

The County can create an e-bike education course for all bicyclists in the County. OCTA's website has detailed information about e-bike safety and laws, including videos that teach bicyclists about safe riding. OCPW can work with OCTA and with non-profits that already work in bicycle education to develop these materials into an in-person class .



Funding Sources

COUNTYWIDE

With limited and competitive funding options, implementing an expanded bicycle and pedestrian network must be prioritized in a thoughtful and feasible manner. Funding sources can come from local, regional, or federal sources, and can be used for building new bicycle and pedestrian facilities, maintenance of existing facilities, and programming to encourage safe use of active transportation methods.

Local

OCTA MEASURE M2

Measure M2, also known as OC Go, is a half-cent sales tax for transportation improvements in Orange County through 2041. Jurisdictions can apply for this grant to fund transit improvements and programs, and street pavement improvement projects. OCTA administers the funding, and the Measure M Taxpayer Oversight Committee upholds the integrity of the funds to ensure it is spent on voter-approved transportation projects.

COMPREHENSIVE TRANSPORTATION FUNDING PROGRAM (CTFP)

The CTFP is a collection of grant programs which fund projects related to street safety improvements, traffic and pedestrian safety near schools, and transit improvements including extensions and stops. The CTFP streamlines the grant application process by providing uniform guidelines for multiple funding programs. Measure M2 provides funding for many of the programs in the CTFP.

ARTERIAL PAVEMENT MANAGEMENT (APM)

The APM program, administered by OCTA, provides funding for pavement maintenance and reconstruction. Strategically coordinated pavement improvements provide an opportunity to integrate active transportation striping projects on streets in a cost effective manner. Additionally, the inclusion of an existing or new on-street bikeway in a project yields more points on the APM grant application.

CAPITAL IMPROVEMENT PROGRAM (CIP)

Capital Improvement Programs identify infrastructure projects in a jurisdiction and forecast budget and timeline information. OCPW has a 7-year CIP cycle which includes OCPW projects, OC Parks projects and OC Libraries projects. The current CIP is active until 2029 and includes OC Loop bicycle projects. Projects identified in this Plan will be considered for the next CIP cycle.

Regional

SCAG SUSTAINABLE COMMUNITIES PROGRAM (SCP)

Created in 2005, SCAG's Sustainable Communities Program has provided resources and assistance to jurisdictions to complete local planning efforts. The SCP provides resources to support active transportation and multimodal efforts and sustainability, equity in transportation planning, reductions in motorized vehicle miles traveled and reductions in greenhouse gas emissions. The SCP also supports quick build projects, and network visioning to help jurisdictions install active transportation networks.

SCAG LOCAL COMMUNITY ENGAGEMENT AND SAFETY MINI-GRANT

This mini-grant program is intended to increase the safety of those most harmed by traffic injuries and fatalities. Grants are awarded to community organizations, non-profits, and social enterprises with a focus on organizations that include members of disadvantaged or underinvested communities. Mini-grants fund projects which educate mobility users on safe practices, increase access to safe routes for users, and envision safety improvements to transportation infrastructure that prioritizes vulnerable users. Funding is available up to $10,000.

State and Federal

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)

The Highway Safety Improvement program's purpose is to reduce traffic fatalities and serious injuries on public roads. Eligible projects from the list of Plan recommendations include installation of pedestrian hybrid beacons, roadway improvements that provide separation between pedestrians and motor vehicles, and other physical infrastructure projects. The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads that focuses on performance. Funding is available up to $10 million.

STATE TRANSPORTATION IMPROVEMENT PROGRAM (STIP)

The STIP is a multi-year capital improvement program of transportation projects on and off the State Highway System, funded with revenues from the Transportation Investment Fund and other funding sources. Funding consists of two components: Caltrans' Interregional Transportation Improvement Program (ITIP) and regional transportation planning agencies' Regional Transportation Improvement Program (RTIP). Pedestrian and bicycle projects may be programmed under ITIP and RTIP. STIP programming occurs every two years. There is $6.960 million available in funding through 2025.

STATE HIGHWAY OPERATION AND PROTECTION PROGRAM (SHOPP)

The SHOPP program is designed to maintain the state highway system, however it includes opportunities to address Complete Streets elements and improve pedestrian and bicycle facilities. The 2020-2024 program has set aside $42 million for projects with Complete Streets components, particularly in disadvantaged neighborhoods. These elements include signage, bike parking, bike lanes, pedestrian crossing infrastructure, transit stop improvements, and pedestrian lighting. SHOPP

projects are administered by Caltrans and the California Transportation Commission.

TRANSPORTATION DEVELOPMENT ACT FUNDS (TDA)

TDA provides funding from State Transit Assistance (STA) and Local Transportation Fund (LTF). This program funds a variety of transportation programs including for pedestrians, bicyclists, and transit facilities. The amount of funding is based on sales tax collected in each county. This fund is administered by Caltrans.

ACTIVE TRANSPORTATION PROGRAM (ATP)

The ATP was created to encourage the use of active transportation through encouragement and safety measures. Eligible projects include infrastructure projects, education, encouragement, and enforcement of non-infrastructure projects which further the goals of the ATP, a combination of infrastructure and non-infrastructure activities, and development of active transportation plans in disadvantaged communities.

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

Typical projects funded by the ATP include:

- Safe Routes to School programming
- Safe Routes to Transit programming
- New or improved bicycle infrastructure, including bike lanes and bike parking
- New or improved pedestrian facilities including sidewalks, and crosswalks
- Network links to trails and parks
- Educational and encourage programming

The goals of the ATP are defined as the following:

- Increase the proportion of walking and biking trips
- Increase safety and mobility for non-motorized users
- Reduce greenhouse gas emissions
- Enhance public health
- Ensure disadvantaged communities share the benefits of the program

SUSTAINABLE TRANSPORTATION EQUITY PROJECT (STEP)

Started in 2020, STEP aims to address transportation equity while also reducing greenhouse gas emissions. STEP issues grants for either planning and building projects or clean transportation projects. The objective of STEP is to provide accessible, affordable, and safe transportation options for everyone, particularly disadvantaged communities. Examples of STEP funded projects include transit stop improvements, pedestrian infrastructure improvements, and transportation network improvements near key destinations.

AFFORDABLE HOUSING AND SUSTAINABLE COMMUNITIES PROGRAM (AHSC)

The goals of AHSC are to support compact development in order to preserve land, reduce greenhouse gas emissions, and increase the supply of affordable housing near jobs, stores, transit, and other key destinations. Eligible projects include sustainable transportation infrastructure, such as new transit vehicles, sidewalks, and bike lanes; transportation-related amenities, such as bus shelters, benches, or shade trees; and other programs that encourage residents to walk, bike, and use public transit. Funding is available up to $30 million.

CALIFORNIA OFFICE OF TRAFFIC SAFETY GRANTS

The Office of Traffic Safety's goal is to prevent serious injury and death from motor vehicle crashes. Funding is available for projects which relate to one of the priority program areas, including pedestrian and bicycle safety. Bike and pedestrian safety programs include educational outreach particularly for high-risk populations, youth bicycle trainings and walking courses, and outreach for underserved older communities to identify safety issues. Grant applications must be submitted by January 31.

CALIFORNIA TRANSPORTATION COMMISSION LOCAL PARTNERSHIP PROGRAM (LPP)

Created from Senate Bill 1 (SB-1), this program provides $200 million in funding for local and regional transportation agencies with voter approved taxes, tolls, or fees, which are dedicated solely to transportation improvements. The program provides funding for aging infrastructure, road conditions, active transportation, transit and rail, and health and safety benefits. The LPP funds are distributed through a 40% statewide competitive component and a 60% formulaic component.

TRANSFORMATIVE CLIMATE COMMUNITIES (TCC)

The California Strategic Growth Council funds community-led development and infrastructure projects that achieve major environmental, health, and economic benefits in California's most disadvantaged communities. Funded by California's Cap-and-Trade Program, TCC empowers the communities most impacted by pollution to choose their community vision, strategies, and projects to enact transformational change – all with data-driven milestones and measurable outcomes. Approximately $56.4 million is available to use for implementation and planning projects.

RUBBERIZED PAVEMENT GRANT PROGRAM

The California Department of Resources Recycling and Recovery (Cal Recycle) provides the Rubberized Pavement Grant Program, formerly called the Rubberized Asphalt Concrete (RAC) Grant Program, to promote markets for recycled-content surfacing products derived from waste tires generated in California, and decrease the adverse environmental impacts created by unlawful disposal and stockpiling of waste tires. There is $4,000,000 available funding. $350,000 is the maximum for individual applications. If applying for a regional application, the maximum is $500,000.

CALTRANS SUSTAINABLE TRANSPORTATION PLANNING GRANTS

The Sustainable Transportation Planning Grant Program supports transportation planning processes which address local and regional transportation needs and issues. The program offers two types of grants: Strategic Partnerships and Sustainable Communities. The Sustainable Communities Grants has $29.5 million in funding to encourage local and regional planning that furthers state goals. The Strategic Partnership Grant has $4.5 million to identify and address statewide or regional deficiencies on the State highway system in partnership with Caltrans. The overarching objectives to guide grant applications are sustainability, preservation, mobility, safety, innovation, economy, health and social equity. Past awarded projects types include active transportation, complete streets, transit, and emission reduction.

REBUILDING AMERICAN INFRASTRUCTURE WITH SUSTAINABILITY AND EQUITY (RAISE)

Previously known as the BUILD and TIGER grants, the RAISE grant funds the building and repair of transportation networks. Available through the U.S. department of Transportation, the RAISE grant allows sponsors at the State and local levels to obtain funding for multi-modal, multi-jurisdictional projects that are more difficult to support through traditional funding initiatives. Eligible projects include road or bridge projects, public transportation projects, and surface transportation facilities.

METROPOLITAN, STATEWIDE & NON-METROPOLITAN PLANNING

This federal source provides funding for multimodal transportation planning in metropolitan areas. Funding can be used to plan, design, and evaluate public transportation projects, complete technical studies related to transportation, and develop transportation plans and programs. Entities that receive funding are required to consider equitable community representation.

PILOT PROGRAM FOR TRANSIT-ORIENTED DEVELOPMENT PLANNING

These federal funds can be used to create compact, mixed-use communities which facilitate multimodal connectivity and accessibility. Eligible projects should enhance transit ridership, increase access to transit hubs for bicyclists and pedestrians, and enable mixed-use development. $37 million is available for fiscal year 2022.

TRANSPORTATION INFRASTRUCTURE FINANCE AND INNOVATION ACT (TIFIA) LOANS

TIFIA loans are low interest loans that can provide assistance for projects with regional and national significance including large-scale transportation projects. These loans are often on more advantageous terms than from financial institutions.

CENTERS FOR DISEASE CONTROL AND PREVENTION GRANTS (CDC)

The CDC provides funding opportunities for several different organization and jurisdiction types that can potentially support pedestrian and bicycle infrastructure, planning or other support programs.

RIVERS, TRAILS, AND CONSERVATION ASSISTANCE PROGRAM

The RTCA is a National Parks Service (NPS) program which provides assistance for projects to restore parks, conservation areas, rivers, and outdoor recreation areas, as well as programming to engage citizens in the outdoors. The RTCA is not a funding program, it provides 1-2 years of technical assistance in accomplishing conservation and recreation projects, and can help in identifying funding sources. Examples of RTCA projects include restoring land for public use, bringing stakeholders together to strengthen community partnerships, and bike-share expansion in trails areas.

AMERICAN RESCUE PLAN ACT TRAVEL, TOURISM, AND OUTDOOR RECREATION (ARPA TOURISM)

This program, developed to help economic recovery during the COVID-19 pandemic, helps jurisdictions implement sustainable economic recovery strategies through construction and non-construction projects that can respond to the damage to the travel, tourism, and recreation sectors from the pandemic. Both state grants and community grants are available.

Other Funding Sources

NATIONAL ENDOWMENT FOR THE ARTS: OUR TOWN

The Our Town grant program supports projects that integrate arts, culture, and design activities into efforts that strengthen communities by advancing local economic, physical, and/or social outcomes. Creative placemaking is when art is deliberately integrated into community revitalization work - placing arts at the table with land-use, transportation, economic development, education, housing, infrastructure, and public safety strategies. Grant applicants require partnerships between arts organizations and government. Funding ranges from $25,000-$200,000 per project with a minimum cost share/match equal to the grant amount. This

program occurs on a yearly basis and the application deadline typically falls in August.

PEOPLE FOR BIKES COMMUNITY GRANTS

Established in 1999, and funded by partners in the industry, PeopleForBikes is a partnership of bicycle advocates that has awarded more than $3.5 million dollars in grants for bike projects and bike advocacy initiatives. In 2021, PeopleForBikes contributed $50,000 for investments in bicycle infrastructure, education for children who bike, mountain biking trails, and parklets.

ROBERT WOOD JOHNSON FOUNDATION

The Robert Wood Johnson Foundation is the nation's largest philanthropy dedicated to health. Some grants offered by RWJF support planning and demonstration projects and programs which are devoted to expanding public health in the built environment. Grants are developed in consultation with leading experts in the field and can provide funding and technical assistance.

AMERICA WALKS COMMUNITY CHANGE GRANT

In partnership with the CDC's Active People, Healthy Nation initiative, America Walks awards grants of $1,500 for projects related to creating healthy, active, and engaged places to live, work, and play. Projects should have a foundation of equity, and should lead to increased physical activity and active transportation in a community. Projects can be infrastructure related, or programmatic such as Safe Routes to School programs.

KRESGE FOUNDATION

The Kresge Foundation is a national foundation which invests in arts and culture, education, environment, health, human services, and community development with the goal of creating pathways for people with low incomes to improve their life circumstances and join the economic mainstream. One of the foundation's eight focus areas is American Cities, which provides funding to make cities more connected and create reliable public transportation options. Another of the foundation's focuses is the Environment, which offers grants to projects which help communities reduce the effects and prepare for the impacts of climate change.

CAMBIA HEALTH FOUNDATION HEALTHY PEOPLE, HEALTHY COMMUNITIES

A series of grants are offered from Cambia Health Foundation to "support innovative whole person care strategies focused on eliminating disparities." Whole person care addresses health holistically, by considering factors like the emotional, social, and environmental life of a person. Grants are for projects that improve access to healthy foods, recreation facilities, and encourage healthy behavior for families, and are typically in the $50,000 to $100,000 range.

REI GRANTS

REI awards millions in grants yearly to maintain parks, trails, and recreation areas. Grant recipients have pledged to increase equity within outdoor spaces, conserve green spaces, and renew open space. The majority of grant funding goes to nonprofits and funding ranges from $2,000 to hundreds of thousands.

NATIONAL ASSOCIATION OF REALTORS' SMART GROWTH GRANTS

These grants fund transportation-related activities that support smart growth principles, including mixed-land use, walkable neighborhoods, distinctive communities, and a variety of transportation choices. There are several grant levels, where funding can range between $1,500 to $10,000.

NATIONAL ASSOCIATION OF REALTORS' PLACEMAKING GRANTS

The Placemaking Grant is available to REALTOR® associations to help them plan, organize, implement and maintain Placemaking activities in their communities. The grant funds outdoor spaces in communities, including parklets, pop-up parks, pedestrian plazas, bike lanes, trails, and recreation areas.

AARP COMMUNITY CHALLENGE GRANTS

This program "helps communities become great places to live for residents of all ages." Grants are available to nonprofits and local governments, and funding can go towards improving open spaces, mobility options, housing, the built environment, and other projects addressing community priorities.



Next Steps, Agencies and Reporting

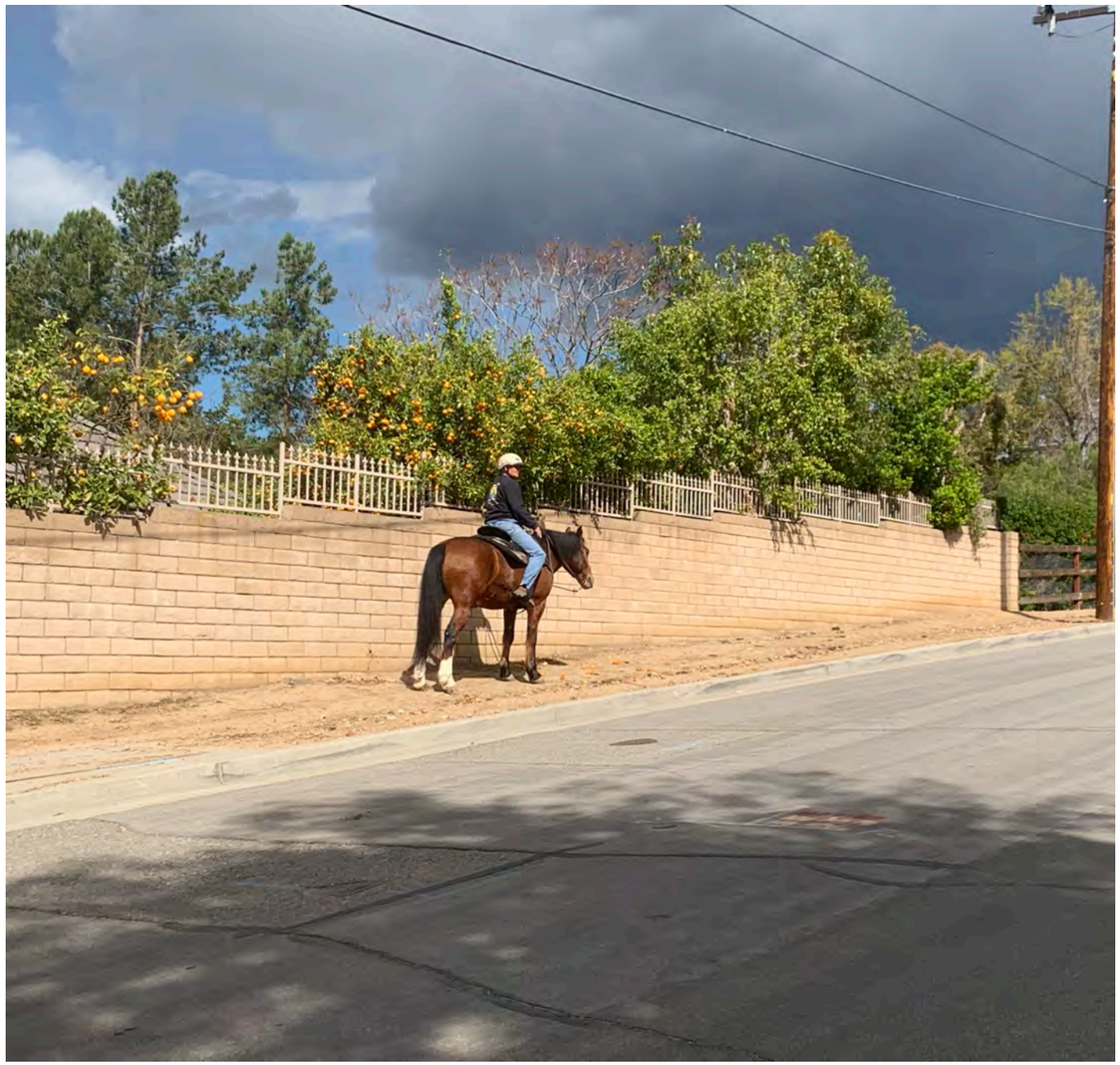
COUNTYWIDE

OCPW is responsible for working with the Orange County Board of Supervisors to formally adopt this Active Transportation Plan. OCPW is responsible for collaborating and coordinating with relevant City, State, Federal agencies, and Metropolitan Planning Organization's (MPO), per project respectively, to create an active transportation network that is continuous and connected. Additional approval by City Engineers Flood Control Advisory Committee (CEFCAC) could potentially be needed for bikeway recommendations along OCFCD maintenance roads. Regional agencies like local school districts and police departments should also be involved in creating programs to encourage walking and bicycling, and using other active modes. Additionally, a safer and more active Orange County is not possible without the involvement of community members as residents have invaluable local knowledge about the streets in their community. As OCPW moves forward with the implementation of active transportation projects, additional community engagement and outreach will be essential.

OCPW will need to regularly evaluating how well performance measures set forth in this Plan are met, and whether the many recommendations established in this Plan still meet the needs of residents and visitors. The recommendations in this Plan should be re-evaluated at least every five years to ensure that these still constitute best practices and reflect OCPW's vision for a safer and more active community.

Evaluation Recommendations

Keeping the community informed of the progress OCPW is making on the implementation of the recommended infrastructure and programs is critical in achieving the goals of the Plan. OCPW has several existing structures in place to reach residents, such as the research map on the OCPW website which has resources for community members to learn and remain involved with upcoming Plan projects and opportunities. This Plan lists other recommended activities to help community members understand and remain involved in the implementation process. These activities are listed in the Program Recommendation section beginning on page **355**.



Maintenance

COUNTYWIDE

"I do not feel safe riding my bike in a Class II lane. Bike lanes need to be separated/protected."

-Community Comment

Orange County must acquire funding to adequately maintain existing and new bicycle and pedestrian infrastructure. Infrastructure that is not maintained can be unsafe and uncomfortable, and may discourage residents from using active transportation.

Infrastructure should regularly be cleared of debris and hazards, and traffic control devices, striping, and signage should be maintained to ensure the network continues to function properly. Additionally, pavement should be maintained, and vegetation should be cut back when encroaching into pedestrian and bicycle facilities. The following sections lists existing maintenance strategies as well as potential strategies that the county can adopt to properly maintain these facilities.

Existing Orange County Maintenance Systems

MAINTENANCE IMPROVEMENT PROGRAM (MIP)

MIP budgets fund road maintenance and flood control channel maintenance projects. OCPW also uses a pavement management system to manage long-term maintenance of roadways. Orange County has a goal of achieving a pavement condition index (PCI) of 81 or above, which helps OCPW receive Measure M2 funding. SB 1 funds are additionally utilized for pavement maintenance, which can be used for safety improvements, complete streets projects, and active transportation projects.

MY OC ESERVICES

This service request app allows residents to make a complaint or service request regarding topics like sidewalk and curb maintenance, street sweeping, trash and debris, potholes, signage and pavement marking, and traffic issues. Users identify the location of the issues on a map, and can upload photos before sending it to the County.

OPERATIONS AND MAINTENANCE DIVISION

The OCPW Operations and Maintenance Division oversees general maintenance on County properties, like traffic paint markings, trash and debris removal, and signage installation including on roadways and flood control channels. Roads are continually monitored by staff and work orders are generated as maintenance is needed. Residents can submit a service request for maintenance on the My OC eServices app, and Public Works typically responds in 3-5 days.

SPECIAL DISTRICTS

Special districts provide services and facilities to defined areas. Residents can form a district to pay for services like fire departments, water treatment, road maintenance, and street lighting. Unlike a benefit assessment district, a special district is an autonomous local government with a governing board. There are several special districts in unincorporated Orange County. For example, the Rossmoor special district maintains street lighting, public recreation facilities, and street sweeping in the community, and the Silverado-Modjeska Recreation and Park District provides recreation activities in Silverado and Modjeska Canyons.

BIKEWAY MAINTENANCE

In some cases, bikeway maintenance may require additional considerations. For example, to keep bikeways free of debris, a smaller bikeway street sweeper may be needed, especially for separated bikeways or shared-use paths. Proper maintenance of bikeways is crucial in ensuring the bikeway remains safe and comfortable. Bikeways should be kept clear of litter and vegetation, and potholes and erosion should be repaired as soon as possible.



Cost Estimates

COUNTYWIDE

The following chart is a combination of the cost estimates from the top 15 prioritized bicycle projects and the intersecting Tier 1 pedestrian projects, as well as the top 5 prioritized flood control channel paths in the Plan. These cost estimates were made in 2023 and are for planning level purposes only. OCPW project design and engineering teams will need to review and update these costs prior to implementation.

TABLE 55 Top Prioritized Project Cost Estimates

Item	Quantity/ Mileage	Unit Cost	Total
Class I Shared-Use Path	28.4	$1,500,000	$42,525,000
Class II Bike Lane	1.58	$132,000	$207,240
Class IIb Buffered Bike Lane	1.24	$387,000	$479,880
Class III Bike Route	.11	$35,000	$3,850
Class IIIB Bicycle Boulevard	12.9	$1,020,000	$13,147,800
Class IV Separated Bikeway	4.9	$2,313,000	$11,218,050
Pedestrian Refuge Island	6	$100,000	$600,000
Curb Extension	23	$50,000	$1,150,000
High Visibility Crosswalks	20	$4,000-$7,000	$103,000
Pedestrian- Scale Lighting	.3	$260,000	$67,600
Sidewalk Improvement	.3	$500,000	$155,000
Pedestrian Hybrid Beacon (e.g. HAWK)	1	$700,000	$700,000
Pedestrian Signal Improvements	12	$100,000	$1,200,000
Enhanced Signage	4	$850	$3,400
Slip Lane Modification	1	$250,000	$250,000
		TOTAL	$71,810,820



ORANGE COUNTY

OC Public Works