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# INTRODUCTION

# 1

## INTRODUCTION

### PURPOSE OF THE SUSTAINABLE PLAN

The City of Carlsbad Sustainable Mobility Plan (SMP) presents recommendations for reducing vehicle miles traveled, mitigating the impacts of growth and development, and shifting how residents get around the city away from private automobiles toward modes that are more livable, cleaner and healthier. This plan document builds upon important prior planning work in the city, including the City of Carlsbad General Plan Mobility Element, the Bicycle and Pedestrian Master Plans, the Village and Barrio Master Plan, the Carlsbad Active Transportation Strategy and recent initiatives such as the Climate Action Plan and the passage of the Transportation Demand Ordinance.

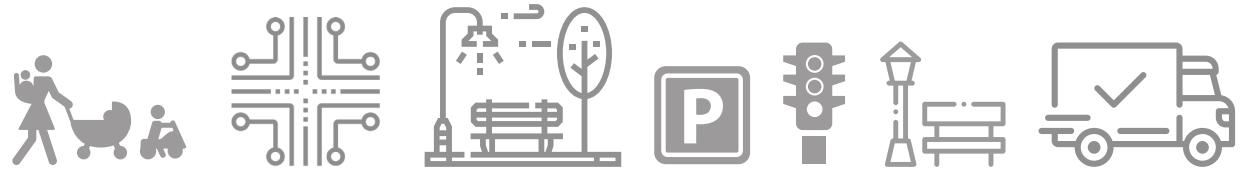
Increasing transportation options and improving connectivity within the city are core values of the Carlsbad Community Vision (Envision Carlsbad, 2010 and Carlsbad General Plan, 2015). Achieving increased travel options and connectivity will also support other values expressed in these plans such as sustainability, access to recreation and active, healthy lifestyles, and neighborhood revitalization.

In addition to the community's vision, the Carlsbad General Plan Mobility Element sets forth several goals related to sustainable mobility. These goals provide an important framework and foundation for the SMP.

- Keep the City of Carlsbad moving with livable streets that provide a safe, balanced, cost-

#### IN THIS CHAPTER

- Purpose and context of Sustainable Mobility Plan
- Legislative framework for walking and biking improvements
- Community profile
- Caltrans active transportation checklist for statewide compliance



effective, multi-modal transportation system (vehicles, pedestrians, bikes, transit), accommodating the mobility needs of all community members, including children, the elderly and the disabled. **(3-G.1)**

- Improve connectivity for residents, visitors and businesses. **(3-G.2)**
- Provide inviting streetscapes that encourage walking and promote livable streets. **(3-G.3)**
- Manage parking to support all modes of transportation and ensure efficient use of land. **(3-G.4)**
- Implement transportation demand and traffic signal management techniques to improve mobility. **(3-G.5)**
- Protect and enhance the visual, environmental and historical characteristics of the City of Carlsbad through sensitive planning and design of scenic transportation corridors. **(3-G.6)**
- Provide for the safe and efficient movement of goods throughout the city. **(3-G.7)**

Since adoption of the Mobility Element in 2015, the City of Carlsbad has actively been developing and implementing a series of stand-alone documents, technical analyses and recommendations related to walking and bicycling. The SMP is designed to serve as a “Plan of Plans” and help the city consolidate these multiple planning efforts over the previous 10 years in a manner that simplifies implementation and achievement of the overall goals for sustainable outcomes in the City of Carlsbad.

## WHY DO WE NEED A SUSTAINABLE MOBILITY PLAN?

The City of Carlsbad has extensive places for people walking and biking — sidewalks, bike lanes, crosswalks and many other features exist for the benefit of residents and visitors alike.

Recent research and analysis conducted as part of the SMP process confirms that the mere presence of these facilities does not always ensure safe walking and cycling, nor attract new users to these modes. A key goal of this document is to take additional steps to ensure safe travels and to create new users from people who would otherwise drive to their destination by providing appealing facilities for the most pedestrians and cyclists.



Carlsbad Boulevard in the 1980s

The SMP represents a critical step in developing a “toolbox” of new treatments designed to make it easier for casual users to use transit, walkways and bikeways for short, routine trips throughout the city, and with those trips, reduce vehicular congestion, improve safety and reduce emissions consistent with the city’s Climate Action Plan.

## HOW TO USE THIS DOCUMENT

- **Chapter One:** Introduction sets forth the SMP’s vision, provides the legislative framework and summarizes the vision for the SMP as articulated by the Stakeholder Working Group.
- **Chapter Two:** Existing Mobility provides a snapshot of the existing physical environment and existing programs, practices and policies related to walking and cycling in the City of Carlsbad.
- **Chapter Three:** Guiding Principles and Emerging Mobility Trends presents overarching guiding principles motivating this planning process as well as several innovative planning concepts that inform the SMP’s recommendations.
- **Chapter Four:** Community Perspectives provides a summary of the public engagement activities and outcomes that inform the SMP recommendations.
- **Chapter Five:** Planned Mobility Networks presents the SMP’s planned networks for walking, cycling and transit with a focus on integrating recommendations from the city’s multiple, previously adopted plans. The four modal networks were also used to develop a backbone network of Transformative Corridors which is presented at the end of this chapter.
- **Chapter Six:** Proposed Mobility Programs presents key programmatic recommendations including those related to Bicycle Education, Safe Routes to School (SRTS), Transportation Demand Management (TDM), and Active Transportation Monitoring.
- **Chapter Seven:** Action Plan presents the consolidated SMP project database including project recommendations from 10 years of prior mobility planning in Carlsbad as well as new SMP recommendations. The action plan also presents the prioritization of these projects using criteria identified by the stakeholder working group and city staff. The identification of higher priority projects helps city staff to understand which projects should be implemented in the near-term versus long-term.

## COMMUNITY PROFILE

The City of Carlsbad is located in Northern San Diego County, approximately 35 miles north of the City of San Diego and approximately 90 miles south of Los Angeles. The City of Carlsbad is bordered by the cities of Oceanside and Vista to the north, the City of San Marcos and unincorporated San Diego County to the east, the City of Encinitas to the south and the Pacific Ocean to the west.

Interstate 5 traverses the city in a north-south direction, providing the primary north-south freeway access to Carlsbad, while State Route 78 connects the northern portion of Carlsbad with communities to the east.

Along the coast, the city’s terrain is relatively flat. However, as the city spreads easterly, the terrain becomes hilly.

The City of Carlsbad has several qualities contributing to a positive walking and cycling environment, including a temperate Southern California climate, an active population, high quality recreation opportunities and wide, new streets in many parts of the city that can, or already do, accommodate active transportation infrastructure.

## KEY THEMES FROM THE SMP PLANNING PROCESS

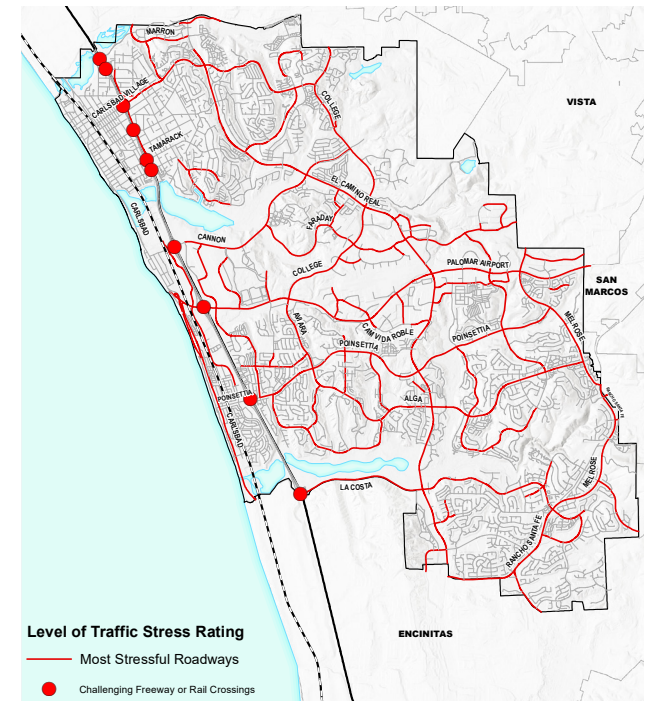
Based on the evaluation of the City of Carlsbad’s safety, infrastructure and community perspectives, the following key themes and plan priorities were developed:

**Enhance Existing Bikeways Along Major Arterials** – The City of Carlsbad already has many miles of bicycle infrastructure. The challenge facing the city is how to retrofit this infrastructure, which is mostly bike lanes, to not only improve safety of existing cyclists, but to attract new users.

This can be achieved through implementation of protected or buffered bikeways, particularly along high speed roadways.

**Improve Freeway Crossings and Intersections** – Many freeway crossings and intersections at major roadways create physical and psychological barriers, as people do not feel safe walking or cycling through these areas.

**Plan for Vulnerable Users** – The development of an “8 to 80” network where people can comfortably walk and bike is critical to shifting mode choice away from driving. This is achieved by planning and designing facilities for those who are likely



Analysis determined that several roadways, typically arterials, are frequently inaccessible to casual users walking or biking, which limits connections throughout the City.

to benefit the most from protection on roadways – children and the elderly.

**Innovate and Make Use of the City’s Desirable Location to Attract Visitors, Employees and Employers** – The City of Carlsbad has long sought a highly-skilled and highly-educated workforce, with an emphasis on technology and the pursuit of an active, enjoyable quality of life. With the emergence of multiple, new technologies, the city’s transportation network should reflect this innovation, along with strong

workplace commuter programs, and a focus on maintaining its status as a family-oriented destination for people from all over the world.

## APPLICABLE LEGISLATION

Several pieces of legislation support increased bicycling and walking in the state of California. Much of the legislation addresses greenhouse gas (GHG) reduction and points to bicycling and walking as a means to achieve reduction targets. The most relevant legislation concerning bicycle and pedestrian policy, planning, infrastructure and programs are described in the following sections.



Median Refuge for pedestrians crossing at mid-block locations

### AB-32 California Global Warming Solutions Act (2006)

AB-32 calls for the reduction of greenhouse gas emissions and codifies the 2020 emissions reduction goal. This act also directs the California Air Resources Board to develop specific early actions to reduce greenhouse gases while also preparing a scoping plan to identify how best to reach the 2020 limit.

### AB-1581 Bicycle and Motorcycle Traffic Signal Actuation (2007)

This bill defines a traffic control device as a traffic-actuated signal that displays one or more of its indications in response to the presence of traffic detected by mechanical, visual, electrical or other means. Upon the first placement or replacement of a traffic-actuated signal, the signal would have to be installed and maintained, to the extent feasible and in conformance with professional engineering practices, so as to detect lawful bicycle or motorcycle traffic on the roadway. Caltrans has adopted standards for implementing the legislation.

### SB-375 Redesigning Communities to Reduce Greenhouse Gases (2008)

This bill seeks to reduce vehicle miles traveled through land use and planning incentives. Key provisions require the larger

regional transportation planning agencies to develop more sophisticated transportation planning models, and to use them for the purpose of creating “preferred growth scenarios” in their regional plans that reduce greenhouse gas emissions. The bill also provides incentives for local governments to incorporate these preferred growth scenarios into the transportation elements of their general land use plans.

### AB-1358 Complete Streets Act (2008)

AB-1358 requires the legislative body of a city or county, upon revision of the circulation element of their general plan, to identify how the jurisdiction will provide for the routine accommodation of all users of the roadway including drivers, pedestrians, cyclists, individuals with disabilities, seniors and public transit users. The bill also directs the Governor’s Office of Planning and Research to amend guidelines for general plan circulation element development so that the building and operation of local transportation facilities safely and conveniently accommodates everyone, regardless of their travel mode.

### Caltrans Deputy Directive 64-R1 (2008)

Deputy Directive 64-R1 is a policy statement affecting Caltrans mobility planning and projects requiring the agency to “...provide

for the needs of travelers of all ages and abilities in all planning, programming, design, construction, operations and maintenance activities and products on the state highway system. The Department views all transportation improvements as opportunities to improve safety, access, and mobility for all travelers in California and recognizes bicycle, pedestrian and transit modes as integral elements of the transportation system. The directive goes on to mention the environmental, health and economic benefits of more complete streets.

### Deputy Directive 13-02

Deputy Directive 13-02 establishes that roundabout intersection proposals no longer



"Pedestrian Scramble" crosswalk in Carlsbad

require Conceptual Approval by Caltrans. It also establishes that roundabout intersection proposals shall be planned, developed, and evaluated in accordance with the National Cooperative Highway Research Program (NCHRP) Report 672 entitled "Roundabouts: An Informational Guide, 2nd Edition." This directive also supplements the California MUTCD warrant and engineering study requirements by adding yield control to the menu of options for intersection control.

### AB-1371 Passing Distance/Three Feet for Safety Act (2013)

This statute, widely referred to as the "Three Foot Passing Law," requires drivers to provide at least three feet of clearance when passing cyclists. If traffic or roadway conditions prevent drivers from giving cyclists three feet of clearance, they must "slow to a speed that is reasonable and prudent" and wait until they reach a point where passing can occur without endangering the cyclist. Violations are punishable by a \$35 base fine, but drivers who collide with cyclists and injure them in violation of the law are subject to a \$220 fine.

### SB-743 CEQA Reform (2013)

Just as important as the aforementioned pieces of legislation that support increases in bicycling and walking infrastructure and accommodation is one that promises to

remove a longstanding roadblock to them. That roadblock is vehicular Level of Service (LOS) and the legislation with the potential to remove it is SB-743.

For decades, vehicular congestion has been interpreted as an environmental impact and has often stymied on-street bicycle projects in particular. Projections of degraded Level of Service have, at a minimum, driven up project costs and, at a maximum, precluded projects altogether. SB-743 could completely remove LOS as a measure of vehicle traffic congestion that must be used to analyze environmental impacts under the California Environmental Quality Act (CEQA).

This is extremely important because adequately accommodating cyclists, particularly in built-out environments, often requires relocation of right-of-way and the potential for increased vehicular congestion. The reframing of Level of Service as a matter of driver inconvenience, rather than an environmental impact, allows planners to assess the true impacts of transportation projects and will help support bicycling projects that improve mobility for all roadway users.

### AB-1193 Bikeways (2014)

This act amends various code sections, all relating to bikeways in general, specifically by

recognizing a fourth class of bicycle facility, cycle tracks. However, the following may be even more significant to future bikeway development:

Existing law requires Caltrans, in cooperation with county and city governments, to establish minimum safety design criteria for the planning and construction of bikeways, and requires the department to establish uniform specifications and symbols regarding bicycle travel and traffic related matters. Existing law also requires all city, county, regional and other local agencies responsible for the development or operation of bikeways or roadways to utilize all of those minimum safety design criteria and uniform specifications and symbols.

This bill revises these provisions to require Caltrans to establish minimum safety design criteria for each type of bikeway by January 1, 2016, and also authorizes local agencies to utilize different minimum safety criteria if adopted by resolution at a public meeting.

#### **AB 902 Traffic Violations and Diversion Programs (2015)**

Existing law provides that a local authority may not allow a person who has committed a traffic violation under the Vehicle Code to participate in a driver awareness or education program as an alternative to the

imposition of those penalties and procedures, unless the program is a diversion program for a minor who commits an infraction not involving a motor vehicle and for which no fee is charged.

This bill instead allows any person of any age who commits an infraction not involving a motor vehicle to participate in a diversion program that is sanctioned by local law enforcement. The bill eliminates the requirement that such a program charge no fee. The bill makes other technical, non-substantive changes.

#### **AB 1096 Electric Bicycles as Vehicles (2015)**

Existing law defines a “motorized bicycle” as a device that has fully operative pedals for propulsion by human power and has an electric motor that meets specified requirements. The bill defines an “electric bicycle” as a bicycle with fully operable pedals and an electric motor of less than 750 watts, and creates three classes of electric bicycles.

The bill prohibits the operation of a class III electric bicycle on specified paths, lanes or trails, unless that operation is authorized by a local ordinance. The bill also authorizes a local authority or governing body to prohibit, by ordinance, the operation of class 1 or class 2 electric bicycles on specified paths or trails.

#### **SB-1 Transportation Funding (2017)**

This bill creates the Road Maintenance and Rehabilitation Program to address deferred maintenance on the state highway system and the local street and road system. A total of \$5.4 billion will be invested annually over the next decade, which will undertake a backlog of repairs and upgrades. Additionally, cleaner and more sustainable travel networks will be ensured for the future, including upgrades to local roads, transit agencies and an expansion of the state’s growing network of pedestrians and bicycle routes.

#### **SB-672 Traffic-Actuated Signals: Motorcycles and Bicycles (2017)**

This bill extends indefinitely the requirement to install traffic-actuated signals to detect lawful bicycle or motorcycle traffic on the roadway. By extending indefinitely requirements regarding traffic-actuated signals applicable to local governments, this bill imposed a state-mandated local program.

Existing law requires the state to reimburse local agencies and school districts for certain costs mandated by the state.

#### **AB-1218 California Environmental Quality Act Exemption: Bicycle Transportation Plans (2017)**



This bill extends CEQA exemptions for bicycle transportation plans for an urbanized area until January 1, 2021. These exemptions include re-striping of streets and highways, bicycle parking and storage, signal timing to improve street and highway intersection operations, and related signage for bicycles, pedestrians and vehicles under certain conditions. Additionally, CEQA will also exempt from its requirements projects consisting of re-striping of streets and highways for bicycle lanes in an urbanized area that are consistent with a bicycle transportation plan under certain conditions.

Planning projects such as this document are exempt from CEQA analysis since they provide planning and conceptual recommendations. As individual recommendations move forward toward further design and implementation, the city will then need to determine if there are environmental impacts that may warrant an EIR.

A project involving only feasibility or planning studies for possible future actions which the agency, board or commission has not approved, adopted or funded does not require the preparation of an EIR or Negative Declaration but does require consideration of environmental factors. This section does not

apply to the adoption of a plan that will have a legally binding effect on later activities.

### SB-760 Transportation Funding: Active Transportation: Complete Streets (2019)

This bill establishes a Division of Active Transportation within Caltrans to give attention to active transportation program matters to guide progress toward meeting the department’s active transportation program goals and objectives. This bill requires the California Transportation Commission to give high priority to increasing safety for pedestrians and bicyclists and to the implementation of bicycle and pedestrian facilities. The bill also directs the department to update the Highway Design Manual to incorporate “complete streets” design concepts, including guidance for selection of bicycle facilities.

## CALTRANS ACTIVE TRANSPORTATION CHECKLIST

In order to comply with Caltrans requirements and to keep the city competitive in future grant opportunities, the table on the following page lists items that are addressed in the SMP.



Table 1-1 Caltrans Active Transportation Plan Checklist

Item	Location in Plan
The estimated number of existing bicycle trips and pedestrian trips in the plan area, both in absolute numbers and as a percentage of all trips and the estimated increase in the number of bicycle trips and pedestrian trips resulting from implementation of the plan.	Chapters 2 & 7
The number and location of collisions, serious injuries and fatalities suffered by bicyclists and pedestrians in the plan area, and a goal for collision, serious injury and fatality reduction after implementation of the plan.	Chapters 2 & 5
A map and description of existing and proposed land use and settlement patterns which must include, but not be limited to, locations of residential neighborhoods, schools, shopping centers, public buildings, major employment centers and other destinations.	Chapter 2
A map and description of existing and proposed bicycle transportation facilities, including a description of bicycle facilities that serve public and private schools and, if appropriate, a description of how the five E's (Education, Encouragement, Enforcement, Engineering and Evaluation) will be used to increase rates of bicycling to school.	Chapters 2 & 6 Appendix G
A map and description of existing and proposed end-of-trip bicycle parking facilities.	Chapter 2
A description of existing and proposed policies related to bicycle parking in public locations, private parking garages and parking lots and in new commercial and residential developments.	Chapter 2
A map and description of existing and proposed bicycle transport and parking facilities for connections with and use of other transportation modes. These must include, but not be limited to, bicycle parking facilities at transit stops, rail and transit terminals, ferry docks and landings, park and ride lots, and provisions for transporting bicyclists and bicycles on transit or rail vehicles or ferry vessels.	Chapter 2
A map and description of existing and proposed pedestrian facilities, including those at major transit hubs and those that serve public and private schools and, if appropriate, a description of how the five E's (Education, Encouragement, Enforcement, Engineering and Evaluation) will be used to increase rates of walking to school. Major transit hubs must include, but are not limited to, rail and transit terminals, and ferry docks and landings. A description of proposed signage providing wayfinding along bicycle and pedestrian networks to designated destinations.	Chapters 2 & 6
A description of the policies and procedures for maintaining existing and proposed bicycle and pedestrian facilities, including, but not limited to, the maintenance of smooth pavement, ADA level surfaces, freedom from encroaching vegetation, maintenance of traffic control devices including striping and other pavement markings, and lighting.	Chapter 2
A description of bicycle and pedestrian safety, education and encouragement programs conducted in the area included within the plan. Efforts by the law enforcement agency having primary traffic law enforcement responsibility in the area to enforce provisions of the law impacting bicycle and pedestrian safety, and the resulting effect on collisions involving bicyclists and pedestrians are also included.	Chapter 6
A description of the extent of community involvement in development of the plan, including disadvantaged and underserved communities.	Chapter 4
A description of how the active transportation plan has been coordinated with neighboring jurisdictions, including school districts within the plan area, and is consistent with other local or regional transportation, air quality or energy conservation plans, including, but not limited to, general plans and a Sustainable Community Strategy in a Regional Transportation Plan.	Chapters 2 & 4 Appendices D & F
A description of the projects and programs proposed in the plan and a listing of their priorities for implementation, including the methodology for project prioritization and a proposed timeline for implementation.	Chapter 7
A description of past expenditures for bicycle and pedestrian facilities and programs, and future financial needs for projects and programs that improve safety and convenience for bicyclists and pedestrians in the plan area. Include anticipated revenue sources and potential grant funding for bicycle and pedestrian uses.	Chapter 7
A description of steps necessary to implement the plan and the reporting process that will be used to keep the adopting agency and community informed of the progress being made in implementing the plan.	Chapter 7



# 2 EXISTING MOBILITY NETWORKS



## EXISTING MOBILITY NETWORKS

### CARLSBAD TODAY

This chapter summarizes the current mobility context of the City of Carlsbad with a focus on previously adopted mobility plans, land use and socio-economic conditions, and most importantly, the status of current networks, travel demands and safety for walking, cycling and transit. This chapter lays the foundation for identifying key opportunities for the SMP to integrate and strengthen walking, cycling and transit networks and user experience across the city. The draft SMP Existing Conditions Report is provided in Appendix A.

The SMP will lay the foundation for improving mobility for all modes of travel, including pedestrians and bicyclists, within the City of Carlsbad. This represents the city's inaugural Sustainable Mobility Plan, building upon recommendations set forth in numerous plans preceding this effort including among others, the Trails Master Plan (2019), the Carlsbad Coastal Mobility Readiness Plan (2016), the General Plan Mobility Element (2015), the Climate Action Plan (2015), Carlsbad Active Transportation Strategy (2015), Livable Streets Assessment (2013), Americans with Disabilities Transition Plan for Public Rights-of-Way (2013), the Pedestrian Master Plan (2008), and the Bicycle Master Plan (2007). The final section of this chapter assesses how well key destinations across the City of Carlsbad are served by the existing bike, pedestrian and transit networks. The "gap" analysis provides important input to the project prioritization mentioned in the final chapter of this document.

In addition to building on the previously adopted plans, the SMP will update the 10-year-old Pedestrian Master Plan and the 11-year-old Bicycle Master Plan. It will also provide the opportunity for collaboration among the City of Carlsbad's Transportation, Parks and Economic Development departments.

#### IN THIS CHAPTER

- Analysis of current conditions for people walking and biking, particularly vulnerable users
- Identification of network gaps serving key City of Carlsbad destinations

## PRIOR PLANNING CONTEXT

### Bikeway Master Plan (2007)

In December 2007, the City of Carlsbad adopted the Bikeway Master Plan as a blueprint for bicycle transportation and recreation in the City of Carlsbad. The Bikeway Master Plan provided an updated network of planned bikeway facilities.

### Pedestrian Master Plan (2008)

In August of 2008, the City Council adopted the Pedestrian Master Plan. The vision of the Pedestrian Master Plan is multi-pronged. It envisioned a future City of Carlsbad where:

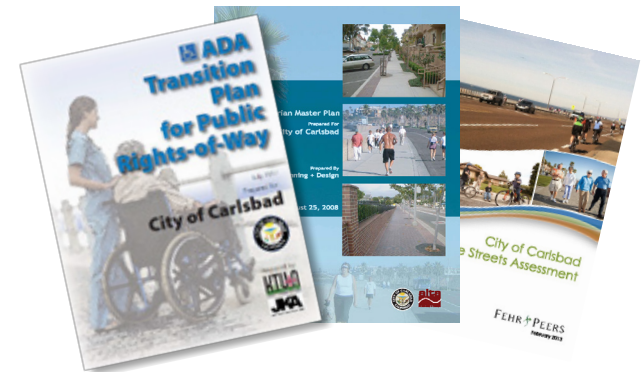
- People can conveniently walk to their destinations
- People feel safe walking
- Facilities are provided for people from all age groups
- People with disabilities are more easily mobile
- Visitors are attracted to the enhanced walking environment
- Commercial streets are exciting places to visit.

### ADA Transition Plan for Public Right-of-Way (2012)

The Americans with Disabilities Act (ADA), enacted in 1990, extends comprehensive civil rights protections to all people with disabilities. The ADA Transition Plan for Public Right-of-Way outlines a comprehensive approach to removing public barriers to walking by mapping out a program that will transition the City of Carlsbad to comply with ADA and Title 24 requirements. The primary goal of the project is to provide a complete and accurate survey of walking facilities within the public right-of-way in the designated tier areas that can then be addressed as part of a broader strategic "Transition Plan."

### City of Carlsbad Livable Streets Assessment (2013)

In 2012, Livable Streets was a City of Carlsbad City Council priority and strategic focus area for further enhancing the City of Carlsbad's outstanding quality of life. It was partially used as a way to incorporate the feedback received from the Envision Carlsbad General Plan Update process regarding the challenges, values, needs and wants of the community.



Planning documents used to identify future projects

### City of Carlsbad Active Transportation Strategy (2015)

The Carlsbad Active Transportation Strategy (CATS) is divided into five chapters: Where We Have Been, Gap Analysis, Roadmap to Livable Streets, Priority Projects, Measures of Effectiveness.

### Climate Action Plan (2015)

The City of Carlsbad has long been a steward of environmental sustainability. In 2007, the City of Carlsbad City Council adopted a set of sustainability and environmental guiding principles (Resolution No. 2007-187) to help guide city investments, activities, and programs. Additionally, sustainability emerged as a key theme during the Envision Carlsbad community outreach process, and reflected as a Core Value of the Community

Vision. City Council adopted the Climate Action plan in 2015. The CAP includes goals, policies and actions for the City of Carlsbad to reduce GHG emissions and combat climate change and includes:

- An inventory of the City of Carlsbad's citywide and local government GHG emissions;
- Forecasts of future citywide and local government GHG emissions;
- A comprehensive, citywide strategy and actions to manage and reduce GHG emissions, with emission targets through 2035; and
- Actions that demonstrate the City of Carlsbad's commitment to achieve state GHG reduction targets by creating enforceable measures, and monitoring and reporting processes to ensure targets are met.

The time frame for the Plan extends from the date of adoption through 2035.

### General Plan Mobility Element (2015)

A component of the larger General Plan, the mobility element is required by state law. The introduction includes a background and purpose, and notes that the primary

transportation issues facing the City of Carlsbad relate to protecting and enhancing the community's quality of life, as reflected in the core values of the Carlsbad Community Vision. The report goes on to state that the community's vision includes "better pedestrian and bicycle connections between neighborhoods, destinations and different parts of the community, and a balanced transportation system rather than a singular focus on automobile movement."

### Carlsbad Coastal Mobility Readiness Plan (Draft 2016)

The Carlsbad Coastal Mobility Readiness Plan was developed to help stakeholders and constituents envision a coastal transportation system that connects people, creates a sense of belonging and closely links quality of life issues to economic growth. The report was designed as a blueprint for building the infrastructure to meet the mobility needs of the community, encourage healthy lifestyles and support a vibrant downtown setting.

### Village and Barrio Master Plan (2018)

The master plan focuses on enhancing neighborhood character, public spaces, and ways to get around the Village and Barrio, based on ideas gathered from the community starting in September 2014.



Additional City Adopted Plans

The plan was approved by City Council on July 10, 2018.

### Trails Master Plan (2019)

The City of Carlsbad has a citywide Trails Program with a mission statement of "...striv[ing] to meet the leisure and recreational needs of Carlsbad residents while protecting and preserving open spaces and coastal resources in accordance with the City of Carlsbad General Plan."

### 2018 Draft Transit and TDM Blueprint

The Transit and TDM Blueprint assessed the existing travel behavior, transit systems, and TDM strategies in the City of Carlsbad. From this analysis, the Blueprint identified barriers to implementing TDM and transit strategies and provides a list of potential transit and TDM strategies to pursue in order to improve the performance of the transportation system.

### 2019 Trolley Program Feasibility Study

The purpose of this study was to evaluate local-circulator service options that would serve major destinations along the city's coast including the Carlsbad Village, Barrio, and beach areas. With an increasing demand on the limited space on local roads and the limited number of parking available along the coast, the city has identified a need to implement a local-circulator service option that helps commuters, residents, and visitors travel between home, work, and destinations of play. The Trolley Program Feasibility Study identifies three alternative trolley options, the probable cost for each option, and the next steps city council and staff could take to implement a preferred alternative.



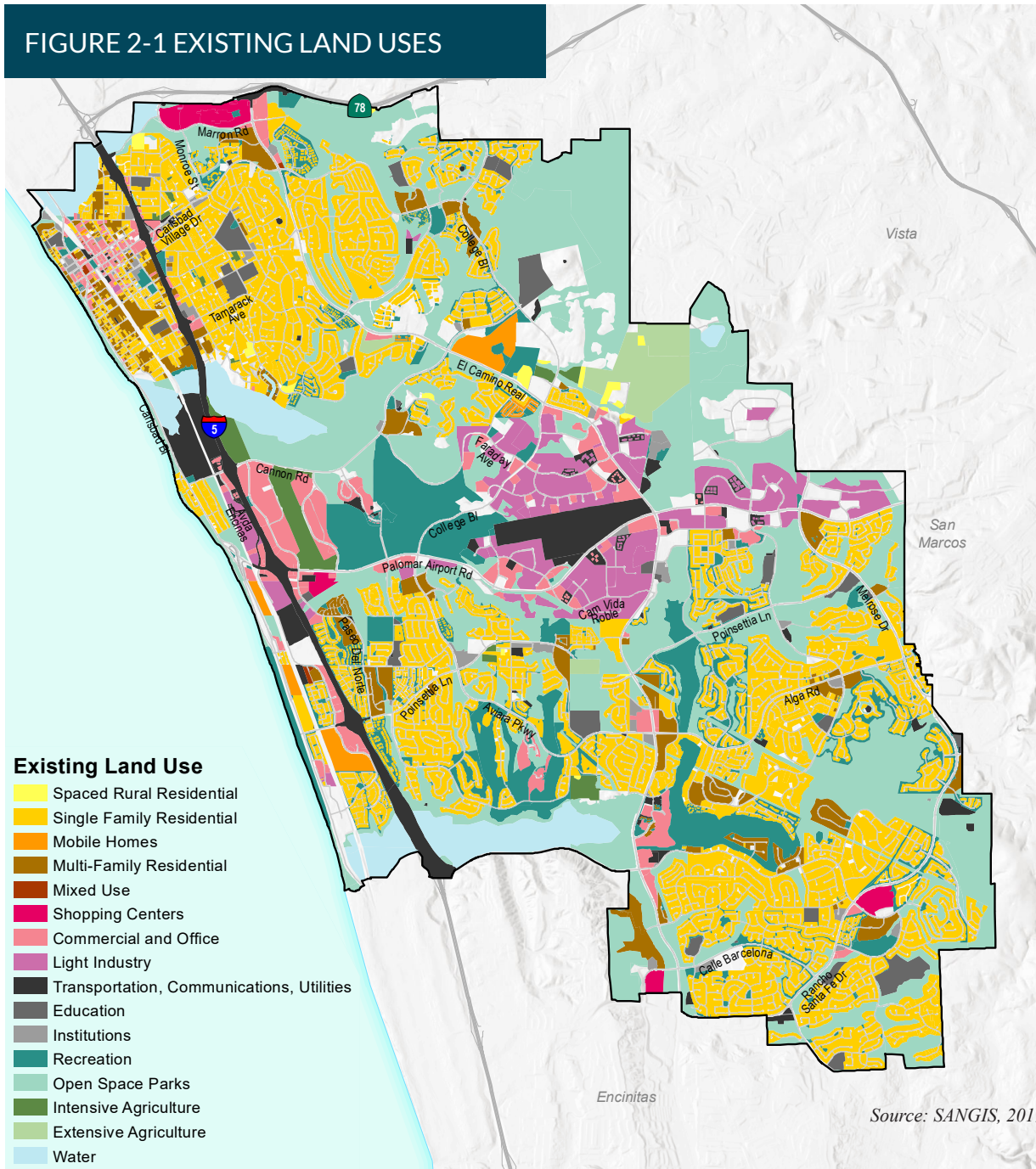
Four goals are identified within the Carlsbad TMP. These Include:

- Goal 1: Create a Connected and Complete Trails System
- Goal 2: Accommodate a Variety of Trail Users in a Safe and Environmentally Sensitive Manner
- Goal 3: Identify Existing & Future Trail Development
- Goal 4: Integrate Transportation Related Facilities as Part of the Trails System



Carlsbad Village Streetscape

FIGURE 2-1 EXISTING LAND USES



Downtown Carlsbad

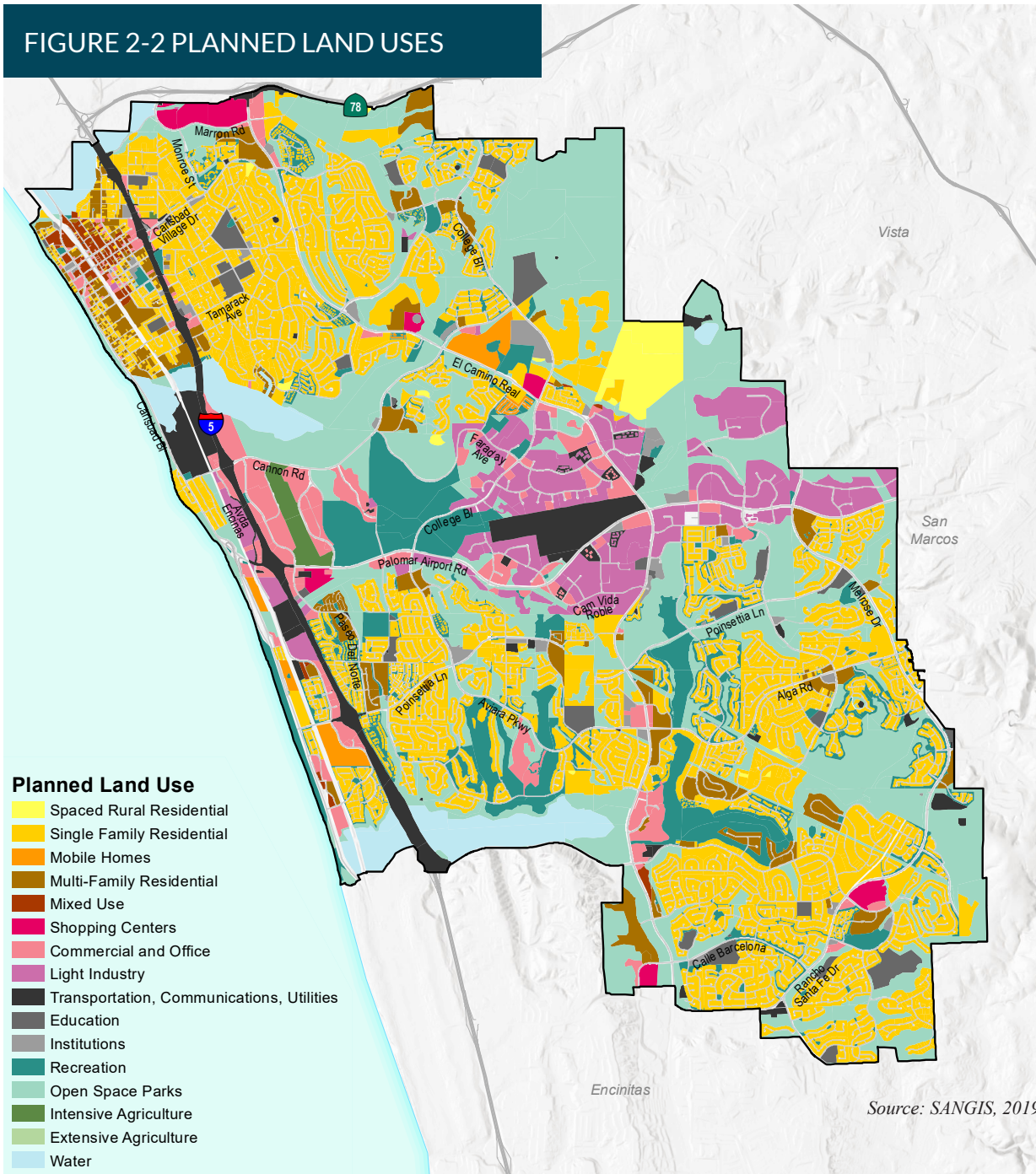
## LAND USES, SOCIO-ECONOMIC AND TRAVEL CHARACTERISTICS

The City of Carlsbad began as a small coastal town, and its settlement pattern is typical of most coastal Southern California cities. The original downtown, known today as the Carlsbad Village, is characterized by a mix of commercial and residential land uses, narrow tree-lined streets arranged in a grid pattern, and has been served by rail service for over 100 years.

Beginning in the postwar years of the late 1940s, development accelerated, bringing greater numbers of employees and residents. Despite this development, significant amounts of nearby land remained as undeveloped open space. Throughout the second half of the 20th Century, housing frequently took the shape of master-planned developments adjacent to major vehicular arterials. Employment centers were also developed as standalone sites, separate from housing and commercial land uses. Currently, employment is predominately located between Cannon Road to the north and Palomar Airport Road to the south.



FIGURE 2-2 PLANNED LAND USES



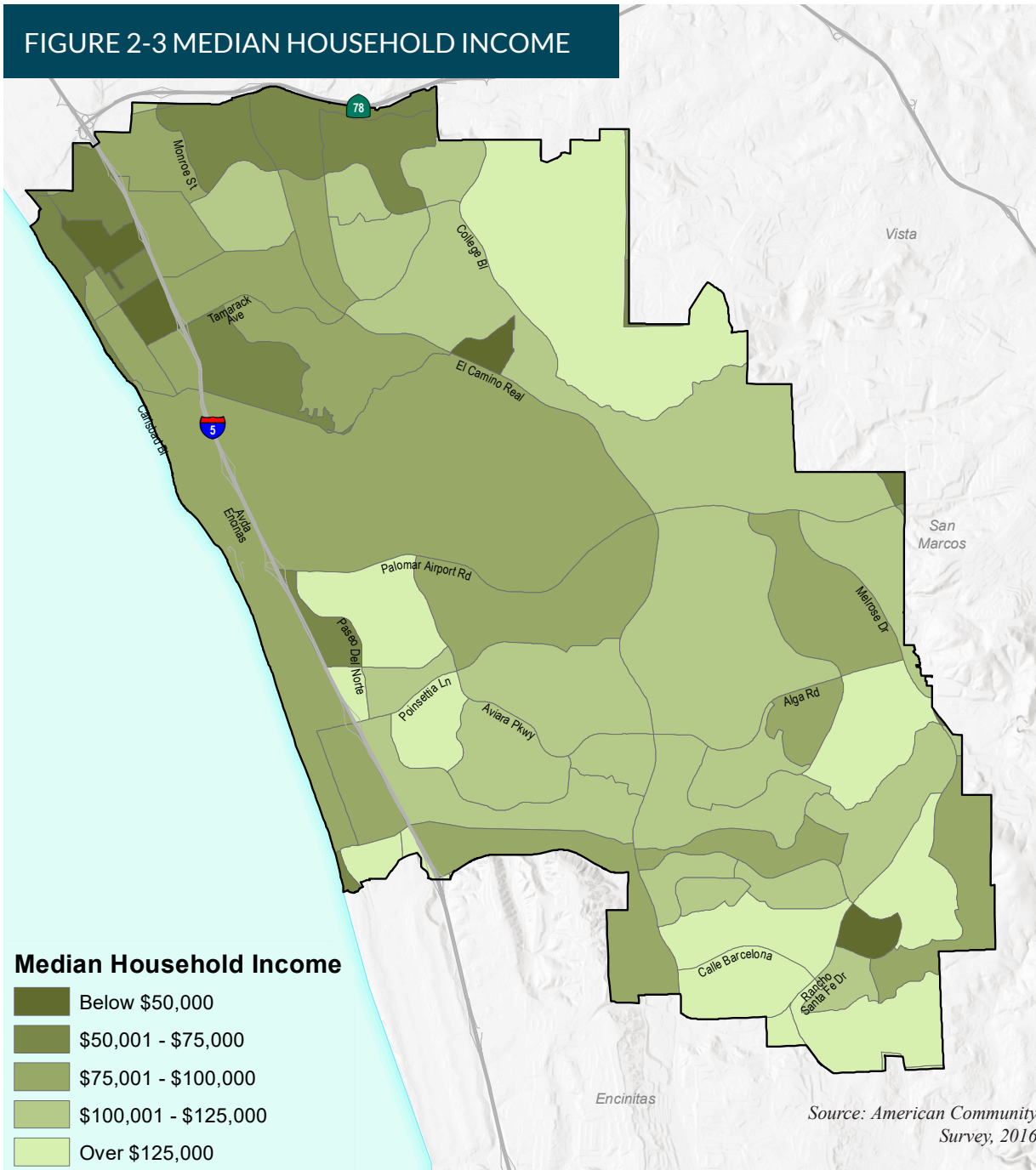
### Planned Land Uses

The notable differences between the City of Carlsbad's existing land use and the planned land uses depicted in Figure 2-2, is an increase in single family residential northeast of El Camino Real and College Boulevard, and an increase in light industrial in the area north of Faraday Avenue, directly west of the intersection of Faraday Avenue and S. Melrose Drive. The planned land uses also include an increase in mixed commercial directly south of the intersection of Avenida Encinas and Carlsbad Boulevard near the southern boundary of the city.



A commercial district "Bike Corral"

FIGURE 2-3 MEDIAN HOUSEHOLD INCOME



### Socio-Economic Conditions

Figure 2-3 displays 2016 median household income for the City of Carlsbad by census block group.

Disadvantaged or low-income communities are defined by the Caltrans 2019 Regional ATP Program Guidelines as having a median household income less than 80 percent of the statewide median based on the most current census data from the 2016 American Community Survey, which is less than \$51,026.

According to the map, there are four low-income census block groups, two of which are located in the Village Barrio zone of the City of Carlsbad, where the median household income is roughly \$47,000.

The neighborhood southeast of the intersection of La Costa Avenue and Rancho Santa Fe Road, near Stagecoach Community Park, has a median household income of about \$48,000.

Lastly, the lowest median household income is found in the neighborhood east of the intersection of Cannon Road and El Camino Real, with a median household income of about \$34,000.

FIGURE 2-4 MODE SHARE/TRAVEL TIME TO WORK

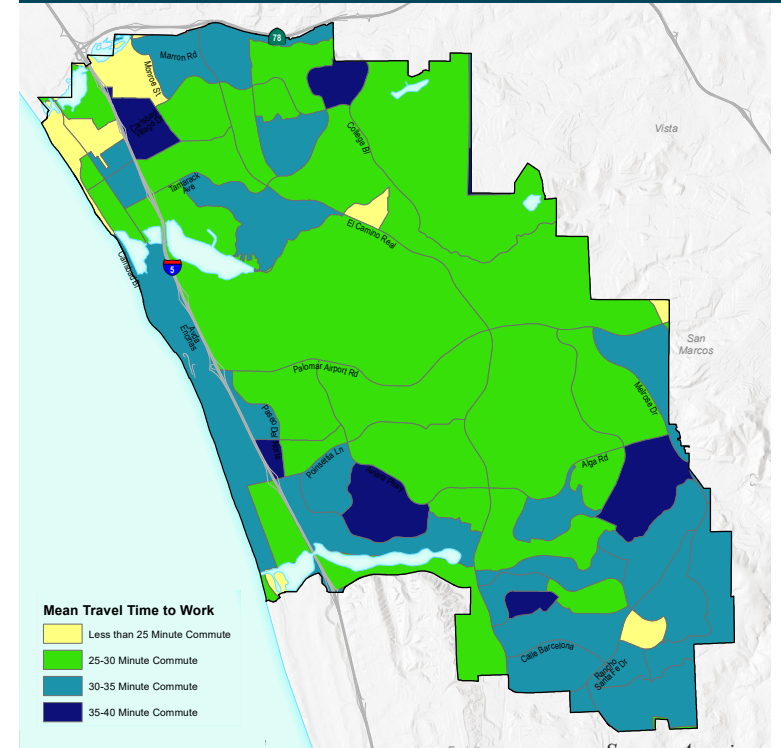
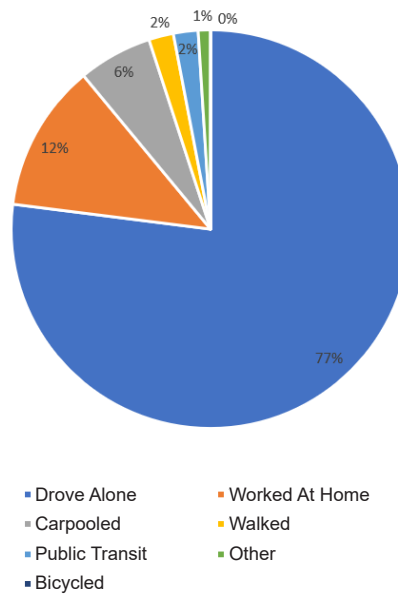
Travel Characteristics

According to the American Community Survey 5-Year Estimate (2016), the City of Carlsbad has similar but slightly higher rates of commuters driving alone to work than San Diego County as a whole. In addition, there are slightly higher rates of residents working at home in Carlsbad compared to the county as a whole. Also noteworthy is a lower percentage of Carlsbad residents who carpool, take public transportation, walk to work, ride a bicycle, or commute via some other means as compared to San Diego County as a whole. These findings indicate a strong potential for change.

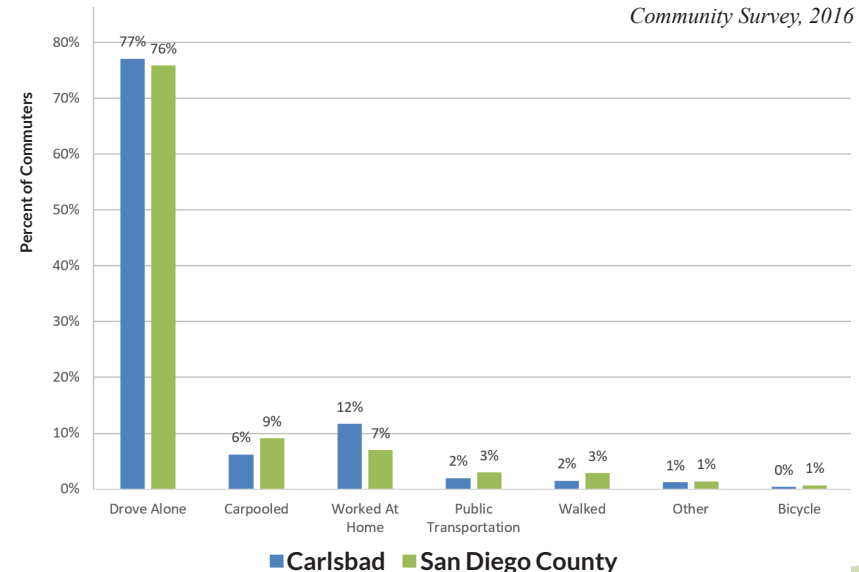
The 2016 mean travel time for working residents of the City of Carlsbad is about 28.6 minutes.

Figure 2-4 displays travel time to work and commute mode shares by census block group for working residents of the City of Carlsbad. As can be seen, most residents have an average commute lasting between 25 – 30 minutes. Very few residents have an average commute time of less than 25 minutes.

Carlsbad Commute Mode Share



Source: American Community Survey, 2016



### City of Carlsbad-led Employer Surveys

An Employer Survey and an Employee TDM Survey were distributed to employers, employees, and residents of Carlsbad. These two surveys gathered information about existing commute behaviors and opinions about TDM strategies and alternative transportation options.

There were questions spanning all modes of alternative transportation, such as active transportation (biking and walking), public transportation, ridesharing, and more.

The following is a list of key findings reflecting a snapshot of the typical Carlsbad Commuter:

- Lives outside the City of Carlsbad (71.8 percent),
- Starts the work day between 7 to 9 a.m. (42.5 percent),
- Ends the work day between 5 to 6 p.m. (46.6 percent),
- Has a one-way commute duration of less than 30 minutes (59.6 percent),
- Drives alone five days per week (59.4 percent), and

- Could be motivated to use a shuttle/trolley as a commute option (45.5 percent).

With a total of 532 responses, the Employer Survey and Employee TDM Survey was conducted in about 12 weeks, and included fourteen employment sites overall.

### SANDAG iCommute Travel Analyses

SANDAG iCommute also collects employment and trip distribution data for the San Diego region and analyzes its findings in a series of datasets, which are displayed in the following figures.

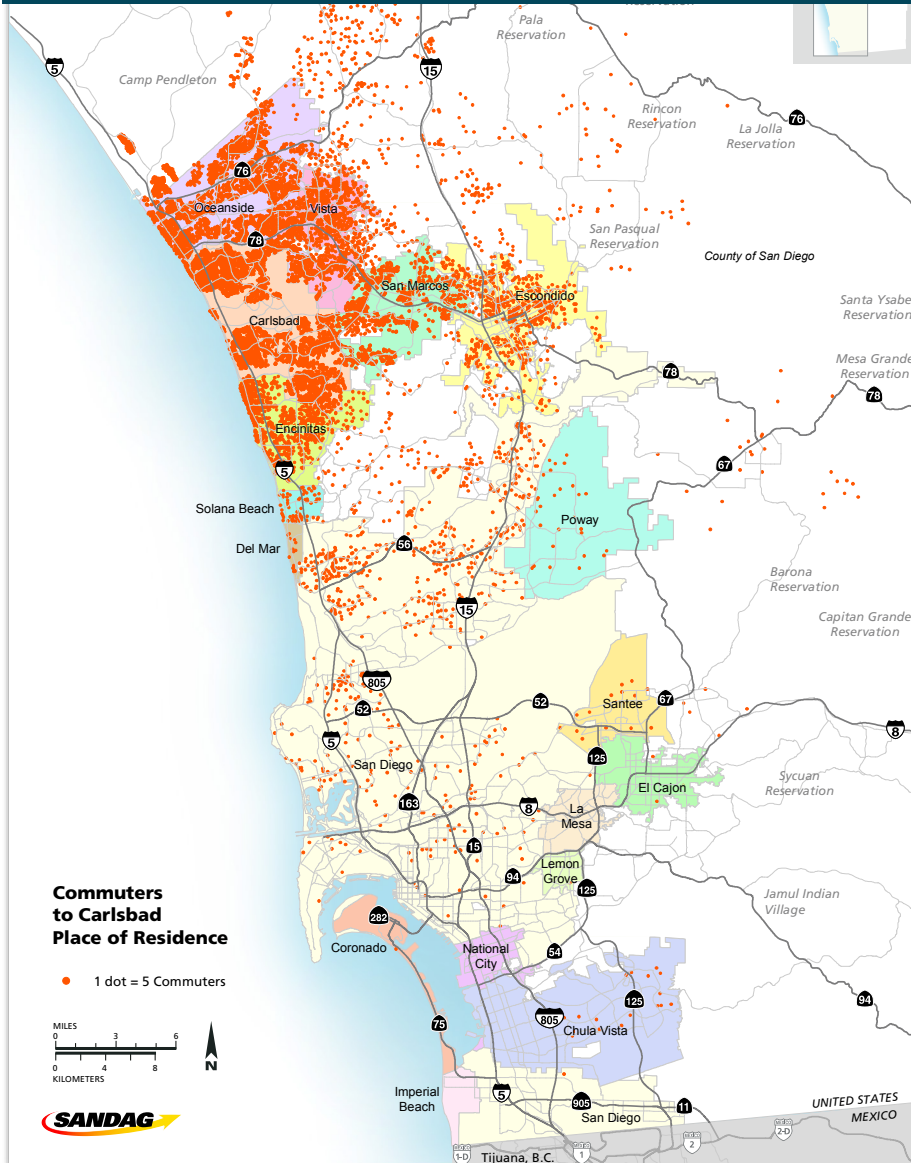
Staff with SANDAG's iCommute program made several recommendations for the City of Carlsbad, including to promote carpooling, biking, and vanpooling.



SANDAG's iCommute Programs (Source: iCommute)



FIGURE 2-6 WHERE CARLSBAD WORKERS LIVE



US Census Bureau Analysis

The US Census Bureau also reports useful information about commute patterns. Data from 2017 shows that roughly 65,250 people commute to Carlsbad each day for work, and an additional 10,752 Carlsbad residents work in the City of Carlsbad. The remaining 35,500 Carlsbad residents commute to jobs outside Carlsbad.

According to OnTheMap Census Data shown in Table 2-1, of those who work in Carlsbad, 14.1 percent live in the City of Carlsbad. The largest percentage of people (14.6 percent) who work in Carlsbad live in the City of Oceanside. Table 2-2 shows the most popular locations, which are City of San Diego (25.2%) and the City of Carlsbad (22.8%).

Table 2-1 Where Carlsbad Workers Live

City	Count	Percent
Oceanside	11,068	14.6%
Carlsbad	10,752	14.1%
San Diego	8,837	11.6%
Vista	6,052	8.0%
San Marcos	4,459	5.9%
Escondido	3,335	4.4%
Encinitas	2,282	3.8%
Los Angeles	1,554	2.0%
Chula Vista	822	1.1%
Fallbrook	650	0.9%
All Other Locations	25,601	33.7%
<b>Total</b>	<b>71,681</b>	<b>100.0%</b>

Source: OnTheMap, 2017



### 2019 Streetlight Data Travel Analysis

A 2019 study of travel demand in the City of Carlsbad evaluated origins of employees working in the City and living near a Park and Ride Facility, a transit stop with service access to Carlsbad, or both. The analysis utilized StreetLight Data, a proprietary big data source that tracks anonymized GPS data from phones and other sources.

The analysis found that on an average weekday 74% of the 38,000 average daily trips were made to one of four employment zones: NW Quadrant Business Park, NE Quadrant Business Park, SW Quadrant Business Park, and the Village. Figure 2-8 shows these work destination zones and their respective percent of average daily trip ends.

The study also found that 81% of commuter trips originate from areas within two miles of a Park and Ride facility with or without transit service. The study suggests that incentivizing car or vanpools and transit use through TDM measures and first/last mile improvements can help shift commuters away from single occupancy vehicles.

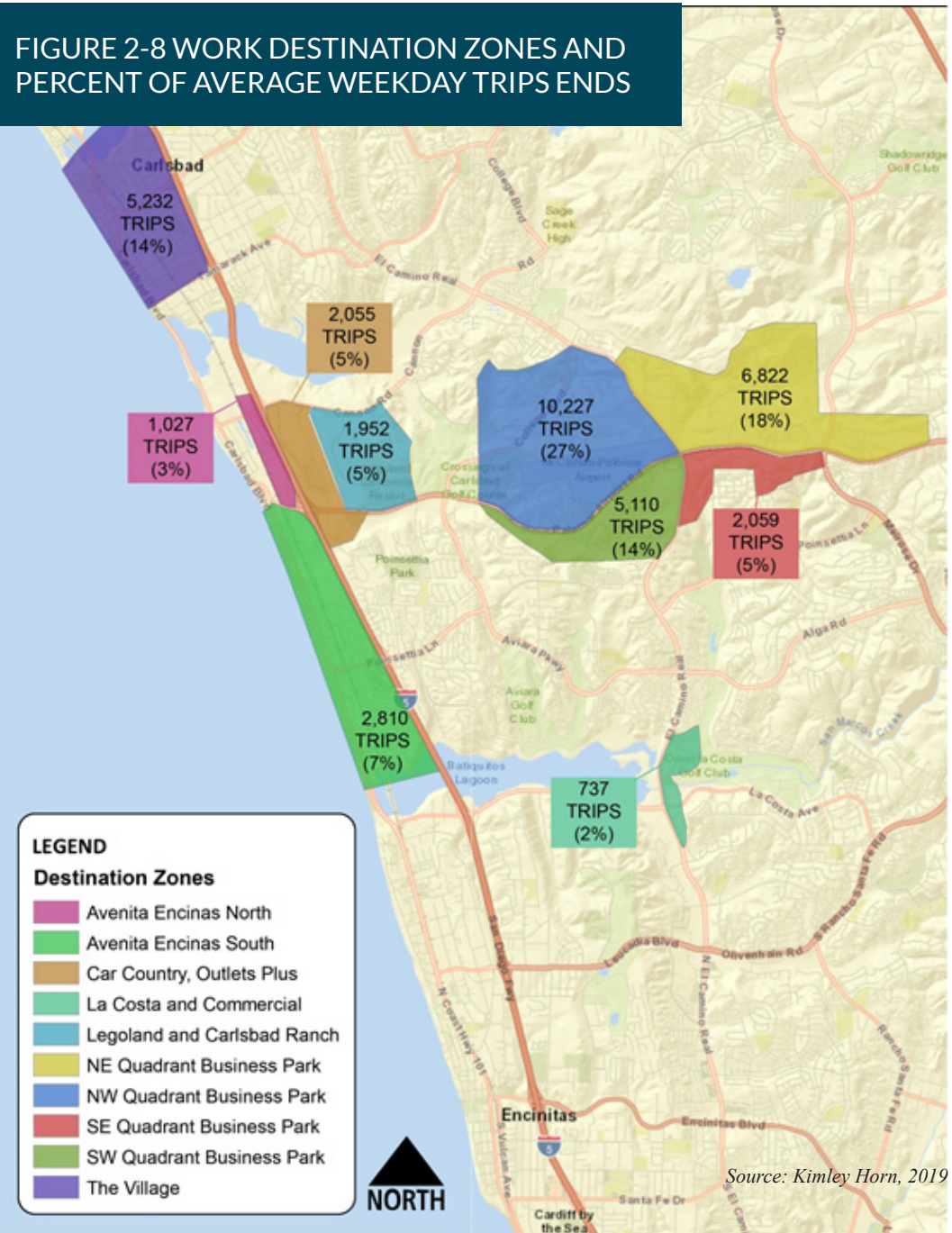
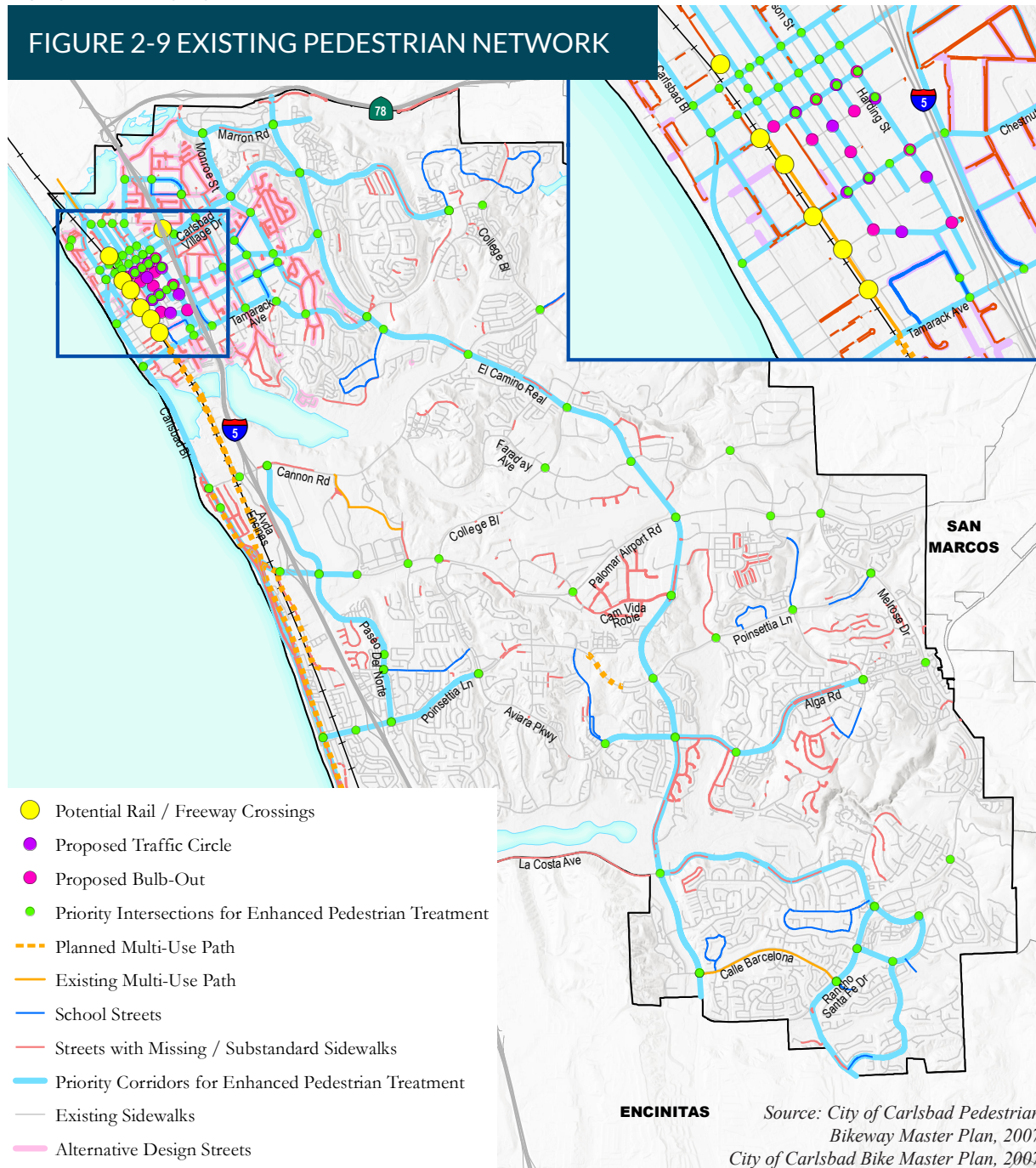




FIGURE 2-9 EXISTING PEDESTRIAN NETWORK



Typical Sidewalk Environment in the Village

## CURRENT PEDESTRIAN CONDITIONS

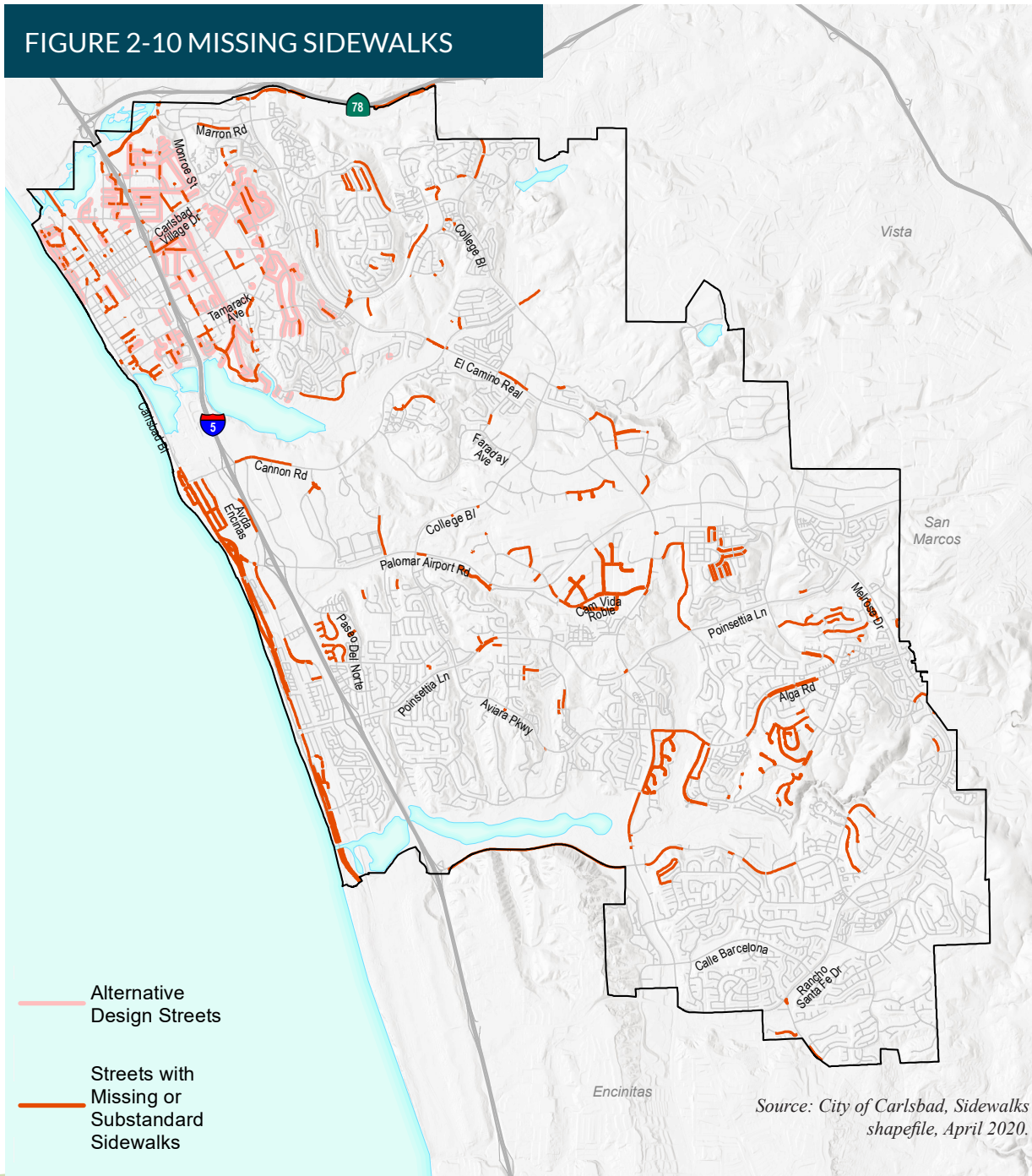
This section of the SMP summarizes current pedestrian conditions in terms of the existing pedestrian network conditions, pedestrian activity levels and pedestrian safety across the city. These facets of the current pedestrian conditions, along with extensive community input, establish the basis for pedestrian recommendations presented in chapter five of the SMP.

### Pedestrian and Trail Network

The current pedestrian network includes not only the city's sidewalk network, but also the trails, paths and connectors identified in the Trails Master Plan. Figure 2-9 shows existing travelways available to pedestrians across the city. There are approximately 651 miles of sidewalk and 3.2 miles of multi-use paths.

There are different types of existing sidewalks in the City of Carlsbad. The typical sidewalk environment in the Village is pedestrian-friendly, with street trees,

FIGURE 2-10 MISSING SIDEWALKS



Source: City of Carlsbad, Sidewalks shapefile, April 2020.



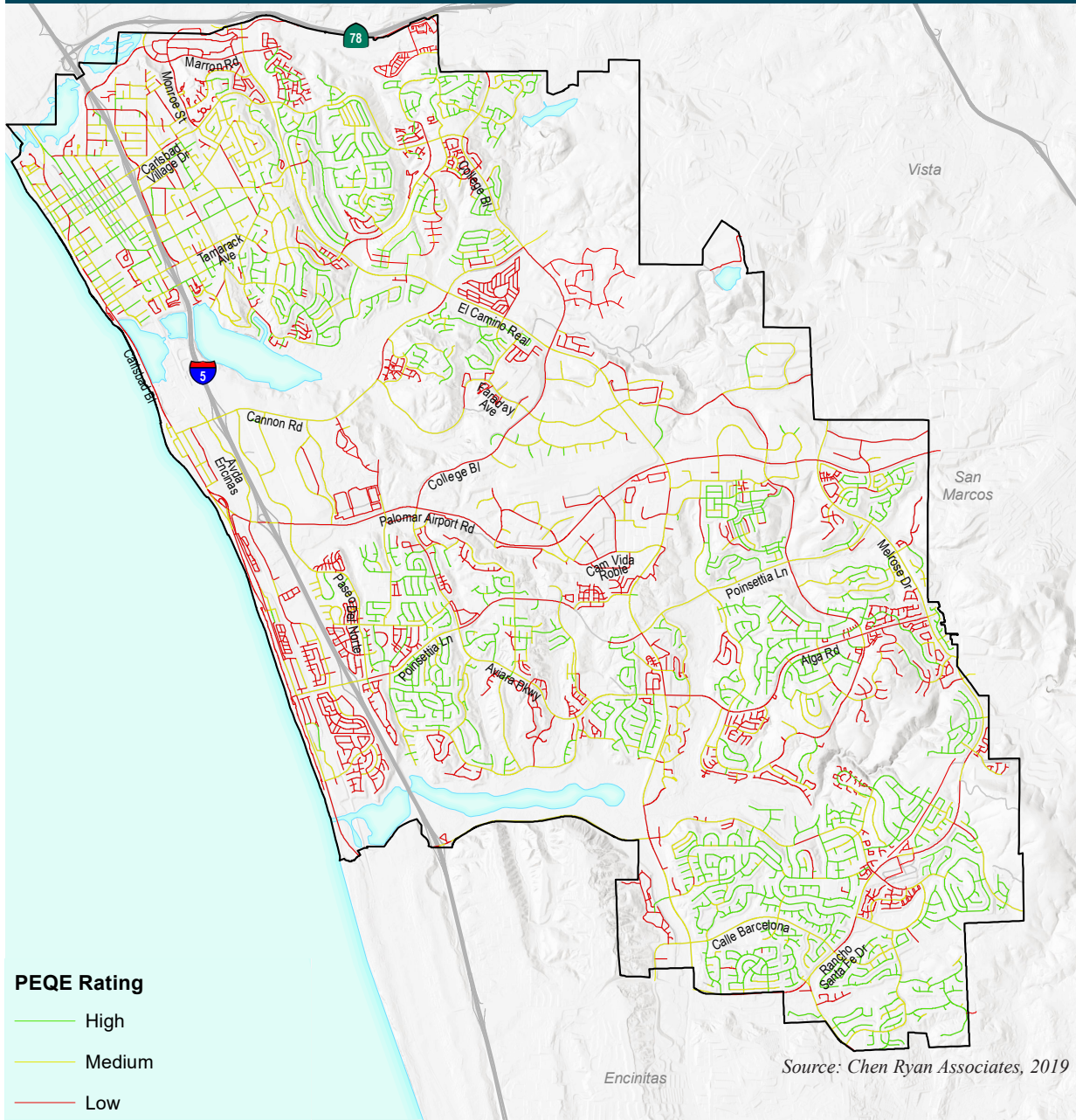
Missing Sidewalks in Carlsbad; residential area (left) and high-speed roadway (right)

amenities and artistic features. Most importantly, the decorative sidewalk is typically 10-15 feet wide, providing a comfortable environment for walking. Most intersections are ADA compliant, and almost all corners have ramps. Most of the City of Carlsbad’s beaches are easily accessible by foot. In fact, there is a large portion of the coast that has a dedicated pathway at sea-level in addition to the high-quality pathways on the top of the cliffs at street level. Specifically, Carlsbad State Beach to Tamarack Beach is a prime example of this feature.

### Missing Sidewalks

Figure 2-10 shows the missing or substandard sidewalks in the City of Carlsbad. In total, 73 miles of roadway are without sidewalks or with substandard sidewalks, although several of these locations are considered “Alternative Design Streets,” and are not intended to be constructed or retrofitted with sidewalks. These areas include small neighborhood streets and wide, high-speed corridors. Appendix B presents a table of roadway segments with missing or substandard sidewalks.

FIGURE 2-11 QUALITY OF THE PEDESTRIAN ENVIRONMENT



Sidewalks along Carlsbad beaches

### Quality of the Pedestrian Environment

All public roadways in the City of Carlsbad were evaluated using the Pedestrian Environment Quality Evaluation (PEQE) tool. This tool allows for an objective assessment of the quality of the pedestrian environment taking into consideration the speed of vehicles along the roadway and the buffer distance between pedestrian travelways and moving vehicles. Table 2-3 displays the PEQE criteria and scoring system.

As shown in Table 2-3, the PEQE analysis involves assigning a score to each side of a roadway segment based on four measures: horizontal buffer, lighting, clear pedestrian zone and posted speed limit. The scores for each side of the roadway are averaged together to display a single segment score.

Figure 2-11 displays the quality of the pedestrian environment along each roadway segment in the City of Carlsbad. As shown, the Village area and areas east of the Village show relatively higher quality pedestrian environments, as do other residential pockets in the southern portion of the city.

Table 2-3 PEQE Ranking System and Criteria

Facility Type	Measure	Description/Feature	Scoring
<b>Segment</b> <i>between two intersections</i>	1. Horizontal Buffer	Between the edge of auto travel way and the edge of clear pedestrian zone	0 point: < 6 feet 1 point: 6 - 14 feet 2 points: > 14 feet or vertical buffer
	2. Lighting		0 point: below standard/requirement 1 point: meet standard/requirement 2 points: exceed standard/requirement
	3. Clear Pedestrian Zone	5' minimum	0 point: has obstructions 2 points: no obstruction
	4. Posted Speed Limit		0 point: > 40 mph 1 point: 30 - 40 mph 2 points: < 30 mph
<b>Maximum 8 points</b>			
<b>Intersection by Leg</b>	1. Physical Feature	<ul style="list-style-type: none"> <li>• Enhanced/High Visibility Crosswalk</li> <li>• Raised Crosswalk</li> <li>• Advanced Stop Bar</li> <li>• Bulb out/Curb Extension</li> </ul>	0 point: < 1 feature per ped crossing 1 point: 1 – 2 features per ped crossing 2 points: > 2 features per ped crossing
	2. Operational Feature	<ul style="list-style-type: none"> <li>• Pedestrian Countdown Signal</li> <li>• Pedestrian Lead Interval</li> <li>• No-Turn on Red Sign/Signal</li> <li>• Additional Pedestrian Signage</li> </ul>	0 point: < 1 feature per ped crossing 1 point: 1 – 2 features per ped crossing 2 points: > 2 features per ped crossing
	3. ADA Curb Ramp		0 point: no ramps and no truncated domes 1 point: ramps only, no truncated domes 2 points: meet standard/requirement
	4. Traffic Control		0 point: no control 1 point: stop sign controlled 2 points: signal/roundabout/traffic circle
<b>Maximum 8 points</b>			

Facility Type	Measure	Description/Feature	Scoring
<b>Mid-block Crossing</b>	1. Visibility		0 point: w/o high visibility crosswalk 2 points: with high visibility crosswalk
	2. Crossing Distance		0 point: no treatment 2 points: with bulb out or median pedestrian refuge
	3. ADA		0 point: no ramps and no truncated domes 1 point: ramps only, no truncated domes 2 points: meet standard/requirement
	4. Traffic Control		0 point: no control 1 point: flashing beacon (In-pavement, RRFB, etc) 2 points: signal/pedestrian hybrid beacon (HAWK)
Maximum 8 points			

FIGURE 2-12 PEDESTRIAN COLLISIONS

### Pedestrian Safety

Pedestrian collisions are summarized by severity in Table 2-4. As shown, a majority of collisions, or 50.5%, resulted in “Other Visible Injury,” meaning an injury that is visible but non-traumatic. This was followed by “Complaint of Pain,” at 31.5% of all collisions. A total of eight pedestrian collisions, or 6.2%, were fatal.

Figure 2-12 displays the location of the pedestrian collisions across the City of Carlsbad. As can be seen, there is a high number of pedestrian collisions along Carlsbad Boulevard, as well as in the Carlsbad Village.

Table 2-4 Pedestrian Collisions by Severity of Type

Collision Severity	Collisions	Percent of Total
Other Visible Injury	65	50.5%
Complaint Of Pain	41	31.5%
Severe Injury	13	10.0%
Fatality	8	6.2%
Property Damage Only	3	2.3%
<b>Total</b>	<b>130</b>	<b>100.0%</b>

Source: SWITRS, 2013-2017

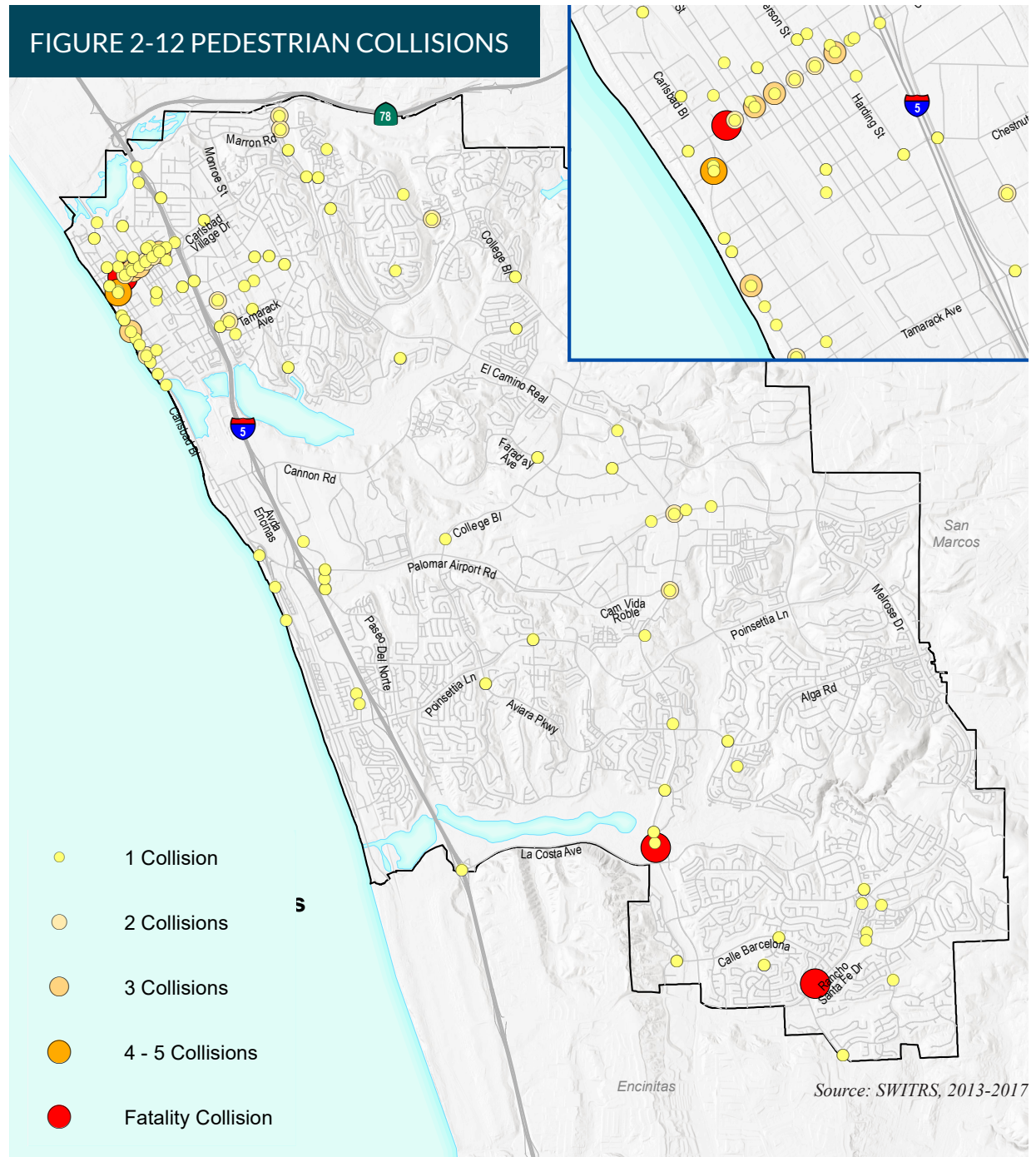


FIGURE 2-13 TRAILS PLAN



A group of hikers on a Carlsbad Outdoor Recreational Trail

## CURRENT TRAIL CONDITIONS

Figure 2-13 shows the extensive network of existing trails in the City of Carlsbad.

Bringing together both pedestrian and bicycle networks, the trails map shows all of the existing connections that have been identified throughout the City of Carlsbad in the 2019 Carlsbad Trails Master Plan.

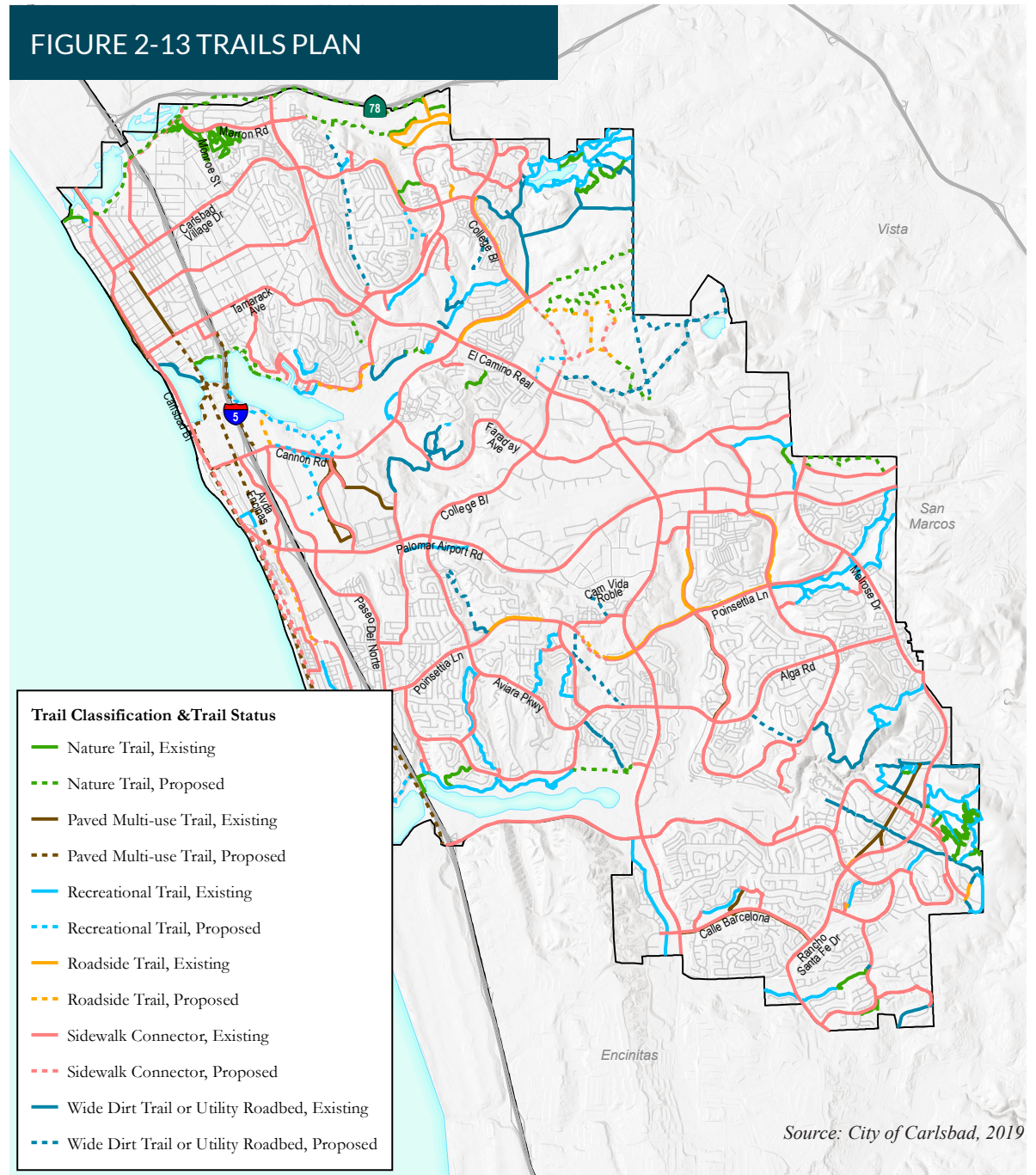


Table 2-5 Centerline Mileage of Carlsbad Roadways by Speed

Roadway MPH	Centerline Miles	Percent of Total
20	24.4	7.0%
25	196.8	56.5%
30	17.4	5.0%
35	27.1	7.8%
40	29.2	8.4%
45	12.0	3.4%
50	20.0	5.7%
55	21.4	6.1%
<b>Total</b>	<b>348.4</b>	<b>100.0%</b>

## CURRENT CYCLING CONDITIONS

Caltrans currently recognizes four classifications of bicycle facilities, including Class I multi-use paths, Class II bicycle lanes, Class III bicycle routes and Class IV cycle tracks. A description and image of each of these facility types is provided to the right. Table 2-5 shows existing roadway mileage by speed in the City of Carlsbad. Depending on the posted speed limits, certain recommended bicycle facilities may be preferred over others. For instance a Class III facility would not be suitable for high-speed traffic, for there would be danger for both the cyclists and drivers. As shown in the table, the most common roadway has a posted speed limit of 25mph (56.5%). About one-third of the city has a speed limit of 35mph or higher.

## BICYCLE CLASSIFICATIONS



**Class I Multi-Use Path** – Also referred to as a bike path or shared-use path, Class I facilities provide a completely separated right-of-way designed for the exclusive use of bicycles and pedestrians with cross-flows by motorists minimized. The minimum paved width for a two-way multi-use path is considered to be eight-feet, with a two-foot wide graded area adjacent to the pavement.



**Class II Bike Lane** – Provides a striped lane designated for the exclusive or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited. Bike lanes are one-way facilities located on either side of a roadway. Pedestrian and motorist cross-flows are permitted. Additional enhancements such as painted buffers and signage may be applied. The minimum bike lane width is considered five feet.



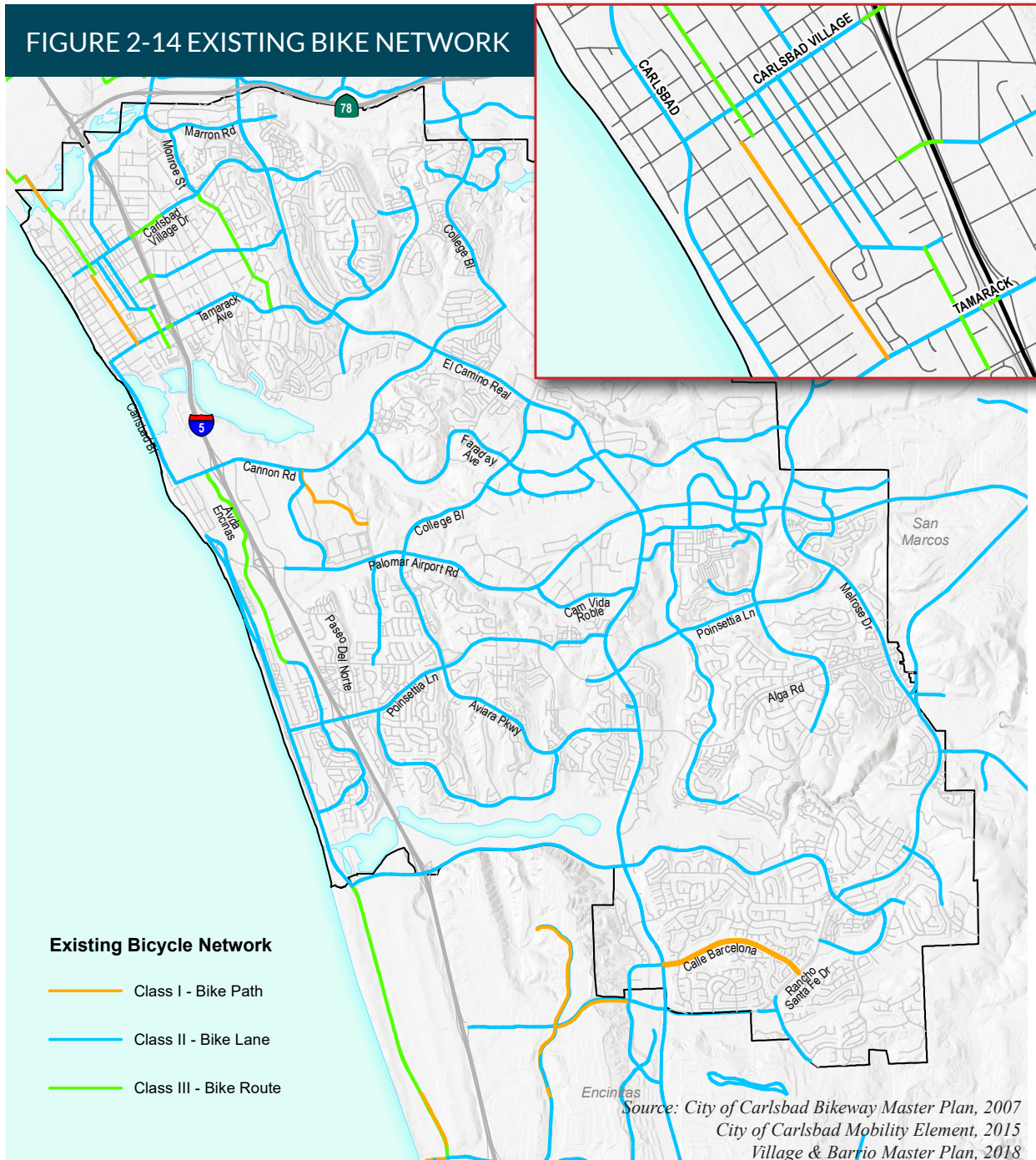
**Class III Bike Route** – Provides shared use of traffic lanes with cyclists and motor vehicles, identified by signage and/or street markings such as “sharrows”. Bike routes are best suited for low-speed, low-volume roadways with an outside lane of 14 feet or greater. Bike routes provide network continuity or designate preferred routes through corridors with high demand.



**Class IV Cycle Track** – Also referred to as separated bikeways, cycle tracks provide a right-of-way designated exclusively for bicycle travel within the roadway and physically separated from vehicular traffic. Cycle tracks can provide for one-way or two-way travel. Types of separation include, but are not limited to, grade separation, flexible posts, or on-street parking.



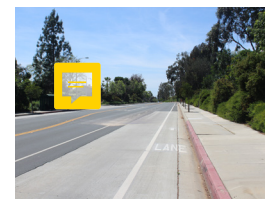
FIGURE 2-14 EXISTING BIKE NETWORK

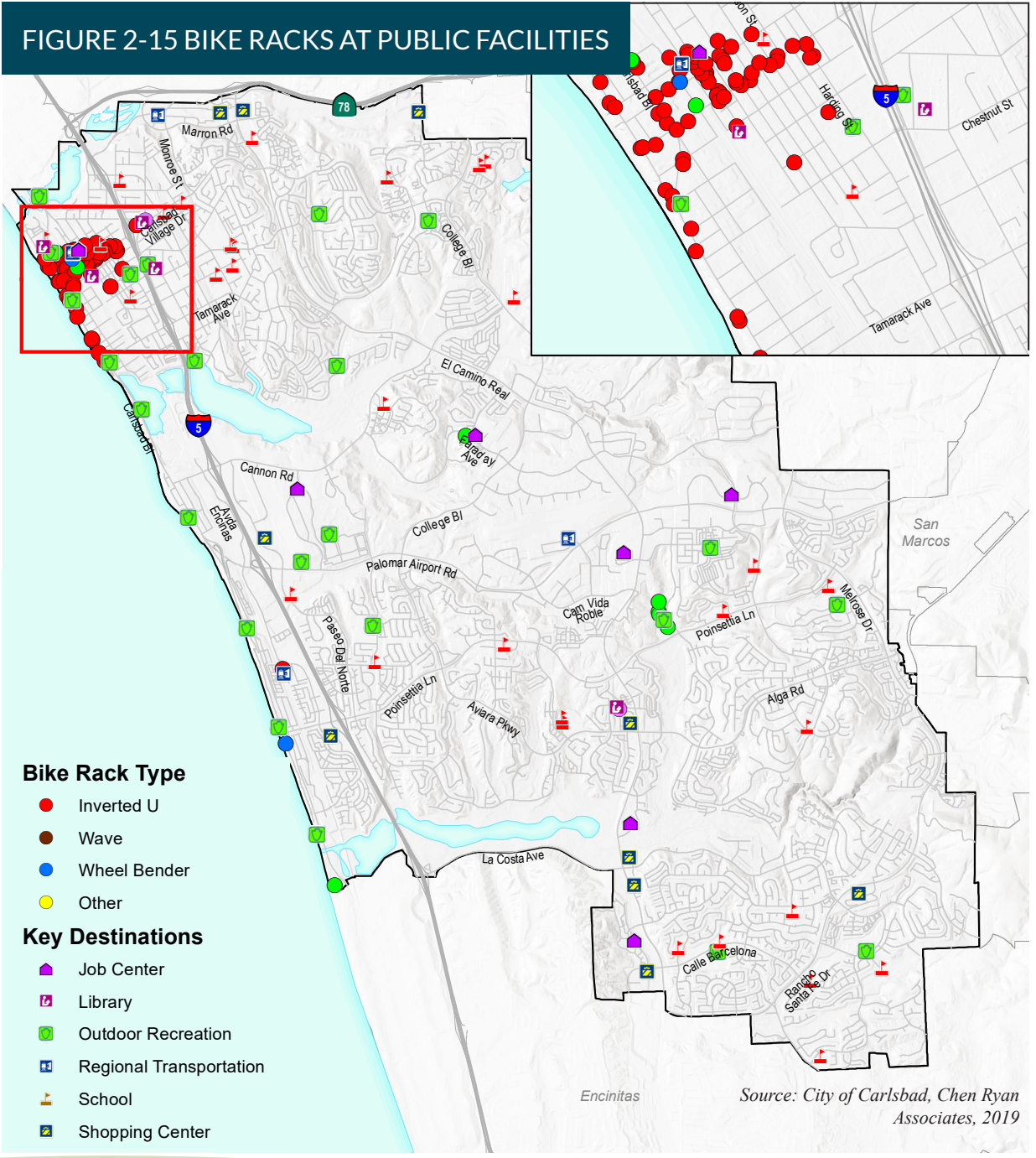


### Bicycle Network

Figure 2-14 displays the location of existing bicycle facilities within the City of Carlsbad. As shown, the Carlsbad bicycle network is comprised of multi-use paths (Class I), bike lanes (Class II) and bike routes (Class III). Bicycle lanes comprise the majority of the network. There are 3.2 miles of multi-use paths in the City of Carlsbad.

Bicycle Facilities: Class I (top), Class II (left), Class III (right)





### Bicycle Rack Inventory

Figure 2-15 is a bicycle rack inventory at public facilities in the City of Carlsbad. The map displays the type of bicycle rack at each of the key destinations. As shown many bicycle racks are concentrated in the Village. The most common bicycle rack type found at outdoor recreation sites is the “wave” bicycle rack.

### Existing and Proposed Bicycle Parking Policy

Bicycle parking is an important component in planning bicycle facilities and encouraging people to use their bicycles for everyday transportation. A variety of existing bicycle parking facilities are located throughout Carlsbad, at locations such as civic buildings, schools, parking, and commercial centers. Bicycle parking includes standard bike racks, covered lockers, and corrals. While Carlsbad’s transit stations and some parks and recreation facilities are well outfitted with bicycle parking, Carlsbad’s commercial areas have limited bicycle parking available. Bicycle parking facilities are frequently located behind buildings and are intended solely for commuter cyclists. Bicycle racks should be placed in well-lit, accessible and convenient locations where they are visible to the public and convey a sense of safety for cyclists and their bicycles. Locations in need of additional bicycle parking include the Village, commercial areas near La Costa,

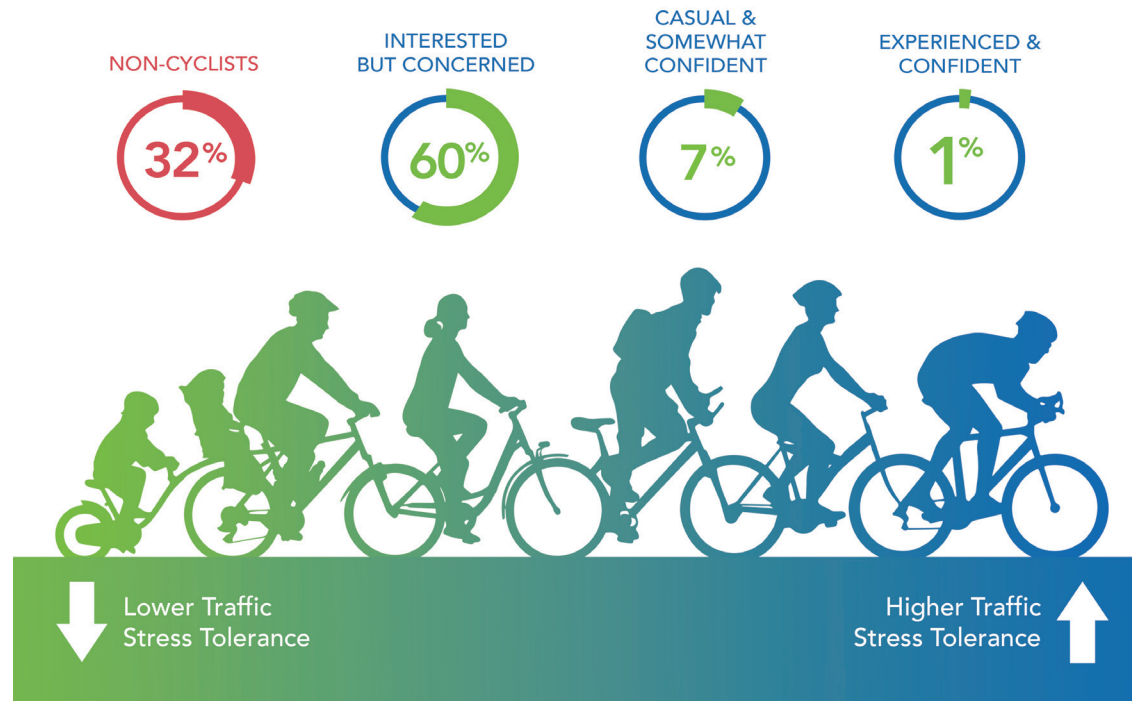
and beach areas. A lack of safe and secure bicycle parking is often noted as a concern of bicyclists who may wish to ride to work or to shop.

Bicycle parking facilities should be provided in commercial areas in Carlsbad. A systemic program to improve the quantity of these bicycle end-of-trip facilities should be implemented in Carlsbad. This may include providing free inverted U-racks to businesses to replace the commonly used wheelbender design. The City of Carlsbad should adopt a bicycle parking ordinance to ensure that new bicycle parking facilities are installed with new development.

### Quality of the Bicycle Network

The quality of the bicycle environment was assessed using the bicycle Level of Traffic Stress (LTS) methodology as developed by Mekuria, et al. (2012) of the Mineta Transportation Institute and reported in *Low-Stress Bicycling and Network Connectivity*. LTS classifies the street network into categories according to the level of stress it causes cyclists, taking into consideration a cyclist’s physical separation from moving vehicles, vehicular traffic speeds along the roadway segment, number of travel lanes and factors related to intersection approaches with dedicated right-turn lanes and unsignalized crossings.

## Types of Cyclists



A visual depiction of the Four Types of Cyclists is shown to the right. The first category, the “Non-Cyclists”, are people who, for a variety of reasons, would never get on a bicycle. About 32% of the population identifies with this category. The second category, the “Interested But Concerned,” are people who would like to ride their bike, but are cautious. This category of cyclist prefers facilities that have little traffic stress. Approximately 60% of the population falls into this category. As the largest category, this is the category which is taken into consideration when recommending and designing facilities. The third category is referred to as “Causal and Somewhat Confident” category, which approximately 7% of the population falls into. The final category is referred to as the “Experienced & Confident”; these are the cyclists who are willing to ride their bicycles regardless of the facility type, which makes up 1% of the population.

FIGURE 2-16 LEVEL OF TRAFFIC STRESS

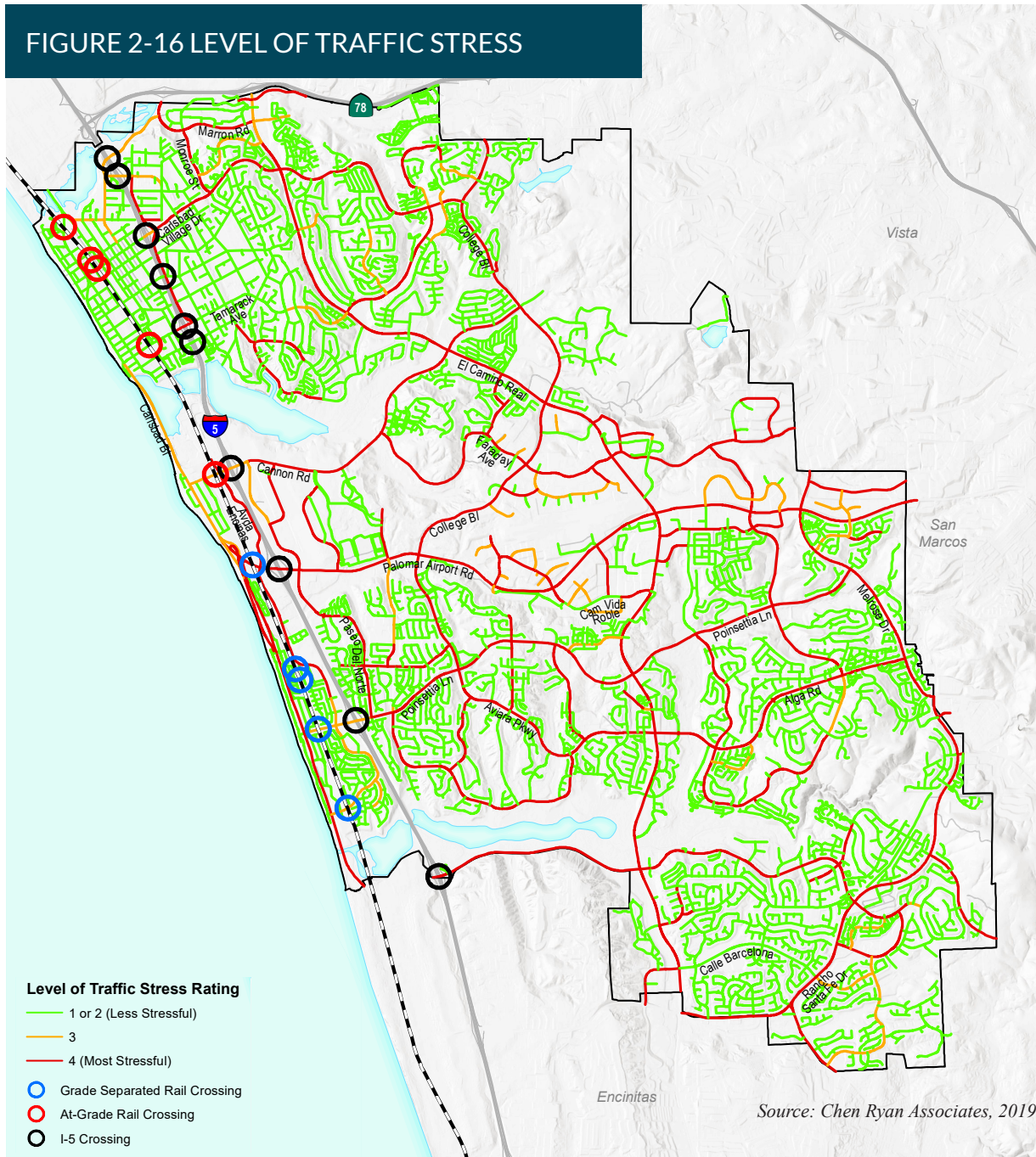


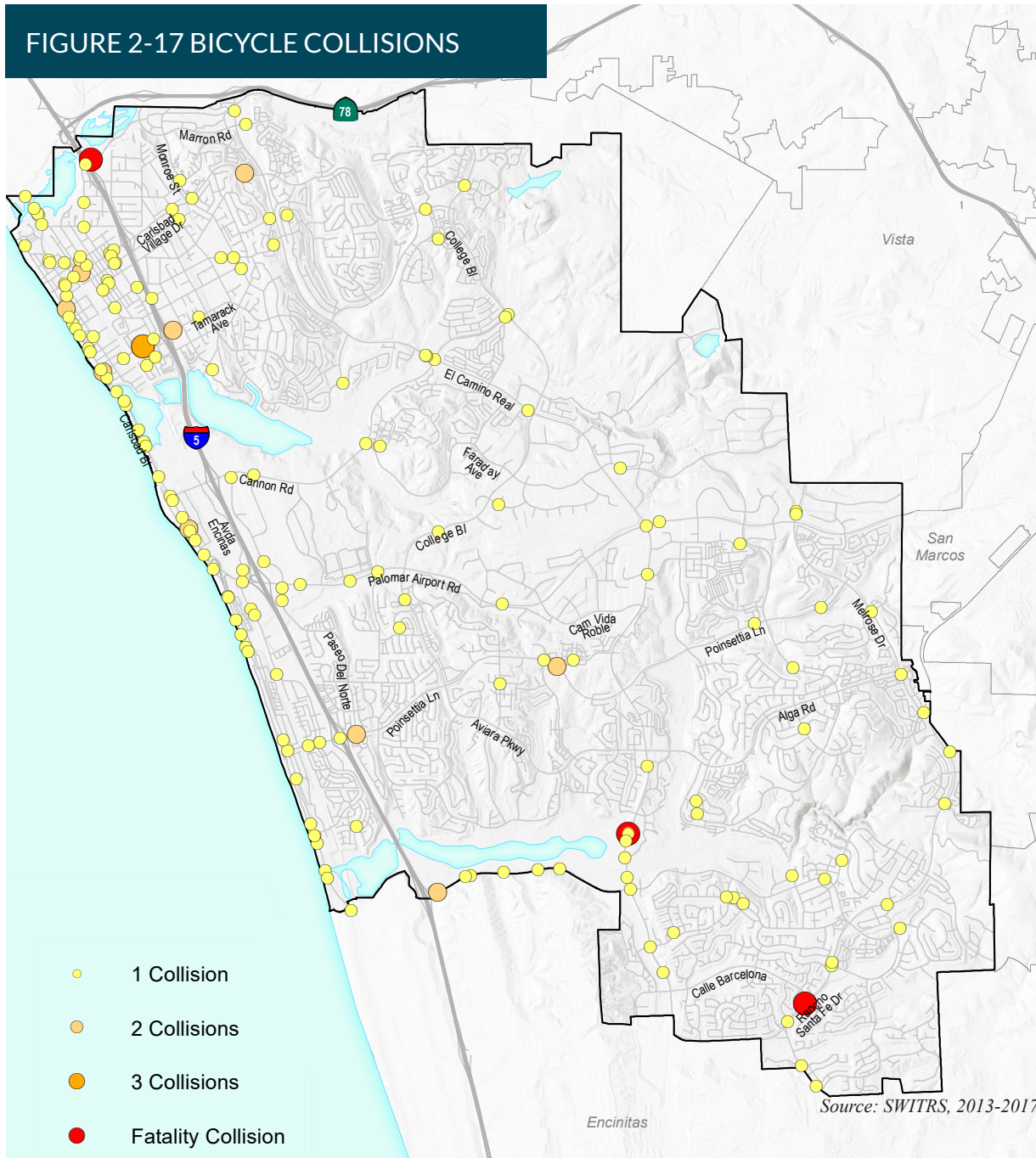
Figure 2-16 displays the bicycle Level of Traffic Stress for all roadways and paths where cyclists are permitted. Table 2-6 displays the key LTS inputs and criteria. As shown, roadways in the City of Carlsbad predominantly exhibit characteristics of LTS 1/2 or 4 environments. Roadways with an LTS 1 or 2 environment are generally residential streets and collectors, and considered high quality cycling environments. These types of roadways are generally characterized as having one lane in each direction while providing adequate width for cyclists and vehicles, with a low posted speed.

A number of roadways in the city offer an LTS 3 environment. In these cases, speed limits, vehicular volumes and roadway widths were sufficient to garner an LTS score which has room for improvement relative to most roadway conditions in the city, but would still not be deemed comfortable enough for an average cyclist.

Table 2-6 LTS Classification

LTS Category	LTS Description	Description of Environment	Comfort Level
<b>LTS 1</b>	Presenting little traffic stress and demanding little attention from cyclists; suitable for almost all cyclists, including children trained to safely cross intersections.	<ul style="list-style-type: none"> <li>• Facility that is physically separated from traffic or an exclusive cycling zone next to a slow traffic stream with no more than one lane per direction</li> <li>• A shared roadway where cyclists only interact with the occasional motor vehicle with a low speed differential</li> <li>• Ample space for cyclist when alongside a parking lane</li> <li>• Intersections are easy to approach and cross</li> </ul>	Interested but Concerned – Vulnerable Populations
<b>LTS 2</b>	Presenting little traffic stress but demanding more attention that might be expected from children.	<ul style="list-style-type: none"> <li>• Facility that is physically separated from traffic or an exclusive cycling zone next to a well-confined traffic stream with adequate clearance from parking lanes</li> <li>• A shared roadway where cyclists only interact with the occasional motor vehicle (as opposed to a stream of traffic) with a low speed differential</li> <li>• Unambiguous priority to the cyclist where cars must cross bike lanes (e.g. at dedicated right-turn lanes); design speed for right-turn lanes comparable to bicycling speeds</li> <li>• Crossings not difficult for most adults</li> </ul>	Interested but Concerned – Mainstream Adult Populations
<b>LTS 3</b>	Presenting enough traffic stress to deter the Interested but Concerned demographic.	<ul style="list-style-type: none"> <li>• An exclusive cycling zone (lane) next to moderate-speed vehicular traffic</li> <li>• A shared roadway that is not multilane and has moderately low automobile travel speeds</li> <li>• Crossings may be longer or across higher-speed roadways than allowed by LTS 2, but are still considered acceptably safe to most adult pedestrians</li> </ul>	Enthusied & Confident
<b>LTS 4</b>	Presenting enough traffic stress to deter all but the Experienced & Confident demographic.	<ul style="list-style-type: none"> <li>• An exclusive cycling zone (lane) next to high-speed and multilane vehicular traffic</li> <li>• A shared roadway with multiple lanes per direction with high traffic speeds</li> <li>• Cyclist must maneuver through dedicated right-turn lanes containing no dedicated bicycling space and designed for turning speeds faster than bicycling speeds</li> </ul>	Experienced & Confident

FIGURE 2-17 BICYCLE COLLISIONS



### Bicycle Safety

Bicycle collisions are summarized by severity in Table 2-7. As shown, a majority of collisions resulted in “Other Visible Injury” at 61.6% of all collisions, followed by “Complaint of Pain” at 25.3% of all collisions. Three bicycle collisions were fatal, or 1.6% of all collisions.

The bicycle collision locations are displayed in Figure 2-17. There is a high concentration of bicycle collisions along Carlsbad Boulevard as well as in and around the Village. Three bicycle involved collisions resulted in fatalities and took place on Carlsbad Boulevard, El Camino Real and Rancho Santa Fe Drive.

Table 2-7 Bicycle Collisions by Severity Type

Collision Severity	Number of Collisions	Percent of Total
Other Visible Injury	117	61.6%
Complaint of Pain	48	25.3%
Severe Injury	13	6.8%
Property Damage Only	9	4.7%
Fatality	3	1.6%
<b>Total</b>	<b>190</b>	<b>100.0%</b>

Source: SWITRS, 2013-2017

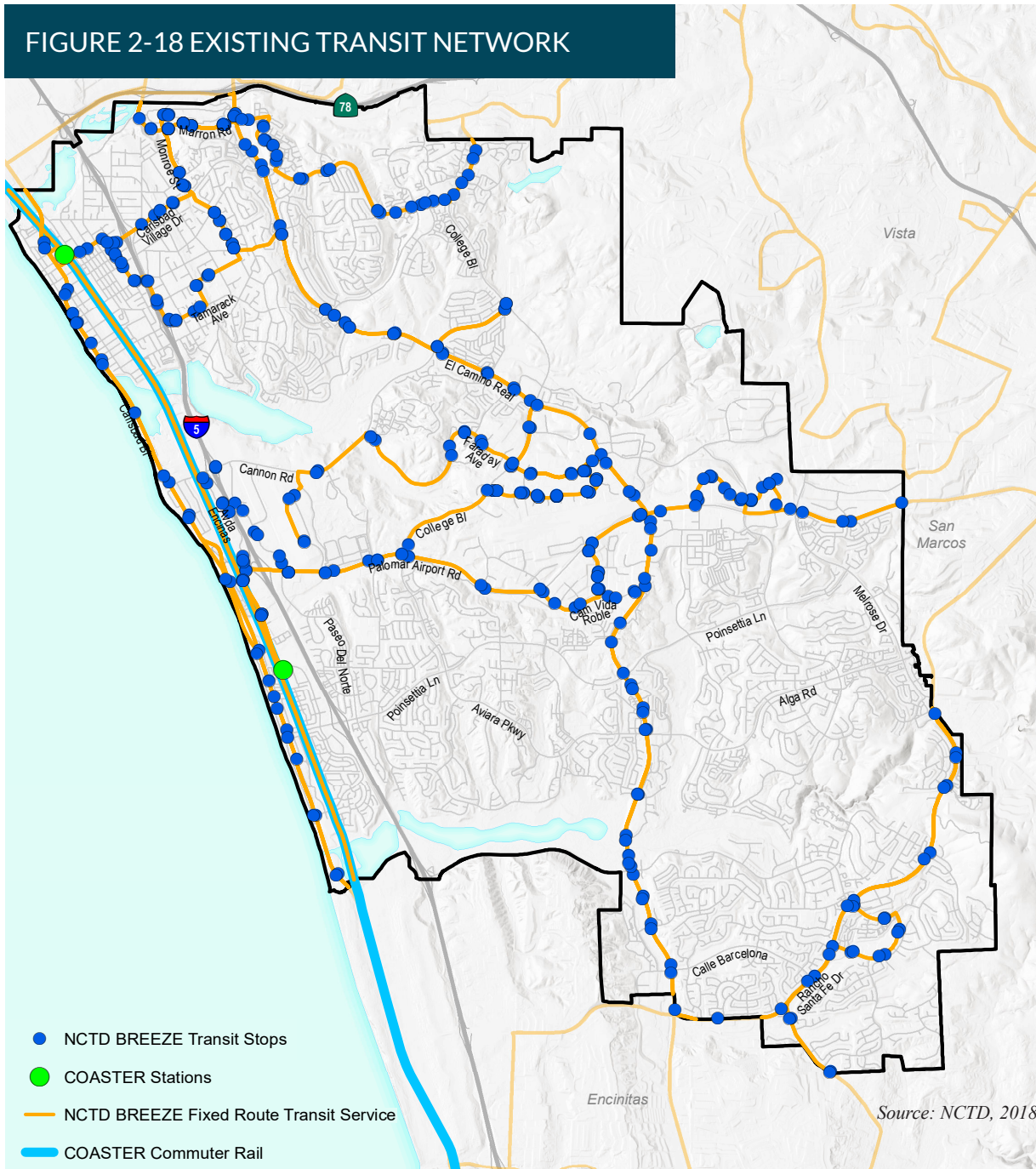
### Maintenance Policy

In general, the City is responsible for maintaining bicycle and pedestrian facilities. Currently, the maintenance of Carlsbad's bikeway and pedestrian facilities consist of restriping, re-stenciling, vegetation removal and sweeping on a regular basis. Other maintenance activities are conducted on an as-needed basis.

As described in Chapter 7 of the City's 2019 Trails Master Plan, the city has developed a detailed trails maintenance schedule. The city has committed to adhering to the general maintenance schedule and will take appropriate actions to address any condition deemed a safety hazard. Trail maintenance activities are coordinated so as to minimize impacts to trail users and to maximize cost efficiencies through the use of trail volunteers.

The city has developed and adopted an ADA Transition Plan in 2012 to provide a program to maintain and address accessibility along the city's public rights-of-way. The implementation of the ADA Plan will improve accessibility and walking conditions for all users of the public facilities. The ADA Plan divided the ADA program into project phases to progressively complete the design and construction for non-compliant pedestrian ramps in accordance with the City of Carlsbad Engineering Design Standards, as well as, the San Diego County Regional Engineering Standards.

FIGURE 2-18 EXISTING TRANSIT NETWORK



## CURRENT TRANSIT CONDITIONS

Figure 2-18 shows NCTD’s BREEZE transit routes and stops. As shown, the majority of transit stops are along main arterial corridors, such as along El Camino Real, Palomar Airport Road, Faraday Avenue, Cannon Road and Tamarack Avenue. A higher concentration of stops occur along the coastal and business corridors.

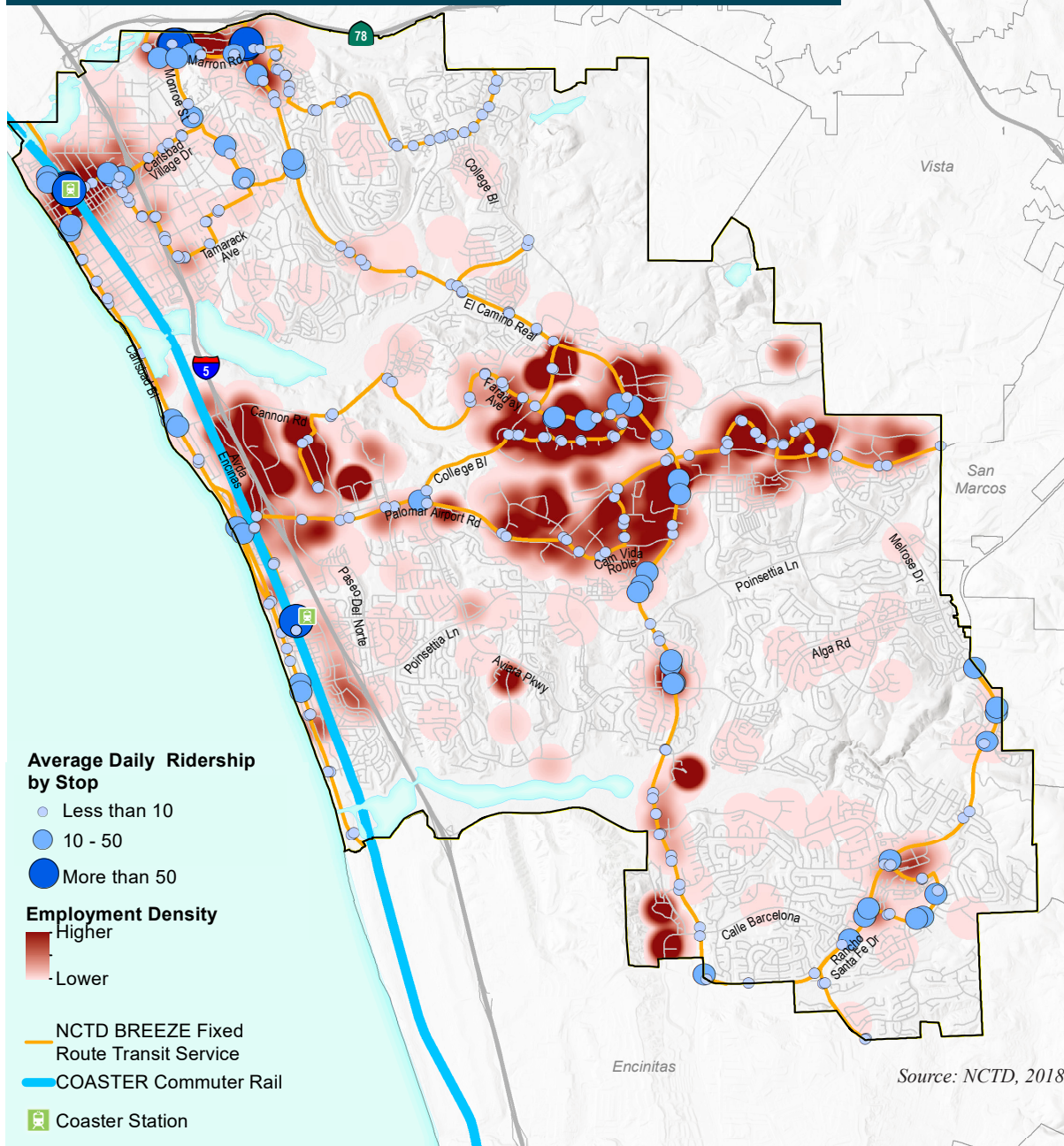
The NCTD Coaster serves two locations in Carlsbad, at the Carlsbad Village Coaster Station and the Poinsettia Coaster Station. The NCTD Coaster serves the Carlsbad Village Coaster and Poinsettia stations between 5am and 11:20am on weekday mornings in the southbound direction, and between 7:00am and 10:20am on weekday mornings in the northbound direction. In the afternoon, southbound service runs from 2:45pm to 5:55pm, and northbound service runs from 2:45pm to 8:15pm.

There are four southbound trains departing from the Carlsbad Village Coaster and Poinsettia Coaster stations on weekends and holidays (two in the morning and two in the afternoon), and four northbound trains.

Source: NCTD, 2018



FIGURE 2-19 TRANSIT SERVICE QUALITY AND RIDERSHIP



### Transit Service Quality and Ridership

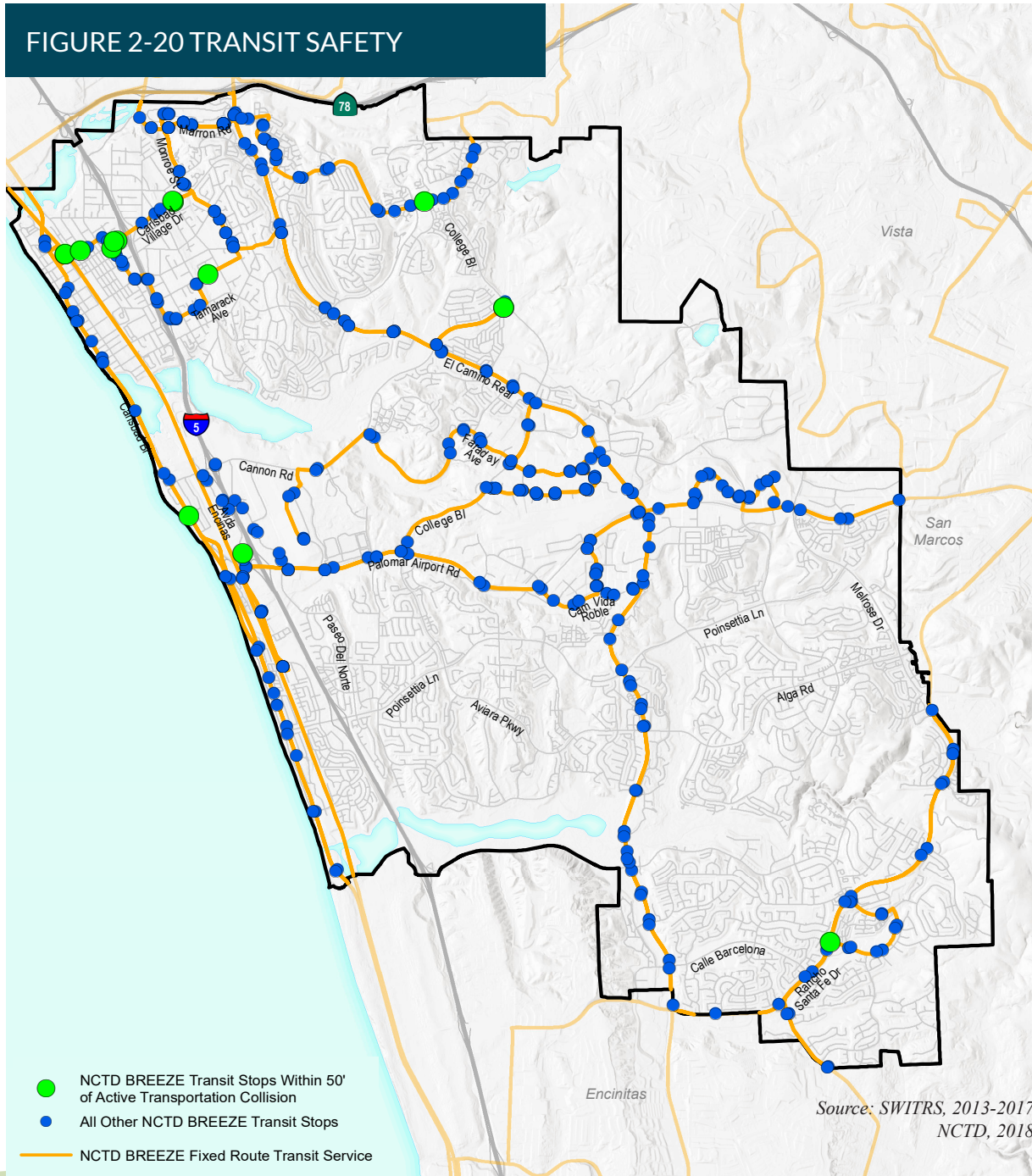
Figure 2-19 shows the NCTD Breeze’s average daily ridership in relation to City of Carlsbad employment density. Transit ridership appears fairly strongly correlated with employment density. Of particular note is the high employment density in the central portion of Carlsbad spanning from west to east, roughly between Cannon Road and Palomar Airport Road. Transit service connecting between these employment rich areas and the residential areas across the City of Carlsbad is an important consideration for future recommendations.

Average daily boardings and alightings at the Carlsbad Village Coaster station are approximately 78 per day (41 boardings and 37 alightings); while Poinsettia Village Coaster station has about 335 average daily riders per day with approximately 175 boardings and 160 alightings.



NCTD’s Breeze Commuters

FIGURE 2-20 TRANSIT SAFETY



### Transit Safety

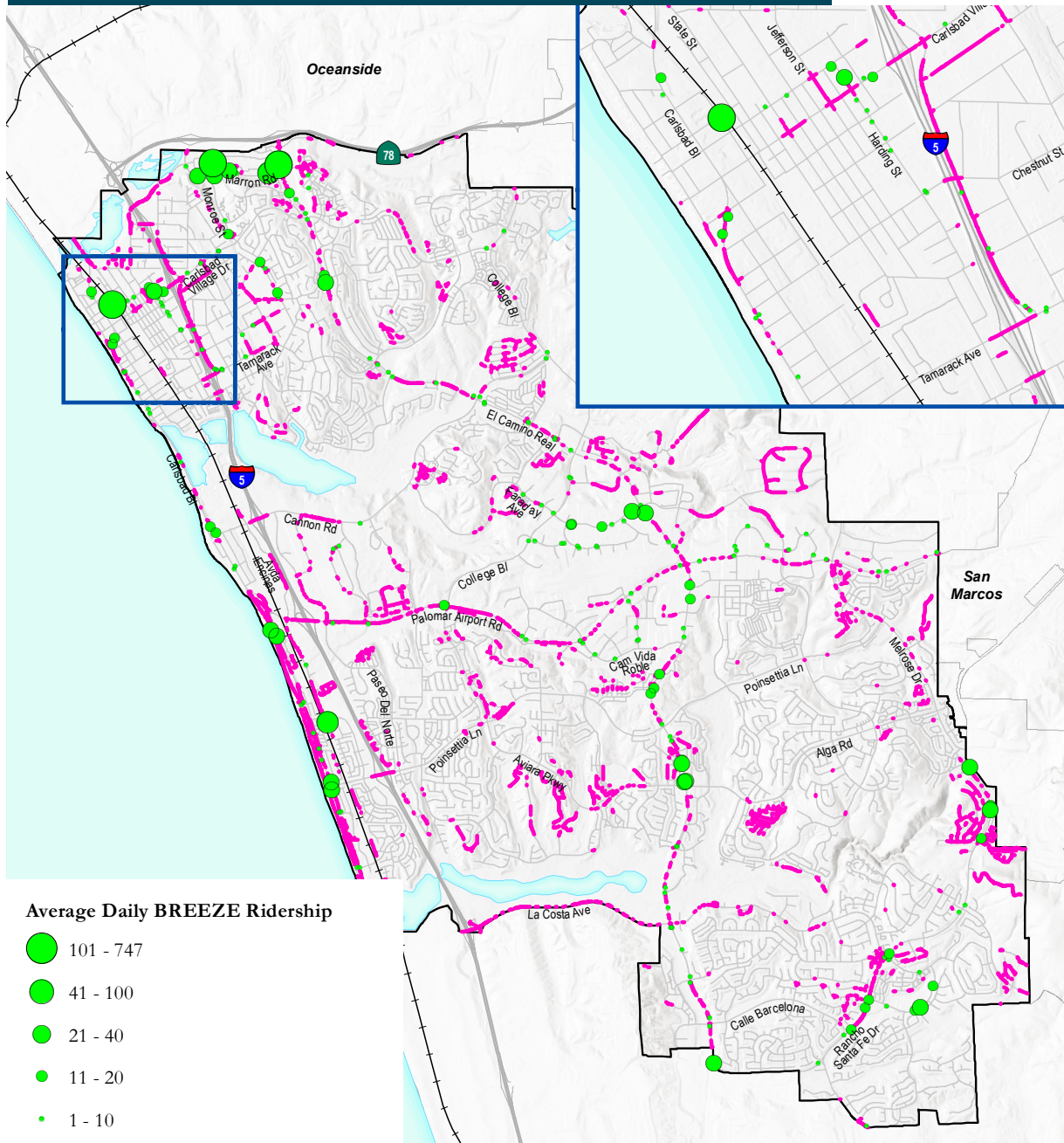
Figure 2-20 shows the bicycle and pedestrian-involved (active transportation) collisions within fifty feet of NCTD Breeze’s bus stops. As shown, there is a concentration of active transportation collisions in the Village and Barrio neighborhoods. However, there are instances of active transportation collisions within fifty feet of the bus stops that have occurred throughout the city.

A total of 15 collisions occurred near transit stops between 2013-2017.



NCTD’s Breeze Fixed Route Transit Service

FIGURE 2-21 HIGH DETRACTORS AND TRANSIT RIDERSHIP



### Transit Usage and Access Barriers

Figure 2-21 shows high bicycle and pedestrian detractors along with transit ridership. As many transit stops are accessed via walking and cycling, it is important to consider the barriers these non-motorized travelers face while trying to use transit.

Detractors shown in Figure 2-21 include locations of high collisions, average daily traffic volumes, posted speed limits, as well as absence of street lights, and presence of rail and freeway corridors, and steep slopes.

Data collected as part of the draft 2018 Transit and TDM Blueprint study found that several other factors also prevent residents from using transit, including the following:

- The need for their car before/after work
- Transit service is not convenient or takes too long
- Irregular schedule
- No viable service near my home/work
- Get home in an emergency



*Coast to Work. Skip the Traffic.*

**Carlsbad  
Connector**

## CARLSBAD CONNECTOR

The Carlsbad Connector is an on-demand shuttle service that transports commuters between the Poinsettia COASTER station and workplaces in Carlsbad. As the first program of its kind in San Diego County, the proof of concept service is designed to provide increased COASTER ridership by providing a flexible and convenient solution to bridge the gap between the station and the city's business parks.

The innovative project is operated by a partnership with the City of Carlsbad, North County Transit District (NCTD) and the San Diego Association of Governments (SANDAG). The Carlsbad Connector

functions via a smartphone app, similar to ride hailing service apps. The basic shuttle service characteristics include the following:

- Morning service from 7-9 AM, capturing the 7:09AM and 8:36AM northbound COASTER trains
- Mid-day service from 9-3 PM, provides expanded service including the Village which allows commuters to visit local lunch spots and other commercial areas to run daytime errands.
- Afternoon service from 3-6 PM delivers commuters to the southbound COASTER trains at 3:43PM, 5:21PM and 5:51PM
- Four 14-person shuttles, one of which is fully ADA compliant
- Shuttles are equipped with Wi-Fi- and each shuttle will hold up to two bikes
- The system creates virtual stops that drop-off riders within a five minute walk from their ultimate destination
- The software optimizes drop-offs such that if 12 people all request to go to the same location, they will be grouped together and a single vehicle will go straight to that destination
- Customers can pay through the COASTER app
- Customers without access to smart phones may call in to reserve and pay for rides
- Customers with a COASTER monthly or day-pass will ride for free
- Individual rides are \$2.50 per ride, in alignment with North County Transit District fares
- Businesses can offer promotions to employees or customers and RideCo will bill businesses directly
- Data are shared with all three agencies to help determine if service or stops need to be changed and for planning the viability of long-term service
- The participating agencies have targeted an average of 100 new daily boardings and/or disembarkings, or an average of 50 new daily roundtrip riders on the COASTER train serving Pointsettia Station as a marker of success for the pilot project.

## KEY DESTINATIONS CONNECTIVITY ANALYSIS

This section presents a holistic assessment of how well key destinations across the city of Carlsbad are served by the pedestrian, bicycle, and transit networks. It attempts to identify whether any specific location across the city is underserved by sustainable networks. This information will subsequently be used in the prioritization process presented in the final chapter of this document. Eighty-one (81) key destinations were identified by city staff and community members during the existing conditions phase of this planning process. The destinations include tourist attractions, shopping centers, parks, beaches, schools and employment centers. Each key destination received a score based on its locational significance in relation to the region and to the city itself, as well as based upon how well it is served by pedestrian, bicycle and transit networks.

$$\begin{array}{c}
 \text{Accessibility Score} = \\
 \frac{\text{Transit Network Points}}{\text{Locational Significance}} + \frac{\text{Bike Network Points}}{\text{Locational Significance}} + \frac{\text{Pedestrian Network Points}}{\text{Locational Significance}}
 \end{array}$$

Each destination was assigned an accessibility score based on the formula above, which considers the destination’s locational significance within the city and how well the destination is served by pedestrian, bicycle and transit networks. The accessibility score calculation results in higher values being assigned to destinations that are under-served by the networks, so that nearby projects emerge with higher implementation priority. The locational significance input recognizes that not all sites are equally significant as attractions. The point values in this formula are structured to require more significant locations be better served by the three networks (a higher numerator) than less significant locations.

Each input to the accessibility score calculation is described below.

### Assigning Locational Significance to Key Destinations

The key destinations were categorized into a hierarchy of three groups, with the following point values assigned:

- Regionally-significant (1 point) – 12 destinations
- Jurisdictionally-significant (2 points) – 22 destinations
- Neighborhood-serving (3 points) – 47 destinations

### Key Destination Interface with Modal Networks

Each key destination was assigned point values according to how closely the destination interfaced with pedestrian, bicycle and transit networks. The points were awarded as follows:

#### *Pedestrian Network Points (see Figure 2-21)*

To assess how well a key destination is served by the existing pedestrian network, the following points were awarded to the destination if an existing sidewalk facility was:

- adjacent to key destination (0 points)
- not existing adjacent to key destination (2 points)

#### *Bicycle Network Points (see Figure 2-22)*

To assess how well a key destination is served by the existing bicycle network, the following points were awarded to the destination if a bike lane or separated bicycle facility was:

- adjacent to key destination (0 points)
- within 0.25 miles of key destination (0.5 points)

- between 0.25 miles and 0.5 miles of key destination (1 point)
- beyond 0.5 miles of key destination (2 points)

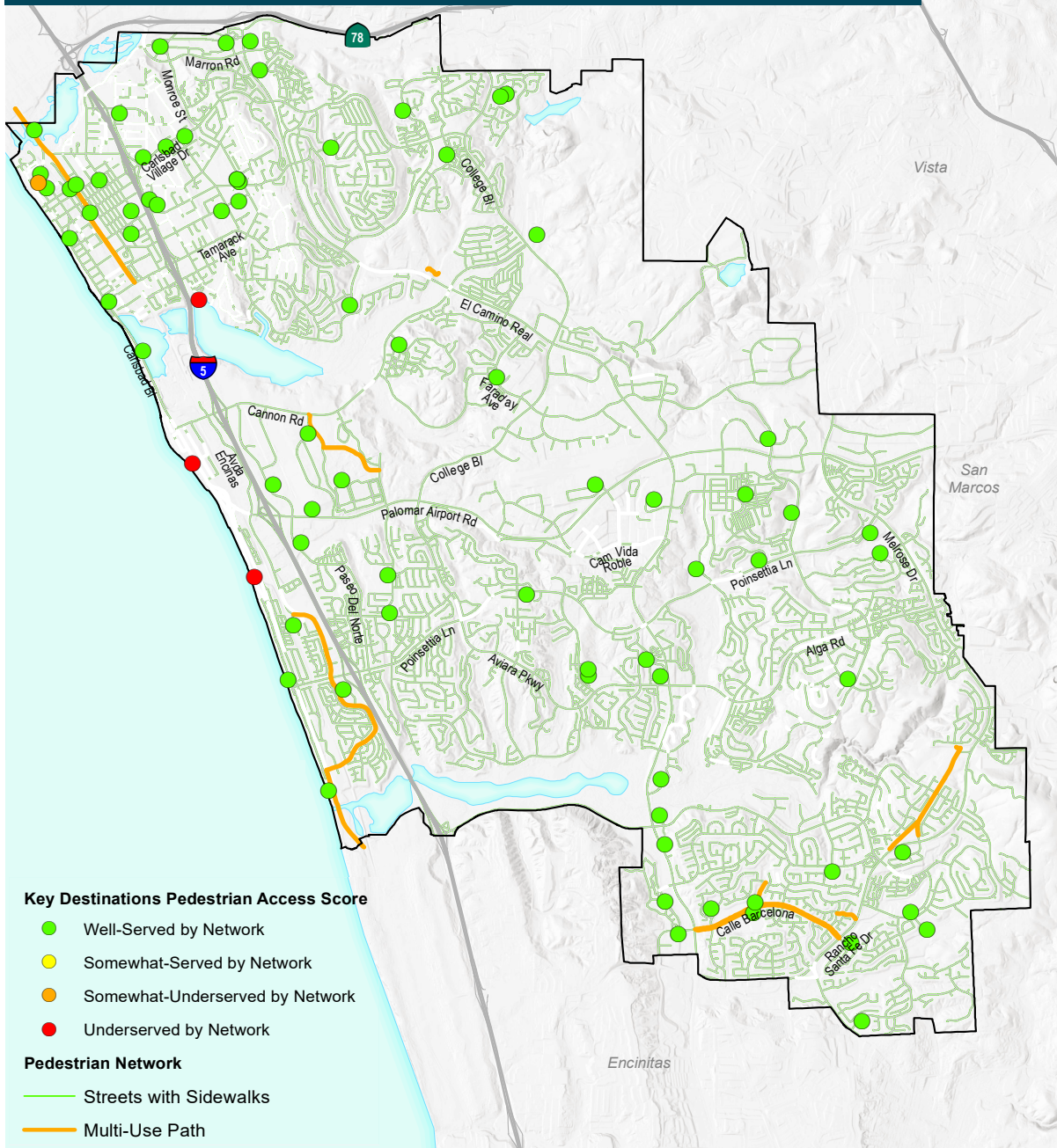
#### *Transit Network Points (see Figure 2-23)*

To assess how well a key destination is served by the existing transit network, the following points were awarded to the destination if a transit stop was:

- adjacent to key destination (0 points)
- within 0.25 miles of key destination (0.5 points)
- between 0.25 miles and 0.5 miles of key destination (1 point)
- beyond 0.5 miles of key destination (2 points)

Figures 2-21 through 2-23 show the key destinations and their respective pedestrian access scores, bicycle access scores and transit access scores. The “access” scores were calculated by dividing the respective network-specific points for each key destination by its locational significance.

FIGURE 2-22 KEY DESTINATIONS AND PEDESTRIAN NETWORK

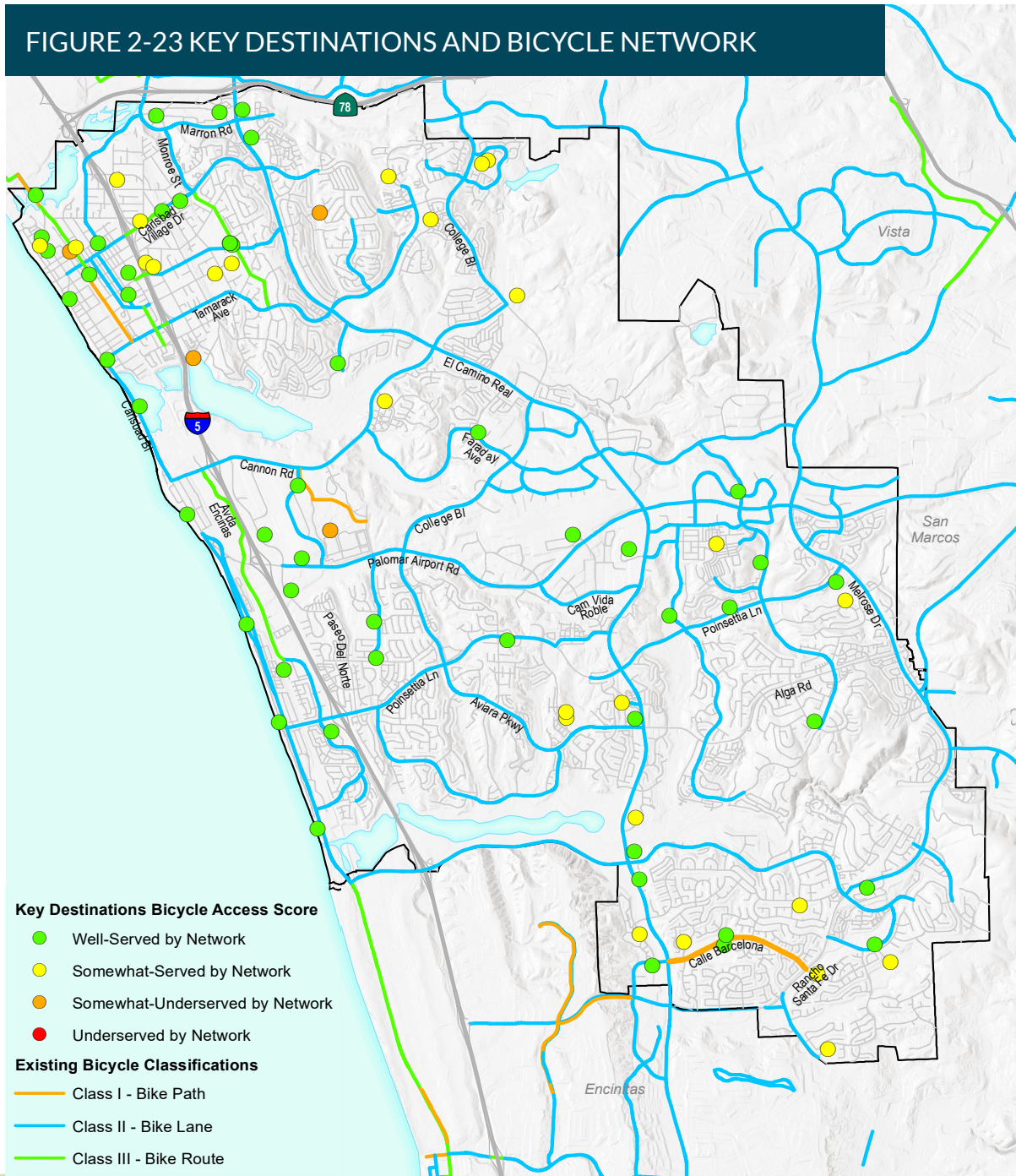


### Pedestrian Access

As shown in Figure 2-22, almost all key destinations across the City of Carlsbad are well-served by the current pedestrian network, with the exception of the following:

- Samuel Warfield Peterson Library & Information Center
- Agua Hedionda Trailhead
- Terramar Beach
- Canyon de la Encinas Beach

FIGURE 2-23 KEY DESTINATIONS AND BICYCLE NETWORK



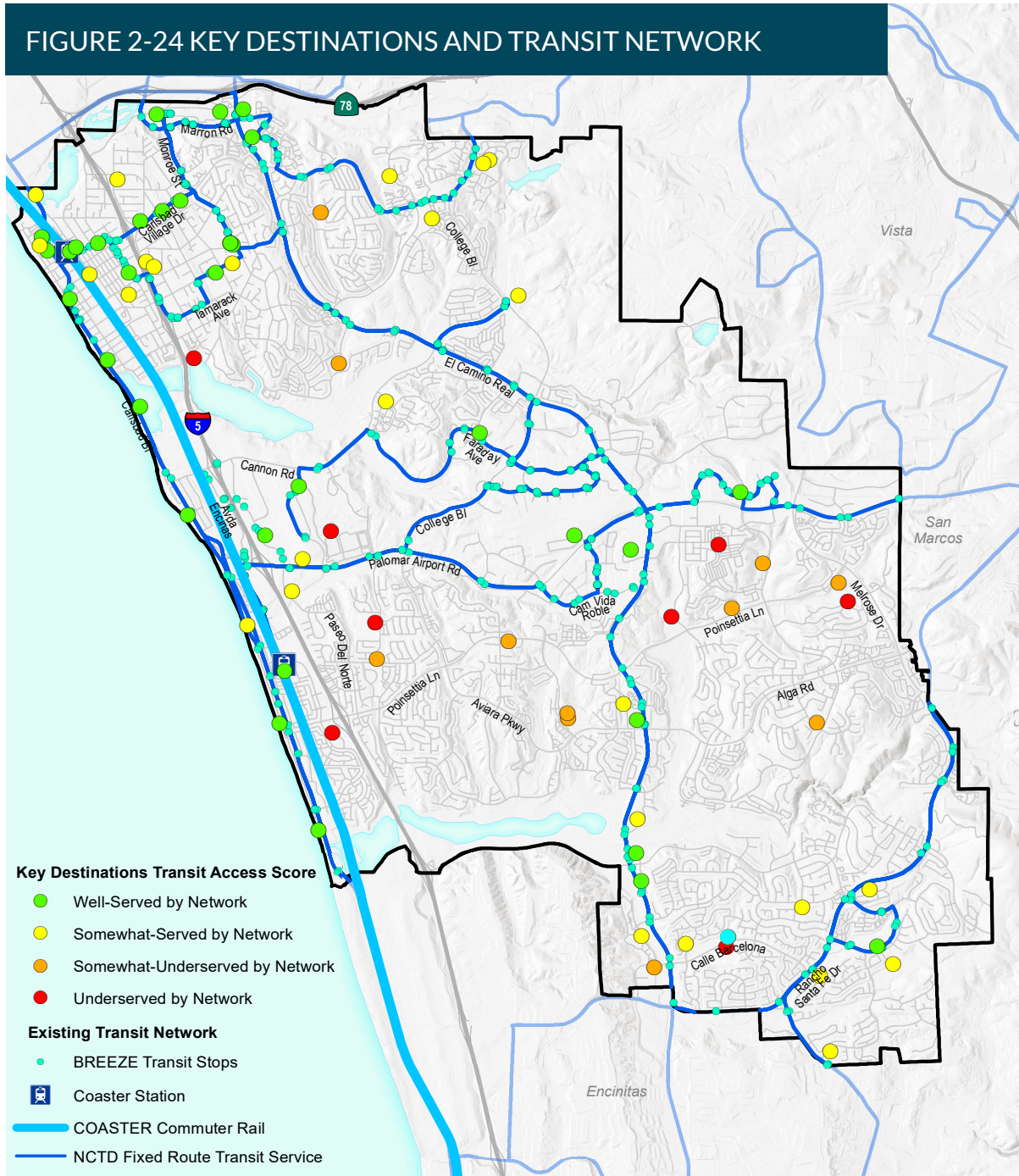
### Bicycle Access

As shown in Figure 2-23, almost all key destinations are either well-served or somewhat-served by the existing bicycle network. The following key destinations are somewhat-underserved by the bicycle network:

- Carlsbad Village Coaster Station
- Hidden Canyon Community Park
- Agua Hedionda Trailhead
- Legoland



FIGURE 2-24 KEY DESTINATIONS AND TRANSIT NETWORK



Transit Access

Figure 2-24 shows that eight key destinations are underserved by current transit network:

- Agua Hedionda Trailhead
- Legoland
- Poinsettia Park
- Poinsettia Village Plaza
- Bressi Ranch
- Alga Norte Community Park
- Leo Carrillo Ranch Historic Park
- San Dieguito Sports Complex

Figure 2-24 also shows that 11 key destinations are somewhat underserved:

- Hidden Canyon Community Park
- Laguna Riviera Community Park
- Pacific Rim Elementary
- Redeemer by The Sea Lutheran Preschool
- Aviara Oaks Middle School
- Aviara Oaks Elementary School
- Pacific Ridge School
- Poinsettia Elementary School
- Carillo Elementary School
- La Costa Meadows Elementary School
- La Costa Valley Preschool

## KEY FINDINGS

### Pedestrian

Most of the streets in the City of Carlsbad that are programmed for sidewalks have sidewalks present. The overriding issue for people walking is the curvilinear nature of the street network, which limits direct connectivity to adjoining land uses. In addition, the streets that connect land uses are typically high-speed, high-volume vehicular arterials, with long block lengths and generally disconnected walking environments, despite the presence of cosmetic amenities such as planting strips, and adequate sidewalks.

The auto-oriented street network and land use mix limits the attractiveness of walking for transportation in all but a few selected locations in the city. Retrofitting arterials to facilitate crossings for students, the elderly and other vulnerable users will require careful consideration of the Mobility Element's guiding principles.

In addition, intersections citywide may need to be upgraded when feasible to improve visibility and conflicts with turning vehicles and other high-frequency collision behaviors.

### Trails

The City of Carlsbad has a citywide Trails Program, which creates a connected and complete trails system, accommodates a variety of trail users in a safe and environmentally sensitive manner, seeks to identify existing and future trail development and integrates transportation related facilities as part of the trails system.

### Bicycles

As with the conditions present for people on foot, people on bicycles suffer from a lack of practical connections between areas of the city. While the city maintains an extensive network of bicycle facilities, these facilities are often present alongside high-speed and high-volume vehicular arterials, and lack physical protections for people bicycling, which discourages all but the most confident users of the network.

An exception to this can be found in Carlsbad Village, which features a number of low-speed and connected streets, and a completed section of the Coastal Rail Trail, all of which are appealing places to ride and represent excellent opportunities for shifting travel modes away from vehicles to bicycles when conditions are comfortable and perceived as safe by the user.

### Transit

A significant constraint for people using transit is the lack of connection between the employment centers located along College Boulevard, Faraday Avenue, El Camino Real and Palomar Airport Road and the COASTER Stations. Lack of travel times competitive with private automobiles, lack of transfer locations and lack of amenities at fixed route stops present significant barriers to attracting "choice" riders to the network and the resultant improvements in vehicle miles traveled metrics, greenhouse gas emission reductions and other benefits.

Recent city initiatives will provide a policy framework for the development of Transportation Demand Management strategies to assist in the efforts of the public and private sectors to better connect job sites and other key destinations, and should be developed alongside improvements to other modes to encourage seamless connections for transit riders throughout the City of Carlsbad.