City of Garden Grove Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment

FEHR PEERS

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Development of TIA Guidelines

Background Information

SB 743, signed by the Governor in 2013, is changing the way transportation impacts are identified. Specifically, the legislation has directed the Office of Planning and Research (OPR) to look at different metrics for identifying transportation as a California Environmental Quality Act (CEQA) impact. The Final OPR guidelines were released in December 2018 and identified Vehicle Miles Traveled (VMT) as the preferred metric 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 Garden Grove undertook the Garden Grove SB 743 Implementation Study to assist with answering important implementation questions about the methodology, thresholds, and mitigation approaches for VMT impact analysis. The study includes the following main components.

- Thresholds Evaluation Memorandum – Potential thresholds Garden Grove can consider when establishing thresholds of significance for VMT assessment
- Analysis Methodologies Memorandum – Recommendations of analysis methodologies for VMT impact screening and analysis
- Mitigation Memorandum – Types of mitigation that can be considered for VMT mitigation

Due to the State of California's July 1, 2020 deadline to adopt VMT impact thresholds, the following components will be completed after July 1, 2020.

- Tools Evaluation Memorandum – Types of tools that could be used to estimate VMT and the pros/cons associated with each tool
- VMT Screening and Mitigation Recommendation Tool – A spreadsheet tool that can be used for VMT screening and mitigation recommendation.

The City of Garden Grove can utilize the information produced through the Implementation Study to adopt a methodology and significance thresholds for use in CEQA compliance. As noted in CEQA Guidelines Section 15064.7(b) below, lead agencies are encouraged to formally adopt their significance thresholds and this is 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).*

The City of Garden Grove has produced these Transportation Impact Analysis (TIA) Guidelines to outline the specific steps for complying with the new CEQA expectations for VMT analysis and the applicable general plan consistency requirements related to Level of Service (LOS).

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 Garden Grove should continually review their guidelines for applicability and consultants should contact the City to ensure that they are applying the City's most recent guidelines for project impact assessment.

Is Level of Service Still Important?

The City of Garden Grove has LOS standards The LOS standards apply to discretionary approvals of new land use and transportation projects. Therefore, this TIA guidelines document also includes instructions for vehicle LOS analysis consistent with City requirements.

Traffic Impact Analysis Guidelines

State and Federal 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 Garden Grove 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 guidelines identify CEQA based requirements and non-CEQA based requirements intended for any person or entity who is proposing development in the City of Garden Grove and should be used in coordination with the City's Local CEQA Guidelines and Garden Grove 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 using intersection and/or roadway segment levels of service (LOS). However, with the passage of Senate Bill (SB) 743, changes to the TIA process are necessary. Specifically, a TIA may be needed as a stand-alone document which is a requirement of project approval and will include information for the decision makers that is not required as part of the CEQA process.

The purpose of Transportation Impact Analysis (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 completed by the City, 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 environmental 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 includes 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 from 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).

Guidelines Organization

The remainder of this guidelines document is organized as follows. We have attempted to organize this memorandum to provide background information, assessment for congestion management/ General Plan Consistency (e.g. LOS analysis), and CEQA assessment (e.g. VMT analysis).

1. Introduction
2. Non-CEQA Transportation Assessment
3. CEQA Assessment - VMT Analysis
4. CEQA Assessment - Active Transportation and Public Transit Analysis
5. Transportation Impact Analysis Format

Introduction

An applicant seeking project approval will submit the proposed project to the City with a planning and land used approval application. After a preliminary review of the project by City Staff, the applicant will be notified by the project planner as to whether or not a TIA is required.

The Traffic Impact Analysis (TIA) should consider changes in both Level of Service (LOS) and VMT .

A TIA which includes LOS analysis shall be required for a proposed project when either the AM or PM peak hour trip generation from the proposed development is expected to exceed 50 vehicle trips. *Traffic study may be required for smaller projects based on land use and location per City's discretion.*

Furthermore, a TIA which includes VMT assessment shall be required for a proposed project that does ***NOT*** satisfy the identified project screening criteria:

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

See Section, "CEQA Assessment - VMT Analysis" 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 Traffic Engineer shall determine, at his or her discretion, whether a TIA will be required.

Non-CEQA Transportation Assessment

Level of Service Analysis Procedure

Traffic analysis should be prepared under the direction and/or by registered traffic engineer, registered civil engineer, or qualified transportation planner. To establish a mutually agreeable scope of work for the traffic analysis, the analyst and project applicant shall meet with Planning Department staff and Traffic Engineering staff to identify study area, assumptions, and methodologies of the traffic analysis. The City Traffic Engineer has the authority to approve or modify the study area, assumptions, and methodologies of the traffic analysis.

Traffic Counts

The traffic analysis should not use any traffic counts that are more than two years old without approval of the City Traffic Engineer. If traffic counts taken within the last two years are not available, then new traffic counts shall be collected by a qualified data collection firm. Turning movement data at the study intersections should be collected in 15-minute intervals during the hours of 7:00 AM to 9:00 AM. and 4:00 PM to 6:00 PM, unless the City Traffic Engineer specifies other hours (e.g., for a signal warrant determination or weekend analysis). Unless otherwise required, all traffic counts should generally be conducted when local schools or colleges are in session, on days of good weather, on Tuesdays through Thursdays during non-Summer months, and should avoid being taken on weeks with a holiday.

Trip Generation

City of Garden Grove will accept the trip generation rate of the latest edition of the Trip Generation Manual published by the Institute of Transportation Engineers. In addition, analysis for a proposed project with trip generation rates not provided in the ITE Trip Generation Manual, may use rates from other agencies or locally approved studies for specific land uses. Documentation supporting the use of these trip generation rates will be required.

The traffic analysis should include justification for trip generation credits such as existing uses, transit, and internal capture. The pass-by traffic credit should be calculated based upon the Institute of Transportation Engineer data or city approved special studies.

Trip Distribution and Assignment

Description of trip distribution and assignment for vehicle trips to and from the site along specific roadways that will be utilized by project generated traffic is required. The basic methodology and assumptions used to develop trip distribution and assignments must be clearly stated and approved by the City Traffic Engineer. The basis for trip distribution should be linked to the demographic or market data in the area and should consider the project's location relative to the regional roadway system.

The trip assignment for the project should be based on existing and projected travel patterns and the future roadway network and its travel time characteristics. The trip assignment should incorporate the trip generation of the project minus the appropriate credits.

Traffic Forecasts

The traffic analysis should include the total traffic which is expected to occur at buildout of proposed project. This means that the analyst preparing the traffic study should include all the cumulative effects of proposed developments as well. The latest version of the Orange County Transportation Analysis Model (OCTAM) should be used to generate future year forecasts. Projects which have been approved or planned, but not built in the vicinity of the proposed project should be verified as included in the latest version of the OCTAM model.

Analysis Methodologies

The City of Garden Grove will use the Intersection Capacity Utilization (ICU) methodology to evaluate the AM and PM peak hour LOS at signalized intersections. The latest version of the Highway Capacity Manual (HCM) methodology will be used to evaluate the AM and PM peak hour LOS at unsignalized intersections. The peak hour will be identified as the highest one-hour period in both AM and PM counted periods, as determined by four consecutive 15-minute count intervals. The following parameters should be used in determining the LOS at the intersections within City of Garden Grove.

ICU Methodology

- A minimum clearance interval of 0.05 of green time
- Lane capacities of 1,700 per hour per lane for through and turn lanes

HCM Methodology

- A peak hour factor (PHF) based on observed conditions will be used for the under existing conditions.
- A PHF of 0.92 will be used for future conditions.

Pedestrian activity should be considered on a case by case basis using reductions in saturation flow rates for affected lanes as determined by sound engineering judgement. The HCM is the best source of guidance for assessment of pedestrian influences on flow rates.

Analysis Scenarios

The following identifies the analysis scenarios that should be evaluated for LOS analysis (at the discretion of the City Traffic Engineer).

- Existing Conditions

Existing traffic conditions: data must have been collected within the previous 2-year period.

- Opening Year

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.

- Opening Year + Project:

Traffic conditions of existing plus ambient growth and approved and pending developments, plus traffic generated by the proposed project.

- Horizon Year:

Build-out of City General Plan combined with build-out of circulation system. OCTAM Build-out projections should 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 Traffic Engineer.

- Horizon Year + Project:

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

Projects that are to be constructed in more than one phase will require interim year future analysis 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.

A table is to be included which identifies the forecast LOS for each intersection within the defined study area. This summary table shall present LOS for all scenarios evaluated-including improvements.

Transportation Effects

The acceptable LOS for intersections in the City of Garden Grove is D or better as established in the City's General Plan. Any intersection operating at a LOS of E or F is considered deficient. Signalized intersections will require improvements if one of the following conditions is met:

- The addition of project traffic to an intersection results in the degradation of intersection operations from acceptable operations (LOS D or better to unacceptable operations (LOS E or F).

- The project-related increase in volume-to-capacity ratio (V/C) is equal to or greater than 0.010 at an intersection that is already operating at LOS E or F.

Unsignalized intersections will require improvements if both of the following conditions is met:

- The addition of project traffic to an intersection results in the degradation of overall intersection operations from acceptable operations (LOS D or better) to unacceptable operations (LOS E or F), and

- The intersection meets peak hour signal warrants either caused by project volumes, or project volumes are added at an intersection that meets peak hour signal warrants in the baseline scenario(s). Peak hour signal warrants should be determined based on the latest California Manual on Uniform Traffic Control Devices (CA MUTCD).

The fair share cost for the proposed improvements in the cumulative condition should also be calculated.

On-Site Parking Analysis

A project provides adequate parking capacity if the project meets Garden Grove 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 Title 9 of the Garden Grove Municipal Code. In cases where the code does not address parking rates for a specific land use, or where deviations from code are proposed, documentation must be included provided by the applicant and/or consulting engineer showing how or where the proposed rates were obtained. The parking analysis must demonstrate that proposed parking supply is adequate to accommodate demand. Shared parking evaluations, in accordance with Title 9 of the Garden Grove Municipal Code will be considered when appropriate.

Access and Circulation Analysis

The project's effect on access points and on-site circulation shall be analyzed. The analysis shall, 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.

CEQA Assessment - 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 CEQA impacts. The updated CEQA Guidelines, released in December 2018, recommend VMT as the most appropriate measure of project transportation impacts. However, SB 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.

Analysis Methodology

For purposes of SB 743 compliance, a VMT analysis should be conducted for land use projects as deemed necessary by the City Traffic Engineer and would apply to projects that have the potential to increase the baseline VMT per service population (e.g. population plus employment) for the City of Garden Grove. Normalizing VMT per service population (e.g. creating a rate by dividing VMT by service population) provides a transportation efficiency metric that the analysis is based on. All assumptions and methodologies of the VMT analysis are subject to review by the City Traffic Engineer.

Project Screening

There are three types of screening that may be applied to effectively screen projects from project-level assessment. These screening steps are summarized below:

Step 1: Transit Priority Area (TPA) Screening

Projects located within a TPA[1] may be presumed to have a less than significant impact absent substantial evidence to the contrary. This presumption may ***NOT*** be appropriate if the project:

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 City;
3. Is inconsistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Southern California Association of Governments [SCAG]); or

[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. Public Resources Code § 21099(a)(7)

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.

4. Replaces affordable residential units with a smaller number of moderate- or high-income residential units.

To identify if the project is in a TPA, the analyst may review TPA map prepared as part of the City of Garden Grove VMT Impact Analysis Methodologies Assessment memorandum. Additionally, the analyst should confirm with all local transit providers that no recent changes in transit service have occurred in the project area (e.g. addition or removal of transit lines, addition or removal of transit stops, or changes to service frequency).

Step 2: Low VMT Area Screening

Residential and office projects located within a low VMT-generating area 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 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.

For this screening in Garden Grove, the OCTAM travel forecasting model was used to measure VMT performance for individual traffic analysis 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. 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. The project applicant should document whether or not any increase to the trip generation rate or length of vehicle trips is expected.

To identify if the project is in a low VMT-generating area, the analyst may review the Origin-Destination (OD) Methodology: Daily VMT per Service Population Compared to County Average screening map prepared as part of the City of Garden Grove VMT Impact Analysis Methodologies Assessment memorandum. Additionally, as noted above, the analyst must identify if the project is consistent with the existing land use (i.e. if the project is proposing single-family housing, there should be existing single-family housing of approximately the same density) within that TAZ and use professional judgement that there is nothing unique about the project that would otherwise be misrepresented utilizing the data from the travel demand model.

Step 3: Project Type Screening

Some project types have been identified as having the presumption of a less than significant impact. 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
    - Shopping Center
- Local-serving hotels (e.g. non-destination hotels)
- Student housing projects on or adjacent to a college campus
- Local-serving assembly uses (places of worship, community organizations)
- Community institutions (public libraries, fire stations, local government)
- Affordable, supportive, or transitional housing
- Assisted living facilities
- Senior housing (as defined by HUD)
- Local serving community colleges that are consistent with the assumptions noted in the RTP/SCS
- Projects generating less than 110 daily vehicle trips[2]
    - 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[3]
        - 63,000 sq. ft. of warehousing[3]
        - 79,000 sq. ft. of high cube transload and short-term storage warehouse[3]

Local serving retail projects with a total square footage less than 50,000 square feet may be presumed to have a less than significant impact absent substantial evidence to the contrary. Any project that uses the designation of "local-serving" should be able to demonstrate that its users (employees, customers, visitors) would be existing within the community. The project would not generate new "demand" for the project land uses, but would meet at existing demand that would

[2] 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.

[3] This number was estimated using rates from ITE's Trip Generation Manual. Some industrial and warehousing tenants may generate traffic differently than what is documented in ITE. In these cases, documentation of the project generating less than 110 daily trips will be required for review and approval by the City Traffic Engineer.

shorten the distance existing residents, employees, customers, or visitors would need to travel. Local serving retail generally improves the convenience of shopping close to home and has the effect of reducing vehicle travel.

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 both 'project generated VMT' for the project TAZ (or TAZs) and 'project effect on VMT' estimates under the following scenarios. Project generated VMT shall include the VMT generated by the site compared back to the CEQA threshold of significance. The project effect on VMT is the link based VMT for a geographic region which is more appropriate to review to evaluate how these developments change travel behavior in the region.

- Baseline conditions - This data is 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. These reasonableness checks are subject to City Traffic Engineer's review. 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 are often represented in the assumed growth of the cumulative year population and employment. It may be appropriate to remove land use growth that represents a project from the cumulative year model to represent the cumulative no project scenario 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.

The model output should include total VMT, which includes all vehicle trips and trip purposes, 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[4].

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.

In some cases, it may be appropriate to extract the Project-generated VMT using the production-attraction trip matrix. This may be appropriate when a project is entirely composed of retail or office uses, and there is a need to isolate the home-based-work (HBW) VMT for the purposes of isolating commute VMT. The City should evaluate the appropriate methodology based on the project land use types and context.

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[5] 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. See Attachment A, "Detailed VMT Forecasting Information".

CEQA VMT Impact Thresholds

VMT Impacts

VMT thresholds provided below are to be applied to determine potential project generated VMT impacts and project's effect on VMT impacts.

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

1. The baseline project generated VMT per service population exceeds the 15% below the County of Orange baseline VMT per service population, or

[4] This assumes that the City will use VMT per service population for its impact threshold. If the City decides to isolate VMT by trip purpose, then the City would need to update this section of the recommended guidelines.

[5] Note – for projects near the City boundary, a different boundary may be more applicable to make sure that VMT effects are not artificially truncated at the City boundary.

2. The cumulative project generated VMT per service population exceeds 15% below the County of Orange baseline VMT per service population

The project's effect on VMT would be considered significant if it resulted in either of the following conditions being satisfied:

1. The baseline link-level boundary Citywide VMT per service population increases under the plus project condition compared to the no project condition, or
2. 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 SCAG RTP/SCS, then the cumulative impacts (project effect on VMT) 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.
3. Participate in a VMT fee program and/or VMT mitigation exchange/banking program (if available) to reduce VMT from the project or other land uses to achieve acceptable levels.

As part of the Implementation Study, key TDM measures that are appropriate to the region were identified. Measures appropriate for most of the City of Garden Grove are summarized in Attachment B of the City of Garden Grove SB 743 Implementation Mitigation and TDM Strategy Assessment memorandum. These measures are attached to these guidelines. See Attachment B, "Relevant Strategies for Implementation in Garden Grove".

VMT reductions should be evaluated as part of the VMT impact analysis using state-of-the-practice 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.

When a Project is found to have a significant impact under CEQA, the City of Garden Grove 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 VMT through the use of a TDM plan should be addressed in the traffic study.

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 it complies with the South Coast Air Quality Management District Regulations.

CEQA Assessment - Active Transportation and Public Transit Analysis

Potential impacts to public transit, pedestrian facilities and travel, and bicycle facilities and travel can 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 evaluate whether a project is consistent with adopted policies, plans, or programs regarding active transportation or public transit facilities, or otherwise increases or 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.

Transportation Impact Study Format

Each Traffic Impact Study submitted to the City of Garden Grove shall contain each of the following elements unless the topic is not applicable. However, items omitted therefrom as "not applicable" shall first be approved by the City.

1. Executive Summary
2. Introduction
3. Existing Street System
4. Project Description and Location
5. LOS Analysis
6. On-Site Parking and Circulation
7. Vehicle Miles Traveled (VMT) Analysis
8. Active Transportation and Public Transit Analysis
9. Appendix

1. Executive Summary

This portion of the report shall present factual and concise information relative to the major issues. Pertinent information in this regard shall include a brief overview of the project, a short discussion of the project's traffic generation potential, the expected VMT impacts of the project, and a summary of mitigation measures. It should also summarize any deficiencies in roadway LOS and the corresponding proposed improvements.

2. Introduction

The introduction of the report shall include a detailed description of study procedures, a general overview of the proposed project site and study area boundaries, existing and proposed site uses, and existing and proposed roadways and intersections within the defined study area (defined study area to be determined by the City). Exhibits required for this section shall include a regional map showing the project vicinity and a site layout map.

3. Project Description and Location

This section shall expand on information presented in the introduction and shall provide a detailed development scenario and specific project location. Exhibits in this section shall include, at a minimum, a clear illustration of the project in terms of a site plan, its density, adjacent roadways, on-site parking supply, proposed traffic circulation within the project, gross square footage, number of rooms/units, and other descriptors as appropriate.

4. 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 the City's LOS standards for roadways and intersections.

5. LOS Analysis

This should include the Traffic Generation Forecast, Traffic Distribution and Assignment, Traffic Analysis, and identify required improvements described about in "Level of Service Analysis Procedure".

6. On-site Parking, Access, and Circulation Analysis

See the On-Site Parking Analysis on Page 13 and Access and Circulation Analysis on Page 14.

7. Active Transportation and Public Transit Analysis

Refer to Page 24.

8. Vehicle Miles Traveled (VMT) Analysis

Present the Project VMT per service population 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 City's VMT screening criteria , 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.

9. Appendix

Detailed appendix material shall be supplied as part of the report. If the main report is too large to include an appendix, such material shall be provided under a separate and identifiable cover. Typical material in this regard includes VMT and TDM calculations, traffic counts, ICU calculation sheets, fully completed signal warrants, accident diagrams at high accident locations, sketches of proposed roadway improvements, and other information necessary for the City's review of the report.

Attachments

Attachment A: Detailed VMT Forecasting Information

This section provides detailed VMT forecasting instructions for use with the Orange County Traffic Analysis Model (OCTAM) travel demand forecasting model. Please note that Orange County Transportation Authority (OCTA) periodically updates OCTAM and the latest version available should be utilized for VMT assessment in the City of Garden Grove. 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 Garden Grove 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, Garden Grove's recommended approach to estimating VMT is outlined below. Deviating from this approach will require justification and approval from the City Traffic 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.

Attachment B: Relevant Strategies for Implementation in Garden Grove