

## RESOLUTION NO. 2019-049

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SANTA ANA ADOPTING "VEHICLE MILES TRAVELED" THRESHOLDS OF SIGNIFICANCE FOR PURPOSES OF ANALYZING TRANSPORTATION IMPACTS UNDER THE CALIFORNIA ENVIRONMENTAL QUALITY ACT

WHEREAS, the California Environmental Quality Act Guidelines ("CEQA Guidelines") encourage public agencies to develop and publish generally applicable "thresholds of significance" to be used in determining the significance of a project's environmental effects; and

WHEREAS, CEQA Guidelines section 15064.7(a) defines a threshold of significance as "an identifiable quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant"; and

WHEREAS, CEQA Guidelines section 15064.7(b) requires that thresholds of significance must be adopted by ordinance, resolution, rule, or regulations, developed through a public review process, and be supported by substantial evidence; and

WHEREAS, pursuant to CEQA Guidelines section 15064.7(c), when adopting thresholds of significance, a public agency may consider thresholds of significance adopted or recommended by other public agencies provided that the decision of the agency is supported by substantial evidence; and

WHEREAS, Senate Bill 743, enacted in 2013 and codified in Public Resources Code section 21099, required changes to the CEQA Guidelines regarding the criteria for determining the significance of transportation impacts of projects; and

WHEREAS, in 2018, the Governor's Office of Planning and Research ("OPR") proposed, and the California Natural Resources Agency certified and adopted, new CEQA Guidelines section 15064.3 that identifies vehicle miles traveled ("VMT") – meaning the amount and distance of automobile travel attributable to a project – as the most appropriate metric to evaluate a project's transportation impacts; and

WHEREAS, as a result, automobile delay, as measured by "level of service" and other similar metrics, generally no longer constitutes a significant environmental effect under CEQA; and

WHEREAS, CEQA Guidelines section 15064.3 goes into effect on July 1, 2020, though public agencies may elect to be governed by this section immediately; and

WHEREAS, the City of Santa Ana, following internal study and a public review process consisting of staff presentations before the Planning Commission and the Environmental and Transportation Committee, and two public outreach meetings, wishes to adopt VMT thresholds of significance for determining the significance of transportation impacts; and

WHEREAS, on June 18, 2019, the City Council held a duly noticed public hearing to consider this Resolution, at which all persons interested were given an opportunity to be heard.

**NOW, THEREFORE, BE IT RESOLVED** by the City Council of the City of Santa Ana as follows:

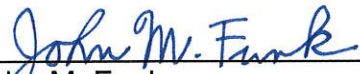
**Section 1.** The City of Santa Ana hereby adopts the VMT thresholds of significance for transportation impact analysis under CEQA that are attached as Exhibit A. These thresholds of significance have been developed through a public review process and are supported by substantial evidence, as required by CEQA Guidelines section 15064.7.

**Section 2.** This Resolution shall take effect immediately upon its adoption by the City Council, and the Clerk of the Council shall attest to and certify the vote adopting this Resolution.

ADOPTED this 18<sup>th</sup> day of June, 2019.

  
\_\_\_\_\_  
Miguel A. Pulido  
Mayor

APPROVED AS TO FORM:  
Sonia R. Carvalho, City Attorney

By:   
\_\_\_\_\_  
John M. Funk  
Assistant City Attorney

|              |                |   |
|--------------|----------------|---|
| AYES:        | Councilmembers | <u>Iglesias, Penaloza, Pulido, Sarmiento, Solorio, Villegas (6)</u> |
| NOES:        | Councilmembers | <u>None (0)</u>   |
| ABSTAIN:     | Councilmembers | <u>None (0)</u>   |
| NOT PRESENT: | Councilmembers | <u>None (0)</u>   |

\* Ward 4 representative vacant.

**CERTIFICATE OF ATTESTATION AND ORIGINALITY**

I, NORMA MITRE, Acting Clerk of the Council, do hereby attest to and certify the attached Resolution No. 2019-049 to be the original resolution adopted by the City Council of the City of Santa Ana on June 18, 2019.

Date: June 25, 2019



\_\_\_\_\_  
Norma Mitre  
Acting Clerk of the Council  
City of Santa Ana

## EXHIBIT A

| <b>Table 1<br/>VMT Impact Thresholds</b>   |   |  |
|--|---|--|
| <b>Methods</b>   | <b>Project Threshold</b>  | <b>Cumulative Threshold</b>  |
| <b>Land Use Plans (such as General Plans and Specific Plans)</b>   |   |  |
| <ul style="list-style-type: none"> <li>• Orange County Traffic Analysis Model (OCTAM) forecast of total daily VMT/SP.                             <ul style="list-style-type: none"> <li>- To capture project effect, the same cumulative year population and employment growth totals should be used. The 'project' only influences land use allocation.</li> </ul> </li> </ul> | A significant impact would occur if the project VMT/SP (for the land use plan) exceeds 15% below the Countywide average.  | A significant impact would occur if the project caused total daily VMT within the City to be higher than the no project alternative under cumulative conditions.   |
| <ul style="list-style-type: none"> <li>• Consistency check with SCAG RTP/SCS.                             <ul style="list-style-type: none"> <li>- Is the proposed project within the growth projections in the RTP/SCS?</li> </ul> </li> </ul>  | NA  | A significant impact would occur if the project is determined to be inconsistent with the RTP/SCS.   |
| <b>Land Use Projects</b>   |   |  |
| <ul style="list-style-type: none"> <li>• Transit Priority Area (TPA) screening.</li> </ul>   | Presumed less than significant VMT impact for projects located in TPAs.   | Project presumption applies under cumulative conditions as long as project is consistent with SCAG RTP/SCS.  |
| <ul style="list-style-type: none"> <li>• Low VMT area screening.</li> </ul>  | Presumed less than significant VMT impact for projects located in low VMT generating model traffic analysis zones (TAZs). These TAZs generate total daily VMT/SP that is 15% less than the baseline level for the County.                                 | Project presumption applies under cumulative conditions as long as project is consistent with SCAG RTP/SCS.  |
| <ul style="list-style-type: none"> <li>• Project type screening.</li> </ul>  | Local serving retail projects (Per OPR's Technical Advisory less than 50,000 square feet) and neighborhood schools are presumed to have a less than significant VMT impact. Projects that generate less than 110 daily trips do not require VMT analysis. | Project presumption applies under cumulative conditions as long as project is consistent with SCAG RTP/SCS.  |
| <ul style="list-style-type: none"> <li>• VMT analysis using OCTAM forecast of total daily VMT/SP.</li> </ul>   | A significant impact would occur if the project generates VMT/SP above 15% below the Countywide average.  | <p>A significant impact would occur if the project is determined to be inconsistent with the RTP/SCS.</p> <p>A significant impact would occur if the project causes total daily VMT within the City to be higher than the no project alternative under cumulative conditions. This analysis should be performed using the 'project effect' method.</p> |
| <b>Transportation Projects (thresholds may apply for SB 743 or GHG purposes)</b>   |   |  |

| <b>Table 1<br/>VMT Impact Thresholds</b>   |   |  |
|--|---|--|
| <b>Methods</b>   | <b>Project Threshold</b>  | <b>Cumulative Threshold</b>  |
| <ul style="list-style-type: none"> <li>OCTAM forecast of total citywide daily VMT<sup>1</sup></li> </ul> | A significant impact would occur if the project increased the baseline VMT within the City. | A significant impact would occur if the project caused total daily VMT within the City to be higher than the no build alternative under cumulative conditions. |
| <ul style="list-style-type: none"> <li>Consistency check with SCAG RTP/SCS</li> </ul>                    | NA  | A significant impact would occur if the project is determined to be inconsistent with the RTP/SCS.   |

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<sup>1</sup> It is recommended that OCTAM is used to develop VMT estimates for transportation project impact assessment. However, the analyst must verify the model results for sensitivity to changes in VMT. Alternatively, if the model is not deemed appropriate, Robert Cevero's research on lane-mile elasticity and its relationship to VMT can be referenced.





# CITY OF SANTA ANA TRAFFIC IMPACT STUDY GUIDELINES

SEPTEMBER 2019

## 1.0 INTRODUCTION

The City of Santa Ana has identified Vehicle Miles Traveled (VMT) as the metric for transportation impact analysis in all traffic studies in accordance with California Environmental Quality Act (CEQA) and California Senate Bill 743 (SB 743). The City of Santa Ana has prepared these Traffic Impact Study (TIS) Guidelines for assessing potential transportation impacts of proposed development projects, General Plan Amendments, and changes to the zoning in the City.

The Public Works Agency reserves the right to modify the TIS Guidelines requirements based on the unique characteristics of a project. Any person completing a VMT assessment should have sufficient background knowledge of SB 743 requirements and travel demand forecasting models to update the appropriate information as needed to complete an accurate assessment.

## 2.0 NEED FOR A TRAFFIC STUDY

A VMT analysis should be conducted for the transportation impact analysis for any land use and transportation project as deemed necessary by the City Traffic Engineer and would apply to projects that have the potential to increase the average VMT per service population (VMT/SP)<sup>1</sup>.

Projects may be screened out from completing a VMT analysis if they have the potential to reduce VMT/SP and result in a less-than-significant transportation impact. Projects that are not screened out will be required to complete a VMT impact analysis per the methodology and transportation impact thresholds of significance outlined in **Section 3.0**.

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<sup>1</sup> Service population typically includes the total employees and residents within a study area or project. However, any population that may generate traffic should be included in the total VMT generated. For some project types it may be appropriate to include other persons in the service population, such as hotel residents, hospital patients or school students.



The City Traffic Engineer reserves the right to request VMT analysis, Level-of-Service analysis, or both in a traffic study for any proposed project. Site specific traffic studies must be scoped with the City Traffic Engineer per the Site Specific Requirements outlined in **Appendix D**.

## 2.1 Project Screening

The first step of a VMT assessment is to conduct an initial project screening to determine if a full VMT analysis is required. The initial project screening should address the following:

1. Does the project have the potential to reduce VMT/SP?
2. Is the project consistent with the Regional Transportation Plan (RTP) / Sustainable Communities Strategy's (SCS)?

Several types of projects can be screened out from a VMT assessment using the following criteria, indicating that these projects have the potential to reduce VMT/SP and result in a less-than-significant transportation impact:

- Projects which serve the local community and have the potential to reduce VMT, such as neighborhood K-12 schools and local-serving retail less than 50,000 sq. ft. (Charter schools are excluded from this criteria).
- Projects that generate less than 110 net daily trips.<sup>2</sup>
- Projects located within Transit Priority Areas (TPAs). **Appendix A** shows the transit priority areas in the City of Santa Ana. Due to the many high quality transit routes in the City, much of the City is a transit priority area.
  - TPAs are defined as a ½ mile radius around an existing or planned major transit stop (e.g. Metrolink Station, Streetcar Station, etc) or an existing stop along a high quality transit corridor.

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<sup>2</sup> Per the *Technical Advisory on Evaluating Transportation Impacts in CEQA*, December 2018, CEQA provides a categorical exemption for existing facilities, including additions to existing structures of up to 10,000 square feet, so long as the project is in an area where public infrastructure is available to allow for maximum planned development and the project is not in an environmentally sensitive area. (CEQA Guidelines, § 15301, subd. (e)(2).) Typical project types for which trip generation increases relatively linearly with building footprint (i.e., general office building, single tenant office building, office park, and business park) generate or attract an additional 110-124 trips per 10,000 square feet. Therefore, absent substantial evidence otherwise, it is reasonable to conclude that the addition of 110 or fewer trips could be considered not to lead to a significant impact.



- High Quality Transit Areas (HQTAs) are defined as a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours. A map of HQTAs can be reviewed on SCAG's website<sup>3</sup> (but should be verified by the engineer/planner related to the criteria for these areas).
- Please note that projects that are in TPAs will also be required to complete a secondary screening step to verify the proposed project's consistency with the assumptions from the RTP/SCS. This consistency can be a land use review (e.g. are the proposed land uses already included in the RTP/SCS) or can be reviewed from a VMT/SP perspective (e.g. does the resulting land use increase or decrease the VMT/SP in the Traffic Analysis Zone (TAZ) compared to the RTP/SCS assumptions).
- Projects located in a low-VMT generating TAZ. **Appendix B** shows VMT/SP in Santa Ana as compared to the Orange County average<sup>4</sup>. Low-VMT TAZs per Santa Ana's threshold of significance are any TAZs generating VMT 15 % below the Orange County average.
  - These projects will require two additional secondary screening steps:
    1. Verify that the proposed land use is consistent with the existing land use that is generating low VMT/SP. This will include a land use (type, density, demographics, etc.) comparison.
    2. Verify that the proposed land use is consistent with RTP/SCS assumptions or the project decreases VMT/SP compared to the RTP/SCS.

**Appendix C** shows areas in the City that can not be screened out by being located in a TPA or low-VMT generating area and identify locations where VMT analysis would be required.

In order to determine if a proposed project is consistent with the RTP/SCS assumptions, SCAG land use growth projections should be reviewed<sup>5</sup>. If the land use growth projections already assume growth in households or employment greater than or equal to the project, than it is reasonable to conclude that the RTP/SCS accounts for the proposed project. If the project was not assumed in the growth, a cumulative impact analysis should be performed, as detailed in **Section 3.0**.

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<sup>3</sup> <http://gisdata.scag.ca.gov/Pages/GISStaticMaps.aspx>

<sup>4</sup> The Orange County Transportation Analysis Model (OCTAM) was utilized to estimate VMT by TAZ and for the Orange County regional average. VMT was estimated using base year OCTAM origin-destination trip matrices and trip skim matrices.

<sup>5</sup> SCAG land use growth projections can be reviewed in the OCTAM socioeconomic dataset.





### 3.0 CEQA VMT ANALYSIS

The following provides the analysis methodology and thresholds of significance for CEQA level VMT analysis. For projects that do not meet any of the screening criteria above, a TIS completing a full VMT analysis will be required. A full VMT analysis will consist of both a project level impact analysis (focused on project-generated VMT) and a cumulative level impact analysis (focused on the project's effect on VMT).

#### 3.1 VMT Impact Thresholds of Significance

##### *Project Level Impacts*

A project is considered to have a significant impact if the project generates total daily VMT/SP higher than 15% below the existing total daily VMT/SP for the County.

##### *Cumulative Impacts*

A cumulative impact would occur if the project results in a negative effect on VMT/SP at the citywide level, i.e. if the City's future VMT/SP is higher with the project than without.

#### 3.2 VMT Analysis Methodology

##### *Analysis Tool*

The Orange County Transportation Analysis Model (OCTAM) is the most appropriate travel demand model to use for VMT analysis within the City of Santa Ana. The City Traffic Engineer will identify the most appropriate version of this model to be used for analysis since the land use information is typically updated every 3-5 years, consistent with the General Plan update and SCAG RTP/SCS updates. Since the model's VMT/SP is utilized to generate the Citywide and Countywide averages, use of the OCTAM is necessary to ensure that project VMT is evaluated consistently with the identified thresholds. As such, the analyst must utilize the OCTAM to generate the project generated VMT and the project's effect on VMT so that the trip generation rates and average trip length information are consistent for comparative purposes.



However, the analyst must verify the model results for sensitivity to changes in VMT, especially for transportation infrastructure projects. Alternatively, if the model is not deemed appropriate, Robert Cervero's research<sup>6</sup> on lane-mile elasticity and its relationship to VMT can be referenced.

### *Project Level Analysis*

To evaluate the project generated VMT, the project should be isolated in the base year model. VMT for the project TAZ should be estimated, using the full accounting methodology<sup>7</sup> and origin-destination methodology<sup>8</sup>, and normalized by the total service population. The VMT/SP should then be compared back to the VMT/SP for Orange County from a base year run without the project to make conclusions on significant impacts. The baseline VMT to compare the project to depends on the date of the project application or notice of preparation, and should be linearly interpolated between the base year and future year model.

### *Cumulative Analysis*

To evaluate the project's effect on VMT, a future year model run with and without the project is needed. VMT within the City of Santa Ana should be estimated from each model run, using the full accounting methodology and origin-destination trip matrices, and normalized by the total service population assumed in the City. The "no project" VMT/SP in the City should be compared to the "with project" VMT/SP in the City to make conclusions on significant impacts.

The analyst may need to complete a redistribution of land use to ensure that the "no project" analysis and the "with project" analysis contain the same land use control totals for City or region; especially if the project is large enough that it would affect land use absorption elsewhere in the City or region. The analyst will need to work with City staff to identify the most appropriate reallocation of land use for this analysis based on project type, scale, location, etc. If a redistribution is assessed, the analyst should use one of the following approaches to complete the assessment:

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<sup>6</sup> *Induced Demand: An Urban and Metropolitan Perspective*, Robert Cervero, 2001. (<https://pdfs.semanticscholar.org/3061/80528a26827d545323f3926cad4690597028.pdf>)

<sup>7</sup> The full accounting methodology takes into account 100% of the internal-to-internal (I-I) trips, 100% of the internal-to-external and external-to-internal (I-X, X-I) trips and 0% of the external-to-external (X-X) trips.

<sup>8</sup> The origin-destination (O-D) methodology uses the assigned vehicle trips from the O-D trip tables from the travel model outputs. This is as opposed to the production-attraction (P-A) methodology that uses the person trips (by trip purpose) from the P-A trip tables.



- Utilize an economist to identify where else in the local region would assumed development not occur if the proposed project is completed; or
- Review all TAZs within a five- to ten-mile radius of the City and reduce growth proportionately across all TAZs showing growth.
- Land use redistribution would also be required if a project reduces land use in a TPA or in a low VMT-generating TAZ compared to either existing conditions or as planned in the RTP/SCS; thus requiring additional land use to be absorbed elsewhere in the region (which may not be in a TPA or in a low-VMT generating area). The redistribution methodology noted above would also be appropriate for this type of assessment.

Alternatively, the analyst could add the project to the assumed land use if the project is smaller in scale; but this should be disclosed in the analysis.

#### 4.0 VMT MITIGATION

Once a significant impact is identified, the project's VMT per capita should be mitigated to be at or less than 15% below the existing Countywide VMT/SP. Mitigation should consist of Transportation Demand Management (TDM) measures analyzed under a VMT-reduction methodology consistent with Chapter 7 of the California Air Pollution Control Officers Association (CAPCOA) *Quantifying Greenhouse Gas Mitigation Measures* (August 2010) and approved by the City's Traffic Engineering Division.

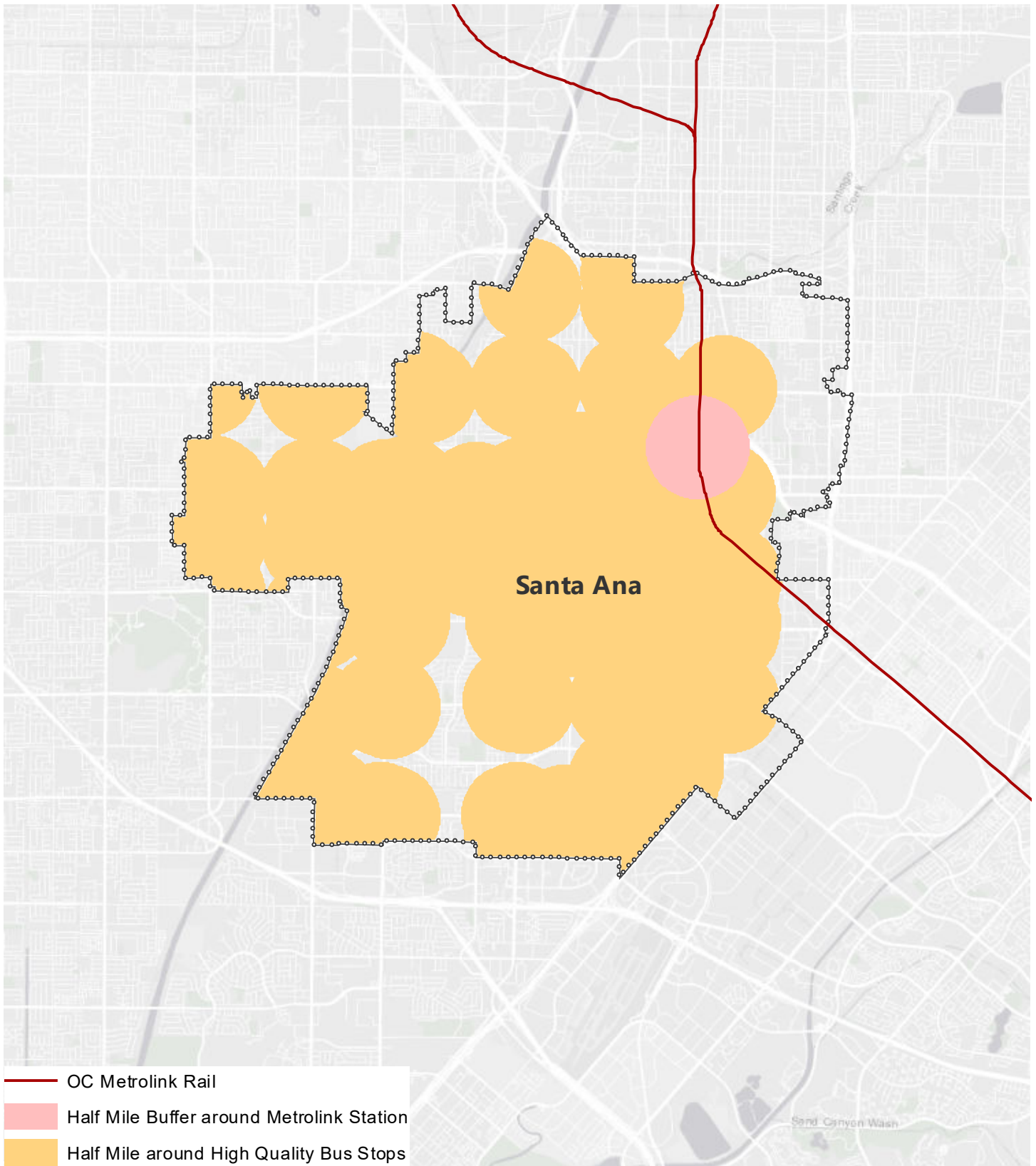
#### **Attachments:**

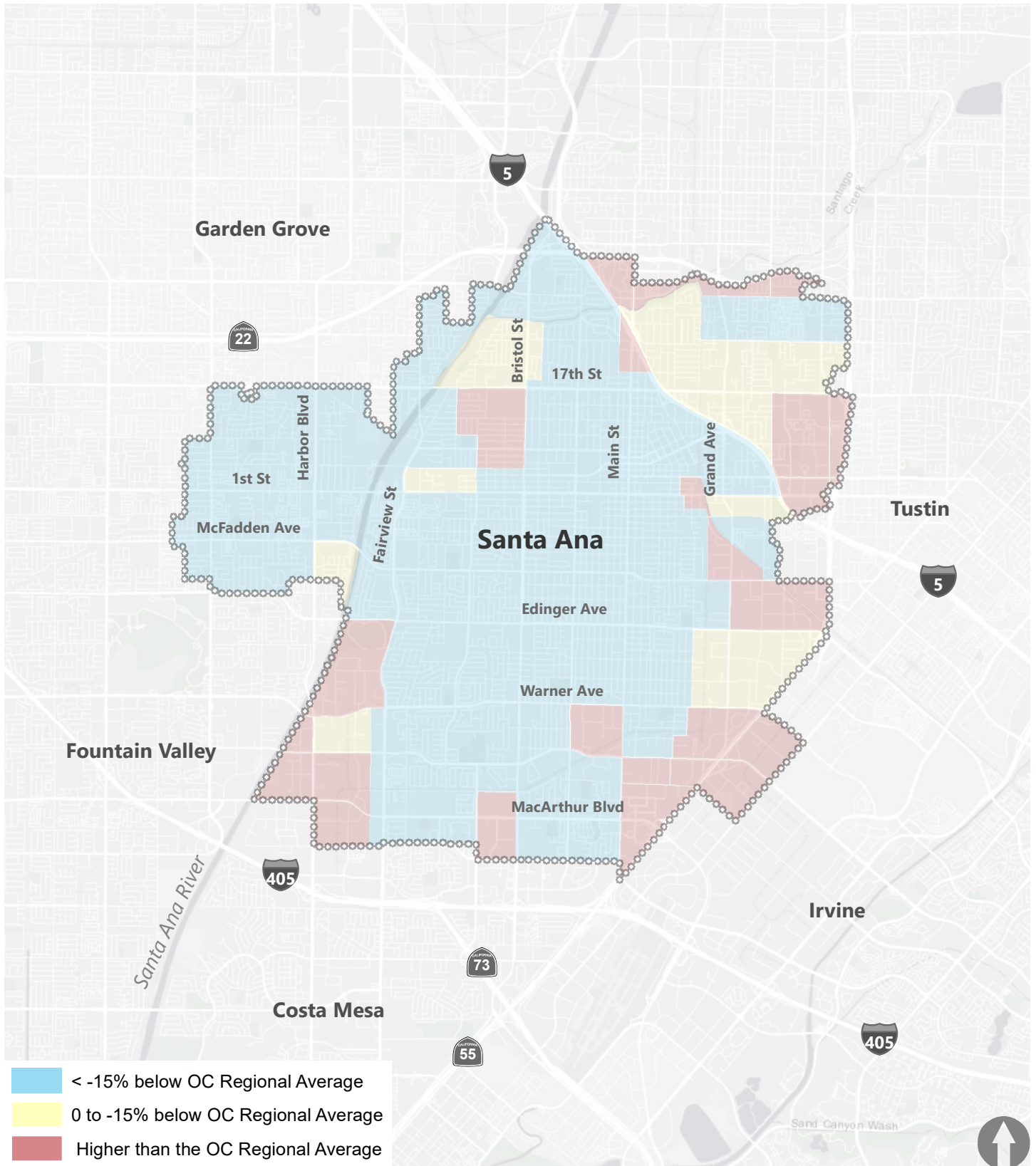
**Appendix A – Santa Ana Transit Priority Areas**

**Appendix B – VMT/SP in Santa Ana as Compared to Orange County Average**

**Appendix C – Santa Ana Development Areas That Require VMT Analysis**

**Appendix D – Traffic Impact Analysis Site Specific Requirements**

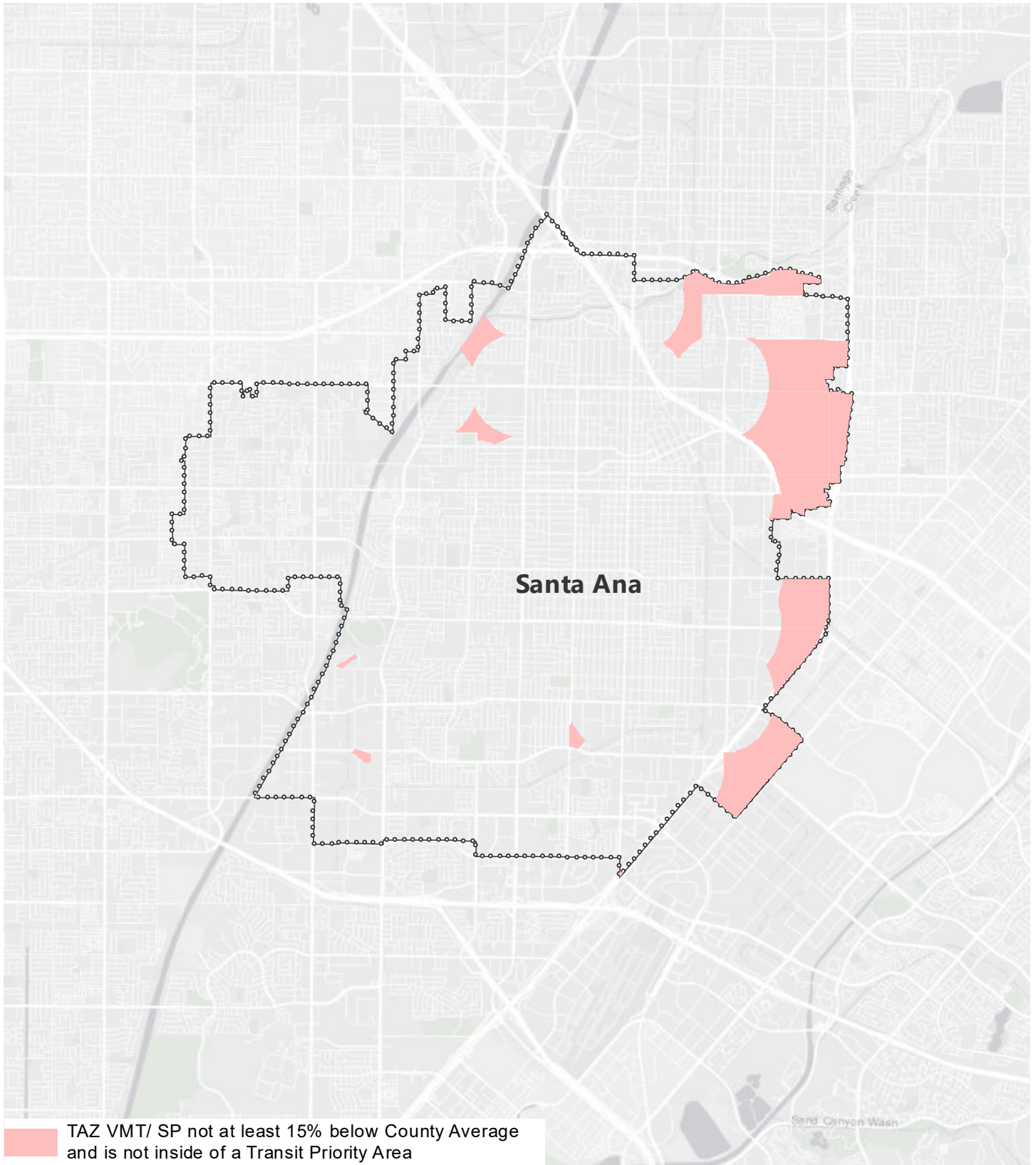




Appendix B

VMT/SP in Santa Ana as Compared to Orange County Average







## APPENDIX D

### TRAFFIC IMPACT ANALYSIS SITE SPECIFIC REQUIREMENTS

- Trip generation forecast including existing and cumulative projects.
- Trip distribution forecast and trip assignment customized to accommodate the nature of project and cumulative project traffic.
- Capacity analysis at the following intersections during both the morning (am) and evening (pm) peak periods. The City of Santa Ana utilizes the following values in calculating Intersection Capacity Utilizations (ICU's): 1600 vphpl for turning lanes, 1700 vphpl for through lanes, 5% clearance intervals. For Unsignalized intersection, the HCM shall be used.
  - **LIST OF INTERSECTIONS TO BE STUDIED**
  - **LIST OF INTERSECTIONS TO BE STUDIED**
- Assessment and recommendation of existing and future configuration/stripping and Level of Service (LOS) at all impacted areas including the following segment location(s). Please note road segment analysis shall be based on the Orange County MPAH methodology and the City of Santa Ana Circulation Element, No V/C capacity ratios in segment analysis:
  - **LIST OF ROADWAY SEGMENTS TO BE STUDIED**
  - **LIST OF INTERSECTIONS TO BE STUDIED**
- Adequacy of storage length of the left turn pockets for:
  - **LIST OF INTERSECTION TURN POCKETS TO BE STUDIED**
  - **LIST OF INTERSECTION TURN POCKETS TO BE STUDIED**
- Field inspect the subject roadway areas and inventory the existing street system as to base line width, striping patterns, and traffic.
- Collect traffic counts on key site area roadways and intersections. These counts will include morning and afternoon peak hour turning movements as well as 24-hour daily volumes at locations between selected intersections.
- Study shall include scenario analysis as follow:
  - Existing Conditions – utilized to establish the current level or existing baseline of traffic operations.
  - Existing Conditions – utilized to establish the current level or existing baseline of traffic operations with project.
  - Project Opening Year No Project Conditions – establishes project opening year baseline to evaluate the proposed Project.
  - Project Opening Year with Project Conditions – represents project opening year baseline traffic conditions.
  - 2040 Project Design Year No Project Conditions – establishes future year baseline to evaluate the proposed Project.

- 2040 Project Design Year with Project Conditions – represents future year baseline traffic conditions with the proposed Project.
- Prepare site traffic access analysis to include the potential impacts associated with other uses to be identified.
- Investigate the adequacy of site access and internal circulation. Internal circulation, particularly with respect to vehicular queues at driveways, required stacking distance and potential impacts upon on-street traffic. Ensure that all access locations will provide safe egress and ingress including adequate sight distance in all directions.
- Evaluate the need for additional on-site and/or off-site traffic controls.
- Identify measures to mitigate the impact of project traffic including roadway and intersection widening, traffic signals installation & modification signing, localized street improvement striping/channelization and all others improvements to provide acceptable LOS.
- Prepare a professional traffic engineering site traffic access analysis report to include appropriate text, tabular and graphic material, suitable for presentation to the City as a freestanding document.
- The consultant must review relevant traffic and parking studies and documents containing traffic analysis conducted in the area. The report must include investigation of the mitigation list presented in the original development agreement/traffic study as it relates to any proposed mitigation recommended in this study.
- An assessment of traffic entering and exiting adjacent arterials must be included particularly with respect to the ability of project to find an "acceptable" gap in the traffic stream without being overtaken by the major street traffic.
- Traffic Consultant shall be responsible to reach out to other jurisdictions, as needed, for concurrence on proposed study locations.
- The City of Santa Ana adopted LOS “D” as the maximum threshold of significance at all intersections and mid-block locations. See Definitions below:

**LEVEL OF SERVICE DEFINITION**

**Maximum Daily Average for Arterial Roads**

| <b>Street Classification</b> | <b>Lane Configuration</b> | <b>A</b> | <b>B</b> | <b>C</b> | <b>D</b> | <b>E</b> | <b>F</b> |
|------------------------------|---------------------------|----------|----------|----------|----------|----------|----------|
| Principal Arterial           | 8 Lanes Divided           | 45,000   | 52,500   | 60,000   | 67,500   | 75,000   | >75,000  |
| Major Arterial               | 6 Lanes Divided           | 33,900   | 39,400   | 45,000   | 50,600   | 56,300   | >56,300  |
| Primary Arterial             | 4 Lanes Divided           | 22,500   | 26,300   | 30,000   | 33,800   | 37,500   | >37,500  |
| Secondary Arterial           | 4 Lanes Undivided         | 15,000   | 17,500   | 20,000   | 22,500   | 25,000   | >25,000  |
| Commuter Street              | 2 Lanes Undivided         | 7,500    | 8,800    | 10,000   | 11,300   | 12,500   | >12,500  |

## Level of Service Descriptions

| Level of Service | Description of Operation   | Range of V/C Ratios |
|------------------|--|---------------------|
| A                | Free flow. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to maneuver within the traffic stream is extremely high. The general level of comfort and convenience provided to the motorist, passenger, or pedestrian is excellent.  | 0.00 – 0.60         |
| B                | Stable flow. The presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream from LOS A. The general level of comfort and convenience provided is somewhat less than that of LOS A, because the presence of others in the traffic stream begins to affect individual behavior.  | 0.61 – 0.70         |
| C                | Stable flow. This LOS marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream. The selection of speed is affected by the presence of others, and maneuvering within the traffic stream requires substantial vigilance on the part of the user. The general level of comfort and convenience declines noticeably at this level.  | 0.71 – 0.80         |
| D                | High density, but stable flow. Speed and freedom to maneuver are severely restricted, and the driver or pedestrian experiences a generally poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level.   | 0.81 – 0.90         |
| E                | Operating conditions at or near the capacity level. All speeds are reduced to a low but relatively uniform value. Freedom to maneuver within the traffic stream is extremely difficult, and generally accomplished by forcing a vehicle or pedestrian to “give way” to accommodate such maneuvers. Comfort and convenience levels are extremely poor, and drivers or pedestrian frustration is generally high. Operations at this level are usually unstable because small increases in flow or minor variations within the stream will cause a breakdown. | 0.91 – 1.00         |
| F                | Forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse that point. Queues form up behind such locations as arrival flow exceeds discharge flow.  | > 1.00              |

### **ADDITIONAL TRAFFIC ANALYSIS REQUIREMENTS (PROJECT SPECIFIC)**

- Evaluate the potential driveway entrance congestion going into the lot from **“X ROAD”**. The southeast parking lot, on the corner of **“Y ROAD”** and **“X ROAD”**, can possibly cause an obstruction in the entrance to the lot. Vehicles parked in the southeast parking lot, especially those in accessible (ADA) parking near the entrance that are backing out of their parking space can prevent vehicles from entering the parking lot. As a result, other vehicles behind will be held back thus creating a traffic jam. This may cause an overflow of vehicles in the parking lot entrance, leading to vehicles being backed up all the way to the **“X ROAD”** entrance as well.
- Vehicles that are exiting the lot making a left onto **“X ROAD”** can potentially be hazardous. Having a raised median on **“X ROAD”** will restrict vehicles from making that left turn out of the lot. In result, there will need to be a path identified for those vehicles exiting the lot to head eastbound.