

# Circulation Element

Carson is located at the intersection of Interstate-405, the busiest interstate in the county, and the Alameda Corridor, the largest freight corridor in the country. Thus, transportation has played a pivotal role in the city's evolution, and greatly influenced the location and distribution of land uses. Warehousing, distribution, and industrial uses occupy more land area in the city than do residential uses. Therefore, distribution of goods—in addition to people movement—is a significant component of transportation operations in the city.

The Circulation Element furthers the General Plan's vision and objectives of promoting multi-modal mobility, enhancing connection and access across the community, and supporting development of "Complete Streets", while minimizing adverse impacts of truck traffic. It seeks to improve access and safety for all roadway users, and encourage walking, biking, and the use of public transit to meet local and regional goals. The element balances and integrates all transportation modes, and outlines street and operational improvements reflecting the community's transportation needs for the future.

The element provides policies and programs to enhance the quality of life for Carson residents such that the transportation system:

- Sustains and improves the social, economic, aesthetic, and environmental health of the city;
- Is accessible and safe for all residents;
- Offers a balance of investment and opportunities to travel by various modes to promote benefits to the environment, personal fitness, and reducing congestion and parking demand;
- Enhance the community's environmental quality; and
- Encourage an active lifestyle and improved quality of life based on the diverse population of Carson.





## 3.1 Roadway Network

### STREET CLASSIFICATIONS

The City of Carson is well connected with neighboring communities and other parts of Los Angeles County. State Route 91 (SR-91), also known as the Artesia Freeway, and I-405 traverse Carson, and I-110 and I-710 are located just outside City boundaries. The local roadway network in Carson consists of Major Arterials, Minor Arterials, Secondary Streets, Collector Streets, and Local Streets. The city also has sidewalks, on- and off-street bike facilities, and public transportation facilities. Classifications of roadways are shown in Table 3-1: Street Classification of Carson Streets.

The existing street network is a modified grid system of north/south and east/west roadways. The primary north/south roadways are Figueroa Street, Broadway, Main Street, Avalon Boulevard, Central Avenue, Wilmington Avenue, Alameda Street, and Santa Fe Avenue. The primary east/west streets are Alondra Boulevard, Gardena Boulevard, Artesia Boulevard, Albertoni Street, Walnut Street, Victoria Street, University Drive, Del Amo Boulevard, Carson Street, 223rd Street, Sepulveda Boulevard, and Lomita Boulevard. Further details about the road network—street classification, number of lanes, roadway widths and right-of-way dimensions—are described in Table 3-1. The street classification system is shown in Figure 3-1.

TABLE 3-1 STREET CLASSIFICATION OF CARSON STREETS

<i>Street Name</i>	<i>Segment</i>	<i>Classification<sup>1</sup></i>	<i>No. of Lanes Each Direction<sup>2</sup></i>	<i>Right-of-way (feet)<sup>3</sup></i>	<i>Roadway Width (feet)<sup>3</sup></i>
Martin Luther King Jr. Street	Main Street to Towne Avenue	Collector	1	80	64
Martin Luther King Jr. Street	Towne Avenue to Avalon Boulevard	Collector	2	80	64
213th Street	Main Street to Avalon Boulevard	Collector	1	50 - 60	24-40
213th Street	405 Freeway to Wilmington Avenue	Collector	1	50 - 60	40
213th Street	Avalon Boulevard to 405 Freeway	Collector	1, 2	50 - 70	24 -30
214th Street	Figueroa Street to Main Street	Collector	1	60	30 -36
220th Street	Vera Street to Wilmington Avenue	Collector	1	50 - 60	24 - 40
220th Street	Figueroa Street to Lucerne Street	Collector	1	46 - 60	32 - 40
223rd Street	West City Limit to East City Limit	Major Highway	2	42 - 116	28 - 84
228th Street	West City Limit to Avalon Boulevard	Collector	1	33 - 60	28 - 40
234th Street	Figueroa Street to Main Street	Collector	1	60	36
Acarus Avenue	Vera Street to Carson Street	Collector	1	60	40
Alameda Street	Lomita Boulevard to Del Amo Boulevard	Major Highway	2, 3	50 - 145	44 - 114
Albertoni Street	Figueroa Street to Sudbury Court	Secondary Highway	2	100	84
Albertoni Street	Sudbury Drive to Central Avenue	Collector	2	60	34
Alondra Boulevard	Figueroa Street to East City Limit	Major Highway	2, 3	100	80
Artesia Boulevard (East)	Avalon Boulevard to Central Avenue	Collector	2, 3	48	34
Avalon Boulevard	South City Limits to Alondra Boulevard	Major Highway	2, 3	47 - 150	28 - 130

**TABLE 3-1 STREET CLASSIFICATION OF CARSON STREETS**

<i>Street Name</i>	<i>Segment</i>	<i>Classification<sup>1</sup></i>	<i>No. of Lanes Each Direction<sup>2</sup></i>	<i>Right-of-way (feet)<sup>3</sup></i>	<i>Roadway Width (feet)<sup>3</sup></i>
Bonita Street	Watson Center Road to Carson Street	Collector	1	57 - 80	35 - 60
Carson Street	West City Limit to Santa Fe Avenue	Major Highway	2	83 - 100	44 - 86
Central Avenue	Del Amo Boulevard to North City Limits	Major Highway	2	40 - 100	20 - 84
Del Amo Boulevard	West City Limit to East City Limit	Major Highway	2, 3	100 - 108	44 - 90
Dolores Street	Sepulveda Boulevard to 213th Street	Collector	1	50 - 80	18 - 60
Dominguez Street	Wilmington Avenue to Santa Fe Avenue	Collector	1, 2	66 - 84	30 - 68
Figueroa Street	South City Limits to Alondra Boulevard	Major Highway	2	100 - 200	40 - 84
Gardena Boulevard	Figueroa Street to Avalon Boulevard	Secondary Highway	2	60 - 80	16 - 64
Grace Avenue	228th Street to 213th Street	Collector	1	55 - 60	23 - 40
Lomita Boulevard	West City Limit to City West of Avalon Boulevard	Major Highway	2	100 - 182	80 - 84
Lomita Boulevard	Wilmington Avenue to Alameda Street	Major Highway	1	100 - 810	22 - 82
Lucerne Street	Watson Center Road to 220th Street	Collector	1	50 - 80	26 - 60
Main Street	Lomita Boulevard to Alondra Boulevard	Major Highway	2, 3	80 - 100	40 - 84
Martin Street	Carson Street to 213th Street	Collector	1	50 - 60	28 - 40
Moneta Avenue	228th Street to 214th Street	Collector	1	60	40
Santa Fe Avenue	405 Freeway to Del Amo Boulevard	Secondary Highway	2	80 - 112	44 - 84
Sepulveda Boulevard	West City Limit to East City Limit	Major Highway	2	50 - 100	36 - 88
University Drive	Avalon Boulevard to Wilmington Avenue	Secondary Highway	1, 2	100	80

TABLE 3-1 STREET CLASSIFICATION OF CARSON STREETS

Street Name	Segment	Classification <sup>1</sup>	No. of Lanes Each Direction <sup>2</sup>	Right-of-way (feet) <sup>3</sup>	Roadway Width (feet) <sup>3</sup>
Vera Street	Carson Street to 213th Street	Collector	1, 2	60	21
Victoria Street	West City Limit to Wilmington Avenue	Major Highway	2	66 - 100	20 - 84
Walnut Street <sup>4</sup>	Figuroa Street to Main Street	Collector	1	50	30
Walnut Street (East)	Avalon Boulevard to Central Avenue	Secondary Highway	2	80	64
Watson Center Road	Avalon Boulevard to Wilmington Avenue	Collector	1	80	60
Wilmington Avenue	Lomita Boulevard to Victoria Street	Major Highway	2, 3	66 - 145	26 - 105

## Notes:

1. Source: *City of Carson Master Plan of Highways, amended May 17, 1982*
2. Source: *South Bay COG Sub regional Model Database and field observation*
3. Source: *LA County Roads Department, Classification of road Surfaces Database*
4. Downgraded to Collector Street per Resolution No. 85-020, General Plan Amendment on February 4, 1985.
5. Number of lanes varies

## Freeways

With the Artesia Freeway (SR-91) to the north, the Long Beach Freeway (I-710) to the east, the Harbor Freeway (I-110) to the west and the San Diego Freeway (I-405) through the center of the city, Carson is well served by a regional roadway network. Access to the freeways is provided via an extensive freeway ramp system connecting the city's major arterials to the freeways.

## Major Highways

Major Highways are streets that carry both local and through traffic and are designed and operated to serve the highest volumes of vehicle traffic in the city. They provide limited access to adjacent land uses. Some major highways also function as multi-modal corridors that serve key transit routes, emergency response routes, provide dedicated pedestrian and/or bicycle facilities, and may also serve as truck routes. North/south major highways include

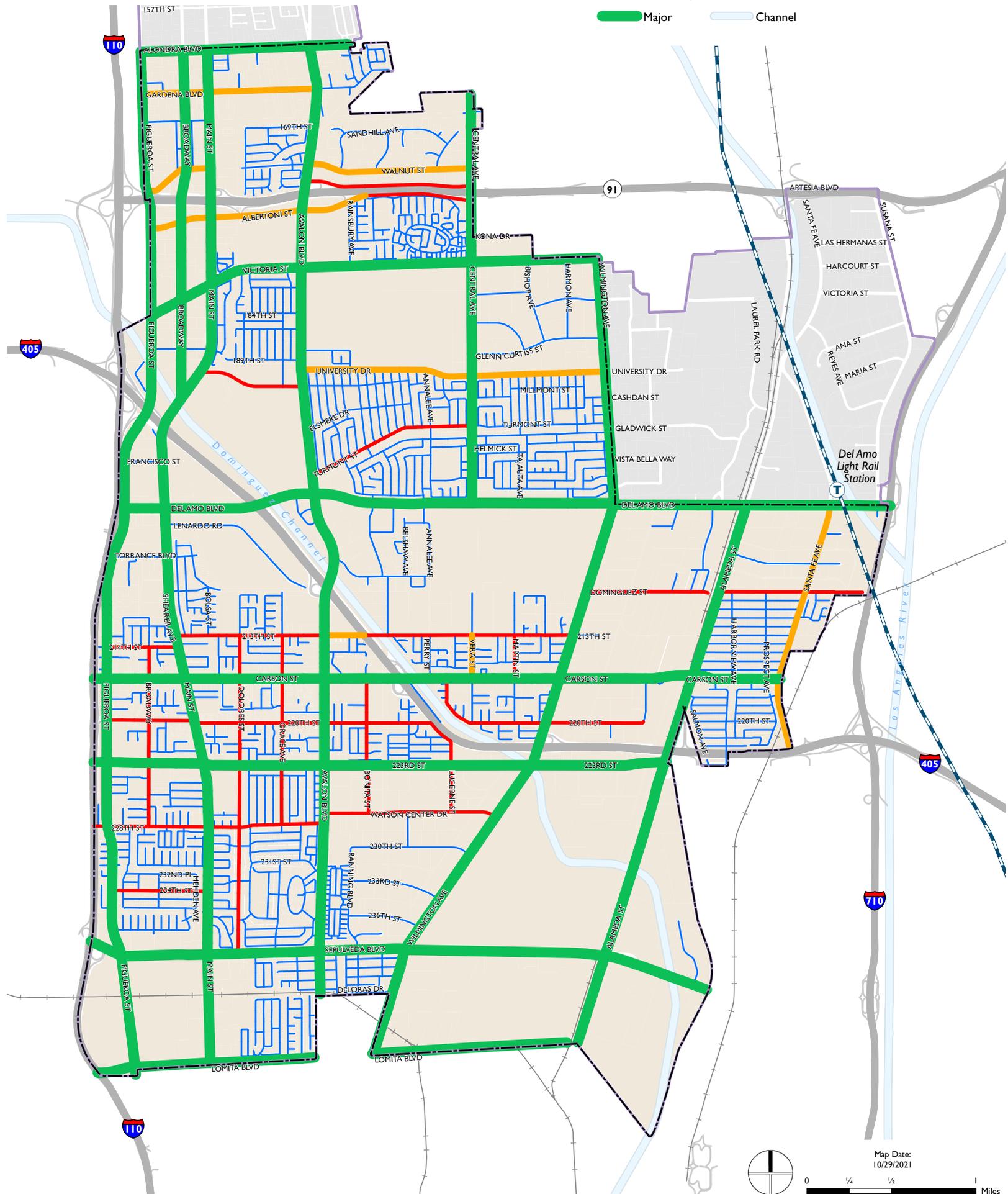
Figuroa Street, Main Street, Avalon Boulevard, Central Avenue, Wilmington Avenue, and Alameda Street. Major highways running east/west include Alondra Boulevard, Victoria Street, Del Amo Boulevard, Carson Street, 223rd Street, Sepulveda Boulevard, and Lomita Boulevard.

## Secondary Highways

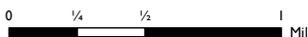
These streets carry a combination of local traffic and through traffic. They serve shorter trips and provide access to adjacent land uses and destinations in Carson. These streets can serve as local transit corridors, include designated bicycle facilities, and include sidewalks for pedestrian routes in the city. The secondary north/south streets are Santa Fe Street. Secondary east/west streets include Gardena Boulevard, Albertoni Street, a section of 213th Street, and University Drive.

# Figure 3-1 Street Classification

- Local
- Collector
- Secondary
- Major
- City of Carson
- Sphere of Influence
- Metro Station
- Metro Blue Line
- Railroads
- Channel



Map Date:  
10/29/2021



Data Source: Fehr & Peers, 2021; City of Carson, 2017; Los Angeles GIS Data Portal, 2017; Dyett & Bhatia, 2021

## Collector Streets

Collectors connect busier arterials and secondary streets with local streets, neighborhoods to each other, and to commercial and other districts. These streets typically provide a cross-section with two travel lanes total (one in each direction) and on-street parking (some sections provide four lanes or do not include parking). Examples of collectors include sections of 213th Street, Dolores Street, Artesia Boulevard, and 228th Street.

## PARKING AND CURB MANAGEMENT

The City has explored modifications to parking and curb management as activity becomes more concentrated in identified neighborhood nodes and corridors, competing demands emerge for curb space, and modal shifts to transit, biking, and walking are prioritized. This Circulation Element includes policies that address parking and curb management. In the policy section, parking and curb management policies address the following:

- Parking supply management
- Shared parking arrangements;
- Existing curb inventory and curb improvements;

- Identification of freight loading zones and passenger pick-up/drop-off; and
- Improvements to monitor curb occupancy and facilitate enforcement of parking resources

## CAPITAL IMPROVEMENT PROJECTS

In 2018, the City released a Five-Year Capital Improvement Plan (CIP) as a guide to provide for public infrastructure projects and facilities. The CIP serves to coordinate funding, timing of improvements, and maximize return to the public; subsequent updates to the CIP would need to ensure that it is consistent with the updated General Plan. A Capital Project constructs new infrastructure or extends the life of an existing asset by rehabilitation. Estimated project costs include acquisition, design, and construction of buildings, park facilities, utility systems or major landscaping projects. Transportation-related improvement projects includes bridge widening, intersection improvements, pavement overlay, pavement slurry seal, street reconstruction, street rehabilitation, installation of way-finding signs, new or upgraded traffic signals, and green streets.



**TABLE 3-2 CITY OF CARSON VMT METRICS**

<i>VMT Metrics</i>	<i>2016 Existing/ Baseline Conditions</i>	<i>Cumulative Base 2040 Conditions</i>	<i>Cumulative Plus General Plan 2040 Conditions</i>
Total VMT (Include Auto and Trucks)	7,867,557	8,405,911	9,505,005
Home-Based VMT	1,548,953	1,470,830	1,709,723
Home-Based Work VMT	1,805,701	1,548,271	1,719,621
Total VMT per Service Population	39.5	38.0	37.3
Home-Based VMT per Capita	15.0	12.7	12.4
Home-Based Work VMT per Employee	20.9	16.2	16.0

### 3.2 Transportation Performance Standards and Planned Improvements

#### TRANSPORTATION PERFORMANCE STANDARDS

The City will use a combination of Level of Service (LOS) and vehicle miles traveled (VMT) metrics to ensure the efficient movement of people and goods as well as reductions in greenhouse gases (GHG) emissions.

VMT is defined as the total mileage traveled by all vehicles. Although VMT relates specifically to automobiles, it can capture the effects of development patterns such as land use mix and density along with transit, bike, and pedestrian infrastructure improvements by reflecting their impacts on vehicle trip generation and trip lengths.

Efforts to reduce VMT may include locating housing and jobs near transit stations, implementing transportation demand management (TDM) strategies such as road or parking pricing, commute trip reduction programs, transit system improvements, or providing facilities for modes of transportation other than single occupant vehicles.

Introducing a greater mix of land uses can also reduce VMT so that residents may have better access to resources and opportunities such as entertainment, shopping, and jobs, thus reducing the length of their trips.

Recent changes to the California Environmental Quality Act (CEQA) require that evaluation of traffic impacts for environmental review purposes be conducted using VMT only. However, while VMT provides one measure of the transportation system’s overall performance, LOS continues to be useful to evaluate performance of specific intersections, streets, and corridors, and to design improvements to ease congestion, which also indirectly contributes to negative air quality as well transit delays. The following sections address the City’s approach for VMT and LOS. The City’s baseline and future forecast VMT metrics based on General Plan build out are presented in Table 3-2, while Circulation Element Policies CIR-P 20 through 22 reflect the Circulation Element policies for VMT. Figure 3-2 and Table 3-4 present and summarize the baseline and future forecast LOS metrics based on General Plan build out, while policies CIR-G 3 and CIR-P 5 reflect the Circulation Element polices for LOS. More detailed information regarding the City’s approach to VMT and LOS analysis can be found in the City’s Transportation Guidelines.

## Vehicle Miles Traveled (VMT)

VMT is a quantitative measure used to assess the total number of miles traveled by vehicles in an area or generated by a project. VMT is also used to estimate the environmental impacts of driving through measurement of associated GHG and air pollutant emissions. For land use projects, trip-based VMT is used to measure the VMT associated with passenger vehicle trips that begin or end at a project site. Pursuant to Senate Bill (SB) 743 (2013), VMT is now the sole metric allowed for transportation impact evaluation under CEQA. While LOS is no longer allowed to be used to analyze environmental impacts, it is maintained as a performance metric in the General Plan for informational purposes.

SB 743 requires impacts to transportation network performance to be assessed through a screening process that promotes the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses through infill development. VMT analysis can help identify how land development and infrastructure influence accessibility and emissions, so that land development projects can align with the objectives of SB 743 at the state level and many of Carson's goals that are discussed later in this Circulation Element. VMT allows environmental impacts to be assessed beyond the effects of vehicle delay. The shift to VMT is seen as a way to appropriately balance statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions.

SB 743 allows a CEQA exemption for based on several different criteria. For a detailed explanation of how projects may qualify for exemption from CEQA analysis, please refer to the City's Transportation Study Guidelines. With the implementation of SB 743 and incorporation of VMT reduction goals in the General Plan, Carson is positioned to help the state decrease mobile greenhouse gas emissions and mobile air pollutant emissions through decreasing VMT. The City of Carson has developed Transportation Study Guidelines that inform the approach, methodology, and impact criteria that are to be used for transportation analysis in the City of Carson. Consistent with state guidance, the City has identified an appropriate threshold for per capita VMT (residential VMT per resident, work VMT per employee, and total VMT per service population) to be applied for environmental impact analysis.

Table 3-2 displays a summary of the forecasted Baseline and General Plan VMT estimates for total VMT and the residential- and employee-based VMT. These estimates were extracted from the Southern California Association of Governments (SCAG) 2016 Regional Travel Demand Model, which is the best tool currently available for evaluating VMT in Carson. The most recent available version of the SCAG Regional Travel Demand Model uses 2016 as its base year. Because of this, Table 3-2 presents VMT estimates for 2016 as the baseline/existing conditions. Per the City's Transportation Guidelines, project impacts will be assessed based on the extent to which projects contribute to reduced VMT relative to the City's baseline per capita VMT metrics.



As recommended by the Governor’s Office of Planning and Research (OPR), the metrics of Total VMT, Total VMT per Service Population, Home-Based VMT per capita, and Home-Based Work VMT per employee will be the primary transportation metrics used to assess transportation-related environmental impacts in the City of Carson. State law and local goals are focused on reducing overall VMT and VMT per capita to reduce greenhouse gas emissions through the promotion of infill development and providing opportunities to shorten or reduce vehicle trips. The General Plan analysis indicates that while increased development will lead to an increase in total VMT, the land use patterns and transportation strategies envisioned by the General Plan will contribute to more efficient VMT (less VMT per capita).

### Level of Service (LOS)

Given Carson’s overall development pattern and the high truck traffic due to industrial activity and proximity to the country’s two largest ports, LOS continues to be a useful measure of the potential localized effects of development and land use changes on the transportation network and on the efficiency of vehicular travel. Thus, LOS continues to be pertinent to mobility in the city even as the General Plan seeks to balance LOS with other considerations and measures.

LOS represents a qualitative description of the traffic operations experienced by the driver at an intersection or along a roadway segment. It ranges from LOS A, with no congestion and little delay, to LOS F, with excessive congestion and delays. Table 3-3 provides definitions for the different LOS levels.

### Balancing VMT and LOS

With a commitment to Complete Streets and a desire to accommodate other users such as pedestrians and bicyclists, it is particularly important that LOS thresholds, which are commonly evaluated to determine the size and design of the roadway system or the feasibility of development, are balanced with other goals that seek to reduce vehicle travel, enhance community character and design, minimize costs and construction disruption, and promote alternative transportation modes. Therefore, the City’s strategy for enhancing LOS focuses on intersections and spot improvements that improve access, circulation, and level of service while seeking to minimize capacity expansions that induce additional vehicle travel.

As described in the policy section of this chapter, the City will strive to achieve LOS D or better as the minimum operating threshold for intersections, with exceptions for

**TABLE 3-3: LEVEL OF SERVICE (LOS) DEFINITIONS<sup>1</sup>**

<i>LOS</i>	<i>Definition</i>
A	Free-flow travel with freedom to maneuver
B	Stable operating conditions, but the presence of other road users causes a noticeable, though slight, reduction in convenience, and maneuvering freedom
C	Stable operating conditions, but the operation of individual users is substantially affected by the interaction with others in the traffic stream.
D	High-density, but stable flow. Users may experience restriction in speed and freedom to maneuver, with poor levels of convenience.
E	Operating conditions at or near capacity. Speeds are reduced to a low but relatively uniform value. Freedom to maneuver is difficult with users experiencing frustration and poor convenience. Unstable operation is frequent, and minor disturbances in traffic flow can cause breakdown conditions.
F	Forced or breakdown conditions. This condition exists wherever the volume of traffic exceeds the capacity of the roadway. Long queues can form behind these bottleneck points with queued traffic traveling in a stop-and-go fashion

<sup>1</sup> Based on Highway Capacity Manual (Transportation Research Board, 2020)

**TABLE 3-4: LEVEL OF SERVICE ANALYSIS RESULTS**

Int	Street Name		Existing Baseline				2040 With General Plan Buildout			
			V/C		LOS		V/C		LOS	
	N/S	E/W	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
1	Avalon Boulevard	Albertoni Street	0.71	0.91	C	E	0.88	1.13	D	F
2	Avalon Boulevard	University Drive	0.61	0.74	B	C	0.74	0.91	C	E
3	Central Avenue	Victoria Street	0.65	0.74	B	C	0.80	0.91	C	E
4	Central Avenue	Del Amo Boulevard	0.82	0.79	D	C	1.01	0.98	F	E
5	Main Street	223rd Street	0.88	0.91	D	E	1.09	1.13	F	F
6	Wilmington Avenue	223rd Street	0.68	0.69	B	B	0.83	0.85	D	D
7	Figueroa Street	Sepulveda Boulevard	0.72	0.68	C	B	0.89	0.84	D	D
8	Avalon Boulevard	Sepulveda Boulevard	0.73	0.76	C	C	0.90	0.94	D	E
9	Alameda Street	Del Amo Boulevard	0.53	0.90	A	E	0.64	1.12	B	F
10	Alameda Street	Sepulveda Boulevard	0.68	0.76	B	C	0.84	0.94	D	E
11	Main Street	I-405 SB on-ramp	0.48	0.99	A	E	0.58	1.22	A	F
12	Main Street	I-405 NB off-ramp	0.60	0.73	A	C	0.74	0.90	C	E
13	Avalon Boulevard	Del Amo Boulevard	0.90	0.96	D	E	1.11	1.19	F	F
14	Main Street	Torrance Boulevard	0.67	0.79	B	C	0.83	0.99	D	E
15	Avalon Boulevard	I-405 SB Ramps	0.64	0.59	B	A	0.79	0.72	C	C
16	Avalon Boulevard	I-405 NB Ramps	0.51	0.58	A	A	0.62	0.70	B	C
17	Figueroa Street	Carson Street	0.99	1.13	E	F	1.23	1.42	F	F
18	Avalon Boulevard	Carson Street	0.88	1.00	D	F	1.09	1.25	F	F
19	I-405 SB Ramps	Carson Street	0.72	0.88	C	D	0.89	1.09	D	F
20	I-405 NB Ramps	Carson Street	0.41	0.51	A	A	0.50	0.62	A	B

**Figure 3-2 Congested Corridors and Intersection Level of Service with Suggested Operational Enhancements**

**Peak Hour LOS**

- Uncongested
- ◐ Only PM Congested
- Both AM & PM Congested

**Proposed Operational Enhancement**

- Signal Optimization
- Striping/Roadway Modification
- Congested Corridor

Ⓜ Metro Station

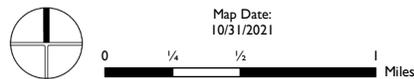
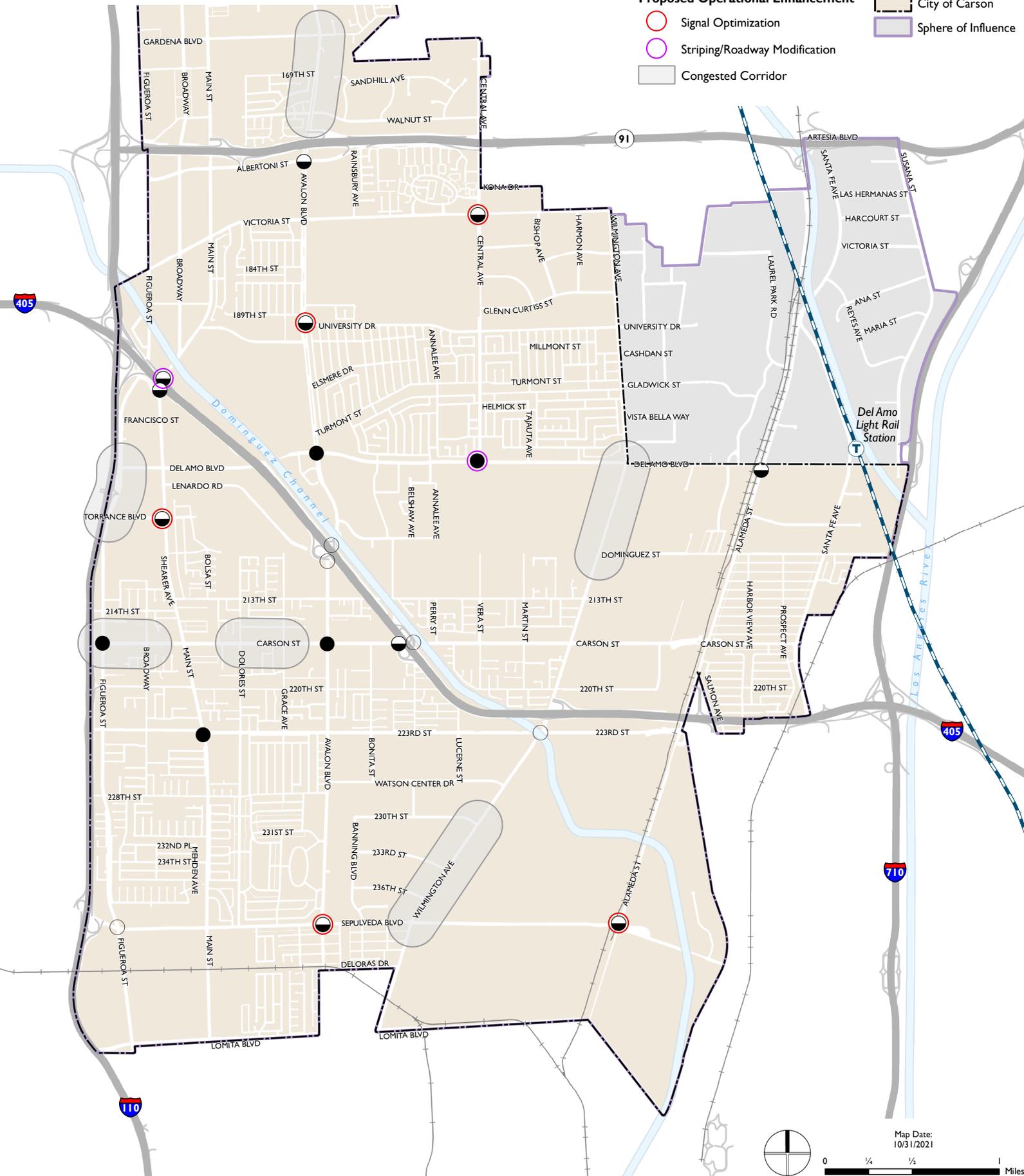
— Metro Blue Line

— Railroads

— Channel

■ City of Carson

■ Sphere of Influence



Data Source: Fehr & Peers, 2021; City of Carson, 2017; Los Angeles GIS Data Portal, 2017; Dyett & Bhatia, 2021

transit priority areas/high quality transit corridors<sup>1</sup> and central/neighborhood business districts where multimodal access and circulation are a critical component of local travel. In addition, locations that are currently operating at LOS E/F would be exempt from the LOS D standard. A list of intersections that are exempt from the LOS D standard is provided at the end of this chapter and will be updated periodically to reflect changing conditions in future. These locations are also displayed in Figure 3-2.

<sup>2</sup> The Governor's Office of Planning & Research (OPR) defines a Transit Priority Area (TPA) as the ½ mile radius surrounding an existing or planned major transit stop or an existing stop along a High-Quality Transit Corridor (HQTC). A major transit stop is defined as a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods. A HQTC is a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours. Currently, the only existing TPA/HQTC in Carson is the ½ mile radius surrounding the Metro Silver Line on the western border of the City.

## STREET AND INTERSECTION IMPROVEMENTS

An LOS analysis of the projected future conditions in 2040 under the General Plan land use buildout was performed for 20 major intersections in the city. Table 3-4 shows a comparison of the LOS results under the existing baseline to future conditions with the General Plan buildout. As shown in the table, 15 intersections will operate at LOS E or F in either the AM peak hour, the PM peak hour, or both, under the General Plan buildout scenario, which is indicative of vehicular demand and the potential for congested operating conditions during peak hours. A total of seven intersections operate at LOS E or F in either the AM peak hour, the PM peak hour, or both under the Existing Baseline scenario. These same seven intersections and eight more are also projected to operate at LOS E or F in the 2040 with project scenario that would result from the forecast buildout of the General Plan. As such, operational enhancements were identified and tested for these locations to improve their operations, including restriping intersections to add additional turn lanes where capacity



**Figure 3-3 Existing and Proposed Bike Facilities**

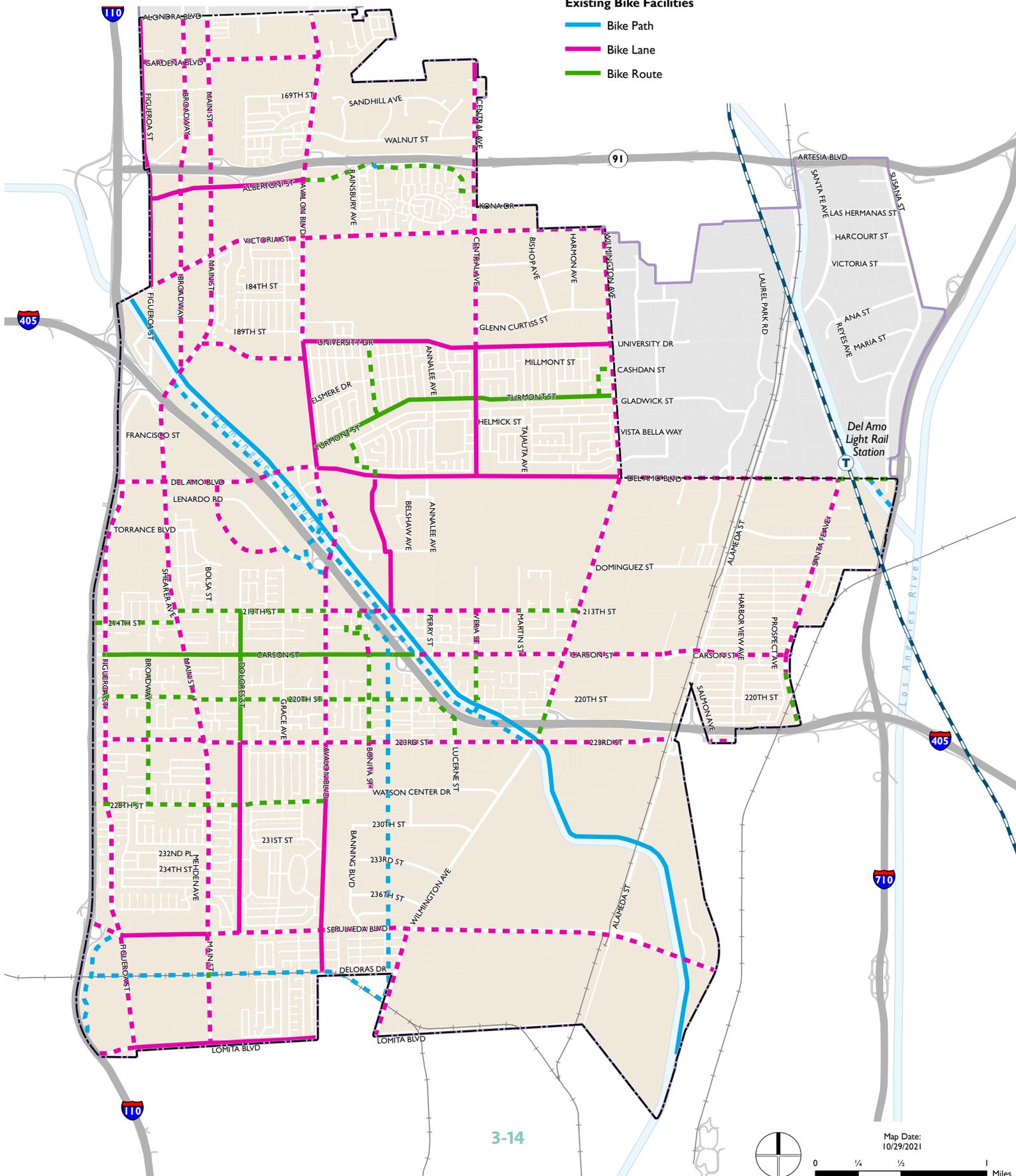
**Proposed Bike Facilities**

- - - Bike Path
- - - Bike Lane
- - - Bike Route

**Existing Bike Facilities**

- Bike Path
- Bike Lane
- Bike Route

- T Metro Station
- Metro Blue Line
- Railroads
- Channel
- City of Carson
- Sphere of Influence



is available, and optimizing the signal timing during the peak hours to improve operational efficiency and increase vehicular throughput. It is estimated that optimizing signal timing can result in up to a 10 percent improvement in operational efficiency, and as such, a 0.10 V/C ratio adjustment was applied to five of the seven operationally deficient intersections to account for this improvement. Table 3-5 shows the results of the operational improvements for the seven operationally deficient intersections. Figure 3-2 shows the results of the LOS analysis under the General Plan buildout scenario.

## TRANSPORTATION DEMAND MANAGEMENT (TDM)

TDM refers to a comprehensive strategy to reduce driving and resulting VMT by promoting alternatives such as public transit, carpooling, bicycling, walking, and telecommuting. While some TDM measures can be undertaken by the City, such as investments in facilities and programs to encourage

alternative modes of transportation, other TDM measures require collaboration with other jurisdictions, for example with transit providers to seek expanded service, or with employers to encourage flexible work schedules and the provision of on-site childcare, preferential carpool parking, and subsidized transit passes.

## INTELLIGENT TRANSPORTATION SYSTEMS

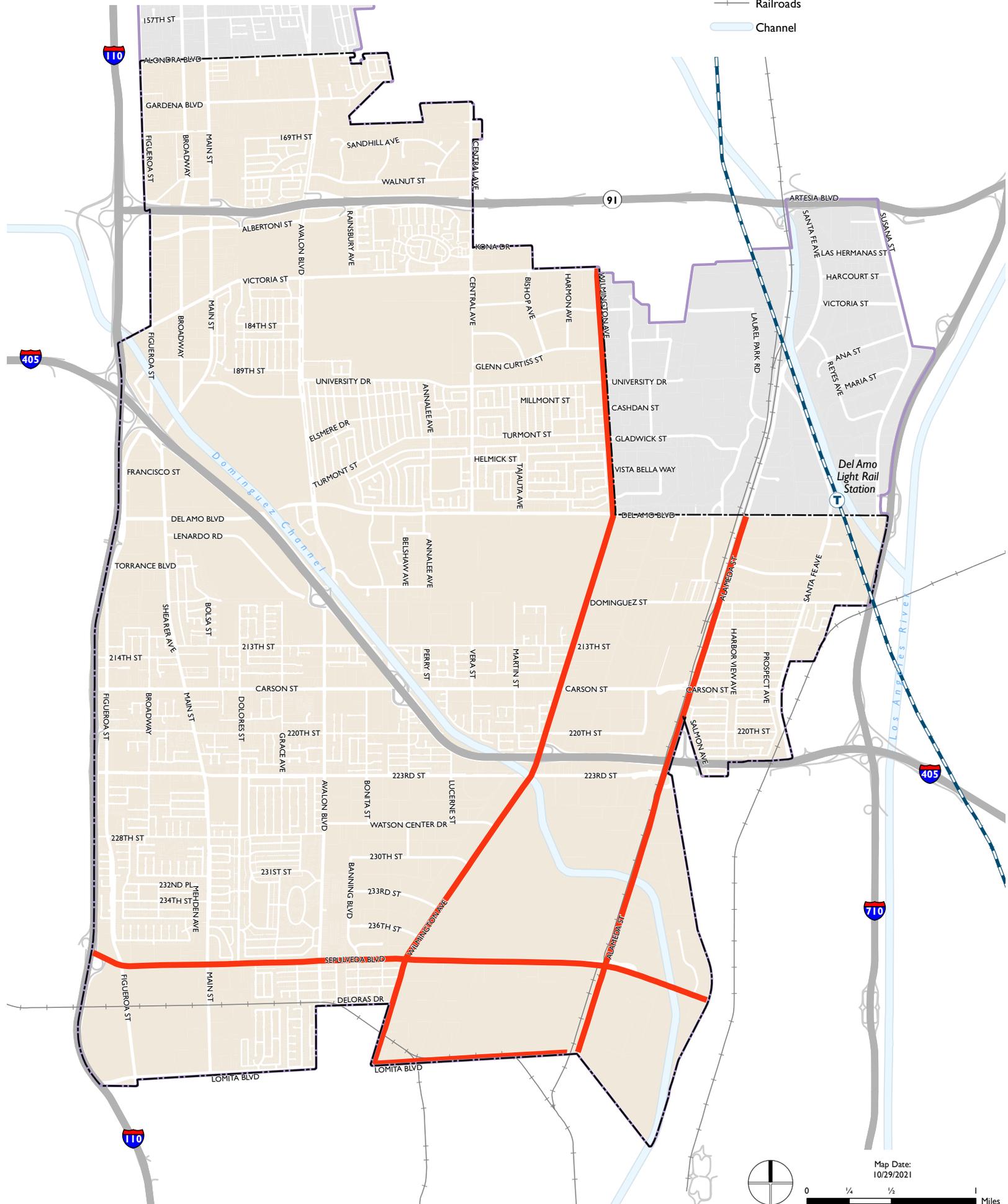
Intelligent Transportation Systems (ITS) refers to a set of tools that facilitates a connected, integrated transportation system. Applications of ITS includes adaptive traffic prioritization signals aimed at congestion management and improving traffic flow, and the collection and dissemination of real-time travel information such as transit arrivals or traffic incident alerts. Other applications of ITS to be considered as transportation patterns change and emerging technologies come online may include connecting autonomous vehicles and smart city integration.

**TABLE 3-5: ANALYSIS OF OPERATIONAL ENHANCEMENTS**

Int	Street Name		Existing Baseline				2040 With General Plan Buildout and Operational Enhancements				Operational Enhancement
			V/C		LOS		V/C		LOS		
	N/S	E/W	AM PEAK HOUR	PM PEAK HOUR	AM PEAK HOUR	PM PEAK HOUR	AM PEAK HOUR	PM PEAK HOUR	AM PEAK HOUR	PM PEAK HOUR	
2	Avalon Boulevard	University Drive	0.605	0.739	B	C	0.643	0.812	B	D	Optimize Signal Timing
3	Central Avenue	Victoria Street	0.65	0.739	B	C	0.700	0.812	B	D	Optimize Signal Timing
4	Central Avenue	Del Amo Boulevard	0.816	0.787	D	C	0.896	0.892	D	D	Stripe a Westbound Right Turn Lane
8	Avalon Boulevard	Sepulveda Boulevard	0.727	0.764	C	C	0.797	0.844	C	D	Optimize Signal Timing
10	Alameda Street	Sepulveda Boulevard	0.68	0.763	B	C	0.739	0.843	C	D	Optimize Signal Timing
12	Main Street	I-405 NB off-ramp	0.6	0.73	A	C	0.700	0.873	B	D	Stripe 2 Southbound Through Lanes & 1 Southbound Right Turn Lane
14	Main Street	Torrance Boulevard	0.671	0.794	B	C	0.726	0.884	C	D	Optimize Signal Timing

**Figure 3-4 Existing and Proposed Transit Routes**

- Future Priority Corridors
- Metro Station
- City of Carson
- Metro Blue Line
- Sphere of Influence
- Railroads
- Channel



Data Source: Fehr & Peers, 2021; City of Carson, 2017; Los Angeles GIS Data Portal, 2017; Dyett & Bhatia, 2021

## 3.3 Pedestrian & Bicycle Circulation

### PEDESTRIAN CIRCULATION

Pedestrian circulation and access is primarily provided through sidewalks. Sidewalks are found on most streets throughout the city except for some neighborhoods and industrial areas. Pedestrian crosswalks are provided at signalized and, occasionally, un-signalized intersections.

The Municipal Code Improvements Section requires that sidewalks or parkway landscaping within the right-of-way are provided along all highways within a subdivision. The requirement to construct sidewalks may be waived if one of the following criteria are met: construction would be impractical, a sidewalk would be inconsistent with neighborhood pattern, a sidewalk would not be used by children on a route to a school or school bus stop, or sidewalks are not needed or would not benefit the area.

### BICYCLE CIRCULATION

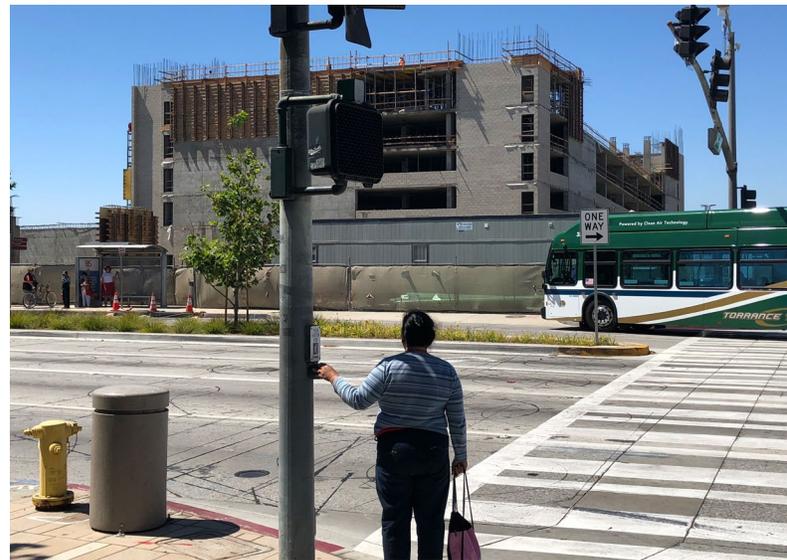
Circulation for people riding bicycles is provided largely through on-street bike lanes. Several streets within the city are designated as bike routes and provide an opportunity for people riding bicycles and people driving cars to share the street. Taken together, Carson's existing bicycle facilities make up a network that is 13.3-miles long.

Bicycle facilities are sorted into three classes, as outlined below. Figure 3-3 shows the existing and proposed bicycle facilities in the city.

**Class I bikeway** trails, also known as bike paths or shared-use paths, are facilities with exclusive right of way for bicyclists and pedestrians, away from the roadway and with cross flows by motor traffic minimized. Some systems provide separate pedestrian facilities.

There are three Class I bikeways that run through or near the Planning Area: the Dominguez Channel Bikeway, the Los Angeles River Bicycle Path, and the Compton Creek Bikeway. The Dominguez Channel bikeway runs along the channel of the same name between Vermont Avenue, west of I-110 outside of Carson, to Main Street, within Carson. The Los Angeles River Bicycle Path is located

east of I-710, outside of Carson. This Class I Bikeway runs between Long Beach, to the south and Maywood in the north, then it recommences north of downtown Los Angeles. Access points to the bikeway nearest to the city include those at Del Amo Boulevard, 34th Street, and Willow Avenue, which is an extension of Sepulveda Boulevard into Long Beach. The segment of the bikeway near Carson runs on the east side of the Los Angeles River so people using this path from Carson must cross the river to gain



*Leapwood Bike*

access to the facility. The Compton Creek bikeway runs east of the City along the creek of the same name, from El Segundo Boulevard to Del Amo Boulevard with a gap between Greenleaf Boulevard and Artesia Boulevard. Access to this facility that is proximate to Carson is provided at Santa Fe Avenue and Del Amo Boulevard.

**Class II bike lanes** are established along streets and are defined by pavement striping and signage to delineate a portion of a roadway for bicycle travel. Bike lanes are one-way facilities, typically striped adjacent to motor traffic traveling in the same direction. Contraflow bike lanes can be provided on one-way streets for bicyclists traveling in the opposite direction.

Several key arterials within the city include Class II bike lanes. These streets include segments of University Drive, Del Amo Boulevard, Central Avenue, Lomita Boulevard, Leapwood Avenue, and Chico Street.

**Class III bike routes**, or bikeways, designate a preferred route for bicyclists on streets shared with motor traffic not served by dedicated bikeways to provide continuity to the bikeway network. Bike routes are generally not appropriate for roadways with higher motor traffic speeds or volumes. Bike routes are established by placing bike route signs and optional shared roadway markings (sharrows) along roadways.

Several roadways within the city include Class III bike routes. These streets include segments of Carson Street, Dolores Street, and Turmont Street.

**Class IV separated bikeways**, or cycle tracks/protected bike lanes, are for the exclusive use of bicycles, physically separated from motor traffic with a vertical feature. The separation may include, but is not limited to, grade separation, flexible posts, inflexible barriers, or on-street parking. Separated bikeways can provide for one-way or two-way travel.

There are currently no Class IV separated bikeways within the Planning Area.

## CARSON MASTER PLAN OF BIKEWAYS

The Carson Master Plan of Bikeways, prepared in 2013, creates a strategic vision for enhancing bicycle transportation in the city. The Master Plan of Bikeways is the guiding document for all bicycle infrastructure, policies, and programs in Carson. The Master Plan of Bikeways proposes a comprehensive network of streets designed to prioritize comfort and safety for bicyclists to enhance the practical use of bicycles as a transportation choice. The Master Plan also includes bikeway design guidelines and recommended programs and policies to encourage bicycle travel and increase safety.



## 3.4 Local and Regional Transit

Several transit agencies provide local and regional transit service to the residents of Carson, including Metro, Long Beach Transit, Compton Renaissance Transit, Gardena Transit, and Torrance Transit. The City of Carson provided a service called the Carson Circuit, however, it was discontinued during the COVID-19 pandemic and the City has offered Dial-A-Ride services for all Carson adult residents.

Several routes in Carson provide access to the Metro Blue Line that is located to the east of the city and passes through the eastern edge of Carson without stops. The Blue Line provides service at six-minute intervals during peak times and at 12-minute intervals during off-peak times and on weekends north to downtown Los Angeles and south the downtown Long Beach. There are three Blue Line stations near Carson that can be accessed by bus routes; these include the Compton Blue Line Station, the Artesia Blue Line Station, and the Del Amo Blue Line Station. Compton Renaissance Transit Route 5 connects to both the Compton Blue Line Station and the Artesia Blue Line Station. Gardena Transit Route 3 also connects to the Compton Blue Line Station, Long Beach Transit Route 1 connects to the Del Amo Blue Line Station, and Torrance Transit Route 6 connects to the Artesia Station.

The Harbor Gateway Transit Center is located just west of the city, adjacent to I-110. This transit center is a stop on the Metro Silver Line, which provides critical regional access to downtown Los Angeles then east to the El Monte Station. Connection to the Transit Center is provided by Metro Lines 52 and 246.

Both Long Beach Transit and Torrance Transit provide access to Long Beach, including the Long Beach Transit Gallery, located at the downtown Long Beach Blue Line station. Torrance Transit also provides access to the South Bay, including to the South Bay Galleria Transit Center and the Redondo Beach Pier in Torrance.

The Metro Local buses that serve Carson provide access to a variety of regional locations, including downtown Los Angeles, San Pedro, Koreatown, and Lincoln Heights. Table 3-6 summarizes operational information for the transit lines in Carson and the routes are shown in Figure 3-4.



**TABLE 3-6: TRANSIT SERVICE IN CARSON**

<i>Provider</i>	<i>Line</i>	<i>Origin</i>	<i>Destination</i>	<i>Frequency in minutes</i>
Metro Local/Limited	51	Westlake/MacArthur Park Station	Cal State Dominguez Hills	20 peak and midday, 20-30 evening
	53	Downtown Los Angeles	Cal State Dominguez Hills	20 peak, 25 midday, 30-60 evening
	130	Artesia Station	Los Cerritos Center	40 peak and midday, 40-45 evening
	202	Willowbrook/Rosa Parks Station	Del Amo Station	60 peak and midday
	205	Willowbrook/Rosa Parks Station	San Pedro	30 peak and midday, 60 evening
	246	Harbor Gateway Transit Center	San Pedro - Point Fermin Park	40 peak and midday, 40-45 evening, 60 overnight
Metro J (Silver) Line	950	El Monte Station	San Pedro	20 peak, 20-30 midday, 40 evening
Torrance Transit	1	Del Amo Fashion Center	Harbor Freeway Station	60 peak, midday, and evening
	3	Redondo Beach	Downtown Long Beach Station	30-40 peak, midday, and evening
	3 - Rapid	South Bay Galleria Transit Center	Downtown Long Beach Station	20 peak, no service midday**
	4X	Downtown Los Angeles – Union Station	Torrance – Hawthorne Bl. at PCH	60 peak, no service midday
	6	Del Amo Fashion Center	Artesia Station	60 peak, no service midday
	7	Redondo Beach Pier	Sepulveda Bl. at Avalon Bl.	60-75 peak, midday, and evening
	9	Del Amo Mall	Sepulveda Bl. at Avalon Bl.	50-75 peak, midday, and evening
	13	Redondo Beach Pier	Artesia Station	40 peak, midday, and evening
Long Beach Transit	1	Cal State Dominguez Hills	Del Amo Station	40 peak and midday
	2	Cal State Dominguez Hills	Sepulveda Bl. at Figueroa St.	40 peak and midday
	4	Harbor UCLA Medical Center	Del Amo Station	40 peak and midday
	8	Vermont Ave. and 223 <sup>rd</sup> St.	Wardlow Station	40 peak and midday
	191	Artesia High School	Long Beach Transit Gallery	30 peak and midday, 60 evenings
	192	Los Cerritos Center	Long Beach Transit Gallery	30 peak and midday, 60 evenings
	405	UCLA	Long Beach Airport	2 trips in peak direction. To UCLA in AM, To Long Beach in PM
Gardena Transit	3	South Bay Galleria Transit Center	MLK Transit Center	30 peak and midday
Carson Circuit	A	South Bay Pavilion	Cal State Dominguez Hills	40 peak, no service midday
	B	South Bay Pavilion	Carson High School	40 peak, no service midday

Source: Los Angeles County Metropolitan Authority, Torrance Transit, Long Beach Transit, Compton Renaissance Transit, and Gardena Transit, 2022

\*Reflects schedules current May 2022. Subject to change regarding the COVID-19 pandemic and nationwide operator shortage.

\*\*Torrance Transit Rapid 3 temporarily suspended due to operator shortage.

## 3.5 Neighborhood Electric Vehicle (NEV) Network

Neighborhood Electric Vehicles (NEVs) are potential alternatives to automobiles for short neighborhood trips. NEVs can travel at a maximum speed of 25 miles per hour (mph) and are often used for on-campus transportation. The City's Neighborhood Villages Plan study seeks to accommodate NEVs by proposing NEV networks throughout the city. The NEV network includes all streets that permit NEVs by California Vehicle Code standards. Local jurisdictions are also able to create specific standards through an NEV Plan that would require state approval. NEV networks for the City are shown in Figures 3-5, 3-6, 3-7, and 3-8.

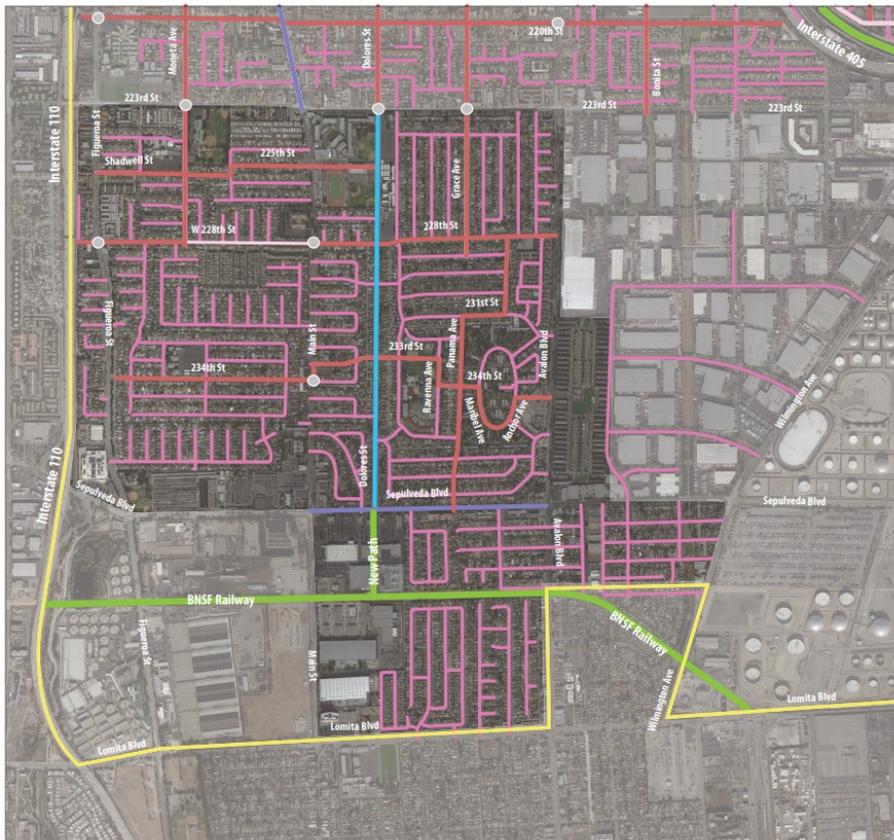
Roadways in the NEV Network are classified into the following types:

- NEV-Friendly Roads: Local roads with speed limits less than 25 miles per hour.
- NEV-Calmed Routes: Class III slow speed route.

- NEV Slow Speed Lane on Accepted Roadways: Streets with speed limits 35 mph or less with 7-foot proposed bike lanes.
- NEV Slow Speed Path: Class I Slow Speed Path with a minimum 7-foot lane in each direction.
- Other State Accepted Roadways: Other streets with speed limits between 30 and 35mph.
- NEV Slow Speed Lane on High-Speed Roadway: Streets with speed limits greater than 35 mph with 7-foot proposed bike lanes. Under current regulations, NEVs would not be allowed to travel in these lanes unless speed limits were lowered to 35 mph. However, these lanes might be included in an NEV Plan, should the City choose to prepare one.



**Figure 3-5 NEV Network for Southwest Carson**



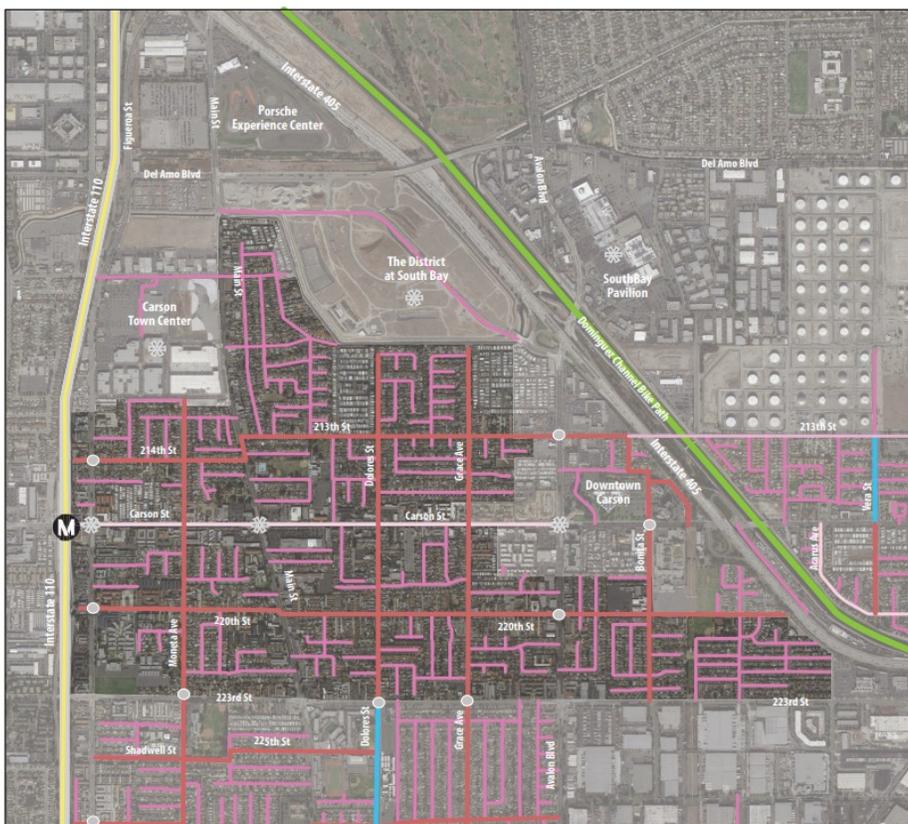
MAP 5-3

**Southwest Carson  
NEV Network**

- NEV-Friendly Roads  
*Local roads with speed limits less than 25-miles-per-hour*
- NEV Slow Speed Route  
*Class III Slow Speed Routes*
- NEV Slow Speed Lane on Accepted Roadways  
*Other streets with speed limits 35 miles-per-hour or less with 7' proposed bike lanes*
- Other State-Accepted Roadways  
*Streets with speed limits between 30 and 35 miles-per-hour*
- NEV Slow Speed Lane on High-Speed Roadway  
*Streets with speed limits greater than 35 miles-per-hour with 7' proposed bike lanes*
- NEV Slow Speed Path  
*Class I Slow Speed Path*
- High Speed Roadway Crossings
- City of Carson

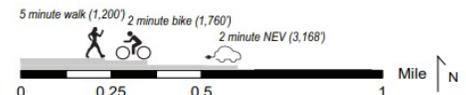


**Figure 3-6 NEV Network for Downtown West**

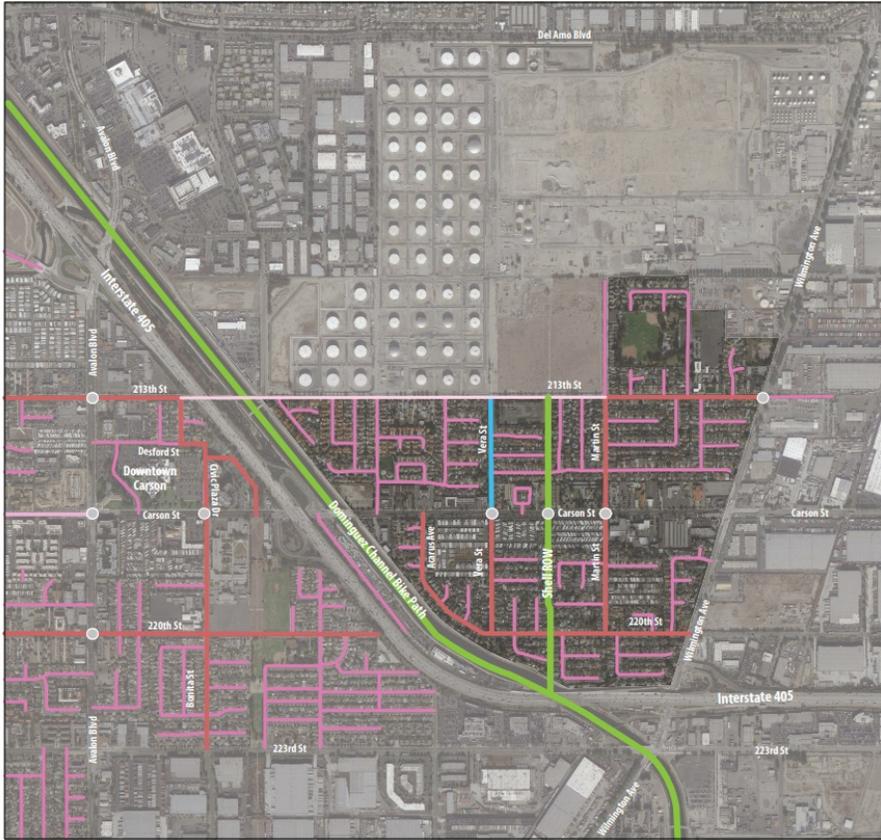


**Downtown West  
NEV Network**

- NEV-Friendly Roads  
*Local roads with speed limits less than 25-miles-per-hour*
- NEV Slow Speed Route  
*Class III Slow Speed Routes*
- NEV Slow Speed Lane on Accepted Roadways  
*Other streets with speed limits 35 miles-per-hour or less with 7' proposed bike lanes*
- Other State-Accepted Roadways  
*Streets with speed limits between 30 and 35 miles-per-hour*
- NEV Slow Speed Path  
*Class I Slow Speed Path*
- High Speed Roadway Crossings
- ✳ Potential Mobility Hub Locations
- M Metro Silver Line
- City of Carson



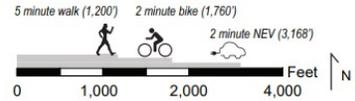
**Figure 3-7 Figure 3-7 NEV Network for Dolphin Park**



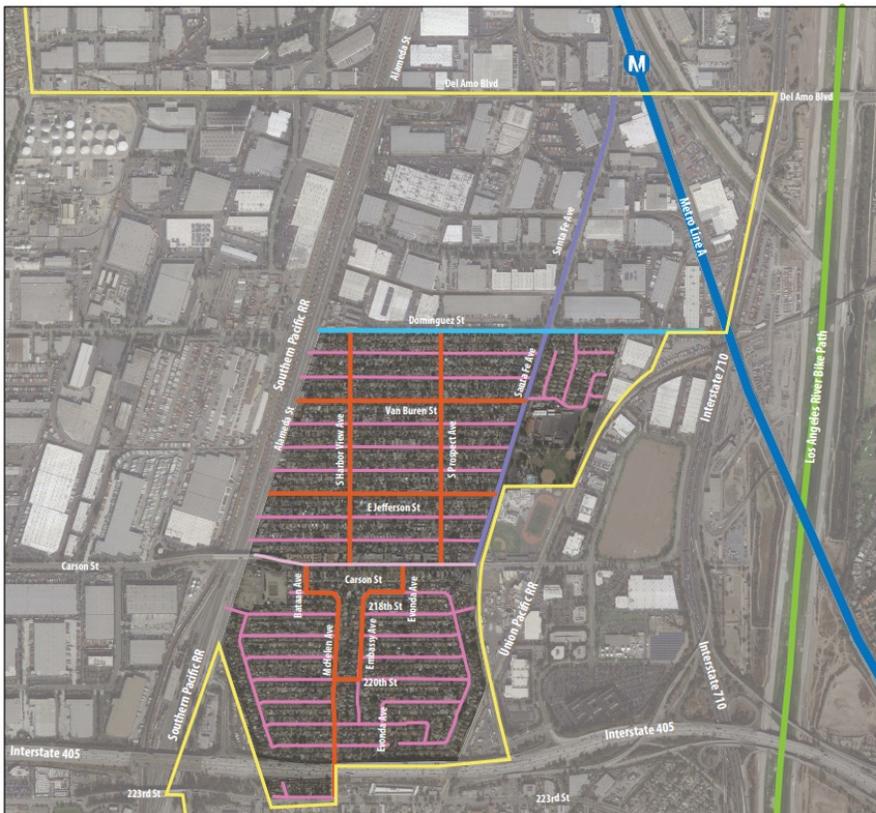
MAP 7-~

**Dolphin Park  
NEV Network**

- NEV-Friendly Roads  
*Local roads with speed limits less than 25-miles-per-hour*
- NEV Slow Speed Route  
*Class III Slow Speed Routes*
- NEV Slow Speed Lane on Accepted Roadways  
*Streets with speed limits 35 miles-per-hour or less with 7' proposed bike lanes*
- Other State-Accepted Roadways  
*Other streets with speed limits between 30 and 35 miles-per-hour*
- NEV Slow Speed Path  
*Class I Slow Speed Path*
- High Speed Roadway Crossings



**Figure 3-8 NEV Network for East Carson<sup>1</sup>**



MAP 8-3

**East Carson  
NEV Network**

- NEV-Friendly Roads  
*Local roads with speed limits less than 25-miles-per-hour*
- NEV Slow Speed Route  
*Class III Slow Speed Routes*
- NEV Slow Speed Lane on Accepted Roadways  
*Streets with speed limits 35 miles-per-hour or less with 7' proposed bike lanes*
- Other State-Accepted Roadways  
*Other streets with speed limits between 30 and 35 miles-per-hour*
- NEV Slow Speed Lane on High-Speed Roadway  
*Streets with speed limits greater than 35 miles-per-hour with 7' proposed bike lanes*
- NEV Slow Speed Path  
*Class I Slow Speed Path*
- M Metro Line A
- City of Carson



<sup>1</sup> Carson Neighborhood Villages Plan available at <https://www.carson2040.com/reports-and-products-1> (last accessed Oct 1, 2021)

## 3.6 Freight and Goods Movement

As described in Chapter 2: Land Use and Development, about 47 percent of the Planning Area is used for warehousing/distribution/storage, industrial/manufacturing, heavy manufacturing, mineral extraction/refinery/storage, and open storage. These land uses require large amounts of goods transported to and from their facilities either by roadways or by rail, imposing increased demand on the transportation network in the Planning Area.

To manage the impact of freight truck traffic on the street network, the City of Carson regulates truck routes and truck parking. Chapter 2 of the Municipal Code contains Truck Regulations and designates specific roadways as truck routes and specific roadway segments as permitting truck parking, displayed in Figure 3-9.

Truck routes are located on most major arterials within the Planning Area, including Figueroa Street, Wilmington Avenue, Alameda Street, Santa Fe Avenue, Del Amo Boulevard, 233rd Street, and Sepulveda Boulevard. Trucks exceeding 6,000 pounds are prohibited from using routes other than those designated as truck routes, except to access specific facilities at the end of the journey.

Truck parking is permitted on street segments on and around Figueroa Street, Broadway, Main Street, Wilmington Avenue, Alameda Street, Sepulveda Boulevard, Carson Street, and 223rd Street. While some arterials permit truck parking, much of the truck parking is located on local streets that connect to arterials.

One of the critical truck routes in the Planning Area is Alameda Street and the adjacent freight corridor, the Alameda Corridor. Alameda Street connects the Long Beach and the Los Angeles ports with industrial areas in Carson, Vernon, and downtown Los Angeles. It provides two lanes of travel in each direction, with three lanes of travel on some segments. Alameda Street connects to four east-west arterials in the Planning Area: Sepulveda Boulevard, 223rd Street, Carson Street, and Del Amo Boulevard. Alameda Street is grade-separated from

these arterials and these connections are made through signalized ramp intersections on both Alameda Street and the connecting arterial. Alameda Street connects with other roadways and driveways at signalized or unsignalized intersections. The freight rail line adjacent to the roadway also provides goods movement to Carson. Like the roadway, this 20-mile rail line connects the Port of Long Beach and downtown Los Angeles.



*Located at the confluence of the country's busiest freeway and the largest freight corridor and industry, Carson's transportation system is greatly impacted by goods movement*





### 3.7 Emergency Access and Evacuation

The City’s Natural Hazards Mitigation Plan (NHMP) and Chapter 7: Community Services, Education, and Safety Element identify natural, man-made, and technological hazards and how to plan for these hazards in the city. The NHMP provides measures that may assist the City in reducing risk and preventing loss from future hazard events. The NHMP addresses multi-hazards issues and hazards related to earthquake, flood, and windstorm. The Safety Element incorporates goals, policies, and implementation actions to reduce the impacts of natural and man-made hazards related to the potential risk of death, injuries, property damage and economic and social dislocation. In the event of an evacuation, evacuations would be conducted by the Los Angeles County Sheriff’s Department. The Safety Element identifies evacuation routes and casualty collection points. The four major freeways (I-405, SR-91, I-110, and I-710) within or adjacent to the city would serve as potential evacuation routes. North/south arterial streets that would be used as evacuation routes include Santa Fe Avenue, Alameda Street, Wilmington Avenue, Avalon Boulevard, Main Street, Figueroa Street, and Broadway. East/west arterial streets that would be used as evacuation routes include Lomita Boulevard, Sepulveda Boulevard, 223rd Street, Carson Street, Del Amo Boulevard, Victoria Street, Artesia Boulevard, and Alondra Boulevard.

### 3.8 Guiding and Implementing Policies

This section contains guiding and implementing policies that focus on citywide issues and those of a programmatic high-level nature as it relates to promoting transportation in Carson. Text in italics is for reference only and is not considered adopted policy.

#### GUIDING POLICIES

- CIR-G-1** Provide a balanced transportation system of multimodal networks providing a broad range of travel options to make transportation convenient, comfortable, and safe for people of all abilities.
- CIR-G-2** Promote bicycling and walking, and support and improve connections to local and regional transit service.
- CIR-G-3** Manage the transportation network to minimize roadway congestion, while balancing traffic Level of Service (LOS) objectives with promoting reduction in vehicle miles traveled and considerations of community character and design.

- CIR-G-4** Encourage the development of a multimodal freight transportation system that balances the need for effective and efficient transportation of goods with the health and wellbeing of the community.
- CIR-G-5** Manage parking demand and supply through the provision of adequate and convenient facilities.
- CIR-G-6** Prepare for transportation related technological advances, including autonomous vehicles, and new mobility services.
- CIR-G-7** Balance the needs of various curbside users through the development of an effective Curbside Management Strategy.
- CIR-G-8** Proactively maintain the City's roadways and identify relevant funding sources for ongoing maintenance needs. This may include a fee study that identifies a nexus for the City to generate revenue for maintenance, investigating grant opportunities, and local budget and financing tools to cover roadway maintenance.

## IMPLEMENTING POLICIES

### Pedestrian and Bicycle Movement

- CIR-P-1** Update the City's Bicycle Plan, identifying a citywide bicycle network of off-street bike paths, on-street bike lanes and bike streets. As part of the plan, consider bicycle lockers, secure bike parking, pavement condition, and access to transit, parks, and schools throughout the city. The update of the Bicycle Plan should strategically identify projects that will improve equity, the environment, reduce trips on the roadway system, and prioritize projects that align with primary local active transportation grant funding programs including Metro, SCAG, and Caltrans.
- CIR-P-2** Develop a First Last Mile Plan to improve walking and biking connections to future and existing transportation hubs.

- CIR-P-3** Establish bike hubs (centralized locations with convenient bike parking for trip destinations or transfer to other transportation modes), at key transit nodes or commercial nodes.
- CIR-P-4** Evaluate opportunities, such as new development or changes to the transit network, to enhance existing and proposed Class II bike lanes and Class III bike routes to protected bike lanes and bike routes to bike lanes or bike boulevards.
- CIR-P-5** Work with the school district and private schools to improve pedestrian and bicycle routing and safety around schools. Focus pedestrian access to the elementary schools and bicycle and pedestrian access to the middle and high schools.





## Street Design, Operations, Improvements, and Safety

- CIR-P-6** Strive to achieve LOS D or better as the minimum operating threshold for intersections, with exceptions for transit-oriented districts, transit priority areas, and central/neighborhood business districts. Refer the list at the conclusion of this chapter and to Figure 3-2 for a map showing intersections where the LOS standard is applied in Carson.
- CIR-P-7** Create and update a Local Road Safety Plan (LRSP) which Caltrans offers grants to develop, create, and administer Vision Zero policies to prioritize safety of all roadway users.
- CIR-P-8** Develop and implement street design standards on arterial corridors that are context sensitive to adjacent land uses or districts, and to all roadway users. Require large new developments and redevelopment projects to provide interconnected street networks with small blocks.
- CIR-P-9** Coordinate with regional authorities and adjacent jurisdictions for regional highway network improvements, multi-modal and signage programs.

- CIR-P-10** Direct commuter traffic to move through the city primarily on arterial streets, and on collector streets as appropriate. Consider traffic calming strategies.
  - CIR-P-11** Encourage the use of neighborhood traffic management tools to mitigate neighborhood intrusion by commuter traffic and improve conditions for pedestrians and bicyclists.
  - CIR-P-12** Install traffic calming devices as needed and appropriate in existing neighborhoods.
  - CIR-P-13** Explore the use of porous pavement and features that capture stormwater as part of City projects to be eligible for Proposition 84 grant funding.
  - CIR-P-14** Incorporate Americans with Disabilities Act (ADA) requirements throughout the city, especially in high-volume pedestrian areas.
  - CIR-P-15** Coordinate with Metro and Caltrans to seek funding and implementation solutions to improve congestion from regional traffic.
- ### Transit
- CIR-P-16** Work with Long Beach Transit to serve local neighborhoods and connect residences with shopping, employment, transit, and recreational opportunities.
  - CIR-P-17** Participate in and encourage collaboration among adjacent cities to provide a more reliable public transportation system the area.
  - CIR-P-18** Work with transit services to provide attractive and convenient bus stops, including shade/weather protection, seats, transit information, and trash receptacles.
  - CIR-P-19** Work with regional transit services to develop an on-demand transportation system that caters to senior populations and people with disabilities.

**CIR-P-20** Evaluate and adjust transit routes to better connect disadvantaged communities with major transit hubs and key destinations such as parks, schools, and healthy food opportunities.

### Transportation Demand Management

**CIR-P-21** Work with transit providers in the city to implement public transportation improvements and enhance first-last mile connections at highly utilized transit stops.

**CIR-P-22** Develop a transportation demand management (TDM) ordinance. A TDM ordinance would incorporate strategies appropriate for the local context and land use as different strategies are more effective at reducing employee commute trips, while others focus on reducing residential, shopping, or other discretionary trips. Strategies will generally focus on land use, parking, transit, and active transportation.

**CIR-P-23** Pursue the implementation of TDM strategies through application of the City's Transportation Study Guidelines and compliance with Senate Bill 743 that seeks to reduce per capita VMT for residential, retail, and office trips.

**CIR-P-24** Encourage local public agencies and employers to implement TDM policies that promote VMT reductions. The research in this area is regularly evolving and can help identify viable and defensible VMT reduction strategies.

**CIR-P-25** Evaluate the potential for strategies that can reduce VMT such as citywide bike-sharing, promote car-sharing and other electrified modes as options to reduce traffic congestion.

**CIR-P-26** Prioritize and identify disadvantaged community locations to develop sustainable mobility hubs that include car-sharing, bike-sharing and public EV charging infrastructure to minimize traffic and air quality effects.

**CIR-P-27** Require all new and substantially renovated office, retail, industrial, and multi-family developments to provide EV charging infrastructure and EV ready parking.

**CIR-P-28** For additional policies related to mobility in disadvantaged communities, please see Chapter 6: Community Health and Environmental Justice.

### Goods Movement

**CIR-P-29** Focus truck traffic onto appropriate arterial corridors in the City by clearly marking truck routes and posting appropriate signage to provide for the effective transport of goods while minimizing negative impacts on local circulation and noise-sensitive land uses. While the City has identified truck routes (Fig 3-8), the designation of truck routes does not prevent trucks from using other roads or streets to make deliveries to individual addresses. Seeking community input around the issue and general observation of traffic patterns as online shopping and associated deliveries increase in the future will help in developing strategies to reduce use of non-designated corridors and limit disruption and potentially regulate truck movement.

**CIR-P-30** Retain and strengthen ordinances restricting trucks from residential neighborhoods, using strategies such as time-of-day restrictions.

**CIR-P-31** Conduct a study reviewing truck routes that are designated adjacent to residential neighborhoods. The City of Carson will explore where truck routes are redundant or unnecessary and could be removed without negative impacts to other residential neighborhoods. Segments of truck routes adjacent to residential neighborhoods are shown in Figure 3-9.

**CIR-P-32** Develop curb management strategies to accommodate growing loading needs of on-demand food and goods delivery services.

**CIR-P-33** Enhance infrastructure to accommodate last mile delivery services for low carbon solutions, such as last mile bicycle delivery.

**CIR-P-34** Promote the deployment of near-zero and zero-emissions trucks for urban deliveries, port

drayage trips, regional, and long-haul trips by providing charging infrastructure and plug-in technologies for extended idling.

**CIR-P-35** Encourage deployment of alternative-fueled vehicles through advancement of new technologies, such as autonomous vehicles that are anticipated to be a pathway to electric vehicles.

**CIR-P-36** Incorporate delivery lockers (Parcel Port, Amazon Locker/Hub) and pack stations into mobility/transit hubs and frequently visited locations (e.g., grocery stores, 7-11).

**Parking and Curb Management**

**CIR-P-37** Manage parking supply and loading facilities to support residential, recreational, and commercial needs.

**CIR-P-38** Establish a Parking Management Program to evaluate parking and loading supply and demand, address parking issues, and examine a potential shift in parking demand due to increased use of ride sharing services (and AVs) in the future.

**CIR-P-39** Periodically evaluate the adequacy of parking standards, in light of vehicle ownership patterns and vehicle sizes.

**CIR-P-40** Encourage joint-use and off-site parking where appropriate. Develop procedures and templates for use in shared parking arrangements.

**CIR-P-41** Create inventory of existing curb assets and identify necessary improvements to make the curb space future ready to accommodate various modes and services.

**CIR-P-42** Identify corridors with effective curb supply for potential commercial and passenger loading zones within the City.

**CIR-P-43** Explore dynamic pricing and regulations to effectively manage curb demand and supply for future uses.

**CIR-P-44** Repurpose curbside parking to accommodate active transportation elements, curbside loading areas, or promote pedestrian friendly infrastructure, such as plazas and parklets.

**CIR-P-45** CIR-P-49 Install dynamic (physical & digital) wayfinding mechanisms that monitor occupancy, educate users, and facilitate enforcement of parking resources.

**CIR-P-46** Evaluate curb space operations near popular destinations to limit conflicts and impacts of micro mobility, Transportation Network Companies (i.e. Uber and Lyft), and pick-up/drop-off activity to businesses, residents, and the public right-of-way.

**Emerging Technologies**

**CIR-P-47** Plan for the deployment of autonomous vehicle and related smart cities infrastructure through modifications to the City's implementing documents, such as zoning, parking, and supportive infrastructure found in multimodal plans.

**CIR-P-48** Develop a Future Mobility Technologies working group to guide Autonomous Vehicles (AV) development and future mobility technologies integration in a way that is consistent with community goals and provides equitable service to all neighborhoods.

**CIR-P-49** Assess state and federal regulations for AV testing/deployment and host community events to educate citizens on the potential impacts of AVs and other future technologies.

**CIR-P-50** Create a policy framework for AV testing, pilots, and eventual commercial deployment, consistent with state and federal regulations.

**CIR-P-51** Develop 'AV readiness index' based on policies, physical assessment of existing infrastructure, and cost/feasibility of infrastructure updates.

**CIR-P-52** Determine the need and standards for a centralized traffic management system that can integrate and interact with different AV systems and providers.

**CIR-P-53** Explore strategies that have been successfully implemented by other jurisdictions for collecting, storing, analyzing, and sharing transportation data statistics; potential datasets include activity and safety metrics.

**CIR-P-54** Develop a data management plan and sharing standards to allow data to be shared with smart mobility technology and AV providers/developers (e.g. mobility data specification (MDS)/Open Mobility Foundation, SharedStreets).

### List of Intersections Exempt from LOS policy standard:

9. Alameda Street & Del Amo Boulevard
10. Alameda Street & Sepulveda Boulevard
11. Avalon Boulevard & Albertoni Street
12. Avalon Boulevard & Carson Street
13. Avalon Boulevard & Del Amo Boulevard
14. Avalon Boulevard & Sepulveda Boulevard
15. Avalon Boulevard & University Drive
16. Avalon Boulevard & Victoria Street
17. Central Avenue & Albertoni Street
18. Central Avenue and University Drive
19. Central Avenue & Del Amo Boulevard
20. Central Avenue & Victoria Street
21. Dolores Street & Sepulveda Boulevard
22. Figueroa Street & Carson Street
23. Figueroa Street & Torrance Boulevard
24. I-405 SB ramps & Carson Street
25. Intersections on Carson St between Figueroa Street and Wilmington Avenue (inclusive)
26. Main Street & 223rd Street
27. Main Street & I-405 NB off-ramp
28. Main Street & I-405 SB on-ramp
29. Main Street & Sepulveda Boulevard
30. Main Street & Torrance Boulevard



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