5.4 TRAFFIC

This section is based upon the *Duarte Station Specific Plan Transportation Impact Study*, dated July 2019, prepared by Fehr & Peers and included as Appendix D, Transportation Impact Analysis, for the amendment to the Duarte Station Specific Plan. The purpose of the *Transportation Impact Study* is to evaluate development under the amended Duarte Station Specific Plan from a traffic and circulation standpoint.

Under the current approved 2013 Duarte Station Specific Plan, mitigation measures were suggested for traffic impacts on the intersections of Village Road and Duarte Road and Buena Vista Street and Duarte Road. In 2013, unavoidable significant impacts were found at the intersections of Buena Vista Road and Three Ranch Road as well as Highland Avenue and Evergreen Street. Circumstances, cumulative impacts, as well as proposed development under the amended Duarte Station Specific Plan have now changed requiring new analyses as well as new mitigation measures which are provided below to avoid or reduce project impacts on traffic and circulation.

The *Transportation Impact Study* analyzes existing and future morning and evening peak hour traffic conditions for the following scenarios:

- Existing Conditions
- Existing plus Project Conditions
- Future (Year 2025) Without Project Conditions
- Future (Year 2025) plus Project Conditions

5.4.1 REGULATORY SETTING

CALIFORNIA ENVIRONMENTAL QUALITY ACT

On September 27, 2013, Governor Jerry Brown signed Senate Bill (SB) 743 into law and started a process that will fundamentally change transportation impact analysis conducted as part of CEQA compliance. The Governor's Office of Planning and Research (OPR) was charged with developing new guidelines for evaluating transportation impacts under CEQA using methods that no longer focus on measuring automobile delay and level of service (LOS). This change at the State level recognizes the unintended consequences of using LOS as an impact metric, which results in understating potential transportation impacts in greenfield areas and discouraging more sustainable infill projects and alternative transportation projects. SB 743 directed agencies to create new guidelines that develop a transportation performance metric promoting: the reduction of greenhouse gas emissions, the development of multimodal networks, and a more sustainable diversity of land uses.

OPR issued proposed updates to the CEQA guidelines in support of these goals in November 2017 and a supporting technical advisory in December 2018. The updates establish vehicle miles traveled (VMT) as the primary metric for evaluating a project's environmental impacts on the transportation system. The changes to CEQA Guidelines Section 15064.3 to implement SB 743 were certified by the State in December of 2018. Lead agencies have until July 1, 2020 to implement these new requirements. As the City of Duarte has not yet adopted new traffic impact study guidelines including the VMT metric and significance in compliance with SB 743 guidelines, the analyses below were conducted for informational purposes only.

CALIFORNIA DEPARTMENT OF TRANSPORTATION

The California Department of Transportation (Caltrans) publishes the *Guide for the Preparation of Traffic Impact Studies*, which provides guidelines and recommended elements of traffic studies for projects that could potentially impact state facilities such as State Route highways and freeway facilities. This is a State-level document that is used by each of the Caltrans District offices.

The guide defines when traffic studies should be conducted to address impacts to state facilities but does not define quantitative impact standards. The guide states that Measures of Effectiveness (MOEs) are used to evaluate Caltrans facilities and that the agency strives to maintain a LOS value of C on its facilities. However, the guide states that the appropriate target LOS varies by facility and congestion level and is defined differently by Caltrans depending on the analyzed facility.

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

The Los Angeles County Metropolitan Transportation Authority (Metro) is the agency that operates the Metro bus transit lines and the Metrorail facilities, including the Gold Line through Duarte. Metro also administers the Los Angeles County Congestion Management Program (CMP) and prepares the Long Range Transportation Plan (LRTP).

The Los Angeles County CMP is mandated by State law. This law is administered locally by Metro and requires that the traffic generated by individual development projects be analyzed for potential impacts to the regional roadway system. It also requires that local jurisdictions (cities and counties) maintain CMP conformance by monitoring development activity, reporting the results annually to Metro, and adopting a CMP transportation demand management ordinance. The only two CMP highways in or near Duarte are the I-210 and I-605 freeways. There are no CMP arterial roadways in Duarte.

The LRTP prepared by Metro is the blueprint for implementing future transportation improvements in Los Angeles County. It is a program of recommended transportation projects that assists decision-makers in understanding the options that are available for improving the transportation system. The LRTP recommends a balanced transportation program with a strong emphasis on public transit to meet the region's growing travel demands.

CITY OF DUARTE

City of Duarte General Plan

The *General Plan* Circulation Element serves as the City's primary guide for transportation planning. Specifically, the Circulation Element establishes the overarching goal of providing a balanced transportation/circulation system that will support the anticipated growth in local and regional land uses.

The Circulation Element focuses on providing a safe and efficient circulation system that improves the flow of traffic while enhancing pedestrian and vehicular safety, promoting commerce, and providing for alternative modes of transportation. Circulation Element policies that pertain to the proposed project include, but are not limited to, the following:

- Circ 1.1.4 - Evaluate the traffic impacts of new development and require developers to employ appropriate mitigation measures to reduce traffic or improve roadway and traffic conditions.

- Circ 2.1.1 - Discourage through traffic on local streets that are located in residential neighborhoods.

- Circ 2.1.4 - Discourage non-resident motorists from traveling through residential neighborhoods.

- Circ 2.1.5 - Appropriate mitigation measures should be implemented to ensure that the adverse impacts from trucks and employee traffic can be reduced.

- Circ 3.1.1 - Continue to promote the development of the MTA Gold Line and a Duarte Station.

- Circ 3.1.4 - Ensure that new developments incorporate both local and regional transit measures into the project design that promote the use of alternate modes of transportation.

- Circ 3.1.5 - Provide incentives for appropriate pedestrian and bicycle facilities throughout Duarte, particularly for bike lanes to the Gold Line Station.

5.4.2 ENVIRONMENTAL SETTING

STUDY AREA

Primary access to the project site is provided at Highland Avenue, Evergreen Street, and Business Center Drive.

Local Roadways

The characteristics of the roadway system in the vicinity of the project site are described below:

- *Interstate 210 (I-210)* runs in an east-west direction north of the project site and extends from I-5 in the west to San Bernardino in the east. I-210 provides four general travel lanes and one high-occupancy vehicle (HOV) lane in each direction within the study area. A number of interchanges are provided between Mountain Avenue and Mount Olive Drive in the study area.

- *Interstate 605 (I-605)* runs generally in a north-south direction east of the project site and extends from Huntington Drive in Duarte in the north to I-405 in the south. The freeway provides four general travel lanes in each direction within the study area. The project site can access I-605 via Huntington Drive to the north and Arrow Highway in the south.

- *Huntington Drive* is an arterial street that runs through the northern portion of the study area. It is a component of Historic U.S. Route 66. Huntington Drive provides two travel lanes in each direction with a median and left-turn pockets through the corridor. Generally, the street allows parking on both sides of the roadway with a posted speed limit of 40 miles per hour.

- *Central Avenue* is a collector street that runs parallel to and north of I-210. The street generally provides one travel lane in each direction between Fernley Drive and Buena Vista Street, after which it turns into a two-lane one-way street in the westbound direction. It also provides access to the I- 210 ramps. The corridor allows parking on both sides of the roadway east of Buena Vista and the posted speed limit is 35 miles per hour.

- *Evergreen Street* is a collector that runs parallel to and south of I-210. The street provides two travel lanes in the eastward direction with access to I-210 between Mountain Avenue and Buena Vista Street and no parking is allowed. The street provides one lane in each direction between Buena Vista Street and Highland Avenue with parking allowed on the south side of the street and limited parking on the north side of the street. The posted speed limit is 30 miles per hour.

- *Business Center Drive* is a local street that runs through the project site. The street provides one travel lane in each direction and parking on both sides of the street.

- *Three Ranch Road* is a local street that runs just west of the project site through residential neighborhoods. The street provides one travel lane in each direction and allows parking on both sides of the street.

- *Duarte Road* is an arterial street that runs directly south of the project site parallel to the Metro Gold Line. The street provides two travel lanes in each direction with a median and left-turn pockets throughout the corridor. Parking is not allowed on either side of the street. The posted speed limit is 40 miles per hour.

- *Mountain Avenue* is an arterial street that runs in the western portion of the study area. The street provides two travel lanes in each direction north of Duarte Road and one travel lane in each direction south of Duarte Road. Mountain Avenue also has a center turn lane. Parking is generally allowed on both sides of the street south of Duarte Road, and the posted speed limit is 40 miles per hour.

- *Buena Vista Street* is an arterial street that runs through the center of the study area. The street provides two travel lanes in each direction and has parking on both sides of the street south of I-210. North of the freeway, the street has bike lanes on both sides. The posted speed limit is 35 miles per hour.

- *Village Road* is a private drive that runs south of Duarte Road between Hope Drive and Buena Vista Street. The street provides one travel lane in each direction, and no parking is allowed.

- *Hope Drive* is a private drive that runs south of Duarte Road between Village Road and Highland Avenue. The street provides two lanes in the southern direction and one in the northern direction. No parking is allowed on either side.

- *Duncannon Avenue* is a local street that runs west of the project site. The street provides one travel lane in each direction, and parking is allowed on both sides of the street.

- *Highland Avenue* is an arterial street that runs east of the project site. The street provides two travel lanes in each direction and has parking on both sides of the street, with the

exception of immediately adjacent to the project site. The posted speed limit is 35 miles per hour.

- *Mt. Olive Drive* is a collector street that runs north from the I-605 terminus. The street provides one travel lane in the north direction and two travel lanes in the south direction. Parking is allowed on the west side of the street and is restricted on the east of the street. The posted speed limit is 35 miles per hour.

Study Intersections

Table 5.4-1, *Study Intersections*, identifies the study intersections and respective jurisdictions. *Figure 5.4-1*, *Study Intersections*, illustrates the location of the study intersections.

Table 5.4-1
Study Intersections

Intersection Number	Study Intersection	Jurisdiction	
		City of Duarte	Caltrans
1	Mountain Avenue/Central Avenue	X	
2	Mountain Avenue/Evergreen Street	X	
3	Mountain Avenue/Duarte Road	X	
4	Buena Vista Street/Huntington Drive	X	
5	Buena Vista Street/Central Avenue	X	
6	Buena Vista Street/I-210 WB On-Ramp		X
7	Buena Vista Street & Evergreen Street/I-210 EB On-Ramp		X
8	Buena Vista Street/Three Ranch Road	X	
9	Buena Vista Street/Duarte Road	X	
10	I-210 WB Off-Ramp/Central Avenue		X
11	Village Road/Duarte Road	X	
12	Duncannon Avenue/Evergreen Street	X	
13	Hope Drive/Duarte Road	X	
14	Highland Avenue/Huntington Drive	X	
15	Highland Avenue/Central Avenue	X	
16	Highland Avenue/Evergreen Street	X	
17	Highland Avenue/Business Center Drive	X	
18	I-605 Terminus/Mt. Olive Drive/Huntington Drive		X

WB = westbound; EB = eastbound.

ANALYSIS METHODOLOGY

The traffic analysis is based upon the potential impacts associated with the proposed project. The traffic analysis evaluates existing operating conditions at key study intersections within the project vicinity, estimates the trip generation potential of the proposed project, and forecasts future operating conditions with and without the proposed project. For a detailed discussion of the analytical methodology, refer to Appendix D, Traffic Impact Analysis.

Existing Conditions

To determine existing operation of the study intersections, weekday AM and PM peak period traffic movement counts were collected on December 4, 2018 during typical weekday conditions. The AM peak period intersection counts were collected from 7:00 AM to 9:00 AM; the PM peak period intersection counts were collected from 4:00 PM to 6:00 PM. The traffic volumes used in this analysis were taken from the highest hour within the two-hour peak period counted. Detailed traffic count data sheets are contained in Appendix D.

INTERSECTION LEVEL OF SERVICE METHODOLOGY

City of Duarte

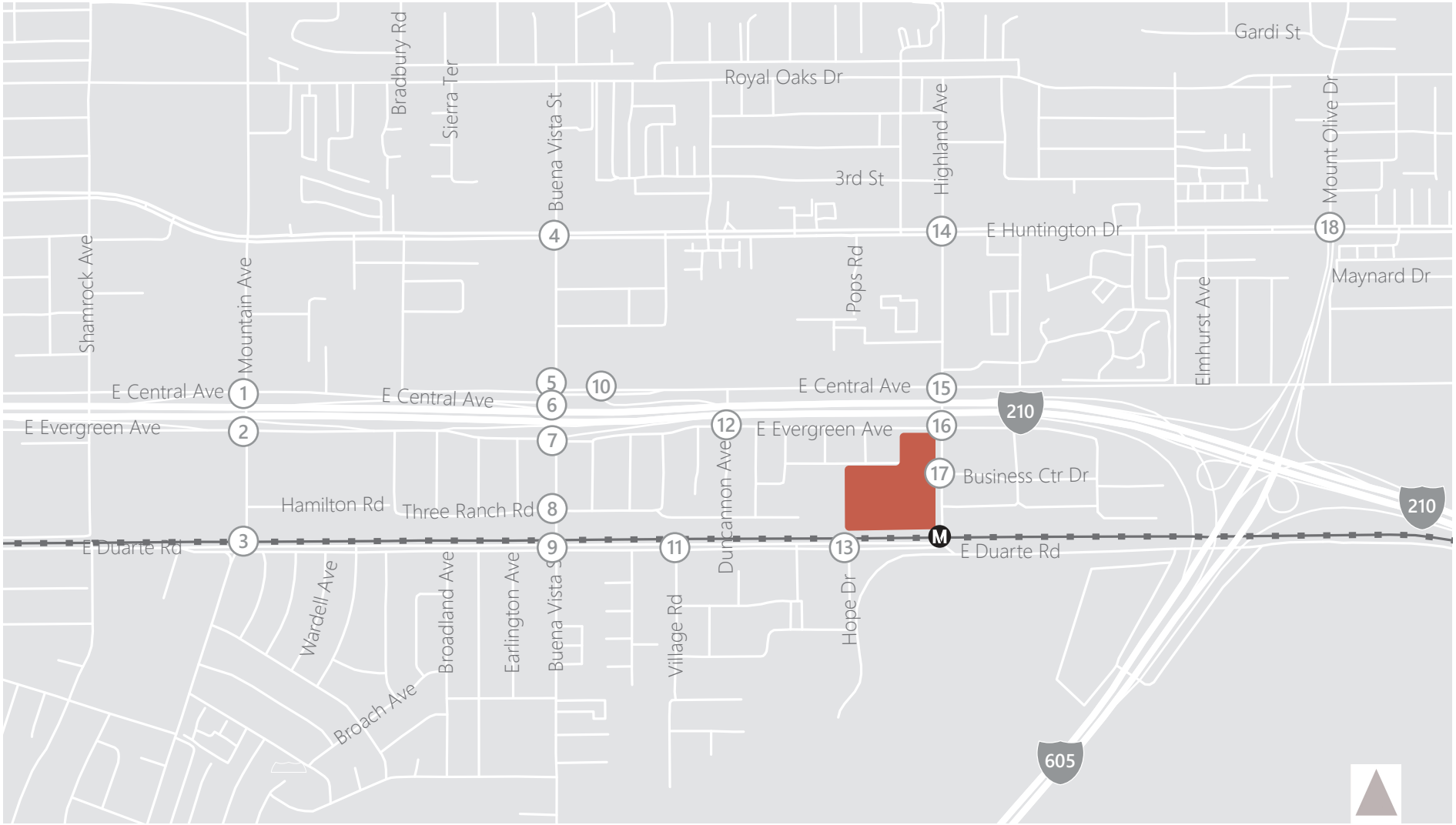
INTERSECTION CAPACITY UTILIZATION (ICU) METHOD OF ANALYSIS

LOS is commonly used as a qualitative description of intersection operation and is based on the capacity of the intersection and the volume of traffic using the intersection. The Intersection Capacity Utilization (ICU) analysis method is utilized by the City of Duarte to determine the operating LOS of signalized intersections. The ICU analysis methodology describes the operation of an intersection using a range of LOS from LOS A (free-flow conditions) to LOS F (severely congested conditions), based on the corresponding volume to capacity (V/C) ratios shown in *Table 5.4-2, Signalized Study Intersection V/C and Level of Service Ranges*.

Table 5.4-2
Signalized Study Intersection V/C and Level of Service Ranges

V/C Ratio	Level of Service (LOS)
$\leq$ 0.60	A
0.61 to $\leq$ 0.70	B
0.71 to $\leq$ 0.80	C
0.81 to $\leq$ 0.90	D
0.91 to $\leq$ 1.00	E
> 1.00	F

Source: Transportation Research Circular No. 212, Interim Materials on Highway Capacity, Transportation Research Board, 1980.
V/C = Volume to Capacity



Source: Fehr & Peers, 2019

(#) Study Intersections

Project Site Boundary

Rail

Metro Rail Station

Figure 5.4-1 Study Intersections

Duarte Station Specific Plan Subsequent EIR

MIG

HIGHWAY CAPACITY MANUAL METHOD OF ANALYSIS

The Highway Capacity Manual (HCM) intersection analysis methodology is used to analyze the operation of unsignalized study intersections. The HCM analysis methodology describes the operation of an unsignalized intersection using a range of LOS from LOS A (free-flow conditions) to LOS F (severely congested conditions), based on the corresponding stopped delay experienced per vehicle as shown in *Table 5.4-3*, *Unsignalized Study Intersection Level of Service and Delay Ranges*.

Table 5.4-3
Unsignalized Study Intersection Level of Service and Delay Ranges

Level of Service (LOS)	Delay (second/vehicle)
A	≤ 10.0
B	> 10.0 to ≤ 15.0
C	> 15.0 to ≤ 25.0
D	> 25.0 to ≤ 35.0
E	> 35.0 to ≤ 50.0
F	> 50.0

Source: Transportation Research Board. 2010. Highway Capacity Manual.

HCM level of service is based on the average stopped delay per vehicle for all movements of all-way stop-controlled intersections; for one-way or two-way stop-controlled intersections, LOS is based on the worst stop-controlled approach.

California Department of Transportation

This intersection analysis of State-controlled study intersections has been prepared in accordance with the California Department of Transportation (Caltrans) *Guide for the Preparation of Traffic Impact Studies* (State of California Department of Transportation, December 2002).

HIGHWAY CAPACITY MANUAL METHOD OF ANALYSIS

Caltrans also advocates use of HCM intersection analysis methodology to analyze the operation of signalized intersections. The HCM analysis methodology describes the operation of signalized intersections and unsignalized intersections using a range of LOS from LOS A (free-flow conditions) to LOS F (severely congested conditions), based on the corresponding stopped delay experienced per vehicle as shown in *Table 5.4-4*, *State-Controlled Intersection Level of Service and Delay Ranges*.

Table 5.4-4
State-Controlled Intersection Level of Service and Delay Ranges

Level of Service (LOS)	Delay (seconds/vehicle)	
	Signalized Intersections	Unsignalized Intersections
A	≤ 10.0	≤ 10.0
B	> 10.0 to ≤ 20.0	> 10.0 to ≤ 15.0
C	> 20.0 to ≤ 35.0	> 15.0 to ≤ 25.0
D	> 35.0 to ≤ 55.0	> 25.0 to ≤ 35.0
E	> 55.0 to ≤ 80.0	> 35.0 to ≤ 50.0
F	> 80.0	> 50.0

Source: Transportation Research Board. 2010. Highway Capacity Manual.

LOS is based on the average stopped delay per vehicle for all movements of signalized intersections and all-way stop-controlled intersections; for one-way or two-way stop-controlled intersections, LOS is based on the worst stop-controlled approach.

EXISTING INTERSECTION LEVELS OF SERVICE

Table 5.4-5, *Existing Year (2018) Intersection Levels of Service Signalized Study Intersections*, summarizes the existing peak hour LOS for the signalized study intersections.

Table 5.4-5
Existing Year (2018) Intersection Levels of Service Signalized Study Intersections

Study Intersection		V/C – Delay – LOS	
		AM Peak Hour	PM Peak Hour
1	Mountain Avenue / Central Avenue	0.771 – C	0.761 – C
2	Mountain Avenue / Evergreen Street	0.652 – B	0.959 – E
3	Mountain Avenue / Duarte Rd	0.6 – A	0.678 – B
4	Buena Vista Street / Huntington Drive	0.691 – B	0.787 – C
5	Buena Vista Street / Central Avenue	0.556 – A	0.613 – B
6	Buena Vista St / I-210 WB On-ramp	0.390 – A	0.524 – A
7	Buena Vista St / Evergreen St/I-210 EB On-ramp	0.597 – A	0.595 – A
9	Buena Vista St & Duarte Rd	0.808 – D	0.920 – E
13	Hope Dr & Duarte Rd	0.330 – A	0.415 – A
14	Highland Avenue / Huntington Drive	0.552 – A	0.821 – D
15	Highland Avenue / Central Avenue	0.565 – A	0.763 – C
17	Highland Avenue / Business Center Drive	0.346 – A	0.433 – A
18	I-605/Mt Olive Dr / Huntington Dr	0.891 – D	1.096 – F

V/C = volume to capacity

Table 5.4-6, *Existing Year (2018) Intersection Levels of Service Unsignalized Study Intersections*, summarizes existing AM and PM peak hour LOS of the unsignalized study intersections; detailed LOS analysis sheets are contained in Appendix D.

Table 5.4-6
Existing Year (2018) Intersection Levels of Service Unsignalized Study Intersections

Study Intersection		Delay – LOS	
		AM Peak Hour	PM Peak Hour
8	Buena Vista Street / Three Ranch Road	18.9 – C	22.5 – C
10	I-210 WB Off-Ramp / Central Avenue	94.4 – F	94.9 – F
11	Village Rd / Duarte Road	49.1 – E	44.3 – E
12	Duncannon Avenue / Evergreen Street	7.8 – A	7.5 – A
16	Highland Avenue / Evergreen Street	24.3 – C	22.0 – C

Delay shown in seconds. Average vehicular delay reported for worst case approach for unsignalized intersections.
WB = westbound; EB = eastbound

EXISTING TRANSIT SERVICE

The City of Duarte, Foothill Transit, and Metro provide bus service to the City. The Metro Gold Line is a light-rail transit line running from East Los Angeles to Azusa via Los Angeles Union Station. The study area is served by the Duarte/City of Hope Station (directly accessible from the Project site). Metro Line 264/267 provides local service running between Altadena and Duarte. The line runs east to west through the project site and connects to the Duarte/City of Hope Light Rail Station.

Foothill Transit Line 187 provides service to Pasadena, Arcadia, Duarte, and Azusa. Line 187 runs in the northern section of the study area. Foothill Transit Line 272 provides service between Duarte and West Covina, through Irwindale and Baldwin Park. Line 272 runs directly through the northern and southern sections of the study area. Foothill Transit Line 494 provides service between El Monte and San Dimas, through Monrovia, Arcadia, Duarte, Azusa, Glendora, and San Dimas. Line 494 runs from east to west through the northern edge of the study area. Foothill Transit Line 690 provides service between Pasadena and Claremont through La Verne, San Dimas, Glendora, Azusa, and Pasadena. Line 690 runs east to west through the northern edge of the study area.

The Duarte Transit Green Line operates in a clockwise direction around Duarte. The Green Line runs around the study area. The Duarte Transit Blue Line operates in a counterclockwise direction around Duarte. The Blue Line runs around the study area.

EXISTING PEDESTRIAN AND BICYCLE FACILITIES

Along the eastern edge of the project site, an approximately nine-foot-wide sidewalk exists along the western side of Highland Avenue. Business Center Drive, which runs through the project site, has a six-foot-wide sidewalk on the southern side. There is no sidewalk present on the northern edge of the project site along Evergreen Street. A six-foot-wide sidewalk exists along the southern side of Duarte Road between Mountain Avenue and 800 feet east of Hope Drive, where it abruptly ends. On the northern side of Duarte Road, an approximately 10-foot-wide sidewalk is present between Mountain Avenue and Highland Avenue. Pedestrian facilities improvements such as continuations of sidewalks, streetscape improvements, and installations of high-visibility crosswalks are planned along Duarte Road.

Per Caltrans, a Class I bicycle facility is a bike path which has exclusive right-of-way for bicyclists and pedestrians away from the roadway, with crossflows by motor traffic minimized. A Class II bicycle facility is a bike lane established along the street and is defined by pavement striping and signage to delineate a portion of the roadway dedicated for bicycle travel. The bike lane can also be buffered to provide a greater separation from adjacent traffic. A Class III bicycle facility is a bike route which designates a preferred route for bicyclists on streets shared with motor traffic and is not designated as a separate facility. A Class IV bike facility is a separated bikeway, often referred to as a protected bike lane that is physically separated from motor traffic with a vertical feature.

Below is a description of the existing bicycle facilities in the City of Duarte.

- Royal Oaks Drive – A Class I bicycle facility on Royal Oaks Drive provides a bike path in the northern part of the study area, from Buena Vista Street to Vineyard Avenue.

- Duarte Road – A Class II bicycle facility on Duarte Road provides a bike lane from Mountain Avenue to the Duarte Gold Line station.

- Emerald Necklace Bike Trail – A Class I bicycle facility is located within the Santa Fe Recreation area adjacent to the City of Hope in the southern part of the study area. It provides a bike path connecting San Gabriel River Bike Trail and Duarte/City of Hope Gold Line Station.

Highland Avenue – The Class III Duarte Recreational Trail runs along Highland Avenue from Royal Oaks Drive to the Metro Gold Line.

- Buena Vista Street – A Class II bicycle facility on Buena Vista Street provides a bike lane from Huntington Drive to Central Avenue.

- Shamrock Avenue – A Class III bicycle facility on Shamrock Avenue provides a bike route north of Central Avenue.

5.4.3 SIGNIFICANCE THRESHOLD CRITERIA

DEFINITION OF SIGNIFICANT IMPACT

Significant Study Intersection Traffic Impact Criteria

Traffic impacts are identified if a project would result in a significant adverse change in traffic conditions on an analyzed facility. A significant impact is typically identified if traffic generated by a project would cause service levels to deteriorate beyond a threshold limit specified by the overseeing agency. Impacts can also be significant if an intersection is already operating below the poorest acceptable level and project traffic would substantially worsen the condition, thereby causing a further decline below the threshold.

CITY OF DUARTE

Consistent with the Los Angeles County CMP, to determine whether the addition of project-generated trips results in a significant impact at the City of Duarte signalized study intersections, and thus requires mitigation, the following threshold of significance is used:

- A significant project impact occurs when a proposed project increases traffic demand at a signalized study intersection by two percent or more of capacity (increase in V/C by equal to or greater than 0.02), causing or worsening LOS E or F (V/C >0.901) conditions.

At stop-controlled study intersections in Duarte, a significant traffic impact occurs if one of the minor street movements are forecast to operate at LOS F and the addition of project-generated trips causes an increase in delay of two or more seconds to that movement. However, this is not a rigid threshold, and judgment is required to consider the relevance of turning traffic volume, lane configuration, queuing impacts, and other parameters affecting intersection operations. For example, the project would have a significant impact on traffic if the intersection meets signal warrants either caused by project volumes or project volumes are added at an intersection that meets signal warrants in baseline scenarios.

CALTRANS

While Caltrans has not established traffic thresholds of significance, this analysis utilizes the following traffic threshold of significance:

- A significant project impact occurs at a State highway study intersection when the addition of project-generated trips to an intersection operating at LOS D or worse causes the peak hour performance and associated level of service of the study intersection to deteriorate one letter grade or more when compared to pre-project conditions.

Significance Criteria

Environmental impact thresholds, as indicated in *CEQA Guidelines* Appendix G (Initial Study Checklist Form), are also used as significance thresholds in this analysis. As such, a project would create a significant impact if it would:

- Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities;
- Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b);
- Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); and/or
- Result in inadequate emergency access.

Based on these significance thresholds and criteria, the project's effects have been categorized as either "no impact," a "less than significant impact," or a "potentially significant impact." Mitigation measures are recommended for potentially significant impacts. If a potentially significant impact cannot be reduced to a less than significant level through the application of mitigation, it is categorized as a significant unavoidable impact.

5.4.4 PROJECT IMPACTS AND MITIGATION MEASURES

PROJECT TRIP GENERATION

To determine the number of trips currently generated by the existing land uses that would be displaced by the proposed project, traffic counts were collected at the project site in December 2018 during typical weekday conditions. *Table 5.4-7*, *Trip Generation of Existing Land Uses*, shows the trip generation of the existing land uses that would be displaced by the proposed project based on observed data.

Table 5.4-7
Trip Generation of Existing Land Uses

Land Use	AM Peak Hour Trips			PM Peak Hour Trips			Daily Trips
	In	Out	Total	In	Out	Total	
General Light Industrial	92	12	104	11	70	81	1,248

As indicated in *Table 5.4-7*, uses on the site are currently generating approximately 1,248 daily trips, which includes approximately 104 AM peak hour trips and 81 PM peak hour trips.

The proposed project would consist of a mixed-use transit-oriented development with 12,500 square feet of retail and restaurant space, 100,000 square feet of office, and 1,400 residential units. Existing on-site uses would be removed prior to construction or may be adaptively reused with more intensive uses.

To calculate trips forecast to be generated by the proposed project, Institute of Transportation Engineers (ITE) trip generation rates were utilized. *Table 5.4-8*, *ITE Trip Generation Rates for Proposed Project Land Uses*, summarizes the ITE trip generation rates used to calculate the number of trips forecast to be generated by the proposed project.

Table 5.4-8
ITE Trip Generation Rates for Proposed Project Land Uses

Land Use (ITE Code)	Units	AM Peak Hour Rates			PM Peak Hour Rates			Daily Trip Rates
		In	Out	Total	In	Out	Total	
Multifamily Housing (Mid-rise (221)	du	26%	74%	[a]	61%	39%	[a]	[a]
High-Turnover (Sit Down) Restaurant (932)	ksf	55%	45%	9.94	62%	38%	9.77	112.18
Retail (820)	ksf	62%	38%	0.94	48%	52%	3.81	37.75
Office (710)	ksf	86%	14%	[b]	16%	84%	[b]	[b]

Source: 2017 ITE Trip Generation Manual, 10th Edition.
ksf = thousand square feet; du = dwelling units.
[a] ITE Multifamily Housing (Mid-Rise) trip generation equations used rather than linear trip generation rate:
Daily: T = 5.45*A - 1.75, where T = trips, A = area in ksf (Suburban/Urban rate used)
AM Peak Hour: Ln(T) = 0.98*LN(A) - 0.98, where T = trips, A = area in ksf (Suburban/Urban equation used)

Table 5.4-8
ITE Trip Generation Rates for Proposed Project Land Uses

Land Use (ITE Code)	Units	AM Peak Hour Rates			PM Peak Hour Rates			Daily Trip Rates
		In	Out	Total	In	Out	Total	
PM Peak Hour: Ln(T) = 0.96*LN(A) - 0.63, where T = trips, A = area in ksf (Suburban/Urban equation used)								
[b] ITE Office trip generation equations used rather than linear trip generation rate:								
Daily: Ln(T) = 0.97 Ln(A) + 2.50, where T = trips, A = area in ksf (Suburban/Urban equation used)								
AM Peak Hour: T = 0.94(A) + 26.49, where T = trips, A = area in ksf (Suburban/Urban equation used)								
PM Peak Hour: Ln(T) = 0.95 Ln(A) + 0.36, where T = trips, A = area in ksf (Suburban/Urban equation used)								

Pass-by Trip Reduction

As documented in ITE's *Trip Generation Manual (Institute of Transportation Engineers, 10th Edition, 2017),* a pass-by trip reduction is applicable to retail and restaurant land uses located along busy arterial highways attracting vehicle trips already on the roadway; this is particularly the case when the roadway is experiencing peak operating conditions. For example, during the PM peak hour, a motorist already traveling along Highland Avenue between work and home or other destinations may stop at the proposed project site. A pass-by discount under this example would reduce/eliminate both the inbound trip and the outbound trip from the surrounding roadway circulation system since the vehicle was already traveling on the roadway. Without the pass-by trip discount, two trips would be generated: an inbound trip to the project site and an outbound trip from the project site.

Table 5.4-9, *Pass-by Trip Reduction Percentages Applicable to Proposed Project*, summarizes the pass-by trip reductions applicable to the proposed project land uses as documented in the ITE *Trip Generation Manual*.

Table 5.4-9
Pass-by Trip Reduction Percentages Applicable to Proposed Project

Proposed Project Land Use	Peak Hour	
	AM Peak Hour	PM Peak Hour
Restaurant	20%	20%
Retail	50%	50%
Source: 2017 ITE Trip Generation Manual, 10th Edition.		

As shown in *Table 5.4-9*, a reduction of 20 percent was applied to the high-turnover (sit down) restaurant uses and reduction of 50 percent was applied to the retail uses. No pass-by trip credit is applied to the residential and office uses because traveling this use is typically the final destination of one's trip, not a destination one chooses as they pass by.

Trip Reduction for Development Near Transit Centers and Light Rail Stations

The project qualifies for a reduction in site vehicle trip generation because it is a development within 0.25 mile of a transit center or light rail station pursuant to ITE's *Trip General Manual*. The vehicle trip reduction factor increases based on the density/intensity of the development; the larger trip reduction factors are achieved with development patterns that ITE would consider mixed use.

Trip reductions associated with proximity to transit or light rail center for the proposed project have been estimated by applying the applicable ITE-recommended trip reduction factor to the commercial and residential components of the proposed project. The project is located in a transit-rich environment, adjacent to the Metro Gold Line Duarte/City of Hope Light Rail Station and in close proximity to local bus lines. A 15 percent vehicle trip reduction was applied to each land use, since they are all located within a 0.25-mile walking distance of high-quality transit.

Internal Trip Capture Reduction for Proposed Project

As documented in ITE's *Trip Generation Manual,* an internal trip capture reduction is applicable when a project has mixed land uses in which a trip originates from a land use located at the site and ends at a land use located within the same site. For example, a development with residential and office land uses has the potential to generate a pedestrian trip from the residential land use to the office land use within the same site in lieu of generating a vehicular trip to an offsite office.

Consistent with industry standards, internal trip capture has been calculated as directed in ITE's *Trip Generation Manual.* Detailed internal trip capture summary calculation sheets are contained in Appendix D. *Table 5.4-10*, *ITE Internal Trip Capture Percentages for Proposed Project*, shows the proposed project internal capture rates utilized in the analysis.

Table 5.4-10
ITE Internal Trip Capture Percentages for Proposed Project

Proposed Project Land Use	Internal Trip Capture Percentage				
	AM Peak Hour		PM Peak Hour		Daily
	In	Out	In	Out	
Multi-family Housing (Mid-Rise)	1%	3%	3%	7%	3%
High-Turnover (Sit Down) Restaurant)	N/A	N/A	N/A	N/A	N/A
Retail	57%	33%	70%	55%	42%
Office	17%	74%	60%	5%	15%

Forecast Trip Generation of Proposed Project

Table 5.4-11, *Forecast Trip Generation of Proposed Project*, summarizes the forecast trip generation of the proposed project utilizing the ITE trip generation rates shown in *Table 5.4-8*, ITE's pass-by trip reduction adjustment rates shown in *Table 5.4-9*, ITE's 15 percent trip reduction for development near transit centers/light rail stations, ITE's internal trip capture adjustment rates shown in *Table 5.4-10*, and accounting for the existing displaced land uses.

Table 5.4-11
Forecast Trip Generation of Proposed Project

Land Use	AM Peak Hour Trips			PM Peak Hour Trips			Daily Trips
	In	Out	Total	In	Out	Total	
1,400-du Multi-family Housing (Mid-Rise)	118	337	455	340	218	558	7,628
Less: Internal Capture [c]	*(1)*	*(13)*	*(11)*	*(10)*	*(15)*	*(25)*	*(229)*
Less: Transit/Walk/Bike credit [d]	*(18)*	*(49)*	*(67)*	*(50)*	*(30)*	*(80)*	*(1,110)*
Net External Vehicle Trips Subtotal	99	278	377	280	173	453	6,289
100-ksf Office	103	17	120	18	96	114	1,061
Less: Internal Capture [c]	*(18)*	*(13)*	*(31)*	*(11)*	*(5)*	*(16)*	*(159)*
Less: Transit/Walk/Bike credit [d]	*(13)*	*(1)*	*(14)*	*(1)*	*(14)*	*(15)*	*(135)*
Net External Vehicle Trips Subtotal	72	3	75	6	77	83	767
6.25-ksf High-Turnover (Sit Down) Restaurant	34	28	62	38	23	61	701
Less: Transit/Walk/Bike credit [d]	*(3)*	*(3)*	*(6)*	*(4)*	*(2)*	*(6)*	*(76)*
Total Driveway Trips	17	14	31	24	10	34	429
Less: Pass-by [e]	*(3)*	*(3)*	*(6)*	*(5)*	*(2)*	*(7)*	*(86)*
Net External Vehicle Trips Subtotal	14	11	25	19	8	27	343
6.25-ksl Retail	4	2	6	12	12	24	236
Less: Internal Capture [c]	*(2)*	*(1)*	*(3)*	*(8)*	*(7)*	*(15)*	*(99)*
Less: Transit/Walk/Bike credit [d]	*(0)*	*(0)*	*(0)*	*(0)*	*(0)*	*(0)*	*(21)*
Less: Pass-by [e]	*(1)*	*(1)*	*(2)*	*(2)*	*(3)*	*(5)*	*(58)*
Net External Vehicle Trips Subtotal	1	0	1	2	2	4	58
Total Driveway Trips	**190**	**296**	**486**	**314**	**265**	**579**	**7,601**
Total Project External Vehicle Trips	**186**	**292**	**478**	**307**	**265**	**567**	**7,457**
Existing Use: General Light Industrial	92	12	104	11	70	81	1,248
Net External Vehicle Trips Subtotal	92	12	104	11	70	81	1,248
Total Existing Use Credit	**92**	**12**	**104**	**11**	**70**	**81**	**1,248**
Total Project (Net)	**94**	**280**	**374**	**296**	**190**	**486**	**6,209**

ksf = thousand square feet; du = dwelling unit

As indicated in *Table 5.4-11*, when accounting for the displaced land uses, the proposed project is forecast to generate a total of approximately 6,209 net new daily trips, which includes approximately 374 net new AM peak hour trips and approximately 486 net new PM peak hour trips.

Forecast Project Trip Distribution and Assignment

Project trip distribution refers to the paths or routes that project trips are forecast to utilize within the study area when travelling to and from the project site, taking into account the typical minimum time and distance paths. To determine the forecast project trip distribution, various sources of information were reviewed, including the location and land use of surrounding development, the surrounding roadway network, and the directionality of existing traffic.

EXISTING WITH PROJECT CONDITIONS

IMPLEMENTATION OF THE PROPOSED PROJECT COULD CAUSE A SIGNIFICANT INCREASE IN TRAFFIC AT STUDY INTERSECTIONS UNDER EXISTING PLUS PROJECT CONDITIONS WHEN COMPARED TO THE TRAFFIC CAPACITY OF THE STREET SYSTEM.

Impact Analysis: This section addresses the impacts associated with adding project-related trips to existing conditions traffic volumes. The Existing with Project scenario is a hypothetical scenario that assumes the proposed project would be fully implemented at the present time, with no other changes to area traffic volumes or to the street network serving the project site. This analysis is intended to comply with the *CEQA Guidelines* Section 15125. This scenario assumes the full development of the proposed project and full absorption of the proposed project traffic on the circulation systems at the present time. This scenario is provided for information purposes only and is not used for impact determinations or mitigation.

Signalized Study Intersections

Existing with project conditions AM and PM peak hour volumes were derived by adding forecast project-generated trips to existing conditions traffic volumes.

Table 5.4-12, *Existing Year (2018) Plus Project Conditions AM and PM Peak Hour Signalized Study Intersection Level of Service*, summarizes existing plus project conditions AM and PM peak hour LOS of the City study intersections; detailed LOS analysis sheets are contained in Appendix D. As indicated in *Table 5.4-12*, based on the thresholds of significance, the addition of project-generated trips is forecast to result in a significant traffic impact at the following City study intersection for forecast existing with project conditions:

- Buena Vista Street and Duarte Road (PM peak hours)

Table 5.4-12
Existing Year (2018) Plus Project Conditions AM and PM Peak Hour Signalized Study Intersection Level of Service

Signalized Study Intersection		Existing Conditions		Existing with Project Conditions		Change in V/C		Significant Impact?
		V/C – Delay – LOS				AM Peak Hour	PM Peak Hour	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour			
1	Mountain Avenue / Central Avenue	0.771 – C	0.761 – C	0.772 – C	0.765 – C	0.001	0.004	No
2	Mountain Avenue / Evergreen Street	0.652 – B	0.959 – E	0.656 – B	0.967 – E	0.004	0.008	No
3	Mountain Avenue / Duarte Rd	0.600 – A	0.678 – B	0.614 – B	0.673 – B	0.014	-0.005	No
4	Buena Vista Street / Huntington Drive	0.691 – B	0.787 – C	0.695 – B	0.794– C	0.004	0.007	No
5	Buena Vista Street / Central Avenue	0.556 – A	0.613 – B	0.578 – A	0.629 – B	0.022	0.016	No
6	Buena Vista St / I-210 WB On-ramp	0.390 – A	0.524 – A	0.412 – A	0.539 – A	0.022	0.015	No
7	Buena Vista St / Evergreen St/I-210 EB On-ramp	0.597 – A	0.595 – A	0.623 – B	0.607 – B	0.026	0.012	No
9	Buena Vista St & Duarte Rd	0.808 – D	0.920 – E	**0.838 – D**	**0.967 – E**	0.030	0.047	**Yes**
13	Hope Dr & Duarte Rd	0.330 – A	0.415 – A	0.343 – A	0.449 – A	0.013	0.034	No
14	Highland Avenue / Huntington Drive	0.552 – A	0.821 – D	0.584 – A	0.893 – D	0.032	0.072	No
15	Highland Avenue / Central Avenue	0.565 – A	0.763 – C	0.599 – A	0.783 – C	0.034	0.020	No
17	Highland Avenue / Business Center Drive	0.346 – A	0.433 – A	0.439 – A	0.487 – A	0.093	0.054	No
18	I-605/Mt Olive Dr / Huntington Dr	0.891 – D	1.096 – F	0.901 – E	1.115 – F	0.010	0.019	No

V/C = volume to capacity

Unsignalized Intersections

Forecast existing with project conditions AM and PM peak hour volumes were derived by adding forecast project-generated trips to existing conditions traffic volumes. *Table 5.4-13*, *Existing Year (2018) Plus Project AM and PM Peak Hour Unsignalized Highway Intersection Level of Service*, summarizes existing with project conditions AM and PM peak hour LOS of the unsignalized study intersections; detailed LOS analysis sheets are contained in Appendix D.

Table 5.4-13
Existing Year (2018) Plus Project Conditions AM and PM Peak Hour
Unsignalized Intersection Level of Service

Unsignalized Study Intersection		Existing Conditions		Existing Plus Project Conditions		Increase in Delay		Significant Impact?
		Delay – LOS				AM Peak Hour	PM Peak Hour	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour			
8	Buena Vista St / 3 Ranch Rd	18.9 – C	22.5 – C	23.4 – C	28.4 – D	4.5	5.9	No
10	I-210 WB Off-Ramp / Central Ave	94.4 – F	94.9 – F	112.7 – F	101.6 – F	18.3	6.7	**Yes**
11	Village Rd / Duarte Rd	49.1 – E	44.3 – E	63.2 – F	85.8 – F	14.1	41.5	**Yes**
12	Duncannon Ave / Evergreen St	7.8 – A	7.5 – A	7.9 – A	7.7 – A	0.1	0.2	No
16	Highland Ave / Evergreen St	24.3 – C	22.0 – C	31.8 – D	36.9 – E	7.5	14.9	No

WB = westbound; EB = eastbound.
Delay shown in seconds.

As indicated in *Table 5.4-13*, based on the thresholds of significance, the addition of project-generated trips is forecast to result in a significant traffic impact at the following unsignalized study intersection for forecast existing with project conditions:

- I-210 WB Off-ramp & Central Avenue (AM peak hours)
- Village Road & Duarte Road (PM peak hours)

A mitigation measure was analyzed for the intersection of Buena Vista Street and Duarte Road involving a modification to the northbound approach on Buena Vista Street to add a right-turn lane. This mitigation would require the widening of the northbound leg to accommodate the additional lane. However, applying this mitigation measure would still not reduce impacts to less than significant levels, as shown in *Table 5.4-14*, *Mitigated Existing Year (2018) With Project Conditions AM and PM Peak Hour All Study Intersection Level of Service*. In addition, this measure would require modifications of the road right-of- way, which contains the Metro Gold Line tracks to the north and private property to the south. Therefore, this measure was deemed infeasible. Impacts would remain significant and unavoidable.

As stated in the Traffic Impact Analysis (Fehr and Peers 2019), the City of Hope is implementing the following road improvements as part of a Specific Plan to construct a new hospital:

- I-210 westbound off-ramp and Central Avenue – Install a traffic signal per the design specifications of the City Engineer. This improvement shall be accomplished prior to the issuance of occupancy permits for the first development within the Specific Plan or as otherwise directed by the City Traffic Engineer. Costs of the improvement may be shared by other projects, as determined by the Community Development Director.

- Village Road & Duarte Road – Install a traffic signal per the design specifications of the City Engineer. This improvement shall be accomplished prior to the issuance of occupancy permits for the first development within the Specific Plan or as otherwise directed by the City Traffic Engineer. Costs of the improvement may be shared by other projects, as determined by the Community Development Director.

With implementation of these improvements, impacts of the proposed project on these two intersections would be reduced to less than significant levels as shown in *Table 5.4-14, Mitigated Existing Year (2018) With Project Conditions AM and PM Peak Hour All Study Intersection Level of Service*. Detailed LOS analysis sheets are contained in Appendix D. Specifically, a signal warrant analysis was conducted for both intersections (see results in the Traffic Impact Study in Appendix D), and they meet the peak hour signal warrant.

Table 5.4-14
Mitigated Existing Year (2018) With Project Conditions AM and PM Peak All Study Intersection Level of Service

Study Intersection		Existing Year (2018) Without Project Conditions		Existing Year (2018) with Project Conditions (Mitigation)		Change in V/C		Significant Impact Remains?
		V/C – LOS				AM Peak Hour	PM Peak Hour	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour			
9	Buena Vista St & Duarte Rd	0.808 – D	0.920 – E	0.838 – D	0.967 – E	0.030	0.047	**Yes**
10	I-210 WB Off-ramp & Central Ave*	0.616 – B	0.567 - A	0.651 – B	0.585 - A	0.035	0.018	No
11	Village Rd & Duarte Rd*	0.484 – A	0.438 - A	0.494 – A	0.470 – A	0.010	0.032	No

V/C = volume to capacity; N/A = Not Applicable; * = Unsignalized Study Intersection

Furthermore, the City of Duarte wants to ensure that freeway on- and off-ramp impacts associated with future development within the plan area remain consistent with these conclusions, and as such, Mitigation Measure TRF-1 requires that future project applicants prepare traffic studies for proposed development within the Duarte Station Specific Plan Area pursuant to CEQA and the CEQA Guidelines.

Mitigation Measures:

TRF-1 Pursuant to CEQA and the latest CEQA Guidelines, all project applicants within the Duarte Station Specific Plan Area shall prepare and submit at their time of their development application to the Community Development Department a traffic study that documents the project-related trips.

Level of Significance: Significant Unavoidable Impact.

FUTURE YEAR 2025 WITH PROJECT CONDITIONS

IMPLEMENTATION OF THE PROPOSED PROJECT COULD CAUSE A SIGNIFICANT INCREASE IN TRAFFIC AT STUDY INTERSECTIONS UNDER FUTURE YEAR 2025 CONDITIONS WHEN COMPARED TO THE TRAFFIC CAPACITY OF THE STREET SYSTEM.

Impact Analysis: Year 2025 traffic with the proposed project is considered in comparison to the forecast year 2025 traffic conditions without the project. Traffic from cumulative projects are factored into the forecast year 2025 traffic conditions for all study intersections.

Future Year 2025 Without Project Conditions

Consistent with the *Los Angeles County Congestion Management Program's (Los Angeles County Metropolitan Transportation Authority (Metro), 2010)* future growth forecasts for this area of the San Gabriel Valley (i.e., Regional Statistical Area for Duarte), an annual growth rate of 0.46 percent per year of growth was assumed, resulting in a total projected growth of 3.2 percent between 2018 and 2025. It should be noted this is a conservative assumption since the growth rate is applied to all movements at the study intersections.

Additionally, in accordance with City staff direction, future year 2025 without project traffic volumes include the addition of trips associated with the cumulative projects identified in Chapter 4.0 of this EIR. These cumulative projects are assumed to be constructed and generating trips by the time of operation of the proposed project. Exhibit 11 of the Traffic Impact Study (contained in Appendix D) illustrates Future Year 2025 Without Project conditions, including AM and PM peak hour volumes at the study intersections.

Table 5.4-15, Cumulative Projects Trip Generation, summarizes the trips forecast to be generated by the cumulative projects. As indicated in *Table 5.4-15*, the cumulative projects are forecast to generate approximately 1,065 AM peak hour trips, approximately 1,735 PM peak hour trips, and approximately 12,846 daily trips by the year 2025.

Table 5.4-15
Cumulative Projects Trip Generation

Location	Land Use	Trip Generation						
		Daily Trips	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
1634 Third St. and 1101 Oak Ave	Apartments	138	2	7	9	7	4	11
	Townhomes							
	Third Street Park (Existing)							
1122 Huntington Drive	Fast Food Restaurant with drive-thru	636	28	26	54	36	33	69
	Fast Food Restaurant with drive-thru (Existing)							
2632 Royal Oaks Drive [b][c]	Religious Institution	26	1	0	1	1	1	2
946-962 Huntington Drive	Townhomes	236	5	14	19	16	9	25
1405-37 Huntington Drive	Mid-Rise Apartments	1,087	63	45	108	53	39	92
	Commercial							

Table 5.4-15
Cumulative Projects Trip Generation

Location	Land Use	Trip Generation						
		Daily Trips	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
	Live/Work Space [d]							
1200 Huntington Drive	Apartments Commercial Hotel	3,150	155	160	315	538	378	916
City of Hope Specific Plan [d]	Hospital	4,753	448	66	514	74	388	462
1193 Huntington Drive [f]	Gym	547	11	10	21	31	24	55
1525 Huntington Drive	Restaurant	2,112	9	5	14	52	43	95
928 Huntington Drive	Apartments	161	2	8	10	8	0	8
Future Year 2025 Total Cumulative Project Trip Generation		**12,846**	**724**	**341**	**1,065**	**816**	**919**	**1,735**

[a] Trip generation estimates based on rates from Trip Generation, 10th Edition, Institute of Transportation Engineers, 2017.
[b] Square footage of the project site estimated based on project aerial view through google imagery.
[c] ITE trip generation rates for church used for meditation temple.
[d] Trip Generation Estimates provided in Traffic Impact Analysis City of Hope, April 2017
[e] Daily ITE rate was not available. Daily rate was estimated by multiplying PM peak hour rate by 10.

Table 5.4-16, *Future Year 2025 Without Project Conditions AM and PM Peak Signalized Study Intersection Level of Service*, summarizes the AM and PM peak hour LOS of the signalized study intersections under Year 2025 Without Project Conditions; detailed LOS analysis sheets are contained in Appendix D.

Table 5.4-16
Future Year 2025 Without Project Conditions
AM and PM Peak Hour Signalized Study Intersection Level of Service

Signalized Study Intersection		Future Year 2025 Without Project Conditions	
		AM Peak Hour	PM Peak Hour
		V/C – Delay – LOS	
1	Mountain Avenue / Central Avenue	0.843 – D	0.950 – E
2	Mountain Avenue / Evergreen Street	0.720 – C	1.069 – F
3	Mountain Avenue / Duarte Rd	0.620 – B	0.710 – C
4	Buena Vista Street / Huntington Drive	0.740 – C	0.884 – D
5	Buena Vista Street / Central Avenue	0.628 – B	0.669 – B
6	Buena Vista St / I-210 WB On-ramp	0.459 – A	0.626 – B
7	Buena Vista St / Evergreen St/I-210 EB On-ramp	0.656 – B	0.690 – B
9	Buena Vista St & Duarte Rd	1.022 – F	1.175 – F
13	Hope Dr & Duarte Rd	0.397 – A	0.490 – A
14	Highland Avenue / Huntington Drive	0.612 – B	0.901 – E
15	Highland Avenue / Central Avenue	0.598 – A	0.789 – C

Table 5.4-16
Future Year 2025 Without Project Conditions
AM and PM Peak Hour Signalized Study Intersection Level of Service

Signalized Study Intersection		Future Year 2025 Without Project Conditions	
		AM Peak Hour	PM Peak Hour
		V/C – Delay – LOS	
1	Mountain Avenue / Central Avenue	0.843 – D	0.950 – E
17	Highland Avenue / Business Center Drive	0.375 – A	0.458 – A
18	I-605/Mt Olive Dr / Huntington Dr	0.957 – E	1.171 – F
V/C = volume to capacity			

Future year 2025 traffic conditions without the project for unsignalized intersections are summarized in *Table 5.4-17*, *Future Year 2025 Without Project Conditions AM and PM Peak Hour Unsignalized Study Intersection Level of Service*; detailed LOS analysis sheets are contained in Appendix D.

Table 5.4-17
Future Year 2025 Without Project Conditions AM and PM Peak Hour
Unsignalized Study Intersection Level of Service

Unsignalized Study Intersection		AM Peak Hour	PM Peak Hour
		Delay – LOS	
8	Buena Vista St & 3 Ranch Rd	26.9 – D	42.7 – E
10	I-210 WB Off-ramp & Central Ave	201.8 – F	159.0 – F
11	Village Rd & Duarte Rd	305.9 – F	238.3 – F
12	Duncannon Ave & Evergreen St	7.8 – A	7.5 – A
16	Highland Ave & Evergreen St	30.7 – D	25.0 – C
Delay shown in seconds. WB = westbound; EB = eastbound			

Future Year 2025 Plus Project Conditions

Peak hour volumes under the Future Year 2025 With Project conditions were derived by adding project-generated trips to Year 2025 Without Project conditions and are shown in *Tables 5.4-18* and *5.4-19* for signalized and unsignalized intersections, respectively; detailed LOS analysis sheets are contained in Appendix D.

Table 5.4-18
Future Year 2025 Plus Project Conditions AM and PM Peak Hour Signalized Study Intersection Level of Service

Signalized Study Intersection		Future Year 2025 Without Project Conditions		Future Year 2025 Plus Project Conditions		Change in V/C		Significant Impact?
		V/C – Delay – LOS				AM Peak Hour	PM Peak Hour	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour			
1	Mountain Avenue / Central Avenue	0.843 – D	0.950 – E	0.845 – D	0.955 – E	0.002	0.005	No
2	Mountain Avenue / Evergreen Street	0.720 – C	1.069 – F	0.724 – C	1.078 – F	0.004	0.009	No
3	Mountain Avenue / Duarte Rd	0.620 – B	0.710 – C	0.634 – B	0.705 – C	0.014	-0.005	No
4	Buena Vista Street / Huntington Drive	0.740 – C	0.884 – D	0.745 – C	0.888 – D	0.005	0.004	No
5	Buena Vista Street / Central Avenue	0.628 – B	0.669 – B	0.650 – B	0.639 – B	0.022	0.013	No
6	Buena Vista St / I-210 WB On-ramp	0.459 – A	0.626 – B	0.480 – A	0.639 – B	0.021	0.013	No
7	Buena Vista St / Evergreen St/I-210 EB On-ramp	0.656 – B	0.690 – B	0.689 – B	0.702 – C	0.033	0.012	No
9	Buena Vista St & Duarte Rd	1.022 – F	1.175 – F	**1.052 – F**	**1.222 – F**	0.030	0.047	**Yes**
13	Hope Dr & Duarte Rd	0.397 – A	0.490 – A	0.409 – A	0.525 – A	0.012	0.035	No
14	Highland Avenue / Huntington Drive	0.612 – B	0.901 – E	0.643 – B	**0.974 – E**	0.031	0.073	**Yes**
15	Highland Avenue / Central Avenue	0.598 – A	0.789 – C	0.632 – B	0.808 – D	0.034	0.019	No
17	Highland Avenue / Business Center Drive	0.375 – A	0.458 – A	0.468 – A	0.512 – A	0.093	0.054	No
18	I-605/Mt Olive Dr / Huntington Dr	0.957 – E	1.171 – F	0.968 – E	1.190 – F	0.011	0.019	No

V/C = volume to capacity

Table 5.4-19
Future Year 2025 With Project Conditions AM and PM Peak Hour
Unsignalized Study Intersection Level of Service

Study Intersection		Future Year 2025 Without Project Conditions		Future Year 2025 With Project Conditions		Increase in Delay		Significant Impact?
		Delay – LOS				AM Peak Hour	PM Peak Hour	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour			
8	Buena Vista St & 3 Ranch Rd	26.9 – D	42.7 – E	37.5 – E	63.4 – F	10.6	20.7	No
10	I-210 WB Off-ramp & Central Ave	201.8 – F	159.0 – F	228.3 – F	168.0 – F	26.5	9.0	**Yes**
11	Village Rd & Duarte Rd	305.9 – F	238.3 – F	406.8 – F	367.2 – F	100.9	128.9	**Yes**
12	Duncannon Ave & Evergreen St	7.8 – A	7.5 – A	7.9 – A	7.7 – A	0.1	0.2	No
16	Highland Ave & Evergreen St	7.8 – A	7.5 – A	42.7 – E	45.1 – E	12.0	20.1	No

Notes: Worst approach delay reported for Two-Way Stop Controlled intersections.
Delay shown in seconds.
WB = westbound; EB = eastbound

As under Existing Plus Project conditions, the proposed project would result in a significant impact on Future Year 2025 Plus Project Conditions at the following intersections.

- Buena Vista Street/Duarte Road (AM and PM peak hour)
- I-210 westbound off-ramp and Central Avenue (AM and PM peak hours)
- Village Road and Duarte Road (PM peak hours)

The Buena Vista Street/Duarte Road intersection would be significantly affected during both AM and PM peak hours. As discussed above under Existing Plus Project conditions, because implementation of improvements at this intersection would be infeasible, impacts would be significant and unavoidable. However, implementation of road improvements at the I-210 westbound off-ramp and Central Avenue and at Village Road and Duarte Road by the City of Hope would reduce impacts on these intersections to less than significant levels as shown in *Table 5.4-20*.

Finally, the proposed project would result in a significant impact on Future Year 2025 Plus Project Conditions at the following additional intersection:

- Highland Avenue/Huntington Drive (PM peak hour only)

Mitigation Measure TRF-2 would address the future significant traffic impacts at this intersection and reduce impacts to less than significant levels as also shown in Table 5.4-20. A signal warrant analysis was performed for this intersection (see Appendix D) and it meets the peak hour signal warrant.

Table 5.4-20
Mitigated Future Year 2025 With Project Conditions AM and PM Peak All Study Intersection Level of Service

Study Intersection		Future Year 2025 Without Project Conditions		Future Year 2025 With Project Conditions (Mitigation)		Change in V/C		Significant Impact Remains?
		V/C – LOS				AM Peak Hour	PM Peak Hour	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour			
9	Buena Vista St & Duarte Rd	1.022 – F	1.175 – F	**1.052 – F**	**1.222 – F**	0.030	0.047	**Yes**
10	I-210 WB Off-ramp & Central Ave*	0.659 – B	0.600 – A	0.686 – B	0.618 – B	0.027	0.018	No
11	Village Rd & Duarte Rd*	0.610 – B	0.545 – A	0.620 – B	0.577 – A	0.010	0.032	No
14	Highland Ave & Huntington Dr	0.612 – B	0.901 – E	0.643 – B	0.891 – C	0.031	-0.010	No

V/C = volume to capacity; N/A = Not Applicable; * = Unsignalized Study Intersection

As under the Existing Plus Project scenario, the City of Duarte wants to ensure that freeway on- and off-ramp impacts associated with future development within the plan area remain consistent with these conclusions, and as such, Mitigation Measure TRF-1 requires that future project applicants prepare traffic studies for proposed development within the Duarte Station Specific Plan Area pursuant to CEQA and the CEQA Guidelines..

Mitigation Measures:

Refer to Mitigation Measure TRF-1. In addition, the following mitigation measure shall be required:

TRF-2 Highland Avenue and Huntington Drive – Modify the northbound approach and southbound approach signal on Highland Avenue by adding an overlap phase for both right-turn approaches. This mitigation will require a modification to the lane geometry through the striping of northbound and southbound right-turn lanes. This improvement shall be accomplished prior to the issuance of occupancy permits for the first development within the Specific Plan or as otherwise directed by the City Traffic Engineer. Costs of the improvement may be shared by other projects, as determined by the Community Development Director.

Level of Significance: Significant Unavoidable Impact.

VEHICLE MILES TRAVELED

IMPLEMENTATION OF THE PROPOSED PROJECT COULD RESULT IN A SIGNIFICANT INCREASE IN THE AMOUNT OF VEHICLE MILES TRAVELED.

Impact Analysis: As noted above, the State has adopted VMT as the primary metric for evaluating a project's environmental impacts on transportation systems. Lead agencies have until July 1, 2020 to implement these new requirements. As the City of Duarte has not yet adopted

new traffic impact study guidelines including the VMT metric and significance in compliance with SB 743 guidelines, the analyses below were conducted for informational purposes only.

Trip Types

OPR's *Technical Advisory on Evaluating Transportation Impacts* (OPR 2018) advises that the focus of VMT calculations for residential uses should be on "Home-Based" trips. This includes Home-Based Work (HBW) trips and Home-Based Other (HBO) trips, defined as trips produced by residential land uses and trips attracted by non-residential land uses, respectively. The other trip type, Non-Home-Based (NHB), is produced and attracted by non-residential land uses, but is not included in this analysis per OPR guidance (OPR 2018). For office uses, VMT calculations should be on HBW trips (OPR 2018). Finally, changes to the CEQA Guidelines do not require VMT analysis for commercial uses less than 50,000 square feet (OPR 2018). Therefore, daily trips produced by the retail and restaurant land uses of the proposed project have not been included in this analysis.

Trip Distances

Trip distances were determined using Southern California Association of Government's (SCAG) Travel Demand Model. The vehicle trip length for the Duarte transportation analysis zone (TAZ) was obtained from the SCAG 2016 RTP Travel Demand Model. To determine the average trip length of the residential component of the project, the average lengths of production trips in HBW and HBO were identified. To determine average trip length for the office component of the project, average HBW trip distances from attraction trips were selected. The 2016 SCAG Travel Demand Model identifies the average trip length for residential land uses as 15.8 miles for HBW trips and 8.1 miles for HBO trips for the Duarte TAZ, and the average trip length for office land uses for HBW trips is 17.7 miles for the Duarte TAZ (Table 5.4-22).

Trip Generation

The project is expected to generate an estimated 6,289 net new daily residential trips and 767 net new daily worker trips (i.e., not counting existing trips from the project area). National Cooperative Highway Research Program (NCHRP) guidelines estimate that 15 percent of residential trips are HBW trips and 50 percent of residential trips are HBO trips (NCHRP 1998). NCHRP guidelines also estimate that 35 percent of office trips are HBW (NCHRP 1998). These factors were applied to the daily trip generation estimated in the Traffic Impact Study (Fehr and Peers 2019) to identify the number of residential HBW and HBO trips and office HBW trips. For residential land uses, the number of HBW trips was estimated at 943 trips and the number of HBO trips was estimated at 3,145 trips. For office land uses, the number of HBW trips was estimated at 268 trips.

VMT Estimate

To calculate the daily VMT, the trips for each land use were multiplied by the associated SCAG Travel Demand Model trip distances. Based on the project's estimated trip generation of 943 HBW residential trips and average resident HBW trip length of 15.8 miles and 3,145 HBO residential trips and average HBO trip length of 8.1 miles, the residential land use generates 40,374 daily VMT. Based on the project's estimated trip generation of 268 HBW employee trips and average HBW employee trip length of 17.7 miles, the office land use generates 4,744 daily VMT (Table 5.4-22).

Service Population

To conduct a VMT per capita analysis, a service population for the residential and office land uses was determined. Service populations typically account for residents and employees of a project. Residential land uses were converted to household population based on conversion rates derived from 2019 Department of Finance data which assumes an average of 3.03 people per dwelling unit. This results in an estimated population of 4,242 residents generated by the project. SCAG (2016) estimates 280 square feet of General Office space per employee; therefore, 100,000 square feet of new office space would generate 357 employees.

VMT Per Capita Estimate

To calculate the VMT per capita at the project, the daily VMT was divided by the project's population. For the residential land uses, 40,374 daily VMT was divided by the residential population of 4,242 to result in an estimated 9.5 VMT per resident. For the office land uses, 4,744 daily VMT was divided by an employee population of 357 to result in an estimated 13.3 VMT per employee. *Table 5.4-21, Vehicle Miles Traveled (VMT) Analysis,* below summaries the VMT analysis.

Table 5.4-21
Vehicle Miles Traveled (VMT) Analysis

	Residential		Office
	HBW	HBO	HBW
Trip Length by Land Use (miles) [a]	15.8	8.1	17.7
Project Trip Generation [b]	943	3,145	268
Daily VMT [c]	40,374		4,744
Service Population [d]	4,242		357
VMT per Capita/Employee	9.5		13.3

Notes:
a] The Southern California Association of Governments (SCAG) Travel Demand Forecasting Model provides the ability to evaluate the transportation system, use performance indicators for land use and transportation alternatives, provide information on regional pass-through traffic versus locally generated trips, and graphically display these results. The model captures planned growth in the Project Area and is sensitive to emerging land use trends through improved sensitivity to built environment variables. The model forecasts AM and PM peak period and daily vehicle and transit flows on the transportation network in the City and calculates trip origins and destinations for those vehicle flows, ultimately providing the trip lengths utilized here.
[b] NCHRP (1998) estimates 15% of total residential trips to be HBW trip types and 50% of residential trips to be HBO trip types. NCHRP (1998) also estimates 35% of total office trips to be HBW trip types. These factors were applied to the daily trip generation to identify the number of residential HBW and HBO trips and office HBW trips.
[c] Daily VMT for residential and office land uses is calculated using the residential and office trip generation explained in [b] and the average trip length calculated using the SCAG Travel Demand Model for each land use.
[d] VMT per Capita for residential is calculated by converting the residential land use to population based on conversion rates derived from 2019 Department of Finance data. The average population per dwelling unit is 3.03 people per dwelling unit. VMT per Capita for office is based upon SCAG's (2016) estimate of 280 square feet of office space per employee, or 357 employees for the proposed 100,000 square feet of new office space.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

OFF-RAMP QUEUING

IMPLEMENTATION OF THE PROPOSED PROJECT COULD RESULT IN A HAZARDOUS TRAFFIC CONDITION ASSOCIATED WITH QUEUING AT THE FREEWAY STUDY INTERSECTION OFF-RAMPS.

Impact Analysis: An off-ramp queuing analysis was conducted at the five following off-ramps on the I-210 and I-605 freeways:

1. I-210 Westbound off-ramp/Central Avenue & Mountain Avenue
2. I-210 Eastbound off-ramp/Evergreen Street & Mountain Avenue
7. I-210 Eastbound off-ramp/Evergreen Street & Buena Vista Street
10. I-210 Westbound off-ramp & Central Avenue
18. I-605 ramps/Mount Olive Avenue & Huntington Avenue

Table 5.4-22, *AM and PM Peak Hour Freeway Study Intersection Off-Ramp Queue Analysis*, summarizes the results of the peak hour vehicular queue analysis at the freeway study intersection off-ramps for the evaluated scenarios; detailed LOS analysis sheets are contained in Appendix D.

Table 5.4-22
AM and PM Peak Hour Freeway Study Intersection Off-Ramp Queue Analysis

Freeway Study Intersection Off-Ramp	Available Storage Capacity (feet)	Vehicular Queue (feet)								Adequate Storage Provided to Accommodate Queue?
		Existing Conditions		Existing with Project Conditions		Future Year 2025 without Project Conditions		Future Year 2025 With Project Conditions		
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	
I-210 Westbound off-ramp/Central Ave & Mountain Ave	3,860	1128	406	1128	412	1250	609	1250	613	Yes
I-210 Eastbound off-ramp/Evergreen St & Mountain Ave	4,560	489	1329	493	1355	526	1451	530	1476	Yes
I-210 Eastbound off-ramp/Evergreen St & Buena Vista St	5,200	218	368	218	388	340	418	350	440	Yes
I-210 Westbound off-ramp & Central Ave	1,450	478	323	523	358	788	446	591	488	Yes
I-605 ramps/Mount Olive Ave & Huntington Ave	3,130	1390	911	1453	1085	1653	1188	1715	1360	Yes

As indicated in *Table 5.4-22*, the freeway ramps queues would not extend beyond 85 percent of the capacity of the ramp under any existing or future scenarios with the project. No significant impact at off-ramp locations is anticipated as a result of the project. Detailed queue calculations are provided in Appendix D. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

MAINLINE FREEWAY SEGMENT ANALYSIS

IMPLEMENTATION OF THE PROPOSED PROJECT COULD CAUSE A CHANGE IN THE MEASURE OF EFFECTIVENESS (MOE) ON STATE HIGHWAY FACILITIES.

Impact Analysis: Mainline freeway segment analyses were conducted using the HCM operational analysis methodology as implemented by the Highway Capacity Software (HCS) software package for the following four segments along I-210 and I-605 in both directions:

- I-210 west of Mountain Avenue
- I-210 between Buena Vista Street and Highland Avenue
- I-210 east of Mount Olive Drive
- I-605 south of Live Oak Avenue

Per the *Guide for the Preparation of Traffic Impact Studies*, or Caltrans TIS Guide (Caltrans, 2002), Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on State highway facilities; however, Caltrans acknowledges that this may not always be feasible. If an existing State highway facility is operating at less than the appropriate target LOS, the existing MOE should be maintained (Caltrans TIS Guide, page 1). This latter criterion does not allow for determination of effect if the segment is operating at LOS F under baseline conditions. For informational purposes, freeway segments operating at LOS F under base conditions were identified if the project traffic added to these segments is estimated to represent two percent or more of the total traffic on the segment.

Existing and Existing Plus Project Mainline Level of Service

Freeway mainline volume and speed data were obtained from Caltrans' Performance Measurement System (PeMS) archived traffic data for the AM and PM peak periods for Tuesdays, Wednesdays, and Thursdays in December 2018, between December 1 through 22, except when data were not available for those dates, and the data were averaged across the days. Existing and Existing plus Project conditions on the mainline segments, as well as detailed LOS calculations are provided in the Traffic Impact Study in Appendix D.

LOS was determined using the following definitions in *Table 5.4-23* and from the HCM as presented in Appendix C of the Caltrans TIS Guide (note that LOS F is defined as density exceeding 45 passenger cars per mile per lane and average speed below 52.2 miles per hour).

Table 5.4-23
LOS Definitions for Basic Freeway Segments at 65 miles/hour

Level of Service (LOS)	Maximum Density (pc/mi/ln)	Minimum Speed (mph)
A	11	65.0
B	18	65.0
C	26	64.6
D	35	59.7
E	45	52.2

Source: Caltrans. 2012. *Guide for the Preparation of Traffic Impact Studies.*
pc/mi/ln passenger cars per mile per lane
mph miles per hour

For both the Existing and Existing plus Project scenarios during the AM peak hour, I-210 west of Mountain Avenue in the westbound direction and I-605 south of Live Oak Avenue in the southbound direction operate at a congested LOS F. During the PM peak hour, the eastbound segments on I-210 operate at LOS F.

With the project, all of the segments during the AM peak hour would continue to operate at the same LOS as under Existing conditions. The project represents between 0.2 percent and 1.4 percent of the Existing plus Project traffic volumes on the segments, depending on location and direction. The project is projected to have no change in the MOE during the AM peak hour under the Existing plus Project scenario. With the project, none of the segments during the PM peak hour would operate at a worse LOS when compared to the Existing condition. The project represents between 0.5 percent and 1.9 percent of the Existing plus Project traffic volumes on the segments depending on location and direction. The project is projected to have no change in the MOE during the PM peak hour under the Existing plus Project scenario.

Future and Future Plus Project Mainline Level of Service

Per the Caltrans TIS Guide, future conditions analyzed in conjunction with a project entitlement process should be evaluated for the future year in which the project is anticipated to complete construction (Caltrans TIS Guide, page 3). Future volumes were thus projected for the future traffic conditions (year 2025) taking into account projected changes in traffic over existing conditions from two primary sources: (1) ambient growth in the existing traffic volumes due to the effects of overall regional growth and development outside the study area, and (2) traffic generated by specific development projects in, or in the vicinity of, the study area. The methods used to account for these factors are described below.

- **Background or Ambient Growth** – Ambient growth for the study area was developed based on growth factors from the Los Angeles County CMP (Metro, 2010). The State of California requires that a congestion management program be developed, adopted, and updated biennially for every county that includes an urbanized area and shall include every city and the county government within that county. Metro is designated as the Congestion Management Agency for Los Angeles County and is responsible for the implementation of the CMP. The CMP was approved in October 2010 and serves as a resource for future growth factors within the 21 Regional Statistical Areas (RSA) of Los Angeles County. The growth rate factors for the RSA area of Duarte was used to determine yearly growth rates

of the future traffic. Growth rates of 0.46 percent per year for the Duarte RSA was used for the development of the future year scenario.

- **Related Projects** – Future traffic forecasts include the effects of specific projects, called related projects, expected to be implemented in the vicinity of the proposed project site prior to the buildout date of the proposed project. The list of related projects was prepared based on data from the City of Duarte (see Traffic Impact Study in Appendix D). A total of 10 cumulative projects were identified in the study area. Trip generation estimates for the related projects were calculated using a combination of previous study findings, publicly available environmental documentation, and trip generation rates contained in the Institute of Transportation Engineers' trip generation manual.

The Traffic Impact Study in Appendix D presents the future freeway mainline segment analysis. For both the Future and Future plus Project scenarios, during the AM peak hour, I-210 west of Mountain in the westbound direction and I-605 south of Live Oak Avenue in the southbound direction operate at a congested LOS F. During the PM peak hour, the eastbound segments on I-210 operate at LOS F.

With the project, all of the segments during the AM peak hour would continue to operate at the same LOS as under future conditions. The project represents between 0.2 percent and 1.4 percent of the Future plus Project traffic volumes on the segments, depending on location and direction. The project is projected to have no change in the MOE during the AM peak hour under the Future plus Project scenario.

With the project, all of the segments during the PM peak hour would continue to operate at the same LOS as under future conditions. The project represents between 0.5 percent and 1.8 percent of the Future plus Project traffic volumes on the segments depending on location and direction. The project is projected to have no change in the MOE during the PM peak hour under the Future plus Project scenario.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

HAZARDOUS TRAFFIC CONDITIONS

IMPLEMENTATION OF THE PROPOSED PROJECT COULD RESULT IN A HAZARDOUS TRAFFIC CONDITION ASSOCIATED WITH NEIGHBORHOOD PASS-THROUGH TRAFFIC.

Impact Analysis:

Traffic Intrusion into Residential Neighborhood

As discussed above, the traffic impact analysis provides a distribution of both residential and non-residential land use trips on the I-210 and I-605 freeways and on the City's road network, specifically:

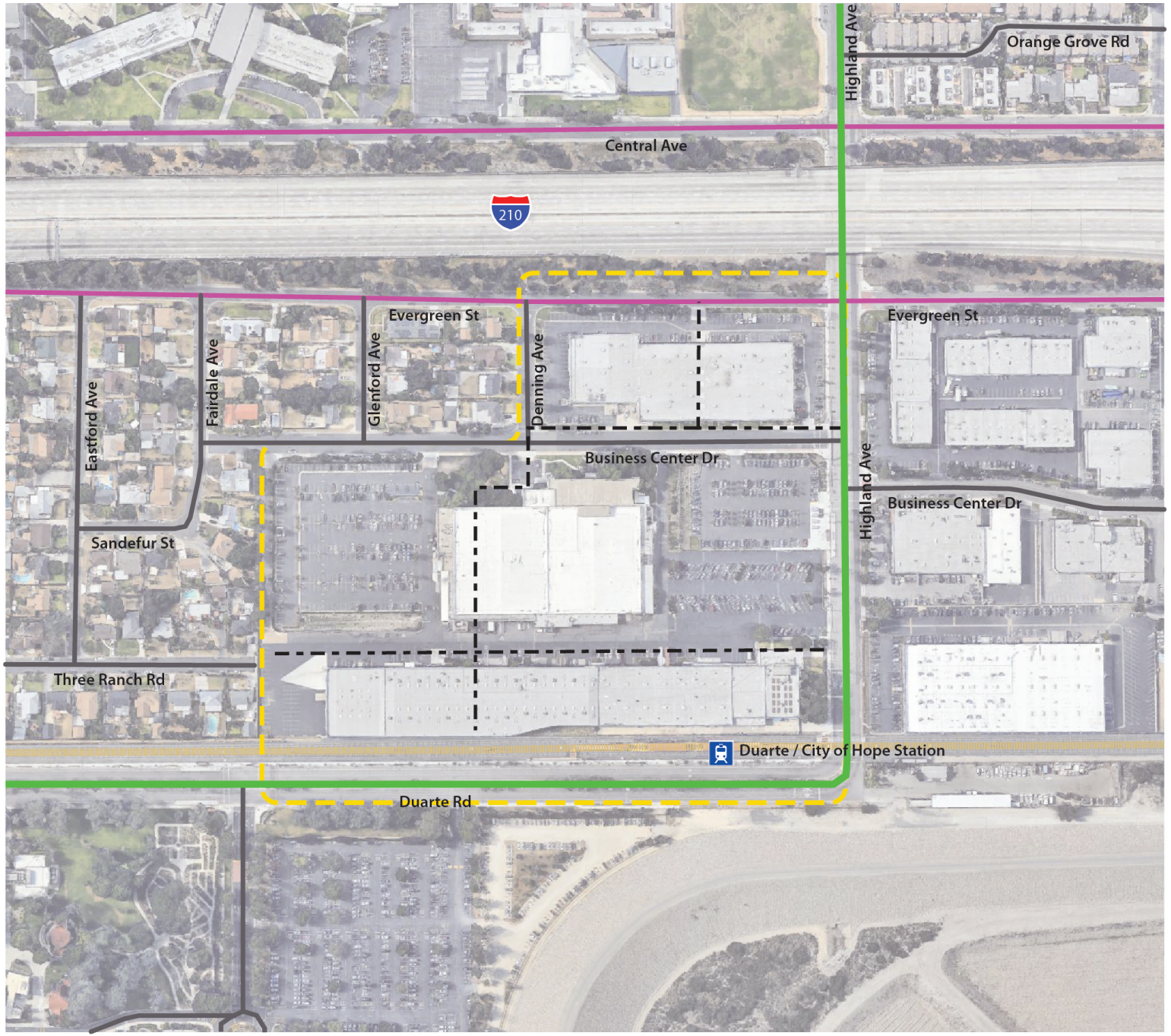
- Huntington Drive (Principal Arterial)
- Central Avenue (Collector)

- Evergreen Street (Collector)
- Business Center Drive (Local Street)
- Three Ranch Road (Local Street)
- Duarte Road (Principal Arterial)
- Mountain Avenue (Principal Arterial)
- Buena Vista Street (Minor Arterial)
- Village Road (Private Drive)
- Hope Drive (Private Drive)
- Duncannon Avenue (Local Street)
- Highland Avenue (Minor Arterial)
- Mt. Olive Drive (Collector)

The proposed Circulation Plan of the amended Duarte Station Specific Plan is shown in *Figure 5.4-2*. No trips were distributed to local streets (with the exception of at intersections with arterials or collectors), which include the residential streets located east of Buena Vista, south of Evergreen Street, north of Duarte Road, and generally west of Highland Avenue, as none of the streets within this residential neighborhood are identified as collector roadways. In addition, the local streets within these areas are not configured in a traditional grid pattern. Instead, the existing configuration includes Evergreen Street (Collector) that runs along the north side of the neighborhood from Brightside Avenue on the west to Highland Avenue (Minor Arterial) on the east. Within the neighborhood, the street network includes a number of cul-de-sacs or roadways that dead end into other streets, with five of the nine north-south streets west of the plan area providing direct connections between Evergreen Street (Collector) and Three Ranch Road (Local Street), which extends from Buena Vista Street on the west and terminates as a cul-de-sac on the east the Specific Plan boundary.

However, individual drivers could look for alternative ways to travel to/from the plan area throughout the day to avoid perceived congested roadways or intersections, which could include driving through the residential neighborhood. While no traffic impacts have been identified in this regard, to ensure that the adjacent residential neighborhood does not experience increased nuisance impacts from the proposed project—such as cut-through traffic, increased traffic volumes, or higher speeds on the local streets—Mitigation Measure TRF-3 includes the development and implementation of a Neighborhood Traffic Management Plan (NTMP), when deemed necessary by the City's Community Development Director and/or City Engineer. The NTMP would be warranted after the City has received a sufficient number of comments from neighborhood residents, which would be forwarded to the Traffic Safety Commission for review and recommendation.

The NTMP would identify measures to make local streets less attractive to through traffic, such as would identify measures to make local routes less attractive to through traffic, such as speed reduction measures, movement prohibitions, physical mitigations, and parking restrictions. The NTMP would be implemented on an area-wide basis with all affected parties, including neighborhood residents, planners, traffic engineers, and project applicants involved in development of the Plan. Improvements that could be considered include speed reduction measures speed tables and stop signs, movement prohibitions (e.g., restricted turns), physical measures (e.g., road narrowing, curb extensions), and parking controls. Development and compliance with the NTMP would reduce impacts to a less than significant level.



Circulation Plan

- Existing Local Road
- Existing Collector
- Existing Minor Arterial
- Internal Pathways*
- Specific Plan Area
- Metro: Gold Line

0 feet — 250 feet

N

* Not exact location of Internal Pathways; actual locations determined by site design.

Figure 5.4-2 Circulation Plan

Duarte Station Specific Plan Subsequent EIR

MIG

Mitigation Measures:

TRF-3 When deemed necessary by the City Community Development Director and/or City Engineer, the project applicant(s) shall prepare, implement, and fund a Neighborhood Traffic Management Plan (NTMP), which shall include three components: education, enforcement, and enhancement.

The educational component of the NTMP shall provide the community with a means of understanding traffic management tools and processes and also increase public awareness of the impact that traffic will have on the neighborhood. Educational efforts that could be implemented as part of the NTMP include, but are not limited to, the following:

- Coordination of neighborhood NTMP meetings
- Coordination of a speed watch program
- Coordination of the placement of temporary NTMP yard signs with volunteers
- Design and distribution of NTMP brochures
- Coordination of applicant and/or staff presentations to neighborhood groups

The enforcement component of the NTMP entails focusing law enforcement efforts to acknowledge areas of concern. Enforcement efforts that could be implemented as part of the NTMP include, but are not limited to, the following:

- Increased enforcement
- Real-time speed feedback signs
- Signage ("Entering residential neighborhood…")

The enhancement component of the NTMP consists of non-physical and physical transportation system improvements. Numerous traffic-calming devices may be selected by a neighborhood for placement on a street. Potential improvements that could be implemented by the applicant and/or City of Duarte as part of the NTMP include, but are not limited to, the following:

- Pavement marking/lane narrowing
- Temporary speed tables
- Neckdowns/bulbouts (extensions of curbs/corner sidewalks at an intersection)
- Choker/Chicane (chokers are build-outs added to a road to narrow it, while chicanes are sequences of tight serpentine curves designed to slow roadway traffic)
- Turn movement restrictions
- Diagonal intersection diverters
- Median barrier through intersection
- Forced turn island

Level of Significance: Less Than Significant Impact with Mitigation Incorporated.

CONFLICT WITH POLICIES, PLANS, OR PROGRAMS

IMPLEMENTATION OF THE PROPOSED PROJECT COULD RESULT IN A DECREASE OF THE PERFORMANCE OR SAFETY OF PUBLIC TRANSIT, BICYCLE, OR PEDESTRIAN FACILITIES AS A RESULT OF A CONFLICT WITH ADOPTED POLICIES, PLANS, OR PROGRAMS.

Impact Analysis: The proposed project would not conflict with any of the following Circulation Element policies pertaining to public transit, bicycle, or pedestrian facilities:

- Circ 3.1.1 - Continue to promote the development of the MTA Gold Line and a Duarte Station.
- Circ 3.1.4 - Ensure that new developments incorporate both local and regional transit measures into the project design that promote the use of alternate modes of transportation.
- Circ 3.1.5 - Provide incentives for appropriate pedestrian and bicycle facilities throughout Duarte, particularly for bike lanes to the Gold Line Station.

Bus service and light rail service is currently provided within the project area. The transit-oriented nature of the proposed project adjacent to the Duarte/City of Hope Light Rail Station would encourage and support use of transit services in the area. Dedicated public parking spaces for Metro's Duarte/City of Hope Light Rail Station are proposed for The Residences at Duarte within the Specific Plan area. Implementation of the proposed project would also not interfere with the establishment of new or expanded bus routes within the area.

There are pedestrian facilities adjacent to the project site. Along the eastern edge of the project site (Highland Avenue), an approximately nine-foot sidewalk is present on the western side of Highland Avenue. Business Center Drive, which runs through the project site, has a six-foot sidewalk present on the southern side. There is no sidewalk present on the northern edge of the project site along Evergreen Street.

A six-foot-wide sidewalk is present on the southern side of Duarte Road between Mountain Avenue and 800 feet east of Hope Drive, where it abruptly ends. On the northern side of Duarte Road, an approximately 10-foot-wide sidewalk is present between Mountain Avenue and Highland Avenue. Pedestrian facilities improvements such as continuations of sidewalks, streetscape improvements, and installations of high-visibility crosswalks are planned along Duarte Road. New sidewalk construction on the southern side of Duarte Road between Hope Drive and East Circle Drive is currently grant funded.

The following improvements by the City of Duarte are also anticipated through the California Active Transportation Program:

- Evergreen Pedestrian Walkway – Sidewalk along the north side of Evergreen Street between Brightside Avenue and Highland Avenue
- Pedestrian / Bicyclist Connection Corridor – Pedestrian corridor south of the I-210 between Buena Vista Street and Brightside Avenue
- Central Pedestrian Walkway – Sidewalk along the south side of Central Avenue between Bradbury Avenue to Highland Avenue

- Pedestrian Underpass Connectivity – Advanced pedestrian lighting under the I-210 underpasses along Highland Avenue, Duncannon Avenue, and Buena Vista Avenue

There are currently no bicycle facilities within the project area. The proposed Specific Plan development standards include requirements for bicycle parking based building code requirements. Incorporation of bike racks is also encouraged.

In addition to the existing facilities, the City is planning to add other Class I, Class II, and Class III bicycle facilities in the project vicinity. Proposed Class I bicycle facilities include a bike path south of Duarte Road between Buena Vista Street and Village Road. Proposed Class II bicycle facilities include a bike lane on Buena Vista Street between Central Avenue and Royal Oaks Drive and on Highland Avenue between Evergreen Street and Royal Oaks Drive. Proposed Class III bicycle facilities include a bike route on Royal Oaks Drive east of Bradbury Avenue, on Central Avenue east of Buena Vista Street, on Evergreen Street between Duncannon Avenue and Highland Avenue, on Highland Avenue between Duarte Road and Evergreen Street, and on Buena Vista Street south of Central Avenue. The Specific Plan would not interfere with these plans.

The proposed project would encourage and support the use of public transit and other forms of transportation including bicycles. Additionally, the proposed project would provide pedestrian facilities that currently do not exist within the project area. Thus, implementation of the proposed project would not conflict with adopted policies, plans, or programs that would result in a decrease of the performance or safety of public transit, bicycle, or pedestrian facilities. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

IMPLEMENTATION OF THE PROPOSED PROJECT COULD CONFLICT WITH THE CONGESTION MANAGEMENT PROGRAM.

Impact Analysis: This section presents an analysis of potential impacts on the regional transportation system. This analysis was conducted in accordance with the procedures outlined in the Los Angeles County CMP (Metro, 2010). The CMP requires that, when an environmental impact report is prepared for a project, traffic and public transit impact analyses be conducted for select regional facilities based on the quantity of project traffic expected to use those facilities.

The CMP guidelines require that the first issue to be addressed is the determination of the geographic scope of the study area. The criteria for determining the study area for CMP arterial monitoring intersections and for freeway monitoring locations are:

- All CMP arterial monitoring intersections where a proposed project will add 50 or more trips during either the AM or PM peak hours of adjacent street traffic
- All CMP mainline freeway monitoring locations where a proposed project will add 150 or more trips, in either direction, during either the AM or PM peak hours

The CMP traffic impact analysis guidelines establish that a significant project impact occurs when the following threshold is exceeded:

- The proposed project increases traffic demand on a CMP facility by two percent of capacity (by a V/C ≥ 0.02), causing LOS F (V/C > 1.00)

If the facility is already at LOS F, a significant impact occurs when the proposed project increases traffic demand on a CMP facility by two percent of capacity (by a V/C ≥ 0.02).

The closest CMP arterial monitoring station, the intersection of Azusa Avenue and Foothill Boulevard, is approximately 4.3 miles from the project site. The project is not expected to add 50 or more vehicle trips during the AM or PM peak hours in the eastbound and westbound directions at any of the study intersections in the northeastern boundary of the Study Area, much closer to the project site. Therefore, the project would not add more than 50 trips to the intersection of Azusa Avenue and Foothill Boulevard farther east, and no further arterial review using CMP criteria is required.

The CMP mainline freeway monitoring stations closest to the project site are I-210 at Highland Avenue and I-605 at Rivergrade Road. According to the trip generation estimates and trip distribution estimates for the proposed project, the project is projected to result in an increase of fewer than 150 trips in each direction for both the AM and PM peak hours at both of these locations. No further analysis of the freeway segments is required for CMP purposes.

Appendix C-8 of the 2010 CMP provides a methodology for estimating the number of transit trips expected to result from a proposed project based on the projected number of vehicle trips. This methodology assumes an average vehicle ridership factor of 1.4 in order to estimate the number of person trips to and from a project and then provides guidance regarding the percentage of person trips assigned to public transit depending on the type of use (commercial/other versus residential) and the proximity to transit services. Appendix C-8 of the 2010 CMP recommends summarizing the fixed-route local bus services within 0.25-mile of the project site and express bus routes and rail service within two miles of the project site.

Within 0.25-mile of the project site, Metro operates one local bus line and one light-rail line; Foothill transit operates two local lines; and Duarte Transit operates two local routes. There are no additional high-quality transit services within two miles of the project site.

As part of the trip generation estimates for the proposed project, a transit credit of 15 percent was taken for the project. This credit accounts for trips made to and from the project site using transit. The 15 percent transit credit is estimated to reduce project-generated trips by 87 vehicle trips during the AM peak hour and 101 during the PM peak hour on weekdays. Applying the average vehicle ridership factor of 1.4, the project would generate an estimated 122 transit riders in the AM peak hour and an estimated 142 transit riders in the PM peak hour.

The project location is well served by numerous established local and regional transit routes; therefore, project-related transit impacts are not expected to be significant. The headway service (i.e., time between vehicles in a transit system) for local routes are between 15 and 60 minutes during both peak periods, as seen in Table 2 in the Traffic Impact Study contained in Appendix D. The Metro Gold Line operates with a 7-minute headway during peak periods. An AM and PM capacity were determined based on AM and PM peak period headways and seating capacities of the various transit types. With a total estimated transit seating capacity of approximately 8,155 persons in the peak hour, the project's estimated transit riders of 122 in the AM peak hour and 142 in the PM peak hour would utilize approximately 1.5 percent of available transit capacity

during the AM peak hour and 1.7 percent during the PM peak hour. This is not considered a significant public transit impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

5.4.5 CUMULATIVE IMPACTS AND MITIGATION MEASURES

DEVELOPMENT ASSOCIATED WITH IMPLEMENTATION OF THE PROPOSED PROJECT AND OTHER RELATED CUMULATIVE PROJECTS COULD RESULT IN CUMULATIVELY CONSIDERABLE IMPACTS RELATED TO TRAFFIC AND CIRCULATION.

Impact Analysis: As previously stated, Future Year 2025 Without Project traffic volumes were derived by applying an annual growth rate of 0.46 percent per year be to existing traffic volume between 2018 and 2025 to account for background and cumulative growth. Additionally, Future Year 2025 Without Project volumes include the addition of trips associated with cumulative projects that are assumed to be constructed and generating trips by project opening (see *Chapter 4.0*). Thus, the analysis provided above within *Section 5.4.4* inherently includes cumulative impacts related to the identified cumulative projects within *Chapter 4.0*.

As concluded in *Section 5.4.4*, the proposed project would result in a cumulatively considerable traffic impacts at the following local intersections:

- Buena Vista Street/Duarte Road (AM and PM peak hour)
- I-210 westbound off-ramp and Central Avenue (AM and PM peak hours)
- Village Road and Duarte Road (PM peak hours)
- Highland Avenue/Huntington Drive (PM peak hour only)

However, implementation of mitigation measure TRF-2 would reduce impacts to a level considered less than significant for the Future Year 2025 With Project conditions, with the exception of the Buena Vista Street/Duarte Road intersection. Traffic impacts at this intersection would remain significant and unavoidable for Future Year 2025 because the mitigation measure analyzed for this intersection would not be feasible. Thus, the proposed project would result in a significant and unavoidable cumulative traffic impact.

As also determined in Section 5.4.4, the proposed project would not result in a cumulative considerable impact on off-ramp queuing or on mainline freeway segments. Impacts would be less than significant.

Given the nature and location of the identified cumulative projects, it is not anticipated that cumulatively considerable impacts related to hazardous traffic conditions would occur. The proposed project, in combination with identified cumulative projects, would not result in the creation of dangerous design features or hazardous intersections. Each project would undergo review by the applicable jurisdiction pursuant to mitigation measure TRF-1 to ensure that circulation and access components comply with existing City standards. TRF-3 would ensure that a Neighborhood Traffic Management Plan is required to address neighborhood complaints of traffic in the surrounding neighborhood of the Specific Plan area. Therefore, impacts would be less than significant.

Finally, cumulative projects within the City would be required to comply with the City's adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities on a project-by-project basis. Implementation of the proposed project would not impede the existing public transit, bicycle, or pedestrian facilities. Implementation of the Specific Plan would improve pedestrian walkability within the area, including the provision of sidewalks and paths connecting existing and proposed residential areas with the Duarte/City of Hope Light Rail Station. The proposed project would not conflict with any of the applicable policies of the Circulation Element pertaining to public transit, bicycle, or pedestrian facilities. The proposed project would encourage and improve accessibility to transit services. The proposed project would be consistent with the Los Angeles County CMP. Therefore, impacts would be less than significant.

Mitigation Measures: Refer to Mitigation Measures TRF-1 through TRF-3. No additional mitigation measures are required.

Level of Significance: Significant and Unavoidable Impact for impacts on Buena Vista Street/Duarte Road. All other impacts are Less Than Significant or Less Than Significant with Mitigation Incorporated.

5.4.6 SIGNIFICANT UNAVOIDABLE IMPACTS

With implementation of the proposed Duarte Station Specific Plan, significant unavoidable project and cumulative project impacts would occur at the following intersections:

- Buena Vista Street/Duarte Road

All other traffic and circulation impacts associated with implementation of the amended Duarte Station Specific Plan are either at less than significant levels or can be mitigated to less than significant levels.

If the City of Duarte approves the proposed Duarte Station Specific Plan, the City Council shall be required to cite their findings in accordance with *CEQA Guidelines* Section 15091 and prepare a Statement of Overriding Considerations in accordance with *CEQA Guidelines* Section 15093.

5.4.7 SOURCES CITED

City of Duarte, *City of Duarte Comprehensive General Plan 2005-2020*, August 14, 2007.

City of Duarte website, http://www.accessduarte.com/, accessed July 8, 2019.

Fehr & Peers, Duarte Station Specific Plan Draft Transportation Impact Study, July 2019.

Los Angeles County Metropolitan Transportation Authority (METRO), Congestion Management Program, 2010.

Los Angeles County Metropolitan Transportation Authority (METRO), METRO Adjacent Development Handbook. A Guide for Cities and Developers, May 2018.

Metro Gold Line Foothill Extension Construction Authority, http://www.foothillextension.org/cities-stations/duarte/, accessed July 8, 2019.

National Cooperative Highway Research Program (NCHRP), Travel Estimation Techniques for Urban Planning, Report No. 365. 1998.

Office of Planning and Research (OPR), Technical Advisory on Evaluating Transportation Impacts in CEQA. December 2018.