Chapter 6

Lawndale

6 Lawndale

This chapter presents Lawndale's portion of the South Bay Bicycle Master Plan. It begins with a discussion of how Lawndale 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

6.1 Bicycle Transportation Account (BTA) Compliance

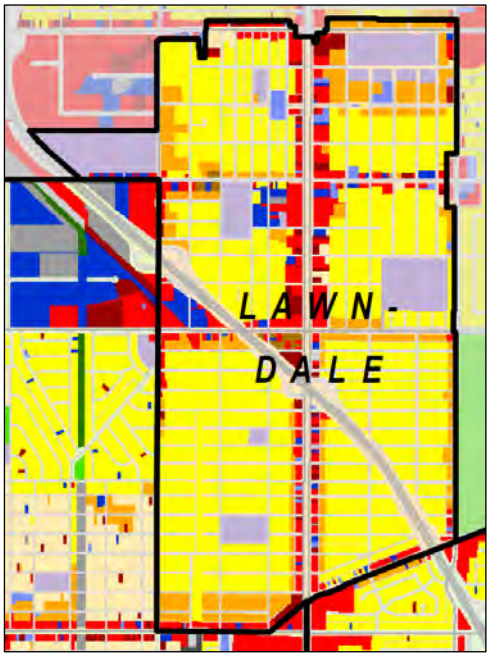
The Bicycle Transportation Account (BTA) is an annual statewide discretionary program that funds bicycle projects through the Caltrans Bicycle Facility Unit. Available as grants to local jurisdictions, the program emphasizes projects that benefit bicycling for commuting purposes. In order for Lawndale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

6.2 Existing Conditions

Lawndale is located in the northern portion of the South Bay region. It is bordered by the City of Hawthorne to the north, the County of Los Angeles to the east, the City of Redondo Beach to the west, and the City of Torrance to the south. According to the 2000 Census, Lawndale has a population of 31,729. The city was incorporated in 1959.

6.2.1 Land Use

Appendix A-3 displays a map of the existing land uses in the South Bay Region. Land uses in Lawndale are shown at right. Almost 60 percent of the City's land area consists of single family residential and another 12 percent is multi-family residential. Lawndale also consists of approximately 12 percent educational uses, a land use that is associated with producing jobs. Having adequate bicycle



Existing Land Uses in Lawndale

(See Appendix A-3 for larger map)

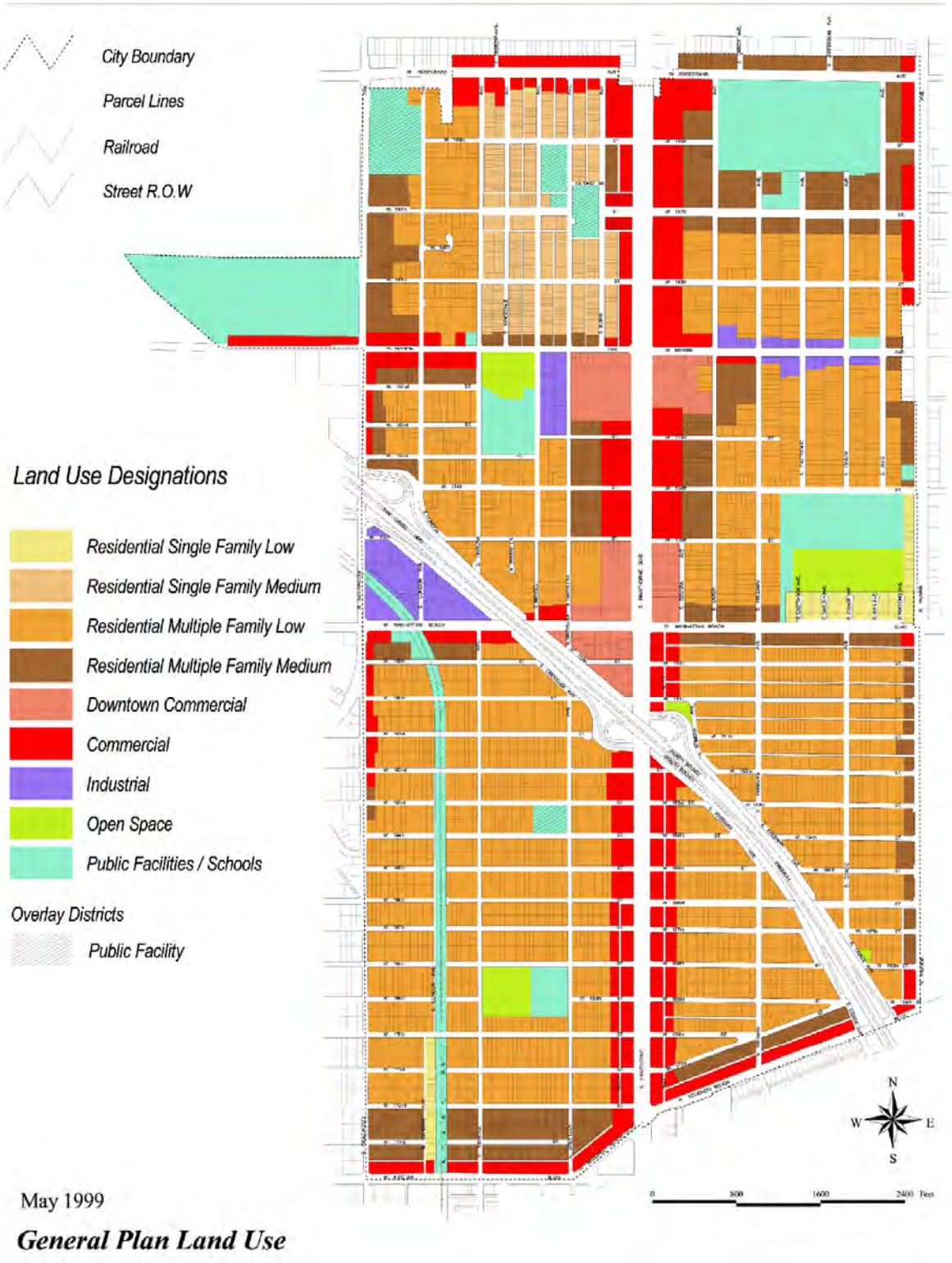


Figure 6-1: City of Lawndale General Plan Land Use Map

South Bay Bicycle Master Plan

Source: City of Lawndale (1999)

facilities could influence commuters to bicycle rather than drive and encourage parents to let their children ride to school.

Figure 6-1 displays proposed land uses in Lawndale. As compared to the existing uses, the City plans to change most of its residential uses from single-family to multi-family. Most of the multi-family residences will be low density, though a portion of it, such as along 152nd Street, will be medium density.

6.2.2 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.

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Appendix A-4 shows population density in Lawndale. The City has high population density due in part to its large proportion of multi-family housing. This type of housing has the potential to produce more bicycle trips as it has more persons per acre and is generally located nearer to community services, such as restaurants or grocery stores. 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 Lawndale. The highest employment density in Lawndale is along Hawthorne Boulevard. The land uses on this corridor are primarily commercial and services, though there are also some general office and industrial 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 in the City of Lawndale. Household median annual incomes throughout the city are below $35,000 (in 1999 dollars). Lawndale has high percentages of households without vehicles and high percentages of transit commuters, especially in the northwestern portion. 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, Lawndale 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 Lawndale, 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.

6.2.3 Relevant Plans and Policies

Table 6-1 outlines information regarding bicycles from the City of Lawndale's Circulation Element and Municipal Code.

Table 6-1: Lawndale Bicycle-Related Plans and Policies

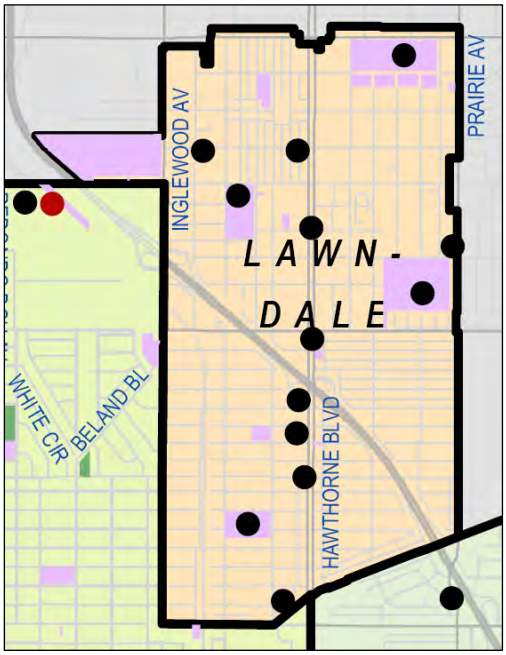
Document	Description
General Plan Circulation Element (1992)	The City of Lawndale's Circulation Element has an overall goal to consider all modes of transportation. Other goals and policies include: • Implement a safe, efficient, and accessible transportation system • Provide bikeways throughout the City to encourage bicycle usage • Consider the use of bicycle lanes where feasible during the design and improvement of the street system • Update and maintain a bikeway plan with recommended routes that connect residential areas to public facilities and employment centers • Provide an integrated system of bicycle and pedestrian networks with associated facilities • Plan Class II bikeways into all major highways and collector streets • Development shall provide short-term bicycle parking and long term bicycle storage facilities • Development shall provide bicycle access to high activity land uses • Continue seeking funds at the private, local, and federal levels for bicycle circulation system expansion • Develop and distribute a bicycle map to employers and existing/future residents • Conduct a citywide bikeway study and develop a bikeway master plan (not completed as of December 2010)
Municipal Code	Bicycle parking requirements in the City's Municipal Code vary by the size and land use of the development as part of the City's transportation demand and trip reduction measures. Parking shall be in the form of bicycle racks, fully enclosed spaces or lockers, or other secure parking. The City also has requirements for the bicycle parking at video arcades and requires developments of certain sizes to provide information, such as bicycle maps. For developments that are required to have bicycle parking, the bicycle storage areas and total number of bikes that can be stored must be indicated on architectural plans. Once the project is near completion, staff inspects the site and makes sure that requirements are met. Detailed bicycle parking information is presented in **Appendix G**. Lawndale's Municipal Code does not prohibit riding bicycles on the sidewalk, though there is not exact language stating this.

6.2.4 Existing Bicycle Network

Figure 6-2 shows the existing bicycle facilities in Lawndale. The City of Lawndale has no existing Class I, Class II, or Class III facilities. **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**.

6.2.5 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 displayed in **Appendix A-9**. The locations of existing bicycle racks in Lawndale are shown at right. These locations include parks, schools, and shopping centers. The City does not provide any long-term bicycle parking within its jurisdiction.



Existing End-of-trip Facilities in Lawndale

See Appendix A-9 for larger map

Existing Bike Racks
Existing Bike Lockers

6.2.6 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 Lawndale. Metro operates several bus lines with routes through the City, which makes it relatively well-served by transit. Buses are equipped with bicycle racks, which are available on a first-come, first-served basis.

Lawndale also operates the Lawndale Beat transit service, which operates two routes through Lawndale. **Appendix A-20** displays the Lawndale Beat bus routes. Both routes connect to the Metro Green Line station to the west on Marine Avenue in Redondo Beach.

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. Lawndale does not currently provide any end-of-trip

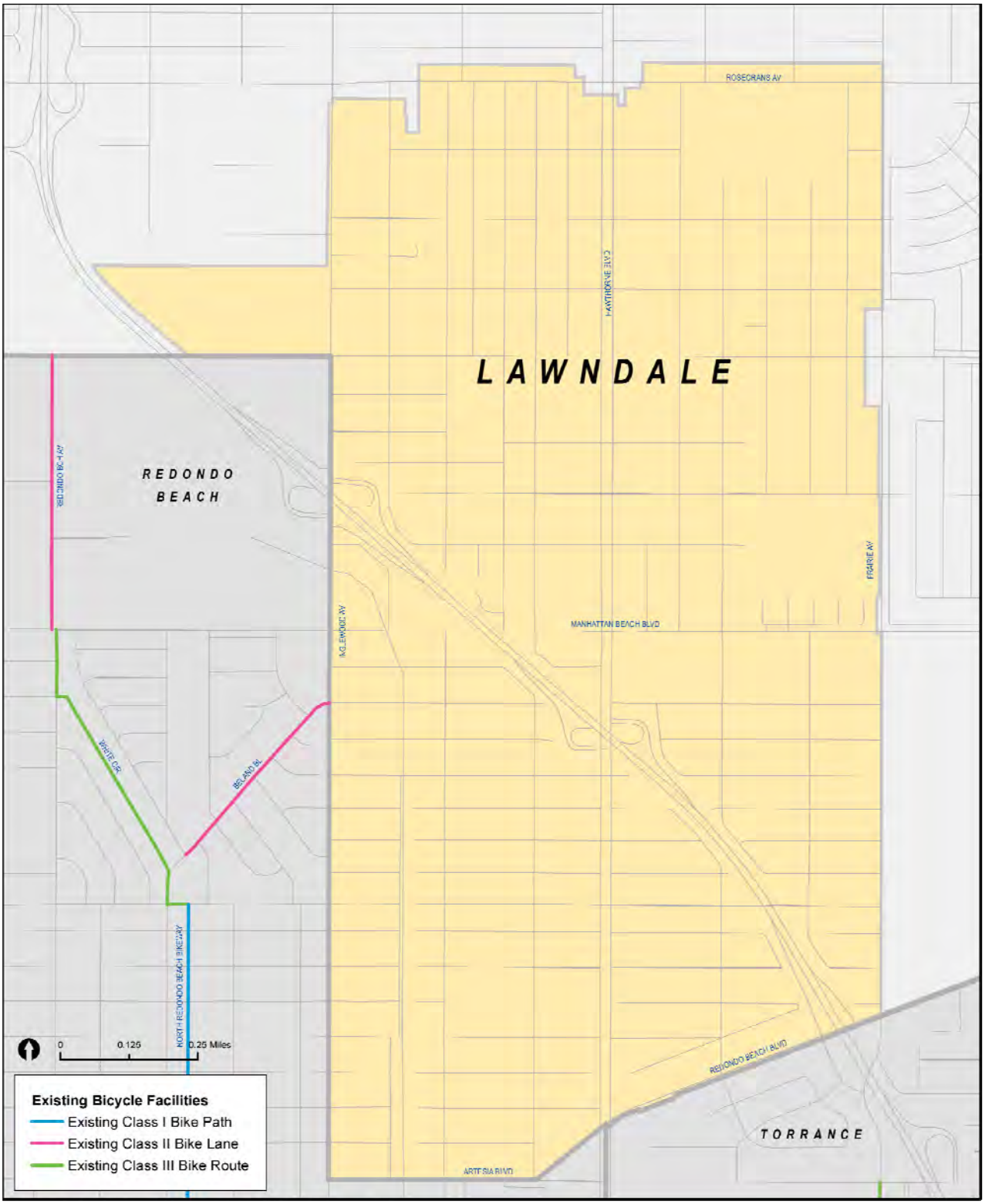


Figure 6-2: Existing Bicycle Facilities in Lawndale

facilities at the Lawndale Beat bus stops within the City or any other intermodal end-of-trip facilities within its jurisdiction.

6.2.7 Education and Enforcement Strategies

Bicycle education programs and enforcement of bicycle-related policies help to make riding safer for all bicyclists. Lawndale does not currently provide any education or enforcement strategies to promote bicycle safety in the City.

6.2.8 Past Bicycle-Related Expenditures

Between 2000 and 2010, the City of Lawndale incurred the following bicycle expenditures:

- 2007: $423.11 for bicycle racks
- 2010: $11,000 for artistic bicycle racks in Jane Adams Park

6.3 Needs Analysis

This section describes the needs of bicyclists in Lawndale. 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.

6.3.1 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 Lawndale that the community identified as desirable for bikeways.

The public overall identified major arterials, including Manhattan Beach Boulevard, Hawthorne Boulevard, Aviation Boulevard, and Marine Avenue, as desirable for bicycle facilities. The community also mentioned that it would like to see bikeways on streets that lead to schools, such as Firmona Avenue and Mansel Avenue.

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6.3.2 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 Lawndale by census tract. Lawndale has high percentages of bicycle commuters throughout the city, especially in the northwest portion. This correlates with

the high percentages of households without vehicles and high percentages of transit commuters in that area.

Table 6-2 presents commute to work data estimates reported by the 2000 US Census for Lawndale. For comparative purposes, the table includes commute to work data for the United States, California, and County of Los Angeles. According to the estimates, 1.6 percent of residents in Lawndale commute predominantly by bicycle. The percent of bicycle commuters in Lawndale is nearly double that of California. Lawndale also has comparatively high rates of carpooling and low rates of driving alone, which could in part be due to low rates of vehicle ownership. Moreover, it is important to note that this figure likely underestimates the true amount of bicycling that occurs in Lawndale 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. This is especially important to note as Lawndale has a low percentage of drive alone commuters and high percentage of transit commuters. It also has a high percentage of carpoolers.

In addition to bicycle commuters in Lawndale, bicyclists from neighboring communities use the city's 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 Lawndale's bicycle network in **Section 6.4**.

Table 6-2: Means of Transportation to Work

Mode	United States	California	Los Angeles County	Lawndale
Bicycle	0.38%	0.83%	0.62%	1.58%
Drove Alone – car, truck, or van	75.70%	71.82%	70.36%	66.95%
Carpool – car, truck, or van	12.19%	14.55%	15.08%	20.39%
Transit	4.73%	5.07%	6.58%	6.89%
Walked	2.93%	2.85%	2.93%	2.30%
Other Means	0.70%	0.79%	0.76%	0.42%
Worked at Home	3.26%	3.83%	3.49%	1.16%

Source: US Census 2000

Table 6-3 presents an estimate of current bicycling within Lawndale using US Census data along with several adjustments for likely bicycle commuter underestimations, as discussed above. Table 6-4 presents the associated air quality benefits from bicycling.

Table 6-3: Existing Bicycling Demand

Variable	Figure	Source
Existing study area population	31,729	2000 US Census, P1
Existing employed population	12,839	2000 US Census, P30
Existing bike-to-work mode share	1.6%	2000 US Census, P30
Existing number of bike-to-work commuters	203	Employed persons multiplied by bike-to-work mode share
Existing work-at-home mode share	1.2%	2000 US Census, P30
Existing number of work-at-home bike commuters	15	Assumes 10% of population working at home makes at least one daily bicycle trip
Existing transit-to-work mode share	6.9%	2000 US Census, P30
Existing transit bicycle commuters	221	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)	5,226	2000 US Census, P8
Existing school children bicycling mode share	2.0%	National Safe Routes to School surveys, 2003.
Existing school children bike commuters	105	School children population multiplied by school children bike mode share
Existing number of college students in study area	2,201	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	110	College student population multiplied by college student bicycling mode share
Existing total number of bike commuters	654	Total bike-to-work, school, college and utilitarian bike trips. Does not include recreation.
Total daily bicycling trips	1,308	Total bicycle commuters x 2 (for round trips)

Table 6-4: Existing Bicycling Air Quality Impact

Variable	Figure	Source
Current Estimated VMT Reductions		
Reduced Vehicle Trips per Weekday	295	Assumes 73% of bicycle trips replace vehicle trips for adults/college students and 53% for school children
Reduced Vehicle Trips per Year	77,012	Reduced weekday vehicle trips x 261 (weekdays / year)
Reduced Vehicle Miles per Weekday	1,973	Assumes average round trip travel length of 5 miles for adults/college students and 1 mile for schoolchildren
Reduced Vehicle Miles per Year	514,886	Reduced weekday vehicle miles x 261 (weekdays / year)
Current Air Quality Benefits		
Reduced Hydrocarbons (lbs/wkday)	6	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)	4	Daily mileage reduction x 0.95 grams / mi
Reduced CO (lbs/wkday)	54	Daily mileage reduction x 12.4 grams / mi
Reduced C02 (lbs/wkday)	1,605	Daily mileage reduction x 369 grams / mi
Reduced Hydrocarbons (lbs/yr)	1,544	Yearly mileage reduction x 1.36 grams / mi
Reduced PM10 (lbs/yr)	6	Yearly mileage reduction x 0.0052 grams / mi
Reduced PM2.5 (lbs/yr)	6	Yearly mileage reduction x 0.0049 grams / mi
Reduced NOX (lbs/yr)	1,078	Yearly mileage reduction x 0.95 grams / mi
Reduced CO (lbs/yr)	14,076	Yearly mileage reduction x 12.4 grams / mi
Reduced $C0_2$ (lbs/yr)	418,863	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 6-5 presents projected year 2030 bicycling activity within Lawndale 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 6-6 presents the associated year

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

Table 6-5: Projected Year 2030 Bicycling Demand

Variable	Figure	Source
Future study area population	39,484	Calculated based on CA Dept. of Finance, *Population Projections for California and Its Counties 2000-2050.*
Future employed population	15,977	Calculated based on CA Dept. of Finance, *Population Projections for California and Its Counties 2000-2050*,
Future bike-to-work mode share	3.2%	Double the rate from 2000 US Census, P30
Future number of bike-to-work commuters	505	Employed persons multiplied by bike-to-work mode share
Future work-at-home mode share	0.76%	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	61	Assumes 10% of population working at home makes at least one daily bicycle trip
Future transit-to-work mode share	13.8%	Double the rate from 2000 US Census, P30
Future transit bicycle commuters	550	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)	4,153	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	166	School children population multiplied by school children bicycling mode share
Future number of college students in study area	2,739	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	192	College student population x college student bicycling mode share
Future total number of bike commuters	1,474	Total bike-to-work, school, college and utilitarian biking trips. Does not include recreation.
Total daily bicycling trips	2,947	Total bike commuters x 2 (for round trips)

Table 6-6: Projected Year 2030 Bicycling Air Quality Impact

Variable	Figure	Source
Forecasted VMT Reductions		
Reduced Vehicle Trips per Weekday	641	Assumes 73% of biking trips replace vehicle trips for adults/college students and 53% for school children
Reduced Vehicle Trips per Year	167,238	Reduced number of weekday vehicle trips x 261 (weekdays / year)
Reduced Vehicle Miles per Weekday	4,510	Assumes average round trip travel length of 8 miles for adults / college students and 1 mile for schoolchildren
Reduced Vehicle Miles per Year	1,177,058	Reduced number of weekday vehicle miles x 261 (weekdays / year)
Forecasted Air Quality Benefits		
Reduced Hydrocarbons (lbs/wkday)	14	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)	9	Daily mileage reduction x by 0.95 grams / mi
Reduced CO (lbs/wkday)	123	Daily mileage reduction x by 12.4 grams / mi
Reduced $C0_2$ (lbs/wkday)	3,669	Daily mileage reduction x by 369 grams / mi
Reduced Hydrocarbons (lbs/yr)	3,529	Yearly mileage reduction x by 1.36 grams / mi
Reduced PM10 (lbs/yr)	13	Yearly mileage reduction x by 0.0052 grams / mi
Reduced PM2.5 (lbs/yr)	13	Yearly mileage reduction x by 0.0049 grams / mi
Reduced NOX (lbs/yr)	2,465	Yearly mileage reduction x by 0.95 grams / mi
Reduced CO (lbs/yr)	32,178	Yearly mileage reduction x by 12.4 grams / mi
Reduced CO_2 (lbs/yr)	957,544	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 approximately 1,300 to just under 3,000, resulting in a substantial reduction of both Vehicle Miles Traveled (VMT) and associated

emissions. This includes a yearly emissions reduction by 2030 of approximately 2,500 pounds of smog forming N0X and roughly one 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.

6.3.3 Bicycle Counts

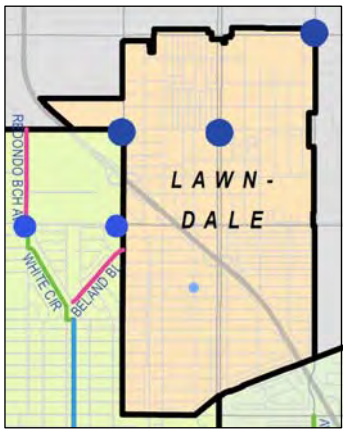
To assess bicycling levels at different sites throughout Lawndale, volunteers conducted bicycle counts, in which they manually recorded the number of bicyclists that rode by.

6.3.3.1 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.

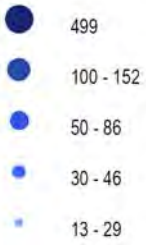
Volunteers conducted bicycle counts in each of the seven participating cities in the South Bay on Thursday, November 4, 2010 from 3:00 p.m. to 6:00 p.m. and Saturday, November 6, 2010 from 10:30 a.m. to 1:30 p.m. These dates are meant to capture volumes of bicyclists on a typical weekday and weekend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

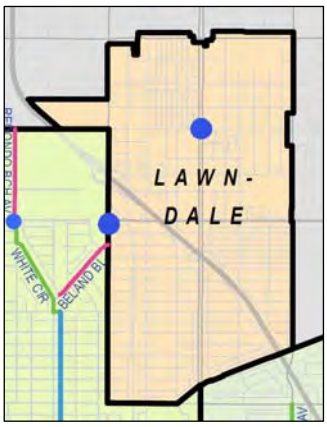
The count locations were selected in partnership by city staff, Alta Planning + Design, Los Angeles County Bicycle Coalition staff, and South Bay Bicycle Coalition board members. This snapshot of locations is meant to capture a diverse bicycling population using the roads and streets that span the spectrum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



Weekday Bicycle Count Results in Lawndale

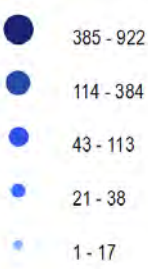
(See Appendix A-16 for larger map and Appendix H for a list of count locations.)





Weekend Bicycle Count Results in Lawndale

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

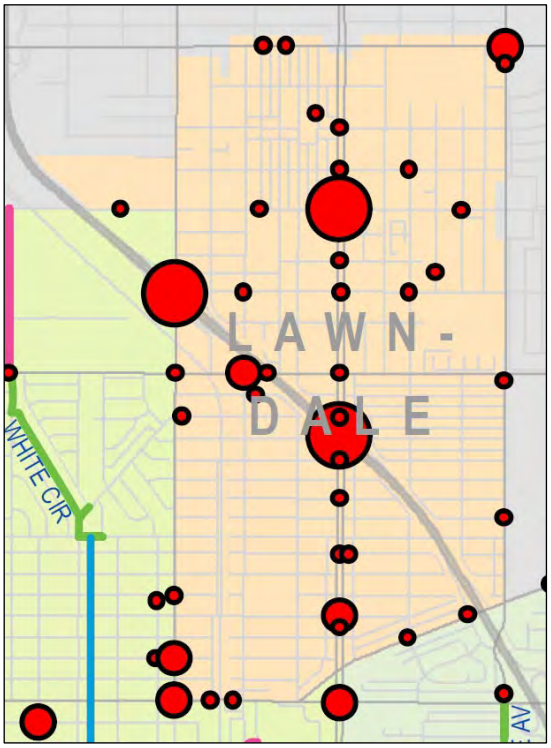


6.3.3.2 Results

The count results for the South Bay are displayed in **Appendix A-16** and **Appendix A-17**. Count results for Lawndale are shown at right. Detailed count data, including a list of count locations, is presented in **Appendix H**. On Thursday, the Lawndale station that experienced the highest volume was Marine Avenue and Hawthorne Boulevard with 134 bicyclists during the three hour count period. The station with the most bicyclists on Saturday was also Marine Avenue and Hawthorne Boulevard with 86 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. About 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 Lawndale 2007-2009

(See Appendix A-18 for larger map)

6.3.4 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 Lawndale. 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 6-7 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 Lawndale are shown on the preceding page. There were 55 total reported collisions involving bicyclists from 2007-2009 in the City of Lawndale. Three locations in Lawndale each experienced four collisions involving bicyclists. These were the intersections of Inglewood Avenue and Interstate 405, Hawthorne Boulevard and Interstate 405, and Hawthorne Boulevard and Marine Avenue.

A total of 21 crashes involving bicyclists occurred on Hawthorne Boulevard alone. Both high employment and population densities lie along Hawthorne north of the 405, which likely generate many bicycle trips. Hawthorne Boulevard also carries large volumes of automobiles traveling at high speeds, producing potential conflicts between vehicles and bicycles. The on- and off-ramps from the 405 are challenging for bicyclists due to channelized turning lanes with large turning radii, as well as poor lighting and visibility in the underpasses.

Table 6-7: Bicycle Collision Data 2007-2009

Total Crashes Involving Bicyclists	Number of Bicyclists Involved	Persons Injured	Persons Severely Injured	Persons Killed
55	55	47	4	1

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

As reported by police officers in traffic reports, bicyclists were at fault in 86 percent of collisions involving bicycles (47 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 Lawndale. Hawthorne Boulevard has the highest volumes of traffic, followed by Rosecrans Avenue, Artesia Boulevard, Prairie Avenue, and Inglewood Avenue. Each of these streets experienced collisions involving bicyclists in 2007-2009. Because Lawndale has such high percentages of bicycle commuters, installing bicycle facilities, especially on major arterials, could reduce the number and severity of collisions involving bicyclists.

6.4 Proposed Bicycle Network

This section presents the proposed bicycle network for the City of Lawndale, 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 Lawndale, 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 Lawndale 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.

6.4.1 Proposed Bikeway Facilities

The proposed bicycle network in the City of Lawndale includes Class I Bike Paths, Class II Bike Lanes, Class III Bike Routes, and Bike Friendly Streets, and is shown in **Figure 6-3**. The proposed bicycle network in Lawndale connects with the recommended networks in Redondo Beach and Torrance, as well as the Los Angeles County bicycle system. **Figure 6-3** shows a blue asterisk at the proposed bike lanes on Marine Avenue and on the proposed path along the Metro Green Line Extension as they are outside the jurisdiction of this plan, but are supported improvements.

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 6-8** lists the proposed bicycle paths, **Table 6-9** lists the proposed bicycle lanes, **Table 6-10** lists the proposed bicycle routes, and **Table 6-11** lists the proposed bicycle-friendly streets. The proposed bicycle network in the South Bay region as a whole is presented in **Appendix A-19**.

Table 6-8: Proposed Class I Bicycle Paths in Lawndale

Street	From	To	Miles
Green Line Extension Bike Path	163rd St	170th St	0.4
Total Bicycle Path Mileage			**0.4**

Table 6-9: Proposed Class II Bicycle Lanes in Lawndale

Street	From	To	Miles
Artesia Boulevard	Inglewood Avenue	Grivellea Avenue	0.4
Marine Avenue	Inglewood Avenue	Prairie Avenue	1.0
Manhattan Beach Boulevard	Inglewood Avenue	Prairie Avenue	1.0
Hawthorne Boulevard	Rosecrans Avenue	Redondo Beach Boulevard	1.9
Redondo Beach Boulevard	Grivellea Avenue	Prairie Avenue	0.7
Inglewood Avenue	Rosecrans Avenue	Artesia Boulevard	2.0
Prairie Avenue	Rosecrans Avenue	Redondo Beach Boulevard	1.7
Rosecrans Avenue	Inglewood Avenue	Prairie Avenue	1.0
Total Bicycle Lane Mileage			**9.7**

Table 6-10: Proposed Class III Bicycle Routes in Lawndale

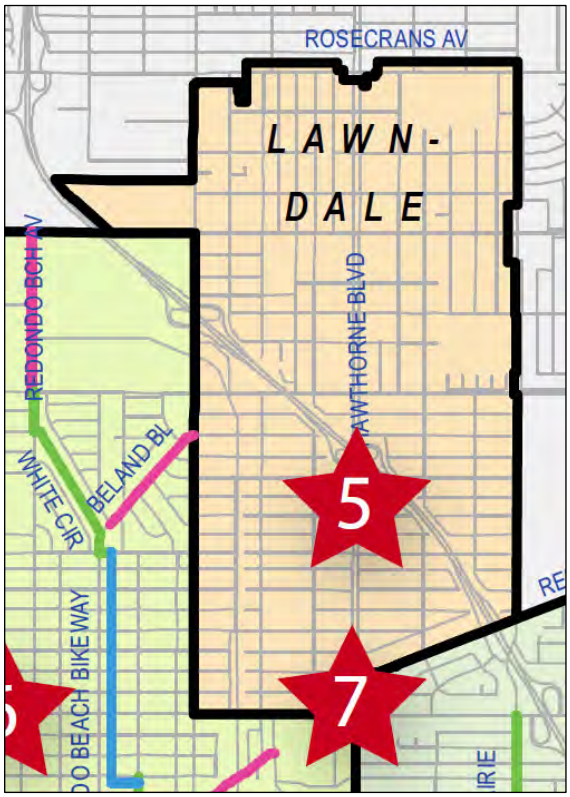
Street	From	To	Miles
Condon Avenue (South Bound only)	163rd St	170th St	0.4
Total Bicycle Route Mileage			**0.4**

Table 6-11: Proposed Bicycle-Friendly Streets in Lawndale

Street	From	To	Miles
160th Street	Inglewood Avenue	Firmona Avenue	0.2
154th Street	Condon Avenue	Prairie Avenue	0.9
Freeman Avenue - 164th Street	147th Street	Prairie Avenue	1.4
Mansel Avenue	Rosecrans Avenue	Manhattan Beach Boulevard	1.0
Firmona Avenue	Manhattan Beach Boulevard	Artesia Boulevard	1.0
149th Street - Burin Avenue - 147th Street	Mansel Avenue	Prairie Avenue	0.8

Street	From	To	Miles
Condon Avenue	Rosecrans Avenue	154th Street	0.8
163rd Street	Inglewood Avenue	Prairie Avenue	1.0

Street	From	To	Miles
147th Street	Inglewood Avenue	Mansel Avenue	0.3
164th Street	Green Line Extension Bike Path	Hawthorne Boulevard	0.3
170th Street	Inglewood Avenue	Hawthorne Boulevard	0.5
166th Street	Inglewood Avenue	Green Line Extension Bike Path	0.1
166th Street - Osage Avenue	Firmona Avenue	164th Street	0.8
Total Bicycle-Friendly Street Mileage			**9.2**



Opportunities and Constraints in Lawndale

(See Appendix I for larger map)

Opportunity

Constraint

There are several constraints to recommending new bicycle facilities in Lawndale. These are shown on the next 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.

One constraint is a proposed Class II bikeway along Hawthorne Boulevard. This facility poses some unique constraints in terms of space availability. This is a busy thoroughfare that is dense with commercial and retail uses. This Plan recommends the consideration of a Class II facility along Hawthorne Boulevard to the extent feasible. One option to consider would be to utilize the necessary space along the center parking landscaped median rather than removing on street parking or travel lanes.

A second 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 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.

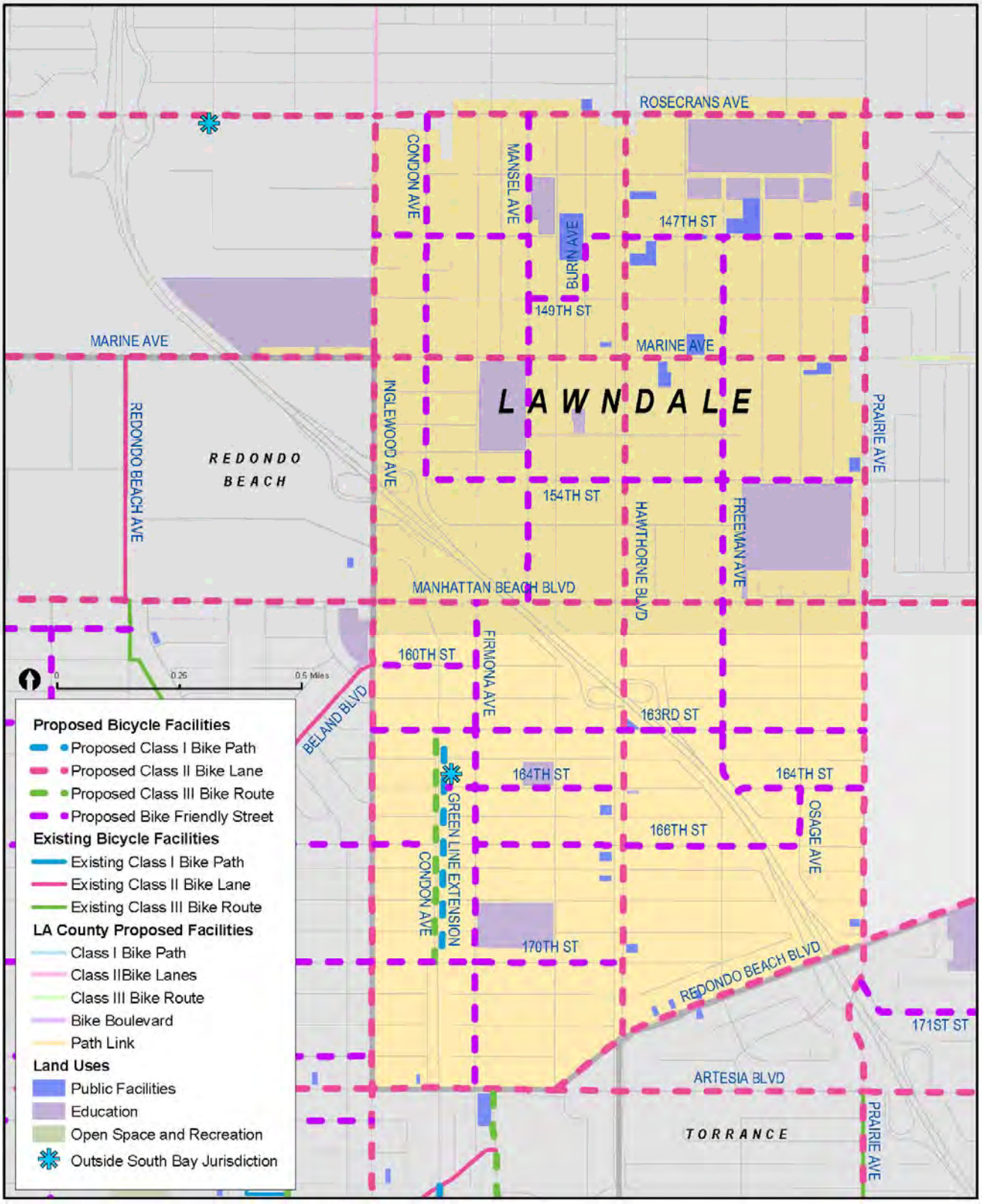


Figure 6-3: Proposed Bicycle Facilities in Lawndale

South Bay Bicycle Master Plan

Bicycle lockers are appropriate end-of-trip facilities for civic activity centers and transit hubs.

6.4.2 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 Lawndale Municipal Code currently provides bicycle parking requirements at video arcades and non-residential developments. The Municipal Code should be amended to remove the section on video arcades and expand the requirements to include quantity of bicycle parking at new and retrofitted multi-family residential, commercial, office, and mixed-use developments of all sizes. Quantity of bicycle parking should be based on square footage of developments or by number of employees/residents to adequately address the bicycle demand at each development.

The City 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. Lawndale 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

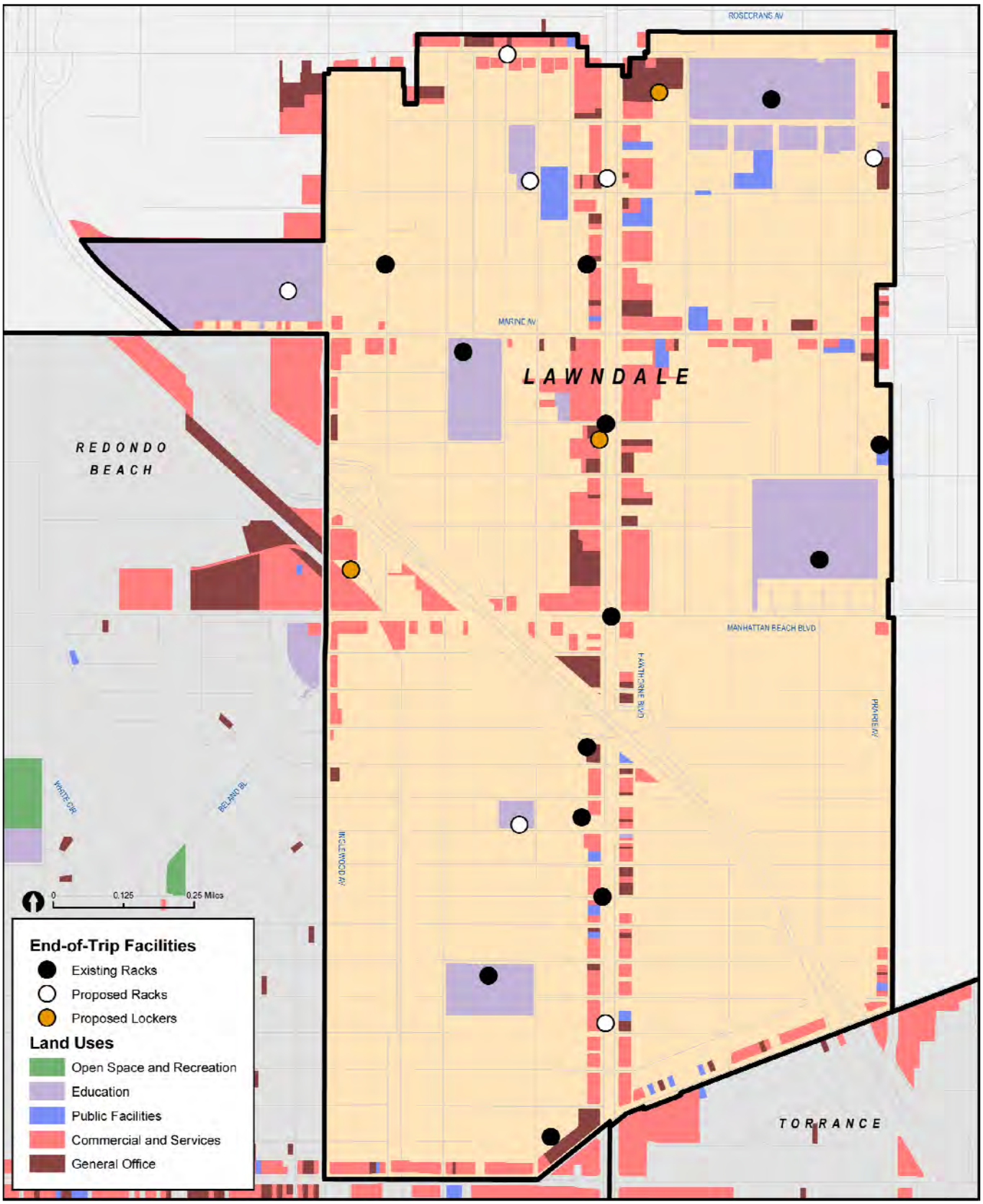
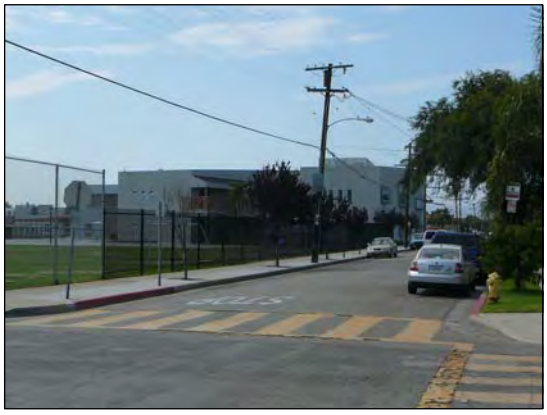


Figure 6-4: Lawndale Proposed End-of-Trip Facilities

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



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

Proposed end-of-trip bicycle facilities in Lawndale are shown in **Figure 6-4**. 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.

6.5 Project Costs

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

6.5.1 Cost Estimates

Table 6-12 displays the planning-level capital cost assumptions for each facility type proposed in this plan and **Table 6-13** displays the cost to implement the proposed network in the City of Lawndale from the cost assumptions.[20] 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

[20] **Table 6-13** assumes the cost of implementing Class III Bicycle Routes with Sharrows based on the policies presented in **Chapter 2**

changes to phasing, recalibration of loop detectors, or installation of push buttons. For detailed cost estimations, refer to the project sheets presented in **Section 6.7**.

Table 6-12: Unit Cost Estimates for Proposed Bicycle Facility Types

Facility Type	Description	Estimated Cost[21]
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 6-13: Estimated Cost of Proposed Bicycle Network

Facility Type	Unit Cost per mile	Length of Proposed Network (miles)	Cost
Bicycle Path	$800,000	0.4	$ 336,000
Bicycle Lane	$40,000	9.7	$ 386,000
Bicycle Route with sharrows	$25,000	0.4	$ 11,000
Bicycle-Friendly Street	$30,000	9.2	$ 275,000
Total		**19.7**	**$ 1,008,000**

6.6 Project Prioritization

A prioritized list of bicycle projects will help guide the City of Lawndale in implementing the proposed bicycle facilities presented in this Plan. Each proposed facility discussed in **Section 6.4.1** is grouped into projects based on feasibility of implementation. **Table 6-14** 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 Lawndale. The projects ranked the highest should be implemented first.

[21] 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 6-14: Lawndale 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
BFS	160th Street	Inglewood Avenue	Firmona Avenue	3	6	0	0	0	1	0	1	2	2	**15**
BL	Artesia Boulevard	Inglewood Avenue	Grivellea Avenue	0	0	0	4	4	2	2	1	2	0	**15**
BL	Marine Avenue	Inglewood Avenue	Prairie Avenue	0	0	1	4	2	2	2	2	1	0	**14**
BL	Manhattan Beach Boulevard	Inglewood Avenue	Prairie Avenue	0	0	0	4	0	2	2	2	1	2	**13**
BL	Hawthorne Boulevard	Rosecrans Avenue	Redondo Beach Boulevard	0	0	0	4	2	2	2	2	0	1	**13**
BL	Redondo Beach Boulevard	Grivellea Avenue	Prairie Avenue	0	0	0	4	2	1	2	2	1	1	**13**
BL	Inglewood Avenue	Rosecrans Avenue	Artesia Boulevard	0	0	2	2	2	2	2	2	0	1	**13**
BFS	154th Street	Condon Avenue	Prairie Avenue	0	0	0	4	0	2	1	2	1	2	**12**
BL	Prairie Avenue	Rosecrans Avenue	Redondo Beach Boulevard	0	3	0	2	0	2	2	2	1	0	**12**
BFS	Freeman Avenue - 164th Street	147th Street	Prairie Avenue	0	0	0	4	0	1	0	2	1	2	**10**
BFS	Mansel Avenue	Rosecrans Avenue	Manhattan Beach Boulevard	0	0	0	4	0	0	1	2	1	2	**10**
BFS	Firmona Avenue	Manhattan Beach Boulevard	Artesia Boulevard	0	0	0	2	2	1	1	1	1	2	**10**
BFS	149th Street - Burin Avenue - 147th Street	Mansel Avenue	Prairie Avenue	0	0	0	0	0	1	1	2	2	2	**8**
BFS	Condon Avenue	Rosecrans Avenue	154th Street	0	0	0	2	0	0	0	2	2	2	**8**
BFS	162nd Street	Inglewood Avenue	Prairie Avenue	0	3	0	0	0	0	0	1	2	2	**8**
BL	Rosecrans Avenue	Inglewood Avenue	Prairie Avenue	0	0	0	0	0	2	2	2	1	0	**7**

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
BFS	Condon Avenue	Green Line Extension Bike Path	164th Street	0	0	0	0	0	0	1	2	2	2	**7**
BFS	170th Street	Inglewood Avenue	Hawthorne Boulevard	0	0	0	0	0	1	0	1	2	2	**6**
BFS	166th Street	Inglewood Avenue	Green Line Extension Bike Path	0	0	0	0	0	0	1	1	2	2	**6**
BFS	166th Street - Osage Avenue	Firmona Avenue	164th Street	0	0	0	0	0	0	1	1	2	2	**6**
BFS	164th Street	Green Line Extension Bike Path	Hawthorne Boulevard	0	0	0	0	0	0	0	1	2	2	**5**
BR	Condon Avenue (Southbound Only)	162nd Street	170th St	0	0	0	0	0	0	0	2	2	0	**4**
BP	Green Line Extension Bike Path	162nd Street	170th St	0	0	0	0	0	0	1	2	0	0	**3**

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

6.7 Project Sheets

The City of Lawndale 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

Lawndale Project #1: Mansel Avenue (Rosecrans Avenue to Manhattan Beach Boulevard)

Project Site

Mansel Avenue is north-south residential street located in the western portion of the City of Lawndale. It connects to the City of Hawthorne to the north and Manhattan Beach Boulevard in Lawndale to the south. Mansel Avenue provides access to Lucille J. Smith Elementary School and Jane Addams Park. There is parallel on-street parking along most of Mansel Avenue and a posted speed limit of 25 mph.

Mansel Avenue has one travel lane in each direction. There are stop controlled intersections at all intersections, except Marine Avenue where there is a traffic signal. Traffic does not stop on Rosecrans Avenue and Manhattan Beach Boulevard.

Project Challenges

Mansel Avenue has no existing bicycle facilities thus bicyclists and motor vehicles must share the road. There are few existing treatments to create a safe bicycling environment for children riding to school. Left turns from Mansel Avenue onto Manhattan Beach Boulevard and Rosecrans Avenue are difficult by bicycle because both roads are busy arterials on which through traffic does not stop.

Proposed Improvements

- Install signage and stripe pavement markings, such as sharrows or bike friendly street stencils,
- Install wayfinding signage at intersections with other bicycle facilities once implemented, especially other bike friendly streets
- Add bicycle loop detectors and pavement markings at all signalized intersections
- Stripe a High-intensity Activated Crosswalk (HAWK) at the intersection of Mansel Avenue and Rosecrans Avenue
- Construct a median refuge island at the intersection of Mansel Avenue and Manhattan Beach Boulevard

Estimated Cost

$130,000

Photos

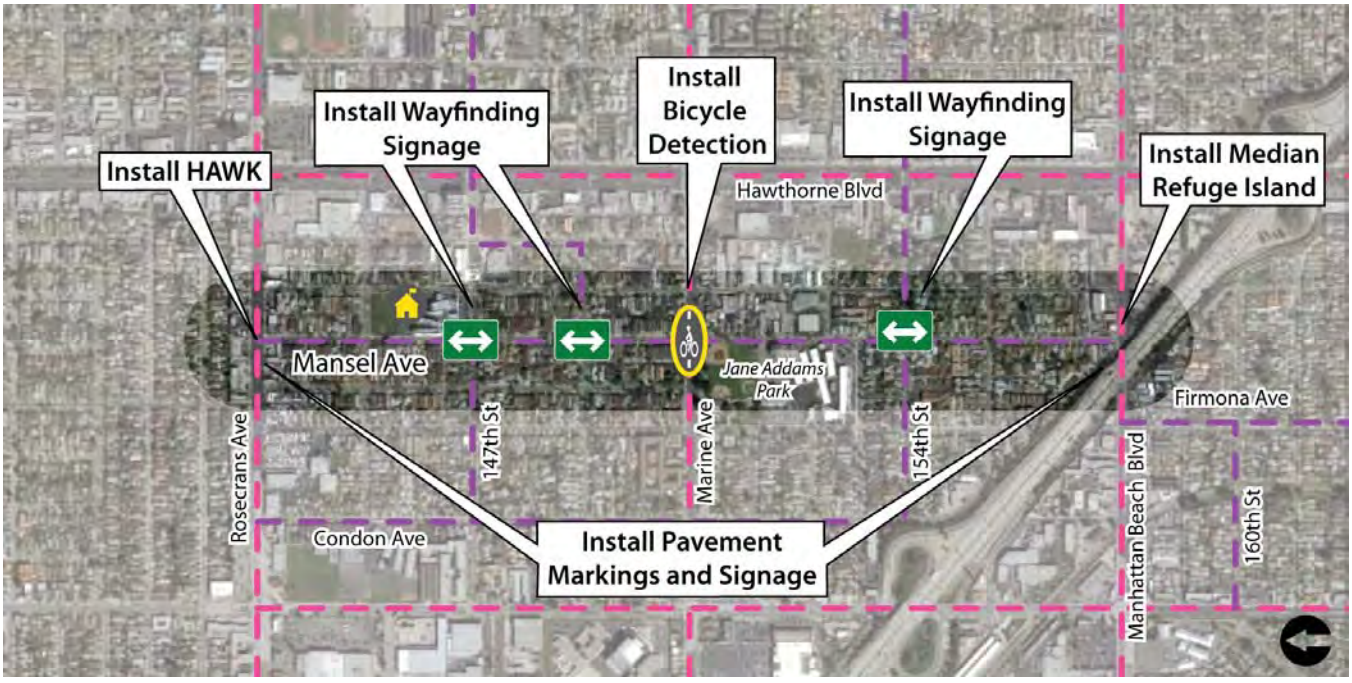
A median refuge island on Manhattan Beach Boulevard will help bicyclists turning left onto and off of Mansel Avenue.

Signage and pavement markings will alert motorists to the presence of bicyclists.

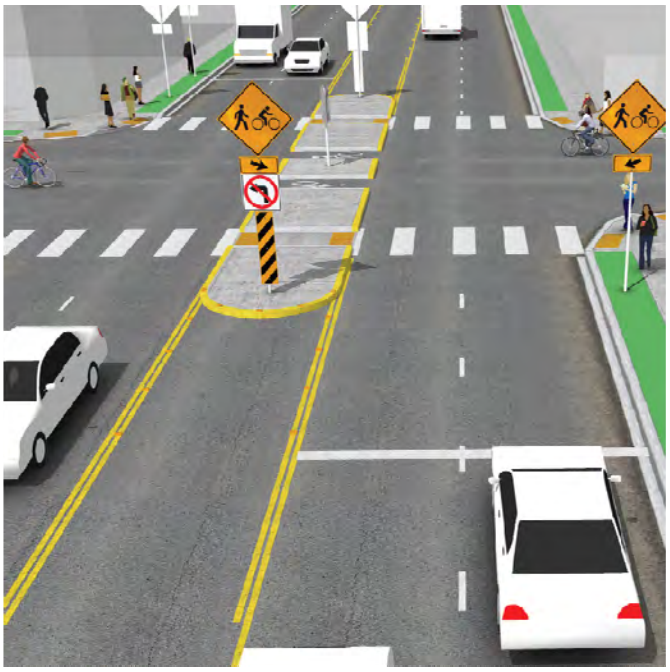
A HAWK across Rosecrans Avenue will help both bicyclists and pedestrians cross the arterial.

Aerial Map and Concept Graphics: Mansel Avenue

Mansel Avenue (Rosecrans Avenue to Manhattan Beach Boulevard)



Example Median Refuge Island (Source: NACTO.org)



Lawndale Project #2: Manhattan Beach Boulevard (Inglewood Avenue to Prairie Avenue)

Project Site

Manhattan Beach Boulevard is an east-west arterial road located in the center of the City of Lawndale. It connects to the City of Redondo Beach to the west and the County of Los Angeles to the east. Manhattan Beach Boulevard provides access to many commercial services and residences, and secondary access to Rogers Anderson Park. There is parallel on-street parking along most of Manhattan Beach Boulevard and a posted speed limit of 40 mph.

Manhattan Beach Boulevard has two travel lanes in each direction with turn pockets and center medians. From Inglewood Avenue to Hawthorne Avenue, the roadway width is approximately 33 to 34 feet on each side of the center median. Between Grivellea Avenue and Hawthorne Boulevard the number of travel lanes increases to three in the eastbound direction. East of Hawthorne Boulevard the number of travel lanes drops to two again. From Hawthorne Boulevard to Prairie Avenue the roadway width is approximately 32 to 33 feet on each side of the center median.

Project Challenges

Manhattan Beach Boulevard has no existing bicycle facilities, thus bicyclists must share the road with high volumes of vehicles traveling at high speeds. A third eastbound travel lane between Grivellea Avenue and Hawthorne Boulevard reduces the space available to provide bicycle facilities.

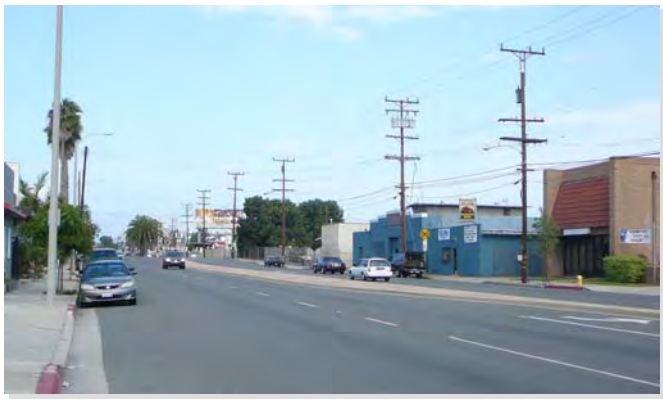
Proposed Improvements

- Stripe 1 mile of Class II bike lanes
- Add bicycle loop detectors and pavement markings at all signalized intersections
- Remove the third northbound travel lane between Grivellea Avenue and Hawthorne Boulevard to provide adequate space to continue bicycle lanes on this segment

Estimated Cost

$75,000

Photos



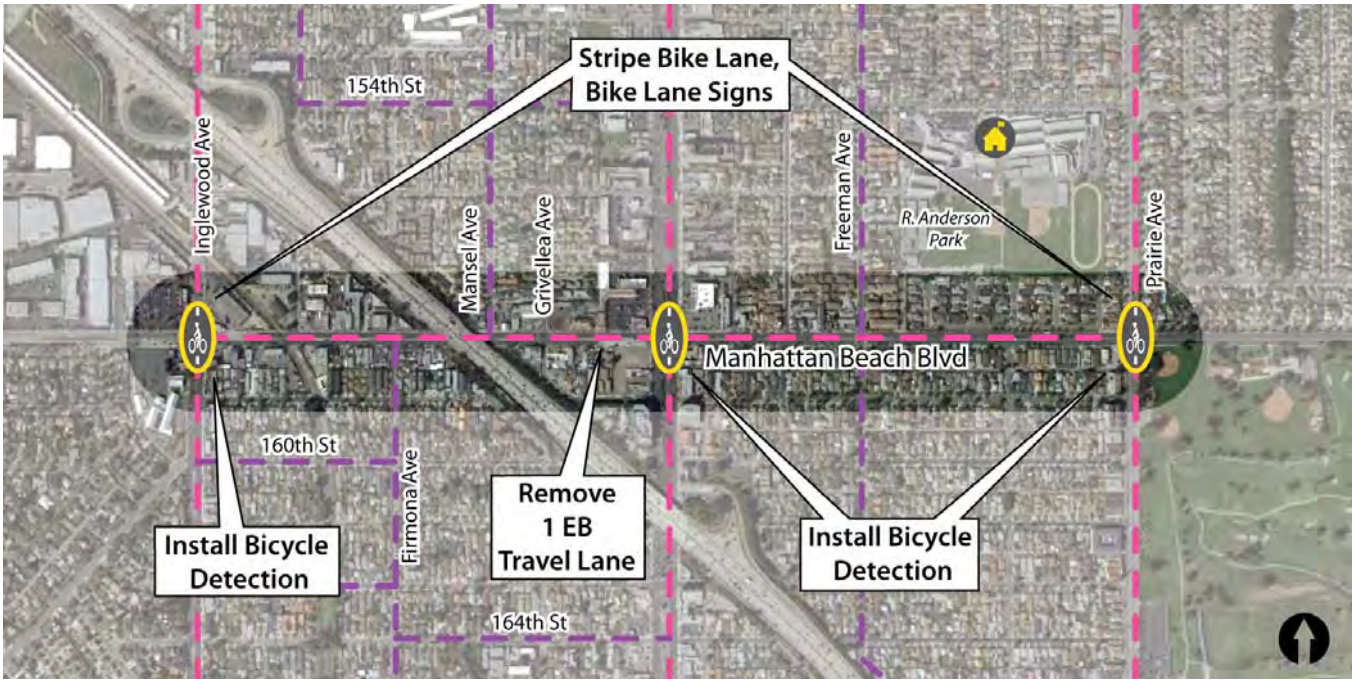
Bicycle Lanes on Manhattan Beach Boulevard will separate bicyclists and motorists to reduce potential conflicts.

Providing bicycle lanes on Manhattan Beach Boulevard will create a more comfortable bicycling environment.

Removing the third eastbound travel lane between Grivellea Avenue and Hawthorne Boulevard will provide adequate space to continue the bike lane through this segment.

Aerial Map and Concept Graphics: Manhattan Beach Boulevard

Manhattan Beach Boulevard (Inglewood Avenue to Prairie Avenue)



Bicycle Loop Detectors