IV. Environmental Impact Analysis
K. Traffic and Access

1. Introduction

This section of the Draft EIR analyzes the Project's potential impacts on traffic and access, including related transportation characteristics such as public transit and pedestrian and bicycle safety. In addition, although not considered an environmental issue under CEQA, this section evaluates the Project's parking supply relative to compliance with City of Long Beach (City) requirements. This section is based on the *Traffic Impact Analysis—2nd + PCH Project* (Traffic Study) prepared by Linscott, Law & Greenspan, Engineers, dated March 10, 2017, and provided in Appendix R of this Draft EIR, as well as the *Parking Demand Analysis* (Parking Analysis), also prepared by Linscott, Law & Greenspan, Engineers, dated April 10, 2017, and provided in Appendix S of this Draft EIR. The Traffic Study follows the traffic impact requirements of the City, the City of Seal Beach, and the *2010 Congestion Management Program for Los Angeles County*. The scope of analysis for the Traffic Study was developed in consultation with the City's Traffic Engineering staff as well as the California Department of Transportation (Caltrans).

The Traffic Study evaluates the Project's potential for impacts on the street system surrounding the Project Site. The following analysis conditions are analyzed:

- Existing Conditions (2016)[1]—The analysis of existing traffic conditions provides a basis for the assessment of existing and future traffic conditions with the addition of Project traffic. Intersection turning movement counts for the A.M. and P.M. peak hours were collected in November 2016 when local area schools were in session. In addition, existing weekend day (Saturday) midday peak-hour traffic counts for nine key study intersections were conducted in August 2013. The Year 2013 Saturday traffic count data was factored by 3 percent (i.e., one percent per year for three years) to bring them up to Year 2016 existing Saturday baseline traffic conditions.

- Existing Plus Project Conditions (2016)—CEQA and the City of Long Beach require an evaluation of a project's traffic impacts on the existing environment as

[1] *The Notice of Preparation (NOP) for the Project was published in November 2016. Existing conditions are based on conditions at the time the NOP was published.*

part of a traffic impact analysis. This analysis evaluates potential Project-related traffic impacts as compared to existing conditions during the typical weekday A.M. and P.M. peak periods for all study intersections and during the typical weekend peak period for nine study intersections.

- Future Without Project Conditions (2019)—This analysis projects the future traffic growth and intersection operating conditions during the typical weekday A.M. and P.M. peak periods for all study intersections and during the typical weekend peak period for nine study intersections that could be expected as a result of regional growth and related projects in the vicinity of the Project Site by the year 2019. The Future Without Project traffic conditions are projected by adding ambient traffic growth (compounded at one percent per year) and traffic from identified related projects to existing conditions. This analysis provides the baseline conditions by which Project impacts are evaluated at full buildout in 2019.

- Future Plus Project Conditions (2019)—This analysis identifies the potential incremental impacts of the Project at full buildout on projected future traffic operating conditions during the typical weekday A.M. and P.M. peak periods for all study intersections and during the typical weekend peak period for nine study intersections by adding the net Project-generated traffic to the Future Without Project traffic forecasts for the year 2019.

2. Environmental Setting

a. Regulatory Framework

(1) Los Angeles County Congestion Management Program

The Los Angeles County Congestion Management Program (CMP) is a State-mandated program enacted by the state legislature to address the increasing concern that urban congestion is affecting the economic vitality of the State and diminishing the quality of life in some communities. Within Los Angeles County, the Los Angeles County Metropolitan Transportation Authority (Metro) is responsible for planning and managing vehicular congestion and coordinating regional transportation policies. Metro prepared the *2010 Congestion Management Program for Los Angeles County*, in accordance with Section 65089 of the California Government Code. The CMP is intended to address vehicular congestion relief by linking land use, transportation, and air quality decisions. The program also seeks to propose transportation projects eligible to compete for state gasoline tax funds and to develop a partnership among transportation decision-makers to devise appropriate transportation solutions that include all modes of travel.

The CMP requires that new development projects analyze potential project impacts on CMP monitoring locations if an EIR is prepared for the project. The CMP project traffic

impact analysis (TIA) guidelines require that the traffic study analyze traffic conditions at all CMP arterial monitoring intersections where a project will add 50 or more trips during either the A.M. or P.M. weekday peak hours of adjacent street traffic. If, based on this threshold, the traffic study identifies no facilities for study, no further traffic analysis is required.

The CMP's TIA guidelines also require that a traffic study analyze traffic conditions at all CMP mainline freeway monitoring locations where a project will add 150 or more trips in either direction during either A.M. or P.M. weekday peak hours. (A freeway mainline is the freeway segment between the ramps.) If based on this criterion a traffic study identifies no facilities for study, then no further traffic analysis is required.

The CMP also requires that a transit system analysis be performed to determine whether a project adds ridership that exceeds the capacity of the transit system.

(2) Southern California Association of Governments 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy

On April 2016, the Southern California Association of Governments (SCAG) adopted the 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). The 2016–2040 RTP/SCS identifies mobility, accessibility, sustainability, and high quality of life as the principles that are most critical to the future of the region. Furthermore, it balances the region's future mobility and housing needs with economic, environmental, and public health goals. As stated in the 2016–2040 RTP/SCS, Senate Bill (SB) 375 requires SCAG and other Metropolitan Planning Organizations (MPOs) throughout the State to develop a Sustainable Communities Strategy to reduce per capita greenhouse gas emissions (GHG) through integrated transportation, land use, housing and environmental planning.[2] Within the 2016 RTP/SCS, the overarching strategy includes plans for High Quality Transit Areas (HQTA), Livable Corridors, and Neighborhood Mobility Areas as key features of a thoughtfully planned, maturing region in which people benefit from increased mobility, more active lifestyles, increased economic opportunity, and an overall higher quality of life. HQTAs are described as generally walkable transit villages or corridors that are within 0.5 mile of a well-serviced transit stop or a transit corridor with 15-minute or less service frequency during peak commute hours.[3] Local jurisdictions are encouraged to focus housing and employment growth within HQTAs.[4] The Project Site is

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[2] *SCAG 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy, adopted April 2016, p. 166.*

[3] *SCAG 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy, adopted April 2016, p. 189.*

[4] *SCAG 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy, adopted April 2016, p. 76.*

located in an area anticipated to be a HQTA by 2040 as designated by the 2016–2040 RTP/SCS.[5,6] Please refer to Section IV.H, Land Use, for a more detailed discussion of the provisions of the 2016–2040 RTP/SCS that apply to the Project.

(3) City of Long Beach General Plan

The Mobility Element of the City of Long Beach General Plan was last updated in October 2013 and describes the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals, routes, and other local public utilizes and facilities. The Mobility Element, together with the Land Use and Urban Design Elements, is intended to create a unified system that links and integrates land use, mobility, and urban design principles and strategies.

(4) City of Long Beach Municipal Code

(a) Construction Traffic

Chapter 8.80.202 of the Long Beach Municipal Code (LBMC) limits construction activities to occur between the hours of 7:00 A.M. and 7:00 P.M. on weekdays and from 9:00 A.M. to 6:00 P.M. on Saturdays and national holidays. No construction is permitted on Sundays.

(b) Parking

Chapter 21.41, *Off-Street Parking and Loading Requirements,* of the LBMC sets forth parking requirements for development projects based on the types and floor area of land uses. As detailed therein, community, regional, and neighborhood shopping centers require five spaces per 1,000 square feet plus additional parking for detached fast-food restaurants. However, pursuant to LBMC Section 21.41.219, shopping centers greater than 150,000 square feet in size may submit a parking demand study to the City in order to reduce the standard shopping center ratio if it can be demonstrated that the proposed shared parking supply will meet the projected parking demand.

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[5] *SCAG 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy, Exhibit 5.1: High Quality Transit Areas in the SCAG Region for 2040 Plan, adopted April 2016, p. 77.*

[6] *Los Angeles County Metropolitan Transportation Authority (Metro). "High Quality Transit Areas—Southwest Quadrant."*

(c) Transportation Improvement Fee

Pursuant to the requirements set forth in the LBMC, Transportation Improvement Fees would be required of the Project. The Transportation Improvement Fee is based on the size of all new commercial development in the City of Long Beach and requires the payment of $3.00 per square foot of retail uses.

Based on a total Project development of 245,000 square feet of commercial (including retail/restaurant) space, the Project can be expected to pay up to $735,000 in Transportation Improvement Fees. The precise fee, plus any credit for existing development, would be determined by the City upon issuance of Project building permits.

b. Existing Facilities

(1) Roadway System

(a) Streets and Highways

The Project Site is primarily served by Pacific Coast Highway (PCH), 2nd Street, Marina Drive, Studebaker Road, and 7th Street. The roadway network in the vicinity of the Project Site is shown in Figure 1-1 in the Traffic Study included in Appendix R of this Draft EIR. Below is a description of the key area streets:

- Pacific Coast Highway—PCH a four-lane divided roadway oriented in the north-south direction. PCH borders the Project Site to the east and provides access to the site via one right-turn only driveway and one full access driveway. Parking is generally permitted on either side of this roadway. With respect to the segment of PCH fronting the Project Site, there are three lanes in the northbound direction and two lanes in the southbound direction, and on-street parking is not permitted on either side of the roadway. The posted speed limit on PCH is generally 45 miles per hour (mph). Traffic signals control the study intersections of PCH at Clark Avenue, Anaheim Street, 7th Street, Bellflower Boulevard, Channel Drive, Loynes Drive, 2nd Street, Studebaker Road, 1st Street, Main Street/Bolsa Avenue, and Seal Beach Boulevard.

- 2nd Street—2nd Street is a four-lane divided roadway oriented in the east-west direction, which borders the Project Site to the north. Between Naples Plaza and Studebaker Road to the east, 2nd Street is a six-lane divided roadway. 2nd Street provides access to the site via a right-turn only driveway. Parking generally is not permitted on either side of this roadway within the Project vicinity. The posted speed limit on 2nd Street ranges from 25 to 50 mph, while the segment fronting the Project Site has a posted speed limit of 40 mph. Traffic signals control the study intersections of 2nd Street at Livingston Drive, Bay

Shore Avenue, Naples Plaza, Marina Drive, PCH, Shopkeeper Road, Studebaker Road, and Seal Beach Boulevard.

- Marina Drive—Marina Drive is a four-lane divided roadway oriented in the north-south direction. Marina Drive borders the Project Site to the west and provides access to the site via three driveways that are limited to right-turn only movements. Parking is not permitted on the west side of this roadway within the Project vicinity. However, permit parking is available on the east side in the vicinity of the SeaPort Marina Hotel. The posted speed limit on Marina Drive is 35 mph. A traffic signal controls the study intersection of Marina Drive and 2nd Street.

- Studebaker Road—Studebaker Road is a four-lane divided roadway oriented in the north-south direction. Parking is not permitted on either side of this roadway within the Project vicinity. The posted speed limit on Studebaker Road is generally 45 mph. Traffic signals control the study intersections of Studebaker Road at Anaheim Road, the State Route 22 (SR-22) Westbound Ramps, the SR-22 Eastbound Ramps, Loynes Drive, 2nd Street, and PCH. A non-contiguous segment of Studebaker Road is located south of the Project Site, from Marina Drive to just east of PCH, where it terminates in an existing shopping center parking lot and does not feature lane markings.

- 7th Street—7th Street is six-lane undivided roadway oriented in the east-west direction. However, near Park Avenue, 7th Street is a four-lane roadway. Parking is generally not permitted on either side of this roadway within the Project vicinity. The posted speed limit on 7th Street is generally 40 mph. Traffic signals control the study intersections of 7th Street at Park Avenue, Santiago Avenue, PCH, and Bellflower Boulevard.

(b) Regional Transportation System

(i) Freeways

- San Diego Freeway (I-405)—The I-405 Freeway serves as a north-south regional travel corridor but runs east-west through the middle of the City. The I-405 Freeway provides regional access to the I-5 Freeway, communities in Los Angeles and Orange County, and the Long Beach Airport.

- Garden Grove Freeway (SR-22)—SR-22 is a major east-west corridor through southern Los Angeles County and Orange County. The state highway begins at California 1 as a surface street, but upgrades to a freeway when it interchanges with Studebaker Road. After a brief duplex with I-405 southbound freeway, SR-22 continues due east as its own four- to six-lane freeway. After passing through the Orange Crush interchange (Junction I-5/Santa Ana Freeway and SR-57/Orange Freeway), SR-22 ends at SR-55/Costa Mesa Freeway.

(ii) Congestion Management Program Facilities

The CMP arterial monitoring station closest to the Project Site is CMP Station No. 39, located at PCH and Westminster Avenue (2nd Street), adjacent to the northern corner of the Project Site. In addition, CMP Station No. 36 is located at PCH and 7th Street, approximately 1.5 miles north of the Project Site.

The nearest mainline freeway monitoring location is the I-405 Freeway, north of SR-22 Freeway (CMP Station No. 1065), located approximately 2 miles northeast of the Project Site.

(2) Public Transit

Existing public transit in the Project area is provided by Metro, Orange County Transportation Authority (OCTA), and Long Beach Transit (LBT). The Project Site is served by three LBT bus lines, two Metro express lines, and one OCTA line. Additionally, the Metro Blue Line 1st Street Station is located approximately 5 miles west of the Project Site. Existing transit service in the study area is shown in Figures 3-5A, 3-5B, and 3-5C in the Traffic Study included in Appendix R of this Draft EIR.

(3) Parking and Access

As described in Section II, Project Description, of this Draft EIR, the Project Site is currently occupied by the two-story, approximately 165,000-square-foot SeaPort Marina Hotel and associated surface parking areas that provide a total of 400 parking spaces. Access to the Project Site is currently provided by a right-turn only driveway and a full access driveway on PCH, a right-turn only driveway on 2nd Street, and three driveways on Marina Drive that are limited to right-turn only movements.

(4) Pedestrian Facilities

Surrounding the Project Site is a mature network of pedestrian facilities including sidewalks, crosswalks, and pedestrian safety features along PCH, Marina Drive, and 2nd Street, although sidewalks are only provided along the east side of Marina Drive adjacent to the Project Site. The existing sidewalk system within the Project vicinity provides direct connectivity to the existing commercial development to the immediate south and public transit stops along PCH and 2nd Street.

(5) Bicycle Facilities

Based on the Long Beach Bicycle Master Plan and the City's Mobility Element, the City has over 60 miles of off-street bike and pedestrian paths and an on-street bicycle

network system consisting of 15 miles of bike routes, 19 miles of bike lanes, and 29 miles of bike paths. The City's local street network has a well-developed bicycle circulation system that includes signed bike routes (Class III bicycle facilities), striped and signed bike lanes (Class II bicycle facilities), and bike paths that are physically separated from automobile traffic (Class I bicycle facilities). The nearest bicycle lanes (Class II bicycle facilities) serving the Project Site are located on PCH (northbound and southbound), Marina Drive (northbound), and 2nd Street west of PCH (eastbound and westbound). The nearest Class I bicycle trail is along the bank of the San Gabriel River. Existing bicycle facilities in the study area are shown in Figure 3-7 in the Traffic Study provided in Appendix R of this Draft EIR.

c. Existing Traffic Conditions

(1) Analyzed Intersections

A total of 31 intersections, including 27 signalized intersections and four unsignalized intersections, which provide both regional and local access to the Project Site, were selected for analysis. All 31 intersections were analyzed for the A.M. and P.M. peak periods on weekdays, and nine were chosen for analysis of Saturday traffic impacts. The 31 study intersections are listed in Table IV.K-1 on page IV.K-9, and the locations of the study intersections are shown in Figure IV.K-1 on page IV.K-10.

Additionally, at the request of Caltrans, quantified analysis is provided for freeway segments and ramps along SR-22, I-405, and Interstate 605 (I-605) during the A.M. and P.M. peak hours. A total of 12 mainline freeway segments and four ramps were analyzed.

(2) Existing Conditions Methodology

(a) Signalized Intersections

(i) Intersection Capacity Utilization

In consultation with the City and in conformance with Los Angeles County CMP requirements, existing traffic levels at the analyzed signalized intersections were evaluated using the Intersection Capacity Utilization (ICU) methodology, which estimates volume-to-capacity (V/C) ratios on a critical movement basis. The overall intersection V/C ratio is subsequently assigned a level of service (LOS) value to describe intersection operations. LOS is a qualitative measure used to describe traffic flow conditions. Table IV.K-2 on page IV.K-11 defines the ranges of V/C ratios and their corresponding levels of service. LOS definitions for signalized intersections range from excellent, nearly free-flow traffic at LOS A to stop-and-go conditions at LOS F.

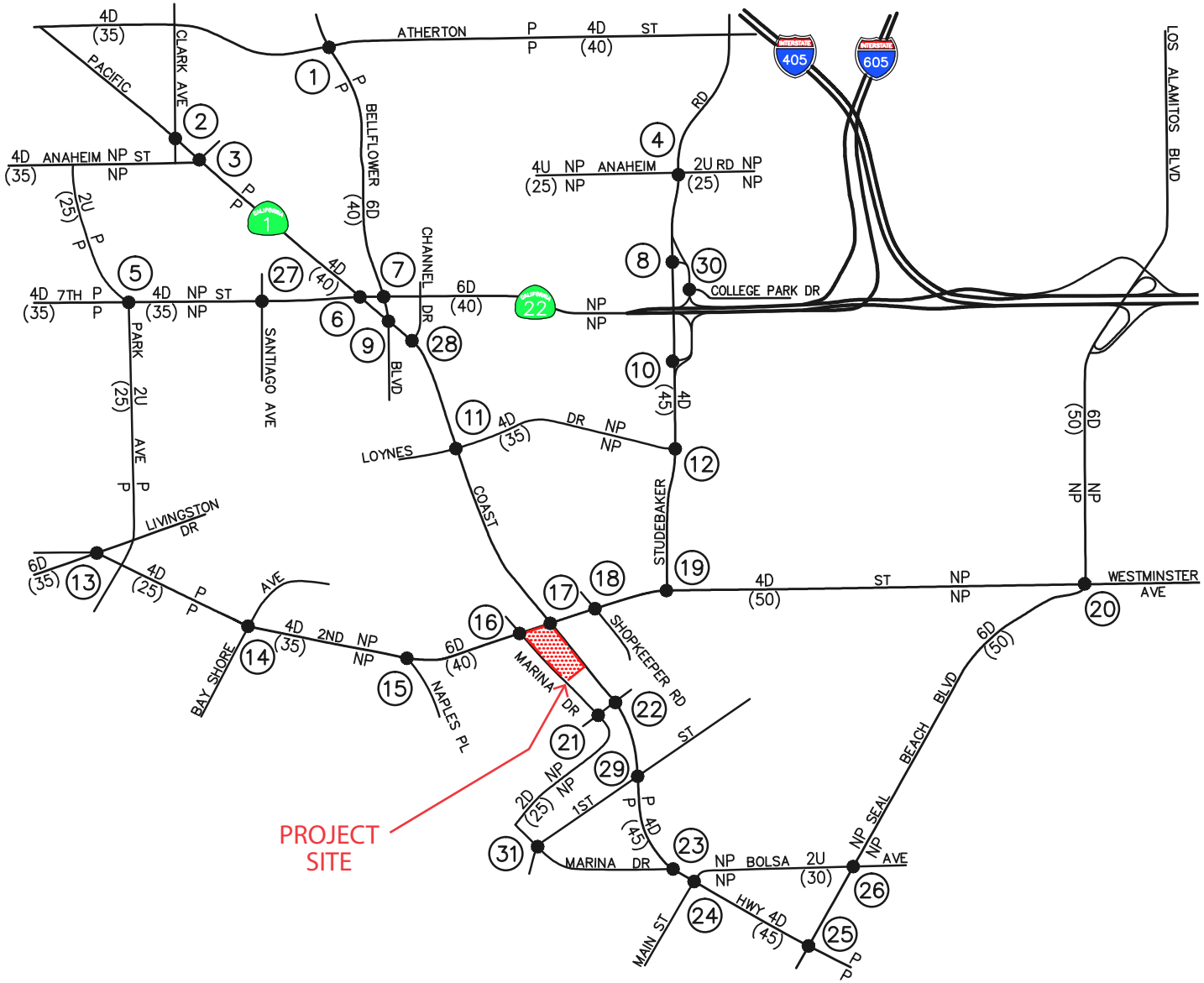
Table IV.K-1
Analyzed Intersections (by Jurisdiction)

Intersection	Jurisdiction
1. Bellflower Boulevard/Atherton Street	Long Beach
2. Pacific Coast Highway/Clark Avenue	Long Beach/Caltrans
3. Pacific Coast Highway/Anaheim Street	Long Beach/Caltrans
4. Studebaker Road/Anaheim Road	Long Beach
5. Park Avenue/7th Street	Long Beach
6. Pacific Coast Highway/7th Street	Long Beach/Caltrans
7. Bellflower Boulevard/7th Street	Long Beach
8. Studebaker Road/SR-22 Westbound Ramps	Long Beach/Caltrans
9. Bellflower Boulevard/Pacific Coast Highway	Long Beach/Caltrans
10. Studebaker Road/SR-22 Eastbound Ramps	Long Beach/Caltrans
11. Pacific Coast Highway/Loynes Drive	Long Beach/Caltrans
12. Studebaker Road/Loynes Drive	Long Beach
13. Livingston Drive/2nd Street[a]	Long Beach
14. Bay Shore Avenue/2nd Street[a]	Long Beach
15. Naples Plaza/2nd Street[a]	Long Beach
16. Marina Drive/2nd Street[a]	Long Beach
17. Pacific Coast Highway/2nd Street[a]	Long Beach/Caltrans
18. Shopkeeper Road/2nd Street[a]	Long Beach
19. Studebaker Road/2nd Street[a]	Long Beach
20. Seal Beach Boulevard/Westminster Avenue	Seal Beach
21. Marina Drive/Studebaker Road[a,b]	Long Beach
22. Pacific Coast Highway/Studebaker Road[a]	Long Beach/Caltrans
23. Pacific Coast Highway/Marina Drive[b]	Seal Beach/Caltrans
24. Pacific Coast Highway/Main/Bolsa Avenue	Seal Beach/Caltrans
25. Seal Beach Boulevard/Pacific Coast Highway	Seal Beach/Caltrans
26. Seal Beach Boulevard/Bolsa Avenue	Seal Beach
27. Santiago Avenue/7th Street	Long Beach
28. Pacific Coast Highway/Channel Drive	Long Beach/Caltrans
29. Pacific Coast Highway/1st Street	Seal Beach/Caltrans
30. SR-22 Westbound Ramps/Studebaker Road/ College Park Drive[b]	Long Beach/Caltrans
31. 1st Street/Marina Drive[b]	Seal Beach

[a] *Saturday study intersection.*

[b] *Unsignalized intersection.*

Source: Linscott, Law & Greenspan, Engineers, 2017.



eyestone ENVIRONMENTAL

Figure IV.K-1
Analyzed Intersections

Source: Google Earth, 2016; Eyestone Environmental, 2017.

Table IV.K-2
Level of Service Definitions for Intersections

Level of Service	Signalized V/C Ratio	Definition
A	0.000–0.600	EXCELLENT. No vehicle waits longer than one red light and no approach phase is fully used. Little or no delay.
B	0.601–0.700	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles. Short traffic delays.
C	0.701–0.800	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles. Average traffic delays.
D	0.801–0.900	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups. Long traffic delays.
E	0.901–1.000	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles. Very long traffic delays.
F	> 1.000	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths. Severe congestion.

Source: Linscott, Law & Greenspan, Engineers, 2017.

(ii) Highway Capacity Manual

The Highway Capacity Manual (HCM) 2010 Operations methodology was also used to evaluate key study intersections that are under the jurisdiction of Caltrans. Under HCM, the level of service for signalized intersections is defined in terms of control delay, which is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. The average delay is used to determine the intersection LOS according to the LOS definitions provided in Table IV.K-3 on page IV.K-12.

(b) Unsignalized Intersections

The unsignalized intersections in the study area were evaluated using HCM methodology to determine the overall intersection delay. Like its signalized counterpart, the unsignalized HCM methodology calculates the average delay, in seconds, of a vehicle passing through the intersection in any direction. The average delay is used to determine the intersection LOS according to the LOS definitions provided in Table IV.K-4 on page IV.K-13.

Table IV.K-3
Level of Service Criteria for Signalized Intersections (HCM Methodology)

Level of Service	Control Delay Per Vehicle (seconds/vehicle)	Definition
A	≤ 10.0	This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	> 10.0 and ≤ 20.0	This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of average delay.
C	> 20.0 and ≤ 35.0	Average traffic delays. These higher delays may result from fair progression, longer cycle lengths, or both. Individual begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
D	> 35.0 and ≤ 55.0	Long traffic delays At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high *V/C* ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	> 55.0 and ≤ 80.0	Very long traffic delays This level is considered by many agencies (i.e. SANBAG) to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high *V/C* ratios. Individual cycle failures are frequent occurrences.
F	≥ 80.0	Severe congestion This level, considered to be unacceptable to most drivers, often occurs with over saturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high *V/C* ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors to such delay levels.

Source: Highway Capacity Manual, Chapter 16 (Signalized Intersections), 2000.

In consultation with the City of Long Beach, LOS D is the minimum acceptable condition that should be maintained during the peak commute hours, or the current LOS, if the existing LOS is worse than LOS D (i.e., LOS E or F). For the study intersections in the City of Seal Beach, LOS D is also the minimum acceptable condition that should be maintained during the peak commute hours.

Table IV.K-4
Level of Service Criteria For Unsignalized Intersections[a]

Level of Service (LOS)	Highway Capacity Manual Delay Value (sec/veh)	Level of Service Description
A	≤ 10.0	Little or no delay
B	> 10.0 and ≤ 15.0	Short traffic delays
C	> 15.0 and ≤ 25.0	Average traffic delays
D	> 25.0 and ≤ 35.0	Long traffic delays
E	> 35.0 and ≤ 50.0	Very long traffic delays
F	> 50.0	Severe congestion

Source: Highway Capacity Manual, 2010.

(c) Freeway Segments and Ramps

Neither the City of Long Beach nor the neighboring cities have devised methods to measure congestion and project impacts on freeways. Therefore, methods used by Caltrans have been used. Caltrans requires the use of analysis methods provided in the HCM for the analysis of basic freeway segments and freeway ramps. Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on state highway facilities; it does not require that LOS D be maintained. However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. For this analysis, LOS D is the target level of service standard and has been utilized to assess the Project's impacts at the study freeway segments. Based on Caltrans criteria, a project's impact is considered significant if the project causes the LOS to change from an acceptable LOS (i.e., LOS D or better) to a deficient LOS (i.e., LOS E or F) or if the project increases the density on a facility operating at an unacceptable level.

Based on Caltrans' request, the following 12 freeway segments were analyzed:

1. SR 22 eastbound, east of Studebaker Road;
2. SR 22 westbound, east of Studebaker Road;
3. I-605 northbound, south of Katella Avenue;
4. I-605 southbound, south of Katella Avenue;
5. I-405 northbound, between Bellflower Boulevard and Woodruff Avenue;

6. I-405 northbound, between Woodruff Avenue and Palo Verde Avenue;
7. I-405 northbound, between Palo Verde Avenue and Studebaker Road;
8. I-405 northbound, south of Studebaker Road;
9. I-405 southbound, between Bellflower Boulevard and Woodruff Avenue;
10. I-405 southbound, between Woodruff Avenue and Palo Verde Avenue;
11. I-405 southbound, between Palo Verde Avenue and Studebaker Road; and
12. I-405 southbound, south of Studebaker Road.

The following four ramps were also analyzed:

1. SR-22 Eastbound off-ramp to Studebaker Road;
2. SR-22 Eastbound on-ramp from Studebaker Road;
3. SR-22 Westbound off-ramp to Studebaker Road; and
4. SR-22 Westbound on-ramp from Studebaker Road.

(3) Existing Intersection Levels of Service

Existing weekday peak-hour traffic volumes for the 31 study intersections evaluated in the Traffic Study were obtained from manual turning movement counts conducted in November 2016 when local area schools were in session. Existing weekend day (Saturday) midday peak-hour traffic counts for nine key study intersections were conducted in August 2013.[7] The Year 2013 Saturday traffic count data was factored by 3.0 percent (i.e., one percent per year for three years) to bring them up to Year 2016 Saturday baseline traffic conditions. The existing intersection peak-hour traffic volumes during the weekday A.M. and P.M. peak periods and during the weekend midday peak period are illustrated in Figure 3-2 through Figure 3-4 of the Traffic Study included in Appendix R of this Draft EIR.

Table IV.K-5 on page IV.K-15 summarizes the existing weekday A.M. and P.M. and weekend midday peak-hour V/C ratio for signalized intersections and peak-hour delay for the unsignalized intersections, as well as the corresponding LOS for each of the study

[7] *The nine Saturday study intersections were selected in coordination with City staff and represent the locations with the greatest likelihood of being impacted by the Project based on weekend traffic conditions.*

Table IV.K-5
Intersection Levels of Service—Existing Conditions

Intersection	Peak Hour	Existing Conditions	
		ICU/HCM[a]	LOS[a]
1. Bellflower Boulevard at Atherton Street	A.M.	0.795	C
	P.M.	0.851	D
2. Pacific Coast Highway at Clark Avenue	A.M.	0.854	D
	P.M.	0.818	D
3. Pacific Coast Highway at Anaheim Street	A.M.	0.763	C
	P.M.	0.845	D
4. Studebaker Road at Anaheim Road	A.M.	0.777	C
	P.M.	0.706	C
5. Park Avenue at 7th Street	A.M.	**0.953**	**E**
	P.M.	0.883	D
6. Pacific Coast Highway at 7th Street	A.M.	**0.979**	**E**
	P.M.	**0.980**	**E**
7. Bellflower Boulevard at 7th Street	A.M.	**0.917**	**E**
	P.M.	0.847	D
8. Studebaker Road at SR-22 Westbound Ramps	A.M.	0.639	B
	P.M.	**0.908**	**E**
9. Bellflower Boulevard at Pacific Coast Highway	A.M.	0.662	B
	P.M.	0.668	B
10. Studebaker Road at SR-22 Eastbound Ramps	A.M.	0.852	D
	P.M.	0.931	E
11. Pacific Coast Highway at Loynes Drive	A.M.	0.677	B
	P.M.	0.809	D
12. Studebaker Road at Loynes Drive	A.M.	0.675	B
	P.M.	0.791	C
13. Livingston Drive at 2nd Street	A.M.	0.624	B
	P.M.	0.583	A
	Sat. Midday	0.544	A
14. Bay Shore Avenue at 2nd Street	A.M.	0.847	D
	P.M.	**1.009**	**F**
	Sat. Midday	**0.983**	**E**
15. Naples Plaza at 2nd Street	A.M.	0.699	B
	P.M.	0.746	C
	Sat. Midday	0.688	B
16. Marina Drive at 2nd Street	A.M.	0.664	B
	P.M.	0.792	C
	Sat. Midday	0.702	C
17. Pacific Coast Highway at 2nd Street	A.M.	**0.933**	**E**
	P.M.	0.876	D
	Sat. Midday	0.887	D
18. Shopkeeper Road at 2nd Street	A.M.	0.648	B
	P.M.	0.881	D
	Sat. Midday	0.843	D

Table IV.K-5 (Continued)
Intersection Levels of Service—Existing Conditions

Intersection	Peak Hour	Existing Conditions	
		ICU/HCM[a]	LOS[a]
19. Studebaker Road at 2nd Street	A.M.	0.857	D
	P.M.	**0.947**	**E**
	Sat. Midday	0.804	D
20. Seal Beach Boulevard at Westminster Avenue	A.M.	**0.936**	**E**
	P.M.	**0.929**	**E**
21. Marina Drive at Studebaker Road[a]	A.M.	11.9 s/v	B
	P.M.	15.8 s/v	C
	Sat. Midday	16.4 s/v	C
22. Pacific Coast Highway at Studebaker Rd	A.M.	0.797	C
	P.M.	0.840	D
	Sat. Midday	0.845	D
23. Pacific Coast Highway at Marina Drive[a]	A.M.	**36.5 s/v**	**E**
	P.M.	19.9 s/v	C
24. Pacific Coast Highway at Main/Bolsa Avenue	A.M.	0.730	C
	P.M.	0.702	C
25. Seal Beach Boulevard at Pacific Coast Highway	A.M.	0.885	D
	P.M.	0.811	D
26. Seal Beach Boulevard at Bolsa Avenue	A.M.	0.548	A
	P.M.	0.492	A
27. Santiago Avenue at 7th Street	A.M.	0.674	B
	P.M.	0.729	C
28. Pacific Coast Highway at Channel Drive	A.M.	0.518	A
	P.M.	0.524	A
29. Pacific Coast Highway at 1st Street	A.M.	0.699	B
	P.M.	0.758	C
30. SR-22 Westbound Ramps/Studebaker Road at College Park Drive[a]	A.M.	15.2 s/v	C
	P.M.	26.7 s/v	D
31. 1st Street at Marina Drive[a]	A.M.	9.2 s/v	A
	P.M.	11.3 s/v	B

Bold ICU/LOS *or* ***Delay/LOS*** *values indicate adverse service levels based on City of Long Beach or City of Seal Beach LOS standards.*

s/v = seconds per vehicle

[a] *Unsignalized intersection.*

Source: Linscott, Law & Greenspan, Engineers, 2017.

intersections. As shown therein, 10 of the 31 study intersections currently operate at an unacceptable LOS E or LOS F during the A.M., P.M., and/or Saturday midday peak hours. The remaining 21 study intersections currently operate at acceptable LOS D or better during the A.M., P.M., and Saturday midday peak hours. The intersections currently operating at a LOS E or LOS F are as follows:

- Intersection No. 5: Park Avenue at 7th Street (LOS E—A.M.)
- Intersection No. 6: Pacific Coast Highway at 7th Street (LOS E—A.M./P.M.)
- Intersection No. 7: Bellflower Boulevard at 7th Street (LOS E—A.M.)
- Intersection No. 8: Studebaker Road at SR-22 WB Ramps (LOS E—P.M.)
- Intersection No. 10: Studebaker Road at SR-22 EB Ramps (LOS E—P.M.)
- Intersection No. 14: Bay Shore Avenue at 2nd Street (LOS F—P.M./Sat.)
- Intersection No. 17: Pacific Coast Highway at 2nd Street (LOS E—A.M.)
- Intersection No. 19: Studebaker Road at 2nd Street (LOS E—P.M.)
- Intersection No. 20: Seal Beach Boulevard at Westminster Avenue (LOS E—A.M./P.M.)
- Intersection No. 23: Pacific Coast Highway at Marina Drive (LOS E—A.M.)

d. Future Without Project Traffic Conditions

(1) Future Without Project Conditions Methodology

The traffic volumes projected for the Future Without Project Conditions take into account the expected changes in traffic over Existing Conditions from two primary sources: ambient growth in the existing traffic volumes due to the effects of overall regional growth and development outside the study area, as well as traffic generated by specific development projects in, or in the vicinity of, the study area. These factors are described further below.

(a) Ambient Growth

Cumulative traffic growth estimates have been calculated using an ambient growth factor. The ambient traffic growth factor is intended to include future, unknown development that may occur within the study area, as well as regular growth in traffic volumes due to the development of projects outside the study area. In consultation with the City of Long Beach, an ambient growth factor of one percent per year was applied to adjust the existing traffic volumes to reflect the effects of regional growth and development by the year 2019. Applied to existing traffic volumes results in a three percent increase of growth in existing (2016) volumes to the horizon Year 2019 (i.e., the Project build-out year).

(a) Related Projects

This analysis also considers the effects of other known development proposals, referred to as related projects, either proposed, approved, or under construction in the study area. The list of related projects was obtained from information provided by the Cities of Long Beach and Seal Beach. A total of six related projects were identified in the study area, as listed in Table III-1 in Section III, Environmental Setting, of this Draft EIR. The locations of the related projects are shown in Figure III-1 therein. To develop the estimated traffic volumes to add to the study area as a result of related projects, trip generation, trip distribution, and trip assignment are considered, as discussed below.

(i) Trip Generation

Trip generation estimates for the related projects were calculated using a combination of previous study findings and the trip generation rates contained in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual, 9th Edition*.[8] Table 5-2 in the Traffic Study contained in Appendix R of this Draft EIR summarizes the related project trip generation for typical weekday A.M. and P.M. and weekend midday peak periods.

(ii) Trip Distribution

The geographic distribution of traffic generated by the related projects is dependent on several factors, including the type and density of the proposed land uses, the geographic distribution of the population from which the employees/residents and potential patrons of the proposed developments are or will be drawn, and the location of these projects in relation to the surrounding street system. These factors are considered along with logical travel routes through the street system to develop a reasonable pattern of trip distribution.

(iii) Trip Assignment

The trip generation estimates for the related projects were assigned to the local street system considering the trip distribution pattern described above. The traffic volumes of the related projects were then added to the existing traffic volumes after adjustment for ambient growth through the projected buildout year of 2019. These volumes represent the Future Without Project condition (i.e., existing traffic volumes, ambient traffic growth, and related project traffic growth).

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[8] *Institute of Transportation Engineers, 2012.*

(2) Future Roadway Improvements

In addition to ambient growth and related projects in the area, the analysis of Future Without Project Conditions considers roadway improvements that are reasonably expected to be implemented in the study area based on input from the City. The following planned or anticipated roadway improvements will result in changes to the physical configuration at the identified study intersections:

- Intersection No. 1: Bellflower Boulevard at Atherton Street—Remove the third northbound through lane on Bellflower Boulevard and install a bike lane. Modify the existing traffic signal accordingly. These improvements are planned by the City of Long Beach as part of the Bellflower Boulevard Bicycle System Gap Closure Project. The installation of these planned improvements is subject to the approval of the City of Long Beach.

- Intersection No. 7: Bellflower Boulevard at 7th Street—Remove the third northbound through lane on Bellflower Boulevard and install a bike lane. Modify the existing traffic signal accordingly. These improvements are planned by the City of Long Beach as part of the Bellflower Boulevard Bicycle System Gap Closure Project. The installation of these planned improvements is subject to the approval of the City of Long Beach and/or Caltrans.

- Intersection No. 9: Bellflower Boulevard at Pacific Coast Highway—Remove one southbound through lane along Bellflower Boulevard and install a bike lane. Modify the existing traffic signal accordingly. These improvements are planned by the City of Long Beach as part of the Bellflower Boulevard Bicycle System Gap Closure Project. The installation of these planned improvements is subject to the approval of the City of Long Beach and/or Caltrans.

- Intersection No. 12: Studebaker Road at Loynes Drive—Provide an exclusive southbound left-turn lane, an exclusive westbound left-turn lane and a westbound shared through/right-turn lane. Modify the existing traffic signal accordingly. The installation of these planned improvements is subject to the approval of the City of Long Beach.[9]

(3) Future Without Project Intersection Levels of Service

Table IV.K-6 on page IV.K-21 summarizes the weekday A.M. and P.M. and weekend midday peak-hour V/C ratios for signalized intersections and peak-hour delay for the unsignalized intersections and the corresponding LOS for each of the study intersections

[9] *This improvement is part of the AES Battery Energy Storage System Project (Related Project No. 1) to provide access to that site from this study intersection.*

under Future Without Project Conditions. As shown therein, 18 of the 31 study intersections are projected to operate at LOS D or better during both the weekday A.M. and P.M. peak hours and during the weekend midday peak hour. The following remaining 13 intersections are anticipated to operate at LOS E or F during at least one of the analyzed peak hours under Future Without Project Conditions:

- Intersection No. 1: Bellflower Boulevard at Atherton Street (LOS E—P.M.)
- Intersection No. 5: Park Avenue at 7th Street (LOS E—A.M./P.M.)
- Intersection No. 6: Pacific Coast Highway at 7th Street (LOS F—A.M./P.M.)
- Intersection No. 7: Bellflower Boulevard at 7th Street (LOS F—A.M., LOS E—P.M.)
- Intersection No. 8: Studebaker Road at SR-22 Westbound Ramps (LOS E—P.M.)
- Intersection No. 10: Studebaker Road at SR-22 Eastbound Ramps (LOS E—P.M.)
- Intersection No. 14: Bay Shore Avenue at 2nd Street (LOS F—P.M./Sat.)
- Intersection No. 17: Pacific Coast Highway at 2nd Street (LOS E—A.M./P.M./Sat.)
- Intersection No. 18: Shopkeeper Road at 2nd Street (LOS E—P.M.)
- Intersection No. 19: Studebaker Road at 2nd Street (LOS E— P.M.)
- Intersection No. 20: Seal Beach Boulevard at Westminster Avenue (LOS E—A.M./P.M.)
- Intersection No. 23: Pacific Coast Highway at Marina Drive (LOS E—A.M.)
- Intersection No. 25: Seal Beach Boulevard at Pacific Coast Highway (LOS E—A.M.)

Table IV.K-6
Intersection Levels of Service—Future Without Project Conditions

	Intersection	Peak Hour	Future Without Project Conditions	
			ICU/HCM	LOS
1.	Bellflower Boulevard at Atherton Street[a]	A.M. P.M.	0.857 0.945	D E
2.	Pacific Coast Highway at Clark Avenue	A.M. P.M.	0.878 0.844	D D
3.	Pacific Coast Highway at Anaheim Street	A.M. P.M.	0.787 0.870	C D
4.	Studebaker Road at Anaheim Street	A.M. P.M.	0.801 0.728	D C
5.	Park Avenue at 7th Street	A.M. P.M.	**0.981** **0.908**	**E** **E**
6.	Pacific Coast Highway at 7th Street	A.M. P.M.	**1.009** **1.010**	**F** **F**
7.	Bellflower Boulevard at 7th Street[a]	A.M. P.M.	**1.002** **0.925**	**F** **E**
8.	Studebaker Road at SR-22 Westbound Ramps	A.M. P.M.	0.681 **0.950**	B **E**
9.	Bellflower Boulevard at Pacific Coast Highway[a]	A.M. P.M.	0.682 0.698	B B
10.	Studebaker Road at SR-22 Eastbound Ramps	A.M. P.M.	0.894 **0.995**	D **E**
11.	Pacific Coast Highway at Loynes Drive	A.M. P.M.	0.706 0.838	C D
12.	Studebaker Road at Loynes Drive[b]	A.M. P.M.	0.781 0.880	C D
13.	Livingstone Drive at 2nd Street	A.M. P.M. Sat. Midday	0.648 0.609 0.579	B B A
14.	Bay Shore Avenue at 2nd Street	A.M. P.M. Sat. Midday	0.878 **1.043** **1.021**	D **F** **F**
15.	Naples Plaza at 2nd Street	A.M. P.M. Sat. Midday	0.725 0.771 0.717	C C C
16.	Marina Drive at 2nd Street	A.M. P.M. Sat. Midday	0.687 0.818 0.727	B D C
17.	Pacific Coast Highway at 2nd Street	A.M. P.M. Sat. Midday	**0.977** **0.916** **0.930**	**E** **E** **E**
18.	Shopkeeper Road at 2nd Street	A.M. P.M. Sat. Midday	0.672 **0.910** 0.868	B **E** D

Table IV.K-6 (Continued)
Intersection Levels of Service—Future Without Project Conditions

	Intersection	Peak Hour	Future Without Project Conditions	
			ICU/HCM	LOS
19.	Studebaker Road at 2nd Street	A.M. P.M. Sat. Midday	0.892 **0.980** **0.837**	D **E** **D**
20.	Seal Beach Boulevard at Westminster Avenue	A.M. P.M.	**0.967** **0.958**	**E** **E**
21.	Marina Drive at Studebaker Road[c]	A.M. P.M. Sat. Midday	11.9 s/v 16.9 s/v 18.5 s/v	B C C
22.	Pacific Coast Highway at Studebaker Road	A.M. P.M. Sat. Midday	0.840 0.889 0.892	D D D
23.	Pacific Coast Highway at Marina Drive[c]	A.M. P.M.	**38.5 s/v** 23.2 s/v	**E** C
24.	Pacific Coast Highway at Main/Bolsa Avenue	A.M. P.M.	0.758 0.729	C C
25.	Seal Beach Boulevard at Pacific Coast Highway	A.M. P.M.	**0.914** 0.841	**E** D
26.	Seal Beach Boulevard at Bolsa Avenue	A.M. P.M.	0.564 0.506	A A
27.	Santiago Avenue at 7th Street	A.M. P.M.	0.692 0.750	B C
28.	Pacific Coast Highway at Channel Drive	A.M. P.M.	0.533 0.542	A A
29.	Pacific Coast Highway at 1st Street	A.M. P.M.	0.732 0.800	C D
30.	SR-22 Westbound Ramps/Studebaker Road at College Park Drive[c]	A.M. P.M.	15.2 s/v 30.7 s/v	C D
31.	1st Street at Marina Drive[c]	A.M. P.M.	9.4 s/v 11.7 s/v	A B

Bold ICU/LOS *or* ***Delay/LOS*** *values indicate adverse service levels based on City of Long Beach or City of Seal Beach LOS standards.*

[a] *The LOS calculations for this intersection include improvements planned by the City of Long Beach as part of the Bellflower Boulevard Bicycle System Gap Closure Project.*

[b] *The LOS calculations for this intersection include improvements assumed as part of the AES Battery Energy Storage System Project (Related Project No. 1).*

[c] *Unsignalized intersection.*

Source: Linscott, Law & Greenspan, Engineers, 2017.

3. Environmental Impacts

a. Methodology

The methodology and base assumptions used in this analysis were established in consultation with the City of Long Beach and in accordance with City of Seal Beach and Los Angeles County Congestion Management Program requirements, as applicable. This analysis addresses a wide range of issues including, but not limited to, the following:

- Construction: an analysis of the potential temporary impacts on traffic, access, and transit resulting from the Project's construction activities;
- Intersections: an analysis of the potential changes in operating conditions at the 31 study intersections identified within the traffic study area;
- Regional Transportation System: an analysis of potential impacts along the nearest CMP arterial monitoring stations and mainline freeway monitoring location;
- Transit: an analysis of potential impacts on the capacity of transit lines serving the Project Site; and
- Project Site Access: an analysis of potential impacts associated with access to and from the Project Site by automobiles, bicyclists, and pedestrians.

(1) Construction Impacts

In order to forecast the potential vehicular trips associated with construction activities at the Project Site, a set of construction assumptions were established for each phase of construction, including demolition, site grading/excavation, building foundation/framing/construction, and paving/concrete/landscaping. The detailed construction assumptions are included in Chapter 15 of the Traffic Study included as Appendix R of this Draft EIR. The construction peak-hour and daily traffic volumes for each of the primary four phases of construction were then forecasted using the established construction assumptions.

(2) Operational Impacts

The relative impact of the added traffic volumes that would be generated by the Project was evaluated based on analysis of operating conditions at the study intersections, with and without the Project. As required by CEQA, the Project's impacts were evaluated against existing (2016) and future (2019) traffic conditions. The following discussion describes the components of the Project's operational traffic impact analysis.

(a) Intersection Level of Service Methodology

The existing and future traffic volumes at the signalized study intersections were evaluated primarily using ICU methodology, which, as discussed above, determines V/C ratios on a critical movement basis. The overall intersection V/C ratio is subsequently assigned an LOS value to describe intersection operations. Table IV.K-2 on page IV.K-11 defines the ranges of V/C ratios and their corresponding levels of service. LOS definitions for signalized intersections range from excellent, nearly free-flow traffic at LOS A to stop-and-go conditions at LOS F.

Signalized study intersections under the jurisdiction of Caltrans and the four unsignalized intersections in the study area were evaluated using the HCM methodology to determine the overall intersection delay. The HCM methodology calculates the average delay, in seconds, of a vehicle passing through the intersection in any direction. The average delay is used to determine the intersection LOS according to the LOS definitions provided in Table IV.K-3 on page IV.K-12 for signalized intersections under the jurisdiction of Caltrans and Table IV.K-4 on page IV.K-13 for unsignalized intersections.

In order to estimate the traffic impact characteristics of the Project, a multi-step process has been utilized. The first step is traffic generation, which estimates the total arriving and departing traffic on a peak-hour and daily basis. The second step of the forecasting process is traffic distribution, which identifies the origins and destinations of inbound and outbound Project traffic. These origins and destinations are typically based on demographics and existing/expected future travel patterns in the study area. The third step is traffic assignment, which involves the allocation of project traffic to study area streets and intersections. Traffic assignment is typically based on minimization of travel time, which may or may not involve the shortest route, depending on prevailing operating conditions and travel speeds. Traffic distribution patterns are indicated by general percentage orientation, while traffic assignment allocates specific volume forecasts to individual roadway links and intersection turning movements throughout the study area. The Project's traffic generation, trip distribution, and trip assignment are described below.

(i) Project Trip Generation

The traffic generation potential is forecast by applying the appropriate vehicle trip generation equations or rates to the project development tabulation. Traffic generation is expressed in vehicle trip ends, defined as one-way vehicular movements, either entering or exiting the generating land use. Generation equations and/or rates used in the traffic forecasting procedure are found in the ITE's *Trip Generation Manual*, *9th Edition*.[10] The trip

[10] *Institute of Transportation Engineers, 2012.*

generation potential of the existing SeaPort Marina Hotel was estimated using ITE Land Use 310: Hotel trip rates. However, only the rooms that were in operation as of the time of publication of the NOP (November 2016) were used to establish the Project Site's existing conditions trip budget. Based on information provided by the hotel operator, the existing hotel had 170 rooms in operation at that time out of a possible 248 rooms.[11] Therefore, the trip generation for the existing land use is based upon 170 rooms. The Project's trip generation was estimated using Land Use Code 820 (Shopping Center), Land Use Code 931 (Quality Restaurant), and Land Use Code 932 (High Turnover Restaurant) trip rates. It should be noted that the retail project component (95,000 square feet), grocery store project component (55,000 square feet), ready to eat restaurant project component (5,000 square feet) and health club project component (25,000 square feet) were included under Land Use 820, per the ITE definition of a shopping center. Based on these ITE definitions, the Project includes the development of approximately 180,000 square feet of retail uses, 40,000 square feet of quality restaurant uses, and approximately 25,000 square feet of high turnover restaurant uses. Appropriate trip reductions were applied to the Project trip generation rates to account for pass-by trips.

The existing trip generation and the Project's resulting trip generation is summarized in Table IV.K-7 on page IV.K-26. As shown therein, the existing SeaPort Marina Hotel generates approximately 1,389 weekday daily trips, 90 weekday A.M. peak-hour trips (53 inbound trips, 37 outbound trips), 102 weekday P.M. peak-hour trips (52 inbound trips, 50 outbound trips), 1,392 weekend daily trips, and 122 weekend midday peak-hour trips (68 inbound trips, 54 outbound trips). As summarized in Table IV.K-7, after accounting for pass-by trips and trips from existing uses, the Project is expected to generate a net of approximately 13,666 daily weekday trips, 412 weekday A.M. peak-hour trips (236 inbound, 176 outbound), 792 weekday P.M. peak-hour trips (426 inbound, 366 outbound), 17,611 weekend daily trips, and 1,439 weekend midday peak-hour trips (770 inbound, 669 outbound).

(ii) Project Trip Distribution and Assignment

Project traffic volumes both entering and exiting the Project Site were distributed and assigned to the adjacent street system based on the Project Site's proximity to major traffic carriers (i.e., 2nd Street, PCH, etc); expected localized traffic flow patterns based on adjacent street channelization and presence of traffic signals; ingress/egress availability at the Project Site and the location of proposed parking areas; and consultation with City staff.

[11] *The SeaPort Marina Hotel has since ceased operations, but in accordance with CEQA, existing conditions for the purposes of this EIR are based on conditions at the time of the NOP.*

Table IV.K-7
Project Trip-Generation Forecast

Land Use	Daily 2-Way	A.M. Peak Hour			P.M. Peak Hour			Saturday Midday			
		Inbound	Outbound	Total	Inbound	Outbound	Total	Daily	Inbound	Outbound	Total
Existing Land Use											
Hotel (170 Rooms)	1,389	53	37	90	52	50	102	1,392	68	54	122
Proposed Uses											
Retail (180,000 sf)	9,951	138	85	223	426	462	888	13,381	666	615	1,281
Pass-By Reduction[b]	(995)	(14)	(9)	(23)	(145)	(157)	(302)	(1,338)	(173)	(160)	(333)
Total Retail Trips	*8,956*	*124*	*76*	*200*	*281*	*305*	*586*	*12,043*	*493*	*455*	*948*
Quality Restaurant (40,000 sf)	3,598	16	16	32	201	99	300	3,774	255	178	433
Pass-By Reduction[b]	(360)	—	—	—	(88)	(44)	(132)	(377)	(56)	(39)	(95)
Total Restaurant Trips	*3,238*	*16*	*16*	*32*	*113*	*55*	*168*	*3,397*	*199*	*139*	*338*
High-Turnover Restaurant (25,000 sf)	3,179	149	121	270	148	98	246	3,959	187	165	352
Pass-By Reduction[b]	(318)	—	—	—	(64)	(42)	(106)	(396)	(41)	(36)	(77)
Total Restaurant Trips	*2,861*	*149*	*121*	*270*	*84*	*56*	*140*	*3,563*	*146*	*129*	*275*
Total Project Trips	**15,055**	**289**	**213**	**502**	**478**	**416**	**894**	**19,003**	**838**	**723**	**1,561**
Less Existing Trips	**(1,389)**	**(53)**	**(37)**	**(90)**	**(52)**	**(50)**	**(102)**	**(1,392)**	**(68)**	**(54)**	**(122)**
Total Net New Project Trips	**13,666**	**236**	**176**	**412**	**426**	**366**	**792**	**17,611**	**770**	**669**	**1,439**

sf = square feet

[a] *Trip Generation, 9th Edition, Institute of Transportation Engineers, 2012.*

[b] *Pass-by reductions for the retail, quality restaurant, and high-turnover restaurant project uses are as follows:*

- *Retail: Weekday (Daily: 10 percent, A.M.: 10 percent and P.M.: 34 percent); Weekend (Daily: 10 percent and Midday: 26 percent)*
- *Quality Restaurant: Weekday (Daily: 10 percent, A.M.: 0 percent and P.M.: 44 percent); Weekend (Daily: 10 percent and Midday: 22 percent)*
- *High-Turnover Restaurant: Weekday (Daily: 10 percent, A.M.: 0 percent and P.M.: 43 percent); Weekend (Daily: 10 percent and Midday: 22 percent)*

Source: Linscott, Law & Greenspan, Engineers, 2017.

(b) Regional Transportation System

(i) Congestion Management Plan

The potential impacts of the Project on CMP monitoring stations and freeways were analyzed in accordance with the CMP's TIA guidelines. In order to address the potential for regional traffic impacts, the number of net new peak-hour Project trips was added to the CMP monitoring locations and freeways in the Project vicinity to determine whether these volumes exceed the CMP thresholds of 150 vehicles per hour for freeway segments or 50 vehicle trips per hour for arterial monitoring stations. If the Project traffic volumes are not found to exceed the CMP screening thresholds, no further analysis is required.

(c) Public Transit

Section B.8.4 of the CMP provides a methodology for estimating the number of transit trips expected to result from a proposed project based on the number of vehicle trips. This methodology assumes an average vehicle occupancy factor of 1.4 in order to estimate the number of person trips to and from a project. The CMP guidelines further estimate that approximately 3.5 percent of the total project person trips may use public transit to travel to and from a project site. A determination was then made as to whether existing transit lines could accommodate the Project's transit demand pursuant to the thresholds of significance below.

(d) Access and Circulation

The analysis of the Project's potential access impacts included a review of the proposed vehicular access points and internal circulation. A determination was made regarding the potential for these features of the Project to impede traffic flows on adjacent City streets and/or result in potential safety impacts.

(e) Bicycle, Pedestrian, and Vehicular Safety

The methodology for the analysis of pedestrian/bicycle safety impacts includes a review of the Project's access and internal circulation scheme and a determination of whether the Project would substantially increase the potential for pedestrian/vehicle and/or bicycle/vehicle conflicts or impact existing pedestrian and bicycle facilities in the surrounding area.

(f) Parking

As previously discussed, LBMC Section 21.41.219 permits a reduced parking ratio for shopping centers greater than 150,000 square feet in size if it can be demonstrated in a shared parking analysis that the proposed parking supply will meet demand. The Parking

Analysis prepared by LLG, provided in Appendix S of this Draft EIR, evaluates the parking demands and operational needs of the Project at full occupancy. The Parking Analysis uses a shared parking methodology because the proposed land uses (i.e., retail, grocery store, restaurant, fitness center, etc…) would experience peak parking demand at different times of the day.

b. Thresholds of Significance

(1) CEQA Guidelines Appendix G

Appendix G of the CEQA Guidelines provides thresholds of significance to assess if a project could have a potential significant impact on the environment with regard to transportation/traffic. These thresholds of significance are as follows:

Would the project:

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

- Conflict with an applicable congestion management program including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

- Result in inadequate emergency access?

- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

Appendix G of the CEQA Guidelines does not include a sample threshold of significance for parking impacts. The prior checklist question regarding inadequate parking capacity was removed in 2010.

A preliminary analysis of the Project's potential traffic and access impacts was conducted relative to the above thresholds to determine whether or not further analysis would be warranted in an EIR. That analysis was published in an Initial Study for the Project, which is included as Appendix A of this Draft EIR. As evaluated therein, the Project Site is not located within the vicinity of a public or private airport or planning boundary of any airport land use plan. In addition, the low-rise structures proposed by the Project would not increase or change air traffic patterns or increase levels of risk with respect to air traffic. Therefore, as analyzed in the Initial Study, no impacts regarding changes in air traffic patterns would occur. Furthermore, regarding emergency access, during construction, both directions of travel on area roadways would be maintained so as not to physically impair access to and around the Project Site. Additionally, the Project would not place any permanent physical barriers on any of the existing surrounding streets, and access along and through streets and highways in the area would be maintained. Therefore, as evaluated in the Initial Study, impacts regarding emergency access would be less than significant. Accordingly, no further analysis regarding the significance thresholds related to changes in air traffic patterns and inadequate emergency access is provided below.

(2) City of Long Beach

In addition to the above thresholds of significance from Appendix G of the CEQA Guidelines, impacts to City of Long Beach intersections (i.e., all 31 study intersections except nos. 20, 23, 24, 25, 26, 29, and 31) would be considered significant if:

- An unacceptable peak-hour Level of Service (i.e., LOS E or F) at any of the key intersections is projected. The City considers LOS D (ICU = 0.801 - 0.900) to be the minimum acceptable LOS for all intersections. The current LOS, if worse than LOS D (i.e., LOS E or F), should also be maintained;

- The project increases traffic demand at the study intersection by 2 percent of capacity (ICU increase ≥ 0.020), causing or worsening LOS E or F (ICU > 0.901); and

- At unsignalized intersections, an impact is considered to be significant if a project causes an intersection operating at LOS D or better to degrade to LOS E or F, and the traffic signal warrant analysis determines that a traffic signal is justified.

With respect to parking, LBMC Section 21.41 sets forth parking requirements for various land uses. As detailed therein, community, regional, and neighborhood shopping centers require five spaces per 1,000 square feet plus additional parking for detached fast-food restaurants. However, pursuant to LBMC Section 21.41.219, shopping centers greater than 150,000 square feet in size may submit a parking demand study to the City in

order to reduce the standard shopping center ratio if it can be demonstrated that the proposed shared parking supply will meet the projected parking demand.

(3) City of Seal Beach

In addition to the above thresholds of significance from Appendix G of the CEQA Guidelines, impacts to City of Seal Beach intersections (i.e., Intersection Nos. 20, 23, 24, 25, 26, 29, and 31) would be considered significant if:

- An unacceptable peak-hour LOS (i.e., LOS E or F) at any of the key intersections is projected. The City of Seal Beach considers LOS D (ICU = 0.801 - 0.900) to be the minimum acceptable LOS for all intersections;

- Per City of Seal Beach criteria, a significant transportation impact is determined based on a sliding scale that varies with LOS. At LOS A or B, the threshold of significance is an increase of 0.06 or greater in the ICU value. At LOS C or D, the threshold of significance is an increase of 0.04 or greater or 0.02 or greater, respectively, in the ICU value. This is reduced to 0.01 or greater under LOS E and F; and

- At unsignalized intersections, this report identifies a significant traffic impact when the addition of Project traffic results in a decrease in LOS by one level or more for those locations operating at LOS D or E.

c. Project Design Features

In addition to the Project characteristics and improvements described in Section II, Project Description, of this Draft EIR, the Project would implement the following specific project design features regarding traffic and access:

Project Design Feature K-1: Pacific Coast Highway Project Frontage—Provide an acceleration/deceleration lane on PCH along the Project Site frontage. The deceleration lane will function as a southbound right-turn lane at Project Driveway No. 1 and Project Driveway No. 2. The installation of these improvements is subject to the approval of the City of Long Beach and Caltrans.

Project Design Feature K-2: Pacific Coast Highway at Project Driveway No. 1—Construct the Project driveway and provide one inbound lane and one outbound lane (i.e., one eastbound right-turn lane). It is recommended that the median on PCH be modified to prohibit eastbound (outbound) left turns and restriped to provide one 100-foot northbound left-turn lane with a 90-foot transition. Install a stop sign, “STOP” pavement legend, and stop bar at the Project driveway. The

installation of these improvements is subject to the approval of the City of Long Beach and Caltrans.

Project Design Feature K-3: Pacific Coast Highway at Project Driveway No. 2—Construct the Project driveway and a new driveway that will serve the Long Beach Marketplace on the east side of PCH. The Project driveway will provide one inbound lane, dual 150-foot eastbound left-turn lanes, and a 150-foot eastbound shared through/right-turn lane. The Long Beach Marketplace driveway will provide two inbound lanes, one 90-foot westbound left-turn lane, and one 90-foot westbound shared through/right-turn lane. The median on PCH will be modified to provide appropriate left-turn lane pockets and transitions in both the northbound and southbound directions. Install an eight-phase traffic signal. The installation of these improvements is subject to the approval of the City of Long Beach and Caltrans.

Project Design Feature K-4: Marina Drive at Project Driveway No. 3—Maintain the existing driveway to provide one inbound lane and one outbound lane (i.e., one westbound right-turn lane). Install a stop sign, "STOP" pavement legend, and stop bar at the Project driveway. The installation of these improvements is subject to the approval of the City of Long Beach.

Project Design Feature K-5: Marina Drive at Project Driveway No. 4—Maintain the existing driveway to provide one inbound lane and one outbound lane (i.e., one westbound right-turn lane). Install a stop sign, "STOP" pavement legend, and stop bar at the Project driveway. The installation of these improvements is subject to the approval of the City of Long Beach.

Project Design Feature K-6: Marina Drive at Project Driveway No. 5—Maintain the existing driveway to provide one inbound lane and one outbound lane (i.e., one westbound right-turn lane). Install a stop sign, "STOP" pavement legend, and stop bar at the Project driveway. The installation of these improvements is subject to the approval of the City of Long Beach.

Project Design Feature K-7: 2nd Street at Project Driveway No. 6—Construct the Project driveway and provide one inbound lane and one outbound lane (i.e., one northbound right-turn lane). Install a stop sign, "STOP" pavement legend, and stop bar at the Project driveway. The installation of these improvements is subject to the approval of the City of Long Beach.

Project Design Feature K-8: In compliance with LBMC Section 21.64.030(B) 1, 2, and 3, the Project shall implement transportation demand management (TDM) measures to reduce vehicle trips and encourage the use of public transit. These measures include, but are not limited to:

- Provide a bulletin board/kiosk displaying information regarding bus schedules and routes, ridesharing, bike routes, and carpool/vanpool opportunities.
- Provide 10 stalls for employee parking located as close as practical to employee entrance for use by potential carpool/ vanpool vehicles. These reserved parking spaces shall be signed/striped as demand warrants with at least two spaces provided at all times.
- Vanpool/carpool loading/unloading and parking areas;
- Provide bicycle parking facilities which are safely and conveniently accessible from the external street system, with the number and location(s) determined in consultation with the City.

In accordance with the LBMC, the Project Applicant also would be required to pay a Transportation Improvement Fee. The fee and any credit for existing development will be determined by the City upon issuance of Project building permits.

d. Analysis of Project Impacts

(1) Construction Impacts

Potential traffic impacts from Project construction activities could occur as a result of the following types of activities:

- Increases in truck traffic associated with export or import of fill materials and delivery of construction materials;
- Increases in automobile traffic associated with construction workers traveling to and from the Project Site;
- Reductions in existing street capacity from temporary lane closures necessary for the construction of roadway/access improvements, utility connections, and drainage facilities; and
- Blocking existing vehicle or pedestrian access to other parcels fronting streets.

The following discussion addresses these potential impacts based on the construction characteristics of the Project. As described above, a set of construction assumptions were established for each phase of construction, including demolition; site grading/excavation; building foundation/framing/construction; and paving/concrete/ landscaping. As discussed further below, the building foundation/framing/construction phase is estimated to generate the greatest amount of construction-related traffic. As such,

the construction analysis considered the peak haul trips and construction worker trips during this phase.

(a) Construction Trip Generation and Access

Table IV.K-8 on page IV.K-34 provides a summary of the estimated construction peak-hour and daily traffic volumes during each of the four construction phases. As shown therein, Project construction could generate a maximum of 650 daily trips during the building foundation/framing/construction phase, with 214 total trips during the A.M. peak hour and 214 total trips during the P.M. peak hour. It is noted that typical construction hours generally require workers to be on-site before the morning commuter peak period (i.e., arrival prior to 7:00 A.M.) and allow them to leave before or after the afternoon peak period (i.e., before 4:00 P.M. or after 6:00 P.M.). Therefore, most construction worker trips are likely occur outside the typical weekday commuter morning and afternoon peak periods.

During construction, regional access to and from the Project Site for construction trucks associated with hauling and deliveries would be provided via the SR-22 Freeway. It is anticipated that construction worker traffic would utilize both regional and local roadways to travel to and from the Project Site, including PCH, 2nd Street, and Marina Drive.

Figure 15-1 and Figure 15-2 of the Traffic Study included in Appendix R of this Draft EIR illustrate the traffic distribution patterns for the construction workers and trucks during the building foundation/framing/construction phase.

(b) Construction Traffic Impacts

(i) Temporary Traffic Impacts

The temporary traffic impacts of the Project during the peak construction phase associated with building foundation/framing/construction are summarized in Table IV.K-9 on page IV.K-35. As shown therein, six of the 31 study intersections would be temporarily impacted during the Project's peak construction phase prior to mitigation:

- Intersection No. 10: Studebaker Road at SR-22 Eastbound Ramps
- Intersection No. 17: Pacific Coast Highway at 2nd Street
- Intersection No. 18: Shopkeeper Road at 2nd Street
- Intersection No. 19: Studebaker Road at 2nd Street
- Intersection No. 23: Pacific Coast Highway at Marina Drive

Table IV.K-8
Project Construction-Related Traffic Generation

Project Description	Daily 2-Way	A.M. Peak Hour			P.M. Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Demolition Generation Forecast							
Construction Truck Traffic (25 Trucks)	50	4	3	7	3	4	7
Passenger Car Equivalent Factor[a]	3	3	3	3	3	3	3
Subtotal	*150*	*12*	*9*	*21*	*9*	*12*	*21*
Employees (30 Workers)	60	30	0	30	0	30	30
Total Demolition Construction Related Traffic Trip Generation Potential	**210**	**42**	**9**	**51**	**9**	**42**	**51**
Site Grading/Excavation Generation Forecast							
Construction Truck Traffic (20 Trucks)	40	3	2	5	2	3	5
Passenger Car Equivalent Factor[a]	3	3	3	3	3	3	3
Subtotal	*120*	*9*	*6*	*15*	*6*	*9*	*15*
Employees (20 Workers)	40	20	0	20	0	20	20
Total Site Grading/Excavation Construction Related Traffic Trip Generation Potential	**160**	**29**	**6**	**35**	**6**	**29**	**35**
Building Foundation/Framing/ Construction Generation Forecast							
Construction Truck Traffic (50 Trucks)	100	7	6	13	6	7	13
Passenger Car Equivalent Factor[a]	3	3	3	3	3	3	3
Subtotal	*300*	*21*	*18*	*39*	*18*	*21*	*39*
Employees (175 Workers)	350	175	0	175	0	175	175
Total Building Foundation/Framing Construction Related Traffic Trip Generation Potential	**650**	**196**	**18**	**214**	**18**	**196**	**214**
Paving/Concrete/Landscaping Generation Forecast							
Construction Truck Traffic (10 Trucks)	20	2	1	3	1	2	3
Passenger Car Equivalent Factor[a]	3	3	3	3	3	3	3
Subtotal	*60*	*6*	*3*	*9*	*3*	*6*	*9*
Employees (30 Workers)	60	30	0	30	0	30	30
Total Paving/Concrete/Landscaping Construction Related Traffic Trip Generation Potential	**120**	**36**	**3**	**39**	**3**	**36**	**39**

[a] *A passenger car equivalent factor of 3.0 was applied to truck trips to convert to passenger car trips.*

Source: Linscott, Law & Greenspan, Engineers, 2017.

- Intersection No. 30: SR-22 Westbound Ramps/Studebaker Road at College Park Drive

Table IV.K-9
Construction Traffic Peak-Hour Intersection Capacity Analysis

Key Intersections		Time Period	Existing Traffic Conditions		Existing Plus Construction Traffic Conditions			
			ICU/ HCM	LOS	ICU/ HCM	LOS	Change in ICU/HCM	Significant Impact?
1.	Bellflower Boulevard at Atherton Street	A.M. P.M.	0.795 0.851	C D	0.795 0.851	C D	0.000 0.000	No No
2.	Pacific Coast Highway at Clark Avenue	A.M. P.M.	0.854 0.818	D D	0.854 0.820	D D	0.000 0.002	No No
3.	Pacific Coast Highway at Anaheim Street	A.M. P.M.	0.763 0.845	C D	0.765 0.845	C D	0.002 0.000	No No
4.	Studebaker Road at Anaheim Street	A.M. P.M.	0.777 0.706	C C	0.777 0.706	C C	0.000 0.000	No No
5.	Park Avenue at 7th Street	A.M. P.M.	**0.953** 0.883	**E** D	**0.954** 0.883	**E** D	0.001 0.000	No No
6.	Pacific Coast Highway at 7th Street	A.M. P.M.	**0.979** **0.980**	**E** **E**	**0.980** **0.981**	**E** **E**	0.001 0.001	No No
7.	Bellflower Boulevard at 7th Street	A.M. P.M.	**0.971** 0.847	**E** D	**0.917** 0.848	**E** D	0.000 0.001	No No
8.	Studebaker Road at SR-22 Westbound Ramps	A.M. P.M.	0.639 **0.908**	B **E**	0.698 **0.914**	B **E**	0.059 0.006	No No
9.	Bellflower Boulevard at Pacific Coast Highway	A.M. P.M.	0.662 0.668	B B	0.664 0.668	B B	0.002 0.000	No No
10.	Studebaker Road at SR-22 Eastbound Ramps	A.M. P.M.	0.852 **0.931**	D **E**	0.864 **1.037**	D **F**	0.012 **0.106**	No **Yes**
11.	Pacific Coast Highway at Loynes Drive	A.M. P.M.	0.677 0.809	B D	0.677 0.809	B D	0.000 0.000	No No
12.	Studebaker Road at Loynes Drive	A.M. P.M.	0.675 0.791	B C	0.697 0.831	B D	0.022 0.040	No No
13.	Livingstone Drive at 2nd Street	A.M. P.M.	0.624 0.583	B A	0.626 0.584	B A	0.002 0.001	No No
14.	Bay Shore Avenue at 2nd Street	A.M. P.M.	0.847 1.009	D F	0.848 1.009	D F	0.001 0.000	No No
15.	Naples Plaza at 2nd Street	A.M. P.M.	0.699 0.746	B C	0.700 0.746	B C	0.001 0.000	No No
16.	Marina Drive at 2nd Street	A.M. P.M.	0.664 0.792	B C	0.665 0.793	B C	0.001 0.001	No No
17.	Pacific Coast Highway at 2nd Street	A.M. P.M.	**0.933** 0.876	**E** D	**0.997** **0.918**	**E** **E**	**0.064** **0.042**	**Yes** **Yes**
18.	Shopkeeper Road at 2nd Street	A.M. P.M.	0.648 0.881	B D	0.652 **0.918**	B **E**	0.004 **0.037**	No **Yes**
19.	Studebaker Road at 2nd Street	A.M. P.M.	0.857 **0.947**	D **E**	0.864 **1.006**	D **F**	0.007 **0.059**	No **Yes**

Table IV.K-9 (Continued)
Construction Traffic Peak-Hour Intersection Capacity Analysis

Key Intersections		Time Period	Existing Traffic Conditions		Existing Plus Construction Traffic Conditions			
			ICU/ HCM	LOS	ICU/ HCM	LOS	Change in ICU/HCM	Significant Impact?
20.	Seal Beach Boulevard at Westminster Avenue	A.M. P.M.	**0.936** **0.929**	**E** **E**	**0.938** **0.929**	**E** **E**	0.002 0.000	No No
21.	Marina Drive at Studebaker Road	A.M. P.M.	11.9 s/v 15.8 s/v	B C	13.6 s/v 16.9 s/v	B C	1.7 s/v 1.1 s/v	No No
22.	Pacific Coast Highway at Studebaker Road	A.M. P.M.	0.797 0.840	C D	0.797 0.842	C D	0.000 0.002	No No
23.	Pacific Coast Highway at Marina Drive	A.M. P.M.	**36.5 s/v** 19.9 s/v	**E** C	**39.1 s/v** 24.9 s/v	**E** C	**2.6 s/v** 5.0 s/v	**Yes** No
24.	Pacific Coast Highway at Main/Bolsa Avenue	A.M. P.M.	0.730 0.702	C C	0.731 0.702	C C	0.001 0.000	No No
25.	Seal Beach Boulevard at Pacific Coast Highway	A.M. P.M.	0.885 0.811	D D	0.886 0.811	D D	0.001 0.000	No No
26.	Seal Beach Boulevard at Bolsa Avenue	A.M. P.M.	0.548 0.492	A A	0.548 0.492	A A	0.000 0.000	No No
27.	Santiago Avenue at 7th Street	A.M. P.M.	0.674 0.729	B C	0.675 0.730	B C	0.001 0.001	No No
28.	Pacific Coast Highway at Channel Drive	A.M. P.M.	0.518 0.524	A A	0.518 0.526	A A	0.000 0.002	No No
29.	Pacific Coast Highway at 1st Street	A.M. P.M.	0.699 0.758	B C	0.699 0.759	B C	0.000 0.001	No No
30.	SR-22 Westbound Ramps/Studebaker Road at College Park Drive	A.M. P.M.	15.2 s/v 26.7 s/v	C D	15.4 s/v **35.9 s/v**	C **E**	0.2 s/v **9.2 s/v**	No **Yes**
31.	1st Street at Marina Drive	A.M. P.M.	9.2 s/v 11.3 s/v	A B	9.2 s/v 11.3 s/v	A B	0.0 s/v 0.0 s/v	No No

Bold ICU/LOS *or* ***Delay/LOS*** *values indicate adverse service levels based on City of Long Beach or City of Seal Beach LOS standards.*

s/v = seconds per vehicle

Source: Linscott, Law & Greenspan, Engineers, 2017.

(ii) Access and Safety

Given the size of the Project Site, it is anticipated that Project construction activities generally would be contained within the Project Site boundaries. Furthermore, as part of the Project, construction staging and construction worker vehicle parking would be provided on-site to the extent possible. In addition, the Project would not require the

removal of any on- or off-street parking. However, some construction activities could encroach into the public right-of-way adjacent to the Project Site for driveway and utility improvements. As such, the use of the public right-of-way could require temporary rerouting of pedestrian and/or vehicular traffic. Therefore, the Project could result in the temporary loss of access to sidewalks surrounding the Project Site perimeter, which represents a potentially significant impact prior to mitigation.

(iii) Public Transit

An existing bus stop is located adjacent to the Project Site along PCH. As previously described, it is anticipated that Project construction activities would be largely contained within the Project Site boundaries. However, some construction activities could encroach into the public right-of-way adjacent to the Project Site for driveway and utility improvements. As such, the potential use of the public right-of-way during construction could require the temporary relocation of the existing bus stop along PCH, which represents a potentially significant impact prior to mitigation.

(2) Operational Impacts

(a) Intersection Levels of Service

(i) Existing Plus Project Conditions

As previously discussed, the analysis of Existing Plus Project Conditions evaluates potential Project-related traffic impacts as compared to existing conditions during the typical weekday A.M. and P.M. peak periods for all intersections and weekend midday peak period for selected intersections.[12] this scenario, the estimated Project traffic volumes during the morning and afternoon peak periods and the weekend midday peak period were added to the existing morning and afternoon peak period and weekend midday peak period traffic volumes, respectively, to determine the change in the volume-to-capacity ratios for signalized intersections, the change in delay for unsignalized intersections, and the corresponding LOS. Table IV.K-10 on page IV.K-38 summarizes the peak-hour LOS results at the 31 study intersections under Existing Plus Project Conditions. As shown therein, traffic associated with the Project would significantly impact 9 of the 31 study intersections, including the following:

- Intersection No. 8: Studebaker Road at SR-22 Westbound Ramps (LOS E—P.M.)

[12] *The nine Saturday study intersections were selected in coordination with City staff and represent the locations with the greatest likelihood of being impacted by the Project based on weekend traffic conditions.*

Table IV.K-10
Existing Plus Project Peak-Hour Intersection Capacity Analysis

	Key Intersections	Time Period	Existing Conditions		Existing Plus Project[a]			
			ICU/HCM	LOS	ICU/HCM	LOS	Change in ICU/HCM	Significant Impact?
1.	Bellflower Boulevard at Atherton Street	A.M.	0.795	C	0.803	D	0.008	No
		P.M.	0.851	D	0.860	D	0.009	No
2.	Pacific Coast Highway at Clark Avenue	A.M.	0.854	D	0.862	D	0.008	No
		P.M.	0.818	D	0.833	D	0.015	No
3.	Pacific Coast Highway at Anaheim Street	A.M.	0.763	C	0.772	C	0.009	No
		P.M.	0.845	D	0.860	D	0.015	No
4.	Studebaker Road at Anaheim Street	A.M.	0.777	C	0.783	C	0.006	No
		P.M.	0.706	C	0.717	C	0.011	No
5.	Park Avenue at 7th Street	A.M.	**0.953**	**E**	**0.959**	**E**	0.006	No
		P.M.	0.883	D	0.893	D	0.010	No
6.	Pacific Coast Highway at 7th Street	A.M.	**0.979**	**E**	**0.986**	**E**	0.007	No
		P.M.	**0.980**	**E**	**0.987**	**E**	0.007	No
7.	Bellflower Boulevard at 7th Street	A.M.	**0.917**	**E**	**0.922**	**E**	0.005	No
		P.M.	0.847	D	0.856	D	0.009	No
8.	Studebaker Road at SR-22 Westbound Ramps	A.M.	0.639	B	0.650	B	0.011	No
		P.M.	**0.908**	**E**	**0.930**	**E**	**0.022**	**Yes**
9.	Bellflower Boulevard at Pacific Coast Highway	A.M.	0.662	B	0.679	B	0.017	No
		P.M.	0.668	B	0.700	C	0.032	No
10.	Studebaker Road at SR-22 Eastbound Ramps	A.M.	0.852	D	0.859	D	0.007	No
		P.M.	**0.931**	**E**	**0.948**	**E**	0.017	No
11.	Pacific Coast Highway at Loynes Drive	A.M.	0.677	B	0.687	B	0.010	No
		P.M.	0.809	D	0.835	D	0.026	No
12.	Studebaker Road at Loynes Drive	A.M.	0.675	B	0.683	B	0.008	No
		P.M.	0.791	C	0.794	C	0.003	No
13.	Livingstone Drive at 2nd Street	A.M.	0.624	B	0.638	B	0.014	No
		P.M.	0.583	A	0.609	B	0.026	No
		Sat. Midday	0.544	A	0.591	A	0.047	No

Table IV.K-10 (Continued)
Existing Plus Project Peak-Hour Intersection Capacity Analysis

	Key Intersections	Time Period	Existing Conditions		Existing Plus Project[a]			
			ICU/HCM	LOS	ICU/HCM	LOS	Change in ICU/HCM	Significant Impact?
14.	Bay Shore Avenue at 2nd Street	A.M.	0.847	D	0.863	D	0.016	No
		P.M.	**1.009**	**F**	**1.025**	**F**	**0.026**	**Yes**
		Sat. Midday	**0.983**	**E**	**1.029**	**F**	**0.046**	**Yes**
15.	Naples Plaza at 2nd Street	A.M.	0.699	B	0.717	C	0.018	No
		P.M.	0.746	C	0.776	C	0.030	No
		Sat. Midday	0.688	B	0.742	C	0.054	No
16.	Marina Drive at 2nd Street	A.M.	0.664	B	0.689	B	0.025	No
		P.M.	0.792	C	0.828	D	0.036	No
		Sat. Midday	0.702	C	0.804	D	0.102	No
17.	Pacific Coast Highway at 2nd Street	A.M.	**0.933**	**E**	**0.968**	**E**	**0.035**	**Yes**
		P.M.	0.876	D	**0.977**	**E**	**0.101**	**Yes**
		Sat. Midday	0.887	D	**1.054**	**F**	**0.167**	**Yes**
18.	Shopkeeper Road at 2nd Street	A.M.	0.648	B	0.654	B	0.006	No
		P.M.	0.881	D	0.897	D	0.016	No
		Sat. Midday	0.843	D	0.874	D	0.031	No
19.	Studebaker Road at 2nd Street	A.M.	0.857	D	0.870	D	0.013	No
		P.M.	**0.947**	**E**	**0.968**	**E**	**0.021**	**Yes**
		Sat. Midday	0.804	D	0.862	D	0.058	No
20.	Seal Beach Boulevard at Westminster Avenue	A.M.	**0.936**	**E**	**0.945**	**E**	0.009	No
		P.M.	**0.929**	**E**	**0.946**	**E**	**0.017**	**Yes**
21.	Marina Drive at Studebaker Road[b]	A.M.	11.9 s/v	B	10.0 s/v	A	0.0 s/v	No
		P.M.	15.8 s/v	C	12.7 s/v	B	0.0 s/v	No
		Sat. Midday	16.4 s/v	C	14.0 s/v	B	0.0 s/v	No
22.	Pacific Coast Highway at Studebaker Road	A.M.	0.797	C	0.813	D	0.016	No
		P.M.	0.840	D	0.872	D	0.032	No
		Sat. Midday	0.845	D	**0.927**	**E**	**0.082**	**Yes**
23.	Pacific Coast Highway at Marina Drive	A.M.	**36.5 s/v**	**E**	**39.1 s/v**	**E**	**2.6 s/v**	**Yes**
		P.M.	19.9 s/v	C	21.5 s/v	C	1.6 s/v	No

Table IV.K-10 (Continued)
Existing Plus Project Peak-Hour Intersection Capacity Analysis

	Key Intersections	Time Period	Existing Conditions		Existing Plus Project[a]			
			ICU/HCM	LOS	ICU/HCM	LOS	Change in ICU/HCM	Significant Impact?
24.	Pacific Coast Highway at Main/Bolsa Avenue	A.M.	0.730	C	0.753	C	0.023	No
		P.M.	0.702	C	0.743	C	**0.041**	**Yes**
25.	Seal Beach Boulevard at Pacific Coast Highway	A.M.	0.885	D	0.894	D	0.009	No
		P.M.	0.811	D	0.831	D	0.020	**Yes**
26.	Seal Beach Boulevard at Bolsa Avenue	A.M.	0.548	A	0.555	A	0.007	No
		P.M.	0.492	A	0.505	A	0.013	No
27.	Santiago at 7th Street	A.M.	0.674	B	0.678	B	0.004	No
		P.M.	0.729	C	0.737	C	0.008	No
28.	Pacific Coast Highway at Channel Drive	A.M.	0.518	A	0.528	A	0.010	No
		P.M.	0.524	A	0.546	A	0.022	No
29.	Pacific Coast Highway at 1st Street	A.M.	0.699	B	0.716	C	0.017	No
		P.M.	0.758	C	0.791	C	0.033	No
30.	SR-22 Westbound Ramps/Studebaker Road at College Park Drive	A.M.	15.2 s/v	C	15.4 s/v	C	0.2 s/v	No
		P.M.	26.7 s/v	D	27.6 s/v	D	0.9 s/v	No
31.	1st Street at Marina Drive	A.M.	9.2 s/v	A	9.2 s/v	A	0.0 s/v	No
		P.M.	11.3 s/v	B	11.3 s/v	B	0.0 s/v	No

Bold ICU/LOS *or* ***Delay/LOS*** *values indicate adverse service levels based on City of Long Beach or City of Seal Beach LOS standards.*

[a] *Includes the removal of the existing SeaPort Marina Hotel and construction of the Project*

[b] *The Existing Plus Project LOS calculations at this intersection include the exclusive northbound right-turn lane and second southbound left-turn lane included in the Project.*

Source: Linscott, Law & Greenspan, Engineers, 2017.

- Intersection No. 14: Bay Shore Avenue at 2nd Street (LOS F—P.M., LOS F—Sat.)
- Intersection No. 17: Pacific Coast Highway at 2nd Street (LOS E—A.M./P.M., LOS F—Sat.)
- Intersection No. 19: Studebaker Road at 2nd Street (LOS E—P.M.)
- Intersection No. 20: Seal Beach Boulevard at Westminster Avenue (LOS E—P.M.)
- Intersection No. 22: Pacific Coast Highway at Studebaker Road (LOS E—Sat.)
- Intersection No. 23: Pacific Coast Highway at Marina Drive (LOS E—A.M.)
- Intersection No. 24: Pacific Coast Highway at Main/Bolsa Avenue (LOS E—P.M.)
- Intersection No. 25: Seal Beach Boulevard at Pacific Coast Highway (LOS D—P.M.)

As shown in Table IV.K-10 on page IV.K-38, Intersection No. 5: Park Avenue at 7th Street, Intersection No. 6: Pacific Coast Highway at 7th Street, Intersection No. 7: Bellflower Boulevard at 7th Street, and Intersection No. 10: Studebaker Road at SR-22 Eastbound Ramps are forecast to operate at unacceptable LOS E during the A.M., P.M., and/or Saturday midday peak hours with the addition of Project traffic. However, the Project is expected to add less than 0.020 to the ICU value and would not result in a significant impact to these intersections. The remaining study intersections are forecast to continue to operate at an acceptable LOS with the addition of Project-generated traffic to existing traffic.

Based on the above, under Existing Plus Project Conditions, the Project would result in a significant impact at Intersection Nos. 8, 14, 17, 19, 20, 22, 23, 24, and 25 prior to mitigation.

(ii) Future Plus Project Conditions

The analysis of Future Plus Project Conditions identifies the potential impacts of the Project at full buildout on projected future operating conditions during the typical weekday morning and afternoon peak periods and during the weekend midday peak period for selected intersections by adding the net Project-generated traffic to the Future Without Project traffic forecasts for the year 2019. Table IV.K-11 on page IV.K-42 summarizes the intersection levels of service under Future Plus Project Conditions during the weekday morning and afternoon peak hours and during the weekday midday peak period. As shown therein, under Future Plus Project Conditions, the Project would significantly impact 11 of the 31 study intersections, including:

Table IV.K-11
Future Plus Project Peak-Hour Intersection Capacity Analysis

	Key Intersections	Time Period	Existing Conditions		Future Traffic Conditions		Future Plus Project[a]			
			ICU/HCM	LOS	ICU/HCM	LOS	ICU/HCM	LOS	Change in ICU/HCM	Significant Impact?
1.	Bellflower Boulevard at Atherton Street[b]	A.M.	0.795	C	0.857	D	0.862	D	0.005	No
		P.M.	0.851	D	0.945	E	**0.957**	**E**	0.012	No
2.	Pacific Coast Highway at Clark Avenue	A.M.	0.854	D	0.878	D	0.887	D	0.009	No
		P.M.	0.818	D	0.844	D	0.859	D	0.015	No
3.	Pacific Coast Highway at Anaheim Street	A.M.	0.763	C	0.787	C	0.796	C	0.009	No
		P.M.	0.845	D	0.870	D	0.885	D	0.015	No
4.	Studebaker Road at Anaheim Street	A.M.	0.777	C	0.801	D	0.808	D	0.007	No
		P.M.	0.706	C	0.728	C	0.739	C	0.011	No
5.	Park Avenue at 7th Street	A.M.	**0.953**	**E**	**0.981**	**E**	**0.987**	**E**	0.006	No
		P.M.	0.883	D	**0.908**	**E**	**0.918**	**E**	0.010	No
6.	Pacific Coast Highway at 7th Street	A.M.	**0.979**	**E**	**1.009**	**F**	**1.016**	**F**	0.007	No
		P.M.	**0.980**	**E**	**1.010**	**F**	**1.016**	**F**	0.006	No
7.	Bellflower Boulevard at 7th Street[b]	A.M.	**0.917**	**E**	**1.002**	**F**	**1.009**	**F**	0.007	No
		P.M.	0.847	D	**0.925**	**E**	**0.939**	**E**	0.014	No
8.	Studebaker Road at SR-22 Westbound Ramps	A.M.	0.639	B	0.681	B	0.692	B	0.011	No
		P.M.	**0.908**	**E**	**0.950**	**E**	**0.971**	**E**	**0.021**	**Yes**
9.	Bellflower Boulevard at Pacific Coast Highway[b]	A.M.	0.662	B	0.682	B	0.699	B	0.017	No
		P.M.	0.668	B	0.698	B	0.724	C	0.026	No
10.	Studebaker Road at SR-22 Eastbound Ramps	A.M.	0.852	D	0.894	D	0.900	D	0.006	No
		P.M.	0.931	E	**0.995**	**E**	**1.012**	**F**	0.017	No
11.	Pacific Coast Highway at Loynes Drive	A.M.	0.677	B	0.706	C	0.716	C	0.010	No
		P.M.	0.809	D	0.838	D	0.863	D	0.025	No
12.	Studebaker Road at Loynes Drive[c]	A.M.	0.675	B	0.781	C	0.789	C	0.008	No
		P.M.	0.791	C	0.880	D	**0.907**	**E**	**0.027**	**Yes**
13.	Livingstone Drive at 2nd Street	A.M.	0.624	B	0.648	B	0.662	B	0.014	No
		P.M.	0.583	A	0.609	B	0.636	B	0.027	No
		Sat. Midday	0.544	A	0.579	A	0.591	A	0.047	No

Table IV.K-11 (Continued)
Future Plus Project Peak-Hour Intersection Capacity Analysis

	Key Intersections	Time Period	Existing Conditions		Future Traffic Conditions		Future Plus Project[a]			
			ICU/HCM	LOS	ICU/HCM	LOS	ICU/HCM	LOS	Change in ICU/HCM	Significant Impact?
14.	Bay Shore Avenue at 2nd Street	A.M.	0.847	D	0.878	D	0.894	D	0.016	No
		P.M.	**1.009**	**F**	**1.043**	**F**	**1.069**	**F**	**0.026**	**Yes**
		Sat. Midday	**0.983**	**E**	**1.021**	**F**	**1.029**	**F**	**0.046**	**Yes**
15.	Naples Plaza at 2nd Street	A.M.	0.699	B	0.725	C	0.743	C	0.018	No
		P.M.	0.746	C	0.771	C	0.802	D	0.031	No
		Sat. Midday	0.688	B	0.717	C	0.742	C	0.054	No
16.	Marina Drive at 2nd Street	A.M.	0.664	B	0.687	B	0.711	C	0.024	No
		P.M.	0.792	C	0.818	D	0.854	D	0.036	No
		Sat. Midday	0.702	C	0.727	C	0.828	D	0.101	No
17.	Pacific Coast Highway at 2nd Street	A.M.	**0.933**	**E**	**0.977**	**E**	**1.011**	**F**	**0.034**	**Yes**
		P.M.	0.876	D	**0.916**	**E**	**1.018**	**F**	**0.102**	**Yes**
		Sat. Midday	0.887	D	**0.930**	**E**	**1.054**	**F**	**0.167**	**Yes**
18.	Shopkeeper Road at 2nd Street	A.M.	0.648	B	0.672	B	0.678	B	0.006	No
		P.M.	0.881	D	**0.910**	**E**	**0.925**	**E**	0.015	No
		Sat. Midday	0.843	D	0.868	D	0.874	D	0.031	No
19.	Studebaker Road at 2nd Street	A.M.	0.857	D	0.892	D	**0.905**	**E**	**0.013**	**Yes**
		P.M.	**0.947**	**E**	**0.980**	**E**	**1.001**	**F**	**0.021**	**Yes**
		Sat. Midday	0.804	D	0.837	D	0.862	D	0.058	No
20.	Seal Beach Boulevard at Westminster Avenue	A.M.	**0.936**	**E**	**0.967**	**E**	0.975	E	0.008	No
		P.M.	**0.929**	**E**	**0.958**	**E**	**0.975**	E	**0.017**	**Yes**
21.	Marina Drive at Studebaker Road[d]	A.M.	11.9 s/v	B	11.9 s/v	B	10.0 s/v	A	0.0 s/v	No
		P.M.	15.8 s/v	C	16.9 s/v	C	13.2 s/v	B	0.0 s/v	No
		Sat. Midday	16.4 s/v	C	18.5 s/v	C	15.1 s/v	C	0.0 s/v	No
22.	Pacific Coast Highway at Studebaker Road	A.M.	0.797	C	0.840	D	0.856	D	0.016	No
		P.M.	0.840	D	0.889	D	**0.921**	**E**	**0.032**	**Yes**
		Sat. Midday	0.845	D	0.892	D	**0.927**	**E**	**0.082**	**Yes**
23.	Pacific Coast Highway at Marina Drive	A.M.	**36.5 s/v**	**E**	**38.5 s/v**	**E**	**41.3 s/v**	**E**	**2.8 s/v**	**Yes**
		P.M.	19.9 s/v	C	23.2 s/v	C	25.5 s/v	D	2.3 s/v	No

Table IV.K-11 (Continued)
Future Plus Project Peak-Hour Intersection Capacity Analysis

	Key Intersections	Time Period	Existing Conditions		Future Traffic Conditions		Future Plus Project[a]			
			ICU/HCM	LOS	ICU/HCM	LOS	ICU/HCM	LOS	Change in ICU/HCM	Significant Impact?
24.	Pacific Coast Highway at Main/Bolsa Avenue	A.M.	0.730	C	0.758	C	0.781	C	0.023	No
		P.M.	0.702	C	0.729	C	0.770	C	**0.041**	**Yes**
25.	Seal Beach Boulevard at Pacific Coast Highway	A.M.	0.885	D	**0.914**	**E**	0.923	E	0.009	No
		P.M.	0.811	D	0.841	D	0.861	D	**0.020**	**Yes**
26.	Seal Beach Boulevard at Bolsa Avenue	A.M.	0.548	A	0.564	A	0.571	A	0.007	No
		P.M.	0.492	A	0.506	A	0.519	A	0.013	No
27.	Santiago Avenue at 7th Street	A.M.	0.674	B	0.692	B	0.696	B	0.004	No
		P.M.	0.729	C	0.750	C	0.758	C	0.008	No
28.	Pacific Coast Highway at Channel Drive	A.M.	0.518	A	0.533	A	0.544	A	0.011	No
		P.M.	0.524	A	0.542	A	0.564	A	0.022	No
29.	Pacific Coast Highway at 1st Street	A.M.	0.699	B	0.732	C	0.749	C	0.017	No
		P.M.	0.758	C	0.800	D	0.833	D	**0.033**	**Yes**
30.	SR-22 Westbound Ramps/Studebaker Road at College Park Drive	A.M.	15.2 s/v	C	15.2 s/v	C	15.4 s/v	C	0.2 s/v	No
		P.M.	26.7 s/v	D	30.7 s/v	D	31.8 s/v	D	1.1 s/v	No
31.	1st Street at Marina Drive	A.M.	9.2 s/v	A	9.4 s/v	A	9.4 s/v	A	0.0 s/v	No
		P.M.	11.3 s/v	B	11.7 s/v	B	11.7 s/v	B	0.0 s/v	No

Bold ICU/LOS *or* ***Delay/LOS*** *values indicate adverse service levels based on City of Long Beach or City of Seal Beach LOS standards.*

N.F. = None Feasible. Intersection improvements at this key intersection are not feasible due to physical and right-of-way constraints.

[a] *Includes removal of the existing SeaPort Marina Hotel and construction of the Project.*

[b] *The LOS calculations for this intersection include improvements planned by the City of Long Beach as part of the Bellflower Boulevard Bicycle System Gap Closure Project.*

[c] *The LOS calculations for this intersection include improvements assumed as part of the AES Battery Energy Storage System Project (Related Project No. 1).*

[d] *The Future Plus Project LOS calculations for this intersection include the exclusive northbound right-turn lane and a second southbound left-turn lane that will be constructed as part of the Project.*

Source: Linscott, Law & Greenspan, Engineers, 2017.

- Intersection No. 8: Studebaker Road at SR-22 Westbound Ramps (LOS E—P.M.)
- Intersection No. 12: Studebaker Road at Loynes Drive (LOS E—P.M.)
- Intersection No. 14: Bay Shore Avenue at 2nd Street (LOS F—P.M./SAT.)
- Intersection No. 17: Pacific Coast Highway at 2nd Street (LOS F—A.M./P.M./Sat.)
- Intersection No. 19: Studebaker Road at 2nd Street (LOS E—A.M., LOS F—P.M.)
- Intersection No. 20: Seal Beach Boulevard at Westminster Avenue (LOS E—P.M.)
- Intersection No. 22: Pacific Coast Highway at Studebaker Road (LOS E—P.M./Sat.)
- Intersection No. 23: Pacific Coast Highway at Marina Drive (LOS E—A.M.)
- Intersection No. 24: Pacific Coast Highway at Main/Bolsa Avenue (LOS C—P.M.)
- Intersection No. 25: Seal Beach Boulevard at Pacific Coast Highway (LOS D—P.M.)
- Intersection No. 29: Pacific Coast Highway at 1st Street (LOS D—P.M.)

As shown in Table IV.K-11 on page IV.K-42, Intersection No. 1: Bellflower Boulevard at Atherton Street, Intersection No. 5: Park Avenue at 7th Street, Intersection No. 6: Pacific Coast Highway at 7th Street, Intersection No. 7: Bellflower Boulevard at 7th Street, Intersection No. 10: Studebaker Road at SR-22 Eastbound Ramps, and Intersection No. 18: Shopkeeper Road at 2nd Street are forecast to operate at unacceptable LOS E or LOS F during the A.M., P.M., and/or Saturday midday peak hours with the addition of Project traffic. However, the Project is expected to add less than 0.020 to the ICU value and would not result in a significant impact to these intersections. The remaining study intersections are forecast to continue to operate at an acceptable LOS with the addition of Project generated traffic in the Year 2019.

In summary, under Future Plus Project Conditions, the Project would result in a significant impact at Intersection Nos. 8, 12, 14, 17, 19, 20, 22, 23, 24, 25, and 29 prior to mitigation.

(b) Regional Transportation System

(i) CMP Arterial Monitoring Station Analysis

As previously described, two CMP arterial monitoring locations are located in proximity to the Project Site. These include CMP Station No. 39: Pacific Coast Highway at Westminster Avenue (2nd Street), also identified herein as Intersection No. 17, and CMP Station No. 36: Pacific Coast Highway at 7th Street, identified herein as Intersection No. 6. CMP guidelines require that arterial monitoring intersection locations must be examined if a proposed project will add 50 or more trips during either the A.M. or P.M. weekday peak hours (of adjacent street traffic) at CMP monitoring intersections. As provided above, the Project would generate 13,666 net new weekday daily trips, including 412 weekday A.M. peak-hour trips and 792 weekday P.M. peak-hour trips. The Project would also generate approximately 17,611 weekend daily trips, including 1,439 weekend midday peak-hour trips. As the Project would add 50 or more trips at the identified CMP intersections during the weekday A.M. peak hour or P.M. peak hour, a CMP intersection traffic impact analysis was conducted, as provided below.

CMP Station No. 36 (Intersection No. 6: Pacific Coast Highway at 7th Street): The Project would add approximately 67 trips during the A.M. peak hour and 131 trips during the P.M. peak hour at this location. As previously analyzed and shown in Table IV.K-11 on page IV.K-42, the Project would not increase demand at this key intersection by two percent (0.02) or more during the A.M. and P.M. peak hours; therefore, the Project would not have a CMP impact at this location.

CMP Station No. 39 (Intersection No. 17: Pacific Coast Highway at 2nd Street): The Project would add approximately 209 trips during the A.M. peak hour and 504 trips during the P.M. peak hour at this location. As previously analyzed and shown in Table IV.K-11, the Project would increase demand at this key intersection by more than two percent (0.02) during the A.M. and P.M. peak hours (0.034 and 0.102, respectively); therefore, the Project would result in a significant impact at this intersection prior to mitigation.

(ii) CMP Freeway Segment Analysis

As discussed above, the nearest mainline freeway monitoring location is CMP Station No. 1065: I-405 Freeway north of SR-22. Based on the Project-trip generation estimates shown above in Table IV.K-7 on page IV.K-26, the Project would not add 150 or more trips (in either direction) during the A.M. or P.M. weekday peak periods at this CMP mainline freeway monitoring location. Thus, a CMP freeway traffic impact analysis is not required.

(c) Public Transit

As previously discussed, public transportation in the Project area is provided by Metro, OCTA, and LBT. As shown in Table IV.K-7 on page IV.K-26, the Project would generate 13,666 net new weekday daily trips, including 412 weekday A.M. peak-hour trips and 792 weekday P.M. peak-hour trips. The Project would also generate approximately 17,611 weekend daily trips, including 1,439 weekend midday peak-hour trips. In accordance with CMP guidelines, the Project trip generation values presented in Table IV.K-7 were adjusted to estimate Project-related transit trip generation. Specifically, as set forth in the CMP, person trips equal 1.4 times vehicle trips and transit trips equal 3.5 percent of the total person trips. When applying these values to the Project's trip generation, the Project is forecasted to generate 20 transit trips (11 inbound and 9 outbound) during the A.M. peak hour and 39 transit trips (21 inbound and 18 outbound) during the P.M. peak hour. Over a 24-hour period the Project is forecasted to generate 670 daily weekday transit trips. Given the availability of public transit in the Project area, it is anticipated that the existing transit service in the Project area would be able to accommodate the Project-generated transit trips. Therefore, given the number of transit trips generated by the Project and the existing transit routes in the Project vicinity, the existing public transit system would not be substantially impacted by the Project. Thus, impacts to the existing public transit system would be less than significant.

(d) Access and Circulation

As part of the Project, access to the Project Site would be provided via two driveways located along PCH (referred to as Driveway No. 1 and No. 2), three driveways along Marina Drive (referred to as Driveway No. 3, No. 4, and No. 5), and one driveway along 2nd Street (referred to as Driveway No. 6). The following describes the access assumptions for each driveway:

<u>Pacific Coast Highway</u>

- Driveway No. 1: Left-turn in/right-turn in and right-turn out driveway.
- Driveway No. 2: Full access signalized intersection, to be located opposite an existing driveway that now serves the Long Beach Marketplace.

<u>Marina Drive</u>

- Driveway No. 3: Right-turn in and right-turn out driveway.
- Driveway No. 4: Right-turn in and right-turn out driveway.
- Driveway No. 5: Right-turn in and right-turn out driveway.

2nd Street

- Driveway No. 6: Right-turn in and right-turn out driveway.

It should be noted that Project Driveways No. 1, No. 3, No. 4, and No. 5 are existing driveways that will remain in their current location as part of the Project. The remaining Project driveways would serve to facilitate site access and circulation. Relative to Driveway No. 1, eastbound (outbound) left-turn movements from this driveway to northbound Pacific Coast Highway are currently allowed, but will be prohibited as a part of the Project in order to improve safety along PCH. In addition, improvements are proposed at the PCH and Driveway No. 2/Long Beach Marketplace intersection in order to improve access to the site, subject to the review and approval of the City of Long Beach and Caltrans.

As it relates to internal circulation, the two driveways on PCH would provide access to the two-way drive aisle ("Main Street") within the site interior, connecting to parking structures at the northern and southern ends of the Project Site. Of the three driveways along Marina Drive, the southern driveway would provide direct access to the southern parking structure, the northern driveway would provide direct access to the northern parking structure, and the middle driveway would provide access to the northern parking structure as well as the interior Main Street. In addition, a driveway along 2nd Street would provide right-in/right-out access to the northern parking structure.

Prior to Project approval, the Project's access and circulation design would be reviewed by the City during the building permit process to ensure the Project includes adequate drive aisle widths, driveway widths, and parking stall widths. Therefore, as the proposed access generally would be similar to existing conditions, and as the Project's access points and circulation corridors would comply with standard City requirements, it is not anticipated that the Project's proposed access points and internal circulation would impede traffic flows on adjacent streets or result in potential safety impacts. As such, Project impacts with regard to access and circulation would be less than significant.

For informational purposes only, an assessment of the proposed access driveway design was also conducted. This assessment determined the overall delay, in seconds, of a vehicle exiting the Project Site onto the surrounding street system from the proposed access driveways. The average delay is used to determine the intersection LOS according to the LOS definitions provided in Table IV.K-2 on page IV.K-11. Table IV.K-12 on page IV.K-49 summarizes the Future Plus Project peak-hour level of service results for the six Project driveways. As shown therein, all Project driveways will operate at LOS D or better. As such, Project access would be adequate. Motorists entering and exiting the Project Site would be able to do so comfortably, safely, and without undue congestion.

Table IV.K-12
Future Plus Project Driveway Analysis—Peak-Hour Level of Service Summary

Driveway	Time Period	Intersection Control	Future Plus Project	
			ICU/Delay	LOS
A. Pacific Coast Highway at Project Driveway No. 1	A.M. P.M.	One-Way Stop	**22.3 s/v** **30.1 s/v**	**C** **D**
B. Pacific Coast Highway at Project Driveway No. 2	A.M. P.M.	Signal	0.704/40.8 s/v 0.736/53.6 s/v	C/D C/D
C. Marina Drive at Project Driveway No. 3	A.M. P.M.	One-Way Stop	9.4 s/v 10.3 s/v	A B
D. Marina Drive at Project Driveway No. 4	A.M. P.M.	One-Way Stop	9.4 s/v 10.6 s/v	A B
E. Marina Drive at Project Driveway No. 5	A.M. P.M.	One-Way Stop	10.2 s/v 11.6 s/v	B B
F. 2nd Street at Project Driveway No. 6	A.M. P.M.	One-Way Stop	25.8 s/v 33.9 s/v	D D

Bold ICU/LOS *or* ***Delay/LOS*** *values indicate adverse service levels based on City of Long Beach or City of Seal Beach LOS standards.*

s/v = seconds per vehicle

Source: Linscott, Law & Greenspan, Engineers, 2017.

(e) Queuing Analysis

In response to City staff concerns, stacking/storage requirements at the Project driveways were evaluated. The queuing evaluation was conducted based on projected Future Plus Project peak-hour traffic volumes using the HCM signalized and unsignalized methodology.

The results of the queuing analysis are shown in Table 11-2 of the Traffic Study included as Appendix R of this Draft EIR. As indicated therein, adequate storage would be provided at the six project driveways except for the southbound left-turn lane (into Long Beach Marketplace on the east side of PCH) and the dual eastbound left-turn lanes at PCH/Driveway No. 2. As proposed, the southbound left-turn lane at PCH/Driveway No. 2 would provide 130-feet of storage with a 90-foot transition. Based on the 95th percentile queuing results shown in Table 11-2, it is recommended that this turn pocket be lengthened by 50 feet to provide 180 feet of storage. Review of the current site plan indicates this can be accommodated by shortening the proposed 150-foot northbound left-turn lane at PCH/Driveway No. 1 by 50 feet, resulting in a 100-foot northbound left-turn lane at Driveway No. 1. The queuing analysis indicates a 100-foot northbound left-turn lane at Driveway No. 1 would be more than adequate to accommodate the projected 95th percentile queue at that location.

Although the 189-foot eastbound queue would exceed the proposed 150-foot dual eastbound left-turn lanes at PCH/Driveway No. 2, it is noted that additional storage capacity is available on-site within the drive aisles. Therefore, adequate storage would be provided for the dual eastbound left-turn lanes at PCH/Driveway No. 2.

(f) Bicycle, Pedestrian, and Vehicular Safety

As described above, access to the Project Site would be provided via driveways along PCH and Marina Drive. The Project access locations would be required to conform to City standards and would be designed to provide adequate sight distance, sidewalks, and pedestrian movement controls that meet the City's requirements to protect pedestrian safety. In addition, the proposed driveways would be designed to limit potential impediments to visibility. The Project would include separate pedestrian entrances and would provide access from adjacent streets, parking facilities, and transit stops to facilitate pedestrian movement. Further, the Project would maintain existing sidewalks and provide a direct and safe path of travel with minimal obstructions to pedestrian movement within and adjacent to the Project Site. As the Project would maintain the existing adjacent sidewalks and bike lanes that are part of the local circulation system, the Project would not disrupt pedestrian or bicycle flow along PCH, Marina Drive, or 2nd Street. Furthermore, visitors, patrons, and employees arriving by bicycle would have the same access opportunities as pedestrian visitors, and bike parking would be provided on-site as part of the Project's sustainability features. Therefore, the Project would not substantially increase hazards to bicyclists, pedestrians, or vehicles, or impact existing pedestrian and bicycle facilities. Impacts related to bicycle and pedestrian safety and facilities would be less than significant.

Separate from the 2nd & PCH Project, the City is undertaking the Marina Drive "Complete Street" Improvement Project (Marina Drive Project), which involves multimodal improvements along Marina Drive between 2nd Street and Studebaker Road in an effort to accommodate anticipated growth in the southeastern area of the City. These improvements are planned to include lane restriping to provide two continuous vehicular travel lanes in either direction;[13] a Class II bike lane in either direction, with the northbound bike lane separated from traffic by a three-foot buffer; clearly marked on-street parking in the northbound direction along all but the southernmost segment near Studebaker Road; reconfiguration of the northernmost Alamitos Bay Marina driveway to align with an existing driveway at the 2nd & PCH site and installation of a traffic signal at this intersection; landscaped median enhancements with appropriate turn pockets; new pedestrian crossings, including a mid-block crossing adjacent to the 2nd & PCH frontage; new

[13] *Alternatively, the City is considering a "road diet" along this segment of Marina Drive, thus providing a single lane in either direction.*

sidewalk where there are gaps in the existing sidewalks thereby providing a continuous sidewalk on the east side between 2nd Street and Studebaker Road; new streetscaping; and potentially a new bus stop or shelter should the City's transit and/or shuttle service be expanded to Marina Drive. These improvements proposed by the Department of Public Works are anticipated to be complete in 2018. The Marina Drive Project will receive funding from the 2nd & PCH Project Applicant as a community benefit.

(g) Parking

As previously discussed, LBMC Section 21.41.219 permits a reduced parking ratio for shopping centers greater than 150,000 square feet in size if it can be demonstrated in a shared parking analysis that the proposed parking supply will meet demand. Based on the Parking Analysis included as Appendix S of this Draft EIR, the proposed 1,150 parking spaces included in the Project (providing a ratio of approximately 4.7 per 1,000 gross square feet of floor area) would be adequate to meet Project-generated parking demand. Specifically, the Project's weekday peak parking demand would be 1,131 spaces and weekend peak parking demand would be 1,134 spaces. As the proposed shared parking supply would meet projected demand during both the weekday and weekend peak demand periods, parking impacts would be less than significant.

(3) Caltrans Roadway Analysis

In accordance with the current Caltrans *Guide for the Preparation of Traffic Impact Studies*, existing and projected weekday A.M., P.M., and weekend midday peak-hour operating conditions at the 16 state-controlled study intersections identified in Table IV.K-1 on page IV.K-9 have been evaluated using the Highway Capacity Manual. The HCM methodology calculates the average control delay, in seconds, of a vehicle. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The control delay is used to determine the intersection LOS according to the LOS definitions provided in Table IV.K-3 on page IV.K-12.

(a) Existing Plus Project Conditions

As shown in Table IV.K-13 on page IV.K-52, under existing conditions, all of the state-controlled study intersections currently operate at an acceptable LOS D or better during the A.M. and P.M. peak hours except for Intersection No. 23: Pacific Coast Highway at Marina Drive. Intersection No. 23 currently operates at unacceptable LOS E during the A.M. peak hour.

As also shown in Table IV.K-13, three of the 16 state-controlled study intersections are forecast to operate at an unacceptable service level during the A.M. and/or P.M. peak hours with the addition of Project traffic to existing traffic. Specifically, Intersection No. 17:

Table IV.K-13
Existing Plus Project Peak-Hour Intersection Capacity Analysis

Key Intersections	Time Period	Existing Conditions		Existing Plus Project Traffic Conditions		
		HCM	LOS	HCM	LOS	Significant Impact?
2. Pacific Coast Highway at Clark Avenue	A.M.	22.5 s/v	C	23.1 s/v	C	No
	P.M.	24.2 s/v	C	24.7 s/v	C	No
3. Pacific Coast Highway at Anaheim Street	A.M.	26.1 s/v	C	26.4 s/v	C	No
	P.M.	29.3 s/v	C	34.9 s/v	C	No
6. Pacific Coast Highway at 7th Street	A.M.	35.8 s/v	D	36.1 s/v	D	No
	P.M.	34.9 s/v	C	35.9 s/v	D	No
7. Bellflower Boulevard at 7th Street	A.M.	33.7 s/v	C	33.8 s/v	C	No
	P.M.	30.1 s/v	C	30.1 s/v	C	No
8. Studebaker Road at SR-22 Westbound Ramps	A.M.	12.5 s/v	B	12.7 s/v	B	No
	P.M.	23.3 s/v	C	24.2 s/v	C	No
9. Bellflower Boulevard at Pacific Coast Highway	A.M.	27.6 s/v	C	29.2 s/v	C	No
	P.M.	25.6 s/v	C	30.5 s/v	C	No
10. Studebaker Road at SR-22 Eastbound Ramps	A.M.	13.6 s/v	B	13.8 s/v	B	No
	P.M.	16.8 s/v	B	17.9 s/v	B	No
11. Pacific Coast Highway at Loynes Drive	A.M.	16.8 s/v	B	16.9 s/v	B	No
	P.M.	26.3 s/v	C	27.2 s/v	C	No
17. Pacific Coast Highway at 2nd Street	A.M.	41.7 s/v	D	43.1 s/v	D	No
	P.M.	41.0 s/v	D	**56.9 s/v**	**E**	**Yes**
22. Pacific Coast Highway at Studebaker Road	A.M.	17.2 s/v	B	17.7 s/v	B	No
	P.M.	28.2 s/v	C	31.0 s/v	C	No
23. Pacific Coast Highway at Marina Drive	A.M.	36.5 s/v	E	**39.1 s/v**	**E**	**Yes**
	P.M.	19.9 s/v	C	21.5 s/v	C	No
24. Pacific Coast Highway at Main/ Bolsa Avenue	A.M.	14.3 s/v	B	15.1 s/v	B	No
	P.M.	16.0 s/v	B	17.2 s/v	B	No
25. Seal Beach Boulevard at Pacific Coast Highway	A.M.	53.1 s/v	D	**57.9 s/v**	**E**	**Yes**
	P.M.	41.1 s/v	D	43.4 s/v	D	No
28. Pacific Coast Highway at Channel Drive	A.M.	5.3 s/v	A	5.3 s/v	A	No
	P.M.	7.0 s/v	A	7.0 s/v	A	No
29. Pacific Coast Highway at 1st Street	A.M.	11.7 s/v	B	12.1 s/v	B	No
	P.M.	12.7 s/v	B	13.5 s/v	B	No
30. SR-22 Westbound Ramps/ Studebaker Road at College Park Drive	A.M.	15.2 s/v	C	15.4 s/v	C	No
	P.M.	26.7 s/v	D	27.6 s/v	D	No

Bold ICU/LOS *or* ***Delay/LOS*** *values indicate adverse service levels based on Caltrans LOS standards.*
s/v = seconds per vehicle
Source: Linscott, Law & Greenspan, Engineers, 2017.

Pacific Coast Highway at 2nd Street, Intersection No. 23: Pacific Coast Highway at Marina Drive, and Intersection No. 25: Seal Beach Boulevard at Pacific Coast Highway are forecast to operate at unacceptable LOS E during the A.M. and/or P.M. peak hours. The

remaining state-controlled key study intersections are forecast to continue to operate at an acceptable LOS with the addition of Project-generated traffic to existing traffic. Thus, based on Caltrans' recommended methodology the Project would significantly impact Intersection Nos. 17, 23, and 25 under Existing Plus Project prior to mitigation.

(b) Future Plus Project Conditions

As shown Table IV.K-14 on page IV.K-54, in 2019, all of the state-controlled study intersections are projected to operate at an acceptable LOS D or better during the A.M. and P.M. peak hours except for Intersection No. 23: Pacific Coast Highway at Marina Drive. Intersection No. 23 is projected to operate at unacceptable LOS E during the A.M. peak hour.

Table IV.K-14 indicates that three of the 16 state-controlled study intersections would operate at an unacceptable service level during the A.M., P.M. and/or weekend midday peak hours under Future Plus Project Conditions. Specifically, Intersection No. 17: Pacific Coast Highway at 2nd Street, Intersection No. 23: Pacific Coast Highway at Marina Drive, and Intersection No. 25: Seal Beach Boulevard at Pacific Coast Highway are forecast to operate at unacceptable LOS E during the A.M. and/or P.M. peak hours. The remaining state-controlled key study intersections are forecast to continue to operate at an acceptable LOS with the addition of Project-generated traffic in the year 2019. Thus, based on Caltrans' recommended methodology under the Future Plus Project Conditions, the Project would significantly impact Intersection Nos. 17, 23, and 25 prior to mitigation.

(4) Caltrans Freeway Analysis

As previously discussed, 12 freeway segments were analyzed at Caltrans' request, as evaluated below.

(a) Existing Plus Project Conditions

As shown in Table IV.K-15 on page IV.K-55, under existing conditions, 3 of the 12 freeway segments operate at an unacceptable LOS E during the A.M. and/or P.M. peak hours. As also shown, the same three freeway segments are forecast to operate at an unacceptable LOS during the A.M. and/or P.M. peak hours with the addition of Project traffic to existing traffic. Although the addition of Project trips is not anticipated to result in any new deficient service levels, the Project's contribution to the freeway system would be significant at 2 of the 12 freeway segments under this traffic impact analysis scenario.

Table IV.K-14
Future Plus Project Peak-Hour Intersection Capacity Analysis

Key Intersections	Time Period	Year 2019 Cumulative		Year 2019 Plus Project		
		HCM	LOS	HCM	LOS	Significant Impact?
2. Pacific Coast Highway at Clark Avenue	A.M.	24.3 s/v	C	24.5 s/v	C	No
	P.M.	25.3 s/v	C	26.7 s/v	C	No
3. Pacific Coast Highway at Anaheim Street	A.M.	27.1 s/v	C	27.3 s/v	C	No
	P.M.	30.6 s/v	C	31.9 s/v	C	No
6. Pacific Coast Highway at 7th Street	A.M.	37.8 s/v	D	38.6 s/v	D	No
	P.M.	36.6 s/v	D	37.9 s/v	D	No
7. Bellflower Boulevard at 7th Street[a]	A.M.	35.3 s/v	D	37.4 s/v	D	No
	P.M.	32.2 s/v	C	32.6 s/v	C	No
8. Studebaker Road at SR-22 Westbound Ramps	A.M.	14.1 s/v	B	14.2 s/v	B	No
	P.M.	26.1 s/v	C	27.6 s/v	C	No
9. Bellflower Boulevard at Pacific Coast Highway[a]	A.M.	29.2 s/v	C	29.2 s/v	C	No
	P.M.	30.0 s/v	C	32.5 s/v	C	No
10. Studebaker Road at SR-22 Eastbound Ramps	A.M.	14.0 s/v	B	14.1 s/v	B	No
	P.M.	21.7 s/v	C	23.2 s/v	C	No
11. Pacific Coast Highway at Loynes Drive	A.M.	17.4 s/v	B	17.5 s/v	B	No
	P.M.	27.4 s/v	C	28.4 s/v	C	No
17. Pacific Coast Highway at 2nd Street	A.M.	45.0 s/v	D	47.5 s/v	D	No
	P.M.	44.1 s/v	D	**55.7 s/v**	**E**	**Yes**
22. Pacific Coast Highway at Studebaker Road	A.M.	20.9 s/v	C	21.4 s/v	C	No
	P.M.	33.3 s/v	C	37.5 s/v	D	No
23. Pacific Coast Highway at Marina Drive	A.M.	**38.5 s/v**	**E**	**41.3 s/v**	**E**	**Yes**
	P.M.	23.2 s/v	C	25.5 s/v	D	No
24. Pacific Coast Highway at Main/ Bolsa Avenue	A.M.	15.0 s/v	B	16.1 s/v	B	No
	P.M.	17.0 s/v	B	18.5 s/v	B	No
25. Seal Beach Boulevard at Pacific Coast Highway	A.M.	54.9 s/v	D	**57.0 s/v**	**E**	**Yes**
	P.M.	46.4 s/v	D	50.4 s/v	D	No
28. Pacific Coast Highway at Channel Drive	A.M.	5.3 s/v	A	5.3 s/v	A	No
	P.M.	7.1 s/v	A	7.2 s/v	A	No
29. Pacific Coast Highway at 1st Street	A.M.	13.1 s/v	B	13.5 s/v	B	No
	P.M.	14.0 s/v	B	15.0 s/v	B	No
30. SR-22 Westbound Ramps/ Studebaker Road at College Park Drive	A.M.	15.2 s/v	C	15.4 s/v	C	No
	P.M.	30.7 s/v	D	31.8 s/v	D	No

Bold ICU/LOS *or* ***Delay/LOS*** *values indicate adverse service levels based on Caltrans LOS standards.*
s/v = seconds per vehicle
[a] *The LOS calculations for this intersection include improvements planned by the City of Long Beach as part of the Bellflower Boulevard Bicycle System Gap Closure Project*
Source: Linscott, Law & Greenspan, Engineers, 2017.

Table IV.K-15
Existing Plus Project Peak-Hour Freeway Mainline Capacity Analysis Summary

Basic Freeway Segment	Time Period	Existing Traffic Conditions			Existing Plus Project Traffic Conditions			Significant Impact?
		Peak-Hour Volume (pc/h/ln)	Density (pc/mi/ln)	LOS	Peak-Hour Volume (pc/h/ln)	Density (pc/mi/ln)	LOS	
SR-22 Segments								
1. SR-22 eastbound, east of Studebaker Road	A.M. P.M.	**2,237** **2,097**	**40.6** **36.1**	**E** **E**	**2,243** **2,111**	**40.8** **36.5**	**E** **E**	**Yes** **Yes**
2. SR-22 westbound, east of Studebaker Road	A.M. P.M.	1,697 **2,148**	26.6 **37.6**	D **E**	1,704 **2,165**	26.8 **38.2**	D **E**	No **Yes**
I-605 Segments								
3. I-605 northbound, south of Katella Avenue	A.M. P.M.	1,134 1,352	17.4 20.8	B C	1,135 1,354	17.5 20.8	B C	No No
4. I-605 southbound, south of Katella Avenue	A.M. P.M.	827 947	12.7 14.6	B B	829 950	12.8 14.6	B B	No No
I-405 Segments								
5. I-405 northbound, between Bellflower Boulevard and Woodruff Avenue	A.M. P.M.	1,622 1,427	25.2 22.0	C C	1,622 1,428	25.2 22.0	C C	No No
6. I-405 northbound, between Woodruff Avenue and Palo Verde Avenue	A.M. P.M.	1,591 1,400	24.7 21.5	C C	1,591 1,401	24.7 21.6	C C	No No
7. I-405 northbound, between Palo Verde Avenue and Studebaker Road	A.M. P.M.	1,653 1,455	25.8 22.4	C C	1,653 1,455	25.8 22.4	C C	No No
8. I-405 northbound, south of Studebaker Road	A.M. P.M.	1,939 1,706	31.8 26.8	D D	1,939 1,707	31.8 26.8	D D	No No
9. I-405 southbound, between Bellflower Boulevard and Woodruff Avenue	A.M. P.M.	1,459 1,785	22.5 28.4	C D	1,459 1,785	22.5 28.4	C D	No No
10. I-405 southbound, between Woodruff Avenue and Palo Verde Avenue	A.M. P.M.	1,717 **2,101**	27.0 **36.2**	D **E**	1,718 **2,102**	27.0 **36.2**	D **E**	No No
11. I-405 southbound, between Palo Verde Avenue and Studebaker Road	A.M. P.M.	1,487 1,819	22.9 29.1	C D	1,487 1,820	22.9 29.1	C D	No No
12. I-405 southbound, south of Studebaker Road	A.M. P.M.	1,453 1,778	22.4 28.2	C D	1,454 1,779	22.4 28.3	C D	No No

Table IV.K-15 (Continued)
Existing Plus Project Peak-Hour Freeway Mainline Capacity Analysis Summary

Basic Freeway Segment	Time Period	Existing Traffic Conditions			Existing Plus Project Traffic Conditions			Significant Impact?
		Peak-Hour Volume (pc/h/ln)	Density (pc/mi/ln)	LOS	Peak-Hour Volume (pc/h/ln)	Density (pc/mi/ln)	LOS	

pc/h/ln = Passenger cars per hour per lane (volume)
pc/mi/ln = Passenger cars per mile per lane (density)
***Boldface Volume/Density/LOS values** indicate adverse service levels based on the Caltrans LOS Criteria.*
Source: Linscott, Law & Greenspan, 2017.

(b) Future Plus Project Conditions

As shown in Table IV.K-16 on page IV.K-58, under future (2019) conditions, 3 of the 12 freeway segments are forecast to operate at an unacceptable LOS E during the A.M. and/or P.M. peak hours. As also shown, the same three freeway segments are forecast to operate at an unacceptable LOS during the A.M. and/or P.M. peak hours with the addition of Project traffic. Although the addition of Project trips is not anticipated to result in any new deficient service levels, the Project's contribution to the freeway system would be significant at 2 of the 12 freeway segments under this traffic impact analysis scenario.

(5) Caltrans Ramps Analysis

An analysis of four ramps at the SR-22 interchange at Studebaker Road was also conducted. This analysis is consistent with Caltrans requirements and was prepared using HCM methodology.

(a) Existing Plus Project Conditions

As shown in Table IV.K-17 on page IV.K-60, under existing conditions, two of the four analyzed ramps operate at an unacceptable LOS during the A.M. or P.M. peak hours. As also shown, the same two ramps are forecast to operate at an unacceptable LOS during the A.M. or P.M. peak hours with the addition of Project traffic. Although the addition of Project trips is not anticipated to result in any new deficient service levels, the Project's contribution to the freeway ramp system would be significant at those two freeway ramps under this traffic impact analysis scenario.

(b) Future Plus Project Conditions

As shown in Table IV.K-18 on page IV.K-61, two of the four ramps are forecast to operate at an unacceptable LOS during the A.M. and/or P.M. peak hours under future (2019) conditions. As also shown, the same two ramps are forecast to operate at an unacceptable LOS during the A.M. and/or P.M. peak hours with the addition of Project traffic. Although the addition of Project trips is not anticipated to result in any new deficient service levels, the Project's contribution to the freeway ramp system would be significant at those two freeway ramps under this traffic impact analysis scenario.

Table IV.K-16
Year 2019 Cumulative Plus Project Peak-Hour Freeway Mainline Capacity Analysis Summary

Basic Freeway Segment	Time Period	Existing Traffic Conditions			Year 2019 Cumulative Traffic Conditions			Year 2019 Cumulative Plus Project Traffic Conditions			Signif. Impact?
		Peak-Hour Volume (pc/h/ln)	Density (pc/mi/ln)	LOS	Peak-Hour Volume (pc/h/ln)	Density (pc/mi/ln)	LOS	Peak-Hour Volume (pc/h/ln)	Density (pc/mi/ln)	LOS	
SR-22 Segments											
1. SR-22 eastbound, east of Studebaker Road	A.M.	**2,237**	**40.6**	**E**	**2,323**	**43.9**	**E**	**2,328**	**44.1**	**E**	**Yes**
	P.M.	**2,097**	**36.1**	**E**	**2,194**	**39.1**	**E**	**2,209**	**39.6**	**E**	**Yes**
2. SR-22 westbound, east of Studebaker Road	A.M.	1,697	26.6	D	1,783	28.3	D	1,790	28.5	D	No
	P.M.	**2,148**	**37.6**	**E**	**2,234**	**40.5**	**E**	**2,251**	**41.1**	E	**Yes**
I-605 Segments											
3. I-605 northbound, south of Katella Avenue	A.M.	1,134	17.4	B	1,168	18.0	B	1,169	18.0	B	No
	P.M.	1,352	20.8	C	1,393	21.4	C	1,395	21.5	C	No
4. I-605 southbound, south of Katella Avenue	A.M.	827	12.7	B	852	13.1	B	854	13.1	B	No
	P.M.	947	14.6	B	975	15.0	B	978	15.0	B	No
I-405 Segments											
5. I-405 northbound, between Bellflower Boulevard and Woodruff Avenue	A.M.	1,622	25.2	C	1,672	26.1	D	1,672	26.1	D	No
	P.M.	1,427	22.0	C	1,471	22.7	C	1,472	22.7	C	No
6. I-405 northbound, between Woodruff Avenue and Palo Verde Avenue	A.M.	1,591	24.7	C	1,640	25.6	C	1,640	25.6	C	No
	P.M.	1,400	21.5	C	1,443	22.2	C	1,443	22.2	C	No
7. I-405 northbound, between Palo Verde Avenue and Studebaker Road	A.M.	1,653	25.8	C	1,703	26.7	D	1,703	26.7	D	No
	P.M.	1,455	22.4	C	1,499	23.1	C	1,499	23.1	C	No
8. I-405 northbound, south of Studebaker Road	A.M.	1,939	31.8	D	1,998	33.3	D	1,998	33.3	D	No
	P.M.	1,706	26.8	D	1,758	27.8	D	1,759	27.8	D	No
9. I-405 southbound, between Bellflower Boulevard and Woodruff Avenue	A.M.	1,459	22.5	C	1,503	23.2	C	1,503	23.2	C	No
	P.M.	1,785	28.4	D	1,839	29.5	D	1,840	29.6	D	No
10. I-405 southbound, between Woodruff Avenue and Palo Verde Avenue	A.M.	1,717	27.0	D	1,770	28.1	D	1,770	28.1	D	No
	P.M.	**2,101**	**36.2**	**E**	**2,165**	**38.2**	**E**	**2,166**	**38.2**	**E**	No

Table IV.K-16 (Continued)
Year 2019 Cumulative Plus Project Peak-Hour Freeway Mainline Capacity Analysis Summary

Basic Freeway Segment	Time Period	Existing Traffic Conditions			Year 2019 Cumulative Traffic Conditions			Year 2019 Cumulative Plus Project Traffic Conditions			Signif. Impact?
		Peak-Hour Volume (pc/h/ln)	Density (pc/mi/ln)	LOS	Peak-Hour Volume (pc/h/ln)	Density (pc/mi/ln)	LOS	Peak-Hour Volume (pc/h/ln)	Density (pc/mi/ln)	LOS	
11. I-405 southbound, between Palo Verde Avenue and Studebaker Road	A.M.	1,487	22.9	C	1,532	23.7	C	1,532	23.7	C	No
	P.M.	1,819	29.1	D	1,875	30.3	D	1,875	30.3	D	No
12. I-405 southbound, south of Studebaker Road	A.M.	1,453	22.4	C	1,497	23.1	C	1,498	23.1	C	No
	P.M.	1,778	28.2	D	1,832	29.4	D	1,833	29.4	D	No

pc/h/ln = Passenger cars per hour per lane (volume)

pc/mi/ln = Passenger cars per mile per lane (density)

***Boldface Volume/Density/LOS values** indicate adverse service levels based on the Caltrans LOS Criteria.*

Source: Linscott, Law & Greenspan, 2017.

Table IV.K-17
Existing Plus Project Peak-Hour Ramp Analysis Summary

Freeway Merge or Diverge Segment	Analysis Type	Time Period	Existing Traffic Conditions				Existing Plus Project Traffic Conditions				Significant Impact?
			Freeway Peak-Hour Volume	Ramp Peak-Hour Volume	Density (pc/mi/ln)	LOS	Freeway Peak-Hour Volume	Ramp Peak-Hour Volume	Density (pc/mi/ln)	LOS	
1. SR-22 eastbound Off-Ramp to Studebaker Road	Divergent Analysis	A.M.	3,222	74	32.9	D	3,222	74	32.9	D	No
		P.M.	2,854	90	29.5	D	2,854	90	29.5	D	No
2. SR-22 eastbound On-Ramp from Studebaker Road	Merge Analysis	A.M.	**3,148**	**1,061**	**35.8**	**E**	**3,148**	**1,071**	**35.9**	**E**	**Yes**
		P.M.	2,764	1,180	33.6	D	2,764	1,207	33.8	D	No
3. SR-22 westbound Off-Ramp to Studebaker Road	Divergent Analysis	A.M.	3,193	764	30.3	D	3,206	777	30.4	D	No
		P.M.	**4,041**	**1,481**	**38.0**	**E**	**4,073**	**1,513**	**38.3**	**E**	**Yes**
4. SR-22 westbound On-Ramp from Studebaker Road	Merge Analysis	A.M.	2,429	83	9.2	A	2,429	83	9.2	A	No
		P.M.	2,560	37	9.5	A	2,560	37	9.5	A	No

pc/mi/ln = Passenger cars per mile per lane (density)

***Boldface Volume/Density/LOS values** indicate adverse service levels based on the Caltrans LOS Criteria.*

Source: Linscott, Law & Greenspan, 2017.

Table IV.K-18
Year 2019 Cumulative Plus Project Peak-Hour Ramp Analysis Summary

Freeway Merge or Diverge Segment	Analysis Type	Time Period	Year 2019 Cumulative Traffic Conditions				Year 2019 Cumulative Plus Project Traffic Conditions				Significant Impact?
			Freeway Peak-Hour Volume	Ramp Peak-Hour Volume	Density (pc/mi/ln)	LOS	Freeway Peak-Hour Volume	Ramp Peak-Hour Volume	Density (pc/mi/ln)	LOS	
1. SR-22 eastbound Off-Ramp to Studebaker Road	Divergent Analysis	A.M.	3,323	80	33.8	D	3,323	80	33.8	D	No
		P.M.	2,941	94	30.3	D	2,941	94	30.3	D	No
2. SR-22 eastbound On-Ramp from Studebaker Road	Merge Analysis	A.M.	**3,243**	**1,127**	**37.1**	**E**	**3,243**	**1,137**	**37.2**	**E**	**Yes**
		P.M.	**2,847**	**1,281**	**35.1**	**E**	**2,847**	**1,308**	**35.3**	**E**	**Yes**
3. SR-22 westbound Off-Ramp to Studebaker Road	Divergent Analysis	A.M.	3,354	851	31.8	D	3,367	864	31.9	D	No
		P.M.	**4,202**	**1,561**	**39.5**	**E**	**4,234**	**1,593**	**39.8**	**E**	**Yes**
4. SR-22 westbound On-Ramp from Studebaker Road	Merge Analysis	A.M.	2,503	85	9.6	A	2,503	85	9.6	A	No
		P.M.	2,641	38	9.9	A	2,641	38	9.9	A	No

pc/mi/ln = Passenger cars per mile per lane (density)

***Boldface Volume/Density/LOS values** indicate adverse service levels based on the Caltrans LOS Criteria.*

Source: Linscott, Law & Greenspan, 2017.

4. Cumulative Impacts

a. Construction Impacts

As previously discussed, the construction of six related projects is anticipated in the Project area. These six related projects are dispersed throughout the Project area and would draw upon a workforce from all parts of the Los Angeles County and Orange County region. Many, and likely most, of the construction workers are anticipated to arrive and depart the individual construction sites during off-peak hours (i.e., arrival prior to 7:00 A.M. and departure between 3:00 and 4:00 P.M.), thereby avoiding construction-related trips during the A.M. and P.M. peak traffic periods. In addition, it is anticipated that the haul truck routes for the related projects would be approved by the City according to the location of the individual construction sites and the ultimate destination(s) in a manner that reduces impacts to the local and regional roadway systems as much as possible. The City's established review process takes into consideration overlapping construction projects and would balance haul routes to minimize the impacts of cumulative hauling on any particular roadway. Nevertheless, the potential exists for the construction-related activities and/or haul routes of the Project and the related projects to overlap, particularly with respect to related projects west, south, and southeast of the Project Site that travel north along Pacific Coast Highway or 2nd Street to access the SR-22 Freeway. In particular, there is a potential for these related projects and the Project to use the same haul routes at the same time. As analyzed above, the Project would result in temporary intersection impacts during construction. As such, the Project's contribution traffic impacts during construction would be cumulatively considerable, and construction-related cumulative traffic impacts would be significant.

b. Operational Impacts

The traffic models used in the above analysis incorporated forecasted traffic increases due to ambient growth as well as the related projects through the year 2019. Furthermore, the CMP analysis presented above evaluates traffic impacts on a larger, regional scale. Therefore, cumulative impacts on intersections, including Caltrans facilities, and the regional transportation system as a result of the Project are accounted for in the analysis above. The following is a summary of the Future Plus Project—or cumulative—impacts.

(1) Intersection Levels of Service

As detailed above, under cumulative conditions (Future Plus Project Conditions), the Project would result in significant impacts to 11 of the 31 study intersections. Therefore, the Project's contribution to cumulative impacts would be considerable, and cumulative

impacts would be significant at the intersections significantly impacted by the Project (Intersection Nos. 8, 12, 14, 17, 19, 20, 22, 23, 24, 25, and 29).

(2) Regional Transportation System

(a) CMP Arterial Monitoring Station Analysis

As described above, the Project would add 50 or more trips at the identified CMP intersections during the weekday A.M. peak hour and P.M. peak hour. Specifically, the Project would add approximately 209 trips during the A.M. peak hour and 504 trips during the P.M. peak hour at CMP Station No. 39 (Intersection No. 17: Pacific Coast Highway at 2nd Street). The Project would increase demand at this key intersection by more than two percent (0.02) during both the A.M. and P.M. peak hour (0.034 and 0.102, respectively). Thus, the Project would result in a significant impact at this location prior to mitigation.

At CMP Station No. 36 (Intersection No. 6: Pacific Coast Highway at 7th Street), the Project would add approximately 67 trips during the A.M. peak hour and 131 trips during the P.M. peak hour. The Project would not increase demand at this intersection by two percent or more during the A.M. and P.M. peak hours. As such, the Project would not result in significant CMP impacts at this intersection. Therefore, the Project would not contribute to a significant cumulative impact at this location.

(b) CMP Freeway Segment Analysis

As analyzed above, the Project would not add 150 or more trips (in either direction) during the A.M. or P.M. weekday peak periods at the nearest mainline freeway monitoring location (CMP Station No. 1065: I-405 Freeway, north of SR-22). Therefore, the Project would not contribute to a significant cumulative impact at this location.

(c) Public Transit

As with the Project, the related projects would generate an overall increase in transit riders. However, this effect is a considered a positive impact and is consistent with City land use and transportation policies to reduce traffic. Given the availability of public transit in the Project area, the anticipated increased transit ridership associated with the Project and related projects is not expected to exceed the capacity of transit systems. Thus, Project impacts with regard to transit would not be cumulatively considerable, and cumulative impacts would be less than significant.

(3) Access and Circulation

Due to the distance of the related projects from the Project Site, it is not anticipated that the Project, when combined with the related projects, would create a significant cumulative impact to access and circulation. In addition, as with the Project, the related projects would be subject to review by the City for compliance with standard City requirements regarding adequate access and circulation. Therefore, the Project's cumulative impacts would not be cumulatively considerable, and impacts to access and circulation would be less than significant.

(4) Bicycle, Pedestrian, and Vehicular Safety

As analyzed above, Project impacts related to bicycle, pedestrian, and vehicular safety would be less than significant. In addition, as with the Project, it is anticipated that future related projects would be subject to City review to ensure that such projects are designed with adequate access and circulation, including standards for sight distance, sidewalks, crosswalks, and pedestrian movement controls. Thus, Project impacts with regard to bicycle, pedestrian, and vehicular safety would not be cumulatively considerable, and cumulative impacts would be less than significant.

(5) Parking

With regard to parking, the parking demand associated with the Project would not contribute to a cumulative demand for parking in the vicinity of the Project Site as a result of development of the Project and related projects. As with the Project, related projects have been or would be subject to City review to ensure that adequate parking be provided for each of the related projects. Therefore, Project impacts with regard to parking would not be cumulatively considerable, and cumulative impacts would be less than significant.

c. Caltrans Roadway Analysis

As detailed above, under cumulative conditions (Future Plus Project Conditions), the Project would result in significant impacts to 3 of the 16 Caltrans study intersections. Therefore, the Project's contribution to cumulative impacts would be considerable, and cumulative impacts would be significant at those intersections (Intersection Nos. 17, 23, and 25).

d. Caltrans Freeway Analysis

As detailed above, under cumulative conditions (Future Plus Project Conditions), the Project would result in significant impacts to 2 of the 12 evaluated freeway segments.

Therefore, the Project's contribution to cumulative impacts would be considerable, and cumulative impacts would be significant at those segments (Freeway Segment Nos. 1 and 2).

e. Caltrans Ramps Analysis

As detailed above, under cumulative conditions (Future Plus Project Conditions), the Project would result in significant impacts to two of the four ramps studied. Therefore, the Project's contribution to cumulative impacts would be considerable, and cumulative impacts would be significant at those ramps (Ramp Nos. 2 and 3).

5. Mitigation Measures

a. Construction

Mitigation Measure K-1: Prior to the start of construction, the Project Applicant shall provide for the preparation of a detailed Construction Management Plan, including haul routes and a staging plan, and submit it to the City of Long Beach Department of Public Works, Traffic and Transportation Bureau for review and approval. The Construction Management Plan would formalize how construction would be carried out and identify specific actions that would be required to reduce effects on the surrounding community. The Construction Management Plan shall be based on the nature and timing of the specific construction activities and shall include, but not be limited to, the following elements, as appropriate:

- Traffic control for any street closure, detour, or other disruption to traffic circulation.
- Identify the routes that construction vehicles would utilize for the delivery of construction materials (i.e. lumber, tiles, piping, windows, etc.), to access the Project Site, traffic controls and detours, and proposed construction phasing plan for the Project.
- Specify the hours during which transport activities can occur and methods to mitigate construction-related impacts to adjacent streets.
- Require the Applicant to keep all haul routes clean and free of debris including but not limited to gravel and dirt as a result of its operations. The Applicant shall clean adjacent streets, as directed by the City Engineer (or representative of the City Engineer), of any material which may have been spilled, tracked, or blown onto adjacent streets or areas.

- Hauling or transport of oversize loads shall be allowed between the hours of 9:00 A.M. and 3:00 P.M. only, Monday through Friday, unless approved otherwise by the City Engineer. No hauling or transport shall be allowed during nighttime hours, weekends or Federal holidays.
- Haul trucks entering or exiting public streets shall at all times yield to public traffic.
- Construction-related parking and staging of vehicles shall occur on-site to the extent possible, but may occur on nearby public parking lots, as approved by the City Engineer.
- The Construction Management Plan shall meet standards established in the current *California Manual on Uniform Traffic Control Device (MUTCD)* as well as City of Long Beach requirements.

b. Operation

The mitigation program for the Project includes the following physical improvements to the intersections impacted by the Project:

Mitigation Measure K-2: Intersection No. 8: Studebaker Road at SR-22 Westbound Ramps—Widen and restripe the westbound approach to provide a third westbound left-turn lane. Widen and restripe the southbound approach of Studebaker Road to provide a third southbound through lane. These improvements would require right-of-way acquisition at the on/off ramp and along the west side of Studebaker Road. Modify the existing traffic signal as necessary. The installation of these improvements is subject to the approval of the City of Long Beach and Caltrans.

Mitigation Measure K-3: Intersection No. 12: Studebaker Road at Loynes Drive—Widen and restripe the northbound approach of Studebaker Road to provide a third northbound through lane. This improvement would require right-of-way acquisition from property owners along the east side of Studebaker Road. Modify the existing traffic signal as necessary. The installation of these improvements is subject to the approval of the City of Long Beach.

Mitigation Measure K-4: Intersection No. 14: Bay Shore Avenue at 2nd Street—Widen and restripe the northbound approach of Bay Shore Avenue to provide an exclusive northbound right-turn lane. This improvement would require right-of-way acquisition at the southeast corner of the intersection and may affect the existing sidewalk and/or existing public restroom building. This improvement would also

require the elimination of short-term parking on Bay Shore Avenue adjacent to the Bay Shore Neighborhood Library. Modify the existing traffic signal as necessary. The installation of these improvements is subject to the approval of the City of Long Beach.

Mitigation Measure K-5: Intersection No. 17: Pacific Coast Highway at 2nd Street—Widen and restripe the northbound approach of Pacific Coast Highway to provide an exclusive northbound right-turn lane. This improvement would require right-of-way acquisition from property owners on the southeast corner of the intersection and may affect the existing Mobil gas canopy. Widen and restripe the eastbound approach of 2nd Street to provide a fourth eastbound through lane. This improvement would require right-of-way acquisition from property owners on the southwest corner and the southeast corner of the intersection and may affect the existing Mobil gas canopy. Widen and restripe the westbound approach of 2nd Street to provide a third westbound left-turn lane. This improvement would require right-of-way acquisition from property owners on the northeast corner of the intersection and may affect the existing In-N-Out burger drive-through lane. Modify the existing traffic signal as necessary and install an eastbound right-turn overlap phase. The installation of these improvements is subject to the approval of the City of Long Beach and Caltrans.

Mitigation Measure K-6: Intersection No. 19: Studebaker Road at 2nd Street—Widen and restripe the eastbound approach of 2nd Street to provide a third eastbound left-turn lane. Widen and restripe Studebaker Road to provide a third northbound receiving lane. These improvements would require right-of-way acquisition along the south side of 2nd Street and on the east side of Studebaker Road within the existing wetlands. Modify the existing traffic signal as necessary. The installation of these improvements is subject to the approval of the City of Long Beach.

Mitigation Measure K-7: Intersection No. 20: Seal Beach Boulevard at Westminster Avenue—Widen and restripe the northbound approach of Seal Beach Boulevard to provide an exclusive northbound right-turn lane. This improvement would require right-of-way acquisition from property owners on the southeast corner of the intersection. Modify the existing traffic signal as necessary. The installation of these improvements is subject to the approval of the City of Seal Beach.

Mitigation Measure K-8: Intersection No. 22: Pacific Coast Highway at Studebaker Road—Convert the exclusive southbound right-turn lane on Pacific Coast Highway to a shared through/right-turn lane. Widen and restripe Pacific Coast Highway to provide a third southbound receiving lane. The third southbound receiving lane would require right-of-way acquisition from property owners on the southwest

corner of the intersection in order to maintain the existing bike lane. Modify the existing traffic signal as necessary. The installation of these improvements is subject to the approval of the City of Long Beach and Caltrans.

Mitigation Measure K-9: Intersection No. 23: Pacific Coast Highway at Marina Drive—Install a three-phase traffic signal with protected left-turn phasing in the northbound direction. The installation of these improvements is subject to the approval of the City of Seal Beach and Caltrans. It should be noted that these improvements cannot be guaranteed by the proposed Project or the City of Long Beach as the improvements would require approval from the City of Seal Beach and/or Caltrans.

Mitigation Measure K-10: Intersection No. 24: Pacific Coast Highway at Main Street/Bolsa Avenue—Widen and restripe the northbound approach of Pacific Coast Highway to provide a third northbound through lane. This improvement would require right-of-way acquisition from property owners on the northeast corner and the southeast corner of the intersection. This improvement may also affect the existing building located on the northeast corner of the intersection and the existing parking spaces within Seal Beach Center located on the southeast corner of the intersection. Modify the existing traffic signal as necessary. The installation of these improvements is subject to the approval of the City of Seal Beach and Caltrans.

Mitigation Measure K-11: Intersection No. 25: Seal Beach Boulevard at Pacific Coast Highway—Widen and restripe the northbound approach of Seal Beach Boulevard to provide an exclusive northbound right-turn lane. This improvement would require right-of-way acquisition from property owners on the southeast corner of the intersection. Modify the existing traffic signal as necessary. The installation of these improvements is subject to the approval of the City of Seal Beach and Caltrans.

Mitigation Measure K-12: Intersection No. 29: Pacific Coast Highway at 1st Street—Widen and restripe the southbound approach of Pacific Coast Highway to provide an exclusive southbound right-turn lane. This improvement would require right-of-way acquisition from property owners on the northwest corner of the intersection. Modify the existing traffic signal as necessary. The installation of these improvements is subject to the approval of the City of Seal Beach and Caltrans.

The physical improvements included in these mitigation measures are subject to the approval of the City of Long Beach, City of Seal Beach, and/or Caltrans, and/or require right-of-way acquisition, as noted above. It is noted that if the applicable jurisdiction(s)

determine(s) that the proposed physical improvements are infeasible, impacts at those intersections would be significant and unavoidable.

6. Level of Significance After Mitigation

a. Construction

As shown above in Table IV.K-9 on page IV.K-35, Project construction would result in temporary or short-term construction-related impacts to six study intersections, including Intersection Nos. 10, 17, 18, 19, 23, and 30. The Project would implement Mitigation Measure K-1, which would ensure that adequate and safe access remains available within and surrounding the Project Site and would minimize potential conflicts between construction activity and pedestrian and vehicular traffic in the vicinity of the Project Site. Nevertheless, impacts would remain significant and unavoidable.

b. Operation

(1) Intersection Levels of Service

(a) Existing Plus Project Conditions

Intersection operating conditions with implementation of mitigation during the weekday A.M. and P.M. peak periods and during the weekend midday peak period for intersections impacted by the Project under Existing Plus Project Conditions are summarized in Table IV.K-19 on page IV.K-70. As shown therein, implementation of the mitigation measures listed above would reduce Project impacts at all study intersections impacted under Existing Plus Project Conditions to below a level of significance. However, as noted above, implementation of these mitigation measures would require the approval of the City of Long Beach, the City of Seal Beach, and/or Caltrans, as well as the acquisition of right-of-way, which cannot be guaranteed. As such, traffic impacts under Existing Plus Project Conditions would be significant and unavoidable.

(b) Future Plus Project Conditions

Table IV.K-20 on page IV.K-71 summarizes the Future Plus Project Conditions with the incorporation of mitigation measures during the weekday A.M. and P.M. peak periods and during the weekend midday peak period for the impacted study intersections. As shown therein, implementation of the mitigation measures listed above would reduce Project impacts at all study intersections impacted under Future Plus Project Conditions to below a level of significance. However, as noted above, implementation of these mitigation measures would require the approval of the City of Long Beach, the City of Seal Beach, and/or Caltrans, as well as the acquisition of right-of-way, which cannot be

Table IV.K-19
Existing Plus Project Peak-Hour Intersection Capacity Analysis (with Mitigation)

Key Intersections	Time Period	Existing Conditions		Existing Plus Project[a]				Existing Plus Project with Improvements			
		ICU/ HCM	LOS	ICU/ HCM	LOS	Change in ICU/HCM	Sig. Impact?	ICU/ HCM	LOS	Change in ICU/HCM	Sig. Impact?
8. Studebaker Road at SR-22 Westbound Ramps	A.M.	0.639	B	0.650	B	0.011	No	0.542	A	-0.097	No
	P.M.	**0.908**	**E**	**0.930**	**E**	**0.022**	**Yes**	0.798	C	-0.110	No[b]
14. Bay Shore Avenue at 2nd Street	A.M.	0.847	D	0.863	D	0.016	No	0.846	D	-0.001	No
	P.M.	**1.009**	**F**	**1.035**	**F**	**0.026**	**Yes**	**1.013**	**F**	0.004	No[b]
	Sat. Midday	**0.983**	**E**	**1.029**	**F**	**0.046**	**Yes**	**0.987**	**E**	0.004	No[b]
17. Pacific Coast Highway at 2nd Street	A.M.	**0.933**	**E**	**0.968**	**E**	**0.035**	**Yes**	0.803	D	-0.130	No[b]
	P.M.	0.876	D	**0.977**	**E**	**0.101**	**Yes**	0.897	D	0.021	No[b]
	Sat. Midday	0.887	D	**1.054**	**F**	**0.167**	**Yes**	0.889	D	0.002	No[b]
19. Studebaker Road at 2nd Street	A.M.	0.857	D	0.870	D	0.013	No	0.759	C	-0.098	No
	P.M.	**0.947**	**E**	**0.968**	**E**	0.021	**Yes**	0.830	D	-0.117	No[b]
	Sat. Midday	0.804	D	0.862	D	0.058	No	—	—	—	No
20. Seal Beach Boulevard at Westminster Avenue	A.M.	**0.936**	**E**	**0.945**	**E**	0.009	No	**0.904**	**E**	-0.032	No
	P.M.	**0.929**	**E**	**0.946**	**E**	**0.017**	**Yes**	0.892	D	-0.037	No[b]
22. Pacific Coast Highway at Studebaker Road	A.M.	0.797	C	0.813	D	0.016	No	—	—	—	No
	P.M.	0.840	D	0.872	D	0.032	No	—	—	—	No
	Sat. Midday	0.845	D	**0.927**	**E**	**0.082**	**Yes**	0.787	C	-0.058	No[b]
23. Pacific Coast Highway at Marina Drive	A.M.	**36.5 s/v**	**E**	**39.1 s/v**	**E**	**2.6 s/v**	**Yes**	0.836	D	—	No[b]
	P.M.	19.9 s/v	C	21.5 s/v	C	1.6 s/v	No	0.800	D	—	No
24. Pacific Coast Highway at Main/Bolsa Avenue	A.M.	0.730	C	0.753	C	0.023	No	0.709	C	-0.021	No
	P.M.	0.702	C	0.743	C	**0.041**	**Yes**	0.672	B	-0.030	No[b]
25. Seal Beach Boulevard at Pacific Coast Highway	A.M.	0.885	D	0.894	D	0.009	No	0.862	D	-0.023	No
	P.M.	0.811	D	0.831	D	**0.020**	**Yes**	0.807	D	-0.004	No[b]

Bold ICU/LOS *or* ***Delay/LOS*** *values indicate adverse service levels based on City of Long Beach or City of Seal Beach LOS standards.*

N.F. = None Feasible. Intersection improvements at this intersection are not feasible due to physical and right-of-way constraints.

[a] *Includes the removal of the existing SeaPort Marina Hotel and construction of the Project.*

[b] *However, as implementation of the applicable mitigation measure(s) would require the approval of the City of Long Beach, the City of Seal Beach, and/or Caltrans, as well as the acquisition of right-of-way, which cannot be guaranteed, this impact is assumed to be significant and unavoidable.*

Source: Linscott, Law, & Greenspan, Engineers, 2017.

Table IV.K-20
Future Plus Project Peak-Hour Intersection Capacity Analysis (with Mitigation)

Key Intersections	Time Period	Year 2019 Cumulative Traffic Conditions		Year 2019 Plus Project[a]				Year 2019 Plus Project with Improvements			
		ICU/HCM	LOS	ICU/HCM	LOS	Change in ICU/HCM	Sig. Impact?	ICU/HCM	LOS	Change in ICU/HCM	Sig. Impact?
8. Studebaker Road at SR-22 Westbound Ramps	A.M.	0.681	B	0.692	B	0.011	No	0.572	A	-0.109	No
	P.M.	0.950	E	**0.971**	**E**	0.021	**Yes**	0.832	D	-0.118	No[b]
12. Studebaker Road at Loynes Drive[c]	A.M.	0.781	C	0.789	C	0.008	No	0.713	C	-0.068	No
	P.M.	0.880	D	**0.907**	**E**	0.027	**Yes**	0.891	D	0.011	No[b]
14. Bay Shore Avenue at 2nd Street	A.M.	0.878	D	0.894	D	0.016	No	0.877	D	-0.001	No
	P.M.	**1.043**	**F**	**1.069**	**F**	0.026	**Yes**	**1.046**	**F**	0.003	No[b]
	Sat. Midday	**1.021**	**F**	**1.067**	**F**	0.046	**Yes**	**1.024**	**F**	0.003	No[b]
17. Pacific Coast Highway at 2nd Street	A.M.	**0.977**	**E**	**1.011**	**F**	**0.034**	**Yes**	0.822	D	-0.155	No[b]
	P.M.	**0.916**	**E**	**1.018**	**F**	**0.102**	**Yes**	**0.931**	**E**	0.015	No[b]
	Sat. Midday	**0.930**	**E**	**1.097**	**F**	**0.167**	**Yes**	**0.925**	**E**	-0.005	No[b]
19. Studebaker Road at 2nd Street	A.M.	0.892	D	**0.905**	**E**	**0.013**	**Yes**	0.787	C	-0.105	No[b]
	P.M.	**0.980**	**E**	**1.001**	**F**	**0.021**	**Yes**	0.856	D	-0.124	No[b]
	Sat. Midday	0.837	D	0.895	D	0.058	No	—	—	—	No
20. Seal Beach Boulevard at Westminster Avenue	A.M.	**0.967**	**E**	**0.975**	**E**	0.008	No	**0.932**	**E**	-0.035	No
	P.M.	**0.958**	**E**	**0.975**	**E**	0.017	**Yes**	**0.918**	**E**	-0.040	No[b]
22. Pacific Coast Highway at Studebaker Road	A.M.	0.840	D	0.856	D	0.016	No	0.773	C	-0.067	No
	P.M.	0.889	D	**0.921**	**E**	0.032	**Yes**	0.792	C	-0.097	No[b]
	Sat. Midday	0.892	D	**0.973**	**E**	0.081	**Yes**	0.825	D	-0.067	No[b]
23. Pacific Coast Highway at Marina Drive	A.M.	**38.5 s/v**	**E**	**41.3 s/v**	**E**	2.8 s/v	**Yes**	0.869	D	—	No[b]
	P.M.	23.2 s/v	C	25.5 s/v	D	2/3 s/v	No	0.834	D	—	No
24. Pacific Coast Highway at Main/Bolsa Avenue	A.M.	0.758	C	0.781	C	0.023	No	0.738	C	-0.020	No
	P.M.	0.729	C	0.770	C	0.041	**Yes**	0.702	C	-0.027	No[b]
25. Seal Beach Boulevard at Pacific Coast Highway	A.M.	**0.914**	**E**	**0.923**	**E**	0.009	No	0.890	D	-0.024	No
	P.M.	0.841	D	0.861	D	**0.020**	**Yes**	0.836	D	-0.005	No[b]
29. Pacific Coast Highway at 1st Street	A.M.	0.732	C	0.749	C	0.017	No	0.744	C	0.012	No
	P.M.	0.800	D	0.833	D	**0.033**	**Yes**	0.759	C	-0.041	No[b]

Bold ICU/LOS *or* ***Delay/LOS*** *values indicate adverse service levels based on City of Long Beach or City of Seal Beach LOS standards.*

N.F. = None Feasible. Intersection improvements at this key intersection are not feasible due to physical and right-of-way constraints.

Table IV.K-20 (Continued)
Future Plus Project Peak-Hour Intersection Capacity Analysis

Key Intersections	Time Period	Year 2019 Cumulative Traffic Conditions		Year 2019 Plus Project[a]				Year 2019 Plus Project with Improvements			
		ICU/HCM	LOS	ICU/HCM	LOS	Change in ICU/HCM	Sig. Impact?	ICU/HCM	LOS	Change in ICU/HCM	Sig. Impact?

[a] *Includes the removal of the existing SeaPort Marina Hotel and construction of the Project.*

[b] *However, as implementation of the applicable mitigation measure(s) would require the approval of the City of Long Beach, the City of Seal Beach, and/or Caltrans, as well as the acquisition of right-of-way, which cannot be guaranteed, this impact is assumed to be significant and unavoidable.*

[c] *The LOS calculations for this intersection include improvements assumed as part of the AES Battery Energy Storage System Project (Related Project No. 1).*

Source: Linscott, Law, & Greenspan, Engineers, 2017.

guaranteed. As such, traffic impacts under Future Plus Project Conditions would be significant and unavoidable.

(2) Regional Transportation System

(a) CMP Arterial Monitoring Station Analysis

As described above, the Project would increase demand at CMP Station No. 39 (Intersection No. 17: Pacific Coast Highway at 2nd Street) by more than two percent (0.02) during both the A.M. and P.M. peak hour (0.034 and 0.102, respectively). Thus, the Project would result in a significant impact without mitigation at this location. Implementation of Mitigation Measure K-5 would reduce Project impacts at Intersection No. 17: Pacific Coast Highway at 2nd Street to a less than significant level. However, as noted above, implementation of this mitigation measure would require the approval of the City of Long Beach and Caltrans, as well as the acquisition of right-of-way, which cannot be guaranteed. As such, Project-level and cumulative impacts to this CMP arterial monitoring station would be significant and unavoidable.

Impacts at CMP Station No. 36 would be less than significant, and no mitigation is required.

(b) CMP Freeway Segment Analysis

As analyzed above, the Project would not add 150 or more trips (in either direction) during the A.M. or P.M. weekday peak periods at the nearest mainline freeway monitoring location (CMP Station No. 1065: I-405 Freeway, north of SR-22). Therefore, Project-level and cumulative impacts to a CMP freeway monitoring location would be less than significant.

(c) Public Transit

Project-level and cumulative impacts with regard to transit would be less than significant, and no mitigation is required.

(3) Access and Circulation

Project-level and cumulative access and circulation impacts would be less than significant, and no mitigation is required.

(4) Bicycle, Pedestrian, and Vehicular Safety

Project-level and cumulative access impacts related to bicycle, pedestrian, and vehicular safety and facilities would be less than significant, and no mitigation is required.

(5) Parking

Project-level and cumulative impacts related to parking would be less than significant, and no mitigation is required.

(6) Caltrans Roadway Analysis

(a) Existing Plus Project Conditions

As shown in Table IV.K-21 on page IV.K-75, implementation of mitigation would reduce Project impacts at all of the significantly impacted state-controlled study intersections under Existing Plus Project Conditions. However, as noted above, implementation of the applicable mitigation measures would require the approval of the City of Long Beach, the City of Seal Beach, and/or Caltrans, as well as the acquisition of right-of-way, which cannot be guaranteed. As such, traffic impacts to Caltrans intersections under Existing Plus Project Conditions would be significant and unavoidable.

(b) Future Plus Project Conditions

As shown in Table IV.K-22 on page IV.K-76, implementation of mitigation would reduce Project impacts at all of the significantly impacted state-controlled study intersections under Future Plus Project Conditions. However, as noted above, implementation of these mitigation measures would require the approval of the City of Long Beach, the City of Seal Beach, and/or Caltrans, as well as the acquisition of right-of-way, which cannot be guaranteed. As such, traffic impacts to Caltrans intersections under Future Plus Project Conditions would be significant and unavoidable.

(7) Caltrans Freeway Analysis

SR-22 is controlled exclusively by the State, and there is no mechanism by which the lead agency (i.e., the City of Long Beach) can construct or guarantee the construction of any improvements to the significantly impacted freeway segments. Therefore, the Project's impacts on Caltrans freeway segments are considered significant and unavoidable, as there are no feasible mitigation measures that would reduce mainline impacts to below significance thresholds or achieve acceptable service level goals.

Table IV.K-21
Existing Plus Project Peak-Hour Intersection Capacity Analysis—Caltrans

Key Intersections	Time Period	Existing Conditions		Existing Plus Project Traffic Conditions			Existing Plus Project with Improvements		
		HCM	LOS	HCM	LOS	Sig. Impact?	HCM	LOS	Sig. Impact?
17. Pacific Coast Highway at 2nd Street	A.M.	41.7 s/v	D	43.1 s/v	D	No	38.7 s/v	D	No
	P.M.	41.0 s/v	D	**56.9 s/v**	**E**	**Yes**	44.8 s/v	D	No[a]
23. Pacific Coast Highway at Marina Drive	A.M.	**36.5 s/v**	**E**	**39.1 s/v**	**E**	**Yes**	16.4 s/v	B	No[a]
	P.M.	19.9 s/v	C	21.5 s/v	C	No	15.6 s/v	B	No
25. Seal Beach Boulevard at Pacific Coast Highway	A.M.	53.1 s/v	D	**57.9 s/v**	**E**	**Yes**	47.2 s/v	D	No[a]
	P.M.	41.1 s/v	D	43.4 s/v	D	No	42.2 s/v	D	No

Bold ICU/LOS *or* ***Delay/LOS*** *values indicate adverse service levels based on City of Long Beach or City of Seal Beach LOS standards.*

s/v = seconds per vehicle

[a] *However, as implementation of the applicable mitigation measure(s) would require the approval of the City of Long Beach, the City of Seal Beach, and/or Caltrans, as well as the acquisition of right-of-way, which cannot be guaranteed, this impact is assumed to be significant and unavoidable.*

Source: Linscott, Law, & Greenspan, Engineers, 2017.

Table IV.K-22
Future Plus Project Peak-Hour Intersection Capacity Analysis—Caltrans

Key Intersections	Time Period	Year 2019 Cumulative		Year 2019 Plus Project		Year 2019 Plus Project with Improvements			
		HCM	LOS	HCM	LOS	Sig. Impact?	HCM	LOS	Sig. Impact?
17. Pacific Coast Highway at 2nd Street	A.M. P.M.	45.0 s/v 44.1 s/v	D D	47.5 s/v **55.7 s/v**	D **E**	No **Yes**	40.0 s/v 48.4 s/v	D D	No No
23. Pacific Coast Highway at Marina Drive	A.M. P.M.	**38.5 s/v** 23.2 s/v	**E** C	**41.3 s/v** 25.5 s/v	**E** D	**Yes** No	19.5 s/v 18.2 s/v	B B	No No
25. Seal Beach Boulevard at Pacific Coast Highway	A.M. P.M.	54.9 s/v 46.4 s/v	D D	**57.0 s/v** 50.4 s/v	**E** D	**Yes** No	51.4 s/v 48.3 s/v	D D	No No

Bold ICU/LOS *or* ***Delay/LOS*** *values indicate adverse service levels based on City of Long Beach or City of Seal Beach LOS standards.*

s/v = seconds per vehicle

Source: Linscott, Law, & Greenspan, Engineers, 2017.

(8) Caltrans Ramps Analysis

As noted above, SR-22 is controlled exclusively by the State, and there is no mechanism by which the lead agency (i.e., the City of Long Beach) can construct or guarantee the construction of any improvements to the significantly impacted freeway ramps. Therefore, the Project's freeway ramp impacts are considered significant and unavoidable, as there are no feasible mitigation measures that will reduce such impacts to below significance thresholds or achieve acceptable service level goals.