Transportation Impact Assessment Guidelines for Land Use Projects in CEQA and for General Plan Consistency

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Background

Background Information

Senate Bill 743 (SB 743), signed by the Governor in 2013, has changed the way transportation impacts are identified and analyzed. Specifically, the legislation has directed the Office of Planning and Research (OPR) to look at metrics other than level of service (LOS) for identifying transportation impacts in CEQA documents. In December 2018, OPR released the final guidelines for analysis of transportation impacts, which indicate that Vehicle Miles of Travel (VMT) are generally the preferred metric for transportation impacts moving forward. The Natural Resources Agency completed the rule making process to modify the CEQA guidelines in December of 2018. The CEQA Guidelines identify that, by July of 2020 all lead agencies must use VMT as the new transportation metric for identifying impacts for land use project.

In anticipation of the change to VMT, the City of Fountain Valley conducted an SB 743 Implementation Study to assist with answering important implementation questions about the methodology, thresholds, and mitigation approaches for VMT impact analysis. The study included the following main components.

- Thresholds Evaluation Memorandum – Potential thresholds Fountain Valley could consider when establishing thresholds of significance for VMT assessment
- Methodologies Memorandum – Types of methodologies that could be used to estimate VMT and the pros/cons associated with each approach
- Mitigation Memorandum – Types of mitigation that can be considered for VMT mitigation

As noted in CEQA Guidelines Section 15064.7(b) below, lead agencies are encouraged to formally adopt their significance thresholds, and this is a key part of the SB 743 implementation process.

> *(b) Each public agency is encouraged to develop and publish thresholds of significance that the agency uses in the determination of the significance of environmental effects. Thresholds of significance to be adopted for general use as part of the lead agency's environmental review process must be adopted by ordinance, resolution, rule, or regulation, and developed through a public review process and be supported by substantial evidence. Lead agencies may also use thresholds on a case-by-case basis as provided in Section 15064(b)(2).*

To complement the previous work, the City of Fountain Valley has produced these Transportation Impact Analysis (TIA) Guidelines to outline the specific steps for conducting a transportation impact analysis using the VMT methodology and how to address the applicable general plan consistency requirements.

It should be noted that CEQA requirements change as the CEQA Guidelines are periodically updated and/or legal opinions are rendered that change how analysis is completed. As such, the City of Fountain Valley will continually review these guidelines to ensure that the guidelines reflect the most recent guidance for project transportation impact assessment.

Is Level of Service Still Important?

The City of Fountain Valley has adopted vehicle LOS policies that set standards for which local infrastructure will strive to maintain. These policies are contained in its general plan and therefore apply to discretionary approvals of new land use and transportation projects. Therefore, these guidelines also include instructions for vehicle LOS analysis consistent with general plan requirements. The City Engineer reserves the right to request VMT analysis, Level-of-Service analysis, or both in a traffic study for any proposed project.

Guidelines Organization

The remainder of this guidelines document is organized as follows, with an eye toward organization that provides relevant background information, assessment for congestion management/ General Plan Consistency (e.g. LOS analysis), and CEQA assessment (e.g. VMT analysis):

1. Introduction
2. Need for Transportation Impact Study
3. Transportation Assessment for General Plan Consistency
4. CEQA Assessment - VMT Analysis
5. CEQA Assessment - Active Transportation and Public Transit Analysis
6. Transportation Impact Analysis Format

Introduction

State laws require the correlation of Land Use Element building intensities in a General Plan with the Circulation Element capacity. A Traffic Impact Analysis (TIA) is required by the City of Fountain Valley so that the impact of land use proposals on the existing and future circulation system can be adequately assessed and to ensure that the California Environmental Qualities Act (CEQA) and Congestion Management Program laws and guidelines are met.

The following TIA requirements apply to all development projects for which a TIA is required in the City of Fountain Valley. These TIA requirements shall be used in conjunction with the City's Local CEQA Guidelines and Municipal Code to guide the development review process.

For the past several decades, the preparation of a TIA was integrated into the CEQA process, in which the TIA was used primarily to analyze a project's impacts under CEQA. However, with the passage of SB 743, changes to the TIA process are necessary. Specifically, a TIA that addresses LOS and site access may be needed for project approval outside of the CEQA process.

The purpose of these TIA Guidelines is to provide general instructions for analyzing the potential transportation impacts of proposed development projects. These guidelines present the recommended format and methodology that should generally be utilized in the preparation of TIAs.

CEQA Changes

Since the last TIA Guidelines update, SB 743 was signed into law. A key element of this law is the elimination of auto delay, level of service (LOS), and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant impacts. This change is intended to assist in balancing the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions.

SB 743 contains amendments to current congestion management law that allows cities and counties to effectively opt-out of the LOS standards that would otherwise apply in areas where Congestion Management Plans (CMPs) are still used (including Orange County). Further, SB 743 required the Governor's Office of Planning and Research (OPR) to update the CEQA Guidelines and establish criteria for determining the significance of transportation impacts. In December 2018, OPR released their final recommended guidelines based on feedback with the public, public agencies, and various organizations and individuals. OPR recommended Vehicle Miles Traveled (VMT) as the most appropriate measure of project transportation impacts for land use projects and land use plans. For transportation projects, lead agencies may select their own preferred metric but must support their decision with substantial evidence that complies with CEQA expectations. SB 743 does not prevent a city or county from continuing to analyze delay or LOS outside of CEQA review for other transportation planning or analysis purposes (i.e., general plans, impact fee programs, corridor studies, congestion mitigation, or ongoing network monitoring); but these metrics may no longer constitute the basis for CEQA impacts.

When is a TIA Required?

An applicant seeking project approval will submit the application for a proposed project to the Planning Department. The Planning Department will transmit the application to the City Engineer for preliminary review as part of its interdepartmental coordination process. After a preliminary review of the project by the City Engineer, the applicant will be notified by Planning Department as to whether a TIA is required.

The Traffic Impact Analysis should consider deficiencies in Level-of-Service (LOS) for General Plan consistency purposes, and transportation impacts under CEQA using Vehicle Miles Traveled (VMT). A Traffic Impact Analysis that includes LOS analysis shall be required for a proposed project that meets any of the following criteria, consistent with the Orange County Congestion Management Program (CMP):

- When either the AM or PM peak hour trip generation is expected to exceed 100 vehicle trips from the proposed development
- Projects on the Arterial Highway System which generate 1,600 Average Daily Trips (ADT)
- Projects that will add 51 or more trips during either the AM or PM peak hours to any intersection
- Any project where variations from the standards and guidelines provided in this manual are being proposed

A Traffic Impact Analysis that includes VMT assessment shall be required for a proposed project that does not satisfy any of the following project screening criteria:

- Transit Priority Areas Screening
- Low VMT-generating Areas Screening
- Project Type Screening

See section CEQA Assessment – Land Use Project VMT Analysis later in this document for details on this screening criteria. Projects may be screened from VMT analysis and require level-of-service analysis, or vice-versa. In cases where insufficient information is available to make a preliminary assessment of a proposal's effect on traffic, the City Engineer shall determine, based on his/her professional judgment, whether a TIA will be required.

A TIA must be prepared under the direction of a registered traffic engineer or a registered civil engineer with documented experience in traffic engineering and transportation planning. The TIA shall be submitted to the Public Works Department in a draft form. Comments relative to the analysis shall be provided by the City Engineer, or his/her designee, in writing to the project proponent and its engineer so that any necessary revisions can be made prior to final submittal. The TIA is not deemed complete or final until it incorporates all necessary revisions and is prepared to the City's satisfaction.

The use of a previously approved TIA for a project can be considered by the City Engineer if the land use assumptions, background conditions, and character of the traffic analyzed in the existing TIA are not significantly changed in a proposed project. This would require the projects to be located in the same TAZ (or very similar TAZ) and the project characteristics would need to be similar enough in order to draw the same conclusions regarding the project's VMT per service population relative to the City's threshold.

Transportation Assessment for General Plan Consistency

This section provides guidance for conducting Level-of-Service (LOS) assessment for General Plan Consistency. The scope of these assessments is at the discretion of the City Engineer on a project-by-project basis. Conclusions found in these analyses should be used for project approval but should not be used in the CEQA document to disclose transportation impacts.

Level-of-Service Analysis Procedure

LOS analysis will be conducted at identified mid-block segments and intersections within the study area and at all proposed access points to the project. Intersection capacity calculations will be made using the Intersection Capacity Utilization (ICU) method unless the consultant conducting the traffic study and/or City Engineer or designee identify locations that can be better evaluated using the Operational or Planning Analysis methodologies found in the latest editions of the Highway Capacity Manual (HCM). Pre-approval to use HCM shall be obtained in writing from the City Engineer or designee. Use of the HCM methodology, in addition to an ICU-type analysis, will be required at any study area intersection under the control of Caltrans.

A minimum clearance interval of .05 in conjunction with lane capacities of 1700 per hour of green time for through and turn lanes will be used for all volume/capacity calculations.

If the distance from the edge of the outside through lane is at least 19 feet and parking is prohibited during the peak period, right turning vehicles may be assumed to utilize this "unofficial" right turn lane. Otherwise, all right turn traffic shall be assigned to the outside through lane. If a right turn lane exists, right turn overlap may be assumed, if not prohibited at that location. However, the assumption of the number of vehicles turning right during the overlap phase cannot conflict with any other critical movement at that intersection. Any signal overlap assumptions must be clearly stated.

Pedestrian adjustments shall be performed on a case-by-case basis and assessed according to the procedures outlined in Chapter 16 of the latest version of the Highway Capacity Manual (HCM) for those intersection that have more than 100 pedestrians in the peak period.

Per the City's General Plan Circulation Element and Growth Management Element, a volume/capacity ratio of 0.90 (Level of Service D) is the lowest acceptable Level of Service at intersections following implementation of roadway improvements. Improvements needed to bring intersections and roadway segments to the acceptable service levels must be identified.

When calculating future traffic conditions, vehicular volumes and level of service associated with existing condition and the various categories of projected volumes should be identified individually. Volume/capacity calculations that demonstrate the result of proposed improvements will be required for intersections where unsatisfactory levels of service are identified, and improvements are necessary.

The results of the various volume/capacity calculations should be summarized using figures that graphically represent the roadways within the study area.

Justification for installation of new traffic signal(s), or other traffic control devices, shall be discussed in the TIA, and based on the warrants stated in the latest edition of the Manual of Uniform Traffic Control Devices (MUCTD) or California Supplement. All traffic signal warrant calculations shall be provided in the appendix of the traffic study.

Whenever new public streets, full access driveways, or private streets are proposed to intersect arterial streets, an evaluation of the intersection capacity, spacing, queuing and pocket lengths will be required.

When improvements are identified to bring study intersection operations to acceptable conditions, project applicants will be required to pay an equitable fair share contribution towards the identified improvement.

Transportation Effects

An intersection will be deemed deficient and require improvements to achieve an acceptable LOS when the LOS is E or F (Final V/C Ratio>0.90) with the addition of the project.

Transportation Systems Improvement Program (TSIP)

If the traffic analysis indicates unacceptable service levels at mid-block arterial segments and/or intersections within the study area, a description of proposed improvements to mitigate the deficiencies shall be included. The following areas are required to be addressed in the discussion of improvements:

1. The location and nature of the improvements (This information should be summarized in exhibit form).

2. Volume/Capacity calculations showing the result of all proposed capacity improvements.

3. Implementation feasibility. (Including project cost.)

4. Feasibility of right-of-way acquisition where additional right-of-way is needed to implement improvements.

5. Consistency with acceptable design standards.

6. Timing of the proposed improvements.

7. A Table shall be submitted showing the Volume-to-Capacity ratios and Levels of Service of all studied intersections with and without project, and, with and without proposed improvements.

8. A single or a series of sketch plans shall be included within the body of the TIA graphically depicting all improvements dealing with roadway, parking, and access points. In cases where phased development of a project is proposed, a schedule identifying the improvements needed to improve traffic deficiencies at each phase will also be required.

The TIA should explain the project's effect on the City arterials and intersections, which shall establish a nexus for any proposed improvements needed. For cumulative or long-range analysis (i.e., General Plan build-out) the project is expected to participate in future improvements on a fair-share basis.

Site Access Analysis

The project's effect on access points and on-site circulation will be analyzed. The analysis will, as appropriate, include the following:

- Number of access points proposed for the project site.
- Spacing between driveways and intersections.
- Potential signalization of driveways.
- On-site stacking distance. (Including uses with a Drive-thru.)
- Shared access.
- Turn conflicts/restrictions.
- Adequate sight distance.
- Driveway improvements.
- Pedestrian Connections.
- Any other operational characteristics (as identified by City staff).

If the proposed project is a residential or commercial use with privacy gates, the applicant shall provide a stacking analysis for review and approval. The adequacy of the interface with the arterial network will need to be demonstrated and necessary improvements to adjacent intersections may be required.

On-Site Parking Analysis

A project provides adequate parking capacity if the project meets Fountain Valley Municipal Code parking code requirements. Parking studies are required to support deviations from parking code requirements or the use of reciprocal parking. The parking rates to be used are obtained from the Fountain Valley Municipal Code Chapter 17.34, "Off-Street Parking and Loading." In cases where the code does not address parking rates for a specific lane use, or where deviations from code are proposed, documentation must be included showing how or where the proposed rates were obtained. The parking analysis must demonstrate that proposed parking supply is adequate to accommodate demand.

CEQA Assessment – Land Use Project VMT Analysis

A key element of SB 743, signed in 2013, is the elimination of automobile delay and LOS as the sole basis of determining transportation impacts in CEQA documents. The most recent CEQA guidelines, released in December 2018, recommend VMT as the most appropriate measure of project transportation impacts. 743 does not prevent a city or county from continuing to analyze delay or LOS as part of other plans (i.e., the general plan), studies, or ongoing network monitoring, hence the non-CEQA transportation analysis discussed in the prior chapter.

The following recommendations assist in determining VMT impact thresholds and mitigation requirements for various land use projects' TIAs.

Analysis Methodology

For purposes of SB 743 compliance, a VMT analysis should be conducted for land use projects as deemed necessary by the City Engineer and/or Public Works Director and would apply to projects that have the potential to increase the average VMT per service population (e.g. population plus employment) compared to the City of Fountain Valley boundary. Normalizing VMT per service population provides a transportation efficiency metric that the analysis is based on. Using this efficiency metric allows comparison of the project to the remainder of the City for purposes of identifying transportation impacts.

The approach to a VMT assessment includes project screening as a first step to see if a full VMT assessment would be required. As outlined below, some projects can be assumed to result in a less-than-significant impact based on project type or location. If projects are not eligible to be screened from assessment, a full VMT impact assessment is required. If the assessment results in an impact, mitigation is required to bring the impact to a less-than-significant level.

Project Screening

There are three types of screening that the City will apply to screen projects from project-level assessment. These screening steps are summarized below:

Step 1: Transit Priority Area (TPA) Screening

If the entirety of the project is located within a TPA[1] may be presumed to have a less than significant impact absent substantial evidence to the contrary. This presumption shall ***NOT*** be appropriate if the project includes any of the following:

1. Has a Floor Area Ratio (FAR) of less than 0.75;
2. Includes more parking for use by residents, customers, or employees of the project than required by the jurisdiction (if the jurisdiction requires the project to supply parking);
3. Is inconsistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Metropolitan Planning Organization); or
4. Replaces affordable residential units with a smaller number of moderate- or high-income residential units.

TPA's in Fountain Valley are mapped and shown on **Appendix A**. Please note that Fountain Valley is not in control of transit routes within the City as OCTA manages the network. Transit routes should be periodically reviewed and this document updated accordingly.

Step 2: Low VMT Area Screening

When a residential or office project is located within a low VMT-generating area it may be presumed to have a less than significant impact absent substantial evidence to the contrary. In addition, other employment-related and mixed-use land use projects may qualify for the use of this screening if the project can reasonably be expected to generate VMT per resident, per worker, or per service population that is similar to the existing land uses in the low VMT area.

To develop this screening in the City of Fountain Valley, the OCTAM travel forecasting model was used to measure VMT performance for individual jurisdictions and for individual traffic analysis

[1] A TPA is defined as a half mile area around an existing major transit stop or an existing stop along a high-quality transit corridor per the definitions below.

Pub. Resources Code, § 21064.3 - 'Major transit stop' means a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.

Pub. Resources Code, § 21155 - For purposes of this section, a 'high-quality transit corridor' means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.

zones (TAZs). TAZs are geographic polygons similar to Census block groups used to represent areas of homogenous travel behavior. Total daily VMT per service population (population plus employment) was estimated for each TAZ in Orange County. This presumption may not be appropriate if the project land uses would alter the existing built environment in such a way as to increase the rate or length of vehicle trips.

To identify if the project is in a low VMT-generating area, the analyst may review **Appendix B,** which provides a map of low VMT-generating zones in Fountain Valley as compared to the County. Additionally, as noted above, the analyst must identify if the project is consistent with the existing land use within that TAZ and use professional judgment that there is nothing unique about the project that would otherwise be misrepresented by using the data from the travel demand model.

Step 3: Project Type Screening

Local serving retail projects less than 50,000 square feet may be presumed to have a less than significant impact absent substantial evidence to the contrary. Local serving retail generally improves the convenience of shopping close to home and has the effect of reducing vehicle travel. Minor interior or exterior expansions could be screened from assessment. The increase in square footage applies to the net new or increase in square footage of a new project or re-tenanting of a project. The following uses can be presumed to have a less than significant impact absent substantial evidence to the contrary as their uses are local serving in nature:

- Local-serving K-12 schools
- Local parks
- Day care centers
- Local-serving retail uses less than 50,000 square feet, including:
    - Gas stations
    - Banks
    - Restaurants, bars, cocktail lounges
    - Shopping Center
    - Service uses such as hair salons, barbers, gyms, equipment sales and rentals, home electronics and small appliance repair, laundromats, tailors, and other uses listed as permitted in Section 21.10.030 of the Fountain Valley Municipal Code
- Local-serving hotels (e.g. non-destination hotels)
- Student housing projects on or adjacent to college campuses
- Local-serving assembly uses (places of worship, community organizations)
- Community institutions (Public libraries, fire stations, local government)
- Local-serving community colleges that are consistent with the assumptions noted in the RTP/SCS
- Affordable or supportive housing

- Assisted living facilities
- Senior housing (as defined by HUD)
- Re-tenanting of existing non-residential space
- Interior expansions
- Minor exterior expansions
- Projects generating less than 110 net new daily vehicle trips[2,3]
    - This generally corresponds to the following "typical" development potentials:
        - 11 single family housing units
        - 16 multi-family, condominiums, or townhouse housing units
        - 10,000 sq. ft. of office
        - 15,000 sq. ft. of light industrial[4]
        - 63,000 sq. ft. of warehousing[3]
        - 79,000 sq. ft. of high cube transload and short-term storage warehouse[3]
- Other local-serving projects as approved by the Planning and Building Director, City Engineer and/or Public Works Director

VMT Assessment for Non-Screened Development

Projects not screened through the steps above should complete VMT analysis and forecasting through the OCTAM model to determine if they have a significant VMT impact. This analysis should include 'project generated VMT'[5] and 'project effect on VMT'[6] estimates for the project TAZ (or TAZs) under the following scenarios:

[2] Note that a redevelopment project replacing an existing use would estimate the net increase in trips above trips what already exists.

[3] This threshold ties directly to the OPR technical advisory and notes that 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.

[4] Threshold may be higher depending on the tenant and the use of the site. This number was estimated using rates from ITE's Trip Generation Manual.

[5] Project generated VMT represents the VMT associated with trips produced or attracted by the project. Project generated VMT should be estimated using the Origin-Destination Methodology.

[6] Project effect on VMT represents the difference on the Citywide VMT with and without the inclusion of the project under cumulative conditions. Project effect on VMT should be estimated using the Boundary Method to estimate link-level VMT within the City of Fountain Valley.

- Baseline conditions - This data is already available from OCTAM.
- Baseline plus project - The project land use would be added to the project TAZ or a separate TAZ would be created to contain the project land uses. A full base year model run would be performed and VMT changes would be isolated for the project TAZ and across the full model network. The model output must include reasonableness checks of the production and attraction balancing to ensure the project effect is accurately captured. If this scenario results in a less-than-significant impact, then additional cumulative scenario analysis may not be required (more information about this outcome can be found in the Thresholds Evaluation discussion later in this chapter).
- Cumulative no project - This data is available from OCTAM.
- Cumulative plus project - The project land use would either be added to the project TAZ or a separate TAZ would be created to contain the project land uses. The addition of project land uses should be accompanied by a reallocation of a similar amount of land use from other TAZs; especially if the proposed project is significant in size such that it would change other future developments. Land use projects will generally not change the cumulative no project control totals for population and employment growth. Instead, they will influence the land use supply through changes in general plan land use designations and zoning. If project land uses are simply added to the cumulative no project scenario, then the analysis should reflect this limitation in the methodology and acknowledge that the analysis may overestimate the project's effect on VMT.

Please note that the Project applicant consultant will be required to obtain the latest version of OCTAM from OCTA and complete the Model User Agreement.

The model output should include total VMT, which includes all vehicle trips and VMT per service population (population plus employment). Total VMT (by speed bin) is needed as an input for air quality, greenhouse gas (GHG), and energy impact analysis while total VMT per service population is recommended for transportation impact analysis.

Both "plus project" scenarios noted above will summarize two types of VMT: (1) project generated VMT per service population and comparing it back to the appropriate benchmark noted in the thresholds of significance, and (2) the project effect on VMT, comparing how the project changes VMT on the network looking at Citywide VMT per service population comparing it to the no project condition.

Project-generated VMT shall be extracted from the travel demand forecasting model using the origin-destination trip matrix and shall multiply that matrix by the final assignment skims. The project-effect on VMT shall be estimated using the City boundary and extracting the total link-level VMT for both the no project and with project condition.

A detailed description of this process is attached to these guidelines as Attachment A.

CEQA VMT Impact Thresholds

Fountain Valley selected the below thresholds concurrent with updating the City's General Plan. The City's General Plan goals and policies represent the values of the community. As such, City Staff determined the below thresholds of significance best balanced the local needs of congestion relief and the goals of SB 743; to promote infill development, promote active transportation and reduce greenhouse gasses.

VMT Impacts

A project would result in a significant project-generated VMT impact if either of the following conditions exist:

1. The baseline project-generated VMT per service population exceeds the City's General Plan Build-Out average VMT per service population[7], or
2. The cumulative project-generated average VMT per service population exceeds the City's General Plan Build-Out average VMT per service population

The project's effect on VMT would be considered significant if it resulted in the following:

- The cumulative link-level boundary Citywide VMT per service population increases under the plus project condition compared to the no project condition.

Please note that the cumulative no project shall reflect the adopted RTP/SCS; as such, if a project is consistent with the regional RTP/SCS, then the cumulative impacts shall be considered less than significant subject to consideration of other substantial evidence.

VMT Mitigation Measures

To mitigate VMT impacts, the following choices are available to the applicant:

1. Modify the project's built environment characteristics to reduce VMT generated by the project.
2. Implement transportation Demand Management (TDM) measures to reduce VMT generated by the project.

[7] The City's General Plan Build-Out scenario is the City of Fountain Valley future year (cumulative year). The land use assumptions are representative of the growth absorption within the City consistent with the land use plan adopted as part of the General Plan. This threshold should reflect the latest version of OCTAM and the SCAG RTP/SCS. The VMT per service population should be calculated using the Origin-Destination Methodology.

3. Participate in a VMT fee program and/or VMT mitigation exchange/banking program (if they exist) to reduce VMT from the project or other land uses to achieve acceptable levels.

As part of the City SB 743 Implementation Study, key TDM measures that are appropriate to the region were identified.

Measures appropriate for most of the City of Fountain Valley are summarized in **Table 1** below and additional information on mitigation and TDM is provided in the *SB 743 Implementation Mitigation and TDM Strategy Assessment Memorandum*. It will be the responsibility of the applicant to demonstrate the effectiveness of the proposed TDM measures on VMT reduction. Please note that due to multiplicative dampening (the diminishing return of multiple TDM measures that target the same subset of drivers), the assumed maximum VMT reduction from voluntary TDM measures is 10%.

Evaluation of VMT reductions should be done using the latest industry accepted methodologies recognizing that many of the TDM strategies are dependent on building tenant performance over time. As such, actual VMT reduction cannot be reliably predicted and monitoring may be necessary to gauge performance related to mitigation expectations.

The State of California requires developers and the business community to assist in reducing peak hour and total vehicular trips by implementing Transportation Demand Management Plans (TDMs). The potential of a proposed project to reduce traffic through the use of a TDM plan should be addressed in the traffic study. This plan is in addition to Regulation 15 by the South Coast Air Quality Management District.

If a TDM plan is proposed as a mitigation measure for a project, and the traffic study attributes a reduction in peak and total traffic to the TDM plan, the following information must be provided:

1. A detailed description of the major components of the TDM plan and how it would be implemented and maintained on a continuing basis.
2. Case studies or empirical data that supports the anticipated reduction of traffic attributed to the TDM plan.
3. Additional Volume/Capacity ratio calculations that illustrate the circulation benefits of the TDM plan.
4. Enforcement Measures – how it will be monitored and enforced.
5. How does it comply with the South Coast Air Quality Management District Regulations.

Table 1: Relevant Strategies for Implementation in Fountain Valley Due to Land Use Context

CAPCOA Category	CAPCOA #	CAPCOA Strategy	Appropriate Context?	CAPCOA Reduction	Strength of Substantial Evidence for CEQA Impact Analysis?	New Information Since CAPCOA Was Published in 2010		
						New information	Change in VMT reduction compared to CAPCOA	Literature or Evidence Cited
Land Use/ Location	3.1.3	LUT-3 Increase Diversity of Urban and Suburban Developments: This strategy focuses on inclusion of mixed uses within projects or in consideration of the surrounding area to minimize vehicle travel in terms of both the number of trips and the length of those trips.	Downtown and suburban	9%-30% VMT reduction due to mixing land uses within a single development	Adequate	1] VMT reduction due to mix of land uses within a single development; 2] Reduction in VMT due to regional change in entropy index of diversity.	1] 0%-12% 2] 0.3%-4%	1] Ewing, R. and Cervero, R. (2010). Travel and the Built Environment - A Meta-Analysis. Journal of the American Planning Association,76(3),265-294. Cited in California Air Pollution Control Officers Association. (2010).Quantifying Greenhouse Gas Mitigation Measures. Retrieved from: http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA- Quantification-Report-9-14-Final.pdf Frank, L., Greenwald, M., Kavage, S. and Devlin, A. (2011). An Assessment of Urban Form and Pedestrian and Transit Improvements as an Integrated GHG Reduction Strategy. WSDOT Research Report WA-RD 765.1. Washington State Department of Transportation. Retrieved from: http://www.wsdot.wa.gov/research/reports/fullreports/765.1.pdf Nasri, A. and Zhang, L. (2012). Impact of Metropolitan-Level Built Environment on Travel Behavior. Transportation Research Record: Journal of the Transportation Research Board, 2323(1), 75-79. Sadek, A. et al. (2011). Reducing VMT through Smart Land-Use Design. New York State Energy Research and Development Authority. Retrieved from: https://www.dot.ny.gov/divisions/engineering/technical-services/trans-r- and-d-repository/C-08-29%20Final%20Report_December%202011%20%282%29.pdf Spears, S.et al. (2014). Impacts of Land-Use Mix on Passenger Vehicle Use and Greenhouse Gas Emissions-Policy Brief and Technical Background

CAPCOA Category	CAPCOA #	CAPCOA Strategy	Appropriate Context?	CAPCOA Reduction	Strength of Substantial Evidence for CEQA Impact Analysis?	New Information Since CAPCOA Was Published in 2010		
						New information	Change in VMT reduction compared to CAPCOA	Literature or Evidence Cited
Land Use/ Location	3.1.5	LUT-5 Increase Transit Accessibility: This strategy is focuses on establishing Transit Oriented Development (TOD) within ½ mile of high-quality transit, with connected facilities for walking and biking.	Downtown only	0.5%-24.6% reduce in VMT due to locating a project near high-quality transit	Adequate	1] VMT reduction when transit station is provided within 1/2 mile of development (compared to VMT for sites located outside 1/2 mile radius of transit). Locating high density development within 1/2 mile of transit will facilitate the use of transit by people traveling to or from the Project site. The use of transit results in a mode shift and therefore reduced VMT; 2]	1] 0%-5.8% 2] 0%-7.3%	1] Lund, H. et al. (2004). Travel Characteristics of Transit-Oriented Development in California. Oakland, CA: Bay Area Rapid Transit District, Metropolitan Transportation Commission, and Caltrans. Tal, G. et al. (2013). Policy Brief on the Impacts of Transit Access (Distance to Transit) Based on a Review of the Empirical Literature. California Air Resources Board. Retrieved from: https://www.arb.ca.gov/cc/sb375/policies/transitaccess/transit_access_brief1 20313.pdf 2] Zamir, K. R. et al. (2014). Effects of Transit-Oriented Development on Trip Generation, Distribution, and Mode Share in Washington, D.C., and Baltimore, Maryland. Transportation Research Record: Journal of the Transportation Research Board. 2413, 45–53. DOI: 10.3141/2413-05
Neighborhood Site Enhancements	3.2.1	SDT-1 Provide Pedestrian Network Improvements: This focuses on creating a pedestrian network within the project and connecting to nearby destinations. Projects in Fountain Valley range in size, so the emphasis of this strategy for smaller projects would likely be the construction of network improvements that connect the project sites directly to nearby destinations. For larger projects, this strategy could focus on the development of a robust pedestrian network within the project itself. Alternatively, implementation could occur through an impact fee program or benefit/assessment district based on local or regional plans.	Downtown and suburban	0%-2% reduction in VMT for creating a connected pedestrian network within the development and connecting to nearby destinations	Adequate	VMT reduction due to provision of complete pedestrian networks.	0.5%-5.7%	Handy, S. et al. (2014). Impacts of Pedestrian Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm
Neighborhood Site Enhancements	3.2.2	SDT-2 Provide Traffic Calming Measures: This strategy combines the CAPCOA research focused on traffic calming with new research on providing a low-stress bicycle network. Traffic calming creates networks with low vehicle speeds and volumes that are more conducive to walking and bicycling. Building a low-stress bicycle network produces a similar outcome. Implementation options are similar to strategy 2 above. One potential change in this strategy over time is that e-bikes (and e-scooters) could extend the effective range of travel on the bicycle network, which could enhance the effectiveness of this strategy.	Downtown and suburban	0.25%-1% VMT reduction due to traffic calming on streets within and around the development	Adequate	Reduction in VMT due to building out a low-stress bike network; reduction in VMT due to expansion of bike networks in urban areas.	0%-1.7%	Zahabi, S. et al. (2016). Exploring the link between the neighborhood typologies, bicycle infrastructure and commuting cycling over time and the potential impact on commuter GHG emissions. Transportation Research Part D: Transport and Environment. 47, 89-103.

CAPCOA Category	CAPCOA #	CAPCOA Strategy	Appropriate Context?	CAPCOA Reduction	Strength of Substantial Evidence for CEQA Impact Analysis?	New Information Since CAPCOA Was Published in 2010		
						New information	Change in VMT reduction compared to CAPCOA	Literature or Evidence Cited
Neighborhood Site Enhancements	3.4.9	TRT-9 Implement Car-Sharing Program: This strategy is appropriate for both downtown and suburban contexts and reduces the need to own a vehicle or reduces the number of vehicles owned by a household by making it convenient to access a shared vehicle for those trips where vehicle use is essential. Note that implementation of this strategy would require regional or local agency implementation and coordination and would not likely be applicable for individual development projects.	Downtown and suburban	0.4% - 0.7% VMT reduction due to lower vehicle ownership rates and general shift to non-driving modes	Adequate	Vehicle trip reduction due to car-sharing programs; reduction assumes 1%-5% penetration rate. Car sharing effect on VMT is still evolving due to TNC effects. UCD research showed less effect on car ownership due to car sharing	0.3%-1.6%	Lovejoy, K. et al. (2013). Impacts of Carsharing on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm *Need to verify with more recent UCD research.*
Parking Pricing	3.3.3	PDT-3 Implement Market Price Public Parking: This strategy focuses on pricing all central business district/employment center/retail center public parking to encourage behavior where patrons park once and visit multiple destinations.	Dowtown only	2.8%-5.5% VMT reduction due to "park once" behavior and disincentive to driving	Adequate	Implement a pricing strategy for parking by pricing all central business district/employment center/retail center on- street parking. It will be priced to encourage park once" behavior. Reduction applies to VMT from visitor/customer trips only	2.8%-14.5%	Clinch, J.P. and Kelly, J.A. (2003). Temporal Variance Of Revealed Preference On-Street Parking Price Elasticity. Dublin: Department of Environmental Studies, University College Dublin. Retrieved from: http://www.ucd.ie/gpep/research/workingpapers/2004/04-02.pdf. Cited in Victoria Transport Policy Institute (2017). Transportation Elasticities: How Prices and Other Factors Affect Travel Behavior. Retrieved from: http://www.vtpi.org/tdm/tdm11.htm Hensher, D. and King, J. (2001). Parking Demand and Responsiveness to Supply, Price and Location in Sydney Central Business District. Transportation Research A. 35(3), 177-196. Millard-Ball, A. et al. (2013). Is the curb 80% full or 20% empty? Assessing the impacts of San Francisco's parking pricing experiment. Transportation Research Part A. 63(2014), 76-92.
Transit System	3.5.3	TST-3 Expand Transit Network: This strategy reduces vehicle trips by increasing existing transit service hours and coverage. This creates a more convenient experience for transit riders and encourages higher rates of transit ridership. Please refer to the discussion below in "Increase transit service frequency and speed" for discussion of alternative options for demand-responsive service. Note that implementation of this strategy would require regional or local agency implementation, substantial changes to current transit practices, and would not likely be applicable for individual development projects.	Dowtown only	0.1-8.2% VMT reduction in response to increase in transit network coverage	Adequate	Reduction in vehicle trips due to increased transit service hours or coverage.	0.1%-10.5%	Handy, S. et al. (2013). Impacts of Transit Service Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm

CAPCOA Category	CAPCOA #	CAPCOA Strategy	Appropriate Context?	CAPCOA Reduction	Strength of Substantial Evidence for CEQA Impact Analysis?	New Information Since CAPCOA Was Published in 2010		
						New information	Change in VMT reduction compared to CAPCOA	Literature or Evidence Cited
Transit System	3.5.4	TST-4 Increase Transit Service Frequency/Speed: This strategy focuses on improving transit service convenience and travel time competitiveness with driving. While Fountain Valley has bus service that could be enhanced, it's also possible that new forms of low-cost demand-responsive transit service could be provided. The demand-responsive service could be provided as subsidized trips by contracting to private TNCs or Taxi companies. Alternatively, a public transit operator could provide the subsidized service but would need to improve on traditional cost effectiveness by relying on TNC ride-hailing technology, using smaller vehicles sized to demand, and flexible driver employment terms where drivers are paid by trip versus by hour. This type of service would reduce wait times for travelers and improve the typical in-vehicle travel time compared to traditional transit. Note that implementation of this strategy would require regional or local agency implementation, substantial changes to current transit practices, and would not likely be applicable for individual development projects.	Downtown and suburban	0.02%-2.5% VMT reduction due to reduced headways and increased speed and reliability	Adequate	Reduction in vehicle trips due to increased transit frequency/decreased headway.	0.3%-6.3%	Handy, S. et al. (2013). Impacts of Transit Service Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm
Transit System	3.5.1	TST-1 Provide a Bus Rapid Transit System: This strategy reduces vehicle trips by converting a standard bus system to a Bus Rapid Transit (BRT) system. This provides a dedicated travel lane for buses and improves travel time for buses. implementation of this strategy would require regional or local agency implementation, substantial changes to current transit practices, and would not likely be applicable for individual development projects.	Dowtown only	0.02%-3.2% VMT reduction by converting standard bus system to BRT system	Adequate	No new information identified.	Same	N/A

CAPCOA Category	CAPCOA #	CAPCOA Strategy	Appropriate Context?	CAPCOA Reduction	Strength of Substantial Evidence for CEQA Impact Analysis?	New Information Since CAPCOA Was Published in 2010		
						New information	Change in VMT reduction compared to CAPCOA	Literature or Evidence Cited
Commute Trip Reduction	3.4.4	TRT-4 Implement Subsidized or Discounted Transit Program: This strategy focuses on incentivizing employees, students, or residents to take transit by subsidizing their transit fare. The effectiveness of the strategy depends on the ultimate building tenants and this should be a factor in considering the potential VMT reduction.	Dowtown only	0.3%-20% commute VMT reduction due to transit subsidy of up to $6/day	Adequate - Effectiveness is building/tenant specific. Do not use with "TRT-1 Implement CTR Program - Voluntary" or "TRT-2 Implement CTR Program - Required Implementation/ Monitoring."	1] Reduction in vehicle trips in response to reduced cost of transit use, assuming that 10-50% of new bus trips replace vehicle trips; 2] Reduction in commute trip VMT due to employee benefits that include transit 3] Reduction in all vehicle trips due to	1] 0.3%-14% 2] 0-16% 3] 0.1% to 6.9%	1] Victoria Transport Policy Institute. (2017). Understanding Transport Demands and Elasticities. Online TDM Encyclopedia. Retrieved from: http://www.vtpi.org/tdm/tdm11.htm 2] Carolina, P. et al. (2016). Do Employee Commuter Benefits Increase Transit Ridership? Evidence rom the NY-NJ Region. Washington, DC: Transportation Research Board, 96th Annual Meeting. 3] Handy, S. et al. (2013). Impacts of Transit Service Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from:
Commute Trip Reduction	3.4.6	TRT-6 Encourage Telecommuting and Alternative Work Schedules: This strategy relies of effective internet access and speeds to individual project sites/buildings to provide the opportunity for telecommuting. The effectiveness of the strategy depends on the ultimate building tenants and this should be a factor in considering the potential VMT reduction.	Downtown and suburban	0.07%-5.5% commute VMT reduction due to reduced commute trips	Adequate - Effectiveness is building/tenant specific. Do not use with "TRT-1 Implement CTR Program - Voluntary" or "TRT-2 Implement CTR Program - Required Implementation/Monitoring."	VMT reduction due to adoption of telecommuting	0.2%-4.5%	Handy, S. et al. (2013). Policy Brief on the Impacts of Telecommuting Based on a Review of the Empirical Literature. California Air Resources Board. Retrieved from: https://www.arb.ca.gov/cc/sb375/policies/telecommuting/telecommuting_brief120313.pdf
Commute Trip Reduction	3.4.3	TRT-3 Provide Ride-Sharing Programs: This strategy focuses on encouraging carpooling and vanpooling by project site/building tenants and has similar limitations as strategy 10 above.	Downtown and suburban	1%-15% commute VMT reduction due to employer ride share coordination and facilities	Adequate - Effectiveness is building/tenant specific. Do not use with "TRT-1 Implement CTR Program - Voluntary" or "TRT-2 Implement CTR Program - Required Implementation/Monitoring."	Commute vehicle trips reduction due to employer ride-sharing programs	2.5%-8.3%	Victoria Transport Policy Institute. (2015). Ridesharing: Carpooling and Vanpooling. Online TDM Encyclopedia. Retrieved from: http://vtpi.org/tdm/tdm34.htm

CEQA Assessment - Active Transportation and Public Transit Analysis

Potential impacts to public transit, pedestrian facilities and travel, and bicycle facilities and travel shall be evaluated using the following criteria.

- A significant impact occurs if the project conflicts with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decreases the performance or safety of such facilities.

Therefore, the TIA should include analysis of a project to examine if it is inconsistent with adopted policies, plans, or programs regarding active transportation or public transit facilities, or otherwise decreases the performance or safety of such facilities and make a determination as to whether it has the potential to conflict with existing or proposed facilities supporting these travel modes.

CEQA Assessment – Transportation Project VMT Analysis

Analysis Methodology

Use of VMT as an environmental impact metric for transportation projects is discretionary under the Section 15064.3(b)(2) of the updated CEQA Guidelines.[8] The City of Fountain Valley has identified the procedures out lined in the Caltrans Draft Transportation Analysis Framework (TAF)[9] and Draft Transportation Impacts Analysis under CEQA for Projects on the State Highway System (TAC)[10] as appropriate analysis methodology and procedures for evaluating potential transportation impacts due to transportation projects.

It is important that the analysis methodology and the forecasting account for any induced vehicle travel effects. OCTAM can be used to perform this analysis, but should be reviewed for induced vehicle travel sensitivity. The analysis should also account for potential increases in trip generation and changes in long-term land use patterns that may occur due to induced vehicle travel. These effects are not directly included in OCTAM, but its inputs and parameters can be modified to include additional sensitivity, or off-model analysis methods such as the use of research-based elasticities can be used to measure regional VMT changes associated with changes in lane-miles associated with proposed projects. The following resources should be consulted for induced vehicle travel recommended analysis practices.

- OPR Technical Advisory (http://opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf)
- Closing the Induced Vehicle Travel Gap Between Research and Practice, Transportation Research Record: Journal of the Transportation Research Board, Volume 2653, 2017 (https://trrjournalonline.trb.org/doi/pdf/10.3141/2653-02)

Using VMT as a transportation project impact metric allows for a variety of transit, bicycle, and pedestrian projects to be presumed to have a less than significant impact. Smaller roadway network modifications such as intersection restriping are also presumed to have a less than significant impact. Roadway capacity expansion projects are the types of projects that can increase vehicle travel and VMT by changing people's travel behavior including making new vehicle trips and making longer vehicle trips.

[8] Source: http://resources.ca.gov/ceqa/docs/2018_CEQA_FINAL_TEXT_122818.pdf

[9] Source: https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/sb-743/2020-04-13-taf-a11y.pdf

[10] Source: https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/sb-743/2020-04-13-tac-a11y.pdf

Project Screening

If a project would likely lead to a measurable and substantial increase in vehicle travel, the lead agency should conduct an analysis assessing the amount of vehicle travel the project will induce.

Project types that would likely lead to a measurable and substantial increase in vehicle travel generally include:

- Addition of through lanes on existing or new highways, including general purpose lanes, HOV lanes, peak period lanes, auxiliary lanes, or lanes through grade-separated interchanges

Projects that would not likely lead to a substantial or measurable increase in vehicle travel, and therefore generally should not require an induced travel analysis, include:

- Rehabilitation, maintenance, replacement, safety, and repair projects designed to improve the condition of existing transportation assets (e.g., highways; roadways; bridges; culverts; Transportation Management System field elements such as cameras, message signs, detection, or signals; tunnels; transit systems; and assets that serve bicycle and pedestrian facilities) and that do not add additional motor vehicle capacity
- Roadside safety devices or hardware installation such as median barriers and guardrails
- Roadway shoulder enhancements to provide "breakdown space," dedicated space for use only by transit vehicles, to provide bicycle access, or to otherwise improve safety, but which will not be used as automobile vehicle travel lanes
- Addition of an auxiliary lane of less than one mile in length designed to improve roadway safety
- Installation, removal, or reconfiguration of traffic lanes that are not for through traffic, such as left, right, and U-turn pockets, two-way left turn lanes, or emergency breakdown lanes that are not utilized as through lanes
- Addition of roadway capacity on local or collector streets provided the project also substantially improves conditions for pedestrians, cyclists, and, if applicable, transit
- Conversion of existing general purpose lanes (including ramps) to managed lanes or transit lanes, or changing lane management in a manner that would not substantially increase vehicle travel
- Addition of a new lane that is permanently restricted to use only by transit vehicles
- Reduction in number of through lanes
- Grade separation to separate vehicles from rail, transit, pedestrians or bicycles, or to replace a lane in order to separate preferential vehicles (e.g., HOV, HOT, or trucks) from general vehicles
- Installation, removal, or reconfiguration of traffic control devices, including Transit Signal Priority (TSP) features
- Installation of traffic metering systems, detection systems, cameras, changeable message signs and other electronics designed to optimize vehicle, bicycle, or pedestrian flow
- Timing of signals to optimize vehicle, bicycle, or pedestrian flow

- Installation of roundabouts or traffic circles
- Installation or reconfiguration of traffic calming devices • Adoption of or increase in tolls
- Addition of tolled lanes, where tolls are sufficient to mitigate VMT increase
- Initiation of new transit service
- Conversion of streets from one-way to two-way operation with no net increase in number of traffic lanes
- Removal or relocation of off-street or on-street parking spaces • Adoption or modification of on-street parking or loading restrictions (including meters, time limits, accessible spaces, and preferential/reserved parking permit programs)
- Addition of traffic wayfinding signage
- Rehabilitation and maintenance projects that do not add motor vehicle capacity
- Addition of new or enhanced bike or pedestrian facilities on existing streets/highways or within existing public rights-of-way
- Addition of Class I bike paths, trails, multi-use paths, or other off-road facilities that serve nonmotorized travel
- Installation of publicly available alternative fuel/charging infrastructure
- Addition of passing lanes, truck climbing lanes, or truck brake-check lanes in rural areas that do not increase overall vehicle capacity along the corridor

CEQA VMT Impact Thresholds

VMT Impacts

Potential impacts associated with increases in VMT due to transportation projects shall be evaluated using the following criteria:

- A significant impact would occur if the project causes a net increase in total citywide VMT compared to baseline conditions and cumulative no project conditions.

Transportation Impact Study Format

Prior to the beginning of any study, the project proponent shall coordinate with staff from the Planning Department and Public Works Department. A tentative schedule for reviewing and processing the TIA will be developed. Initial discussions shall also include a conversation of any key issues along with the development scope and boundaries of the study area. The proponent will submit a detailed site plan at this meeting. City staff will provide input into the following specific areas of the analysis:

- Defining the general study area boundaries.
- Project access.
- Approved development in the vicinity of the project for cumulative analysis.
- Approved General Plan (build-out) traffic volumes.
- Appropriate Trip Generation rates for the project.

The project proponent shall coordinate with the City Engineer and/or Public Works Director so that detailed and technical aspects of the analysis can be discussed prior to a formal submittal. Topics of discussion will include:

- Trip distribution and assignment assumptions.
- Intersections and roadway segments where capacity analysis will be required.
    - As a minimum, intersections where the project will add 51 or more trips during either the AM or PM peak hours will need to be analyzed. This threshold may be reduced, at the discretion of the City Engineer and/or Public Works Director, for intersections that are projected to or currently operate at Level of Service (LOS) "E" or "F".
- Intersection Capacity Analysis assumptions.
- Potential for project level VMT screening
- VMT Analysis assumptions
- Inclusion of a Transportation Demand Management Plan (TDM) to mitigate traffic impacts and promote the use of alternate modes of transportation.
- Any specific issues that require special consideration such as pedestrian circulation, access, parking and on-site circulation.

The content and level of analysis necessary to evaluate a project will vary project-to-project and are dependent on the scope of the land use proposal and location within the City.

All traffic studies must be organized in the following order and contain, at a minimum, the following information:

1. Executive Summary

A clear concise summary of the study area, findings, and proposed improvements are required in the Executive Summary.

2. Introduction

a. Site Location and Study Area Boundaries

Briefly describe the proposed development and the general geographical location of the project. Provide the study area limits mutually agreed upon by the applicant, its engineer, and the City.

b. Existing Land Uses and Project Proposals

The existing site conditions and the proposed project shall be identified. The specific land use proposed must be presented.

c. Committed and Proposed Developments in the Vicinity of the Proposed Project

Information pertaining to projects that would contribute traffic to the project study area, including both approved developments and proposed developments where an application has been submitted, shall be identified. The TIA should include a brief description of these projects, and their traffic-related impacts. During its preliminary meetings with the applicant, City staff will identify the need to assess impacts associated with approved and proposed developments.

d. Existing and Proposed Roadways and Intersections

Identify and describe the roadways and intersections within the study area and the role each will play in providing circulation and access to the project. Number of lanes, driveways locations, ultimate right-of-way, intersection geometrics, bus stops, bike lanes, sidewalks and traffic controls shall be included.

To summarize the information presented in the introduction, a vicinity map depicting the project site, study boundaries, existing lane configurations, traffic controls and any additional features that are pertinent to the study shall be provided.

3. Methodology and Thresholds

Identify the methodology used to calculate LOS and VMT. Include the criteria used for screening projects from project-level VMT analysis, if applicable. Identify the impact threshold for VMT, and deficient LOS operations for roadways and intersections.

4. Trip Generation

Trip generation must be calculated using the Orange County Traffic Analysis Model (OCTAM) and/or ITE rates, as directed by City. If the generation rates do not address proposed land use in sufficient detail, rates from other documented sources (i.e. SANDAG) may be used with prior approval from the City.

A table summarizing the types of land use; the corresponding generation rates and land use units and the resulting a.m. peak, p.m. peak, and total daily trip ends generated by the project is required.

5. Trip Distribution/Assignment

Description of trip distribution and directional approach for vehicle trips to and from the site along with the specific roadways that will be utilized by site-generated traffic is required. The basic methodology and assumptions used to develop trip distribution and assignments must be clearly stated. The City Engineer and/or Public Works Director will have significant input into these areas. Trip distribution and assignment assumptions are required during the preliminary stages of the study and subject to approval of the City Engineer and/or Public Works Director or designee prior to inclusion within the study report.

As part of the analysis, a graphic that shows project distribution by percentage and the direction of travel shall be included.

6. Existing & Projected Traffic Volumes

All traffic volume information used to represent existing conditions shall be no more than two years old. Additionally, the raw data from sources other than the City, on which existing conditions are based, must be supplied in the traffic study appendix identifying the source. The following five analysis scenarios should be evaluated (at the discretion of the City Engineer in coordination with Community Development) and summarized in a single table and throughout the analysis using the following designations:

a. Existing Conditions

Existing traffic conditions: data must have been collected within the previous 24- month period.

b. Existing Conditions + Approved and Pending Projects:

Existing traffic conditions plus ambient growth and traffic from all the development within the study area for which an application has been submitted ("pending projects"), or that have been approved but not yet constructed. This scenario represents project opening year "Without Project" scenario.

c. Existing Conditions + Approved and Pending Projects + Project:

Existing traffic conditions of existing, plus ambient growth and approved and pending developments, plus traffic generated by the proposed project. This scenario represents the project opening year "With Projects" scenario.

d. General Plan Development:

Build-out of City General Plan combined with build-out of circulation system. OCTAM Build-out projections will be used for this purpose. A General Plan build out analysis is generally required for any project that contributes traffic to an intersection projected to have unacceptable LOS, any project that requires a General Plan Amendment or otherwise proposes development that exceeds the land use intensity assumed for the General Plan, and/or at the discretion of the City Engineer.

e. General Plan Development + Project:

Cumulative traffic conditions of General Plan build-out plus proposed project.

For projects planned for construction more than two years beyond existing conditions, an ambient traffic growth factor shall be included to account for annual increases in background traffic (i.e. 1% per year). This factor will be determined by the City Engineer or designee.

Projects that are to be constructed in more than one phase will require interim year future analysis under both LOS and VMT analyses to address each phase of the development and its associated traffic effects. The year(s) to be analyzed will coincide with the scheduled phasing and will be approved by the City Engineer or designee.

7. Traffic Signal Warrant Analysis

Identify any unsignalized intersections which were studied and operate deficiently. Perform a signal warrant analysis to determine if the installation of a traffic signal is warranted.

8. Site Access Analysis

See the Site Access Analysis on Page 15.

9. On-site Parking Analysis

See the On-Site Parking Analysis on Page 15.

10. Active Transportation and Public Transit Analysis

Refer to Page 23.

11. LOS Improvements and Recommendations

a. Proposed improvements at intersections
b. Proposed improvements at roadway segments
c. Recommended Improvements categorized by whether they are included in fee plan or not. (Identify if these improvements are included in an adopted fee program)

12. Vehicle Miles Traveled (VMT) Analysis

Present the Project VMT per person/employee for all analysis scenarios and the Project effect on VMT for all analysis scenarios. Data should be presented in tabular format. If the project meets the criteria for screening from project-generated VMT analysis, this should be documented. All VMT impacts should be identified in accordance with the VMT Impact Thresholds described above. Proposed VMT mitigation measures should be identified.

Appendix

a. Approved scope of work

b. Traffic counts
c. Intersection analysis worksheets
d. VMT and TDM calculations
e. VMT and TDM mitigation calculations
f. Signal warrant worksheets

Attachments

Attachment A: Detailed VMT Forecasting Information

This section provides detailed VMT forecasting instructions for use with the OCTAM travel demand forecasting model. Please note that OCTA periodically updates OCTAM and the latest version available should be utilized for VMT assessment in the City of Fountain Valley. OCTA is also in the development of a VMT estimation tool for OCTAM. Upon completion of the tool, it should be reviewed for appropriateness for CEQA compliance before use on a City of Fountain Valley project.

OCTAM is a trip-based model that generates daily person trip-ends for each TAZ across various trip purposes (Home-based-work, home-based-other, and non-home-based for example) based on population, household, and employment variables. This may create challenges for complying with the VMT guidance because trip generation is not directly tied to specific land use categories. The following methodology addresses this particular challenge among others.

Production and attraction trip-ends are separately calculated for each zone, and generally: production trip-ends are generated by residential land uses and attraction trip-ends are generated by non-residential land uses. Focusing on residential and employment land uses, the first step to forecasting VMT requires translating the land use into model terms, the closest approximations are:

- Residential: home-based production trips
- Employment: home-based work attraction trips

Note that this excludes all non-home-based trips including work-based other and other-based other trips.

The challenges with computing VMT for these two types of trips in a trip-based model are 1) production and attraction trip-ends are not distinguishable after the PA to OD conversion process and 2) trip purposes are not maintained after the mode choice step. For these reasons, it not possible to use the VMT results from the standard vehicle assignment (even using a select zone re-assignment). A separate post-process must be developed to re-estimate VMT for each zone that includes trip-end types and trip purposes. In order to provide the most accurate estimates possible, Fountain Valley's recommended approach to estimating VMT is outlined below. Deviating from this approach will require justification and approval from the City Engineer.

VMT Forecasting Instructions

This approach will calculate total Origin/Destination (OD) VMT using standard OCTAM model output files. The OD method for calculating total VMT includes all vehicle trips that start in a specific traffic analysis zone, and all vehicle trips that end in a specific traffic analysis zone. The major steps of this approach are listed as follows:

- Re-skim final loaded congested networks and adjust the external skim for each mode and time period to account for truncated trips

- Multiply appropriate distance skim matrices by OD trip matrices to estimate VMT by time period
- Sum matrices by time period and mode to calculate daily automobile VMT
- Calculate automobile VMT for individual TAZs

Appropriateness Checks

The number of vehicle trips from the total VMT estimation should match as closely as possible with the results from the traditional model process. The estimated results should be checked against the results from a full model run to understand the degree of accuracy. Note that these custom processes may or may not include full lengths of IX/XI trips (trips with origins or destinations outside of the model roadway network) or special generator trips (airport, seaport, stadium, etc.).

When calculating VMT for comparison at the study area, citywide, or regional geography, the same methodology that was used to estimate project-specific VMT should be used. The VMT for these comparisons can be easily calculated by aggregating the row or column totals for all zones that are within the desired geography.

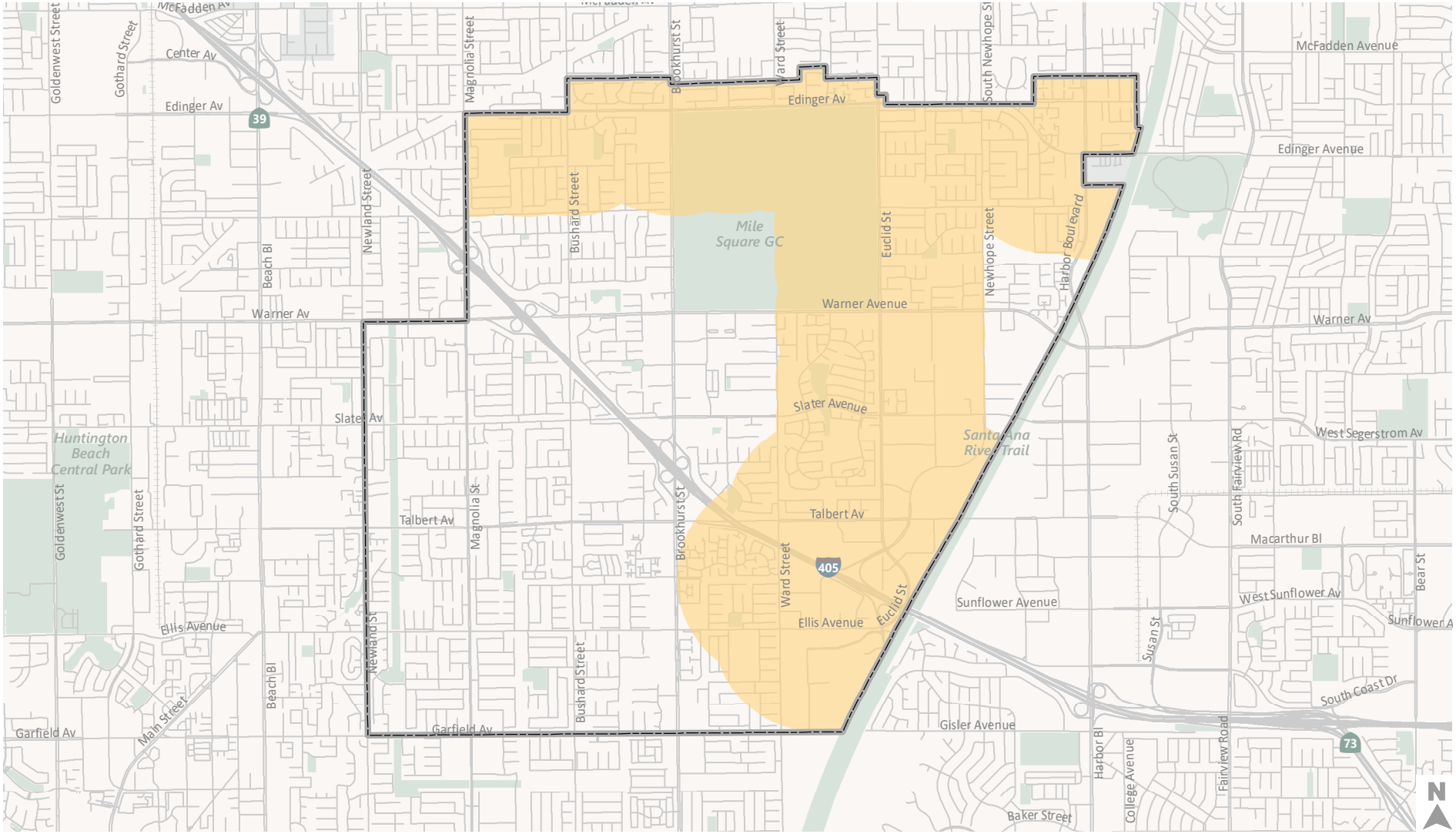
VMT Assessment Modeling Scenarios

Projects required to complete VMT analysis and forecasting through the OCTAM model to determine if they have a significant VMT impact should include 'project generated VMT' and 'project effect on VMT' estimates for the project TAZ (or TAZs) under the following scenarios:

- **Baseline conditions** - This data is already available from OCTAM.
- **Baseline plus project** - The project land use would be added to the project TAZ or a separate TAZ would be created to contain the project land uses. A full base year model run would be performed and VMT changes would be isolated for the project TAZ and across the full model network. The model output must include reasonableness checks of the production and attraction balancing to ensure the project effect is accurately captured. If this scenario results in a less-than-significant impact, then additional cumulative scenario analysis may not be required (more information about this outcome can be found in the Thresholds Evaluation discussion later in this chapter).
- **Cumulative no project** - This data is available from OCTAM.
- **Cumulative plus project** - The project land use would either be added to the project TAZ or a separate TAZ would be created to contain the project land uses. The addition of project land uses should be accompanied by a reallocation of a similar amount of land use from other TAZs; especially if the proposed project is significant in size such that it would change other future developments. Land use projects will generally not change the cumulative no project control totals for population and employment growth. Instead, they will influence the land use supply through changes in general plan land use designations and zoning. If project land uses are simply added to the cumulative no

project scenario, then the analysis should reflect this limitation in the methodology and acknowledge that the analysis may overestimate the project's effect on VMT.

Appendix

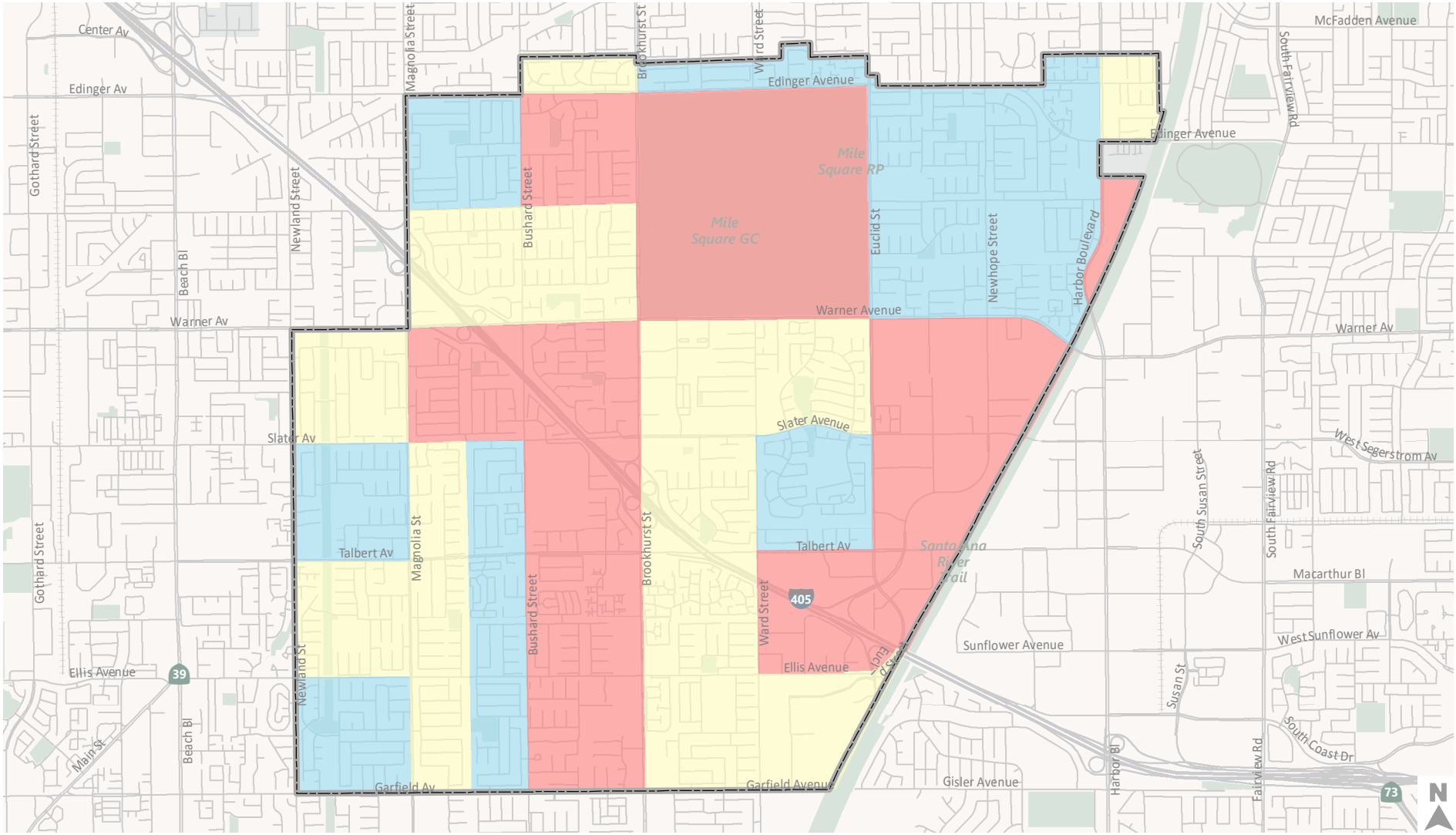


City_Boundary

Transit Priority Area

Source: OCTA, March, 2020, http://www.octa.net/Bus/Routes-and-Schedules/Overview/

Appendix A: Transit Priority Areas in Fountain Valley



City_Boundary

<-15% below City Average

0 to -15% below City Average

Higher than City Average

City Average: 27.51 VMT/SP

Source: OCTAM Version 5, Future Year (2045), April, 2020

Appendix B: Low VMT-Generating Areas in Fountain Valley
Daily VMT per Service Population Compared to City Average (2045)