

7. Future Traffic Conditions

In this section, future traffic conditions reflecting ultimate buildout of the existing General Plan with the project are discussed. All future traffic conditions are for 2020 land use conditions.

Future Daily Traffic Volumes

Figures 9 and 10 show the daily traffic volumes that can be expected for 2020 traffic conditions without and with the development. Future traffic volumes were provided by the City of Fullerton Traffic Model. This model was developed under contract to the City by Al Grover and Associates. It produces Year 2020 traffic forecasts. The Fullerton Traffic Model is more thoroughly discussed in Appendix D, including the traffic volumes produced by the model.

Daily traffic volume estimates were obtained by factoring the sum of the morning and evening peak hour volumes. A factor of 5.5 was used.

Future Peak Hour Turning Movement Volumes

Appendix C contains the future peak hour intersection turning movement volumes.

Future Intersection Lanes

The Appendix C shows of peak hour turning movement volumes for each intersection and also shows the number of future intersection through and turning movement lanes. The lanes are also listed in Tables 1 to 6.

Future Intersection Delay

The Delay for future traffic conditions have been calculated and are shown in Tables 3 and 4.

Appendix B contains the Delay calculations. An explanation of Delay and how it is calculated is also included in Appendix B.

Future Intersection Capacity Utilization

Intersection Capacity Utilization (ICU) for the future traffic

conditions have been calculated and are shown in Table 6.

Appendix C contains the ICU calculations. An explanation of ICU and how it is calculated is also included in Appendix C.

Future Level of Service

From the Delay analysis, the intersection Level of Service (LOS) can be determined. LOS is directly related to Delay. Appendix B shows how LOS is related to Delay, and describes LOS.

From the ICU analysis, the intersection Level of Service (LOS) can be determined. LOS is directly related to ICU. Appendix C shows how LOS is related to ICU, and describes LOS.

From Tables 3 and 4, it can be seen that all intersections in the vicinity of the site operate at a LOS D or better based on Delay Methods, and LOS E or better based on ICU Method for future peak hour traffic conditions, except for the unmitigated intersections of Gilbert Street and Malvern, Beach and Imperial Highway, and Beach and Malvern which operates at an LOS of E based on Delay Method and LOS F based on ICU Method.

For future traffic conditions (year 2020), intersection geometrics as recommended in Tables 4 and 6 should be implemented. Nine intersections will need additional lanes by the Year 2020 to maintain acceptable Level of Service. These mitigation measures are needed with the project. The project does contribute on a cumulative basis, and the project should pay its pro rata share of the cost of these improvements, assuming a satisfactory cost can be negotiated with the cities in which the intersections lie when the intersections lie outside of the City of Fullerton. The intersections and improvements are as follows:

3. Gilbert Street (NS) and Malvern Avenue (EW)
[City of Fullerton]
- add northbound right turn arrow
4. Gilbert Street (NS) and Commonwealth Avenue (EW)
- add eastbound through lane

In addition to the above mitigation measure, restripe the westbound left turn lane to a through/left turn lane.

6. Bastanchury Road (NS) and Malvern Avenue (EW)
[City of Fullerton]
- add a southbound right turn arrow
- add an eastbound left turn lane

In addition to the above mitigation measure, restripe from an optional through / left turn lane to a through lane.

8. Euclid Street (NS) and Chapman Avenue (EW)
[City of Fullerton]
 - add eastbound right turn lane
9. Euclid Street (NS) and Commonwealth Avenue (EW)
[City of Fullerton]
 - restripe northbound right turn lane to a northbound through lane
 - add southbound through lane
10. Harbor Boulevard (NS) and Imperial Highway (EW)
[City of Fullerton / La Habra]
 - restripe eastbound right turn lane to a eastbound through lane
 - add eastbound left turn lane
 - add westbound left turn lane
11. Harbor Boulevard (NS) and Bastanchury Road (EW)
[City of Fullerton]
 - restripe eastbound right turn lane to a eastbound through lane
17. Beach Boulevard (NS) and Malvern Avenue (EW)
[City of Buena Park]
 - add northbound right turn lane
 - add southbound left turn lane
20. Beach Boulevard (NS) and Imperial Highway (EW)
[City of La Habra]
 - restripe northbound right turn lane to a northbound left turn lane
 - add northbound through lane
 - add southbound through lane
 - add southbound right turn lane
 - add eastbound right turn lane
 - add westbound through lane

Intersection of Lakeview and Euclid

It is recommended that the intersection of Lakeview Drive and Euclid Street be designed as a standard four leg intersection with all movements possible. An alternative is to make it so that east-west traffic on Lakeview has to turn north or south on Euclid. The concern has surfaced that without prohibiting eastbound through and westbound through traffic, there will be cut through traffic from the project to Imperial and Harbor. If drivers perceived this as a shorter route, it would make sense

also for drivers northbound on Euclid to cut through to Imperial and Harbor. Today the volume south of Lakeview on Euclid is 16,000 vehicles per day and the volume on Lakeview east of Euclid is 2,300 per Figure 5. Based on the volumes, there is little evidence of cut through traffic. The introduction of turn prohibitions at intersections sets a bad precedent.

Table 11

DETERMINING DEFICIENT INTERSECTIONS AND IF PROJECT HAS A SIGNIFICANT IMPACT

TEST 1. Determine Deficient Intersections.

A City of Fullerton intersection is considered Deficient if it operates at a Level of Service E using the Delay Method or Level of Service F using the Intersection Capacity Utilization Method and assuming a lane capacity of 1800 vehicles per hour in any one of the following scenarios: (1) Existing, (2) Existing Plus Project, (3) Future, or (4) Future Plus Project.

An Intersection outside of the City of Fullerton is considered Deficient if it operates at a Level of Service F (Level of Service E in Buena Park if mitigation is feasible) using the Intersection Capacity Utilization Method assuming a lane capacity of 1700 vehicles per hour in any one of the following scenarios: (1) Existing, (2) Existing Plus Project, (3) Future, or (4) Future Plus Project.

CONCLUSION: From Tables 1 to 6, it will be seen that the following intersections are Deficient before mitigation is added:

3. Gilbert Street and Malvern Avenue: Operates at LOS F based on City of Fullerton ICU method in 2020 with Project.
Operates at LOS E based on City of Fullerton Delay method in 2020 with Project.
4. Gilbert Street and Commonwealth Ave: Operates at LOS F based on City of Fullerton ICU method in 2020 with Project.
Operates at LOS D based on City of Fullerton Delay method in 2020 with Project.
6. Bastanchury Road and Malvern Avenue: Operates at LOS F based on City of Fullerton ICU method in 2020 with Project.
Operates at LOS F based on City of Fullerton Delay method in 2020 with Project.
8. Euclid Street and Chapman Avenue: Operates at LOS F based on City of Fullerton ICU method in 2020 with Project.
Operates at LOS E based on City of Fullerton Delay method in 2020 with Project.
9. Euclid Street and Commonwealth Ave: Operates at LOS F based on City of Fullerton ICU method in 2020 with Project.
Operates at LOS E based on City of Fullerton Delay method in 2020 with Project.
10. Harbor Boulevard and Imperial Highway: Operates at LOS F based on City of Fullerton ICU method in 2020 with Project.
Operates at LOS F based on City of Fullerton Delay method in 2020 with Project.
11. Harbor Boulevard and Bastanchury Road: Operates at LOS F based on City of Fullerton ICU method in 2020 with Project.
Operates at LOS E based on City of Fullerton Delay method in 2020 with Project.
17. Beach Boulevard and Malvern Avenue: Operates at LOS F based on County of Orange ICU method in 2020 with Project.
20. Beach Boulevard and Imperial Highway: Operates at LOS F based on County of Orange ICU method in 2020 with Project.
Operates at LOS E based on City of Fullerton Delay method in 2020 with Project.

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Table 11 continued

DETERMINING DEFICIENT INTERSECTIONS AND IF PROJECT HAS A SIGNIFICANT IMPACT

TEST 2. Determine if the Project Has a Significant Impact using the Orange County Congestion Management Guideline of adding 1 percent to the existing Intersect Capacity Utilization (ICU).

For the Deficient Intersections selected in TEST 2, the impacts shown in this part of the table occur on the Existing ICU Values.

CONCLUSION: The following intersections are Significantly Impacted: 3, 6, 8, 9, 10, 17, and 20.

Intersection	Peak Hour	Existing Without Project ICU* [A]	Existing Plus Project ICU* [B]	Ratio [B] / [A]	Is Ratio Greater Than 1.01 and Therefore Significant Impact per Orange County Congestion Management Plan
3. Gilbert Street and Malvern Avenue	Morning Evening	0.803 0.588	0.829 0.604	1.03238 1.02721	YES YES
4. Gilbert Street and Commonwealth Ave	Morning Evening	0.548 0.634	0.560 0.675	1.02190 1.06467	YES YES
6. Bastanchury Road and Malvern Avenue	Morning Evening	0.768 0.892	0.774 0.909	1.00781 1.01906	NO YES
8. Euclid Street and Chapman Avenue	Morning Evening	0.676 0.691	0.694 0.718	1.02663 1.03907	YES YES
9. Euclid Street and Commonwealth Ave	Morning Evening	0.714 0.748	0.728 0.764	1.01961 1.02139	YES YES
10. Harbor Boulevard and Imperial Highway	Morning Evening	0.865 0.939	0.876 0.947	1.01272 1.00852	YES NO
11. Harbor Boulevard and Bastanchury Road	Morning Evening	0.810 0.839	0.812 0.843	1.00247 1.00477	NO NO
17. Beach Boulevard and Malvern Avenue	Morning Evening	0.711 0.705	0.719 0.714	1.01125 1.01277	YES YES
20. Beach Boulevard and Imperial Highway	Morning Evening	0.833 0.747	0.846 0.750	1.01561 1.00402	YES NO

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* ICU = Intersection Capacity Utilization

Table 11 continued

DETERMINING DEFICIENT INTERSECTIONS AND IF PROJECT HAS A SIGNIFICANT IMPACT

TEST 3. For the Deficient Intersections selected in TEST 1, and the significantly Impacted Intersections selected in TEST 2, does the project add more than 10 percent to the future growth.

For the Deficient Intersections selected in TEST 1, and the significantly Impacted Intersections selected in Test 2, the impacts shown in this part of the table occur.

CONCLUSION: The following intersections are significantly Impacted based on whether the project adds more than 10 percent of the future growth: 3. Gilbert Street and Malvern Avenue

Intersection	Peak Hour	Existing Without Project ICU*	Existing Plus Project ICU*	Year 2020 Without Project ICU* Value Before Mitigation [C]	Year 2020 Plus Project ICU* Value Before Mitigation [D]	Project Difference [E] = [D] - [C]	Total Difference [F] = [D] - [A]	Ratio of Project Difference to Total Difference [G] = [E] / [F]	Is Ratio of Project Difference to Total Difference Greater Than 0.10 and Therefore Significant Impact per City of Fullerton
3. Gilbert Street and Malvern Avenue	Morning Evening	0.803 0.588	0.829 0.604	1.088 0.845	1.144 0.861	0.056 0.016	0.341 0.273	0.16422 0.05861	YES NO
4. Gilbert Street and Commonwealth Ave	Morning Evening	0.548 0.634	0.560 0.675	0.797 0.980	0.799 1.022	0.002 0.042	0.251 0.388	0.00797 0.10825	NO YES
6. Bastanchury Road and Malvern Avenue	Morning Evening	0.768 0.892	0.774 0.909	1.246 1.394	1.251 1.412	0.005 0.018	0.483 0.520	0.01035 0.03462	NO NO
8. Euclid Street and Chapman Avenue	Morning Evening	0.676 0.691	0.694 0.718	0.910 1.006	0.929 1.033	0.019 0.027	0.253 0.342	0.07510 0.07895	NO NO
9. Euclid Street and Commonwealth Ave	Morning Evening	0.714 0.748	0.728 0.764	0.909 1.064	0.924 1.081	0.015 0.017	0.210 0.333	0.07143 0.05105	NO NO
10. Harbor Boulevard and Imperial Highway	Morning Evening	0.865 0.939	0.876 0.947	1.018 1.162	1.029 1.169	0.011 0.007	0.164 0.230	0.06707 0.03043	NO NO
17. Beach Boulevard and Malvern Avenue	Morning Evening	0.711 0.705	0.719 0.714	0.872 0.999	0.879 1.008	0.007 0.009	0.168 0.303	0.04167 0.02970	NO NO
20. Beach Boulevard and Imperial Highway	Morning Evening	0.833 0.747	0.846 0.750	1.014 1.021	1.027 1.025	0.013 0.004	0.194 0.278	0.06701 0.01439	NO NO

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Table 11 continued

DETERMINING DEFICIENT INTERSECTIONS AND IF PROJECT HAS A SIGNIFICANT IMPACT

OVERALL CONCLUSION: The following intersections met all three Tests and are therefore financially responsible for a pro rata share of mitigation measures:

3. Gilbert and Malvern - mitigation is a northbound right turn arrow.
4. Gilbert and Commonwealth - mitigation is add an eastbound through lane. In addition to the mitigation measure, restripe the westbound left turn lane to a through / left turn lane.

Figure 11
Year 2020 Daily Traffic Volumes Without Project (1000's)

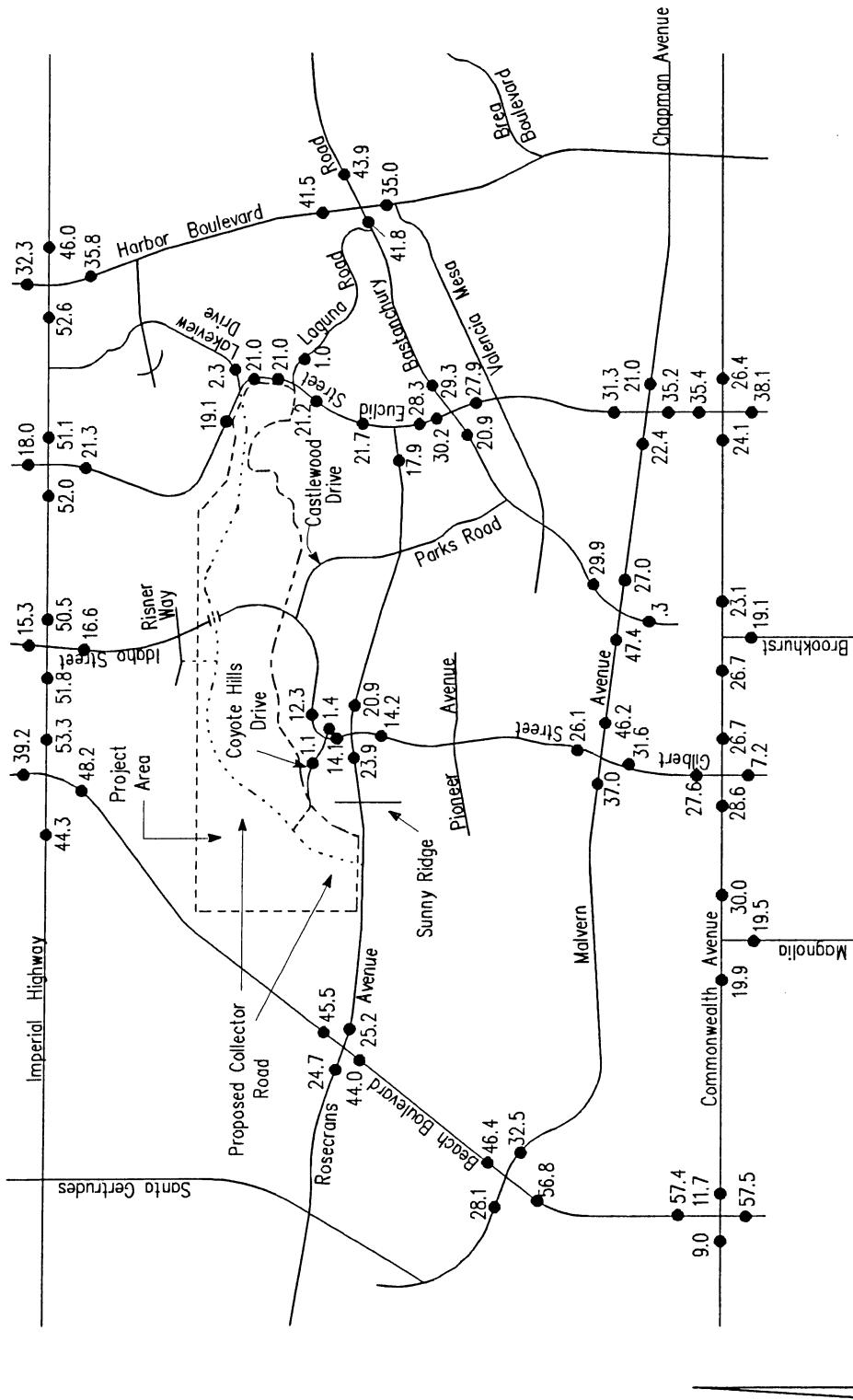


Figure 12
Year 2020 Daily Traffic Volumes With Project (1000's)

