Chapter 3

El Segundo

3 El Segundo

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

- Existing conditions
- Needs analysis
- Proposed bicycle network
- Project prioritization
- Project costs

3.1 Bicycle Transportation Account (BTA) Compliance

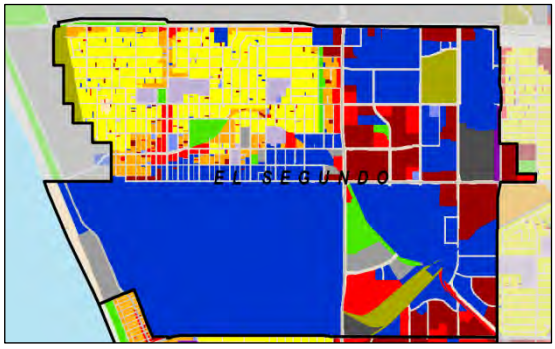
The Bicycle Transportation Account (BTA) is an annual statewide discretionary program that funds bicycle projects through the Caltrans Bicycle Facility Unit. Available as grants to local jurisdictions, the program emphasizes projects that benefit bicycling for commuting purposes. In order for El Segundo 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.

3.2 Existing Conditions

The City of El Segundo is located in the northwest portion of the South Bay region. It is bordered by the City of Los Angeles to the north, the County of Los Angeles to the east, the City of Manhattan Beach to the south, and the Pacific Ocean to the west. According to the 2000 census, El Segundo has a population of 15,970. The City was incorporated in 1917.

3.2.1 Land Use

Appendix A-3 displays a map of the existing land uses in the South Bay Region. Land uses in El Segundo are shown at right. Industrial land uses comprise over half of the land area of the City, demonstrating that El Segundo is a key employment center in the region. Less than 20 percent of the City's land area consists of residential uses. Due to the disparity between acres of employment-producing land uses and acres of housing, it is likely that many



Existing Land Uses in El Segundo

(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

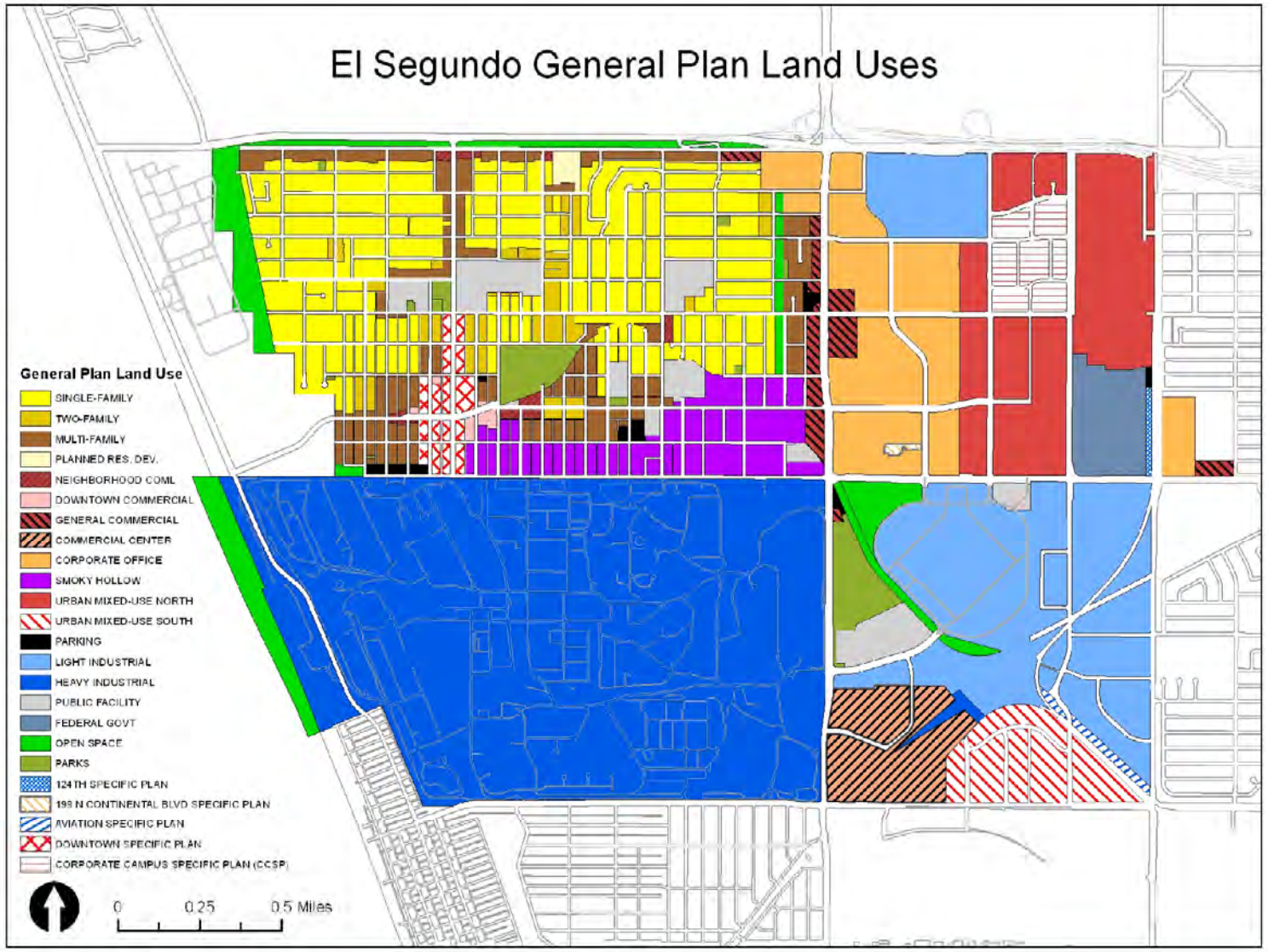


Figure 3-1: El Segundo General Plan Land Uses

South Bay Bicycle Master Plan

Source: City of El Segundo (1992)

persons working in El Segundo are commuting to work from outside of the City.

Figure 3-1 displays proposed land uses for El Segundo. As compared to the existing uses, the City plans to increase office space north of Mariposa Avenue, industrial uses in the southeastern quadrant of the city, and mixed use developments throughout El Segundo.

3.2.2 Bicycle Trip Generators

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.

Bicycle trip generators refer to population characteristics that are correlated with higher bicycling activity levels, such as high employment densities.

Appendix A-4 shows population density in El Segundo. Of the land area that is residential, most of it is single family, low density housing, with the exception of the Main Street area in Downtown El Segundo and R-3 multi-family zoned parcels. Low density units generally produce fewer trips as there are fewer persons per acre. 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. Low density areas present challenges to bicycling because there are not as many community services, such as restaurants or grocery stores nearby, so bicyclists must make longer trips to conduct their day-to-day activities.

Appendix A-5 displays employment density in El Segundo. El Segundo has over 50 percent of its land area dedicated to industrial uses, a land use which typically employs large amounts of people, and therefore produces many commute trips. As a major employment center in the region, El Segundo generates a high number of trips, and therefore has the potential to increase bicycle activity by providing facilities that could encourage commuters to switch to bicycling.

Appendix A-6, Appendix A-7, and **Appendix A-8** display the percent of zero-vehicle households, median annual household income, and percent transit commuters by census tract. Overall, households in El Segundo have median annual incomes between $55,001 and $75,000 (in 1999 dollars). Those in central and western

El Segundo have lower rates of vehicle ownership and higher rates of transit commuting. This part of the city has 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, El Segundo 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 El Segundo, 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.

3.2.3 Relevant Plans and Policies

Table 3-1 outlines information regarding bicycles from the City of El Segundo's Circulation Element, Bicycle Master Plan, Open Space and Recreation Element, Local Coastal Program, and Municipal Code.

Table 3-1: El Segundo Bicycle-Related Plans and Policies

Document	Description
General Plan Circulation Element (2004)	The Circulation Element was adopted in 1992 and most recently updated in 2004. It includes a goal to increase alternative transportation modes, with a corresponding objective to provide a city-wide bikeway system. Policies for implementation include: • Implement recommendations in the Bicycle Master Plan (below) • Encourage new development to provide bicycle parking, shower, and changing facilities • Develop off-street bicycle paths in appropriate corridors • Encourage bicycle trips to and from schools and public facilities • Coordinate bicycle planning/implementation with adjacent and regional agencies • Encourage design of new streets with Class I or Class II bikeways • Maintain Hillcrest Street link between Imperial Avenue and Imperial Highway • Evaluate bikeway system links with the Metro Green Line rail stations and improve access

Document	Description
Bicycle Master Plan (1992)	This plan was adopted in 1992 as part of the Circulation Element and left unchanged in the 2004 update. The 2004 update simply consists of a map (**Appendix F-1**) that outlines existing and proposed routes in the City of El Segundo, the City of Manhattan Beach, and the County of Los Angeles. Proposed routes are designated by possible facility. Some proposed routes are shown to be appropriate for either Class I, II, or III facilities, while others are designated as appropriate for just one Class.
General Plan Open Space and Recreation Element (1992)	The Open Space and Recreation Element discusses bikeways in the context of recreational facilities. This document identifies the County of Los Angeles-maintained beach bicycle path located west of the Chevron Refinery as the primary recreational bikeway in El Segundo. The beach bike path runs along the narrow shoreline and connects with the county paths in the City of Los Angeles to the north and to the community of El Porto to the south. The element also includes an objective to develop utility transmission corridors for active or passive open space and recreational use.
El Segundo Local Coastal Program (1978)	The El Segundo Local Coastal Program (LCP) consists of an Issue Identification and a Coastal Zone Specific Plan. The Issue Identification section summarizes coastal issues and the specific plan provides detailed land use proposals and implementing ordinances in the coastal zone. The program states that developments providing recreational opportunities are preferred in the Coastal Zone. Developments that provide recreational bikeways would satisfy this requirement. All other bikeways shall be in compliance with the policies in the LCP.
Municipal Code	Minimum parking requirements in El Segundo's Municipal Code are based on percent of required vehicle parking spaces. In 2010, the City of El Segundo adopted Ordinance 1444, which amended parking and loading requirements to include minimum bicycle parking space requirements for developments of varying sizes and land uses. Spaces shall be a minimum width of two feet and a minimum length of five feet. The City reviews these requirements in plan check by having the plans routed through the applicable departments. Developments of certain sizes are also required to provide information, such as bicycle maps, either on a bulletin board or in a display case or kiosk. Detailed bicycle parking information is presented in **Appendix G.** El Segundo's Municipal Code does not prohibit riding bicycles on the sidewalk in the city.

Figure 3-2: Existing Bicycle Facilities in El Segundo

3.2.4 Existing Bicycle Network

Figure 3-2 shows the existing bicycle facilities in El Segundo. **Appendix A-2** displays a map of the existing bicycle facilities in the South Bay Region as a whole. Bicycle facility types are discussed in **Section 1.3**. The City of El Segundo has approximately 6 total miles of bikeways. These include Class I, Class II, and Class III facilities, some of which continue outside the City limits. A portion of the Los Angeles County-maintained bike path that runs along the beach is part of the City's network. **Table 3-2** summarizes the classification and mileage of the existing network.

Table 3-2: El Segundo Bicycle Network

Facility Type	Mileage
Class I (Bike Path)	1.0
Class II (Bike Lanes)	2.8
Class III (Bike Route)	2.0
Total Mileage	**5.8**

3.2.5 Existing End-of-Trip Parking Facilities

The BTA requires that this plan inventory publicly-accessible short- and long-term end-of-trip 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.

The locations of existing bicycle parking in the South Bay are shown in **Appendix A-9**. Existing bicycle parking in El Segundo is shown at right. The City has existing bicycle racks located throughout the city, including at schools, civic facilities, and shopping centers. El Segundo does not provide any existing long-term, publicly-accessible end-of-trip bicycle facilities. Existing long-term bicycle storage at transit stops is discussed below.

Existing End-of-trip Facilities in El Segundo

(See Appendix A-9 for larger map)

3.2.6 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 El Segundo. Metro operates several bus lines with routes through the

City. 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 three stations in El Segundo. A fourth station at Aviation/LAX sits very near the eastern boundary of El Segundo. Bicycles are permitted on Metro Rail. The three stations in El Segundo are:

- Mariposa Avenue
- El Segundo Boulevard
- Douglas Street

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. Line 574 connects El Segundo to the City of Encino. Most Commuter Express buses are equipped with bicycle racks, which are available on a first-come, first-served basis. Commuter Express route maps for lines 438 and 574 are shown in **Appendix A-11** and **Appendix A-12.**

Beach Cities Transit (BCT) Line 109, operated by the City of Redondo Beach, and Torrance Transit Line 8, operated by the City of Torrance, also serve the City of El Segundo. **Appendix A-13** shows the BCT System Map and **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.

Two of the three Metro Geen Line stations in El Segundo provide both bicycle racks and lockers.

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 Mariposa Avenue Metro Green Line Station provides bicycle racks and the other two stations provide both bicycle racks and lockers. Metro Green Line stations are shown in **Appendix A-10.** Existing bicycle parking facilities in the South Bay are shown in **Appendix A-9** and existing bicycle parking facilities in El Segundo are shown on page 29. Bicycle locker rentals are $24 for six months plus a $50 refundable security key deposit.

3.2.7 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, the City of El Segundo has in the past held "bicycle rodeos," in which they teach bicycle lessons and awareness during

open houses at schools. Bicycle rodeos are not, however, a regular program. The El Segundo Police Department also provides pamphlets and bicycle safety information at all safety fairs, Ride Share Fairs, and booths it attends, which occur several times per year.

El Segundo police officers enforce all bicycle-related rules in the California Vehicle Code and issue citations when they observe violations.

3.2.8 Past Bicycle-Related Expenditures

The City of El Segundo incurred the following bicycle expenditure between 2000 and 2010:

- About $5,000 for bicycle racks at City Hall and signage on North Douglas and Nash Streets

3.3 Needs Analysis

This section describes the needs of bicyclists in El Segundo. First, it summarizes feedback collected from the online survey and public workshops. Second, the section provides estimates and forecasts of bicycle commuting to determine the estimated bicycling demand in the city. Finally, it analyzes bicycle collision data between 2007 and 2009 to identify areas that would benefit from bicycle facility improvements.

3.3.1 Public Outreach

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

The most frequently identified locations for bicycle facilities include El Segundo Boulevard, Rosecrans Boulevard, and Douglas Street. El Segundo Boulevard and Rosecrans Boulevard are both major arterials. Other streets mentioned by the public as in need of bicycle facilities include Main Street, Grand Avenue, and Mariposa Avenue.

The public in El Segundo had the opportunity to provide input in the planning process through an online survey and two rounds of public workshops.

3.3.2 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 El Segundo by census tract. There is a higher percentage of bicycle commuters in the western portion

of El Segundo than in the eastern part, which corresponds with low vehicle ownership rates and a higher percentage of transit users.

Table 3-3 presents commute to work data estimates reported by the 2000 US Census for El Segundo. For comparative purposes, the table includes commute to work data for the United States, California, and County of Los Angeles. According to the estimates, 0.59 percent of residents in El Segundo commute predominantly by bicycle. The percent of bicycle commuters in El Segundo is consistent with that of the County of Los Angeles. It is below that of California and above the United States as a whole. It is important to note that this figure likely underestimates the true amount of bicycling that occurs in El Segundo for several reasons. First, 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 El Segundo that commute by transit is much lower than that of those that drive alone.

In addition to bicycle commuters in El Segundo, 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 El Segundo's bicycle network in **Section 3.4**.

Table 3-4 presents an estimate of current bicycling within El Segundo using US Census data along with several adjustments for likely bicycle commuter underestimations, as discussed above. **Table 3-5** presents the associated air quality benefits from bicycling.

Table 3-3: Means of Transportation to Work

Mode	United States	California	Los Angeles County	El Segundo
Bicycle	0.38%	0.83%	0.62%	0.59%
Drove Alone – car, truck, or van	75.70%	71.82%	70.36%	85.37%
Carpool – car, truck, or van	12.19%	14.55%	15.08%	6.27%
Transit	4.73%	5.07%	6.58%	1.18%

Mode	United States	California	Los Angeles County	El Segundo
Walked	2.93%	2.85%	2.93%	2.87%
Other Means	0.70%	0.79%	0.76%	0.35%
Worked at Home	3.26%	3.83%	3.49%	3.01%

Source: US Census 2000

Table 3-4: Existing Bicycling Demand

Variable	Figure	Source
Existing study area population	15,970	2000 US Census, P1
Existing employed population	9,092	2000 US Census, P30
Existing bike-to-work mode share	0.59%	2000 US Census, P30
Existing number of bike-to-work commuters	54	Employed persons multiplied by bike-to-work mode share
Existing work-at-home mode share	3.01%	2000 US Census, P30
Existing number of work-at-home bike commuters	27	Assumes 10% of population working at home makes at least one daily bicycle trip
Existing transit-to-work mode share	1.18%	2000 US Census, P30
Existing transit bicycle commuters	27	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)	1,899	2000 US Census, P8
Existing school children bicycling mode share	2.0%	National Safe Routes to School surveys, 2003.
Existing school children bike commuters	38	School children population multiplied by school children bike mode share
Existing number of college students in study area	1,395	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 share at the University of California, Los Angeles
Existing college bike commuters	70	College student population multiplied by college student bicycling mode share
Existing total number of bike commuters	216	Total bike-to-work, school, college and utilitarian bike trips. Does not include recreation.
Total daily bicycling trips	431	Total bicycle commuters x 2 (for round trips)

Table 3-5: Existing Bicycling Air Quality Impact

Variable	Figure	Source
Current Estimated VMT Reductions		
Reduced Vehicle Trips per Weekday	130	Assumes 73% of bicycle trips replace vehicle trips for adults/college students and 53% for school children
Reduced Vehicle Trips per Year	33,978	Reduced number of weekday vehicle trips multiplied by 261 (weekdays / year)
Reduced Vehicle Miles per Weekday	901	Assumes average round trip travel length of 8 miles for adults/college students and 1 mile for schoolchildren
Reduced Vehicle Miles per Year	235,048	Reduced number of weekday vehicle miles multiplied by 261 (weekdays / year)
Current Air Quality Benefits		
Reduced Hydrocarbons (lbs/wkday)	3	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)	2	Daily mileage reduction x 0.95 grams / mi
Reduced CO (lbs/wkday)	25	Daily mileage reduction x 12.4 grams / mi
Reduced C02 (lbs/wkday)	733	Daily mileage reduction x 369 grams / mi
Reduced Hydrocarbons (lbs/yr)	705	Yearly mileage reduction x 1.36 grams / mi
Reduced PM10 (lbs/yr)	3	Yearly mileage reduction x 0.0052 grams / mi
Reduced PM2.5 (lbs/yr)	3	Yearly mileage reduction x 0.0049 grams / mi
Reduced NOX (lbs/yr)	492	Yearly mileage reduction x 0.95 grams / mi
Reduced CO (lbs/yr)	6,426	Yearly mileage reduction x 12.4 grams / mi
Reduced $C0_2$ (lbs/yr)	191,213	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 3-6 presents projected year 2030 bicycling activity within El Segundo 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 3-7 presents the associated year 2030 air quality benefit forecasts. The calculations follow in a straightforward manner from the Projected Year 2030 Bicycling Demand.

Table 3-6: Projected Year 2030 Bicycling Demand

Variable	Figure	Source
Future study area population	19,873	Calculated based on CA Dept. of Finance, Population Projections for California and Its Counties 2000-2050.
Future employed population	11,314	Calculated based on CA Dept. of Finance, Population Projections for California and Its Counties 2000-2050,
Future bike-to-work mode share	1.18%	Double the rate from 2000 US Census, P30
Future number of bike-to-work commuters	134	Employed persons multiplied by bike-to-work mode share
Future work-at-home mode share	5.54%	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	63	Assumes 10% of population working at home makes at least one daily bicycle trip
Future transit-to-work mode share	2.36%	Double the rate from 2000 US Census, P30
Future transit bicycle commuters	67	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)	1,509	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	60	School children population multiplied by school children bicycling mode share
Future number of college students in study area	1,736	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	122	College student population x college student bicycling mode share
Future total number of bike commuters	445	Total bike-to-work, school, college and utilitarian biking trips. Does not include recreation.
Total daily bicycling trips	890	Total bike commuters x 2 (for round trips)

Table 3-7: Projected Year 2030 Bicycling Air Quality Impact

Variable	Figure	Source
Forecasted VMT Reductions		
Reduced Vehicle Trips per Weekday	264	Assumes 73% of biking trips replace vehicle trips for adults/college students and 53% for school children
Reduced Vehicle Trips per Year	68,886	Reduced number of weekday vehicle trips x 261 (weekdays / year)
Reduced Vehicle Miles per Weekday	1,888	Assumes average round trip travel length of 8 miles for adults / college students and 1 mile for schoolchildren
Reduced Vehicle Miles per Year	492,644	Reduced number of weekday vehicle miles x 261 (weekdays / year)
Forecasted Air Quality Benefits		
Reduced Hydrocarbons (lbs/wkday)	6	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)	4	Daily mileage reduction x by 0.95 grams / mi
Reduced CO (lbs/wkday)	52	Daily mileage reduction x by 12.4 grams / mi
Reduced $C0_2$ (lbs/wkday)	1,536	Daily mileage reduction x by 369 grams / mi
Reduced Hydrocarbons (lbs/yr)	1,477	Yearly mileage reduction x by 1.36 grams / mi
Reduced PM10 (lbs/yr)	6	Yearly mileage reduction x by 0.0052 grams / mi
Reduced PM2.5 (lbs/yr)	5	Yearly mileage reduction x by 0.0049 grams / mi
Reduced NOX (lbs/yr)	1,032	Yearly mileage reduction x by 0.95 grams / mi
Reduced CO (lbs/yr)	13,468	Yearly mileage reduction x by 12.4 grams / mi
Reduced CO2 (lbs/yr)	400,768	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 430 to almost 900, resulting in a substantial reduction of both Vehicle Miles Traveled (VMT) and associated emissions. This includes a yearly emissions reduction by 2030 of approximately 1,000 pounds of

smog forming N0X and roughly 400 thousand 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.

3.3.3 Bicycle Counts

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

Volunteers conducted bicycle counts in each of the seven participating cities in the South Bay.

3.3.3.1 Methodology

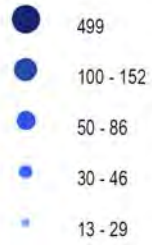
The methodology for the bicycle counts derives from the National Bicycle and Pedestrian Documentation Project (NBPD), a collaborative effort of Alta Planning + Design and the Institute of Transportation Engineers. The NBPD methodology aims to capture both utilitarian bicycling and recreational bicycling. 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 El Segundo, volunteers were stationed at nine stations on Thursday and nine 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.

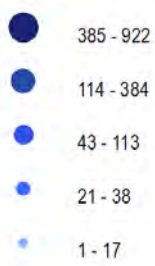
Weekday Bicycle Count Results in El Segundo

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



Weekend Bicycle Count Results in El Segundo

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



3.3.3.2 Results

The count results for the South Bay are displayed in **Appendix A-16** and **Appendix A-17**. Count results for El Segundo are shown at left. Detailed count data, including a list of count locations, is presented in **Appendix H**. On Thursday, the El Segundo station that experienced the highest volume was Douglas Street and the Green Line Station with 57 bicyclists during the three hour count period. The station with the most bicyclists on Saturday was Main Street and Grand Avenue with 65 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.

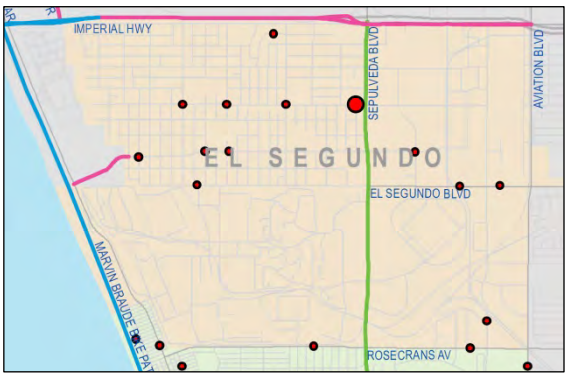
In the region as a whole, approximately 83 percent of bicyclists were male. Approximately 70 percent of those observed did not wear helmets and 41 percent rode on the sidewalks. On Thursday, there were 18 locations at which over half of the observed bicyclists rode on the sidewalk and on Saturday there 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.

3.3.4 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 local and 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 El Segundo. 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 3-8 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 El Segundo are shown at right. There were 15 total reported collisions involving bicyclists from 2007-2009 in the City of El Segundo. Two crashes occurred at the intersection of Mariposa Avenue and Indiana Street, one block west of Sepulveda Boulevard. The remaining 13 collisions in El Segundo occurred at disparate locations, although all occurred on major boulevards: there were five crashes on Mariposa Avenue, three on El Segundo Boulevard, and two on Rosecrans Avenue.



Bicycle Collisions in El Segundo 2007-2009

(See Appendix A-18 for larger map)

4
3
2
1

Table 3-8: Bicycle Collision Data 2007-2009

Total Crashes Involving Bicyclists	Number of Bicyclists Involved	Persons Injured	Persons Severely Injured	Persons Killed
15	15	13	1	0

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

As reported by police officers in traffic reports, bicyclists were at fault in 40 percent of collisions involving bicycles (6 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 El Segundo. El Segundo Boulevard and Rosecrans Avenue, two corridors that experienced collisions involving bicyclists, carry large volumes of vehicular traffic traveling at high speeds. Neither

street has existing bicycling facilities. Sepulveda Boulevard, Aviation Boulevard, and Imperial Highway also have high volumes of vehicles. Aviation Boulevard does not have bicycle facilities and Sepulveda Boulevard is a Class III bicycle route, requiring bicyclists to share the lanes with automobiles on these streets.

3.4 Proposed Bicycle Network

This section presents the proposed bicycle network for the City of El Segundo, 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 presented in **Section 1.3** and are 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 El Segundo, 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 El Segundo 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.

3.4.1 Proposed Bikeway Facilities

Opportunities and Constraints in El Segundo

(See Appendix I for larger map)

Opportunity

Constraint

The proposed bicycle network for El Segundo consists of Class I Bike Paths, Class II Bike Lanes, Class III Bike Routes, and Bike Friendly Streets, and is presented in **Figure 3-3**. El Segundo's network connects with the recommended network in Manhattan Beach and the County of Los Angeles bicycle system. 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 3-9**Table 3-9 lists the proposed bicycle paths, **Table 3-10** lists the proposed bicycle lanes, **Table 3-11** lists the proposed bicycle routes, and **Table 3-12** lists the proposed bicycle friendly streets. The proposed bicycle network for the South Bay region as a whole is presented in **Appendix A-19**.

There are several constraints to recommending new bicycle facilities in El Segundo. These are shown at left and are referenced by the numbers in **Appendix I**. **Appendix I** also presents opportunities and constraints in the South Bay region as a whole.

First, a proposed Class I bikeway east of the waste processing plant would require the City to gain approval from Los Angeles Department of Water and Power (LADWP) as this land is LADWP right-of-way. The facility would run underneath the right-of-way of high-tension power lines. An example of such a facility can be seen in Redondo Beach along the North Redondo Beach Bikeway.

Also, a proposed Class I in El Segundo between Walnut and Holly would require the City to gain similar approval as this land is LADWP right-of-way. The facility would also run underneath the right of way of high-tension power lines.

Table 3-9: Proposed Class I Bicycle Paths in El Segundo

Street	From	To	Miles
El Segundo	Sepulveda Blvd	Nash St	0.5
Washington Street	Walnut Avenue	Holly Avenue	0.7
Total Bicycle Path Mileage			**1.2**

Table 3-10: Proposed Class II Bicycle Lanes in El Segundo

Street	From	To	Miles
Aviation Boulevard	Imperial Highway	Rosecrans Avenue	2.0
Douglas Street	Imperial Highway	Park Place	2.1
El Segundo	Main St	Illinois St	1.0
El Segundo	Nast St	East City Limits	0.7
Mariposa Avenue	Sepulveda Boulevard	Douglas Street	0.7
Rosecrans Avenue	West City Limits	Aviation Boulevard	2.1
Total Bicycle Lane Mileage			**8.7**

Table 3-11: Proposed Class III Bicycle Routes in El Segundo

Street	From	To	Miles
Grand Avenue	West end of Street	Duley Road	2.1
El Segundo	Illinois	Sepulveda Boulevard	0.1
Nash Street	Imperial Highway	El Segundo Boulevard	1.0
Loma Vista Street - Binder Place - Whiting Street - El Segundo Boulevard	Grand Avenue	Main Street	0.5
Utah Avenue	Douglas Street	Aviation Boulevard	0.3
Main Street	Imperial Avenue	El Segundo Boulevard	1.0
Total Bicycle Route Mileage			**5.0**

Table 3-12: Proposed Bicycle-Friendly Streets in El Segundo

Street	From	To	Miles
Imperial Avenue	Hillcrest Street	East end of street	1.6
Mariposa Avenue	West end of Street	Sepulveda Boulevard	1.7
Loma Vista Street	Imperial Avenue	Grand Avenue	0.9
Sheldon Street - Pine Avenue - Eucalyptus Drive	Imperial Avenue	Grand Avenue	0.9
Center Street	Imperial Avenue	El Segundo Boulevard	1.0
Walnut Avenue	Center Street	Washington Street	0.4
Total Bicycle-Friendly Street Mileage			**6.4**

Figure 3-3: Proposed Bicycle Facilities in El Segundo

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3.4.2 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.

The El Segundo Municipal Code currently provides minimum bicycle parking standards. It also requires that all bicycle parking spaces be 2 feet wide by 5 feet long. The City should amend its Municipal Code to include requirements on types of short-term and long-term bicycle parking facility designs. Recommended designs 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 higher degree of security and support for the bicycle. This will more accurately address the bicycle demand at a given development. 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

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

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. El Segundo's Municipal Code should require all new mid-size and 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 El Segundo are shown in **Figure 3-4**.

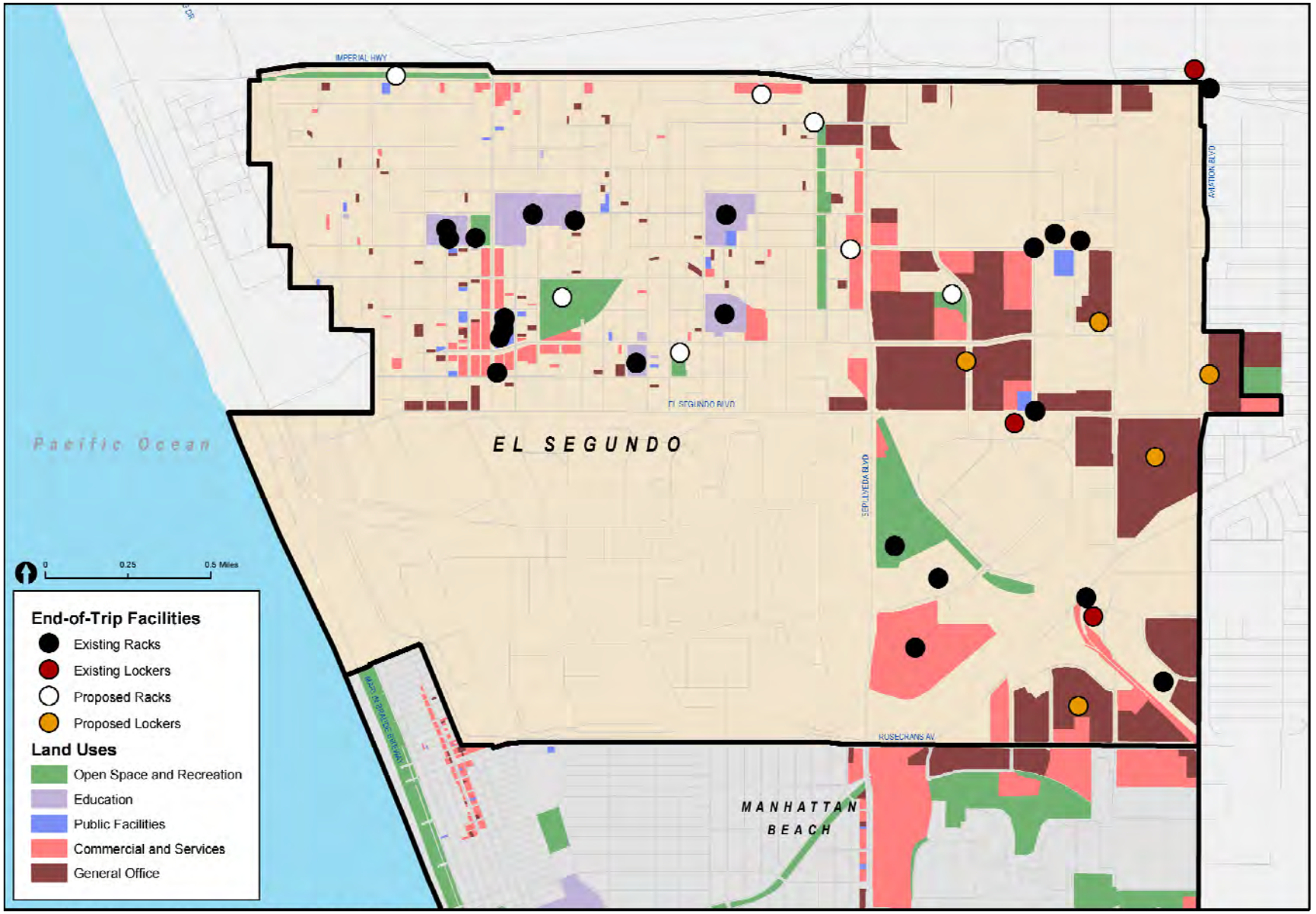

Figure 3-4: El Segundo Proposed End-of-Trip Facilities

The City should ensure there is adequate short-term bicycle parking in the form of bicycle racks at all major trip attractors, including commercial and civic activity centers and transit hubs. 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.

The City should prioritize the installation of bicycle parking throughout the city, with particular attention directed at locations such as parks.

3.5 Project Costs

This section presents the cost to implement the proposed bicycle network in El Segundo.

3.5.1 Cost Estimates

Table 3-13 displays the planning-level capital cost assumptions for each facility type proposed in this plan and **Table 3-14** displays the cost to implement the proposed network in the City of El Segundo from the cost assumptions.[14] 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. 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 3.7**.

[14] **Table 3-14** assumes the cost of implementing Class III Bicycle Routes with Sharrows based on the policies presented in **Chapter 2**

Table 3-13: Unit Cost Estimates for Proposed Bicycle Facility Types

Facility Type	Description	Estimated Cost[15]
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 3-14: Estimated Cost of Proposed Bicycle Network

Facility Type	Unit Cost per mile	Length of Proposed Network (miles)	Cost
Bicycle Path	$800,000	1.2	$ 928,000
Bicycle Lane	$40,000	8.5	$ 339,000
Bicycle Route with sharrows	$25,000	5.2	$ 130,000
Bicycle-Friendly Street	$30,000	6.4	$ 192,000
Total		**21.3**	**$ 1,589,000**

3.6 Project Prioritization

A prioritized list of bicycle projects will help guide the City of El Segundo in implementing the proposed bicycle facilities presented in this Plan. Each proposed facility discussed in **Section 3.4.1** is grouped into projects based on feasibility of implementation. **Table 3-15** 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 El Segundo. The projects ranked the highest should be implemented first.

[15] Cost estimates include physical removals and installations (e.g. of signs and striping), contract contingency costs, preliminary engineering, and construction engineering. The source for the unit costs is the LA County Bicycle Master Plan, which are based upon a peer review of Southern California bikeway construction unit costs.

Table 3-15:El Segundo 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	Douglas Street	Imperial Highway	Rosecrans Avenue	3	6	0	4	4	1	2	1	1	2	**24**
BL	Aviation Boulevard	Imperial Highway	Rosecrans Avenue	3	6	2	4	4	0	2	1	0	1	**23**
BR	Grand Avenue	West end of Street	Duley Road	3	6	0	4	2	2	2	1	1	2	**23**
BL-BR-BP-BL	El Segundo Blvd	Main St	East City Limits	0	0	2	4	4	2	2	1	2	2	**19**
BR	Nash Street	Imperial Highway	El Segundo Boulevard	3	6	0	0	4	0	1	0	2	2	**18**
BL	Mariposa Avenue	Sepulveda Boulevard	Douglas Street	0	3	0	4	4	0	2	0	1	2	**16**
BFS	Imperial Avenue	Hillcrest Street	East end of street	3	6	0	2	0	0	0	1	1	2	**15**
BFS	Mariposa Avenue	West end of Street	Sepulveda Boulevard	0	3	0	4	0	2	2	1	1	2	**15**
BR	Loma Vista Street - Binder Place - Whiting Street - El Segundo Boulevard	Grand Avenue	Main Street	3	6	0	0	0	0	0	1	2	2	**14**
BFS	Loma Vista Street	Imperial Avenue	Grand Avenue	3	6	0	0	0	0	0	1	1	2	**13**
BR	Utah Avenue	Douglas Street	Aviation Boulevard	0	0	0	4	2	0	0	0	2	2	**10**
BR	Main Street	Imperial Avenue	El Segundo Boulevard	0	0	0	2	0	1	1	1	2	2	**9**
BFS	Sheldon Street - Pine Avenue - Eucalyptus Drive	Imperial Avenue	Grand Avenue	0	0	0	4	0	1	0	1	1	2	**9**
BFS	Center Street	Imperial Avenue	El Segundo Boulevard	0	0	0	4	0	1	0	1	1	2	**9**
BP	Washington Street	Walnut Avenue	Holly Avenue	0	0	0	4	2	0	0	1	0	2	**9**
BFS	Walnut Avenue	Center Street	Washington Street	0	0	0	2	0	0	0	0	2	2	**6**
BL	Rosecrans Avenue	West City Limits	Aviation Boulevard	0	0	0	0	0	1	2	1	0	0	**4**

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

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3.7 Project Sheets

The City of El Segundo 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

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El Segundo Project #1: Douglas Street (Imperial Highway to Rosecrans Ave)

Project Site

Douglas Street is a north-south arterial located on the eastern portion of the City of El Segundo. It connects to the Los Angeles International Airport (LAX) and bike lanes on Imperial Highway to the north and to the City of Manhattan Beach to the south. Douglas Street provides access to major employers, such as Northrop Grumman, as well as a Metro Green Line light rail station and a variety of commercial services. There is no on-street parking on Douglas Street.

From Imperial Highway to just south of El Segundo Boulevard, Douglas Street has three travel lanes in both directions of travel and a center turn lane. The roadway width ranges from 85 feet to 100 feet with a posted speed limit of 40 mph. From south of El Segundo Boulevard to Transit Center, Douglas Street drops to two travel lanes in each direction and a center turn lane. This segment has a roadway width of approximately 65 feet and a railroad crossing north of Utah Avenue. South of Transit Center, Douglas Street narrows to two lanes with a center median as it travels under the Metro Green Line bridge until Park Place. The roadway width drops to approximately 23 feet on either side of the center median. Pedestrian access is located above the road, under the bridge. South of Park Place, the road widens to 65 feet with two travel lanes in each direction and a center turn lane until the intersection with Rosecrans Avenue where it widens again to accommodate left and right turn pockets.

Project Challenges

Douglas Street has no existing bicycle facilities, thus bicyclists must share the road with relatively high volumes of vehicles traveling at high speeds. Bicyclists must cross at-grade, angled railroad tracks, which creates the potential for collisions as bicycle tires often get trapped in railroad tracks. When Douglas Street narrows as it travels beneath the Metro Green Line bridge, the road has a significant incline and the lanes become narrow, which can create conflicts due to the speed differential between bicyclists and vehicles. If bicyclists choose to ride on the above grade pedestrian path, they create potential conflicts with pedestrians as the path is not wide enough to accommodate both modes.

Proposed Improvements

- Stripe 1 mile of Class II Bike Lanes
- Add bicycle detectors and pavement markings at all signalized intersections
- Widen the pedestrian path under the Metro Green Line bridge to accommodate both bicyclists and pedestrians
- Realign the bicycle lanes to allow bicyclists to cross perpendicular to the at-grade train tracks

Estimated Cost

$350,000

Photos

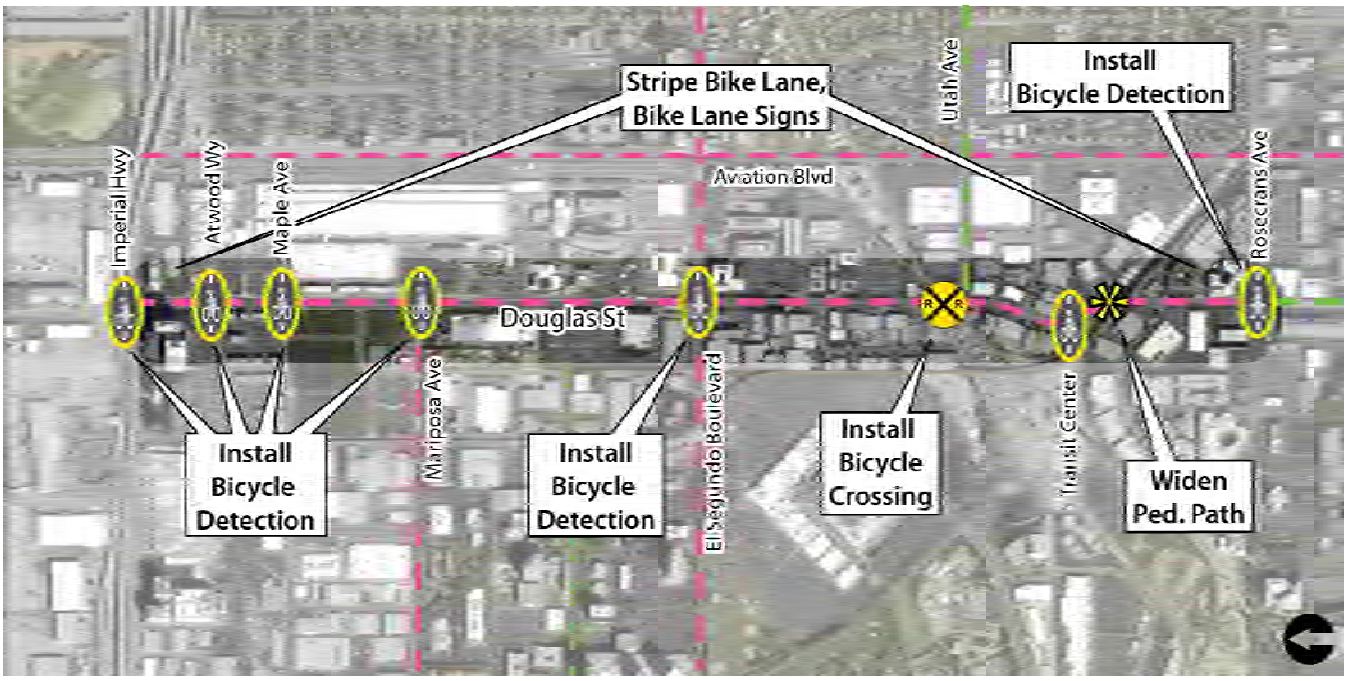
Looking south on Douglas Street. The northern portion of Douglas Street has wide lanes that could be narrowed to accommodate bicycle lanes.

Travel lanes narrow beneath the Metro Green Line bridge.

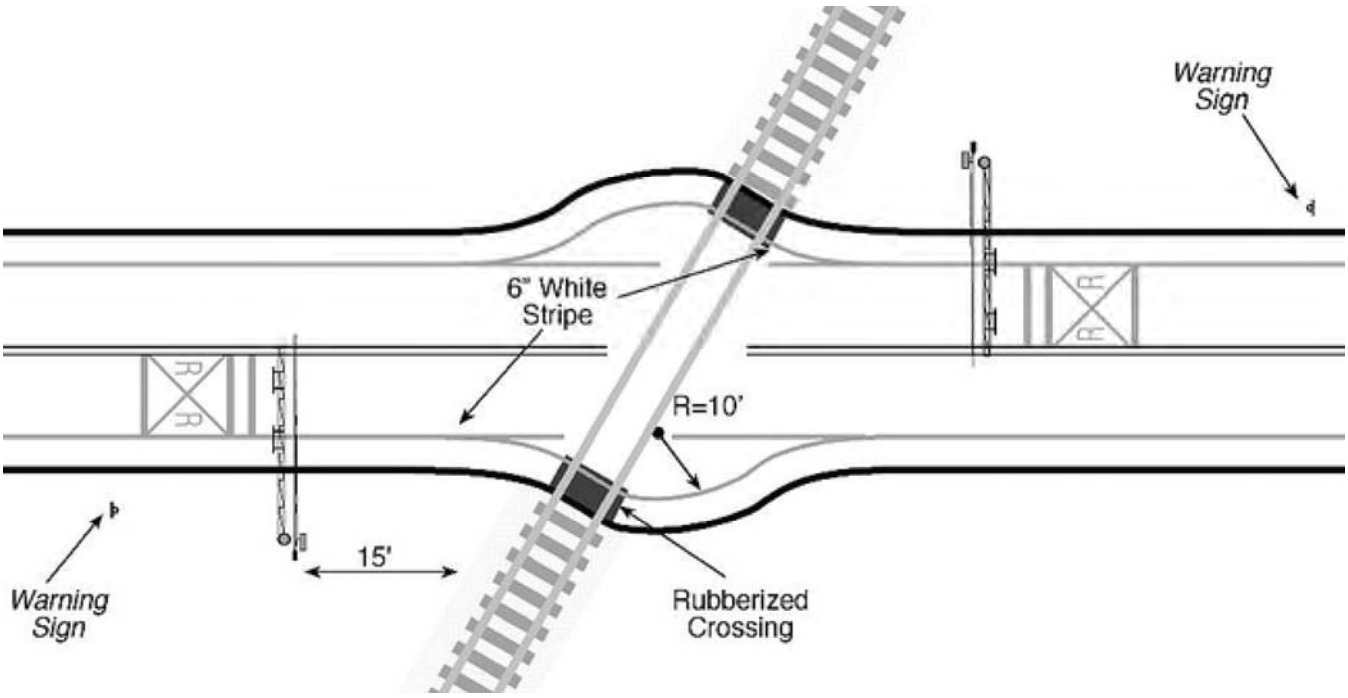
The angle of the existing at-grade railroad tracks is challenging for bicyclists to cross.

Aerial Map and Concept Graphics: Douglas Street

Douglas Street (Imperial Highway to Rosecrans Ave)



Example Bicycle Lane Crossing Railroad Tracks Design



El Segundo Project #2: El Segundo Boulevard (Main Street to Douglas Street)

Project Site

El Segundo Boulevard is an east-west road located in the center of the City of El Segundo. It connects to the County of Los Angeles to the east and provides secondary connectivity to the Marvin Braude Bikeway to the west. East of Aviation Boulevard, El Segundo Boulevard shares jurisdiction with the County of Los Angeles. El Segundo Boulevard provides access to major employers, such as the Chevron Refinery, as well as a variety of commercial services, residential uses, and Downtown El Segundo. There is no on-street parking on El Segundo Boulevard.

From Main Street to Illinois Street, El Segundo Boulevard has two travel lanes in each direction. The roadway width ranges from approximately 50 to 54 feet and has striped edgelines on the north side of the street. The posted speed limit is 35 mph. This segment of El Segundo Boulevard has rolling hills with fairly steep inclines. From Illinois Street to Sepulveda Boulevard the roadway widens to approximately 86 feet to accommodate turn pockets. Between Sepulveda Boulevard and Douglas Street, El Segundo Boulevard has center medians with three travel lanes and turn pockets in each direction. The roadway width (not including turn pockets) is approximately 35 feet on each side of the center median.

Project Challenges

El Segundo Boulevard has no existing bicycle facilities, thus bicyclists must share the road with vehicles traveling at high speeds on the eastern portion, as well as trucks accessing the Chevron Refinery on the western segment. Steep inclines and declines create potential conflicts between bicyclists and motorists due to the speed differential between the two modes. Between Illinois Street and Sepulveda Boulevard, the roadway width is constrained due to turn pockets. East of Nash Street, the roadway width is also constrained and the City has no current potential for a property easement.

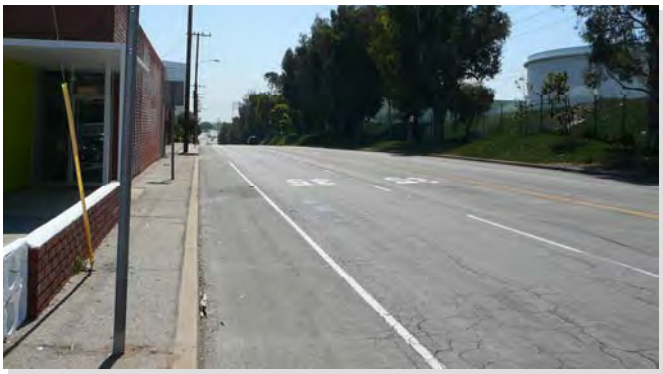
Proposed Improvements

- Stripe 1.2 miles of Class II Bike Lanes
- Add bicycle loop detectors and pavement markings at all signalized intersections
- Install 0.2 miles Class III Bike Route
- Remove 1.2 miles of eastbound curb and landscaping to accommodate bike lanes in City right-of-way (no existing sidewalk)
- Widen westbound sidewalk to comply with ADA standards
- Install 0.5 miles of bi-directional cycle track
- Add bicycle signal phases at entrances/exits to cycle track to be actuated by the presence of bicyclists
- Stripe intersection crossing markings to guide bicyclists through the intersections and increase their visibility
- Install wayfinding signage to direct bicyclists onto proposed bike lanes on Douglas Street

Estimated Cost

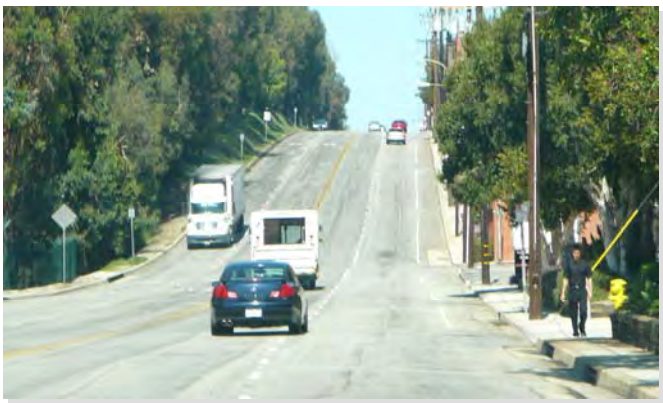
$175,000

Photos



Looking east on El Segundo Boulevard. The curb and landscaping on the eastbound side could be removed to accommodate bicycle lanes.

East of Sepulveda Boulevard, El Segundo Boulevard has six travel lanes and high volumes of vehicular traffic. A cycle track will provide protection for bicyclists.

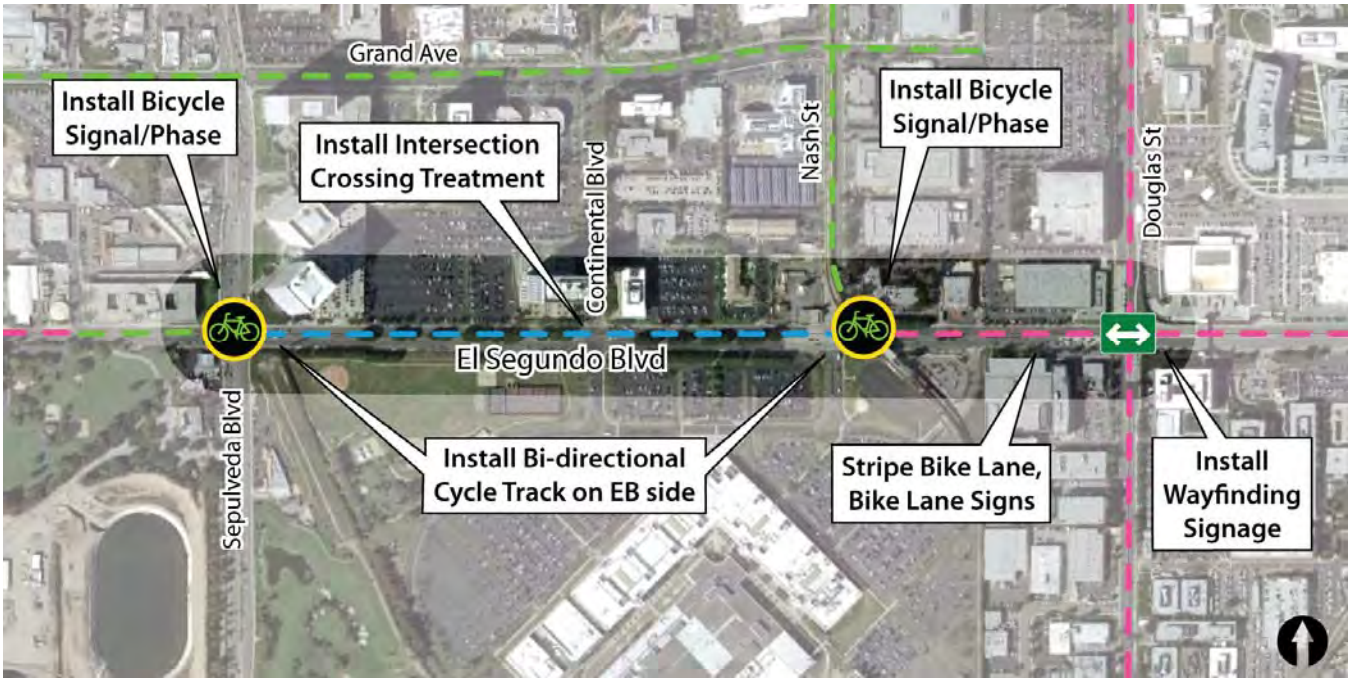


Steep inclines on El Segundo Boulevard can create potential conflicts between bicyclists and motorists due to the speed differential between the two modes.

Aerial Map and Concept Graphics: El Segundo Boulevard

El Segundo Boulevard (Main Street to Sepulveda Boulevard)

El Segundo Boulevard (Sepulveda Boulevard to Douglas Street)



Aerial Map and Concept Graphics: El Segundo Boulevard

Bi-directional Cycle Track and Cycle Track Intersection Crossing Markings

Bicycle-Only Signals