



# 5 PLANNED MOBILITY NETWORKS

# 5

## PLANNED MOBILITY NETWORKS

This chapter presents the SMP proposed citywide networks for walking, trails, cycling and transit. These networks respond to the needs identified through extensive community engagement, field reviews, existing conditions analysis and previous planning efforts. The intended outcome is a Carlsbad transportation system that accommodates people of all ages and physical ability, as well as people who choose to leave their car behind. The SMP networks aspire to invigorate modal shifts away from single occupant driving to walking, cycling and transit.

The planned networks for walking, trails, cycling and transit are described in the following sections, which are then followed by a presentation of the Carlsbad Sustainable Mobility Network, which consolidates those travel corridors providing multi-modal travel options across the City.

The SMP serves as the required update to the City's bicycle and pedestrian master plans and also provides consistency with recommendations from recent planning initiatives such as the Village and Barrio Master Plan, the Carlsbad Active Transportation Strategy, the Trails Master Plan, and SANDAG's Regional Transportation Plan.

By increasing the safety, connectivity and competitiveness of walking, cycling and transit, the SMP proposals will allow the City of Carlsbad to make better use of existing resources, protect undeveloped spaces, and better manage future impacts and demands on public spaces.

Implementation of the planned networks is supported by state-of-the-practice design guidelines (in Appendix C) intended to facilitate proposed infrastructure improvements.

### IN THIS CHAPTER

- Summary of the ways people will get around in the future
- Conceptual improvements to implement future mobility hubs
- Summary of recent initiatives to improve existing transit service and provide a new employee shuttle pilot project

## PLANNED PEDESTRIAN NETWORK

The Pedestrian Master Plan of 2008 governs the development and implementation priorities of places for people walking in Carlsbad. Following the identification of a number of priority locations and corridors, the City developed an ADA Transition Plan in 2012 to assist in prioritizing accessibility gaps and upgrades designed to make the city more accessible for people with disabilities.

Since 2008, a large number of these priorities have been implemented through the CIP process – chiefly the installation of new sidewalks on priority corridors, high-visibility crosswalks, midblock crossings, signal timing adjustments and other intersection amenities such as audible countdown timers, pedestrian scrambles, and wayfinding elements in Carlsbad Village.

The City of Carlsbad is committed to addressing substandard sidewalks, crosswalks and other small-scale improvements wherever feasible through the CIP process, and will continue its commitment to retrofitting existing intersections with upgraded, high visibility crosswalks, and improvements for people with disabilities consistent with the prioritization efforts of the adopted ADA

Transition Plan. Larger projects such as those designed to overcome barriers with at-grade rail or freeway crossings, closing gaps in the Coastal Rail Trail Multi-Use Path, projects requiring additional right-of-way, or other complex design considerations will likely require additional funding for feasibility studies and design services.

Figure 5-1 shows the planned pedestrian network, including priority intersections for enhanced pedestrian treatments, priority corridors per the 2008 PMP, school streets, and missing or substandard sidewalks. The priority intersections for enhanced pedestrian treatments could include consideration of roundabouts. Figure 5-1 shows potential traffic circles (roundabouts) and bulb outs in the Village area. Several locations throughout the City of Carlsbad have been identified as “Alternative Design Streets.” This designation precludes the installation of sidewalks. Cities throughout the region have begun developing ways to better delineate places for people walking within the roadway through pedestrian-only lanes on low-speed, low-volume residential streets. Typically this involves restriping to provide a 5’ to 6’ “door zone” buffer space adjacent to narrow travel lanes (often lacking centerline striping) and the installation of a bi-directional “pedestrian only” stencil. An

example of this treatment from the City of Encinitas is shown at right.

With the recent creation of “School Streets” as part of the Mobility Element and the City of Carlsbad’s commitment to providing safe routes to schools, several street segments adjacent to Carlsbad High School are potentially in conflict with one another. They simultaneously encourage the creation of dedicated places for people walking, yet prevent these places from being traditional sidewalks. Finding a solution to this conflict is an important outcome of the SMP, and “pedestrian only” lanes represent an excellent opportunity to do so.



*Pedestrian-only bidirectional walking zone in Encinitas, CA*



## Roundabouts for Intersection Control

The City of Carlsbad recognizes that roundabouts are an effective intersection traffic control measure to calm traffic and improve safety of intersections for pedestrians, bicyclists, and vehicles by reducing speeds and conflict points. Roundabouts have added benefits of improving efficiency of vehicle operations of intersections, reducing greenhouse gas emissions from idling vehicles and enhancing aesthetics. Roundabouts will be considered on existing city streets where they could effectively address safety or traffic operations issues or in new development projects when intersection control is being considered. It is recognized that roundabouts may not be appropriate in the built environment or at some high-volume intersections and shall be reviewed on a case-by-case basis.

Modern roundabouts are potentially the most efficient and the safest form of traffic control for many intersections while also providing opportunities for enhanced landscaping. They are also preferred by bicyclists under many circumstances, as they do not require the bicyclist to stop or lose momentum, as previously discussed in the bicycle boulevard section. However,



bicycle lanes are typically not striped through roundabout intersections, even on Class II roadways. This allows bicyclists the ability to move from the striped bicycle lane, to take control of the travel lane. Alternately, it is recommended that the sidewalks adjacent to the roundabout provide additional width, to allow for a multi-use segment, so bicycles can choose to use the sidewalk, if they are uncomfortable taking control of the travel lane. Pedestrian crossings within

roundabouts are located one car length away from the circulating roadway to shorten the crossing distance, reduce the potential for vehicle-to-pedestrian conflicts, and allow pedestrians to cross between waiting vehicles. Connections from the bicycle lanes to the sidewalk prior to this crosswalk are recommended.

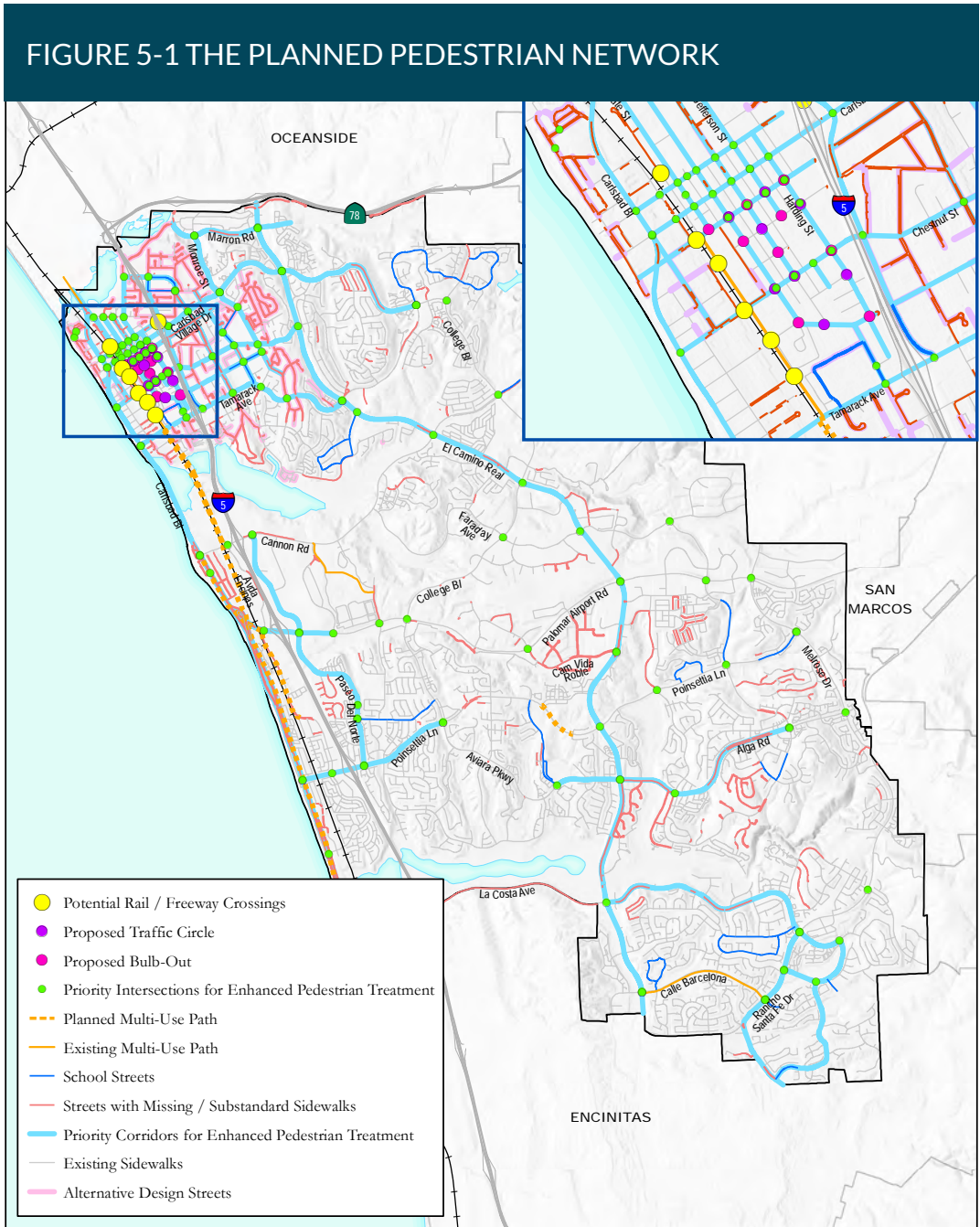


Table 5-1 Summary of Pedestrian Network Mileage

Classification	Existing	Planned	Change in Mileage	Percent Change
Multi-Use	3.2	9.3	+ 6.1	192%
Priority Corridors for Enhanced Treatment	0.0	54.4	+ 54.4	-
Standard Sidewalks	651.6	651.6	-	0%
School Streets	13.4	13.4	-	0%
Alternative Streets	24.0	24.0	-	0%
<b>Total</b>	<b>692.1</b>	<b>752.7</b>	<b>+60.5</b>	<b>9%</b>

Table 5-1 presents the planned pedestrian network mileage. As shown, an additional 9% will be added to the total mileage of the pedestrian network under future conditions. There will be 9.3 miles of planned Multi-Use Paths and 54.4 miles of Priority Enhanced Corridor Treatments.

The City has made progress in implementing the improvements identified in the Pedestrian Master Plan and ADA Transition Plan, and is encouraged to continue the focus on priority projects identified in each

document, particularly those in and around school zones including the Carlsbad High School, Magnolia Elementary and Valley Middle Schools, Aviara Oaks and Calavera Hills areas, among others

Safe Routes to School Conceptual Improvement Plans of this document (Appendix G) includes a number of additional location-specific findings for small infrastructure capital improvement projects around school zones citywide, including high-visibility crosswalk upgrades, signage designed to limit the number of illegal U-turns during student pick-up and drop off, and speed feedback signs. The City is encouraged to implement these improvements on a rolling basis as funding allows.

Larger projects recommended for people walking include the extension of the Coastal Rail Trail and potential improvements for people walking along Carlsbad Boulevard south of Tamarack Avenue.



*Nature Trail in Carlsbad, CA*

## PLANNED TRAIL NETWORK

The Trails Master Plan (TMP) builds upon the 2019 Trails Master Plan, previous efforts by city staff, volunteers, and private development partners over the past twenty years to develop a citywide trails network within the City of Carlsbad.

The TMP takes into consideration larger public and private projects, and has enhanced corridors to create a well-connected

network. One key desired outcome of the TMP is to provide access to trail facilities within ten-minutes of every resident's front door.

Figure 5-2 shows the planned trail network, including recreational trails, roadside trails, sidewalk connectors and paved, multi-use paths.



The Coastal Rail Trail Project is part of a larger effort to link the coastal cities of Northern San Diego County with the City of San Diego through implementation of a Class I path along the existing rail lines. The Coastal Rail has been identified as a high priority by the local and regional community.

In Carlsbad, the trail will provide an important north/south bikeway connection throughout the city and is proposed to run along the eastern side of the NCTD rail line from Oceanside to Encinitas. A  $\frac{3}{4}$ -mile segment of the Coastal Rail Trail in Carlsbad was completed in 2005, connecting Tamarack Avenue with Oak Avenue.

The City has obtained funding through the Caltrans Active Transportation Program (ATP) to construct the portion along Avenida Encinas from Cannon Road to Carlsbad Boulevard. Due to the significant cost of completing the long-term alignment, which includes crossing three lagoons, an interim alignment has been included, which includes Class II and III on-street facilities which may be implemented while additional funding is being sought for long-term Class I facility.

These improvements will likely require additional right-of-way, planning and engineering services to arrive at a preferred alternative.



*Coastal Rail Trail entrance in Encinitas, CA*

As with cycling projects, the SMP Design Guidelines provide the City with engineering flexibility to implement additional spot treatments citywide, including revisions to midblock crossing designs, traffic calming as appropriate, and improved transit access.



*Lake Calavera Preserve Loop in Carlsbad, CA*

FIGURE 5-2 THE PLANNED TRAIL NETWORK

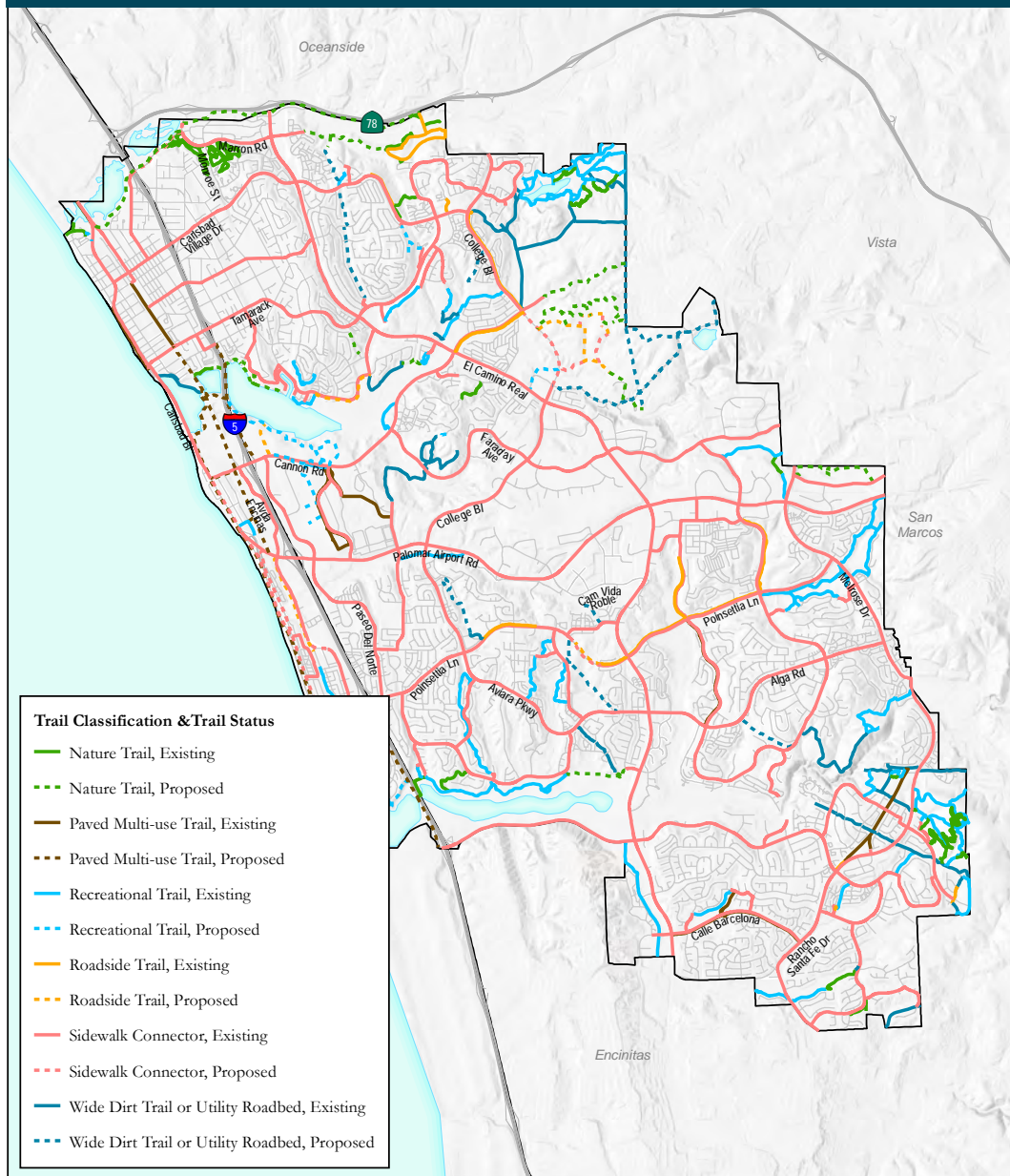


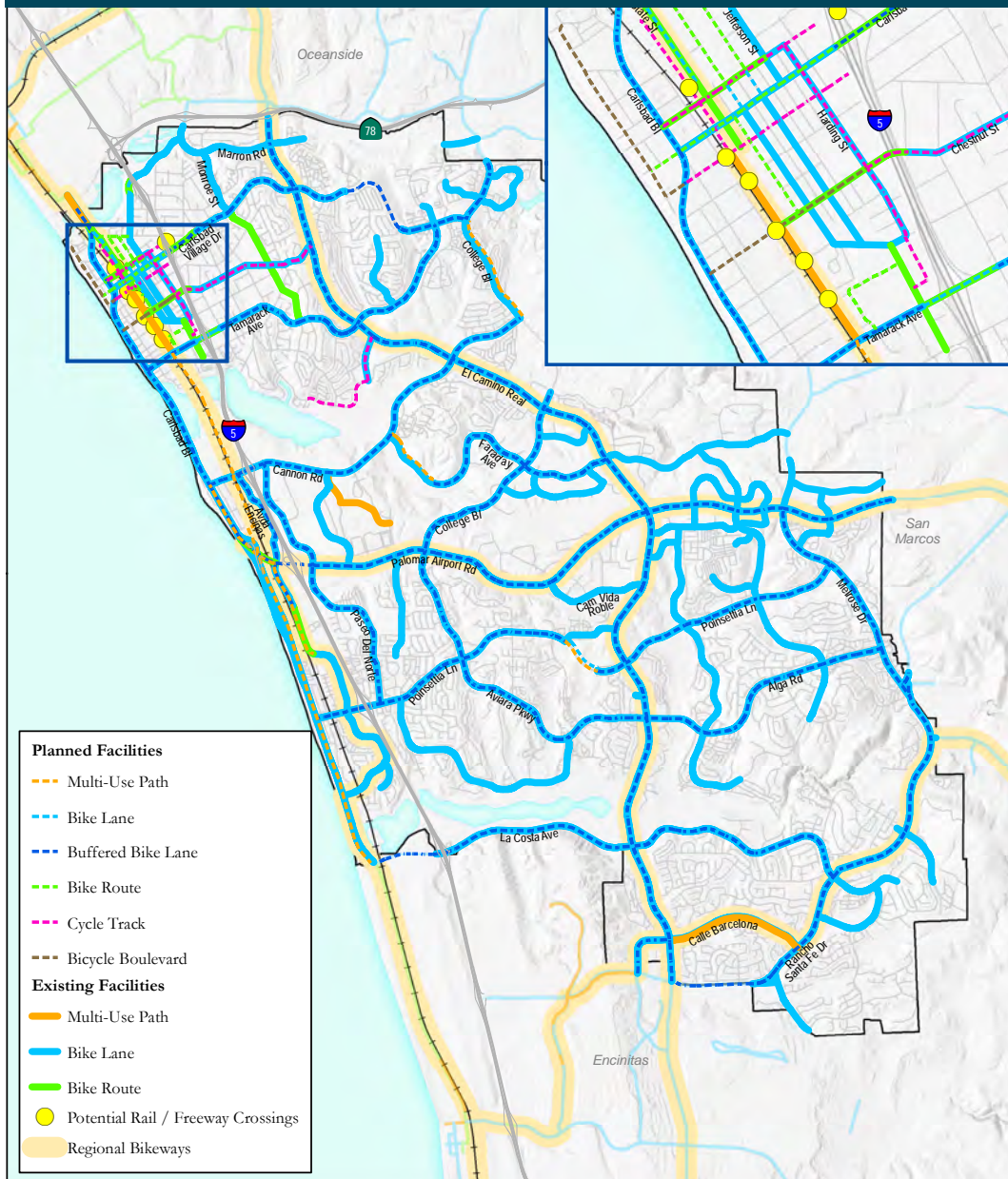
Table 5-2 Summary of Trail Network Mileage

Trail Classification	Existing	Planned	Change in Mileage	Percent Change
Nature	11.4	23.6	+ 12.1	107%
Recreational	26.6	30.8	+ 4.2	16%
Wide Dirt	13.2	22.2	+ 8.9	68%
Roadside	7.8	11.8	+ 4.0	51%
Sidewalk Connector	105.5	113.0	+ 7.5	7%
Paved Multi-Use Path	7.8	17.4	+ 9.6	123%
<b>Total</b>	<b>172.3</b>	<b>218.7</b>	<b>+ 46.4</b>	<b>27%</b>

Table 5-2 shows the existing and planned trail network mileage. As shown, 30.8 miles of Recreational Trails are planned. There will be a 51% increase in Roadside Trails, a 7% increase in Sidewalk Connectors, as well as a 123% increase in paved Multi-Use Paths. This will result in a total of 218.7 planned trail miles, which is a citywide increase of 27% from the existing 172.3 miles.



FIGURE 5-3 THE PLANNED BICYCLE NETWORK



## PLANNED BICYCLE NETWORK

The SMP proposes a comprehensive backbone network of Class II Buffered Bike Lanes across the City of Carlsbad that will ensure safe and comfortable cycling for residents of all ages and physical ability.

Buffered Bike Lanes will be designed to increase residents' sense of safety and comfort while cycling, and allow for increased mobility and access to key destinations throughout the City by bike. The network of buffered bike lanes will help the City realize green house gas (GHG) and vehicle miles traveled (VMT) reduction targets through transitioning existing vehicle trips to bicycling trips, particularly the 40-45% of all trips citywide that are under 3 miles in length.

Figure 5-3 shows the planned bicycle network as well as potential pedestrian, bicycle, rail and freeway crossings. Table 5-3 summarizes the planned bicycle network mileage, which reflects a citywide increase of 5% in bicycle network miles.

Table 5-3 Summary of Bikeway Mileage

Bicycle Classification	Existing	Planned	Change in Mileage	Percent Change
Multi-Use	3.2	9.3	+ 6.1	192%
Bike Lane	157.6	92.0	- 65.6	- 42%
Buffered Bike Lane	-	61.2	+ 61.2	-
Bike Route	5.1	5.2	- 0.2	- 3%
Cycle Track	-	5.1	+ 5.1	-
Bike Boulevard	-	1.3	+ 1.3	-
<b>Total</b>	<b>166.1</b>	<b>174.0</b>	<b>+ 7.9</b>	<b>5%</b>

Pending detailed feasibility studies, initial analysis supports reclassifications of existing bike lanes to cycle tracks along the following key corridors:

- Oak Avenue
- Grand Avenue
- Harding Street
- Chestnut Avenue
- State Street Alley
- Park Drive/Kelly Drive

The mobility benefits of this reclassification process are many. Cycle tracks as well as buffered bike lanes have been shown to greatly increase cycling levels, particularly for people bicycling short distances and for less confident riders.

Several surveys indicate people feel safer and more protected with the installation of a raised median or curb within the buffer area. In fact, separated green lanes reduce bicyclist injury risk up to 90 percent (Teschke, 2012). Drivers have been observed to slow the speed at which they drive along a corridor following the installation of cycle tracks, which in turn allows a city to lower the posted speed limit.

City efforts to prepare for potential future shared mobility modes such as electric bikeshare may benefit from dedicated cycle tracks, as users frequently cite the existence of physically separated facilities as a key factor in their decision to use shared mobility devices and services.

Feasibility and eventual implementation of these treatments would be determined by the City traffic engineering staff and are

subject to funding availability, resurfacing schedules, and other considerations.

Due to constraints within a corridor, separation may not be achievable for the entire length of the route, and it may be necessary to maintain conventional or buffered bike lanes in some locations.

The city will attempt to provide sharrows or bike lanes adjacent to all proposed Class I and IV facilities as an important accommodation in locations where there may be high pedestrian use.



One-Way Class IV Cycle Track. (Source: NACTO)

FIGURE 5-4 END-OF-TRIP FACILITIES

In addition, the City’s SMP Design Guidelines provide for significant improvements for people on bicycles at intersections through the use of green paint, dedicated bike boxes, and other treatments designed to better delineate places for people on bikes at high-volume areas of potential conflicts with vehicles.

The City has invested significant resources in recent years toward accommodating people on bikes throughout the city with end-of-trip amenities such as bicycle parking in and around Carlsbad Village and beach access points, as well as ordinances designed to make it easier for employers to provide changing facilities and showers for employees who choose to bike to work. Figure 5-4 displays the existing end-of-trip facilities across the city.

Future considerations for people biking involve additional bicycle parking amenities citywide, particularly the replacement of existing racks at the end of their useful life, and additional features at potential Mobility Hub locations described later in this chapter.

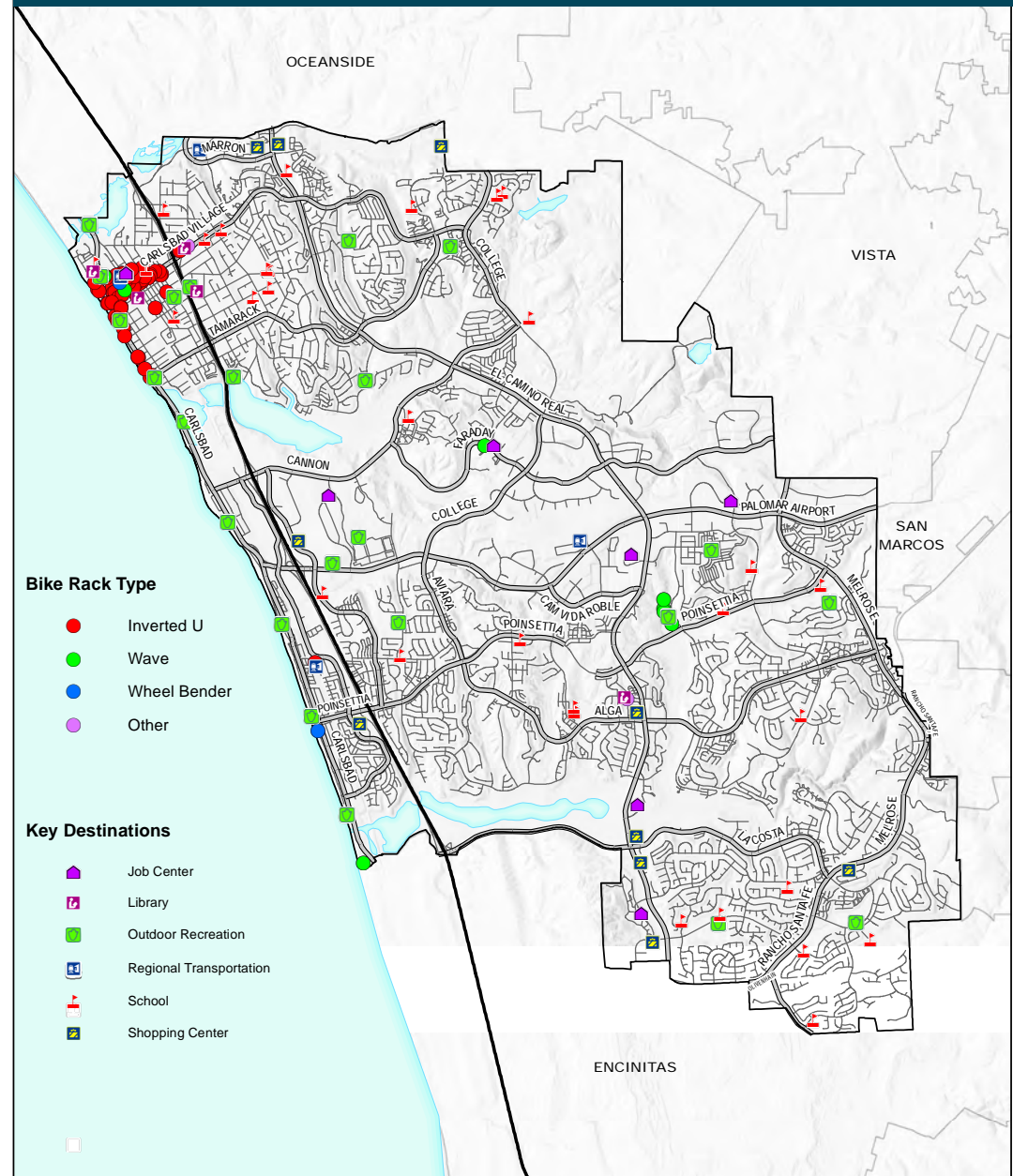




FIGURE 5-5 THE PLANNED TRANSIT NETWORK

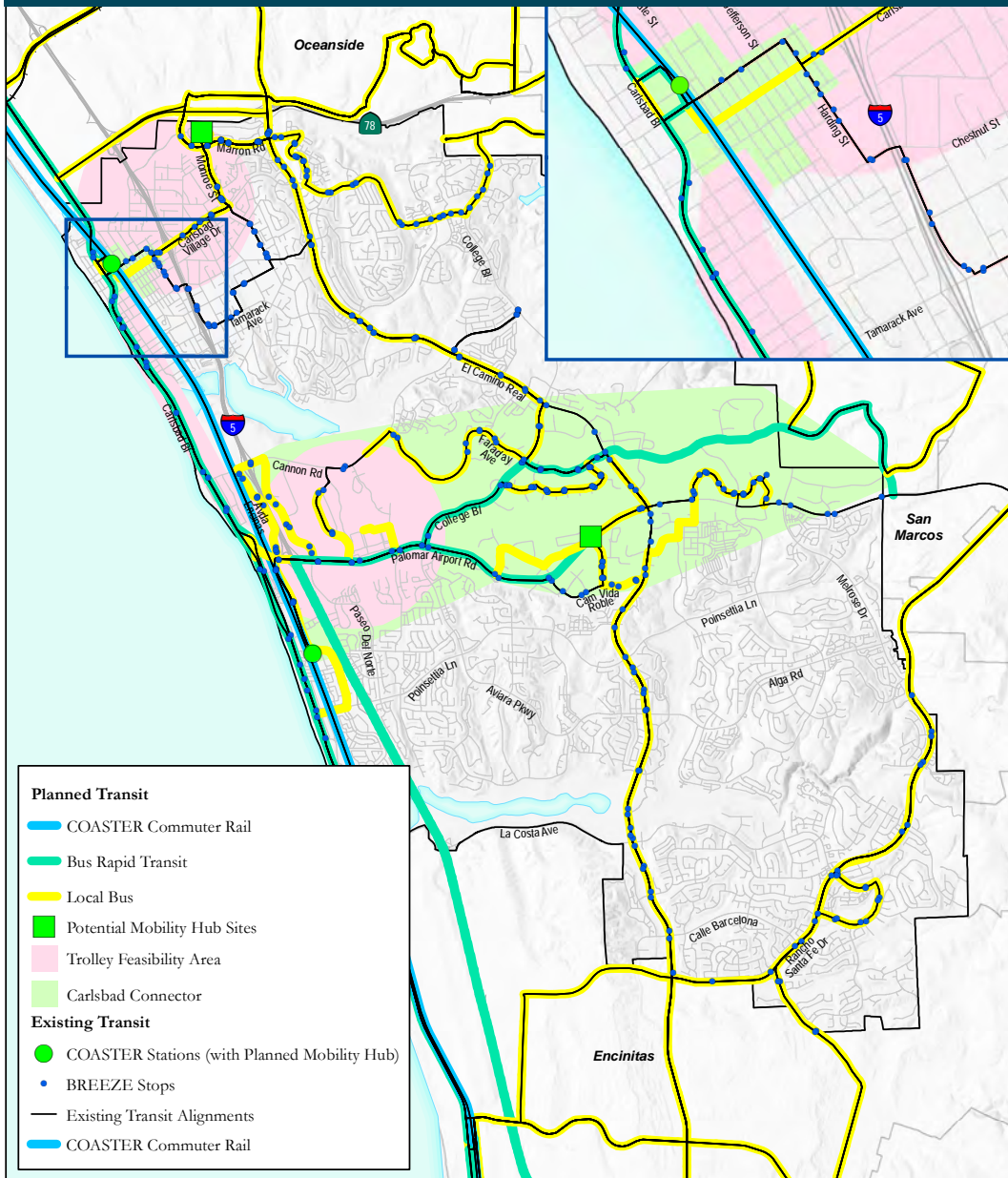


Table 5-4 Summary of Transit Network Mileage

Transit Classification	Existing	Planned	Change in Mileage	Percent Change
Coaster Commuter Rail	6.6	6.6	-	0%
Bus Rapid Transit	-	19.8	+ 19.8	-
Local Bus	50.2	35.5	- 14.7	- 29%
<b>Total</b>	<b>56.8</b>	<b>61.9</b>	<b>+ 5.1</b>	<b>9%</b>

### PLANNED TRANSIT NETWORK

While the City of Carlsbad has limited ability to develop and implement transit service operations, several aspects of a persons ability and willingness to take transit are nevertheless under the city’s jurisdiction, including first-last mile connections to existing bus route service, as well as the development, promotion, and accommodation of alternative transportation services such as employee or visitor shuttles, mobility hub services, and programs designed to incentivize transit through subsidy or other means.

Bus Rapid Transit (BRT) is a form of public transportation for buses which utilizes transit priority treatments along its alignments, consolidated stop spacing and other measures which improve capacity, reliability and reduce delay. Typical features may include some or all the following: higher capacity vehicles, dedicated bus lanes, traffic signal priority, off-board fare purchasing, level boarding and all door boarding. Often, BRT vehicles, stops/stations and routes are given branding synonymous with rapid transit to distinguish it as an enhancement from regular local public transportation bus service. Rapid Bus is the branding used by Metropolitan Transit System for its bus services which utilize BRT treatments.

Figure 5-5 shows the existing and planned transit networks for the City of Carlsbad per SANDAG's Regional Transportation Plan (RTP) Year 2035 network. As shown, the City of Carlsbad has north-south transit service along Carlsbad Boulevard, the commuter rail corridor, and El Camino Real. There are future plans for Bus Rapid Transit along the I-5 corridor that would connect to Palomar Airport Road and College Boulevard. There are also future plans for Rapid Bus along Carlsbad Boulevard that would run the entire length of the city. Table 5-4 presents the planned transit network mileage. As shown, an additional 9% of transit system miles is planned, bringing the total transit network miles from 56.8 existing miles to 61.9 planned miles.

In addition to SANDAG's planned transit improvements, there are many transit recommendations from the previous 12 plans that are being carried forward in the SMP. Figure 5-6 shows those various project segments where planned transit recommendations are being brought forward from previous plans, as well as transit ridership. As shown, all of the higher transit ridership locations -- the Poinsettia Coaster Station, the Palomar Airport Road industrial and office park areas, the Carlsbad Village, and The Shoppes at Carlsbad -- show localized transit improvement recommendations. The project ID's shown in Figure 5-6 are listed in Table 5-5. A transit project description along with the source of the recommendation is provided. Pedestrian, trail and bicycle recommendations near these high transit ridership stops are also shown as they will make accessing transit safer.

FIGURE 5-6 TRANSIT PROJECT AREAS AND RIDERSHIP

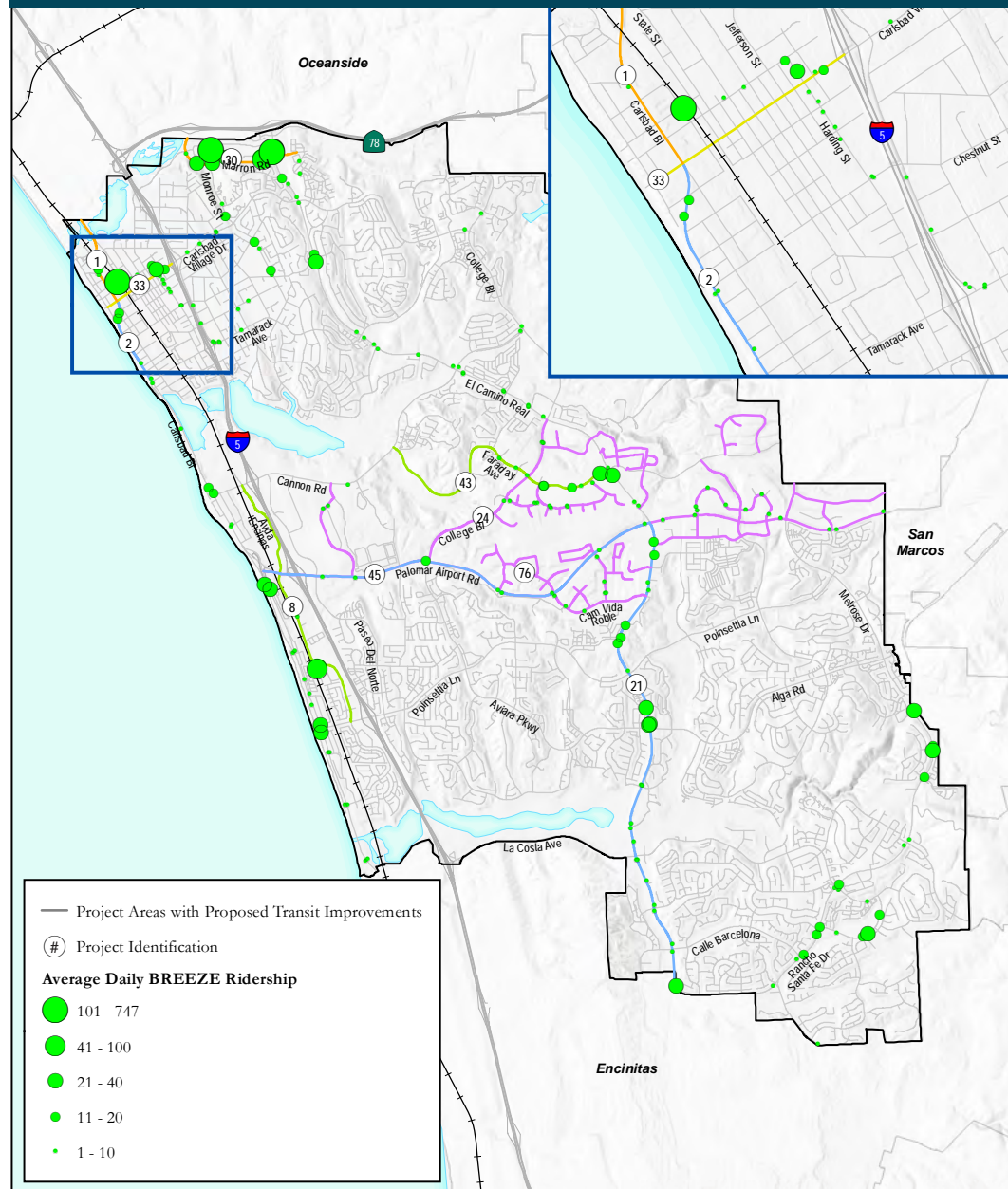


Table 5-5 SMP Transit, Bicycle, and Pedestrian Projects Near High Ridership Transit Stops

ID #	Project Source (PR_A_SR)	Project Description (PR_A_D)
1	Village and Barrio Master Plan	Pedestrian lighting and Restriping for bike and ped comfort
	Community comment	Pedestrian improvements
	City staff comment	Bulbouts at all RRFB and EcoCounter locations
	Transformative Corridor Candidate	Transformative Corridor
	CATS	Pedestrian crossings, Roadway alignment, and Transit stop improvements
2	Village and Barrio Master Plan	Pedestrian lighting
	Community comment	Pedestrian improvements and Road diet on Carlsbad Bl from Pine Av to Tamarack Av
	City staff comment	Bulbouts at all RRFB and EcoCounter locations
	Transformative Corridor Candidate	Transformative Corridor
	CATS	Pedestrian crossings, Roadway alignment, and Transit stop improvements
8	Community comment	New ADA compliant pedestrian ramps from Carlsbad Boulevard to Tamarack Beach and Carlsbad State Beach at Pine Ave
		Bicycle sharrows on Avenida Encinas from Palomar Airport Rd to Poinsettia Coaster Station
	CATS	Trail connection along Avenida Encinas from Embaracadero Ln to Cannon Rd; Additional roadway connection of Paseo Del Norte and Batiquitos Dr from Batiquitos Lagoon to Agua Hedionda Lagoon
	Coastal Mobility Readiness	Mobility Hub at Poinsettia Station
	Trails Master Plan	Type 4 - Roadside Trail
21	Transformative Corridor Candidate	Transformative Corridor
	CATS	Sidewalk improvements along east side of El Camino Real from Cassia Rd to Camino Vida Roble
	CATS	Sidewalk improvements along west side of El Camino Real from La Costa Avenue to Arenal Road
	CATS	Transit stop improvements along El Camino Real from Palomar Airport Rd to La Costa Av
	CATS	Transit stop improvements along El Camino Real from La Costa Av to southern city limit
24	CATS	Transit stop improvements along College Bl from Palomar Airport Rd to Faraday Av

ID #	Project Source (PR_A_SR)	Project Description (PR_A_D)
30	PMP	Sidewalk infill, wayfinding, rail crossing, transit stop improvements
	City staff comment	Mobility Hub at Shoppes Carlsbad
33	Village and Barrio Master Plan	Bike and ped crossing improvements
	Village and Barrio Master Plan	Streetscape improvements
	PMP	Improvements at intersection of Washington St/ Carlsbad Village Dr
43	CATS	Transit stop improvements
	Coastal Mobility Readiness	Mobility Hub at Carlsbad Village Coaster Station
	Caltrans	I-5 crossing pedestrian improvements on Carlsbad Village Dr
43	CATS	Traffic signal installation and pedestrian Improvements at Faraday Av/Camino Hills Dr
	CATS	Transit stop improvements along Faraday Av from Cannon Rd to College Bl
45	PMP	Midblock crosswalk at Armada Dr
	Community comment	Multi-use path
	Community comment	Bicycle and traffic striping improvements on Palomar Airport Rd/I-5 overpass
76	Transformative Corridor Candidate	Transformative Corridor
	CATS	Transit stop improvements along Palomar Airport Rd from College Bl to El Camino Real
	Community comment	Bicycle improvements on Camino Vida Roble from El Camino Real to Palomar Airport Rd
76	City staff comment	Mobility Hub in Business Park
	CATS	Traffic signal installation and pedestrian improvements at Aramada Dr/Fleet St S.
	CATS	Traffic signal installation and pedestrian improvements at intersection of Aramada Drive & Grand Pacific Resort
	CATS	Traffic signal installation and pedestrian improvements at intersection of Camino Vida Roble & Yarrow Drive
	CATS	AT Facility improvements along Orion Street from El Camino Real to Faraday Avenue



Future transit service in the city will build upon what we have today and will be led by the North County Transit District (NCTD). There are several transit improvements, which are part of San Diego Association of Governments (SANDAG) 2021 Regional Planning efforts, which would be phased for implementation through 2050. The 2021 Regional Plan vision for transit is intended to create a complete network of high-speed, high-capacity, high-frequency transit service that connects major residential areas with employment centers and attractions through the San Diego region.

Key features of the SANDAG 2021 Regional Plan vision for transit in the San Diego region include:

- High-speed transit: New high-speed transit lines with higher frequency and capacity that could connect major employment and residential centers
- Expanded service times: More frequent service that starts earlier and runs later would be more convenient and service more riders
- Transit priority: Shorter travel times and more reliable service could result from the addition of dedicated lanes, signal priority during peak travel hours, and bridges and tunnels that provide grade-separated routes
- Better integration: Improved integration with other services would enable more closely timed connections with minimal transfers

- Transition to electric power or alternative fuels: New and existing services could transition to electric power or alternative fuels to reduce greenhouse gas emissions.

The specific vehicle technologies and route alignments were still being evaluated at the time of preparing this document. Moving forward the city will continue to actively participate in the development of the SANDAG 2021 Regional Plan network and a more detailed transit service plan will be developed based on the final plan recommendations.

## PLANNED MOBILITY HUBS

The City is committed to upgrading a number of transit stops in high-ridership locations and providing additional transit service options.

There are four high-ridership transit center locations identified in the City of Carlsbad as potential mobility hubs, as follows:

- Carlsbad Village COASTER Station
- Poinsettia COASTER Station
- The Shoppes at Carlsbad
- McClellan-Palomar Airport

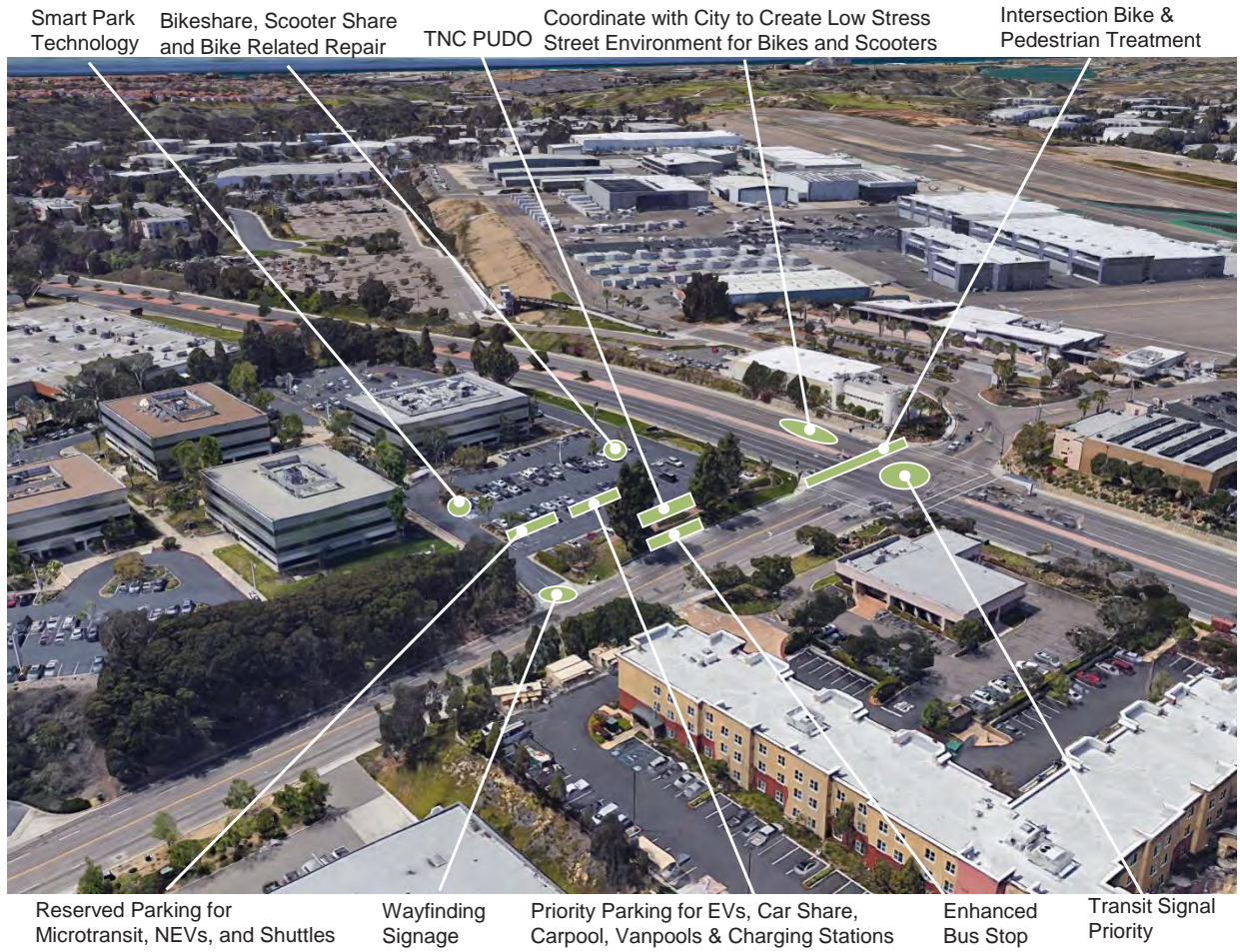
Conceptual alternatives for the four sites are shown in Figures 5-7, 5-8, 5-9, and 5-10

Mobility hubs are community nodes where services, amenities, and technologies are located to help the first/last mile of a commute. Mobility hubs support transit usage by connecting transit riders to/from the regional transit system and the many dispersed land uses typical of Carlsbad's suburban office, industrial and shopping environments.

Mobility hubs can be located at either end of the transit-land use connection, meaning at an existing transit station, or at a regional commercial area, or within a cluster of businesses. The common characteristics of mobility hubs are that they include a mix of passenger waiting areas, curbside pick-up areas for carpool or rideshare, real-time travel information and directional signage, walkways and pedestrian crossings, bicycle parking and bikeshare, micromobility and neighborhood electric vehicles, and charging stations. The variation in mobility hub size and design should be determined by the existing or anticipated land uses at the location and the needs of its anticipated users.

Two of the planned mobility hubs in Carlsbad are “destination” focused and sited at an office/industrial park and a major shopping center, while two are sited at major regional transit stations.

**FIGURE 5-7 MCCLELLAN-PALOMAR AIRPORT MOBILITY HUB CONCEPT**



The McClellan-Palomar Airport Mobility Hub will have a smart park technology station indicating how many parking spaces are utilized at a given time. A designated TNC pick-up/drop-off (PUDO) area will be provided at the northern end of the lot. There will be bikeshare, scooter share, and bike-related repair stations that allow space for micromobility users. Enhanced bicycle and pedestrian treatments will be made at the intersection of McClellan/Yarrow Dr and Palomar Airport Road. There will be reserved parking spaces for microtransit, neighborhood electric vehicles, and shuttles. Wayfinding will be located throughout the mobility hub site to help users navigate. There will be a designated area for priority parking for electric vehicles, carshare, carpool, vanpools, as well as charging stations. Lastly, there will be an enhanced bus stop as well as priority transit signaling to allow for easy flow of traffic.

The mobility hub sited in the McClellan-Airport office/industrial park will function in multiple ways. It is estimated that more than 65,000 workers commute into Carlsbad each day, a large portion of whom work in this job-rich area. The mobility hub will help connect commuters traveling to/from the Poinsettia Coaster Station and their dispersed job sites in the office/industrial park using micromobility, shared mobility, the Coaster Connector, or NEVs. This mobility hub will also serve to connect BRT commuters to/from their dispersed job sites in the office/industrial parks via micromobility or shared mobility options.



FIGURE 5-8 THE SHOPPES AT CARLSBAD MOBILITY HUB CONCEPT



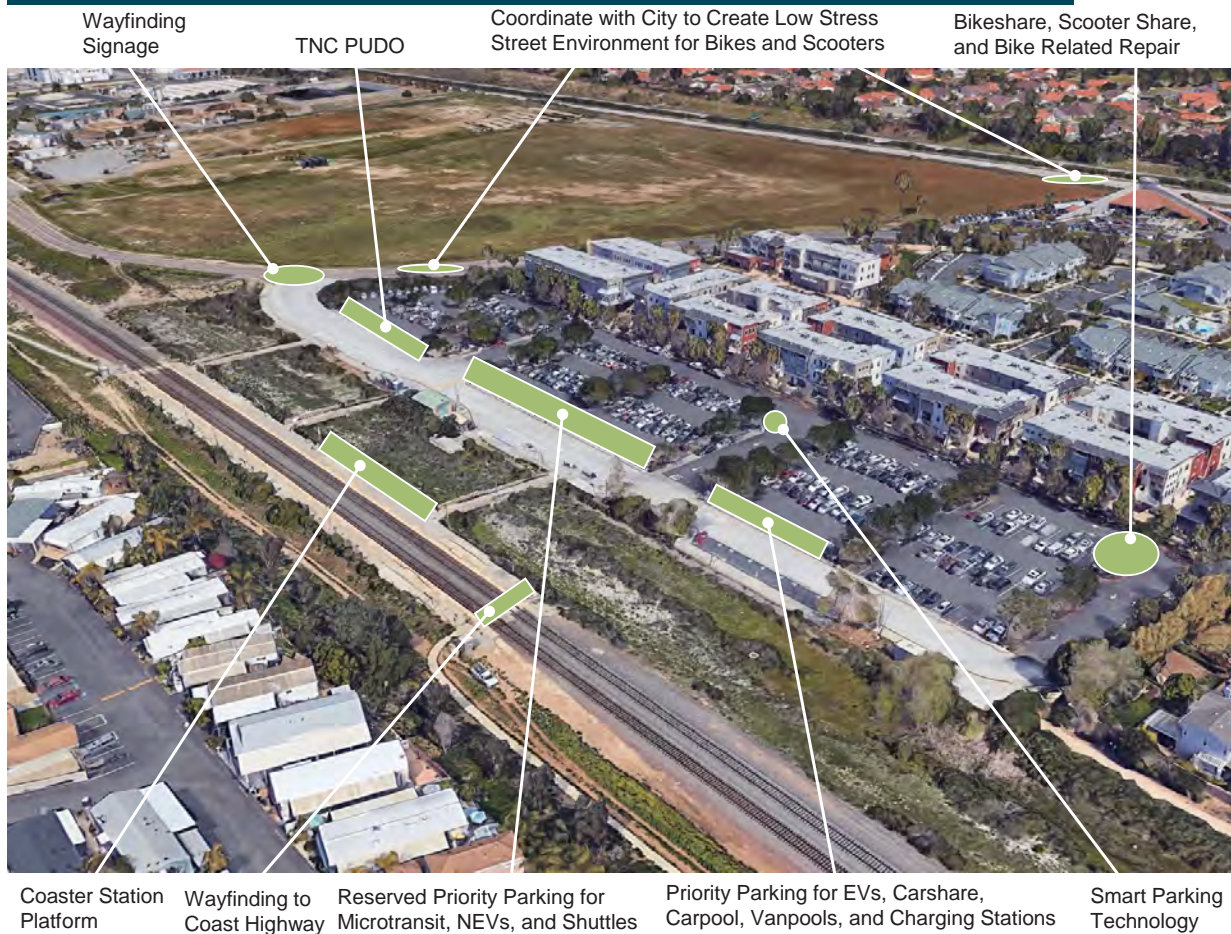
The Shoppes at Carlsbad Mobility Hub will also include all features of the McClellan-Palomar Airport Mobility Hub. The existing transit stop will be upgraded to allow for better flow of traffic. Exact locations for the other services are conceptual and will be adjusted for feasibility, engineering, and costing when implemented. This mobility hub will facilitate connecting both service workers to/from their jobs and regional transit or residential locations, as well as nearby residents to/from the commercial opportunities located at The Shoppes.

The Poinsettia Coaster Mobility Hub will include all features of a mobility hub as mentioned in the McClellan-Palomar Airport Mobility Hub, and will expand on the existing train station. Conceptual improvements show transforming the existing pick-up/drop-off portion of the parking into a space for a variety of users such as microtransit, NEVs, shuttles, vanpools, carshare, TNCs, and electric vehicles.

As mentioned early, connecting heavy rail riders to/from the job-rich areas to the east will be a primary focus of this mobility hub. Once a heavy rail commuter arrives at the Poinsettia Coaster Station, the wide variety of small-scale and shared mobility options will connect this transit user to/from the multitude of dispersed locations where jobs are located in Carlsbad. The mobility hub at the McClellan-Palomar Airport will pair with the Poinsettia Coaster mobility hub to expand non-motorized and non-SOV travel options for commuters living outside Carlsbad.



### FIGURE 5-9 POINSETTIA COASTER MOBILITY HUB CONCEPT



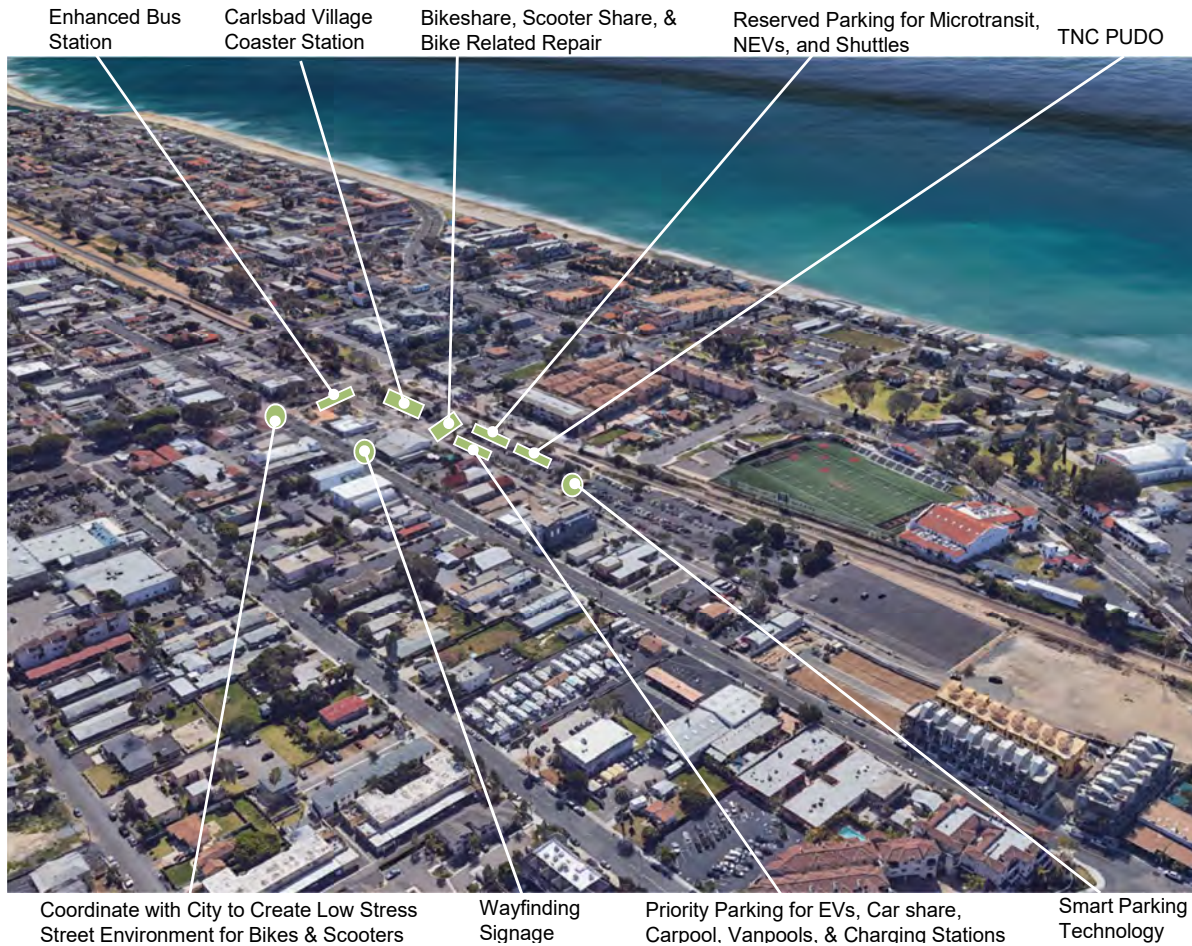
The Carlsbad Village Mobility Hub will include many of the features mentioned in the previous sections, and will transform the existing Carlsbad Village Coaster station site into a mobility rich space with a variety of micromobility, shared mobility, transit shuttle, bike, and NEV options. The existing bus station will be enhanced with improved traffic flow. Although the space for this mobility hub is constrained due to the dense nature of the Village, the level of access to surrounding uses as well as to the beach is enhanced as a result of this density which provides for many nearby land uses. This mobility hub will be especially useful for tourists who may arrive via heavy rail and then benefit from small-scale mobility options for getting to/from final destinations in and near the Village.



Existing Poinsettia Station (Source: SANDAG)



FIGURE 5-10 CARLSBAD VILLAGE MOBILITY HUB CONCEPT



The Carlsbad Village Mobility Hub will include many of the features mentioned in the previous sections, and will transform the existing Carlsbad Village Coaster station site into a mobility rich space with a variety of micromobility, shared

mobility, transit shuttle, bike, and NEV options. The existing bus station will be enhanced with improved traffic flow. Although the space for this mobility hub is constrained due to the dense nature of the Village, the level of access to surrounding uses as well as to the beach is enhanced as a result of this density which provides for many nearby land uses. This mobility hub will be especially useful for tourists who may arrive via heavy rail and then benefit from small-scale mobility options for getting to/from final destinations in and near the Village.

## TROLLEY PROGRAM FEASIBILITY STUDY

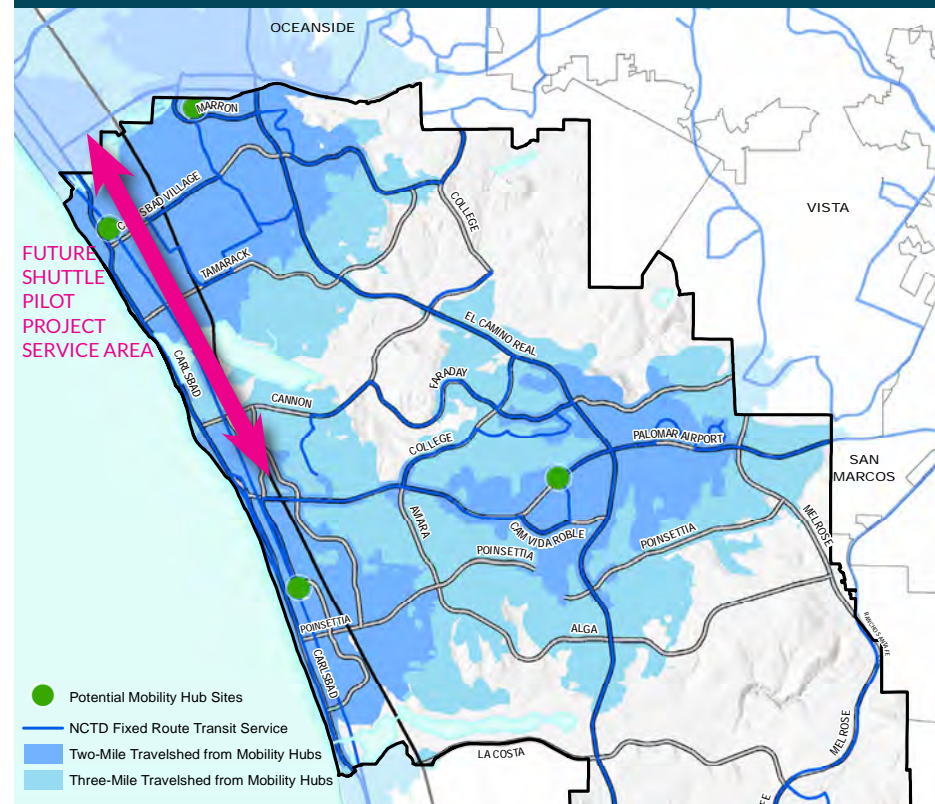
The Trolley Program Feasibility Study proposed implementing a local trolley within Carlsbad to serve coastal areas between the city's two coaster stations and mobility hubs at Carlsbad Village and at Poinsettia. Figure 5-11 shows the key travel flows that would be served by a coastal trolley shuttle.

The study analyzed existing travel patterns in the study area using a Streetlight Data Analytics platform which provided origin-destination pairs for customized geographic zones within the study area based on anonymized mobile device data created from location-based applications on cellphones. The travel data analysis revealed the following findings:

- The weekend presents the largest potential market for the proposed local-circulator service as more trips occur in the potential service areas during the weekend.
- The weekdays show a peak travel around the lunch (12:00 pm – 2:00 pm) and evening commute hours (4:00 pm – 7:00 pm).
- The weekends show consistent travel activity throughout the day (10:00 am – 8:00 pm).
- There is a high concentration of trips within within the Village area.

The study recommended that the city further

FIGURE 5-11 TROLLEY FEASIBILITY

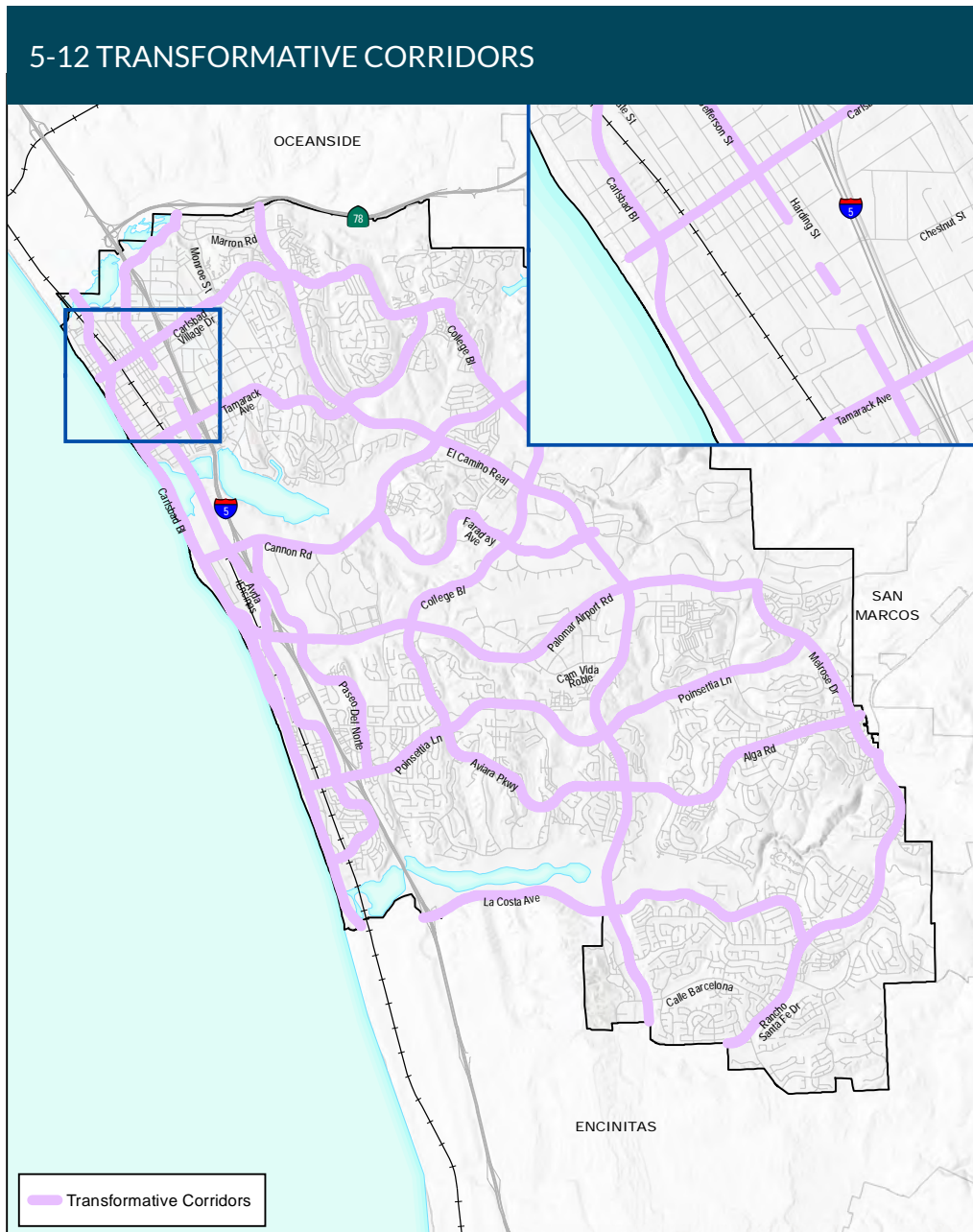


examine three alternative trolley scenarios servicing the area between the Carlsbad Village and the Poinsettia Coaster Station, including 1) a fixed route shuttle service, 2) an on-demand microtransit service, and 3) a dynamic shuttle service.

The study provided service parameters, capital costs and operating and maintenance costs.

The SMP included consideration of transit service improvements within the generalized service area of this proposed future trolley service. Such recommendations were brought forward into the SMP Project Database.





## TRANSFORMATIVE CORRIDORS

The layering of planned walking, cycling and transit networks reveals a strong backbone of “sustainable” corridors across the City. When built out, this planned network of sustainable travel corridors has the potential to transform the lives of Carlsbad workers and residents by providing well-connected and comfortable travel routes that enable access to all of the rich opportunities across the City without driving or riding in a personal vehicle.

Figure 5-12 presents the culmination of the SMP planning process in a Transformative Corridors map. These Transformative Corridors will provide a multi-modal, backbone network of high quality bikeways, pedestrian facilities, and transit services so that Carlsbad residents and visitors have an array of travel options that do not require driving.

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