Chapter 8

Redondo Beach

8 Redondo Beach

This chapter presents Redondo Beach's portion of the South Bay Bicycle Master Plan. It begins with a discussion of how Redondo Beach complies with Bicycle Transportation Account requirements. The chapter is then organized into the following sections:

- Existing conditions
- City-specific goals, policies, and implementation actions
- Needs analysis
- Proposed bicycle network
- Project prioritization
- Project costs

8.1 Bicycle Transportion Account (BTA) Compliance

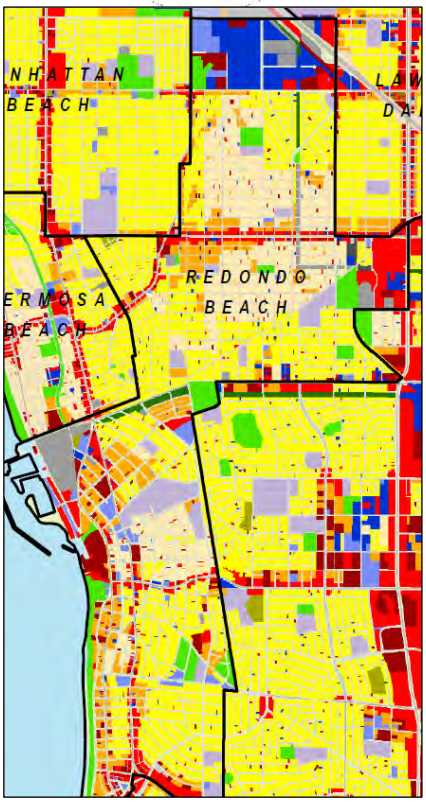
The Bicycle Transportation Account (BTA) is an annual statewide discretionary program that funds bicycle projects through the Caltrans Bicycle Facility Unit. Available as grants to local jurisdictions, the program emphasizes projects that benefit bicycling for commuting purposes. In order for Redondo Beach to qualify for BTA funds, the South Bay Bicycle Master Plan must contain specific elements. **Appendix E** displays the requisite BTA components and their location within this plan in tabular form. The table includes "Approved" and "Notes/Comments" columns for the convenience of the Metro official responsible for reviewing compliance.

8.2 Existing Conditions

Redondo Beach is located in the western portion of the South Bay region. It is bordered by the City of Hawthorne to the north, the City of Manhattan Beach and the City of Hermosa Beach to the west, the City of Lawndale and the City of Torrance to the east, and the City of Torrance again to the south. According to the 2000 Census, Redondo Beach has a population of 63,261. The city was incorporated in 1892.

8.2.1 Land Use

Appendix A-3 displays a map of the existing land uses in the South Bay Region. Land use in Redondo Beach is shown at right. Over 60 percent of the City's land area is devoted to residential uses, though the type of housing is varied. The City consists of 33 percent single



Existing Land Uses in Redondo Beach
(See Appendix A-3 for larger map)

- City Boundary
- Single Family Residential
- Multi-Family Residential
- Other Residential
- General Office
- Commercial and Services
- Public Facilities
- Education
- Military Installations
- Industrial
- Transportation, Communications, and Utilities
- Mixed Commercial and Industrial
- Mixed Urban
- Open Space and Recreation
- Agriculture
- Vacant
- Water
- Under Construction
- Undevelopable
- Unknown

family, approximately 10 percent multi-family, and about 18 percent other residential.

The City of Redondo Beach does not have any proposed changes to its land uses.

8.2.2 Bicycle Trip Generators

High density housing has the potential to generate bicycle activity, as it is generally located in environments with a variety of land uses where trips between uses can be shorter.

Photo Source: Kelly Morphy/WALC Institute for Vitality City

Bicycle trip generators refer to population characteristics that are correlated with higher bicycling activity levels, such as high population or employment densities or high concentrations of certain sub-populations, such as transit commuters or zero-vehicle households.

Appendix A-4 shows population density in Redondo Beach. Many of the areas of highest population density are located along the beach, which is where much of the multi-family housing is located. This has the potential to generate bicycle trips as housing is nearby many key community services. There are also areas of high population density in North Redondo Beach. Population density, measured as the number of persons per acre, is a strong indicator of potential bicycle activity, because more people living in an area implies more trips to and from that area. The high population densities of urbanized environments also tend to support bicycle travel through mixed land uses, interconnected street networks, and shorter trip lengths.

Appendix A-5 displays employment density in Redondo Beach. The highest employment densities are in South Redondo Beach near the beach, in North Redondo Beach along Marine Avenue, and in the eastern portion of the City along Hawthorne Boulevard. The high employment density near the beach is from general office land uses. Marine Avenue is concentrated with industrial uses and Hawthorne Boulevard has primarily commercial and service uses. These sites have the potential to generate bicycle activity, as they are located in environments with a variety of land uses where trips between uses can be shorter.

Appendix A-6, **Appendix A-7**, and **Appendix A-8** display the percent of zero-vehicle households, median annual income, and percent transit commuters by census tract. Redondo Beach has relatively high percentages of households without vehicles. The highest concentrations of these households are along the beach and in North Redondo Beach. Median annual household income is consistently between $55,001 and $75,000 (in 1999 dollars) throughout South Redondo Beach, while North Redondo Beach has

pockets where median annual household income is between $75,001 and $95,000. These are in the west on the border of Hermosa Beach and in the north nearer to the border.

The highest percentages of transit commuters are located in South Redondo Beach and the central portion of North Redondo Beach. These parts of the city have greater potential for increased bicycling activity because residents who do not have vehicles must use alternative modes and are likely to combine bicycle and transit trips.

In addition to the reasons discussed above, Redondo Beach has the potential for increased bicycle activity from bicyclists passing through on their way to destinations outside of the city. A bicycle network that is connected within Redondo Beach, as well as linked to bicycle facilities in adjacent communities, further generates bicycle traffic as it provides a viable transportation option to driving a motorized vehicle.

8.2.3 Relevant Plans and Policies

Table 8-1 outlines information regarding bicycles from the City of Redondo Beach's Circulation Element, Bicycle Transportation Plan Implementation, and Municipal Code.

Table 8-1: Redondo Beach Bicycle-Related Plans and Policies

Document	Description
General Plan Circulation Element (2009)	The Circulation Element contains the extensive network of existing and proposed bikeways shown in **Appendix F-5 and Appendix F-6** There are four proposed Class I bikeways, two proposed Class II bikeways, and 17 proposed Class III bikeways. These are meant to fill gaps in the system and improve connections. The element mentions a Redondo Beach Sustainability Plan, which has a goal to create bicycle lanes, paths, and storage. Other Circulation Element goals and policies include: • Promote alternative modes for residents and visitors • Provide bicycle parking and support facilities as a TDM strategy • Connect North and South Redondo Beach with bicycle facilities • Focus on bicycle access at transit stations, the waterfront, South Bay Galleria, Artesia Boulevard, Riviera Village, Pacific Coast Highway retail zones, and school zones • Reduce vehicle lanes to 10 feet on residential streets to accommodate bicycle lanes • Bike lanes: minimum five feet; Truck routes/bus routes: minimum 12 feet for vehicle travel lanes; Two-way left-turn lane: minimum 14 feet edge to edge; Combination parking lane/bike lane: minimum 13 feet • Increase the provision of bike lockers, bike racks, and lighting for bike facilities • Ensure that residents will be able to bike to key destinations, such as the beach • Conduct bike ability audits and periodic bicycle counts • Apply for Safe Routes to School grants
Bicycle Transportation Plan (2005)	This project implements Metro's 2006 Bicycle Transportation Strategic Plan Objective I, which is to improve access and mobility by encouraging bicycle accommodation in roadway improvements, and was submitted to Metro's 2009 Call for Projects for funding. It outlines the implementation of bicycle improvements in the City's Circulation Element. The project includes the design and construction of the following elements city-wide: • 2.1 miles of Class II bike lanes • 15.8 miles of Class III bike routes • 105 video-detection cameras • 101 pedestrian-push buttons • 295 bicycle-facility signs • 328 bike-lane symbols or sharrows • The widening of Lilienthal Lane for bicycle improvements • The narrowing of medians on Catalina Ave. from PCH to Beryl St. to provide bike lanes • The installation of a bicycle signal at westbound N. Juanita Avenue to N. Catalina at PCH where the intersection will be reconstructed to provide a bicycle-friendly cut-through at a cul-de-sac
Harbor and Pier Area Guiding Principles (2006)	These principles guide the development and activities in the area surrounding King Harbor and the Pier. Relevant principles include: • Ensure gateways to the Harbor and Pier area are attractive and active • Provide and enhance boating, water, recreation, entertainment, and sports related activity • Require development to be designed to encourage pedestrian activity and accommodate safe bike and pedestrian paths
Municipal Code	Bicycle parking requirements in the Municipal Code vary by the size of the development and type of land use as part of the City's transportation demand and trip reduction measures. Minimum parking requirements are based

Document	Description
	on square footage of the development. Developments of certain sizes are also required to provide information, such as bicycle maps. Detailed bicycle parking information is presented in **Appendix G**. The City prohibits riding bicycles on the sidewalk wherever it is determined by the Council that it creates a hazard to the public. It also prohibits riding bicycles on the Pier, on the west side of Esplanade between Knob Hill Ave and Pearl St., and in areas of high pedestrian traffic.

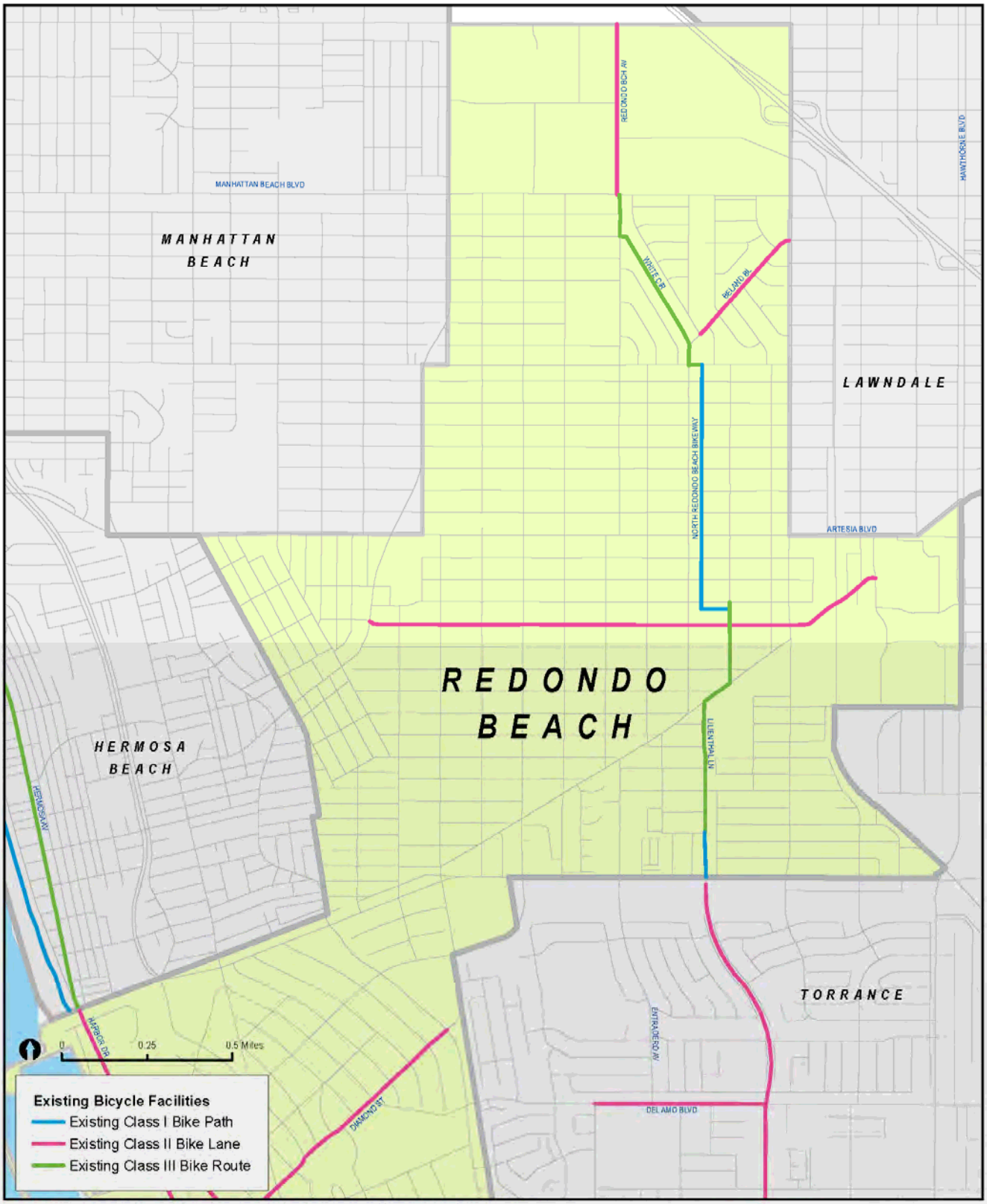


Figure 8-1: Existing Bicycle Facilities in North Redondo Beach

South Bay Bicycle Master Plan

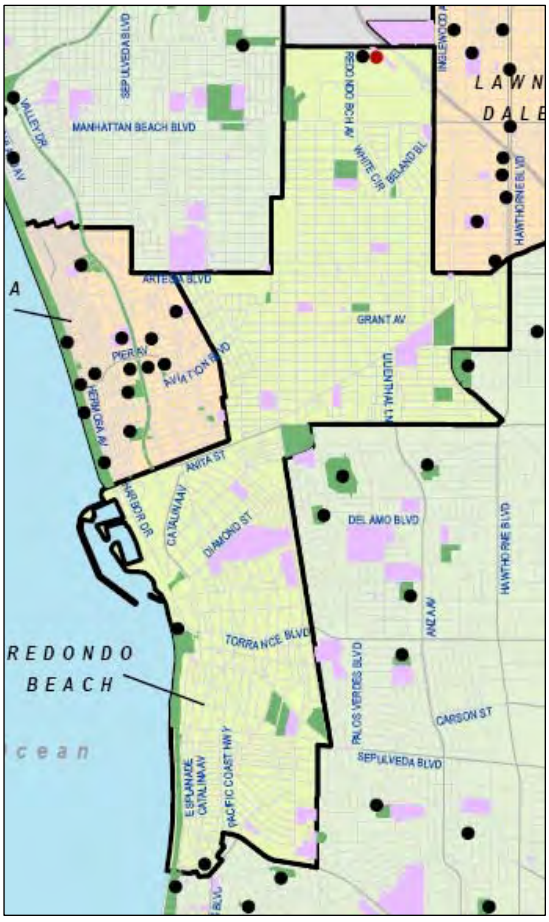
Figure 8-2: Existing Bicycle Facilities in South Redondo Beach

8.2.4 Existing Bicycle Network

Figure 8-1 and **Figure 8-2** show the existing bicycle facilities in Redondo Beach. **Appendix A-2** displays a map of the existing bicycle facilities in the South Bay Region. Bicycle facility types are discussed in **Section 1.3**. Redondo Beach has a 14 mile bicycle network that includes Class I, Class II, and Class III bikeways. Its Class I bike paths are a 0.9 mile segment of the North Redondo Beach Bikeway and the Los Angeles County-maintained Marvin Braude Bikeway. **Table 8-2** summarizes the classification and mileage of the existing network.

Table 8-2: Redondo Beach Bicycle Network

Facility Type	Mileage
Class I (Bike Path)	3.5
Class II (Bike Lanes)	5.9
Class III (Bike Route)	4.7
Total Mileage	**14.1**



Existing End-of-trip Facilities in Redondo Beach

(See Appendix A-9 for larger map)

- Existing Bike Racks
- Existing Bike Lockers

8.2.5 Existing End-of-Trip Parking Facilities

The BTA requires that this plan inventory publicly-accessible short-term and long-term end-of-trip bicycle facilities for the members of the bicycling public to park their bicycles, as well as change and store clothes and equipment. Short-term facilities consist of bicycle racks. Long-term facilities include, but are not limited to, locker, restroom, and shower facilities near bicycle parking facilities. Existing end-of-trip bicycle facilities in the South Bay are shown in Appendix A-9. Existing bicycle parking in Redondo Beach is shown at left. These locations include the Pier and the Riviera Village. Bicycle parking at transit stations is discussed in Section 8.2.7. Redondo Beach does not currently have any existing publicly-accessible long-term end-of-trip bicycle facilities.

8.2.6 Multi-Modal Connections

Transit is often best for longer trips, while bicycling is better for shorter trips. Combining transit use and bicycling can offer a high level of mobility that is comparable to travel by automobile. Appendix A-10 shows the existing Los Angeles Metropolitan Transit Authority (Metro) transit routes that serve the City of Redondo Beach. Metro operates bus lines with east-west routes in North Redondo Beach and north-south routes in South Redondo

Beach. Buses are equipped with bicycle racks, which are available on a first-come, first-served basis. Metro also operates the Green Line Light Rail, which has one station in North Redondo Beach on Marine Avenue. Passengers are allowed to bring bicycles on the Metro Rail.

Metro operates the Green Line Light Rail, which has one station in North Redondo Beach on Marine Avenue.

LADOT operates the Commuter Express bus service. Line 438 connects the cities of El Segundo, Manhattan Beach, Hermosa Beach, Redondo Beach, and Torrance to Downtown Los Angeles. Most Commuter Express buses are equipped with bicycle racks, which are available on a first-come, first-served basis. The Commuter Express Line 438 route map is shown in Appendix A-11.

The City of Redondo Beach operates Beach Cities Transit (BCT). It has three lines that connect Redondo Beach to El Segundo, Hermosa Beach, Manhattan Beach, and Torrance. Appendix A-13 shows the BCT System Map. BCT buses are equipped with bike racks, which are available on a first-come, first-served basis.

Torrance Transit Lines 3 and 8, operated by the City of Torrance, also serve the City of Redondo Beach. Appendix A-14 shows the Torrance Transit System Map. Buses are equipped with bike racks, which are available on a first-come, first-served basis.

The BTA requires that this plan inventory existing bicycle transport and parking facilities for connecting to public transit services. These facilities include, but are not limited to, bicycle parking at transit stops, rail and transit terminals, and park and ride lots; and provisions for transporting bicycles on public transit vehicles. The Marine Avenue Metro Green Line station provides both bicycle racks and lockers, which are shown on the previous page and in Appendix A-9. Bicycle locker rentals are $24 for a six month rental plus a $50 refundable security key deposit.

8.2.7 Education and Enforcement Strategies

Bicycle education programs and enforcement of bicycle-related policies help to make riding safer for all bicyclists. To promote safe bicycling, Redondo Beach regularly conducts child bicycle helmet safety awareness campaigns as part of the police department's annual work plan by:

- Conducting media outreach via cable television and the internet
- Working with the school district and crossing guards to distribute helmet safety info to kids
- Partnering with local businesses

- Distributing free coupons to kids who obey the law

Redondo Beach police officers use their discretion to conduct enforcement of bicycle rules. Typically, complaints about bicyclists who violate the law increase during summer months and the City focuses enforcement based upon these complaints. In response, the police department has conducted outreach prior to conducting enforcement operations. The outreach has included the following:

- Placement of message signboards at strategic locations to warn bicyclists of enforcement
- Providing targeted enforcement literature to local bike shops
- Posting information on bicycle blogs to inform bicyclists of pending enforcement details

Redondo Beach also conducted a bicycle rodeo in 2011 to promote safe bicycling to children.

Redondo Beach spent over $1.4 million between 2000 and 2010 to install bicycle facilities and bicycle support facilities.

Photo Source: Dan Burden/WALC Institute for Vitality City

8.2.8 Past Bicycle-Related Expenditures

The City of Redondo Beach has incurred the following bicycle expenditures between 2000 and 2010. The expenditures total to $1,457,365.

- $12,000 for a Class II facility on Catalina Ave (Esplanade to Beryl St) and a Class III facility on Esplanade (Knob Hill Ave to Catalina Ave) in 2008
- $1,422,465 for Class I, II, and III facilities for the North Redondo Beach Bikeway in 2008
- $7,000 for type D loops on Inglewood Ave (Artesia Blvd to Manhattan Beach Blvd) in 2009
- $7,500 for type D loops on Prospect Ave (Palos Verdes Blvd to Pearl St) in 2010
- $3,000 for type D loops as part of a residential rehabilitation project in 2010
- $3,000 for type D loops on Palos Verdes Blvd (Avenue F to East City Limits) in 2010
- $2,400 for bicycle racks at the Pier and Riviera Village between 2008 and 2010

8.3 Needs Analysis

This section describes the needs of bicyclists in Redondo Beach. It first summarizes feedback collected from the online survey and public workshops. The section also provides estimates and forecasts of bicycle commuting to determine the estimated bicycling demand in the city. It finally analyzes bicycle collision data between 2007 and 2009 to identify areas that would benefit from bicycle facility improvements.

8.3.1 Public Outreach

As mentioned in Chapter 1, the public had the opportunity to provide input in the planning process through an online survey and the first round of public workshops. This section summarizes locations in Redondo Beach that the community identified as desirable for bikeways.

The locations that the public identified the most frequently as needed bicycle facilities in Redondo Beach include the following:

- Aviation Boulevard
- Pacific Coast Highway
- King Harbor
- Prospect Avenue
- Torrance Boulevard

The locations that the public identified the most frequently as needed bicycle facilities in Redondo Beach included Prospect Avenue.

8.3.2 Bicycle Commuter Estimates and Forecasts

United States Census "Commuting to Work" data provides an indication of current bicycle system usage. **Appendix A-15** shows the percent bicycle commuters in Redondo Beach by census tract. The highest percentage of bicycle commuters is located in the southeastern portion of the City on the border with Torrance.

Table 8-3 presents commute to work data estimates reported by the 2000 US Census for Redondo Beach. For comparative purposes, the table includes commute to work data for the United States, California, and County of Los Angeles. According to the estimates, 0.8 percent of residents in Redondo Beach commute predominantly by bicycle. This is comparable with the percentage of bicycle commuters in California, and it is higher than Los Angeles County and the United States as a whole. It is important to note that this figure likely underestimates the true amount of bicycling that occurs in Redondo Beach for several reasons. Data reflects respondents' dominant commute mode and therefore does not capture trips to school, for errands, or other bike trips that would

supplant vehicular trips. Also, US Census data collection methods only enable a respondent to select one mode of travel, thus excluding bicycle trips if they constitute part of a longer multimodal trip. The percentage of commuters in Redondo Beach that commute by transit is much lower than that of those that drive alone. Redondo Beach also has a low percentage of carpooling and walking.

In addition to bicycle commuters in Redondo Beach, bicyclists from neighboring communities use the city's bicycle network to reach their destinations and are not reflected in this data. This Plan addresses the need for regional connectivity to accommodate bicyclists passing through Redondo Beach's bicycle network in **Section 8.4**.

Table 8-3: Means of Transportation to Work

Mode	United States	California	Los Angeles County	Redondo Beach
Bicycle	0.38%	0.83%	0.62%	0.81%
Drove Alone – car, truck, or van	75.70%	71.82%	70.36%	83.35%
Carpool – car, truck, or van	12.19%	14.55%	15.08%	7.43%
Transit	4.73%	5.07%	6.58%	1.47%
Walked	2.93%	2.85%	2.93%	1.41%
Other Means	0.70%	0.79%	0.76%	0.66%
Worked at Home	3.26%	3.83%	3.49%	4.27%

Source: US Census 2000

Table 8-4 presents an estimate of current bicycling within Redondo Beach using US Census data along with several adjustments for likely bicycle commuter underestimations, as discussed above. **Table 8-5** presents the associated air quality benefits from bicycling.

Table 8-4: Existing Bicycling Demand

Variable	Figure	Source
Existing study area population	63,261	2000 US Census, P1
Existing employed population	37,661	2000 US Census, P30
Existing bike-to-work mode share	0.8%	2000 US Census, P30
Existing number of bike-to-work commuters	305	Employed persons multiplied by bike-to-work mode share
Existing work-at-home mode share	4.3%	2000 US Census, P30
Existing number of work-at-home bike commuters	161	Assumes 10% of population working at home makes at least one daily bicycle trip
Existing transit-to-work mode share	1.5%	2000 US Census, P30
Existing transit bicycle commuters	138	Employed persons multiplied by transit mode share. Assumes 25% of transit riders access transit by bicycle
Existing school children, ages 6-14 (grades K-8)	5,650	2000 US Census, P8
Existing school children bicycling mode share	2.0%	National Safe Routes to School surveys, 2003.
Existing school children bike commuters	113	School children population multiplied by school children bike mode share
Existing number of college students in study area	5,136	2000 US Census, PCT24
Existing estimated college bicycling mode share	5.0%	Review of bicycle commute share in seven university communities (source: National Bicycling & Walking Study, FHWA, Case Study No. 1, 1995), review of bicycle commute mode share at the University of California, Los Angeles
Existing college bike commuters	257	College student population multiplied by college student bicycling mode share
Existing total number of bike commuters	974	Total bike-to-work, school, college and utilitarian bike trips. Does not include recreation.
Total daily bicycling trips	1,948	Total bicycle commuters x 2 (for round trips)

Table 8-5: Existing Bicycling Air Quality Impact

Variable	Figure	Source
Current Estimated VMT Reductions		
Reduced Vehicle Trips per Weekday	587	Assumes 73% of bicycle trips replace vehicle trips for adults/college students and 53% for school children
Reduced Vehicle Trips per Year	153,321	Reduced weekday vehicle trips x 261 (weekdays / year)
Reduced Vehicle Miles per Weekday	4,280	Assumes average round trip travel length of 5 miles for adults/college students and 1 mile for schoolchildren
Reduced Vehicle Miles per Year	1,117,149	Reduced weekday vehicle miles x 261 (weekdays / year)
Current Air Quality Benefits		
Reduced Hydrocarbons (lbs/wkday)	13	Daily mileage reduction x 1.36 grams / mi
Reduced PM10 (lbs/wkday)	0	Daily mileage reduction x 0.0052 grams / mi
Reduced PM2.5 (lbs/wkday)	0	Daily mileage reduction x 0.0049 grams / mi
Reduced NOX (lbs/wkday)	9	Daily mileage reduction x 0.95 grams / mi
Reduced CO (lbs/wkday)	117	Daily mileage reduction x 12.4 grams / mi
Reduced C02 (lbs/wkday)	3,482	Daily mileage reduction x 369 grams / mi
Reduced Hydrocarbons (lbs/yr)	3,350	Yearly mileage reduction x 1.36 grams / mi
Reduced PM10 (lbs/yr)	13	Yearly mileage reduction x 0.0052 grams / mi
Reduced PM2.5 (lbs/yr)	12	Yearly mileage reduction x 0.0049 grams / mi
Reduced NOX (lbs/yr)	2,340	Yearly mileage reduction x 0.95 grams / mi
Reduced CO (lbs/yr)	30,540	Yearly mileage reduction x 12.4 grams / mi
Reduced $C0_2$ (lbs/yr)	908,807	Yearly mileage reduction x 369 grams / mi

Source:

Emissions rates from **EPA report 420-F-05-022** *Emission Facts: Average Annual Emissions and Fuel Consumption for Gasoline-Fueled Passenger Cars and Light Trucks.* 2005.

Table 8-6 presents projected year 2030 bicycling activity within Redondo Beach using California Department of Finance population and school enrollment projections. The projection contains the assumption that bicycle mode share will double by 2030, due in part to bicycle network implementation. Actual bicycle mode share in 2030 will depend on many factors, including the extent of network implementation. Table 8-7 presents the associated year

2030 air quality benefit forecasts. The calculations follow in a straightforward manner from the Projected Year 2030 Bicycling Demand.

Table 8-6: Projected Year 2030 Bicycling Demand

Variable	Figure	Source
Future study area population	78,724	Calculated based on CA Dept. of Finance, *Population Projections for California and Its Counties 2000-2050.*
Future employed population	46,866	Calculated based on CA Dept. of Finance, *Population Projections for California and Its Counties 2000-2050*,
Future bike-to-work mode share	1.6%	Double the rate from 2000 US Census, P30
Future number of bike-to-work commuters	759	Employed persons multiplied by bike-to-work mode share
Future work-at-home mode share	8.0%	Calculated based on change in mode share from 1990 US Census, P49, to 2000 US Census, P30
Future number of work-at-home bike commuters	376	Assumes 10% of population working at home makes at least one daily bicycle trip
Future transit-to-work mode share	2.9%	Double the rate from 2000 US Census, P30
Future transit bicycle commuters	344	Employed persons multiplied by transit mode share. Assumes 25% of transit riders access transit by bicycle
Future school children, ages 6-14 (grades K-8)	4,490	Calculated from CA Dept. of Finance, *California Public K–12 Graded Enrollment and High School Graduate Projections by County, 2010 Series.*
Future school children bicycling mode share	4.0%	Double the rate of national school commute trends. National Safe Routes to School surveys, 2003.
Future school children bike commuters	180	School children population multiplied by school children bicycling mode share
Future number of college students in study area	6,391	Calculated based on CA Dept. of Finance, Population Projections for California and Its Counties 2000-2050, Sacramento, California, July 2007.
Future estimated college bicycling mode share	7.0%	A slight increase over the existing college bicycle mode share assumption, commensurate with projected increases in bicycling for other populations
Future college bike commuters	447	College student population x college student bicycling mode share
Future total number of bike commuters	2,107	Total bike-to-work, school, college and utilitarian biking trips. Does not include recreation.
Total daily bicycling trips	4,214	Total bike commuters x 2 (for round trips)

Table 8-7: Projected Year 2030 Bicycling Air Quality Impact

Variable	Figure	Source
Forecasted VMT Reductions		
Reduced Vehicle Trips per Weekday	1,251	Assumes 73% of biking trips replace vehicle trips for adults/college students and 53% for school children
Reduced Vehicle Trips per Year	326,430	Reduced number of weekday vehicle trips x 261 (weekdays / year)
Reduced Vehicle Miles per Weekday	9,339	Assumes average round trip travel length of 8 miles for adults / college students and 1 mile for schoolchildren
Reduced Vehicle Miles per Year	2,437,547	Reduced number of weekday vehicle miles x 261 (weekdays / year)
Forecasted Air Quality Benefits		
Reduced Hydrocarbons (lbs/wkday)	28	Daily mileage reduction x by 1.36 grams / mi
Reduced PM10 (lbs/wkday)	0	Daily mileage reduction x by 0.0052 grams / mi
Reduced PM2.5 (lbs/wkday)	0	Daily mileage reduction x by 0.0049 grams / mi
Reduced NOX (lbs/wkday)	20	Daily mileage reduction x by 0.95 grams / mi
Reduced CO (lbs/wkday)	255	Daily mileage reduction x by 12.4 grams / mi
Reduced $C0_2$ (lbs/wkday)	7,598	Daily mileage reduction x by 369 grams / mi
Reduced Hydrocarbons (lbs/yr)	7,308	Yearly mileage reduction x by 1.36 grams / mi
Reduced PM10 (lbs/yr)	28	Yearly mileage reduction x by 0.0052 grams / mi
Reduced PM2.5 (lbs/yr)	26	Yearly mileage reduction x by 0.0049 grams / mi
Reduced NOX (lbs/yr)	5,105	Yearly mileage reduction x by 0.95 grams / mi
Reduced CO (lbs/yr)	66,636	Yearly mileage reduction x by 12.4 grams / mi
Reduced CO_2 (lbs/yr)	1,982,959	Yearly mileage reduction x by 369 grams / mi

Source:

Emissions rates from **EPA report 420-F-05-022** *Emission Facts: Average Annual Emissions and Fuel Consumption for Gasoline-Fueled Passenger Cars and Light Trucks.* 2005.

This model uses the latest state projections for population growth and reasonable assumptions about future bicycle ridership. The benefits model predicts that the total number of bicycle commute trips could increase from the current daily estimate of about 2,000 to approximately 4,200, resulting in a substantial reduction of both

Vehicle Miles Traveled (VMT) and associated emissions. This includes a yearly emissions reduction by 2030 of approximately 5,100 pounds of smog forming N0X and roughly 2 million pounds of $C0_2$, the principal gas associated with global climate change. Providing bicycle facilities will encourage new bicyclists to begin to ride, thus positively impacting air quality by reducing harmful pollutants from driving motorized vehicles. Because this plan recommends local connections throughout and regional links between the participating cities, it has the potential to have even greater air quality benefits. Bicyclists may not need to rely as heavily on vehicles for transportation because bicycling will be a viable transportation alternative upon implementation of this Plan.

8.3.3 Bicycle Counts

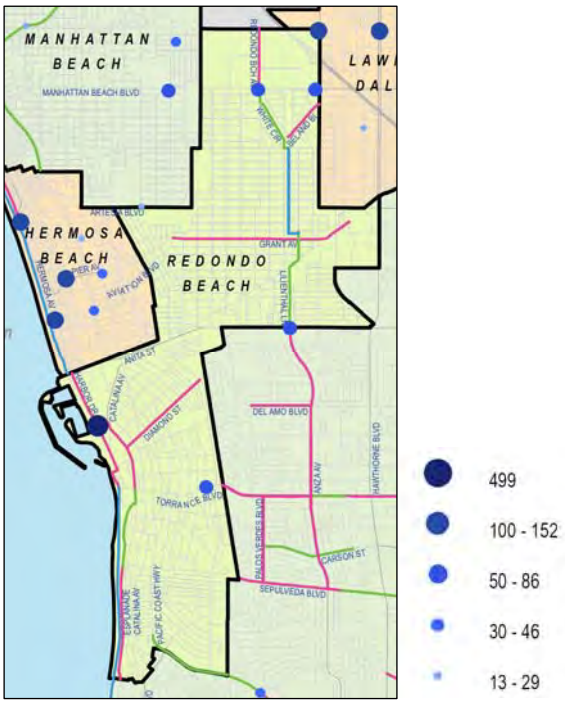
To assess bicycling levels at different sites throughout Redondo Beach, volunteers conducted bicycle counts, in which they manually recorded the number of bicyclists that rode by.

8.3.3.1 Methodology

The methodology for the bicycle counts derives from the National Bicycle and Pedestrian Documentation Project (NBPD), a collaborative effort of Alta Planning + Design and the Institute of Transportation Engineers. The NBPD methodology aims to capture both utilitarian bicycling and recreational bicycling. The NBPD also provides guidance on how to select count locations.

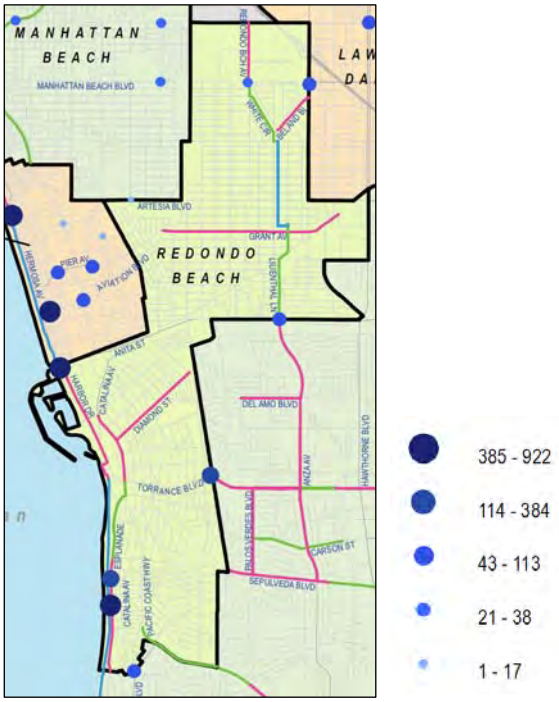
Volunteers conducted bicycle counts in each of the seven participating cities in the South Bay on Thursday, November 4, 2010 from 3:00 p.m. to 6:00 p.m. and Saturday, November 6, 2010 from 10:30 a.m. to 1:30 p.m. These dates are meant to capture volumes of bicyclists on a typical weekday and weekend day. Fall is an appropriate time to conduct bicycle counts in California because school is back in session and vacations are typically over. In Redondo Beach, volunteers were stationed at three stations on Thursday and five stations on Saturday. There were 36 total locations in the South Bay region on each day.

The count locations were selected in partnership by city staff, Alta Planning + Design, Los Angeles County Bicycle Coalition staff, and South Bay Bicycle Coalition board members. This snapshot of locations is meant to capture a diverse bicycling population using the roads and streets that span the spectrum of bike-friendliness.



Weekday Bicycle Count Results in Redondo Beach

(See Appendix A-16 for a larger map and Appendix H for a list of count locations.)



Weekend Bicycle Count Results in Redondo Beach

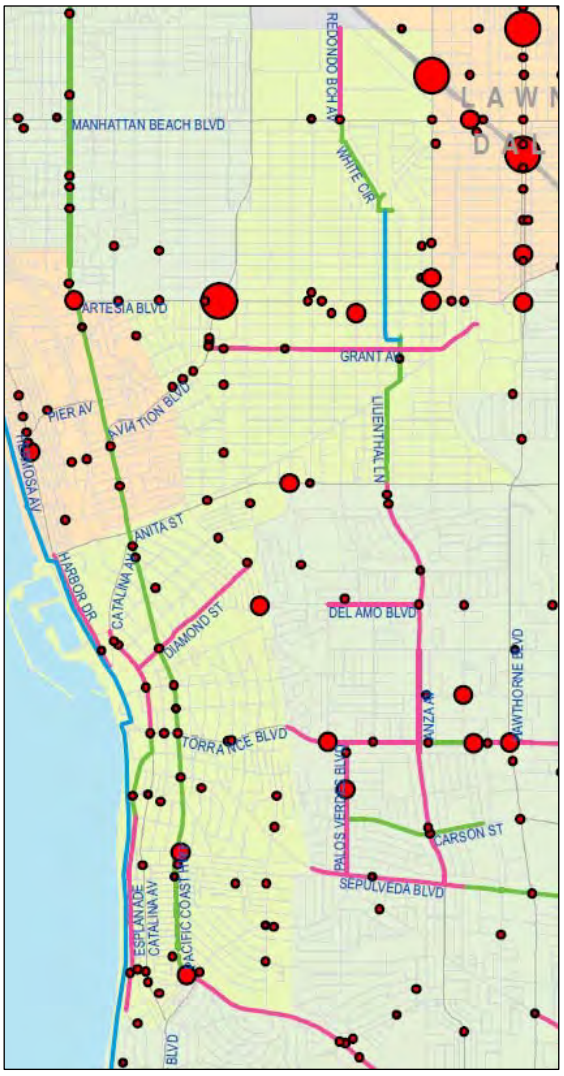
(See Appendix A-17 for a larger map and Appendix H for a list of count locations.)

8.3.3.2 Results

The count results for the South Bay are displayed in **Appendix A-16** and **Appendix A-17**. Count results for Redondo Beach are shown at right. Detailed count data, including a list of count locations, is presented in **Appendix H.** On Thursday, the Redondo Beach station that experienced the highest volume was Harbor Drive and Beryl Street with 499 bicyclists during the three hour count period. The other two stations had fewer than 100 bicyclists each. The station with the most bicyclists on Saturday was Herondo Street and the Strand with 732 bicyclists during the three hour count period.

On both days, the locations with the highest numbers of bicyclists in the South Bay region as a whole were those along the Strand on the County-maintained Marvin Braude Bikeway. Apart from the Strand stations, the inland count locations in Lawndale and Gardena experienced the most riders during the week. On the weekend, there were overall fewer riders in the inland count stations and more riders along the coast. This suggests that more bicyclists ride a bicycle for commuting during the week and for recreation on the weekend.

In the region as a whole, about 83 percent of bicyclists were male. Approximately 70 percent of those observed did not wear helmets and 41 percent rode on the sidewalks. On Thursday, there were 18 locations at which over half of the observed bicyclists rode on the sidewalk and on Saturday there were nine. Riding on the sidewalk can be an indicator of a lack of bicycle facilities, as bicyclists that are uncomfortable riding with traffic may choose to ride on the sidewalk instead.



Bicycle Collisions in Redondo Beach 2007-2009

(See Appendix A-18 for larger map)

8.3.4 Bicycle Collision Analysis

Safety is a major concern for both existing and potential bicyclists. Concern about safety is the most common reason given for not riding a bicycle (or riding more often), according to national surveys. Identifying bicycle collision sites can draw attention to areas that warrant improvement, particularly if multiple collisions occur at the same location. This analysis employs the most reliable data source available, the California Highway Patrol's Statewide Integrated Traffic Records System. The data set only includes reported collisions, and so represents a subset of all the bicycle collisions in Redondo Beach. This data does not include any assessment of conditions present at the time of the collision. There are numerous factors that may contribute to a given incident

including but not limited to time of day, visibility, distractions, obstacles or traffic law obedience. This data simply reflects reported incidents, resulting injuries and the party at fault. This data does not infer faulty infrastructure, but rather provides a baseline of collisions that often decreases in correlation with bike plan implementation and the improvements to facilities and road user behavior and awareness that accompanies it. Fault as determined by law enforcement is discussed below.

Table 8-8 presents the number of reported collisions involving bicyclists, number of bicyclists involved, and severity of the bicycle collisions for three consecutive years: 2007, 2008, and 2009. **Appendix A-18** shows locations of bicycle collisions in the South Bay region in the same time period. Bicycle collisions in Redondo Beach are shown on the preceding page. There were 80 total reported collisions involving bicyclists from 2007-2009 in the City of Redondo Beach. There were four collisions at the intersection of Artesia Boulevard and Aviation Boulevard, on the border of Manhattan Beach and Redondo Beach. There were also 12 collisions on Artesia Boulevard and 14 collisions on Pacific Coast Highway.

Table 8-8: Bicycle Collision Data 2007-2009

Total Crashes Involving Bicyclists	Number of Bicyclists Involved	Persons Injured	Persons Severely Injured	Persons Killed
80	84	80	3	0

Source: California Highway Patrol, Statewide Integrated Traffic Records System (SWITRS)

As reported by police officers in traffic reports, bicyclists were at fault in 48 percent of collisions involving bicycles (38 crashes) in this time period.

Providing bicycle facilities encourages more people to ride. When motorists begin to look for and expect to see bicyclists, collisions between vehicles and bicyclists are reduced. The City of New York, for example, reported that as ridership increased between 1998 and 2008, the number of annual casualties from bicycle collisions decreased (see **Appendix B**).

Appendix A-1 displays estimated weekday traffic volumes in Redondo Beach. The streets with the highest volumes of vehicles are Aviation Boulevard, Inglewood Avenue, Pacific Coast Highway, Manhattan Beach Boulevard, Artesia Boulevard, and 190th Street. Artesia Boulevard, Aviation Boulevard, and Pacific Coast Highway all had a high number of collisions involving bicycles. Pacific Coast

Highway is the only high volume street with a bicycle facility; it has a Class III bike route. Bicyclists must share lanes with vehicular traffic, creating the potential for conflicts between the two modes. Installing bicycle facilities, especially on major arterials, could reduce the number and severity of collisions involving bicyclists.

8.4 Proposed Bicycle Network

This section presents the proposed bicycle network for the City of Redondo Beach, which includes bicycle parking facilities. Upon implementation of the proposed network, the City should coordinate and collaborate with adjacent participating South Bay cities to emphasize a regional bicycle network. Bicycle facilities discussed in this Plan are described in **Section 1.3** and shown in **Figure 1-3** and **Figure 1-4**. **Appendix C** outlines the recommended standards for each facility classification as compared to minimum standards. In addition to creating a comprehensive network of bikeways in Redondo Beach, the recommended system ties into the proposed bicycle facilities for the other South Bay participating cities to create a connected regional network. This will give bicyclists from adjacent communities the opportunity to pass through Redondo Beach to reach their destinations without losing bicycle facilities at city boundaries. Bikeway recommendations are also based on the existing City bicycle plans, public input, topography, traffic volumes, and traffic speeds.

The proposed bikeway network in the City of Redondo Beach consists of Class I Bike Paths, Class II Bike Lanes, Class III Bike Routes, and Bike Friendly Streets.

8.4.1 Proposed Bikeway Facilities

The proposed bikeway network in the City of Redondo Beach consists of Class I Bike Paths, Class II Bike Lanes, Class III Bike Routes, and Bike Friendly Streets, and is shown in **Figure 8-3** and **Figure 8-4.** The proposed bicycle network in Redondo Beach connects with the recommended networks in Manhattan Beach, Hermosa Beach, Lawndale, and Torrance. **Figure 8-3** shows blue asterisks on the proposed path along the Metro Green Line Extension as it is outside the jurisdiction of this Plan, but is a supported improvement. The proposed bicycle network for the South Bay region as a whole is presented in **Appendix A-19**.

Four tables identify the streets on which facilities are proposed, the extents of each proposed facility, and the length in miles of each proposed facility. **Table 8-9** lists the proposed bicycle paths, **Table 8-10** lists the proposed bicycle lanes, **Table 8-11** lists the proposed bicycle routes, and **Table 8-12** lists the proposed bicycle-friendly streets.

Table 8-9: Proposed Class I Bicycle Paths in Redondo Beach

Street	From	To	Miles
Harbor Dr	Herondo St	Existing Bike Path	0.8
Flagler Ln	Towers St	Diamond St	0.1
Total Bicycle Path Mileage			**0.8**

Table 8-10: Proposed Class II Bicycle Lanes in Redondo Beach

Street	From	To	Miles
Prospect Ave	North City Limits	Pacific Coast Highway	3.0
Knob Hill Ave	Esplanade	Pacific Coast Highway	0.4
Torrance Blvd	West End	East City Limits	0.9
Inglewood Ave	Marine Ave	Ripley Ave	1.8
Artesia Blvd	West City Limits	Hawthorne Blvd	2.3
Catalina Ave	Torrance Blvd	Palos Verdes Blvd	1.6
Juanita Ave - Del Amo Blvd	Diamond St	East City Limits	0.3
Marine Ave	Aviation Blvd	Inglewood Ave	1.0
Ripley Ave	Lilienthal Ln	Inglewood Ave	0.3
Beryl St	Harbor Dr	190th St	1.5
Catalina Ave	Pacific Coast Highway	Beryl St	0.5
Sepulveda Blvd	Prospect Ave	West City Limits	0.3
Avenue I	Esplanade	Catalina Ave	0.1
Manhattan Beach Blvd	Aviation Blvd	Inglewood Ave	1.0
Herondo St	Harbor Dr	Pacific Coast Highway	0.4
Lilienthal Ln	Ripley Ave	Fisk Ln	0.4
Aviation Blvd	Marine Ave	Harper Ave (City Limit)	1.7
190th St	Blossom Ln	East City Limits	1.3
Redondo Beach Blvd	Artesia Blvd	Hawthorne Blvd	0.2
Total Bicycle Lane Mileage			**18.9**

Table 8-11: Proposed Class III Bicycle Routes in Redondo Beach

Street	From	To	Miles
Ripley Ave	Flagler Ln	Lilienthal Ln	0.9
Emerald St	Catalina Ave	Prospect Ave	0.7
Yacht Club Way	West end	Harbor Dr	0.1
Portofina Way	West end	Harbor Dr	0.2
Ford Ave - Herrin St - Ormond Ln	Artesia Blvd	Aviation Blvd	0.5
Sepulveda Blvd	Torrance Blvd	Prospect Ave	0.7
182nd St	Felton Ave	Hawthorne Blvd	0.6

Street	From	To	Miles
Kingsdale Ave	Artesia Blvd	182nd St	0.5
Anita St	Pacific Coast Highway	Blossom Ln	0.9
Francisca Ave	Herondo St	Catalina Ave	0.3
Palos Verdes Blvd	South City Limits	East City Limits	0.9
Knob Hill Ave	Pacific Coast Highway	Sepulveda Blvd	0.5
Juanita Ave	Pacific Coast Highway	Diamon	0.5
Flagler Ln	Anita St	Beryl St	0.2
Beland Bl - Phelan Ln	Barkley Ln	White Circle	0.1
Total Bicycle Route Mileage			**7.5**

Table 8-12: Proposed Bicycle Friendly Streets in Redondo Beach

Street	From	To	Miles
Flagler Ln - Diamond St	Beryl St	Prospect Ave	0.1
Flagler Ln	Artesia Blvd	Anita St	1.0
Ave C - Juanita Ave - Ave D - Helberta Ave	Esplanade	Prospect Ave	0.9
Warfield Ave	Aviation Blvd	Redondo Beach Ave	0.5
Vanderbilt Ln	Flagler Ln	Inglewood Ave	1.0
Rindge Ln	Warfield Ave	190th St	1.9
Ralston Ln - Firmona Ave	Meyer Ln	190th St	0.9
Mathews Av	Aviation Way	Inglewood Ave	1.1
Voorhees Ave	Aviation Blvd	Inglewood Ave	1.1
Robinson St	Aviation Blvd	Inglewood Ave	1.1
Meyer Ln	Ripley Ave	190th St	0.3
Helberta Ave - El Redondo	Vincent St	Torrance Blvd	0.5
Farrell Ave	Aviation Blvd	Rindge Ln	0.3
Total Bicycle-Friendly Street Mileage			**10.9**

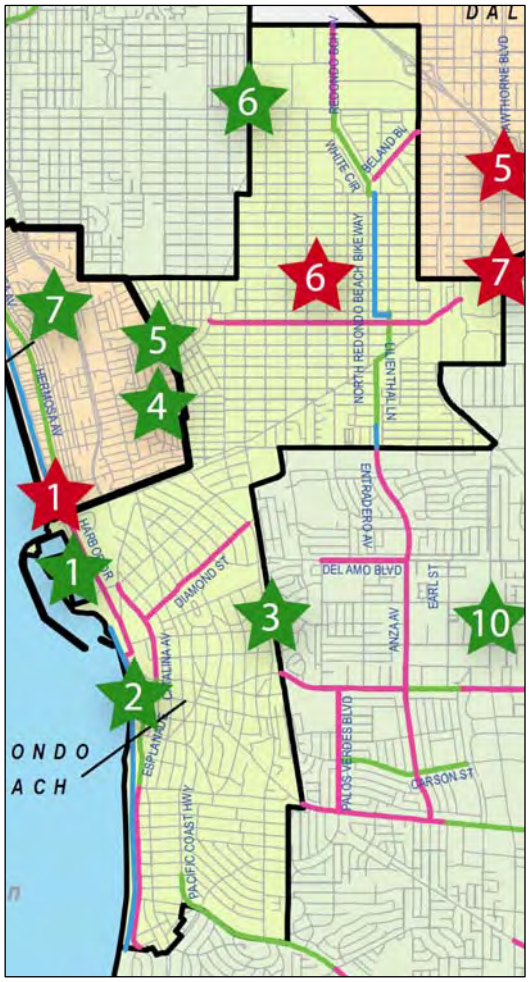
There are several opportunities and constraints to recommending new bicycle facilities in Redondo Beach. These are shown on the following page and are referenced by the numbers in **Appendix I**. **Appendix I** also presents opportunities and constraints in the South Bay region as a whole.

Opportunities include a proposed Class I bikeway on Harbor Drive, a proposed Class II bikeway on Catalina Avenue, and a proposed Class III bikeway on Prospect Avenue: See Vitality City's Livability Plan for further detail.

One constraint is "The Wall" on the Strand at the border of Hermosa Beach and Redondo Beach. This wall severs the Marvin Braude Bikeway at the Hermosa Beach-Redondo Beach border. South-bound bicyclists are forced to make a sharp 90-degree turn and are led out to the bike lanes on Harbor Drive. This plan recommends the removal of the wall and that parking lot 13 in Redondo Beach be partially utilized to accommodate a short extension of the Class I facility that will lead to Harbor Drive in a safer and more navigable way.

A second constraint is a proposed Class II bikeway on Artesia Boulevard. Artesia Boulevard between Aviation Boulevard and the city's eastern boundary has undergone an extensive streetscape improvement in recent history. These improvements included an extensively landscaped center median and bulb-outs. As such, this facility is one that can be considered in any future streetscape improvements that might be implemented along Artesia Boulevard in the years to come.

A third constraint is a proposed Class II bikeway along Redondo Beach Boulevard from Hawthorne Boulevard to Artesia Boulevard in Lawndale/Redondo Beach. This segment experiences high vehicular traffic volumes due to the South Bay Galleria, which creates a challenging environment for bicyclists. Upon plan implementation, Lawndale and Redondo Beach should work together to design a facility that provides safety for bicyclists.



Opportunities and Constraints in Redondo Beach

(See Appendix I for larger map)

Opportunity

Constraint

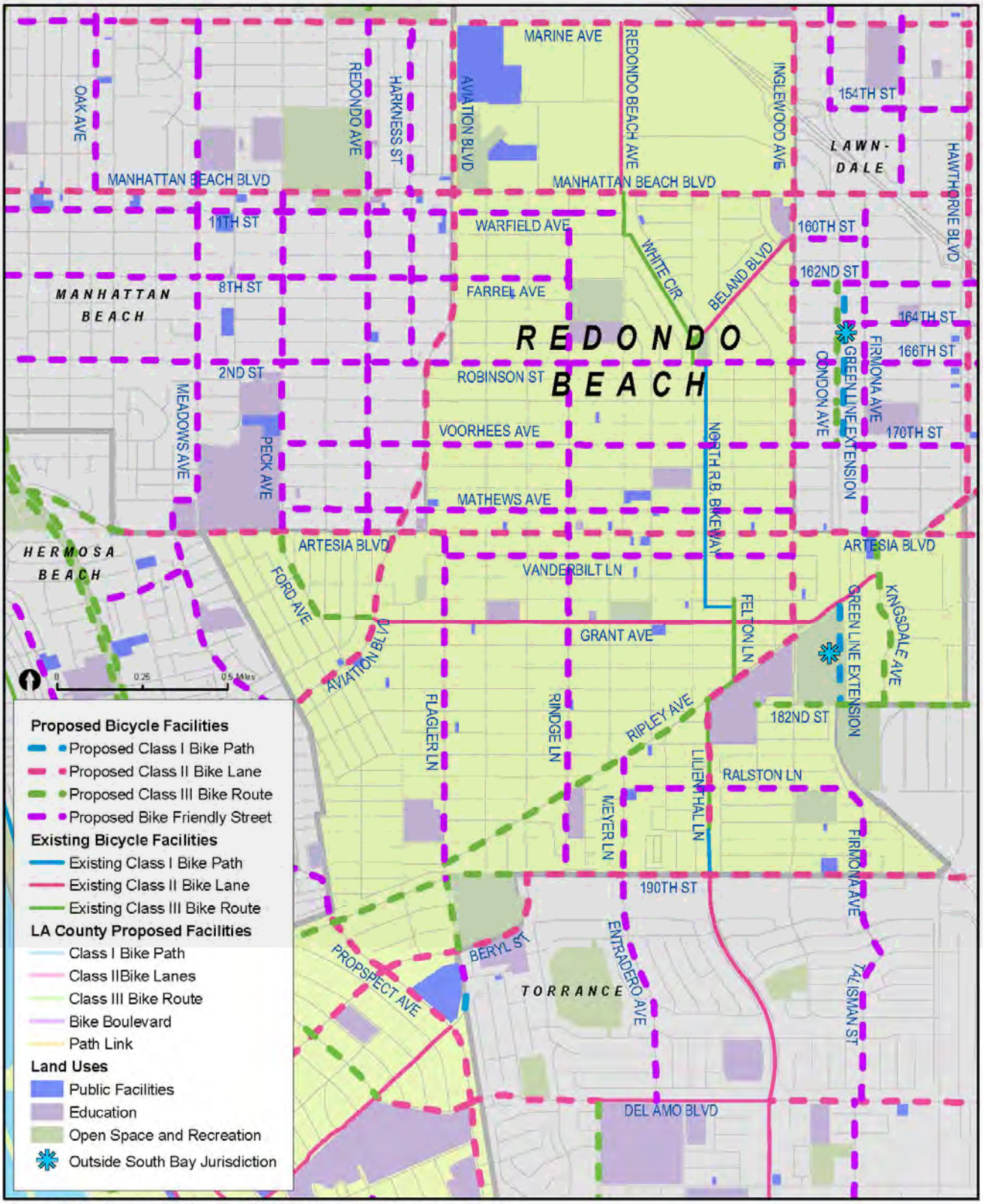


Figure 8-3: Proposed Bicycle Facilities in North Redondo Beach

South Bay Bicycle Master Plan

El Segundo - Gardena - Hermosa Beach - Lawndale - Manhattan Beach - Redondo Beach - Torrance

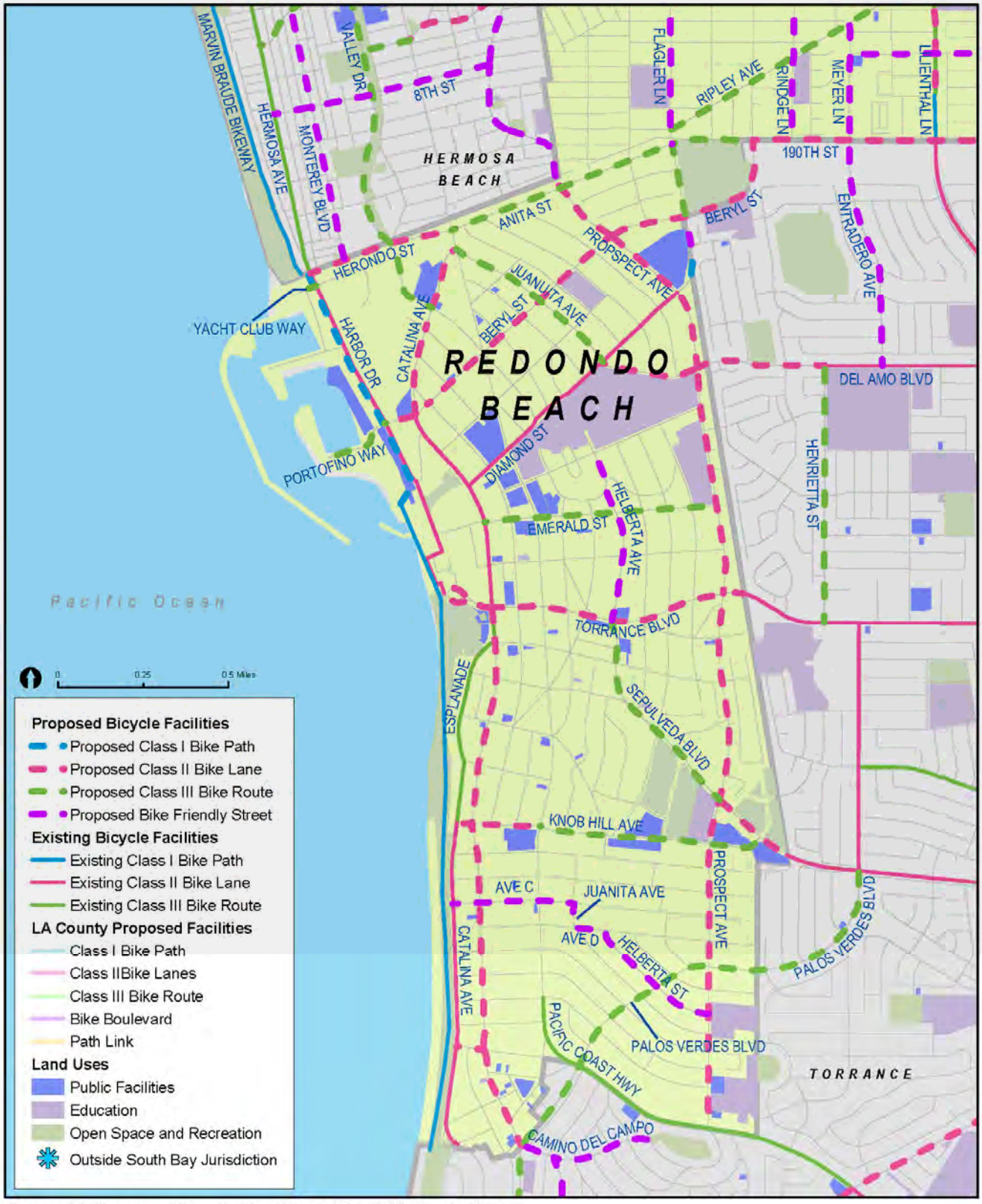


Figure 8-4: Proposed Bicycle Facilities in South Redondo Beach

South Bay Bicycle Master Plan

8.4.2 Proposed End-of-Trip Bicycle Facilities

Support facilities and connections to other modes of transportation are essential components of a bicycle system because they enhance safety and convenience for bicyclists at the end of every trip. With nearly all utilitarian and many recreational bike trips, bicyclists need secure and well-located bicycle parking. A comprehensive bicycle parking strategy is one of the most important things that a jurisdiction can apply to immediately enhance the bicycling environment. Moreover, a bicycle parking strategy with connections to public transit will further the geographical range of residents traveling without using an automobile.

Redondo Beach should amend its Municipal Code to include requirements on types of both short- and long-term bicycle parking facility designs.

The Redondo Beach Municipal Code currently provides bicycle parking requirements for non-residential developments. The City should amend its Municipal Code to include bicycle parking requirements at new and retrofitted multi-family residential, commercial, office, and mixed-use developments of all sizes. The Municipal Code should also require bicycle parking quantities based on square footage of developments or by number of employees/residents to adequately address the bicycle demand at each development.

Redondo Beach should also amend its Municipal Code to include requirements on types of both short- and long-term bicycle parking facility designs, which are shown in **Appendix J**. Bicycle rack designs should include racks that provide two points of contact with the bicycle so that it can be locked from both the front wheel/frame and the rear wheel. This will provide a high degree of security and support for the bicycle. Long-term bicycle parking should be in the form of:

- Covered, lockable enclosures with permanently anchored racks for bicycles
- Lockable bicycle rooms with permanently anchored racks or
- Lockable, permanently anchored bicycle lockers

When people commute by bicycle they often sweat or become dirty from weather or road conditions. Providing changing and storing facilities encourages commuters to travel by bicycle because they have a place to clean up before work or school. Redondo Beach's Municipal Code should require all new mid-to-large employers, offices, and businesses to supply changing and storing facilities, such as by providing showers and clothes lockers within the

buildings or arranging agreements with nearby recreation centers to allow commuters to use their facilities.

Proposed end-of-trip bicycle facilities in Redondo Beach are shown in **Figure 8-5** and **Figure 8-6.** The City should continue to provide short-term bicycle parking in the form of bicycle racks at all major trip attractors, including commercial and civic activity centers and transit hubs, and ensure that an adequate supply is available. The City should prioritize the installation of bicycle parking throughout the city, with particular attention directed at the following locations:

- Parks
- Schools
- Commercial/office areas
- Civic/government buildings
- Public transit stations

High-activity locations such as transit stations, offices, and major commercial districts should provide more secure, long-term bicycle parking options, such as bicycle lockers. Any future transit hubs and intermodal facilities should include secure bicycle parking areas as part of their design. Secure bicycle parking areas that provide services, such as bicycle rentals and repair, should be considered at major transit stations and commuter destinations.

High-activity locations such as transit stations, offices, and major commercial districts should provide more secure, long-term bicycle parking options, such as bicycle lockers.

8.5 Project Costs

This section presents the cost to implement the proposed bicycle network in Redondo Beach.

8.5.1 Cost Estimates

Table 8-13 displays the planning-level capital cost assumptions for each facility type proposed in this plan and **Table 8-14** displays the cost to implement the proposed network in the City of Redondo Beach from the cost assumptions.[24] Cost assumptions are based on LA County averages and may vary depending on environmental conditions of a given facility, unforeseen construction cost variations, and similar considerations. Cost assumptions exclude specific treatments that may vary by location and must be determined by field review, such as traffic calming measures, restriping of existing travel lanes, and sign removal.

[24] **Table 8-14** assumes the cost of implementing Class III Bicycle Routes with Sharrows based on the policies presented in **Chapter 2**

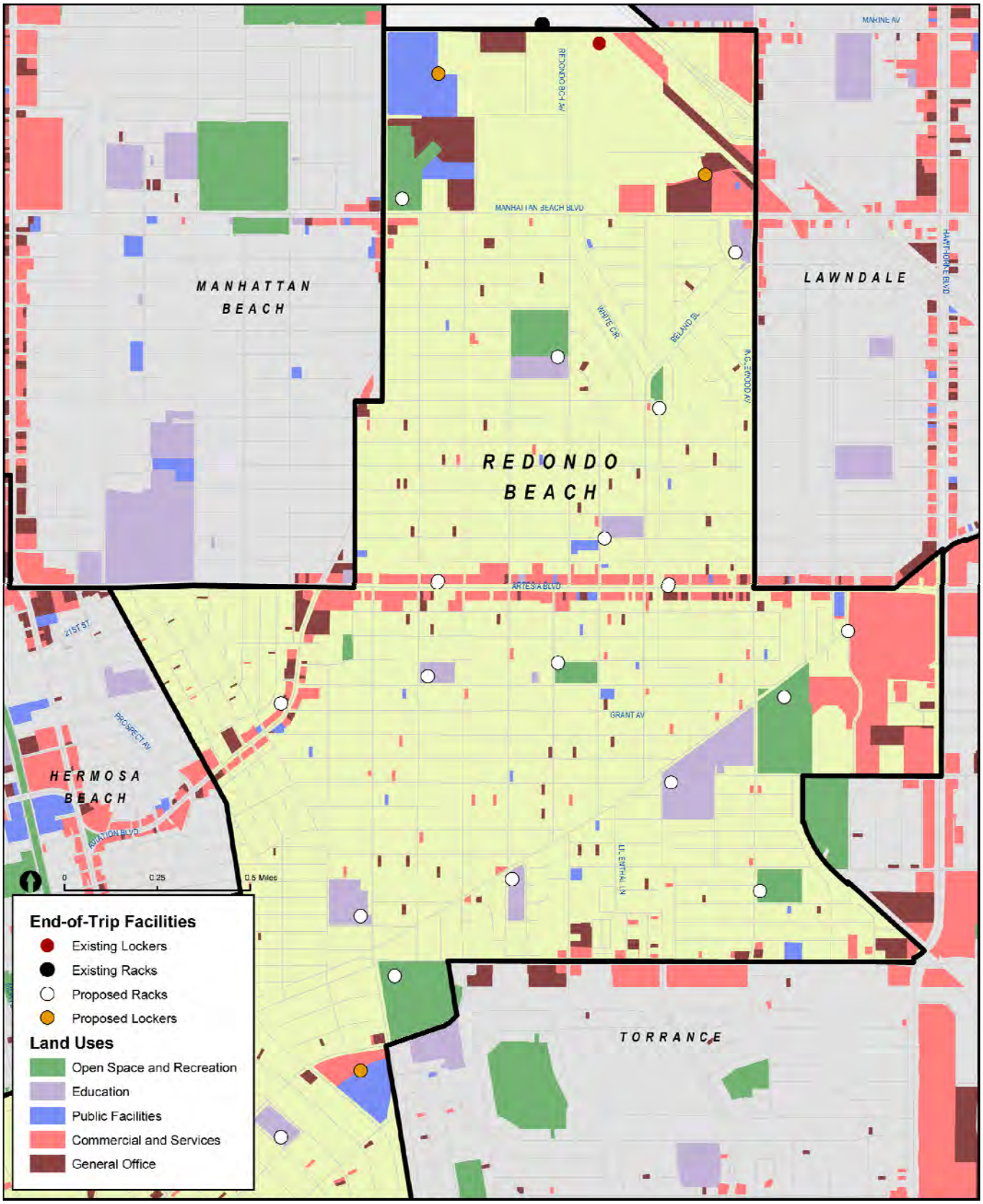


Figure 8-5: North Redondo Beach Proposed End-of-Trip Facilities

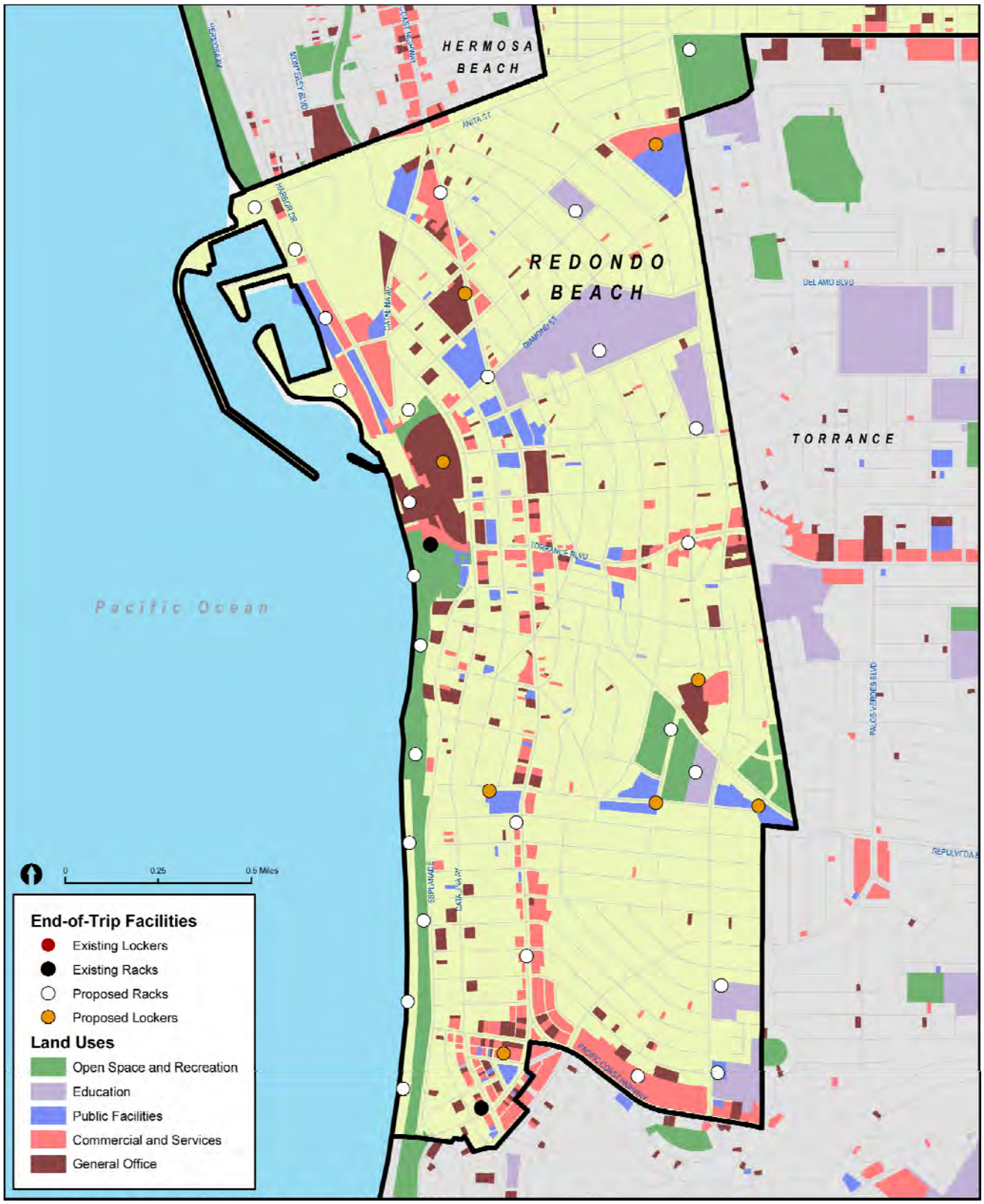


Figure 8-6: South Redondo Beach Proposed End-of-Trip Facilities

Cost assumptions do not include traffic signal improvements, such as changes to phasing, recalibration of loop detectors, or installation of push buttons. For detailed cost estimations, refer to the project sheets presented in **Section 8.7**.

Table 8-13: Unit Cost Estimates for Proposed Bicycle Facility Types

Facility Type	Description	Estimated Cost
Class I Bicycle Path	Paving, striping and signage	$800,000 / mile
Class II Bicycle Lanes (two sides)	Striping, signage, and travel lane restriping	$40,000 / mile
Class III Bicycle Routes (two sides)	Signage	$15,000 / mile
Class III Bicycle Routes (two sides) with sharrows	Pavement markings and signage	$25,000 / mile
Bicycle Friendly Street	Pavement markings, signage, and limited traffic calming	$30,000 / mile

Table 8-14: Estimated Cost of Proposed Bicycle Network

Facility Type	Unit Cost per mile	Length of Proposed Network (miles)	Cost
Bicycle Path	$800,000	0.8	$ 672,000
Bicycle Lane	$40,000	15.9	$ 636,000
Bicycle Route with sharrows	$25,000	10.4	$ 259,000
Bicycle-Friendly Street	$30,000	10.9	$ 328,000
Total		**38.0**	**$ 1,895,000**

8.6 Project Prioritization

A prioritized list of bicycle projects will help guide the City of Redondo Beach in implementing the proposed bicycle facilities presented in this Plan. Each proposed facility discussed in **Section 8.4.1** is grouped into projects based on feasibility of implementation. **Table 8-15** presents the prioritized projects based on the prioritization methodology displayed in **Appendix K**. Each criterion contains information about a facility and its ability to address an existing or future need in Redondo Beach. The projects ranked the highest should be implemented first.

Table 8-15: Redondo Beach Prioritized Bicycle Projects

Facility Type*	Facility Name	From	To	Gap Closure	Connectivity: Existing	Connectivity: Regional	Connectivity: Activity Centers	Connectivity: Multi-Modal	Safety	Public Input	Underserved Communities	Project Cost	Parking Displacement	Total
BL	Prospect Ave	Marine Ave	East City Limits	6	6	0	4	0	2	2	2	1	2	**25**
BP	Harbor Dr	Herondo St	Existing Bike Path	6	6	0	4	0	1	2	2	0	2	**23**
BL	Inglewood Ave	Marine Ave	Ripley Ave	0	6	0	4	2	2	2	2	0	2	**20**
BL	Artesia Blvd	West City Limits	Hawthorne Blvd	0	6	0	4	4	2	2	1	0	0	**19**
BL	Catalina Ave	Torrance Blvd	Palos Verdes Blvd	3	6	0	2	0	2	2	2	1	1	**19**
BL	Juanita Ave - Del Amo Blvd	Diamond St	East City Limits	3	6	0	2	0	1	2	1	2	2	**19**
BR	Ripley Ave	Flagler Ln	Lilienthal Ln	3	6	0	4	0	0	0	1	2	2	**18**
BL - BR	Knob Hill Ave	Esplanade	Sepulveda Blvd	3	6	0	4	0	2	1	1	1	0	**18**
BL	Marine Ave	Aviation Blvd	Inglewood Ave	0	6	0	0	4	1	2	2	1	2	**18**
BL	Ripley Ave	Lilienthal Ln	Inglewood Ave	3	6	0	4	0	0	0	1	2	2	**18**
BL	Beryl St	Harbor Dr	190th St	3	6	0	4	0	1	1	1	1	1	**18**
BL	Prospect Ave	North City Limits	Pacific Coast Highway	3	6	0	0	0	2	2	1	1	2	**17**
BL	Catalina Ave	Pacific Coast Highway	Beryl St	3	6	0	0	0	0	2	2	2	2	**17**
BL	Sepulveda Blvd	Prospect Ave	West City Limits	3	6	0	2	0	1	2	1	2	0	**17**
BL	Avenue I	Esplanade	Catalina Ave	3	6	0	2	0	1	0	1	2	2	**17**
BL	Lilienthal Ln	Ripley Ave	Fisk Ln	6	6	0	0	0	0	0	1	2	2	**17**
BFS	Warfield Ave	Aviation Blvd	Redondo Beach Ave	6	6	0	0	0	0	0	1	2	2	**17**
BR	Beland Bl - Phelan Ln	Barkley Ln	White Cir	6	6	0	0	2	0	0	1	2	0	**17**
BL	Manhattan Beach Blvd	Aviation Blvd	Inglewood Ave	0	6	0	0	2	2	2	1	1	2	**16**

Facility Type*	Facility Name	From	To	Gap Closure	Connectivity: Existing	Connectivity: Regional	Connectivity: Activity Centers	Connectivity: Multi-Modal	Safety	Public Input	Underserved Communities	Project Cost	Parking Displacement	Total
BR - BFS - BP - BFS	Flagler Ln - Diamond St	Anita St	Prospect Ave	3	6	0	4	0	2	1	0	0	0	**16**
BR	Emerald St	Catalina Ave	Prospect Ave	3	3	0	0	0	1	0	2	2	2	**13**
BR	182nd St	Felton Ave	Hawthorne Blvd	0	0	0	4	2	1	0	2	2	2	**13**
BR	Juanita Ave	Pacific Coast Highway	Diamond Street	3	6	0	0	0	1	0	1	2	0	**13**
BL	Aviation Blvd	Marine Ave	Harper Ave (City Limit)	0	6	0	0	2	0	2	1	1	1	**13**
BFS	Ave C - Juanita Ave - Ave D - Helberta Ave	Esplanade	Prospect Ave	3	6	0	0	0	0	0	1	1	2	**13**
BFS	Vanderbilt Ln	Flagler Ln	Inglewood Ave	0	6	0	0	0	2	1	1	1	2	**13**
BFS	Rindge Ln	Warfield Ave	190th St	0	6	0	2	0	1	0	1	1	2	**13**
BR	Kingsdale Ave	Artesia Blvd	182nd St	0	0	0	4	4	0	0	0	2	2	**12**
BL	190th St	Blossom Ln	East City Limits	0	6	0	2	0	2	0	1	1	0	**12**
BL	Redondo Beach Blvd	Artesia Blvd	Hawthorne Blvd	0	0	0	4	2	0	2	1	2	1	**12**
BR	Sepulveda Blvd	Torrance Blvd	Prospect Ave	0	3	0	0	0	1	2	1	2	2	**11**
BFS	Ralston Ln - Firmona Ave	Meyer Ln	190th St	0	6	0	0	0	0	1	1	1	2	**11**
BFS	Mathews Av	Aviation Way	Inglewood Ave	0	6	0	0	0	0	1	1	1	2	**11**
BR	Anita St	Pacific Coast Highway	Blossom Ln	0	3	0	0	0	2	0	1	2	2	**10**
BFS	Voorhees Ave	Aviation Blvd	Inglewood Ave	0	6	0	0	0	0	0	1	1	2	**10**
BFS	Robinson St	Aviation Blvd	Inglewood Ave	0	6	0	0	0	0	0	1	1	2	**10**
BR	Yacht Club	West end	Harbor Dr	0	3	0	0	0	0	0	2	2	2	**9**

Facility Type*	Facility Name	From	To	Gap Closure	Connectivity: Existing	Connectivity: Regional	Connectivity: Activity Centers	Connectivity: Multi-Modal	Safety	Public Input	Underserved Communities	Project Cost	Parking Displacement	Total
	Way													
BR	Portofina Way	West end	Harbor Dr	0	3	0	0	0	0	0	2	2	2	**9**
BR	Ford Ave - Herrin St - Ormond Ln	Artesia Blvd	Aviation Blvd	0	3	0	0	0	1	0	1	2	2	**9**
BL	Herondo St	Harbor Dr	Pacific Coast Highway	3	0	0	0	0	0	0	2	2	2	**9**
BFS	Meyer Ln	Ripley Ave	190th St	0	3	0	0	0	0	0	1	2	2	**8**
BFS	Helberta Ave - El Redondo	Vincent St	Torrance Blvd	0	3	0	0	0	0	0	1	2	2	**8**
BR	Francisca Ave	Herondo St	Catalina Ave	0	3	0	0	0	0	0	0	2	2	**7**
BR	Palos Verdes Blvd	South City Limits	East City Limits	0	0	0	0	0	2	0	1	2	2	**7**
BFS	Farrell Ave	Aviation Blvd	Rindge Ln	0	0	0	0	0	0	0	1	2	2	**5**

*BP=Bike Path, BL=Bike Lane, BR=Bike Route, BFS=Bike Friendly Street

8.7 Project Sheets

The City of Redondo Beach selected two of its top priority projects from the previous table for more detailed concept designs. Project sheets are shown on the following pages and include:

- A review of the existing site conditions
- Site challenges
- Recommended improvements
- Estimated cost
- Photos
- Aerial images
- Concept graphics

Redondo Beach Project #1: Catalina Avenue (Torrance Boulevard to Palos Verdes Boulevard

Project Site

Catalina Avenue is a north-south corridor located in the western portion of the City of Redondo Beach. It connects to existing bike lanes on Catalina Avenue to the north and proposed facilities in the City of Torrance to the south. Catalina Avenue provides access to Veterans Park, a variety of residential and commercial uses, and Downtown Redondo Beach. There is existing on-street parking along most of Catalina Avenue that is highly utilized.

Catalina Avenue has a posted speed limit of 35 mph. From Torrance Boulevard to Avenue I, Catalina Avenue has two travel lanes in each direction and on-street parallel parking. Between Torrance Boulevard and Pearl Street, Catalina Avenue decreases from a roadway width of approximately 86 feet to 60 feet, including a center median, to accommodate turn pockets at Torrance Boulevard. From Pearl Street to Knob Hill Avenue, the roadway width drops to approximately 55 feet. Between Avenue H and Avenue I, the roadway width increases to approximately 78 feet. Catalina Avenue has one travel lane in each direction south of Avenue I and there is a mix of on-street parallel and angled parking. The roadway width is approximately 78 feet.

Project Challenges

This segment of Catalina Avenue has no existing bicycle facilities, thus bicyclists must share the road with vehicular traffic. On-street parking where the roadway narrows reduces the available space for bicycle facilities. Angled parking creates potential conflicts between bicyclists and motorists because it is difficult for drivers to see bicyclists when backing out of parking spaces.

Proposed Improvements

- Stripe 1.6 miles of Class II Bike Lanes and signs
- Add bicycle loop detectors and pavement markings at all signalized intersections
- Conduct a road diet to convert cross-section to one travel lane in each direction and a center turn lane between Torrance Boulevard and Knob Hill Avenue (0.7 miles)
- Convert angled parking to head out angled parking south of Avenue I

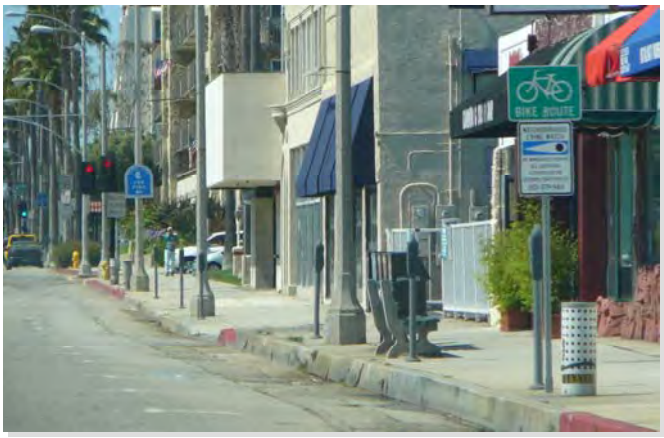
Estimated Cost

$200,000

Photos

Angled parking creates potential conflicts between bicyclists and motorists because it is difficult for drivers to see bicyclists when backing out of parking spaces.

Removing a travel lane north of Knob Hill Avenue will allow for bicycle lanes without removing highly utilized parking.



Proposed bike lanes on Catalina Avenue will connect with existing bike lanes on Catalina Avenue north of Torrance Blvd.

Aerial Map and Concept Graphics: Catalina Avenue

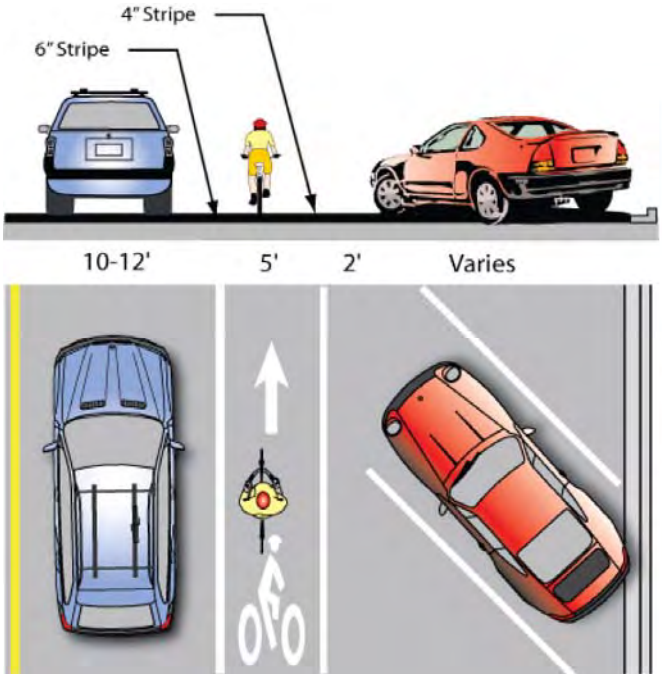
Catalina Avenue (Torrance Boulevard to Avenue B)

Catalina Avenue (Avenue B to Palos Verdes Boulevard)

Aerial Map and Concept Graphics: Catalina Avenue

Road Diet (4 to 3 Lanes)

Head Out Angled Parking



Redondo Beach Project #2: Prospect Avenue (Anita Street to Pacific Coast Highway)

Project Site

Prospect Avenue is a north-south road located in the south-eastern portion of the City of Redondo Beach. It connects to a proposed bike friendly street on Prospect Avenue in Hermosa Beach to the north and to an existing Class III Bike Route in Torrance to the south. Prospect Avenue provides access to Redondo Shores High School, Parras Middle School, and Tulita School. There is existing on-street parking along much of Prospect Avenue on one or both sides of the street that is moderately utilized. The posted speed limit is 35 mph.

Between Anita Street and Torrance Boulevard, Prospect Avenue has two lanes in each direction and a center turn lane. The roadway width ranges from approximately 61 to 65 feet. North of Del Amo Street, there is only on-street parking on the west side of Prospect Avenue. Between Beryl Street and Diamond Street, there is a center median. From Torrance Boulevard to Pacific Coast Highway, there are two travel lanes in each direction, and between Camino Real and Knob Hill Avenue, there is also a center turn lane. From Torrance Boulevard to Palos Verdes Boulevard, the roadway width of Prospect Avenue is approximately 62 to 64 feet. South of Palos Verdes Boulevard to Avenue E, the roadway width drops to approximately 46 feet and has no on-street parking. From Avenue E to Pacific Coast Highway, the roadway widens to approximately 55 feet and has parking on both sides of the street.

Project Challenges

Prospect Avenue has no existing bicycle facilities, which creates potential conflicts between bicyclists and motorists. There are few existing treatments to create a safe bicycling environment for children riding to school. The existing cross-section configuration limits the space available to install bicycle facilities.

Proposed Improvements

- Stripe 3 miles of Class II Bike Lanes and signs
- Add bicycle loop detectors and pavement markings at all signalized intersections
- Conduct a road diet to convert cross-section to one travel lane in each direction and a center turn lane (3 miles)
- Add an additional parking lane where space permits

Estimated Cost

$625,000

Photos

Looking south on Prospect Avenue. Removing a travel lane in each direction will provide adequate space for bike lanes.

Bike lanes on Prospect Avenue will create a safer bicycling environment for children riding to school.

Bicycle loop detectors at signalized intersections will allow bicyclists to trigger the signal when no vehicles are present.

Aerial Map and Concept Graphics: Prospect Avenue

Prospect Avenue (Anita Street to Torrance Boulevard)

Prospect Avenue (Torrance Boulevard to Pacific Coast Highway)

Aerial Map and Concept Graphics: Prospect Avenue

Bike Lane Adjacent to On-street Parking and Buffered Bike Lane

Bicycle Loop Detectors