Appendix W

Project Alternatives Traffic Analysis

MEMORANDUM

To:	Ms. Ashley Rogers Principal Planner Eyestone Environmental	Date:	April 10, 2017
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Subject:	***2nd + PCH Project Alternatives Traffic Analysis*** ***Long Beach, California***		

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As requested, Linscott, Law & Greenspan, Engineers (LLG) is pleased to submit this alternatives traffic analysis memorandum for the proposed 2nd + PCH Project to be located at 6400 East Pacific Coast Highway in the City of Long Beach, California. This traffic analysis is a supplement to the *2nd + PCH Project Traffic Impact Analysis*, prepared by LLG in April 2017.

Three (3) Project Alternatives have been included in this memorandum and an assessment of the potential traffic impacts of each alternative on the existing street system has been completed. Included in this memorandum for each of the Project Alternatives are the following:

- Estimated project traffic generation,
- Weekday AM peak hour and PM peak hour and weekend day (Saturday) Midday peak hour capacity analyses for existing conditions and existing plus project conditions,
- Weekday AM peak hour and PM peak hour and weekend day (Saturday) Midday peak hour capacity analyses for future (Year 2019) conditions without and with project traffic, and
- Caltrans Evaluation.

Note: For all analysis scenarios identified above, the supplemental traffic assessment for each of the Project Alternatives focuses to only the eleven (11) intersections, two (2) SR-22 freeway segments and two (2) freeway ramp locations that were identified to be significantly impacted by the proposed Project:

Key Intersection

8. Studebaker Road at SR-22 WB Ramps
12. Studebaker Road at Loynes Drive
14. Bay Shore Avenue at 2nd Street
17. Pacific Coast Highway at 2nd Street
19. Studebaker Road at 2nd Street
20. Seal Beach Boulevard at Westminster Avenue
22. Pacific Coast Highway at Studebaker Road

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23. Pacific Coast Highway at Marina Drive
24. Pacific Coast Highway at Main Street/Bolsa Avenue
25. Seal Beach Boulevard Pacific Coast Highway
29. Pacific Coast Highway at 1st Street

Key Freeway Segments

1. SR-22 Eastbound, east of Studebaker Road
2. SR-22 Westbound, east of Studebaker Road

Key Freeway Ramps

2. SR-22 Eastbound On-Ramp from Studebaker Road
3. SR-22 Westbound Off-Ramp to Studebaker Road

Briefly, the table below summarizes the trip generation of the proposed Project and the number of intersections impacted by the proposed Project in comparison to the three (3) Project Alternatives based on a quantitative assessment for existing plus project traffic conditions and future (Year 2019) traffic conditions:

Our method of analysis, findings and recommendations are described in detail in the following sections of this memorandum.

Project Development Alternative	**Project Trip Generation Forecast (trips)**	**Existing Plus Project Traffic Conditions**	**Year 2019 Plus Project Traffic Conditions**	**Existing Plus Project Saturday Traffic Conditions**	**Year 2019 Plus Project Saturday Traffic Conditions**	**Existing Plus Project Traffic Conditions (Caltrans)**	**Year 2019 Plus Project Traffic Conditions (Caltrans)**
Proposed Project	Weekday Daily = 13,666 AM Peak Hour = 412 PM Peak Hour = 792 Saturday Daily = 17,611 Saturday Midday = 1,439	8 of 31	11 of 31	3 of 9	3 of 9	3 of 16	3 of 16
Alternative #1 – No Project/ Reoccupation of Existing Hotel	Weekday Daily = 637 AM Peak Hour = 41 PM Peak Hour = 47 Saturday Daily = 639 Saturday Midday = 57	0 of 31	1 of 31	0 of 9	0 of 9	0 of 16	2 of 16
Alternative #2 – Reduced Density	Weekday Daily = 9,986 AM Peak Hour = 294 PM Peak Hour = 574 Saturday Daily = 13,111 Saturday Midday = 1,056	4 of 31	7 of 31	3 of 9	3 of 9	1 of 16	2 of 16
Alternative #3 – Mixed-Use Commercial and Hotel	Weekday Daily = 8,100 AM Peak Hour = 252 PM Peak Hour = 475 Saturday Daily = 10,589 Saturday Midday = 850	3 of 31	5 of 31	2 of 9	3 of 9	1 of 16	2 of 16

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DESCRIPTION OF PROJECT ALTERNATIVES

Three (3) Project Alternatives defined by the City of Long Beach and Eyestone Environmental have been identified. The proposed Project and the alternatives are described below:

- ***Proposed Project:*** The proposed project includes the construction of up to 245,000 square-feet (SF) of retail/commercial floor area, including 95,000 SF of retail uses, a 55,000 SF grocery store, a 25,000 SF fitness/health club, and 70,000 SF of restaurant uses consisting of 40,000 SF of full service dining, 25,000 SF of high-turnover restaurant/fast-food uses, and 5,000 SF of ready to eat/take-out food. The Project would provide a total of 1,150 parking spaces within two main parking structures, including a second-level parking deck above some the single-story uses.

- ***Alternative #1 – No Project/Reoccupation of Existing Hotel*:** This alternative assumes the Project would not be approved, and the existing hotel and associated on-site improvements would remain. It would also involve the reoccupation of the hotel and associated commercial uses. Amenities and commercial uses within the hotel are expected to be similar to those that previously existed (e.g. rental car/limousine service, fitness studio, and restaurant/café uses). In addition, the hotel would host occasional banquets and meetings, as previously occurred on-site.

- ***Alternative #2 – Reduced Density:*** This alternative represents a 30-percent reduction in the Project's total development and would consist of approximately 170,000 SF of new floor area, resulting in approximately 65,773 SF of retail uses, a 38,471 SF grocery store, a 17,374 SF fitness/health club, and approximately 48,382 SF of restaurant uses (i.e. 27,200 SF quality restaurant, 18,700 SF high-turnover restaurant and 2,482 SF take out restaurant) at the Project site. Pursuant to Long Beach Municipal Code (LBMC) *Chapter 21.41.216*, Alternative #2 would be required to provide a minimum of 852 parking spaces[1]. However, based on a shared parking assessment, Alternative #2 would require a minimum of 790 spaces to meet the peak parking demand of the tenant mix identified above.

- ***Alternative #3 – Mixed-Use Commercial and Hotel:*** This alternative would include the development of 120,000 SF of commercial uses and a 100-room hotel.

[1] Pursuant to *LBMC Chapter 21.41.216*, community/regional/neighborhood shopping center parking ratio of 5 spaces per 1,000 SF-GFA was utilized for the retail, grocery store, and restaurant components as well as for the health/fitness club. For the hotel component of Alternative 3, the hotel parking ratio of 1 space per guestroom was utilized for the hotel, the dinner restaurant parking ratio of 20 spaces per 1,000 GFA was used for the hotel restaurant, and the banquet hall parking ratio of 20 spaces per 1,000 GFA was utilized for the hotel banquet facility.

The 120,000 SF of commercial uses includes 85,848 SF of retail uses and 34,152 SF of restaurant uses (i.e. 19,200 SF quality restaurant, 13,200 SF high-turnover restaurant and 1,752 SF take out restaurant) at the Project site. The hotel also includes a 5,000 SF of restaurant space and 10,000 SF of banquet/conference facility space. Pursuant to Long Beach Municipal Code (LBMC) *Chapter 21.41.216*, Alternative #3 would be required to provide a minimum of 952 parking spaces[1], with 602 spaces required for the retail/commercial component of this alternative and 350 spaces required for the hotel component. However, based on a shared parking assessment, the retail/commercial component of Alternative #3 would require a minimum of 561 spaces, whereas a preliminary assessment of the shared parking demand for the hotel component calculates to 220 spaces.

PROJECT ALTERNATIVES TRIP GENERATION

This section summarizes the trip generation potential of each Project Alternative in comparison to the proposed Project.

Alternative #1 – No Project/Reoccupation of Existing Hotel

Table 1 presents a comparison of the traffic generation potential of the proposed Project and Alternative #1. As shown in *Table 1*, Alternative #1 is forecast to generate 637 weekday daily trips, 41 weekday AM peak hour trips, 47 weekday PM peak hour trips, 639 Saturday daily trips and 57 Saturday Midday peak hour trips. As shown at the bottom of *Table 1*, Alternative #1 is forecast to generate 13,029 fewer weekday daily trips, 371 fewer weekday AM peak hour trips, 745 fewer weekday PM peak hour trips, 16,972 fewer Saturday daily trips, and 1,382 fewer Saturday Midday peak hour trips than the proposed Project.

Alternative #2 – Reduced Density

Table 2 presents a comparison of the traffic generation potential of the proposed Project and Alternative #2. As shown in *Table 2*, Alternative #2 is forecast to generate 9,986 weekday daily trips, 294 weekday AM peak hour trips, 574 weekday PM peak hour trips, 13,111 Saturday daily trips and 1,056 Saturday Midday peak hour trips. As shown at the bottom of *Table 2*, Alternative #2 is forecast to generate 3,680 fewer weekday daily trips, 118 fewer weekday AM peak hour trips, 218 fewer weekday PM peak hour trips, 4,500 fewer Saturday daily trips, and 383 fewer Saturday Midday peak hour trips than the proposed Project.

Alternative #3 – Mixed-use Commercial and Hotel

Table 3 presents a comparison of the traffic generation potential of the proposed Project and Alternative #3. As shown in *Table 3,* Alternative #3 is forecast to generate 8,100 weekday daily trips, 252 weekday AM peak hour trips, 475 weekday PM peak hour trips, 10,589 Saturday daily trips and 850 Saturday Midday peak hour trips. As shown at the bottom of *Table 3,* Alternative #3 is forecast to generate 5,566 fewer weekday daily trips, 160 fewer weekday AM peak hour trips, 317 fewer weekday PM peak hour trips, 7,022 fewer Saturday daily trips, and 589 fewer Saturday Midday peak hour trips than the proposed Project.

PROJECT ALTERNATIVES TRAFFIC IMPACT ASSESSMENT

Although all three (3) Project Alternatives generate less traffic than the proposed Project, level of service analyses were conducted at the impacted key study intersections identified in the April 2017 TIA to determine the potential traffic impacts of each alternative and to determine if previously-identified Project intersection impacts would be eliminated with a reduction in trip generation potential.

Alternative #1 – No Project/Reoccupation of Existing Hotel

Existing Plus Project Traffic Conditions

Table 4 presents the existing plus project level of service results for Alternative #1 at the eight (8) previously impacted intersections. Review of Column 2 indicates that traffic associated with Alternative #1 will not significantly impact any of the key study intersections. Although the intersections of Studebaker Road/SR-22 Westbound Ramps, Bay Shore Avenue/2nd Street, Pacific Coast Highway/2nd Street, Studebaker Road/2nd Street, Seal Beach Boulevard/Westminster Avenue, and Pacific Coast Highway/Marina Drive are all forecast to operate at unacceptable LOS E or F in the AM and/or PM peak hours, Alternative #1 is expected to add less than 0.020 to the ICU value for Long Beach intersections and less than 0.010 to the ICU value for Seal Beach intersections. The remaining intersections are forecast to operate at acceptable service levels with the addition of Alternative #1 generated traffic to existing traffic.

Appendix A presents the existing plus project ICU/LOS and HCM/LOS calculations for the key study intersections.

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Year 2019 Cumulative Plus Project Traffic Conditions

Table 5 presents the Year 2019 level of service results for Alternative #1 at the eleven (11) previously impacted intersections. Review of Column 3 indicates that traffic associated with Alternative #1 will significantly impact one (1) study intersection. The one (1) intersection impacted by Alternative #1 under Year 2019 cumulative plus project traffic conditions includes:

	AM Peak Hour		PM Peak Hour	
Key Intersection	ICU/HCM	LOS	ICU/HCM	LOS
23. Pacific Coast Highway at Marina Drive	46.1 s/v	E	--	--

Please note that although the intersections of Studebaker Road/SR-22 Westbound Ramps, Bay Shore Avenue/2nd Street, Pacific Coast Highway/2nd Street, Studebaker Road/2nd Street, Seal Beach Boulevard/Westminster Avenue and Seal Beach Boulevard/Pacific Coast Highway are all forecast to operate at unacceptable LOS E or F in the AM and/or PM peak hours, Alternative #1 is expected to add less than 0.020 to the ICU value for Long Beach intersections and less than 0.010 to the ICU value for Seal Beach intersections. The remaining intersections are forecast to operate at acceptable service levels with the addition of Alternative #1 generated traffic to Year 2019 traffic.

As shown in Column 4, the implementation of improvements at the impacted study intersection completely offsets the impact of Alternative #1 traffic. It should be noted that recommended improvements at the impacted intersection is identical to those recommended for the proposed Project, as discussed in the April 2017 TIA.

Appendix B presents the Year 2019 plus project ICU/LOS and HCM/LIOS calculations for the key intersections.

Existing Plus Project Saturday Traffic Conditions

Table 6 presents the existing plus project Saturday Midday level of service results for Alternative #1 at the three (3) previously impacted intersections. Review of Column 2 indicates that traffic associated with Alternative #1 will not significantly impact any of the key study intersections. Although the intersection of Bay Shore Avenue/2nd Street is forecast to operate at unacceptable LOS E, Alternative #1 is expected to add less than 0.020 to the ICU value. The remaining intersections are forecast to operate at acceptable service levels with the addition of Alternative #1 generated traffic to existing traffic.

Appendix C presents the existing plus project ICU/LOS Saturday calculations for the key study intersections.

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Year 2019 Cumulative Plus Project Saturday Traffic Conditions

Table 7 presents the Year 2019 Saturday Midday level of service results for Alternative #1 at the three (3) previously impacted intersections. Review of Column 3 indicates that traffic associated with Alternative #1 will not significantly impact any of the key study intersections. Although the intersections of Bay Shore Avenue/2nd Street and Pacific Coast Highway/2nd Street are forecast to operate at unacceptable LOS F and E, respectively, Alternative #1 is expected to add less than 0.020 to the ICU value. The remaining intersection is forecast to operate at acceptable service levels with the addition of Alternative #1 generated traffic to Year 2019 traffic.

Appendix D presents the Year 2019 plus project ICU/LOS Saturday calculations for the key study intersections.

Existing Plus Project Traffic Conditions – Caltrans

Table 8 presents the existing plus project level of service results for Alternative #1 at the three (3) previously impacted Caltrans intersections. Review of Column 2 indicates that traffic associated with Alternative #1 will not significantly impact any of the Caltrans study intersections. Although the intersection of Pacific Coast Highway/Marina Drive is forecast to operate at unacceptable LOS E in the AM peak hour, Alternative #1 is not expected to add to the project increment. The remaining intersections are forecast to operate at acceptable service levels with the addition of Alternative #1 generated traffic to existing traffic.

Appendix E presents the existing plus project HCM/LOS calculations for the state controlled study intersections.

Year 2019 Cumulative Plus Project Traffic Conditions – Caltrans

Table 9 presents the Year 2019 level of service results for Alternative #1 at the three (3) previously impacted Caltrans intersections. Review of Column 2 indicates that traffic associated with Alternative #1 will significantly impact two (2) Caltrans study intersections. The remaining intersection is forecast to operate at acceptable service levels with the addition of Alternative #1 generated traffic to Year 2019 traffic. The two (2) intersections impacted by Alternative #1 under Year 2019 cumulative plus project traffic conditions include:

	AM Peak Hour		PM Peak Hour	
Key Intersection	ICU/HCM	LOS	ICU/HCM	LOS
23. Pacific Coast Highway at Marina Drive	46.1 s/v	E	--	--
25. Seal Beach Boulevard at Pacific Coast Highway	62.6 s/v	E	--	--

As shown in Column 3, the implementation of improvements at the impacted study intersections completely offsets the impact of Alternative #1 traffic. It should be

noted that recommended improvements at the impacted intersections are identical to those recommended for the proposed Project, as discussed in the April 2017 TIA.

Appendix F presents the Year 2019 plus project HCM/LOS calculations for the state controlled study intersections.

Alternative 2 – Reduced Density

Existing Plus Project Traffic Conditions

Table 10 presents the existing plus project level of service results for Alternative #2 at the eight (8) previously impacted intersections. Review of Column 2 indicates that traffic associated with Alternative #2 will significantly impact four (4) key study intersections. The four (4) intersections impacted by Alternative 2 under existing plus project traffic conditions includes:

		AM Peak Hour		PM Peak Hour	
Key Intersection		ICU/HCM	LOS	ICU/HCM	LOS
14.	Bay Shore Avenue at 2nd Street	--	--	1.029	F
17.	Pacific Coast Highway at 2nd Street	0.955	E	0.947	E
20.	Seal Beach Boulevard at Westminster Avenue	0.942	E	0.941	E
23.	Pacific Coast Highway at Marina Drive	38.4 s/v	E	--	--

Please note that although the intersections of Studebaker Road/SR-22 Westbound Ramps and Studebaker Road/2nd Street are forecast to operate at unacceptable LOS E in the AM and/or PM peak hours, Alternative #2 is expected to add less than 0.020 to the ICU value. The remaining intersections are forecast to operate at acceptable service levels with the addition of Alternative #2 generated traffic to existing traffic.

As shown in Column 3, the implementation of improvements at the impacted study intersections offsets the impact of Alternative #2 traffic; however, the intersections of Bay Shore Avenue/2nd Street and Seal Beach Boulevard/Westminster Avenue are still forecast to operate at unacceptable LOS F and LOS E during the AM peak hour, respectively. It should be noted that recommended improvements at the impacted intersections are identical to those recommended for the proposed Project, as discussed in the April 2017 TIA.

Appendix A also presents the existing plus project ICU/LOS and HCM/LOS calculations for the key study intersections.

Year 2019 Cumulative Plus Project Traffic Conditions

Table 11 presents the Year 2019 level of service results for Alternative #2 at the eleven (11) previously impacted intersections. Review of Column 3 indicates that traffic associated with Alternative #2 will significantly impact seven (7) key study intersections. The seven (7) intersections impacted by Alternative #2 under Year 2019 cumulative plus project traffic conditions include:

	AM Peak Hour		PM Peak Hour	
Key Intersection	ICU/HCM	LOS	ICU/HCM	LOS
12. Studebaker Road at Loynes Drive	--	--	0.901	E
14. Bay Shore Avenue at 2nd Street	--	--	1.063	F
17. Pacific Coast Highway at 2nd Street	0.999	E	0.988	E
20. Seal Beach Boulevard at Westminster Avenue	0.973	E	0.970	E
22. Pacific Coast Highway at Studebaker Road	--	--	0.913	E
23. Pacific Coast Highway at Marina Drive	40.6 s/v	E	--	--
29. Pacific Coast Highway at 1st Street	--	--	0.825	D

Please note that although the intersections of Studebaker Road/SR-22 Westbound Ramps, Studebaker Road/2nd Street and Seal Beach Boulevard/Pacific Coast Highway are all forecast to operate at unacceptable LOS E or LOS F in the AM and/or PM peak hours, Alternative #2 is expected to add less than 0.020 to the ICU value for Long Beach intersections and less than 0.010 to the ICU value for Seal Beach intersections. The remaining intersections are forecast to operate at acceptable service levels with the addition of Alternative #2 generated traffic to Year 2019 traffic.

As shown in Column 4, the implementation of improvements at the impacted study intersections offsets the impact of Alternative #2 traffic; however, the intersections of Bay Shore Avenue/2nd Street, Pacific Coast Highway/2nd Street and Seal Beach Boulevard/Westminster Avenue are still forecast to operate at LOS E or LOS F during the AM and/or PM peak hours. It should be noted that recommended improvements at the impacted intersections are identical to those recommended for the proposed Project, as discussed in the April 2017 TIA.

Appendix B also presents the Year 2019 plus project ICU/LOS and HCM/LIOS calculations for the key intersections.

Existing Plus Project Saturday Traffic Conditions

Table 12 presents the existing plus project Saturday Midday level of service results for Alternative #2 at the three (3) previously impacted intersections. Review of Column 2 indicates that traffic associated with Alternative #2 will significantly

impact all three (3) key study intersections. The three (3) intersections impacted by Alternative #2 under existing plus project Saturday traffic conditions include:

	Sat. Midday Peak Hour	
Key Intersection	ICU/HCM	LOS
14. Bay Shore Avenue at 2nd Street	1.017	F
17. Pacific Coast Highway at 2nd Street	1.007	F
22. Pacific Coast Highway at Studebaker Road	0.907	E

As shown in Column 3, the implementation of improvements at the impacted study intersections offsets the impact of Alternative #2 traffic; however, the intersection of Bay Shore Avenue/2nd Street is still forecast to operate at unacceptable LOS E during the Midday peak hour. It should be noted that recommended improvements at the impacted intersections are identical to those recommended for the proposed Project, as discussed in the April 2017 TIA.

Appendix C also presents the existing plus project ICU/LOS Saturday calculations for the key study intersections.

Year 2019 Cumulative Plus Project Saturday Traffic Conditions

Table 13 presents the Year 2019 Saturday Midday level of service results for Alternative #2 at the three (3) previously impacted intersections. Review of Column 3 indicates that traffic associated with Alternative #2 will significantly impact all three (3) key study intersections. The three (3) intersections impacted by Alternative #2 under Year 2019 cumulative plus project Saturday traffic conditions include:

	Sat. Midday Peak Hour	
Key Intersection	ICU/HCM	LOS
14. Bay Shore Avenue at 2nd Street	1.056	F
17. Pacific Coast Highway at 2nd Street	1.050	F
22. Pacific Coast Highway at Studebaker Road	0.953	E

As shown in Column 4, the implementation of improvements at the impacted study intersections offsets the impact of Alternative #2 traffic; however, the intersections of Bay Shore Avenue/2nd Street and Pacific Coast Highway/2nd Street are still forecast to operate at unacceptable LOS E during the Midday peak hour. It should be noted that recommended improvements at the impacted intersections are identical to those recommended for the proposed Project, as discussed in the April 2017 TIA.

Appendix D also presents the Year 2019 plus project ICU/LOS Saturday calculations for the key study intersections.

Existing Plus Project Traffic Conditions – Caltrans

Table 14 presents the existing plus project level of service results for Alternative #2 at the three (3) previously impacted Caltrans intersections. Review of Column 2 indicates that traffic associated with Alternative #2 will significantly impact one (1) of the Caltrans study intersections. The remaining intersections are forecast to operate at acceptable service levels with the addition of Alternative #2 generated traffic to existing traffic. The one (1) intersection impacted by Alternative #2 under existing plus project traffic conditions include:

	AM Peak Hour		PM Peak Hour	
Key Intersection	ICU/HCM	LOS	ICU/HCM	LOS
23. Pacific Coast Highway at Marina Drive	38.4 s/v	E	--	--

As shown in Column 3, the implementation of improvements at the impacted study intersection completely offsets the impact of Alternative #2 traffic. It should be noted that recommended improvements at the impacted intersection are identical to those recommended for the proposed Project, as discussed in the April 2017 TIA.

Appendix E also presents the existing plus project HCM/LOS calculations for the state controlled study intersections.

Year 2019 Cumulative Plus Project Traffic Conditions – Caltrans

Table 15 presents the Year 2019 level of service results for Alternative #2 at the three (3) previously impacted Caltrans intersections. Review of Column 2 indicates that traffic associated with Alternative #2 will significantly impact two (2) Caltrans study intersections. The remaining intersection is forecast to operate at acceptable service levels with the addition of Alternative #2 generated traffic to Year 2019 traffic. The two (2) intersections impacted by Alternative #2 under Year 2019 cumulative plus project traffic conditions include:

	AM Peak Hour		PM Peak Hour	
Key Intersection	ICU/HCM	LOS	ICU/HCM	LOS
23. Pacific Coast Highway at Marina Drive	40.6 s/v	E	--	--
25. Seal Beach Boulevard at Pacific Coast Highway	56.6 s/v	E	--	--

As shown in Column 3, the implementation of improvements at the impacted study intersections completely offsets the impact of Alternative 2 traffic. It should be noted that recommended improvements at the impacted intersections are identical to those recommended for the proposed Project, as discussed in the April 2017 TIA.

Appendix also *F* presents the Year 2019 plus project HCM/LOS calculations for the state controlled study intersections.

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Alternative 3 – Mixed-Use Commercial and Hotel

Existing Plus Project Traffic Conditions

Table 16 presents the existing plus project level of service results for Alternative #3 at the eight (8) previously impacted intersections. Review of Column 2 indicates that traffic associated with Alternative #3 will significantly impact three (3) key study intersections. The three (3) intersections impacted by Alternative 3 under existing plus project traffic conditions includes:

		AM Peak Hour		PM Peak Hour	
Key Intersection		ICU/HCM	LOS	ICU/HCM	LOS
17.	Pacific Coast Highway at 2nd Street	0.957	E	0.935	E
20.	Seal Beach Boulevard at Westminster Avenue	0.942	E	0.939	E
23.	Pacific Coast Highway at Marina Drive	38.0 s/v	E	--	--

Please note that although the intersections of Studebaker Road/SR-22 Westbound Ramps, Bay Shore Avenue/2nd Street and Studebaker Road/2nd Street are forecast to operate at unacceptable LOS E and/or LOS F during the AM and/or PM peak hours, Alternative #3 is expected to add less than 0.020 to the ICU value. The remaining intersections are forecast to operate at acceptable service levels with the addition of Alternative #3 generated traffic to existing traffic.

As shown in Column 3, the implementation of improvements at the impacted study intersections offsets the impact of Alternative #3 traffic; however, the intersection of Seal Beach Boulevard/Westminster Avenue is still forecast to operate at unacceptable LOS E during the AM peak hour. It should be noted that recommended improvements at the impacted intersections are identical to those recommended for the proposed Project, as discussed in the April 2017 TIA.

Appendix A also presents the existing plus project ICU/LOS and HCM/LOS calculations for the key study intersections.

Year 2019 Cumulative Plus Project Traffic Conditions

Table 17 presents the Year 2019 level of service results for Alternative #3 at the eleven (11) previously impacted intersections. Review of Column 3 indicates that traffic associated with Alternative #3 will significantly impact five (5) key study intersections. The five (5) intersections impacted by Alternative #3 under Year 2019 cumulative plus project traffic conditions include:

Key Intersection	AM Peak Hour ICU/HCM	AM Peak Hour LOS	PM Peak Hour ICU/HCM	PM Peak Hour LOS
12. Studebaker Road at Loynes Drive	--	--	0.901	E
17. Pacific Coast Highway at 2nd Street	1.000	E	0.977	E
20. Seal Beach Boulevard at Westminster Avenue	0.972	E	0.968	E
23. Pacific Coast Highway at Marina Drive	40.1 s/v	E	--	--
29. Pacific Coast Highway at 1st Street	--	--	0.820	D

Please note that although the intersections of Studebaker Road/SR-22 Westbound Ramps, Bay Shore Avenue/2nd Street, Studebaker Road/2nd Street, Pacific Coast Highway/Studebaker Road and Seal Beach Boulevard/Pacific Coast Highway are all forecast to operate at unacceptable LOS E or LOS F during the AM and/or PM peak hours, Alternative #3 is expected to add less than 0.020 to the ICU value for Long Beach intersections and less than 0.010 to the ICU value for Seal Beach intersections. The remaining intersections are forecast to operate at acceptable service levels with the addition of Alternative #3 generated traffic to Year 2019 traffic.

As shown in Column 4, the implementation of improvements at the impacted study intersections offsets the impact of Alternative #3 traffic; however, the intersections of Pacific Coast Highway/2nd Street and Seal Beach Boulevard/Westminster Avenue are still forecast to operate at LOS E during the AM and/or PM peak hours. It should be noted that recommended improvements at the impacted intersections are identical to those recommended for the proposed Project, as discussed in the April 2017 TIA.

Appendix B also presents the Year 2019 plus project ICU/LOS and HCM/LIOS calculations for the key intersections.

Existing Plus Project Saturday Traffic Conditions

Table 18 presents the existing plus project Saturday Midday level of service results for Alternative #3 at the three (3) previously impacted intersections. Review of Column 2 indicates that traffic associated with Alternative #3 will significantly impact two (2) key study intersections. The remaining intersection is forecast to operate at acceptable service levels with the addition of Alternative #3 generated traffic to existing traffic. The two (2) intersections impacted by Alternative #3 under existing plus project Saturday traffic conditions include:

Key Intersection	Sat. Midday Peak Hour ICU/HCM	Sat. Midday Peak Hour LOS
14. Bay Shore Avenue at 2nd Street	1.010	F
17. Pacific Coast Highway at 2nd Street	0.988	E

As shown in Column 3, the implementation of improvements at the impacted key study intersections offsets the impact of Alternative #3 traffic; however, the

intersection of Bay Shore Avenue/2nd Street is still forecast to operate at unacceptable LOS E during the Midday peak hour. It should be noted that recommended improvements at the impacted intersections are identical to those recommended for the proposed Project, as discussed in the April 2017 TIA.

Appendix C also presents the existing plus project ICU/LOS Saturday calculations for the key study intersections.

Year 2019 Cumulative Plus Project Saturday Traffic Conditions

Table 19 presents the Year 2019 Saturday Midday level of service results for Alternative #3 at the three (3) previously impacted intersections. Review of Column 3 indicates that traffic associated with Alternative #3 will significantly impact all three (3) key study intersections. The three (3) intersections impacted by Alternative #3 under Year 2019 cumulative plus project Saturday traffic conditions include:

	Sat. Midday Peak Hour	
Key Intersection	ICU/HCM	LOS
14. Bay Shore Avenue at 2nd Street	1.048	F
17. Pacific Coast Highway at 2nd Street	1.031	F
22. Pacific Coast Highway at Studebaker Road	0.939	E

As shown in Column 4, the implementation of improvements at the impacted key study intersections offsets the impact of Alternative #3 traffic; however, the intersections of Bay Shore Avenue/2nd Street and Pacific Coast Highway/2nd Street are still forecast to operate at unacceptable LOS F and E during the Midday peak hour, respectively. It should be noted that recommended improvements at the impacted intersections are identical to those recommended for the proposed Project, as discussed in the April 2017 TIA.

Appendix D also presents the Year 2019 plus project ICU/LOS and HCM/LOS Saturday calculations for the key study intersections.

Existing Plus Project Traffic Conditions – Caltrans

Table 20 presents the existing plus project level of service results for Alternative #3 at the three (3) previously impacted Caltrans intersections. Review of Column 2 indicates that traffic associated with Alternative #3 will significantly impact one (1) of the Caltrans study intersections. The remaining intersections are forecast to operate at acceptable service levels with the addition of Alternative #3 generated traffic to existing traffic. The one (1) intersection impacted by Alternative #3 under existing plus project traffic conditions includes:

Key Intersection	AM Peak Hour ICU/HCM	AM Peak Hour LOS	PM Peak Hour ICU/HCM	PM Peak Hour LOS
23. Pacific Coast Highway at Marina Drive	38.0 s/v	E	--	--

As shown in Column 3, the implementation of improvements at the impacted study intersection completely offsets the impact of Alternative #3 traffic. The remaining intersections are forecast to operate at acceptable service levels with the addition of Alternative #3 generated traffic to existing traffic. It should be noted that recommended improvements at the impacted intersections are identical to those recommended for the proposed Project, as discussed in the April 2017 TIA.

Appendix E also presents the existing plus project HCM/LOS calculations for the state controlled study intersections.

Year 2019 Cumulative Plus Project Traffic Conditions – Caltrans

Table 21 presents the Year 2019 level of service results for Alternative #3 at the three (3) previously impacted Caltrans intersections. Review of Column 2 indicates that traffic associated with Alternative #3 will significantly impact two (2) Caltrans study intersections. The remaining intersection is forecast to operate at acceptable service levels with the addition of Alternative #3 generated traffic to Year 2019 traffic. The two (2) intersections impacted by Alternative #3 under Year 2019 cumulative plus project traffic conditions include:

Key Intersection	AM Peak Hour ICU/HCM	AM Peak Hour LOS	PM Peak Hour ICU/HCM	PM Peak Hour LOS
23. Pacific Coast Highway at Marina Drive	40.1 s/v	E	--	--
25. Seal Beach Boulevard at Pacific Coast Highway	57.3 s/v	E	--	--

As shown in Column 3, the implementation of improvements at the impacted study intersections completely offsets the impact of Alternative #3 traffic. It should be noted that recommended improvements at the impacted intersections are identical to those recommended for the proposed Project, as discussed in the April 2017 TIA.

Appendix F also presents the Year 2019 plus project HCM/LOS calculations for the state controlled study intersections.

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Freeway Impacts

As discussed in the *2nd + PCH Project Traffic Impact Analysis*, prepared by LLG in April 2017, the following two (2) key freeway segments and two (2) key freeway ramps are forecast to operate at unacceptable LOS E during the AM and/or PM peak hours without and with the proposed Project.

Key Freeway Segments

1. SR-22 Eastbound, east of Studebaker Road
2. SR-22 Westbound, east of Studebaker Road

Key Freeway Ramps

2. SR-22 Eastbound On-Ramp from Studebaker Road
3. SR-22 Westbound Off-Ramp to Studebaker Road

The April 2017 TIA identified that a Project's impact to a freeway segment or freeway 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 increase the density on a facility operating at an unacceptable level of service. Given this criteria, the proposed Project was determined to have a significant impact at the aforementioned freeway facilities under existing plus project and Year 2019 plus project traffic conditions.

Based on a qualitative assessment of the Project Alternatives, the potential freeway impacts associated with Alternatives #1, #2 and #3 would be equal to or less than that of the proposed Project. Although traffic volumes associated with each alternative would be less than that of the proposed Project, the added volumes at the two (2) key freeway segments and two (2) key freeway ramps will likely result in a significant impact based on the Caltrans criteria identified in the traffic study.

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Construction Impacts

The construction-related trips associated with Alternative #1 would be less than the construction-related trips associated with the proposed Project. Therefore, the Alternative #1 existing plus project construction traffic impacts will be less than the construction impacts identified for the proposed Project as described in the *2nd + PCH Project Traffic Impact Analysis*, prepared by LLG in April 2017.

The construction-related trips associated with Alternatives #2 and #3 would be equal to or less than the construction-related trips associated with the proposed Project. Therefore, the Alternative #2 and Alternative #3 existing plus project construction traffic impacts will be equal to or less than the construction impacts identified for the proposed Project as described in the *2nd + PCH Project Traffic Impact Analysis*, prepared by LLG in April 2017.

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CONCLUSION

The table below summarizes the trip generation of the proposed Project and the number of intersections impacted by the proposed Project in comparison to the three (3) Project Alternatives for existing plus project traffic conditions and future (Year 2019) traffic conditions:

Project Development Alternative	Project Trip Generation Forecast (trips)	Existing Plus Project Traffic Conditions	Year 2019 Plus Project Traffic Conditions	Existing Plus Project Saturday Traffic Conditions	Year 2019 Plus Project Saturday Traffic Conditions	Existing Plus Project Traffic Conditions (Caltrans)	Year 2019 Plus Project Traffic Conditions (Caltrans)
Proposed Project	Weekday Daily = 13,666 AM Peak Hour = 412 PM Peak Hour = 792 Saturday Daily = 17,611 Saturday Midday = 1,439	8 of 31	11 of 31	3 of 9	3 of 9	3 of 16	3 of 16
Alternative #1 – No Project/ Reoccupation of Existing Hotel	Weekday Daily = 637 AM Peak Hour = 41 PM Peak Hour = 47 Saturday Daily = 639 Saturday Midday = 57	0 of 31	1 of 31	0 of 9	0 of 9	0 of 16	2 of 16
Alternative #2 – Reduced Density	Weekday Daily = 9,986 AM Peak Hour = 294 PM Peak Hour = 574 Saturday Daily = 13,111 Saturday Midday = 1,056	4 of 31	7 of 31	3 of 9	3 of 9	1 of 16	2 of 16
Alternative #3 – Mixed-Use Commercial and Hotel	Weekday Daily = 8,100 AM Peak Hour = 252 PM Peak Hour = 475 Saturday Daily = 10,589 Saturday Midday = 850	3 of 31	5 of 31	2 of 9	3 of 9	1 of 16	2 of 16

Review of the above table indicates that Alternative #1 will have eight (8) less existing plus project impacts, ten (10) less Year 2019 plus project impacts, three (3) less existing plus project Saturday impacts, three (3) less Year 2019 plus project Saturday impacts, three (3) less existing plus project Caltrans impacts and one (1) less Year 2019 plus project Caltrans impact compared to the proposed Project.

Alternative #2 will have four (4) less existing plus project impacts, four (4) less Year 2019 plus project impacts, the same existing plus project Saturday impacts, the same Year 2019 plus project Saturday impacts, two (2) less existing plus project Caltrans impacts, and one (1) less Year 2019 plus project Caltrans impact compared to the proposed Project.

Alternative #3 will have five (5) less existing plus project impacts, six (6) less Year 2019 plus project impacts, one (1) less existing plus project Saturday impact, the same Year 2019 plus project Saturday impacts, two (2) less existing plus project Caltrans impacts and one (1) less Year 2019 plus project Caltrans impact compared to the proposed Project.

Based on a qualitative assessment of the Project Alternatives, the potential freeway impacts associated with Alternatives #1, #2 and #3 would be equal to or less than that of the proposed Project. Although traffic volumes associated with each alternative would be less than that of the proposed Project, the added volumes at the two (2) key freeway segments and two (2) key freeway ramps will likely result in a significant impact based on the Caltrans criteria identified in the traffic study

The Alternative #1 existing plus project construction traffic impacts will be less than the construction impacts identified for the proposed Project as described in the *2nd + PCH Project Traffic Impact Analysis*, prepared by LLG in April 2017. The Alternative #2 and Alternative #3 existing plus project construction traffic impacts will be equal to or less than the construction impacts identified for the proposed Project as described in the *2nd + PCH Project Traffic Impact Analysis*, prepared by LLG in April 2017.

* * * * * * * * * * *

Please let us know if you have any comments or questions regarding this project alternatives analysis memorandum.

Attachments

TABLE 1

ALTERNATIVE #1: NO PROJECT/REOCCUPATION OF EXISTING HOTEL ALTERNATIVE - TRAFFIC GENERATION COMPARISON[2]

ITE Land Use Code	Daily 2-Way	AM Peak Hour			PM Peak Hour			Saturday Midday			
		Enter	Exit	Total	Enter	Exit	Total	Daily	Enter	Exit	Total
▪ Existing Land Use	1,389	53	37	90	52	50	102	1,392	68	54	122
▪ Proposed Project	13,666	236	176	412	426	366	792	17,611	770	669	1,439
▪ Alternative #1 – No Project											
➢ Hotel (248 Rooms)	2,026	77	54	131	76	73	149	2,031	100	79	179
Less Existing Trip Generation	*-1,389*	*-53*	*-37*	*-90*	*-52*	*-50*	*-102*	*-1,392*	*-68*	*-54*	*-122*
Total Net Alternative #1 Trip Generation	**637**	**24**	**17**	**41**	**24**	**23**	**47**	**639**	**32**	**25**	**57**
Net Trip Difference (Alternative #1 vs. Project)	**-13,029**	**-212**	**-159**	**-371**	**-402**	**-343**	**-745**	**-16,972**	**-738**	**-644**	**-1,382**

[2] Source: *Trip Generation*, 9th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2012).

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TABLE 2

ALTERNATIVE #2: REDUCED DENSITY ALTERNATIVE - TRAFFIC GENERATION COMPARISON[3]

ITE Land Use Code	Daily 2-Way	AM Peak Hour			PM Peak Hour			Saturday Midday			
		Enter	Exit	Total	Enter	Exit	Total	Daily	Enter	Exit	Total
▪ Existing Land Use	1,389	53	37	90	52	50	102	1,392	68	54	122
▪ Proposed Project	13,666	236	176	412	426	366	792	17,611	770	669	1,439
▪ Alternative #2 – Reduced Density											
➢ Retail (124,100 SF)	7,814	110	68	178	332	360	692	10,586	523	483	1,006
Pass-By Reduction[4]	*-781*	*-11*	*-7*	*-18*	*-113*	*-122*	*-235*	*-1,059*	*-136*	*-126*	*-262*
Subtotal	*7,033*	*99*	*61*	*160*	*219*	*238*	*457*	*9,527*	*387*	*357*	*744*
➢ Quality Restaurant (27,200 SF)	2,447	11	11	22	137	67	204	2,567	173	121	294
Pass-By Reduction[5]	*-245*	*0*	*0*	*0*	*-60*	*-30*	*-90*	*-257*	*-38*	*-27*	*-65*
Subtotal	*2,202*	*11*	*11*	*22*	*77*	*37*	*114*	*2,310*	*135*	*94*	*229*
➢ High-Turnover Restaurant (18,700 SF)	2,378	111	91	202	110	74	184	2,962	139	124	263
Pass-By Reduction[5]	*-238*	*0*	*0*	*0*	*-47*	*-32*	*-79*	*-296*	*-31*	*-27*	*-58*
Subtotal	*2,140*	*111*	*91*	*202*	*63*	*42*	*105*	*2,666*	*108*	*97*	*205*
Total Alternative #2 Project Trip Generation	**11,375**	**221**	**163**	**384**	**359**	**317**	**676**	**14,503**	**630**	**548**	**1,178**
Less Existing Trip Generation	*-1,389*	*-53*	*-37*	*-90*	*-52*	*-50*	*-102*	*-1,392*	*-68*	*-54*	*-122*
Total Net Alternative #2 Trip Generation	**9,986**	**168**	**126**	**294**	**307**	**267**	**574**	**13,111**	**562**	**494**	**1,056**
Net Trip Difference (Alternative #2 vs. Project)	**-3,680**	**-68**	**-50**	**-118**	**-119**	**-99**	**-218**	**-4,500**	**-208**	**-175**	**-383**

3 Source: *Trip Generation*, 9th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2012).

4 Source: *Trip Generation Handbook*, Institute of Transportation Engineers, (ITE) [Washington, D.C. (2012**)].** Pass-by reductions for the retail, quality restaurant and high-turnover restaurant project uses are as follows:

- Retail: Weekday (Daily: 10%, AM: 10% and PM: 34%); Weekend (Daily: 10% and Midday: 26%)
- Quality Restaurant: Weekday (Daily: 10%, AM: 0% and PM: 44%); Weekend (Daily: 10% and Midday: 22%)
- High-Turnover Restaurant: Weekday (Daily: 10%, AM: 0% and PM: 43%); Weekend (Daily: 10% and Midday: 22%)

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TABLE 3

ALTERNATIVE #3: MIXED-USE COMMERCIAL AND HOTEL ALTERNATIVE - TRAFFIC GENERATION COMPARISON[5]

ITE Land Use Code	Daily 2-Way	AM Peak Hour			PM Peak Hour			Saturday Midday			
		Enter	Exit	Total	Enter	Exit	Total	Daily	Enter	Exit	Total
▪ Existing Land Use	1,389	53	37	90	52	50	102	1,392	68	54	122
▪ Proposed Project	13,666	236	176	412	426	366	792	17,611	770	669	1,439
▪ Alternative #3 – Mixed-Use Commercial + Hotel											
➢ Retail (87,600 SF)	6,231	89	55	144	263	285	548	8,500	417	385	802
Pass-By Reduction[6]	*-623*	*-9*	*-5*	*-14*	*-89*	*-97*	*-186*	*-850*	*-108*	*-101*	*-209*
Subtotal	*5,608*	*80*	*50*	*130*	*174*	*188*	*362*	*7,650*	*309*	*284*	*593*
➢ Quality Restaurant (19,200 SF)	1,727	8	8	16	96	48	144	1,812	123	85	208
Pass-By Reduction[7]	*-173*	*0*	*0*	*0*	*-42*	*-21*	*-63*	*-181*	*-27*	*-19*	*-46*
Subtotal	*1,554*	*8*	*8*	*16*	*54*	*27*	*81*	*1,631*	*96*	*66*	*162*
➢ High-Turnover Restaurant (13,200 SF)	1,678	79	64	143	78	52	130	2,090	99	87	186
Pass-By Reduction[7]	*-168*	*0*	*0*	*0*	*-34*	*-22*	*-56*	*-209*	*-22*	*-19*	*-41*
Subtotal	*1,510*	*79*	*64*	*143*	*44*	*30*	*74*	*1,881*	*77*	*68*	*145*
➢ Hotel (100 rooms)	817	31	22	53	31	29	60	819	40	32	72
Total Alternative #3 Project Trip Generation	**9,489**	**198**	**144**	**342**	**303**	**274**	**577**	**11,981**	**522**	**450**	**972**
Less Existing Trip Generation	*-1,389*	*-53*	*-37*	*-90*	*-52*	*-50*	*-102*	*-1,392*	*-68*	*-54*	*-122*
Total Net Alternative #3 Trip Generation	**8,100**	**145**	**107**	**252**	**251**	**224**	**475**	**10,589**	**454**	**396**	**850**
Net Trip Difference (Alternative #3 vs. Project)	**-5,566**	**-91**	**-69**	**-160**	**-175**	**-142**	**-317**	**-7,022**	**-316**	**-273**	**-589**

5 Source: *Trip Generation*, 9th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2012).

6 Source: *Trip Generation Handbook*, Institute of Transportation Engineers, (ITE) [Washington, D.C. (2012**)].** Pass-by reductions for the retail, quality restaurant and high-turnover restaurant project uses are as follows:

- Retail: Weekday (Daily: 10%, AM: 10% and PM: 34%); Weekend (Daily: 10% and Midday: 26%)
- Quality Restaurant: Weekday (Daily: 10%, AM: 0% and PM: 44%); Weekend (Daily: 10% and Midday: 22%)
- High-Turnover Restaurant: Weekday (Daily: 10%, AM: 0% and PM: 43%); Weekend (Daily: 10% and Midday: 22%)

TABLE 4

EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS – ALTERNATIVE #1

Key Intersections		Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Alt #1 Project Traffic Conditions[7]				(3) Existing Plus Alt #1 Project With Improvements Traffic Conditions			
			ICU/ HCM	LOS	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact
8.	Studebaker Road at SR-22 Westbound Ramps	AM	0.639	B	0.643	B	0.004	No	--	--	--	--
		PM	**0.908**	**E**	**0.911**	**E**	0.003	No	--	--	--	--
14.	Bay Shore Avenue at 2nd Street	AM	0.847	D	0.848	D	0.001	No	--	--	--	--
		PM	**1.009**	**F**	**1.010**	**F**	0.001	No	--	--	--	--
17.	Pacific Coast Highway at 2nd Street	AM	**0.933**	**E**	**0.941**	**E**	0.008	No	--	--	--	--
		PM	0.876	D	0.883	D	0.007	No	--	--	--	--
19.	Studebaker Road at 2nd Street	AM	0.857	D	0.860	D	0.003	No	--	--	--	--
		PM	**0.947**	**E**	**0.951**	**E**	0.004	No	--	--	--	--
20.	Seal Beach Boulevard at Westminster Avenue	AM	**0.936**	**E**	**0.937**	**E**	0.001	No	--	--	--	--
		PM	**0.929**	**E**	**0.930**	**E**	0.001	No	--	--	--	--
23.	Pacific Coast Highway at Marina Drive	AM	**36.5 s/v**	**E**	**36.5 s/v**	**E**	0.0 s/v	No	--	--	--	--
		PM	19.9 s/v	C	22.6 s/v	C	2.7 s/v	No	--	--	--	--
24.	Pacific Coast Highway at Main/Bolsa Avenue	AM	0.730	C	0.730	C	0.000	No	--	--	--	--
		PM	0.702	C	0.720	C	0.018	No	--	--	--	--
25.	Seal Beach Boulevard at Pacific Coast Highway	AM	0.885	D	0.885	D	0.000	No	--	--	--	--
		PM	0.811	D	0.811	D	0.000	No	--	--	--	--

Notes:

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

[7] Includes the removal of the existing Seaport Marina Hotel (170 Rooms) and construction of the proposed Project.

TABLE 5

YEAR 2019 CUMULATIVE PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS – ALTERNATIVE #1

Key Intersections	Time Period	(1) Existing Traffic Conditions		(2) Year 2019 Cumulative Traffic Conditions		(3) Year 2019 Cumulative Plus Alt #1 Project Traffic Conditions[8]				(4) Year 2019 Cumulative Plus Alt # 1 Project With Improvements Traffic Conditions			
		ICU/ HCM	LOS	ICU/ HCM	LOS	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact
8. Studebaker Road at SR-22 Westbound Ramps	AM	0.639	B	0.681	B	0.684	B	0.003	No	--	--	--	--
	PM	**0.908**	**E**	**0.950**	**E**	**0.953**	**E**	0.003	No	--	--	--	--
12. Studebaker Road at Loynes Drive	AM	0.675	B	0.781	C[9]	0.783	C[9]	0.002	No	--	--	--	--
	PM	0.791	C	0.880	D	0.892	D	0.012	No	--	--	--	--
14. Bay Shore Avenue at 2nd Street	AM	0.847	D	0.878	D	0.879	D	0.001	No	--	--	--	--
	PM	**1.009**	**F**	**1.043**	**F**	**1.044**	**F**	0.001	No	--	--	--	--
17. Pacific Coast Highway at 2nd Street	AM	**0.933**	**E**	**0.977**	**E**	**0.985**	**E**	0.008	No	--	--	--	--
	PM	0.876	D	**0.916**	**E**	**0.924**	**E**	0.008	No	--	--	--	--
19. Studebaker Road at 2nd Street	AM	0.857	D	0.892	D	0.895	D	0.003	No	--	--	--	--
	PM	**0.947**	**E**	**0.980**	**E**	**0.983**	**E**	0.003	No	--	--	--	--
20. Seal Beach Boulevard at Westminster Avenue	AM	**0.936**	**E**	**0.967**	**E**	**0.968**	**E**	0.001	No	--	--	--	--
	PM	**0.929**	**E**	**0.958**	**E**	**0.959**	**E**	0.001	No	--	--	--	--
22. Pacific Coast Highway at Studebaker Rd	AM	0.797	C	0.840	D	0.840	D	0.000	No	--	--	--	--
	PM	0.840	D	0.889	D	0.890	D	0.001	No	--	--	--	--
23. Pacific Coast Highway at Marina Drive	AM	**36.5 s/v**	**E**	**38.5 s/v**	**E**	**46.1 s/v**	**E**	**7.6 s/v**	**Yes**	0.856	D	--	No
	PM	19.9 s/v	C	23.2 s/v	C	25.6 s/v	D	2.4 s/v	No	0.808	D	--	No

Notes:

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

[8] Includes the removal of the existing Seaport Marina Hotel (170 Rooms) and construction of the proposed Project.

[9] The LOS calculations for this intersection include improvements assumed as part of the AES Battery Energy Storage System cumulative project. Refer to Section 12.2 (planned improvements).

TABLE 5 (CONTINUED)
YEAR 2019 CUMULATIVE PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS – ALTERNATIVE #1

Key Intersections	Time Period	(1) Existing Traffic Conditions		(2) Year 2019 Cumulative Traffic Conditions		(3) Year 2019 Cumulative Plus Alt #1 Project Traffic Conditions[10]				(4) Year 2019 Cumulative Plus Alt # 1 Project With Improvements Traffic Conditions			
		ICU/ HCM	LOS	ICU/ HCM	LOS	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact
24. Pacific Coast Highway at Main/Bolsa Avenue	AM	0.730	C	0.758	C	0.758	C	0.000	No	--	--	--	--
	PM	0.702	C	0.729	C	0.730	C	0.001	No	--	--	--	--
25. Seal Beach Boulevard at Pacific Coast Highway	AM	0.885	D	**0.914**	**E**	**0.914**	**E**	0.000	No	--	--	--	--
	PM	0.811	D	0.841	D	0.841	D	0.000	No	--	--	--	--
29. Pacific Coast Highway at 1st Street	AM	0.699	B	0.732	C	0.733	C	0.001	No	--	--	--	--
	PM	0.758	C	0.800	D	0.801	D	0.001	No	--	--	--	--

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

[10] Includes the removal of the existing Seaport Marina Hotel (170 Rooms) and construction of the proposed Project.

TABLE 6

EXISTING PLUS PROJECT SATURDAY PEAK HOUR INTERSECTION CAPACITY ANALYSIS – ALTERNATIVE #1

Key Intersections	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Alt #1 Project Traffic Conditions[11]				(3) Existing Plus Alt #1 Project With Improvements Traffic Conditions			
		ICU/ HCM	LOS	ICU/ HCM	LOS	Change in ICU/ HCM	Significant Impact	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact
14. Bay Shore Avenue at 2nd Street	Sat. Midday	**0.983**	**E**	**0.984**	**E**	0.001	No	--	--	--	--
17. Pacific Coast Highway at 2nd Street	Sat. Midday	0.887	D	0.899	D	0.012	No	--	--	--	--
22. Pacific Coast Highway at Studebaker Rd	Sat. Midday	0.845	D	0.845	D	0.000	No	--	--	--	--

Notes:

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

[11] Includes the removal of the existing Seaport Marina Hotel (170 Rooms) and construction of the proposed Project.

TABLE 7

YEAR 2019 CUMULATIVE PLUS PROJECT SATURDAY PEAK HOUR INTERSECTION CAPACITY ANALYSIS – ALTERNATIVE #1

Key Intersections	Time Period	(1) Existing Traffic Conditions		(2) Year 2019 Cumulative Traffic Conditions		(3) Year 2019 Cumulative Plus Alt #1 Project Traffic Conditions[12]				(4) Year 2019 Cumulative Plus Alt #1 Project With Improvements Traffic Conditions			
		ICU/ HCM	LOS	ICU/ HCM	LOS	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact
14. Bay Shore Avenue at 2nd Street	Sat. Midday	**0.983**	**E**	**1.021**	**F**	**1.022**	**F**	0.001	No	--	--	--	--
17. Pacific Coast Highway at 2nd Street	Sat. Midday	0.887	D	**0.930**	**E**	**0.942**	**E**	0.012	No	--	--	--	--
22. Pacific Coast Highway at Studebaker Rd	Sat. Midday	0.845	D	0.892	D	0.892	D	0.000	No	--	--	--	--

Notes:

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

[12] Includes the removal of the existing Seaport Marina Hotel (170 Rooms) and construction of the proposed Project.

TABLE 8
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS – ALTERNATIVE #1
CALTRANS METHODOLOGY

Key Intersections	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Alt #1 Project Traffic Conditions[13]			(3) Existing Plus Alt #1 Project With Improvements Traffic Conditions		
		HCM	LOS	HCM	LOS	Significant Impact	HCM	LOS	Significant Impact
17. Pacific Coast Highway at 2nd Street	AM	41.7 s/v	D	42.0 s/v	D	No	--	--	--
	PM	41.0 s/v	D	41.3 s/v	D	No	--	--	--
23. Pacific Coast Highway at Marina Drive	AM	**36.5 s/v**	**E**	**36.5 s/v**	**E**	No	--	--	--
	PM	19.9 s/v	C	22.6 s/v	C	No	--	--	--
25. Seal Beach Boulevard at Pacific Coast Highway	AM	53.1 s/v	D	54.6 s/v	D	No	--	--	--
	PM	41.1 s/v	D	45.2 s/v	D	No	--	--	--

Notes: s/v = seconds per vehicle

[13] Includes the removal of the existing Seaport Marina Hotel (170 Rooms) and construction of the proposed Project.

TABLE 9

YEAR 2019 CUMULATIVE PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS – ALTERNATIVE #1

CALTRANS METHODOLOGY

Key Intersections		Time Period	(1) Year 2019 Cumulative Traffic Conditions		(2) Year 2019 Cumulative Plus Alt #1 Project Traffic Conditions[14]			(3) Year 2019 Cumulative Plus Alt #1 Project With Improvements Traffic Conditions		
			HCM	LOS	HCM	LOS	Significant Impact	HCM	LOS	Significant Impact
17.	Pacific Coast Highway at 2nd Street	AM	45.0 s/v	D	47.1 s/v	D	No	--	--	--
		PM	44.1 s/v	D	45.9 s/v	D	No	--	--	--
23.	Pacific Coast Highway at Marina Drive	AM	**38.5 s/v**	**E**	**46.1 s/v**	**E**	**Yes**	18.0 s/v	B	No
		PM	23.2 s/v	C	25.6 s/v	D	No	16.4 s/v	B	No
25.	Seal Beach Boulevard at Pacific Coast Highway	AM	54.9 s/v	D	**62.6 s/v**	**E**	**Yes**	47.4 s/v	D	No
		PM	46.4 s/v	D	50.3 s/v	D	No	45.1 s/v	D	No

Notes: s/v = seconds per vehicle

[14] Includes the removal of the existing Seaport Marina Hotel (170 Rooms) and construction of the proposed Project.

TABLE 10

EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS – ALTERNATIVE #2

Key Intersections	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Alt #2 Project Traffic Conditions[15]				(3) Existing Plus Alt # 2 Project With Improvements Traffic Conditions			
		ICU/ HCM	LOS	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact
8. Studebaker Road at SR-22 Westbound Ramps	AM	0.639	B	0.645	B	0.006	No	--	--	--	--
	PM	**0.908**	**E**	**0.923**	**E**	0.015	No	--	--	--	--
14. Bay Shore Avenue at 2nd Street	AM	0.847	D	0.859	D	0.012	No	0.842	D	-0.005	No
	PM	**1.009**	**F**	**1.029**	**F**	**0.020**	**Yes**	**1.006**	**F**	-0.003	No
17. Pacific Coast Highway at 2nd Street	AM	**0.933**	**E**	**0.955**	**E**	**0.022**	**Yes**	0.790	C	-0.143	No
	PM	0.876	D	**0.947**	**E**	**0.071**	**Yes**	0.893	D	0.017	No
19. Studebaker Road at 2nd Street	AM	0.857	D	0.865	D	0.008	No	--	--	--	--
	PM	**0.947**	**E**	**0.961**	**E**	0.014	No	--	--	--	--
20. Seal Beach Boulevard at Westminster Avenue	AM	**0.936**	**E**	**0.942**	**E**	0.006	No	**0.902**	**E**	-0.034	No
	PM	**0.929**	**E**	**0.941**	**E**	**0.012**	**Yes**	0.888	D	-0.041	No
23. Pacific Coast Highway at Marina Drive	AM	**36.5 s/v**	**E**	**38.4 s/v**	**E**	**1.9 s/v**	**Yes**	0.833	D	--	No
	PM	19.9 s/v	C	21.1 s/v	C	1.2 s/v	No	0.794	C	--	No
24. Pacific Coast Highway at Main/Bolsa Avenue	AM	0.730	C	0.747	C	0.017	No	--	--	--	--
	PM	0.702	C	0.732	C	0.030	No	--	--	--	--
25. Seal Beach Boulevard at Pacific Coast Highway	AM	0.885	D	0.891	D	0.006	No	--	--	--	--
	PM	0.811	D	0.826	D	0.015	No	--	--	--	--

Notes:

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

[15] Includes the removal of the existing Seaport Marina Hotel (170 Rooms) and construction of the proposed Project.

TABLE 11

YEAR 2019 CUMULATIVE PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS – ALTERNATIVE #2

Key Intersections	Time Period	(1) Existing Traffic Conditions		(2) Year 2019 Cumulative Traffic Conditions		(3) Year 2019 Cumulative Plus Alt #2 Project Traffic Conditions[16]				(4) Year 2019 Cumulative Plus Alt #2 Project With Improvements Traffic Conditions			
		ICU/ HCM	LOS	ICU/ HCM	LOS	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact
8. Studebaker Road at SR-22 Westbound Ramps	AM	0.639	B	0.681	B	0.687	B	0.006	No	--	--	--	--
	PM	**0.908**	**E**	**0.950**	**E**	**0.964**	**E**	0.014	No	--	--	--	--
12. Studebaker Road at Loynes Drive	AM	0.675	B	0.781	C[17]	0.786	C[17]	0.005	No	0.708	C	-0.073	No
	PM	0.791	C	0.880	D	**0.901**	**E**	**0.021**	**Yes**	0.883	D	0.003	No
14. Bay Shore Avenue at 2nd Street	AM	0.847	D	0.878	D	0.890	D	0.012	No	0.873	D	-0.005	No
	PM	**1.009**	**F**	**1.043**	**F**	**1.063**	**F**	**0.020**	**Yes**	**1.040**	**F**	-0.003	No
17. Pacific Coast Highway at 2nd Street	AM	**0.933**	**E**	**0.977**	**E**	**0.999**	**E**	**0.022**	**Yes**	0.818	D	-0.159	No
	PM	0.876	D	**0.916**	**E**	**0.988**	**E**	**0.072**	**Yes**	**0.927**	**E**	0.011	No
19. Studebaker Road at 2nd Street	AM	0.857	D	0.892	D	0.900	D	0.008	No	--	--	--	--
	PM	**0.947**	**E**	**0.980**	**E**	**0.994**	**E**	0.014	No	--	--	--	--
20. Seal Beach Boulevard at Westminster Avenue	AM	**0.936**	**E**	**0.967**	**E**	**0.973**	**E**	0.006	No	**0.930**	**E**	-0.037	No
	PM	**0.929**	**E**	**0.958**	**E**	**0.970**	**E**	**0.012**	**Yes**	**0.914**	**E**	-0.044	No
22. Pacific Coast Highway at Studebaker Rd	AM	0.797	C	0.840	D	0.852	D	0.012	No	0.773	C	-0.067	No
	PM	0.840	D	0.889	D	**0.913**	**E**	**0.024**	**Yes**	0.787	C	-0.102	No
23. Pacific Coast Highway at Marina Drive	AM	**36.5 s/v**	**E**	**38.5 s/v**	**E**	**40.6 s/v**	**E**	**2.1 s/v**	**Yes**	0.866	D	--	No
	PM	19.9 s/v	C	23.2 s/v	C	24.9 s/v	C	1.7 s/v	No	0.827	D	--	No

Notes:

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

[16] Includes the removal of the existing Seaport Marina Hotel (170 Rooms) and construction of the proposed Project.

[17] The LOS calculations for this intersection include improvements assumed as part of the AES Battery Energy Storage System cumulative project. Refer to Section 12.2 (planned improvements).

TABLE 11 (CONTINUED)
YEAR 2019 CUMULATIVE PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS – ALTERNATIVE #2

Key Intersections	Time Period	(1) Existing Traffic Conditions		(2) Year 2019 Cumulative Traffic Conditions		(3) Year 2019 Cumulative Plus Alt #2 Project Traffic Conditions[18]				(4) Year 2019 Cumulative Plus Alt #2 Project With Improvements Traffic Conditions			
		ICU/ HCM	LOS	ICU/ HCM	LOS	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact
24. Pacific Coast Highway at Main/Bolsa Avenue	AM	0.730	C	0.758	C	0.774	C	0.016	No	--	--	--	--
	PM	0.702	C	0.729	C	0.760	C	0.031	No	--	--	--	--
25. Seal Beach Boulevard at Pacific Coast Highway	AM	0.885	D	**0.914**	**E**	**0.920**	**E**	0.006	No	--	--	--	--
	PM	0.811	D	0.841	D	0.856	D	0.015	No	--	--	--	--
29. Pacific Coast Highway at 1st Street	AM	0.699	B	0.732	C	0.745	C	0.013	No	0.740	C	0.008	No
	PM	0.758	C	0.800	D	0.825	D	**0.025**	**Yes**	0.751	C	-0.049	No

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

[18] Includes the removal of the existing Seaport Marina Hotel (170 Rooms) and construction of the proposed Project.

TABLE 12

EXISTING PLUS PROJECT SATURDAY PEAK HOUR INTERSECTION CAPACITY ANALYSIS – ALTERNATIVE #2

Key Intersections	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Alt #2 Project Traffic Conditions[19]				(3) Existing Plus Alt #2 Project With Improvements Traffic Conditions			
		ICU/ HCM	LOS	ICU/ HCM	LOS	Change in ICU/ HCM	Significant Impact	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact
14. Bay Shore Avenue at 2nd Street	Sat. Midday	**0.983**	**E**	**1.017**	**F**	**0.034**	**Yes**	**0.976**	**E**	-0.007	No
17. Pacific Coast Highway at 2nd Street	Sat. Midday	0.887	D	**1.007**	**F**	**0.120**	**Yes**	0.871	D	-0.016	No
22. Pacific Coast Highway at Studebaker Rd	Sat. Midday	0.845	D	**0.907**	**E**	**0.062**	**Yes**	0.771	C	-0.074	No

Notes:

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

[19] Includes the removal of the existing Seaport Marina Hotel (170 Rooms) and construction of the proposed Project.

TABLE 13

YEAR 2019 CUMULATIVE PLUS PROJECT SATURDAY PEAK HOUR INTERSECTION CAPACITY ANALYSIS – ALTERNATIVE #2

Key Intersections	Time Period	(1) Existing Traffic Conditions		(2) Year 2019 Cumulative Traffic Conditions		(3) Year 2019 Cumulative Plus Alt #2 Project Traffic Conditions[20]				(4) Year 2019 Cumulative Plus Alt #2 Project With Improvements Traffic Conditions			
		ICU/ HCM	LOS	ICU/ HCM	LOS	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact
14. Bay Shore Avenue at 2nd Street	Sat. Midday	**0.983**	**E**	**1.021**	**F**	**1.056**	**F**	**0.035**	**Yes**	**1.012**	**F**	-0.009	No
17. Pacific Coast Highway at 2nd Street	Sat. Midday	0.887	D	**0.930**	**E**	**1.050**	**F**	**0.120**	**Yes**	**0.914**	**E**	-0.016	No
22. Pacific Coast Highway at Studebaker Rd	Sat. Midday	0.845	D	0.892	D	**0.953**	**E**	**0.061**	**Yes**	0.809	D	-0.083	No

Notes:

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

[20] Includes the removal of the existing Seaport Marina Hotel (170 Rooms) and construction of the proposed Project.

TABLE 14
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS – ALTERNATIVE #2
CALTRANS METHODOLOGY

Key Intersections	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Alt #2 Project Traffic Conditions[21]			(3) Existing Plus Alt #2 Project With Improvements Traffic Conditions		
		HCM	LOS	HCM	LOS	Significant Impact	HCM	LOS	Significant Impact
17. Pacific Coast Highway at 2nd Street	AM	41.7 s/v	D	42.5 s/v	D	No	--	--	--
	PM	41.0 s/v	D	44.3 s/v	D	No	--	--	--
23. Pacific Coast Highway at Marina Drive	AM	**36.5 s/v**	**E**	**38.4 s/v**	**E**	**Yes**	15.8 s/v	B	No
	PM	19.9 s/v	C	21.1 s/v	C	No	15.3 s/v	B	No
25. Seal Beach Boulevard at Pacific Coast Highway	AM	53.1 s/v	D	54.3 s/v	D	No	--	--	--
	PM	41.1 s/v	D	41.8 s/v	D	No	--	--	--

Notes: s/v = seconds per vehicle

[21] Includes the removal of the existing Seaport Marina Hotel (170 Rooms) and construction of the proposed Project.

TABLE 15

YEAR 2019 CUMULATIVE PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS – ALTERNATIVE #2

CALTRANS METHODOLOGY

Key Intersections		Time Period	(1) Year 2019 Cumulative Traffic Conditions		(2) Year 2019 Cumulative Plus Alt #2 Project Traffic Conditions[22]			(3) Year 2019 Cumulative Plus Alt #2 Project With Improvements Traffic Conditions		
			HCM	LOS	HCM	LOS	Significant Impact	HCM	LOS	Significant Impact
17.	Pacific Coast Highway at 2nd Street	AM	45.0 s/v	D	46.1 s/v	D	No	--	--	--
		PM	44.1 s/v	D	51.0 s/v	D	No	--	--	--
23.	Pacific Coast Highway at Marina Drive	AM	**38.5 s/v**	**E**	**40.6 s/v**	**E**	**Yes**	18.8 s/v	B	No
		PM	23.2 s/v	C	24.9 s/v	C	No	17.1 s/v	B	No
25.	Seal Beach Boulevard at Pacific Coast Highway	AM	54.9 s/v	D	**56.6 s/v**	**E**	**Yes**	49.7 s/v	D	No
		PM	46.4 s/v	D	50.2 s/v	D	No	48.9 s/v	D	No

Notes: s/v = seconds per vehicle

[22] Includes the removal of the existing Seaport Marina Hotel (170 Rooms) and construction of the proposed Project.

TABLE 16

EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS – ALTERNATIVE #3

Key Intersections	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Alt #3 Project Traffic Conditions[23]				(3) Existing Plus Alt #3 Project With Improvements Traffic Conditions			
		ICU/ HCM	LOS	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact
8. Studebaker Road at SR-22 Westbound Ramps	AM	0.639	B	0.647	B	0.008	No	--	--	--	--
	PM	**0.908**	**E**	**0.922**	**E**	0.014	No	--	--	--	--
14. Bay Shore Avenue at 2nd Street	AM	0.847	D	0.856	D	0.009	No	--	--	--	--
	PM	**1.009**	**F**	**1.024**	**F**	0.015	No	--	--	--	--
17. Pacific Coast Highway at 2nd Street	AM	**0.933**	**E**	**0.957**	**E**	**0.024**	**Yes**	0.788	C	-0.145	No
	PM	0.876	D	**0.935**	**E**	**0.059**	**Yes**	0.892	D	0.016	No
19. Studebaker Road at 2nd Street	AM	0.857	D	0.866	D	0.009	No	--	--	--	--
	PM	**0.947**	**E**	**0.961**	**E**	0.014	No	--	--	--	--
20. Seal Beach Boulevard at Westminster Avenue	AM	**0.936**	**E**	**0.942**	**E**	0.006	No	**0.902**	**E**	-0.034	No
	PM	**0.929**	**E**	**0.939**	**E**	**0.010**	**Yes**	0.887	D	-0.042	No
23. Pacific Coast Highway at Marina Drive	AM	**36.5 s/v**	**E**	**38.0 s/v**	**E**	**1.5 s/v**	**Yes**	0.831	D	--	No
	PM	19.9 s/v	C	20.8 s/v	C	0.9 s/v	No	0.789	C	--	No
24. Pacific Coast Highway at Main/Bolsa Avenue	AM	0.730	C	0.743	C	0.013	No	--	--	--	--
	PM	0.702	C	0.725	C	0.023	No	--	--	--	--
25. Seal Beach Boulevard at Pacific Coast Highway	AM	0.885	D	0.890	D	0.005	No	--	--	--	--
	PM	0.811	D	0.823	D	0.012	No	--	--	--	--

Notes:

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

[23] Includes the removal of the existing Seaport Marina Hotel (170 Rooms) and construction of the proposed Project.

TABLE 17

YEAR 2019 CUMULATIVE PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS – ALTERNATIVE #3

Key Intersections	Time Period	(1) Existing Traffic Conditions		(2) Year 2019 Cumulative Traffic Conditions		(3) Year 2019 Cumulative Plus Alt #3 Project Traffic Conditions[24]				(4) Year 2019 Cumulative Plus Alt #3 Project With Improvements Traffic Conditions			
		ICU/ HCM	LOS	ICU/ HCM	LOS	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact
8. Studebaker Road at SR-22 Westbound Ramps	AM	0.639	B	0.681	B	0.689	B	0.008	No	--	--	--	--
	PM	**0.908**	**E**	**0.950**	**E**	**0.963**	**E**	0.013	No	--	--	--	--
12. Studebaker Road at Loynes Drive	AM	0.675	B	0.781	C[25]	0.787	C[25]	0.006	No	0.709	C	-0.072	No
	PM	0.791	C	0.880	D	**0.901**	**E**	**0.021**	**Yes**	0.882	D	0.002	No
14. Bay Shore Avenue at 2nd Street	AM	0.847	D	0.878	D	0.888	D	0.010	No	--	--	--	--
	PM	**1.009**	**F**	**1.043**	**F**	**1.058**	**F**	0.015	No	--	--	--	--
17. Pacific Coast Highway at 2nd Street	AM	**0.933**	**E**	**0.977**	**E**	**1.000**	**E**	**0.023**	**Yes**	0.816	D	-0.161	No
	PM	0.876	D	**0.916**	**E**	**0.977**	**E**	**0.061**	**Yes**	**0.926**	**E**	0.010	No
19. Studebaker Road at 2nd Street	AM	0.857	D	0.892	D	**0.901**	**E**	0.009	No	--	--	--	--
	PM	**0.947**	**E**	**0.980**	**E**	**0.993**	**E**	0.013	No	--	--	--	--
20. Seal Beach Boulevard at Westminster Avenue	AM	**0.936**	**E**	**0.967**	**E**	**0.972**	**E**	0.005	No	**0.930**	**E**	-0.037	No
	PM	**0.929**	**E**	**0.958**	**E**	**0.968**	**E**	**0.010**	**Yes**	**0.913**	**E**	-0.045	No
22. Pacific Coast Highway at Studebaker Rd	AM	0.797	C	0.840	D	0.849	D	0.009	No	--	--	--	--
	PM	0.840	D	0.889	D	**0.908**	**E**	0.019	No	--	--	--	--
23. Pacific Coast Highway at Marina Drive	AM	**36.5 s/v**	**E**	**38.5 s/v**	**E**	**40.1 s/v**	**E**	**1.6 s/v**	**Yes**	0.863	D	--	No
	PM	19.9 s/v	C	23.2 s/v	C	24.5 s/v	C	1.3 s/v	No	0.823	D	--	No

Notes:

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

[24] Includes the removal of the existing Seaport Marina Hotel (170 Rooms) and construction of the proposed Project.

[25] The LOS calculations for this intersection include improvements assumed as part of the AES Battery Energy Storage System cumulative project. Refer to Section 12.2 (planned improvements).

TABLE 17 (CONTINUED)
YEAR 2019 CUMULATIVE PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS – ALTERNATIVE #3

Key Intersections	Time Period	(1) Existing Traffic Conditions		(2) Year 2019 Cumulative Traffic Conditions		(3) Year 2019 Cumulative Plus Alt #3 Project Traffic Conditions[26]				(4) Year 2019 Cumulative Plus Alt #3 Project With Improvements Traffic Conditions			
		ICU/ HCM	LOS	ICU/ HCM	LOS	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact
24. Pacific Coast Highway at Main/Bolsa Avenue	AM	0.730	C	0.758	C	0.771	C	0.013	No	--	--	--	--
	PM	0.702	C	0.729	C	0.753	C	0.024	No	--	--	--	--
25. Seal Beach Boulevard at Pacific Coast Highway	AM	0.885	D	**0.914**	**E**	**0.919**	**E**	0.005	No	--	--	--	--
	PM	0.811	D	0.841	D	0.853	D	0.012	No	--	--	--	--
29. Pacific Coast Highway at 1st Street	AM	0.699	B	0.732	C	0.742	C	0.010	No	0.738	C	0.006	No
	PM	0.758	C	0.800	D	0.820	D	**0.020**	**Yes**	0.746	C	-0.054	No

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

[26] Includes the removal of the existing Seaport Marina Hotel (170 Rooms) and construction of the proposed Project.

TABLE 18

EXISTING PLUS PROJECT SATURDAY PEAK HOUR INTERSECTION CAPACITY ANALYSIS – ALTERNATIVE #3

Key Intersections	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Alt #3 Project Traffic Conditions[27]				(3) Existing Plus Alt #3 Project With Improvements Traffic Conditions			
		ICU/ HCM	LOS	ICU/ HCM	LOS	Change in ICU/ HCM	Significant Impact	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact
14. Bay Shore Avenue at 2nd Street	Sat. Midday	**0.983**	**E**	**1.010**	**F**	**0.027**	**Yes**	**0.968**	**E**	-0.015	No
17. Pacific Coast Highway at 2nd Street	Sat. Midday	0.887	D	**0.988**	**E**	**0.101**	**Yes**	0.870	D	-0.017	No
22. Pacific Coast Highway at Studebaker Rd	Sat. Midday	0.845	D	0.893	D	0.048	No	--	--	--	--

Notes:

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

[27] Includes the removal of the existing Seaport Marina Hotel (170 Rooms) and construction of the proposed Project.

TABLE 19

YEAR 2019 CUMULATIVE PLUS PROJECT SATURDAY PEAK HOUR INTERSECTION CAPACITY ANALYSIS – ALTERNATIVE #3

Key Intersections	Time Period	(1) Existing Traffic Conditions		(2) Year 2019 Cumulative Traffic Conditions		(3) Year 2019 Cumulative Plus Alt #3 Project Traffic Conditions[28]				(4) Year 2019 Cumulative Plus Alt #3 Project With Improvements Traffic Conditions			
		ICU/ HCM	LOS	ICU/ HCM	LOS	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact	ICU/ HCM	LOS	Change in ICU/ HCM	Signif-icant Impact
14. Bay Shore Avenue at 2nd Street	Sat. Midday	**0.983**	**E**	**1.021**	**F**	**1.048**	**F**	**0.027**	**Yes**	**1.035**	**F**	0.014	No
17. Pacific Coast Highway at 2nd Street	Sat. Midday	0.887	D	**0.930**	**E**	**1.031**	**F**	**0.101**	**Yes**	**0.926**	**E**	-0.004	No
22. Pacific Coast Highway at Studebaker Rd	Sat. Midday	0.845	D	0.892	D	**0.939**	**E**	**0.047**	**Yes**	0.783	C	-0.109	No

Notes:

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

[28] Includes the removal of the existing Seaport Marina Hotel (170 Rooms) and construction of the proposed Project.

LINSCOTT LAW & GREENSPAN engineers

TABLE 20
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS – ALTERNATIVE #3
CALTRANS METHODOLOGY

Key Intersections	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Alt #3 Project Traffic Conditions[29]			(3) Existing Plus Alt #3 Project With Improvements Traffic Conditions		
		HCM	LOS	HCM	LOS	Significant Impact	HCM	LOS	Significant Impact
17. Pacific Coast Highway at 2nd Street	AM	41.7 s/v	D	42.6 s/v	D	No	--	--	--
	PM	41.0 s/v	D	43.5 s/v	D	No	--	--	--
23. Pacific Coast Highway at Marina Drive	AM	**36.5 s/v**	**E**	**38.0 s/v**	**E**	**Yes**	15.7 s/v	B	No
	PM	19.9 s/v	C	20.8 s/v	C	No	15.0 s/v	B	No
25. Seal Beach Boulevard at Pacific Coast Highway	AM	53.1 s/v	D	53.5 s/v	D	No	--	--	--
	PM	41.1 s/v	D	41.4 s/v	D	No	--	--	--

Notes: s/v = seconds per vehicle

[29] Includes the removal of the existing Seaport Marina Hotel (170 Rooms) and construction of the proposed Project.

TABLE 21

YEAR 2019 CUMULATIVE PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS – ALTERNATIVE #3

CALTRANS METHODOLOGY

Key Intersections		Time Period	(1) Year 2019 Cumulative Traffic Conditions		(2) Year 2019 Cumulative Plus Alt #3 Project Traffic Conditions[30]			(3) Year 2019 Cumulative Plus Alt #3 Project With Improvements Traffic Conditions		
			HCM	LOS	HCM	LOS	Significant Impact	HCM	LOS	Significant Impact
17.	Pacific Coast Highway at 2nd Street	AM	45.0 s/v	D	46.2 s/v	D	No	--	--	--
		PM	44.1 s/v	D	49.5 s/v	D	No	--	--	--
23.	Pacific Coast Highway at Marina Drive	AM	**38.5 s/v**	**E**	**40.1 s/v**	**E**	**Yes**	18.6 s/v	B	No
		PM	23.2 s/v	C	24.5 s/v	C	No	16.9 s/v	B	No
25.	Seal Beach Boulevard at Pacific Coast Highway	AM	54.9 s/v	D	**57.3 s/v**	**E**	**Yes**	54.1 s/v	D	No
		PM	46.4 s/v	D	49.0 s/v	D	No	47.9 s/v	D	No

Notes: s/v = seconds per vehicle

[30] Includes the removal of the existing Seaport Marina Hotel (170 Rooms) and construction of the proposed Project.