

TRANSPORTATION IMPACT ANALYSIS GUIDELINES

City of San Marcos, CA



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Transportation Impact Analysis Guidelines

San Marcos, California

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1. INTRODUCTION

The Transportation Impact Analysis Guidelines for the City of San Marcos (City) document provides guidance to City staff, applicants, and consultants on the requirements to evaluate transportation impacts for projects in the City of San Marcos. It is intended to:

- ▶ promote conformance with applicable city and state regulations;
- ▶ provide evaluation consistent with the California Environmental Quality Act (CEQA);
- ▶ ensure consistency in preparation of studies by applicants and consultants; and,
- ▶ provide predictability in content for staff and the public in reviewing studies.

Although these guidelines are intended to be comprehensive, not all aspects of every transportation analysis can be addressed in this framework. Project applicants and other parties should first consult with City staff before utilizing the information provided in these Guidelines to analyze a project for potential transportation impacts. City staff reserve the right to use professional engineering judgement to provide exemptions and/or to modify requirements for specific projects at the time of the review application.

1.1. BACKGROUND

The Transportation Impact Analysis Guidelines specifically address the requirements of California Senate Bill (SB) 743 which mandated specific types of CEQA analysis of transportation projects effective July 1, 2020.

Prior to implementation of SB 743, CEQA transportation analyses of individual projects typically determined impacts on the circulation system in terms of roadway delay and/or capacity usage at specific locations, such as street intersections or roadway segments. SB 743, signed into law in September 2013, required changes to the guidelines for CEQA transportation analysis. The changes include 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. The purpose of SB 743 is to promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses.

Under SB 743, a project's effect on automobile delay shall not constitute a significant environmental impact. Therefore, LOS and other similar vehicle delay or capacity metrics may no longer serve as transportation impact metrics for CEQA analysis. The California Office of Planning and Research (OPR) has updated the CEQA Guidelines and provided a final technical advisory in December 2018, which recommends vehicle miles traveled (VMT) as the most appropriate measure of transportation impacts under CEQA. The California Natural Resources Agency certified and adopted the CEQA Guidelines including the Guidelines section implementing SB 743. The changes have been approved by the Office of the Administrative Law and are now in effect.

While VMT is the preferred quantitative metric for assessing potentially significant transportation impacts under CEQA, it should be noted that SB 743 does not prevent a city or county from using metrics such as LOS as part of the application of local general plan policies, municipal and zoning codes, conditions of approval, or any other planning requirements through a city's planning approval process; cities can still ensure adequate operation of the transportation system in terms of transportation congestion measures related to vehicular delay and roadway capacity. As such, the City can continue to require congestion-related transportation analysis and mitigation projects through planning approval processes outside CEQA.

1.2. TRANSPORTATION ANALYSIS IN THE CITY OF SAN MARCOS

To comply with the requirements of SB 743, the City has prepared its Transportation Analysis Guidelines to provide guidance on conducting transportation impact analyses in the City. This document is organized as follows:

- ▶ **CEQA Analysis Requirements:** Requirements for conducting CEQA analysis, which consists of SB 743-consistent VMT analysis as well as assessing impacts to pedestrians, bicyclists, transit, hazards, emergency access, and other impacts.
- ▶ **Local Transportation Analysis Requirements:** Requirements for conducting LOS analysis, site access assessments, and other local transportation analyses for non-CEQA purposes.

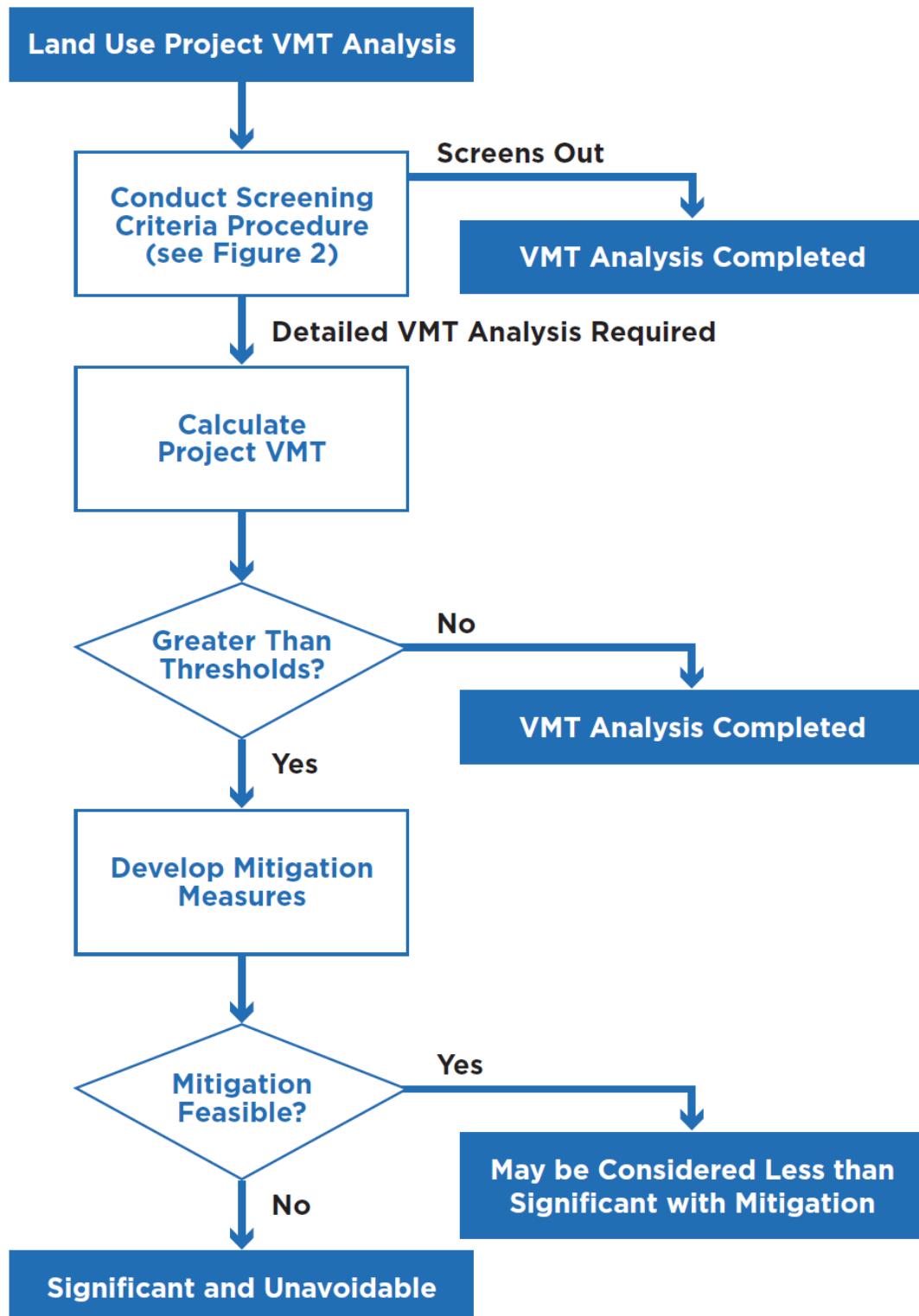
2. CEQA ANALYSIS REQUIREMENTS

This chapter discusses the requirements for conducting transportation impact analyses for CEQA, which primarily consists of SB 743-consistent VMT analysis. In addition, evaluation requirements for pedestrians, bicyclists, transit, hazards, and emergency access are also addressed. Project applicants and other parties shall consult with City staff before utilizing the information provided in this section.

2.1. LAND USE PROJECTS

This section provides information for analyzing individual land use projects, including the process to determine in deciding if a detailed VMT analysis is needed for a land use project. Figure 1 presents a flowchart depicting how a land use project would be analyzed under VMT-based metrics. For land use plans that cover an area beyond an individual project site, the information and guidance provide in the section Area Plans (see Section 2.3) should be used instead.

Figure 1: Land Use Projects VMT Analysis Flowchart



The City has developed the following VMT metrics and impact thresholds for land use projects:

- ▶ **Residential Uses:** A significant impact will occur if the project generates VMT per resident exceeding a level of 15 percent below the countywide average.
- ▶ **Employment Projects:** A significant impact will occur if the project generates VMT per employee exceeding a level of 15 percent below the countywide average.
- ▶ **Retail Uses:** A significant impact will occur if the project would result in a net increase in total citywide VMT.

2.1.1. VMT Estimating Tools

The recommended tools to estimate VMT for land use projects in the City are outlined below.

- ▶ **SANDAG Travel Demand Model:** The San Diego Association of Governments (SANDAG) regional travel demand model can be used to estimate VMT and traffic volumes in the City. This tool can be used to estimate VMT efficiency metrics specific to a project, as well as total citywide VMT. The project applicant should consult with City staff to coordinate travel demand model runs with SANDAG.
- ▶ **SANDAG Online VMT Tool:** SANDAG has prepared an online VMT estimating tool to estimate VMT efficiency metrics for residential and employment projects. This tool maps VMT by census tract in San Diego County.

Project applicants should consult with City staff before utilizing either of these VMT estimating tools. In determining the appropriate VMT estimating tool(s), it should be noted that the online VMT tool cannot be used for the purposes listed below, which require conducting a full travel demand model run:

- ▶ Estimating net changes in area VMT due to implementation of a retail project
- ▶ Evaluating VMT impacts of regional-serving retail projects, entertainment projects, or event centers
- ▶ Estimating changes in cumulative citywide VMT

The use of the SANDAG online VMT mapping tool should be limited to individual land-use projects where an efficiency metric (such as VMT per capita or per employee) is being estimated. In addition, the use of the online tool should be limited to projects generating fewer than 2,400 daily vehicle trips, with trip generation estimated using SANDAG's *(Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region* (April 2002), included as Attachment A to these guidelines; for land uses not included in the SANDAG attachment, other sources such as the Institute of Transportation Engineers (ITE) can be used. Internalization for mixed-use developments should be taken into account.

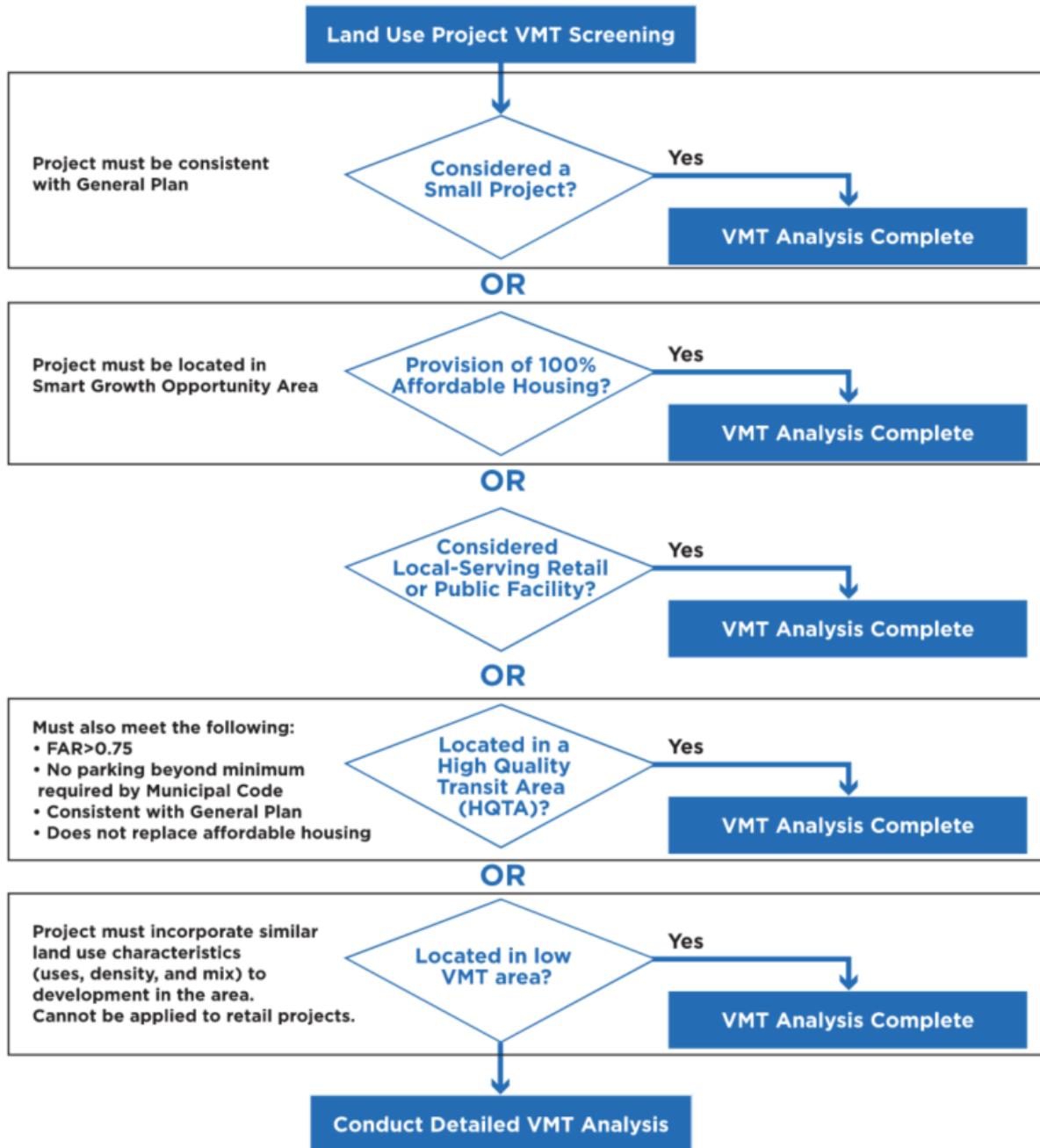
Project applicants should consult with the City to determine which tool to use for estimating internalization for mixed-use projects. One available tool is SANDAG's smart growth trip generation spreadsheet tool that is available online.¹

2.1.2. Project Screening

This subsection provides guidance on determining if a detailed VMT analysis is needed, including several screening approaches that can be used to quickly identify when a project should be expected to cause a less-than-significant impact related to VMT. Figure 2 presents a flowchart depicting how a land use project would be analyzed under the proposed screening criteria. A project that meets at least one of the screening criteria would be considered to have a less-than-significant VMT impact due to project or location characteristics.

¹ <https://www.sandag.org/index.asp?projectid=378&fuseaction=projects.detail>

Figure 2: Land Use Projects Screening Criteria Flowchart



2.1.2.1. Small Projects

Projects that generate fewer than 110 daily vehicle trips can be presumed to cause a less-than-significant transportation impact and would not require a detailed VMT analysis. Trips should be calculated using SANDAG trip generation rates (or other sources if an applicable SANDAG rate is not available). For mixed-use projects, this screening criteria should be applied to the entirety of the project to determine if the project screens out of a detailed VMT analysis; internalization and pass-by reductions (if applicable) can be applied to the project's estimated trip generation. If a project is replacing existing active uses, a credit should be taken for existing trip generation, with the 110 daily trip small project threshold being applied to net new daily vehicle trips. Examples of projects that typically generate fewer than 110 daily vehicle trips are shown in Table 1.

Table 1: Sample Small Projects (fewer than 110 daily trips)

Land Use Type	Number of Units/Square Feet
Auto Repair Center	5,450 square feet
Industrial/Business Park (no commercial)	13,630 square feet
Warehousing	21,800 square feet
Business Hotel	15 occupied rooms
Single Tenant Office	7,790 square feet
Medical-Dental Office	2,180 square feet
Single-Family Detached Housing (average three to six dwelling units per acre)	10 dwelling units
Apartments (more than 20 dwelling units per acre)	18 dwelling units

Note: Trips calculated using SANDAG trip generation rates.

This screening criteria cannot be applied if the project is inconsistent with the City's current General Plan.

2.1.2.2. Affordable Housing

Residential projects with 100 percent deed restricted affordable housing can be presumed to have a less-than-significant transportation impact and would not require a detailed VMT analysis. If a project contains less than 100 percent affordable housing, the portion that is affordable should be screened out of needing a detailed VMT analysis. Projects can only be screened out if they are located in parts of the city that have been identified by SANDAG and the City as Smart Growth Opportunity Areas.² For mixed-use projects, this screening criteria should be applied to the

² Additional information is provided on SANDAG's Smart Growth Concept Map webpage: <https://www.sandag.org/index.asp?projectid=296&fuseaction=projects.detail>

residential component separately to determine if that portion of the project screens out of a detailed VMT analysis.

2.1.2.3. Local-Serving Retail and Public Facilities

Retail projects that are 50,000 square feet gross floor area or less can be presumed to have a less-than-significant transportation impact and would not require a detailed VMT analysis. Retail can include shopping centers as well as standalone uses such as commercial shops, gas stations, and restaurants. This screening criteria applies to the entirety of a retail project; it would not be applied to multiple tenants at a retail site separately. For a mixed-use project, this screening criteria should be applied to the retail/commercial component separately to determine if that portion of the project screens out of a detailed VMT analysis.

Uses that are local-serving public facilities can be presumed to have a less-than-significant transportation impact and would not require a detailed VMT analysis, absent substantial evidence that they will generate significant VMT. These uses include, but are not limited to:

- ▶ Public services (e.g., police, fire stations, public utilities)
- ▶ Local-serving neighborhood schools
- ▶ Local neighborhood parks

2.1.2.4. Adjacency to High-Quality Transit

Projects that are located in a high-quality transit area can be presumed to have a less-than-significant transportation impact and would not require a detailed VMT analysis. A high-quality transit area is defined as the one-half mile walkshed around either of the following:

- ▶ An existing major transit stop, defined as a site containing an existing rail transit station or the intersection of two or more major bus routes with a combined frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods (typically defined as 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM, respectively). In addition, a rail transit station must be within 0.25 miles of bus stops serving at least one bus route with individual service intervals no longer than 30 minutes during peak commute periods per route in order to qualify as a high-quality transit area.
- ▶ An existing stop along a high-quality transit corridor, defined as a corridor with fixed route bus service with combined service intervals (gaps between buses serving the corridor) no longer than 15 minutes during peak commute hours.

However, this presumption does not apply if the project:

- ▶ has a floor area ratio (FAR) of less than 0.75;
- ▶ includes more parking for use by residents, customers, or employees of the project than required by the City;
- ▶ is inconsistent with the City's current General Plan, as determined by the City; or,

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

A project should be considered to be within one-half mile of a major transit stop or high-quality transit corridor if all parcels within the project have no more than 25 percent of their area farther than one-half mile from the stop or corridor and if not more than 10 percent of the residential units or 100 units (whichever is lower) in the project are farther than one-half mile from the stop or corridor. In addition, a project applicant must clearly demonstrate that the project is within a half mile walking distance of a major transit stop or a high-quality transit corridor to use this screening criterion.

Current high-quality transit area maps are provided as Attachment B to these guidelines. These maps highlight existing high-quality transit areas in the city based on transit service information published online by North County Transit District (NCTD). Given that transit services changes can result in adding or removing high-quality transit areas, the project applicant should check with City staff for the most recently available high-quality transit information.

For mixed-use projects, this screening criteria should be applied to the entirety of the project to determine if the project screens out of a detailed VMT analysis.

2.1.2.5. Map-Based Screening

Residential and employment projects that are proposed in areas that generate VMT below adopted City thresholds can be presumed to have a less-than-significant transportation impact and would not require a detailed VMT analysis. This determination must be made using SANDAG's online residential and employment VMT maps for existing year or model baseline year VMT (whichever is available at the time analysis is being conducted), which show census tracts in the city where the VMT is below the regional average. The following types of projects could be screened out using this approach:

- Residential projects proposed in census tracts with residential VMT per capita below the City's threshold of exceeding 85 percent of the SANDAG regional average
- Employment projects proposed in census tracts with work VMT per employee below the City's threshold of exceeding 85 percent of the SANDAG regional average

In order to utilize this screening approach, the project must incorporate similar land use characteristics to other projects in the census tract. For mixed-use projects, this screening criteria should be applied to the residential and employment components separately to determine if any portions of the project screen out of a detailed VMT analysis. Map-based screening cannot be applied to a retail project, the retail portion of a mixed-use project, or any projects that are not analyzed using VMT per capita or per employee metrics.

2.1.3. VMT Methodology, Metrics, and Significant Impact Thresholds

For new land use developments which do not meet any of the screening criteria, the City has adopted quantitative VMT thresholds. The significance thresholds and specific VMT metrics used to indicate a significant transportation are described by land use type in Table 2 and detailed in this section.

Table 2: Impact Thresholds by Land Use Type

Land Use Type	Impact Threshold
Residential Uses	A significant impact will occur if the project generates VMT per resident exceeding a level of 15 percent below the existing countywide average.
Employment Projects (including office and industrial)	A significant impact will occur if the project generates VMT per employee exceeding a level of 15 percent below the existing countywide average.
Retail Uses	A significant impact will occur if the project would result in a net increase in existing total citywide VMT.
Mixed-Use Projects	Evaluate each component of a mixed-use project independently and apply the significance threshold for each land use type, incorporating internalization reductions.
Redevelopment Projects (replaces existing uses)	If the project results in a net increase in VMT, apply the appropriate significance threshold for the project land use type(s).

While residential, office, and retail projects tend to be the most common land use projects requiring a VMT analysis, land use projects consisting of other uses may require a VMT analysis. Guidance for other land uses is listed below:

- ▶ Hotel: Use employment project threshold
- ▶ Medical Office: Use employment project threshold
- ▶ School³/College: Use retail threshold
- ▶ Large event centers, arenas, convention centers, and similar uses: Use retail threshold
- ▶ Recreational Facilities: Use retail threshold
- ▶ Churches and Other Religious Institutions: Use retail threshold

When considering metrics and thresholds for other land uses not listed above, the project applicant shall consult with City staff. For these other uses, the City will make the final determination on a case-by-case basis on the appropriate metric(s) and threshold(s). The City will require analyzing the

³ Note, local-serving neighborhood public schools would be screened out per Section 2.1.2.3.

trip-making characteristics of the project and determining whether to use the residential, employment, and/or retail/commercial methodologies.

When determining potentially significant impacts using efficiency metrics such as VMT per capita (for residential projects) and VMT per employee (for employment projects), the following analysis methods should be used:

- ▶ The project's VMT per capita or per employee should be looked up using the latest SANDAG online mapping tool and the census tract containing the project site, or should be generated for the project TAZ if the latest version of the base year SANDAG travel demand model has been run to include the project.
- ▶ The existing countywide averages for VMT per capita or VMT per employee are determined using the SANDAG online mapping tool or the latest version of the base year SANDAG travel demand model (in consultation with the City and SANDAG).

For land use projects that use the change in total VMT to determine impacts (such as retail), the following analysis method should be used:

- ▶ The total VMT for the city without and with the project should be calculated, using the most recent version of the base year SANDAG travel demand model. The net change in total VMT that is attributable to the project is defined as the difference between the total VMT generated by all TAZs in the city between the no project and plus project model runs.

If a project contains transportation demand management (TDM) and other strategies to reduce trips as project features, those reductions should be incorporated into the project VMT estimate before an impact determination is made. Additional information on TDM is provided in Section 2.1.4 Mitigation.

2.1.3.1. Mixed Use Projects

For land use projects with a mixed-use component, each use in the project (e.g., residential, office, and retail) should be analyzed separately, taking internalization of trips into account. This approach ensures that the vehicle trip-reducing aspects of such projects are not omitted in the VMT analysis. The percentage of internal trips needs to be confirmed with City staff.

2.1.3.2. Redevelopment Projects

Per CEQA, a redevelopment project that replaces existing uses and results in a net decrease in VMT can be presumed to have a less-than-significant transportation impact and would not require a detailed VMT analysis; a redevelopment project that replaces existing uses and results in a net increase in VMT will require a VMT analysis. This should be calculated by estimating the total VMT for the previous and proposed land uses using SANDAG trip generation rates and citywide average trip lengths from the California Household Travel Survey (CHTS)⁴ provided below. If a project

⁴ <https://www.nrel.gov/transportation/secure-transportation-data/tsdc-california-travel-survey.html>

replaces existing uses and the project leads to a net overall increase in VMT compared to the previous uses, then the appropriate metrics and thresholds should be applied to each proposed use. If the project is a mixed-use project, then internalization should be considered when estimating its total VMT and each component's trip generation should be multiplied by its respective trip length; if the project results in a net increase in VMT, then each individual use should be analyzed under its respective threshold. In addition, the proposed land uses should be analyzed without incorporating a credit or reduction for the displacement of existing land uses at the project site.

The following trip lengths should be used to estimate total VMT:

- **Residential Projects:** 6.39 miles
- **Office/Employment Projects:** 8.29 miles
- **Retail Projects:** 5.39 miles
- **School/Educational Projects:** 4.98 miles
- **Recreational Projects:** 7.63 miles
- **Projects w/ Employment and Customer Attributes (e.g., hospitals):** 6.19 miles

2.1.3.3. Exclusion of Heavy Vehicle and Truck VMT

It shall be noted that SB 743 does not apply to goods movement (i.e., trucks). Section 15064.3 of the CEQA Guidelines states that VMT for transportation impacts refers to "... the amount and distance of automobile travel...". Therefore, the VMT associated with trucks and the movement of goods is not required to be analyzed and mitigated for the evaluation of transportation impacts under CEQA. VMT analysis and mitigation is limited to passenger vehicle and light truck trips. The VMT for all vehicles including heavy trucks related to a project will still be calculated as input for air quality, GHG, noise and energy impact analyses to be evaluated in non-transportation parts of the environmental analysis. In addition, heavy vehicle trips would still be assessed as part of the Local Transportation Analysis.

2.1.3.4. Cumulative Impact Analysis

If a land use project (or a component of a mixed-use project) is screened out of requiring a detailed existing VMT analysis or if it falls below the existing VMT thresholds outlined in Table 2, it would also result in less than significant cumulative impacts.

Otherwise, the project must demonstrate consistency with the City's General Plan to result in a less than significant cumulative impact. If City staff determines consistency with the General Plan, then the project would result in less than significant cumulative impacts. If the City determines inconsistency (due to proposed land uses and/or densities), a cumulative impact analysis would be required to determine if the project would result in a net increase in regional VMT. This analysis must be conducted using the most recent version of the cumulative year SANDAG travel demand model. The total VMT for the county without and with the project should be calculated. The difference between the total VMT generated by all TAZs in the county from the two scenarios'

model runs is the net change in total VMT that is attributable to the project; the cumulative impact threshold is a net increase in total regional VMT.

2.1.4. Mitigation

If a project would result in significant impacts, CEQA requires mitigation measures to be implemented to reduce or mitigate an impact. For VMT impacts, a combination of measures from several VMT reduction strategies may be implemented – project characteristics, multimodal improvements, parking, and transportation demand management (TDM) strategies. VMT is reduced by implementing strategies that reduce the number of automobile trips generated by the project, shift more trips from automobile to non-automobile modes, and/or reduce the distances that people drive. Generally, these reductions can be achieved by the implementation of TDM strategies.

Potential measures to reduce VMT that are appropriate to implement in the City of San Marcos are provided in Attachment C. Projects for which VMT impacts are determined to be significant are required to propose a list of VMT reduction measures and document the associated percent reduction in VMT. Mitigated project VMT is calculated by applying the percent reduction. Project VMT is then compared to the threshold of significance to determine if the project's VMT impact has been mitigated. The project applicant should consult with the City before conducting any mitigation analysis, and the City will review and approve the proposed mitigation and the calculated VMT percentage reductions.

2.2. TRANSPORTATION PROJECTS

This section provides information for analyzing transportation projects, including the process to aid in deciding if a detailed VMT analysis should be conducted.

2.2.1. Determining Need for Detailed VMT Analysis

A detailed VMT analysis required for transportation projects if they are expected to increase VMT; these primarily consist of projects that encourage the use of single-occupant automobile use such as the addition of through travel lanes. Projects that would require a detailed VMT analysis include, but are not limited to:

- ▶ 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

A transportation project would be excluded from VMT analysis requirements if it has already undergone VMT analysis as part of a citywide plan. This exemption may be granted if the necessary VMT analysis and potential mitigations have already been identified and quantified at the plan level.

Examples of projects that are unlikely to lead to increases in vehicular travel and are excluded from VMT analysis requirements are listed below. A full list is provided in Attachment D.

- ▶ Rehabilitation, maintenance, replacement, safety, and repair projects designed to improve the condition of existing transportation assets and that do not add additional motor vehicle capacity
- ▶ Roadside safety devices or hardware installation such as median barriers and guardrails
- ▶ Installation, removal, or reconfiguration of traffic lanes that are not for through traffic, such as left, right, and U-turn pocket and two-way left turn 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 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
- ▶ Installation, removal, or reconfiguration of traffic control devices, including Transit Signal Priority (TSP) features
- ▶ Timing of signals to optimize vehicle, bicycle, or pedestrian flow
- ▶ Installation of roundabouts or traffic circles
- ▶ Installation or reconfiguration of traffic calming devices
- ▶ 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
- ▶ 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 non-motorized travel
- ▶ Installation of publicly available alternative fuel/charging infrastructure

In addition, a transportation project which provides new connectivity across a barrier (such as a new bridge across a river) which may provide a shortened path between existing origins and destinations (thereby shortening existing trips and VMT) can be excluded from a detailed VMT analysis.

2.2.2. Methodology and Tools

For projects that require a detailed VMT analysis (e.g., increasing vehicular throughput and not analyzed as part of a citywide plan), two tiers of VMT analysis may need to be conducted. Near-

term and long-term impacts should be assessed using the most recent version of the SANDAG cumulative-year travel demand model.

2.2.2.1. Near-Term VMT Analysis

Near-term VMT analysis must be conducted with the SANDAG travel demand model in order to estimate near-term changes to citywide VMT due to rerouted trips that could result from a new or expanded facility. The model must be run for two scenarios: with and without the implementation of the transportation project. VMT should be captured using the boundary method, which would provide the total daily VMT on all roads within the City of San Marcos. The metric for this analysis would be the net change in total citywide VMT with the transportation project.

2.2.2.2. Induced Demand Analysis

If the SANDAG travel demand model demonstrates that travel time along the corridor being improved decreases by at least five minutes per trip (based on changes in congested speeds), long-term VMT analysis must be conducted in order to estimate potential long-term increases in citywide VMT due to induced demand. To capture the long-term effects such as increased travel demand, an induced demand assessment is required using the following formula recommended:

$$[\% \text{ increase in lane miles}] \times [\text{baseline VMT}] \times [\text{elasticity}] = [\text{VMT resulting from the project}]$$

The baseline VMT in the City should be estimated using the boundary method on a model run that does not contain the proposed transportation project. The metric for this analysis would be the net increase in total citywide VMT with the transportation project.

Research indicates an elasticity of 0.75 may be appropriate for arterial roads in the city; City staff shall be consulted before any induced demand analysis is undertaken.

2.2.3. Significant Impact Threshold

Total citywide VMT on roads in the City of San Marcos (using the boundary method) is the appropriate VMT metric for assessing transportation projects. A significant impact will occur if a transportation project would result in a net increase in total citywide VMT for any study scenario (near-term or long-term).

2.2.4. Mitigation

If a transportation project would result in significant VMT impacts, CEQA requires mitigation measures to be implemented to reduce or mitigate the impact. Mitigation measures for transportation projects generally seek to reduce VMT by discouraging increased single-occupant vehicle travel or funding TDM measures. The following are potential mitigation measures for transportation projects:

- Bicycle network improvements

- Pedestrian network improvements
- Transit network improvements
- Off-site TDM strategies

In addition, intelligent transportation system (ITS) strategies should be considered in place of additional vehicular through lanes to reduce VMT.

2.3. AREA PLANS

This section provides information for analyzing area plans, such as specific plans and citywide area plans.

2.3.1. Methodology and Tools

Area plans must be analyzed using the SANDAG travel demand model. The following model runs and scenarios must be conducted:

- ▶ Base year model to estimate existing conditions
- ▶ Cumulative year model to estimate future conditions for the no project or previous plan scenario
- ▶ Cumulative year model updated to reflect the proposed project to estimate future conditions with the proposed plan

VMT per capita and VMT per employee are the appropriate metrics for assessing area plans. VMT per capita and VMT per employee must be calculated for the plan area (in the case of a general plan, trips originating and/or ending in the city).

2.3.2. Significant Impact Thresholds

A significant impact would occur if any of the following conditions take place:

- ▶ If the plan generates VMT per capita in the future plus project scenario that exceeds the VMT per resident under existing conditions.
- ▶ If the plan generates VMT per employee in the future plus project scenario that exceeds the VMT per employee under existing conditions.
- ▶ If the plan generates VMT per capita in the future plus project scenario that exceeds the VMT per resident under the future no project/previous plan scenario.
- ▶ If the plan generates VMT per employee in the future plus project scenario that exceeds the VMT per employee under the future no project/previous plan scenario.

2.3.3. Mitigation

If an area plan results in significant impacts, CEQA requires mitigation measures to be implemented to reduce or mitigate impacts. Potential mitigation measures for area plans can include:

- ▶ Increasing the density and mix of proposed land uses
- ▶ Proposing bicycle, pedestrian, and transit network improvements as opposed to automobile facilities
- ▶ Policies to reduce parking supply
- ▶ Policies to address promote worker commute reduction programs
- ▶ Policies to require on-site TDM strategies for individual projects under the plan

Measures to reduce VMT that are appropriate to implement in the City of San Marcos are provided in Attachment C.

2.4. OTHER CEQA ANALYSES

In addition to VMT analysis, other analyses must also be conducted to fully capture the potential effects of a project on the transportation network under CEQA. These thresholds and analysis requirements are outlined below.

2.4.1. Impacts to Public Transit, Bicycles, and Pedestrians

A proposed project will result in a significant impact if it will conflict with or impact existing or proposed public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Impacts related to public transit, bicycles, and pedestrians should be assessed as follows:

- ▶ **Transit Impacts:** Examine potential operational impacts to transit routes and facilities and potential impacts to transit user safety and accessibility for all existing and planned transit stops or stations adjacent to the project site or within a half mile of the project site.
- ▶ **Bicyclist Impacts:** Examine potential impacts to bicyclist safety and accessibility for all roadways adjacent to the project, extending in each direction to the nearest intersection with a classified roadway or with a Class I path; both directions of travel shall be evaluated.
- ▶ **Pedestrian Impacts:** Examine potential impacts to pedestrian safety and accessibility for:
 - All pedestrian facilities directly connected to project access points or adjacent to the project site, extending in each direction to the nearest intersection with a classified roadway or connection with a Class I path.
 - Pedestrian facilities connecting to transit stops within two blocks of the project site
 - Only facilities on the side of the project site or along the walking route to a transit stop
 - Additional geographic areas may be requested by City staff in certain cases to address special cases such as schools or retail centers.

The following safety-related impact criteria must also be considered:

- ▶ A proposed project will result in a significant impact if it will substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- ▶ A proposed project will result in a significant impact if it will result in inadequate emergency access.

3. LOCAL TRANSPORTATION ANALYSIS REQUIREMENTS

In addition to the CEQA analysis, a non-CEQA local transportation analysis may be required for land use projects to evaluate the effects of a development project on the circulation network, primarily on local access and circulation in the proximity of a project site. This analysis will address traffic operations, safety issues and needed project design features related to a proposed land use project, as well as site access and internal circulation.

A local transportation analysis is required for projects generating more than 1,000 daily vehicle trips or more than 100 peak hour vehicle trips (if consistent with the latest version of the City's General Plan) or generating at least 500 daily vehicle trips or at least 50 peak hour vehicle trips if inconsistent with the City's latest General Plan. This determination should be made using SANDAG trip generation rates (or ITE or local rates if an applicable SANDAG rate is not available); mixed-use project trip generation should take internalization into account.

Before conducting a local transportation analysis, the project applicant should provide a scoping memorandum to the City for staff approval, detailing the assumptions and proposed study components as outlined below.

3.1. STUDY AREA

At a minimum, the study must examine facilities that fall into one of the following categories:

- ▶ Project driveways
- ▶ Signalized and unsignalized intersections along and adjacent to the project site
- ▶ Any classified (non-residential) roadway segments that are linked to intersections that are being studied

The study should also examine any other intersections or roadway segments necessary as determined by City staff.

3.2. DATA COLLECTION AND STUDY PERIODS

Two-hour peak period vehicular, bicycle, and pedestrian volumes should be collected for all study intersections for the weekday AM (7:00 AM to 9:00 AM) and PM (4:00 PM to 6:00 PM) periods.

Weekday AM and PM peak hour LOS analysis should be conducted for all study intersections for all

study scenarios. Weekday twenty-four hour daily vehicle counts should be collected for all study roadway segments. Traffic counts should be collected and included in the Appendix of the study.

Available existing counts can be used if they are less than twenty-four (24) months old and the traffic volumes have not been significantly changed due to more recent development in the vicinity. City staff shall approve all requests to use other available traffic counts.

Weekday counts should be conducted on a Tuesday, Wednesday, or Thursday when schools are in session and during weeks not containing major holidays.

During the scoping process, City staff may require additional periods for analysis and traffic counts due to a project's unique traffic patterns (such a school or an event center).

3.3. STUDY SCENARIOS

Intersection and roadway segment LOS should be analyzed for the following scenarios:

- ▶ Existing Conditions
- ▶ Interim Year Conditions (based on one of SANDAG's pre-established interim year scenario models, depending on whichever is closest to the project's anticipated opening year)
- ▶ Interim Year Plus Project Conditions (project-generated traffic added to Interim Year volumes)
- ▶ Horizon Year Conditions (based on the RTP year, currently 2050)
- ▶ Horizon Year Project Conditions (project-generated traffic added to horizon year traffic volumes)

City staff may require additional analysis scenarios for a project as needed.

3.4. FUTURE TRAFFIC VOLUME FORECASTING METHODOLOGY

Once the interim and horizon analysis years and scenarios have been established in coordination with City staff, interim and horizon year traffic volumes should be developed. Future (no project) volumes should be forecast and extrapolated based on outputs from the SANDAG travel demand model. Volumes should be estimated for study intersections and roadway segments not included in the model.

City staff must approve alternative methods to develop future volumes such as general growth rates.

While the interim year scenario is based on the interim SANDAG model, the City may require the project applicant to include specific approved projects in the no project forecasts, if not accounted for in the interim year model (at staff discretion).

3.5. TRIP GENERATION, DISTRIBUTION, AND ASSIGNMENT

Project-generated vehicle trips should be estimated using SANDAG trip generation rates, or other approved sources (such as the latest version of the ITE Trip Generation manual or other sources for unique land uses, as appropriate). Appropriate trip reductions should be applied for internal capture, proximity to transit, or project TDM strategies. If a project contains TDM strategies to reduce trips as project features, those reductions should be applied to the trip generation estimate. Additional information on TDM is in Section 2.1.4 Mitigation. Note, TDM reductions from VMT impact mitigation measures cannot be applied to the project trip generation unless unacceptable traffic operations are identified.

Projected daily, AM peak hour, and PM peak hour trip generation estimates for the proposed project shall be summarized in a table. Trip generation rates, factors and source should be provided. Inbound and outbound trips shall be provided in the table.

Trip distribution should be developed and project trips assigned to the study intersections and roadway segments using either existing travel patterns and relative locations of complementary land uses or a SANDAG travel demand model select zone run (in consultation with City and SANDAG staff).

A trip distribution figure illustrating the percentage of trips going to and from the project along the surrounding roadway network shall be provided. A figure illustrating peak hour project only trips at the driveways, study intersections and roadway segments shall be provided based on the trip distribution.

3.6. OPERATIONS ANALYSIS METHODOLOGY

Existing, Interim Year, Interim Year Plus Project, Horizon Year, and Horizon Year Plus Project peak hour intersection LOS must be evaluated for all study intersections using the most recent edition of the Highway Capacity Manual (HCM) methodology.

Roadway segments should be analyzed by calculating daily LOS using the daily volume capacities detailed below based on average daily traffic (ADT).

Table 3: Roadway Classifications, Capacity, and LOS

Street Classification	Lanes	LOS A	LOS B	LOS C	LOS D	LOS E (Capacity)
Expressway	6	30,000	42,000	60,000	70,000	80,000
Prime Arterial	6	25,000	35,000	50,000	55,000	60,000
Major Arterial	6	20,000	28,000	40,000	45,000	50,000
Major Arterial	4	15,000	21,000	30,000	35,000	40,000
Major Arterial (One-Way)	3	12,500	16,500	22,500	25,000	27,500
Major Arterial (One-Way)	2	10,000	13,000	17,500	20,000	22,500
Secondary Arterial/Collector	4	10,000	14,000	20,000	25,000	30,000
Collector (no center lane)	4	5,000	7,000	10,000	13,000	15,000
Collector (continuous left-turn lane)	2	5,000	7,000	10,000	13,000	15,000
Collector (no fronting property)	2	4,000	5,500	7,500	9,000	10,000
Collector (commercial-industrial fronting)	2	2,500	3,500	5,000	6,500	8,000
Collector (multi-family)	2	2,500	3,500	5,000	6,500	8,000
Collector (one-way)	3	11,000	14,000	19,000	22,500	26,000
Collector (one-way)	2	7,500	9,500	12,500	15,000	17,500
Collector (one-way)	1	2,500	3,500	5,000	6,500	7,500
Sub-Collector (single-family)	2	--	--	2,200	--	--

Source: *Guidelines for Transportation Impact Studies in the San Diego Region* (May 2019)

Notes: 1. The volumes and the average daily level of service listed above are only intended as a general planning outline.

2. Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.

3.7. LEVEL OF SERVICE STANDARDS

The City of San Marcos strives to maintain intersection and roadway segment operations based on LOS standards outlined in the General Plan Mobility Element. The local transportation analysis should note intersections and roadway segments that perform unacceptably (based on standards in the current General Plan Mobility Element) under no project and/or plus project conditions, and improvements that can be applied to increase performance to acceptable levels.

For study intersections, the study should identify if the addition of the traffic generated from the proposed project results in any one of the following, and improvements should be identified to increase performance to acceptable or pre-project conditions under each scenario:

- ▶ Triggers an intersection operating at acceptable LOS to operate at unacceptable LOS and increases the average delay per vehicle by more than 2.0 seconds.
- ▶ Increases the average delay per vehicle for a study intersection that is already operating at unacceptable LOS by more than 2.0 seconds.

For study roadway segments, the study should identify if the addition of the traffic generated from the proposed project results in any one of the following, and improvements should be identified to increase performance to acceptable or pre-project conditions under each scenario:

- ▶ Triggers a roadway segment operating at acceptable LOS to operate at unacceptable LOS and increases the volume/capacity (V/C) ratio by more than 0.02.
- ▶ Increases the V/C ratio for a study roadway segment that is already operating at unacceptable LOS by more than 0.02.

3.8. OTHER ANALYSIS REQUIREMENTS

In addition to LOS, the local transportation assessment must include the following analyses:

- ▶ **Site Access and On-Site Circulation:** Review site access and on-site circulation for vehicles, heavy vehicles, bicyclists, and pedestrians and identify any issues that should be improved.
- ▶ **Driveway Sight Distance:** Analyze driveway sight distance for all signalized and unsignalized driveways and identify any deficiencies.
- ▶ **Parking:** Identify and compare the project's proposed parking supply, parking requirements, and expected peak parking demand (based on local or Institute of Transportation Engineering parking rates). For mixed-use projects, examine the feasibility of shared parking. The bicycle parking supply will also be compared to code requirements (if applicable).
- ▶ **Vehicle Queuing:** Examine inbound and outbound vehicle queuing at project driveways and note any on-site deficiencies or conflicts with circulation. Also examine the adequacy of turn pocket storage length at off-site study intersections based on 95th percentile queues. On-site queuing analysis is necessary if the project has a drive-thru component.

The project applicant should conduct any additional analysis that is deemed necessary by City staff, to be determined through a scoping meeting. This could include passenger loading demand analyses, freight loading demand analysis, and truck turning templates.

3.9. CROSS-JURISDICTIONAL ANALYSIS

If a project will affect another jurisdiction, such as Caltrans, San Diego County, SANDAG, or adjacent cities, coordination with that jurisdiction may be required. City of San Marcos staff will provide guidance and contact information for other jurisdictions, as necessary.

Attachment A: SANDAG (Not So) Brief Guide
of Vehicular Traffic
Generation Rates for the San
Diego Region

(NOT SO)
**BRIEF GUIDE OF VEHICULAR TRAFFIC GENERATION RATES
FOR THE SAN DIEGO REGION**

APRIL 2002



401 B Street, Suite 800
San Diego, California 92101
(619) 699-1900 • Fax (619) 699-1950

NOTE: This listing only represents a **guide** of average, or estimated, traffic generation "driveway" rates and some very general trip data for land uses (emphasis on acreage and building square footage) in the San Diego region. These rates (both local and national) are subject to change as future documentation becomes available, or as regional sources are updated. For more specific information regarding traffic data and trip rates, please refer to the San Diego Traffic Generators manual. *Always check with local jurisdictions for their preferred or applicable rates.*

LAND USE	TRIP CATEGORIES [PRIMARY:DIVERTED:PASS-BY] ^P	ESTIMATED WEEKDAY VEHICLE TRIP GENERATION RATE (DRIVEWAY)	HIGHEST PEAK HOUR % (plus IN:OUT ratio)		TRIP LENGTH (Miles) ^L
			Between 6:00-9:30 A.M.	Between 3:00-6:30 P.M.	
AGRICULTURE (Open Space)	[80:18:2]	2/acre**			10.8
AIRPORT	[78:20:2]				12.5
Commercial		60/acre, 100/flight, 70/1000 sq. ft.***	5%	(6:4)	
General Aviation		6/acre, 2/flight, 6/based aircraft***	9%	(7:3)	
Heliports		100/acre**		15% (5:5)	
AUTOMOBILE ^S					
Car Wash		900/site, 600/acre**	4%	(5:5)	
Automatic		100/wash stall**	4%	(5:5)	
Self-serve				8% (5:5)	
Gasoline	[21:51:28]	160/vehicle fueling space**	7%	(5:5)	
with/Food Mart		155/vehicle fueling space**	8%	(5:5)	
with/Food Mart & Car Wash		150/vehicle fueling space, 900/station**	7%	(5:5)	
Older Service Station Design		50/1000 sq. ft., 300/acre, 60/service stall***	5%	(7:3)	
Sales (Dealer & Repair)		20/1000 sq. ft., 400/acre, 20/service stall*	8%	(7:3)	
Auto Repair Center		60/1000 sq. ft. **	4%		11% (4:6)
Auto Parts Sales		40/service stall**	7%	(6:4)	
Quick Lube		25/1000 sq. ft., 30/service stall**	7%	(6:4)	
Tire Store				10% (5:5)	
				11% (5:5)	
CEMETERY		5/acre*			
CHURCH (or Synagogue)	[64:25:11]	9/1000 sq. ft., 30/acre** (quadruple rates for Sunday, or days of assembly)	5%	(6:4)	5.1
COMMERCIAL/RETAIL ^S					
Super Regional Shopping Center (More than 80 acres, more than 800,000 sq. ft., w/usually 3+ major stores)		35/1000 sq. ft., ^c 400/acre*	4%	(7:3)	10% (5:5)
Regional Shopping Center	[54:35:11]	50/1000 sq. ft., ^c 500/acre*	4%	(7:3)	9% (5:5)
(40-80acres, 400,000-800,000 sq. ft., w/usually 2+ major stores)		80/1000 sq. ft., 700/acre* **	4%	(6:4)	10% (5:5)
Community Shopping Center	[47:31:22]	120/1000 sq. ft., 1200/acre* **	4%	(6:4)	3.6
(15-40 acres, 125,000-400,000 sq. ft., w/usually 1 major store, detached restaurant(s), grocery and drugstore)					
Neighborhood Shopping Center (Less than 15 acres, less than 125,000 sq. ft., w/usually grocery & drugstore, cleaners, beauty & barber shop, & fast food services)		40/1000 sq. ft., 400/acre*	3%	(6:4)	
Commercial Shops	[45:40:15]	50/1000 sq. ft.**	3%	(6:4)	9% (5:5)
Specialty Retail/Strip Commercial		40/1000 sq. ft.**	3%	(7:3)	10% (5:5)
Electronics Superstore		150/1000 sq. ft., 2000/acre* ***	4%	(7:3)	10% (5:5)
Factory Outlet		90/1000 sq. ft.**	4%	(6:4)	10% (5:5)
Supermarket		500/1000 sq. ft.**	8%	(5:5)	8% (5:5)
Drugstore		700/1000 sq. ft.**	9%	(5:5)	7% (5:5)
Convenience Market (15-16 hours)		850/1000 sq. ft., 550/vehicle fueling space**	8%	(5:5)	8% (5:5)
Convenience Market (24 hours)		60/1000 sq. ft., 600/acre* ***	1%	(7:3)	7% (5:5)
Convenience Market (w/gasoline pumps)		60/1000 sq. ft., 600/acre**	3%	(6:4)	8% (5:5)
Discount Club		6/1000 sq. ft., 100/acre**	4%	(7:3)	8% (5:5)
Discount Store		30/1000 sq. ft., 150/acre**	7%	(6:4)	9% (5:5)
Furniture Store		40/1000 sq. ft.**	5%	(6:4)	8% (5:5)
Lumber Store		60/1000 sq. ft., 600/acre**	2%	(6:4)	9% (5:5)
Home Improvement Superstore		40/1000 sq. ft., 90/acre**	3%	(6:4)	10% (5:5)
Hardware/Paint Store		110/1000 sq. ft., 2000/acre* (commercial only)	3%	(6:4)	
Garden Nursery		5/dwelling unit, 200/acre* (residential only)	9%	(3:7)	9% (5:5)
Mixed Use: Commercial (w/supermarket)/Residential				13% (6:4)	
EDUCATION					
University (4 years)	[91:9:0]	2.4/student, 100 acre*	10%	(8:2)	9% (3:7)
Junior College (2 years)	[92:7:1]	1.2/student, 24/1000 sq. ft., 120/acre* **	12%	(8:2)	9% (6:4)
High School	[75:19:6]	1.3/student, 15/1000 sq. ft., 60/acre* **	20%	(7:3)	10% (4:6)
Middle/Junior High	[63:25:12]	1.4/student, 12/1000 sq. ft. 50/acre**	30%	(6:4)	9% (4:6)
Elementary	[57:25:10]	1.6/student, 14/1000 sq. ft., 90/acre* **	32%	(6:4)	9% (4:6)
Day Care	[28:58:14]	5/child, 80/1000 sq. ft.**	17%	(5:5)	18% (5:5)
FINANCIAL ^S [35:42:23]				3.4
Bank (Walk-In only) with Drive-Through		150/1000 sq. ft., 1000/acre* **	4%	(7:3)	
Drive-Through only		200/1000 sq. ft., 1500/acre*	5%	(6:4)	8% (4:6)
Savings & Loan Drive-Through only		250 (125 one-way)/lane*	3%	(5:5)	10% (5:5)
		60/1000 sq. ft., 600/acre**	2%		
		100 (50 one-way)/lane**	4%		
HOSPITAL [73:25:2]				8.3
General		20/bed, 25/1000 sq. ft., 250/acre*	8%	(7:3)	
Convalescent/Nursing		3/bed**	7%	(6:4)	10% (4:6)
INDUSTRIAL					
Industrial/Business Park (commercial included)	[79:19:2]	16/1000 sq. ft., 200/acre* **	12%	(8:2)	12% (2:8)
Industrial Park (no commercial)		8/1000 sq. ft., 90/acre**	11%	(9:1)	12% (2:8)
Industrial Plant (multiple shifts)	[92:5:3]	10/1000 sq. ft., 120/acre*	14%	(8:2)	15% (3:7)
Manufacturing/Assembly		4/1000 sq. ft., 50/acre**	19%	(9:1)	20% (2:8)
Warehousing		5/1000 sq. ft., 60/acre**	13%	(7:3)	15% (4:6)
Storage		2/1000 sq. ft., 0.2/vault, 30/acre*	6%	(5:5)	9% (5:5)
Science Research & Development		8/1000 sq. ft., 80/acre*	16%	(9:1)	14% (1:9)
Landfill & Recycling Center		6/acre	11%	(5:5)	10% (4:6)

(OVER)

MEMBER AGENCIES: Cities of Carlsbad, Chula Vista, Coronado, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana Beach, Vista and County of San Diego.

ADVISORY/LIAISON MEMBERS: California Department of Transportation, County Water Authority, U.S. Department of Defense, S.D. Unified Port District and Tijuana/Baja California.

LAND USE	TRIP CATEGORIES [PRIMARY:DIVERTED:PAS-BY] ^P	ESTIMATED WEEKDAY VEHICLE TRIP GENERATION RATE (DRIVEWAY)	HIGHEST PEAK HOUR % (plus IN:OUT ratio)				TRIP LENGTH (Miles) ^L
			Between 6:00-9:30 A.M.	Between 3:00-6:30 P.M.			
LIBRARY	[44:44:12]	50/1000 sq. ft., 400/acre**	2%	(7:3)	10%	(5:5)	3.9
LODGING	[58:38:4]						7.6
Hotel (w/convention facilities/restaurant)		10/occupied room, 300/acre	6%	(6:4)	8%	(6:4)	
Motel		9/occupied room, 200/acre*	8%	(4:6)	9%	(6:4)	
Resort Hotel		8/occupied room, 100/acre*	8%	(6:4)	7%	(4:6)	
Business Hotel		7/occupied room**	8%	(4:6)	9%	(6:4)	
MILITARY	[82:16:2]	2.5/military & civilian personnel*	9%	(9:1)	10%	(2:8)	11.2
OFFICE							
Standard Commercial Office	[77:19:4]	20/1000 sq. ft., ^o 300/acre*	14%	(9:1)	13%	(2:8)	8.8
(less than 100,000 sq. ft.)							
Large (High-Rise) Commercial Office	[82:15:3]	17/1000 sq. ft., ^o 600/acre*	13%	(9:1)	14%	(2:8)	10.0
(more than 100,000 sq. ft., 6+ stories)							
Office Park (400,000+ sq. ft.)		12/1000 sq. ft., 200/acre* **	13%	(9:1)	13%	(2:8)	
Single Tenant Office		14/1000 sq. ft., 180/acre*	15%	(9:1)	15%	(2:8)	8.8
Corporate Headquarters		7/1000 sq. ft., 110/acre*	17%	(9:1)	16%	(1:9)	
Government (Civic Center)	[50:34:16]	30/1000 sq. ft.**	9%	(9:1)	12%	(3:7)	6.0
Post Office							
Central/Walk-In Only		90/1000 sq. ft.**	5%		7%		
Community (not including mail drop lane)		200/1000 sq. ft., 1300/acre*	6%	(6:4)	9%	(5:5)	
Community (w/mail drop lane)		300/1000 sq. ft., 2000/acre*	7%	(5:5)	10%	(5:5)	
Mail Drop Lane only		1500 (750 one-way)/lane*	7%	(5:5)	12%	(5:5)	
Department of Motor Vehicles		180/1000 sq. ft., 900/acre**	6%	(6:4)	10%	(4:6)	
Medical-Dental	[60:30:10]	50/1000 sq. ft., 500/acre*	6%	(8:2)	11%	(3:7)	6.4
PARKS	[66:28:6]						5.4
City (developed w/meeting rooms and sports facilities)		50/acre*	4%		8%		
Regional (developed)		20/acre*	13%	(5:5)	9%	(5:5)	
Neighborhood/County (undeveloped)		5/acre (add for specific sport uses), 6/picnic site* **					
State (average 1000 acres)		1/acre, 10/picnic site**					
Amusement (Theme)		80/acre, 130/acre (summer only)**			6%	(6:4)	
San Diego Zoo		115/acre*					
Sea World		80/acre*					
RECREATION							
Beach, Ocean or Bay	[52:39:9]	600/1000 ft. shoreline, 60/acre*					6.3
Beach, Lake (fresh water)		50/1000 ft. shoreline, 5/acre*					
Bowling Center		30/1000 sq. ft., 300/acre, 30/lane **	7%	(7:3)	11%	(4:6)	
Campground		4/campsite**	4%		8%		
Golf Course		7/acre, 40/hole, 700/course* **	7%	(8:2)	9%	(3:7)	
Driving Range only		70/acre, 14/tee box*	3%	(7:3)	9%	(5:5)	
Marinas		4/berth, 20/acre* **	3%	(3:7)	7%	(6:4)	
Multi-purpose (miniature golf, video arcade, batting cage, etc.)		90/acre	2%		6%		
Racquetball/Health Club		30/1000 sq. ft., 300/acre, 40/court*	4%	(6:4)	9%	(6:4)	
Tennis Courts		16/acre, 30/court**	5%		11%	(5:5)	
Sports Facilities							
Outdoor Stadium		50/acre, 0.2/seat*					
Indoor Arena		30/acre, 0.1/seat*					
Racetrack		40/acre, 0.6 seat*					
Theaters (multiplex w/matinee)	[66:17:17]	80/1000 sq. ft., 1.8/seat, 360/screen*	1/3%		8%	(6:4)	6.1
RESIDENTIAL	[86:11:3]						7.9
Estate, Urban or Rural (average 1-2 DU/acre)		12/dwelling unit ^R	8%	(3:7)	10%	(7:3)	
Single Family Detached (average 3-6 DU/acre)		10/dwelling unit ^R	8%	(3:7)	10%	(7:3)	
Condominium (or any multi-family 6-20 DU/acre)		8/dwelling unit ^R	8%	(2:8)	10%	(7:3)	
Apartment (or any multi-family units more than 20 DU/acre)		6/dwelling unit ^R	8%	(2:8)	9%	(7:3)	
Military Housing (off-base, multi-family) (less than 6 DU/acre)		8/dwelling unit	7%	(3:7)	9%	(6:4)	
(6-20 DU/acre)		6/dwelling unit	7%	(3:7)	9%	(6:4)	
Mobile Home		5/dwelling unit, 40/acre*	8%	(3:7)	11%	(6:4)	
Family		3/dwelling unit, 20/acre*	9%	(3:7)	10%	(6:4)	
Adults Only		4/dwelling unit**	9%	(4:6)	7%	(6:4)	
Retirement Community		2.5/dwelling unit**	4%	(6:4)	8%	(5:5)	
Congregate Care Facility							
RESTAURANT ^S	[51:37:12]						4.7
Quality		100/1000 sq. ft., 3/seat, 500/acre* **	1%	(6:4)	8%	(7:3)	
Sit-down, high turnover		160/1000 sq. ft., 6/seat, 1000/acre* **	8%	(5:5)	8%	(6:4)	
Fast Food (w/drive-through)		650/1000 sq. ft., 20/seat, 3000/acre* **	7%	(5:5)	7%	(5:5)	
Fast Food (without drive-through)		700/1000 sq. ft.**	5%	(6:4)	7%	(5:5)	
Delicatessen (7am-4pm)		150/1000 sq. ft., 11/seat*	9%	(6:4)	3%	(3:7)	
TRANSPORTATION							
Bus Depot		25/1000 sq. ft.**					
Truck Terminal		10/1000 sq. ft., 7/bay, 80/acre**	9%	(4:6)	8%	(5:5)	
Waterport/Marine Terminal		170/berth, 12/acre**					
Transit Station (Light Rail w/parking)		300/acre, 2 ^{1/2} /parking space (4/occupied)**	14%	(7:3)	15%	(3:7)	
Park & Ride Lots		400/acre (600/paved acre), 5/parking space (8/occupied)* **	14%	(7:3)	15%	(3:7)	

* Primary source: *San Diego Traffic Generators*.

* Other sources: *ITE Trip Generation Report [6th Edition]*, Trip Generation Rates (other agencies and publications), various SANDAG & CALTRANS studies, reports and estimates.

^P Trip category percentage ratios are daily from local household surveys, often cannot be applied to very specific land uses, and do not include non-resident drivers (draft SANDAG *Analysis of Trip Diversion*, revised November, 1990):

 PRIMARY - one trip directly between origin and primary destination.

 DIVERTED - linked trip (having one or more stops along the way to a primary destination) whose distance compared to direct distance ≥ 1 mile.

 PASS-BY - undiverted or diverted < 1 mile.

^L Trip lengths are average weighted for all trips to and from general land use site. (All trips system-wide average length = 6.9 miles)

^C Fitted curve equation: $\ln(T) = 0.502 \ln(x) + 6.945$ } T = total trips, x = 1,000 sq. ft.

^O Fitted curve equation: $\ln(T) = 0.756 \ln(x) + 3.950$ }

^R Fitted curve equation: $t = -2.169 \ln(d) + 12.85$

t = trips/DU, d = density (DU/acre), DU = dwelling unit

^S Suggested PASS-BY [undiverted or diverted < 1 mile] percentages for trip rate reductions only during P.M. peak period (based on combination of local data/review and Other sources**):

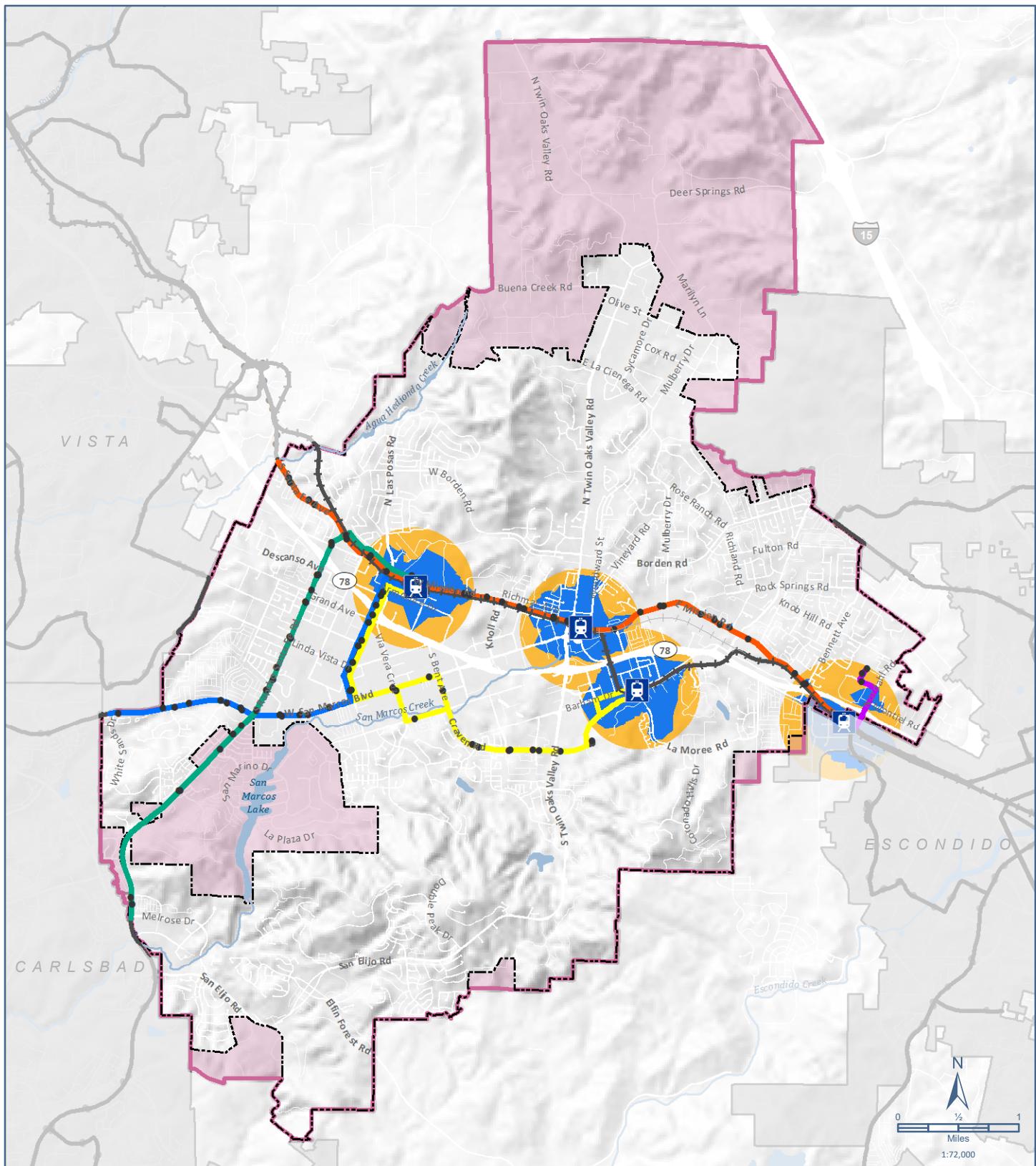
COMMERCIAL/RETAIL	
Regional Shopping Center	20%
Community " "	30%
Neighborhood " "	40%
Specialty Retail/Strip Commercial (other)	10%
Supermarket	40%
Convenience Market	50%
Discount Club/Store	30%
FINANCIAL	
Bank	25%
AUTOMOBILE	
Gasoline Station	50%
RESTAURANT	
Quality	10%
Sit-down high turnover	20%
Fast Food	40%

^T Trip Reductions - In order to help promote regional "smart growth" policies, and acknowledge San Diego's expanding mass transit system, consider vehicle trip rate reductions (with proper documentation and necessary adjustments for peak periods). The following are some examples:

[1] A 5% daily trip reduction for land uses with transit access or near transit stations accessible within 1/4 mile.

[2] Up to 10% daily trip reduction for mixed-use developments where residential and commercial retail are combined (demonstrate mode split of walking trips to replace vehicular trips).

Attachment B: High Quality Transit Area
Map



LEGEND

NCTD Breeze Routes			
304	353	+	NCTD SPRINTER Light Rail Line
305	445	●	Transit Stop
347		■	Half Mile Transit Buffer
		Half Mile Walkshed	
		City of San Marcos	
		Sphere of Influence	
		Areas within the Sphere of Influence	
		Neighboring City	

Data sources: SANGIS; CalAtlas. Map date: February 24, 2020.

City of San Marcos
SB 743 Implementation

FIGURE X

High Quality Transit Areas

Attachment C: VMT Mitigation

MEMORANDUM

Date: October 9, 2020

Project #24296

To: City of San Marcos
From: Michael Sahimi
Project: City of San Marcos SB 743 Implementation
Subject: VMT Mitigation Measures

With the passage of Senate Bill (SB) 743 in 2013, and the adoption of the City's updated transportation impact analysis guidelines in 2020, the basis for measuring significant transportation impacts for development projects under the California Environmental Quality Act (CEQA) has shifted from level of service (LOS) and automobile delay to vehicle miles traveled (VMT). This shift in focus from reducing impact to drivers to reducing the impact of driving better aligns with the State's goals to reduce greenhouse gas (GHG) emissions and encourage infill development and active transportation.

When projects under CEQA review are found to result in significant impacts to the environment, the lead agency must consider mitigation measures that would reduce the impact to below significant levels. With the shift away from LOS, delay, and vehicular capacity metrics and impact thresholds to VMT thresholds, mitigating significant impacts now requires focusing on measures to shorten vehicle trip distances or reduce single-occupancy vehicle trips (in favor of carpooling, taking public transit, bicycling, walking, and other modes), since VMT in essence is a function of the number of vehicle trips and their associated trip lengths. Whereas previous LOS-related mitigation measures focused on expanding roadway facilities primarily for vehicles, VMT-reducing mitigation measures can include modifying project characteristics, implementing on- or off-site improvements to transit, pedestrian and bicycle facilities, parking management strategies, and Transportation Demand Management (TDM) strategies to either reduce or shorten vehicular trips. In particular, TDM can reduce travel by single-occupancy vehicles by expanding traveler choices and encouraging ridesharing, carpooling, bicycling, walking, and riding transit. TDM strategies are among the most effective at reducing VMT impacts for land development projects at the project level.

This memorandum documents VMT mitigation strategies that Kittelson has determined can be applicable to projects in the City of San Marcos, based on a review of relevant literature and research. The selected strategies, as well as the applicable VMT reduction percentages and other attributes, are primarily based on a review of the guidance published by the California Air Pollution Control Officers Association (CAPCOA) in August 2010 (*Quantifying Greenhouse Gas Mitigation Measures: A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures*). This resource forms the basis for much of the TDM and VMT mitigation research and policymaking in the state. The

recommendations in this memo are also based on more recent information, such as recent research published by the San Diego Association of Governments (SANDAG) in June 2019 (*Mobility Management Guidebook* and *Mobility Management VMT Reduction Calculator Tool – Design Document*), California Air Resources Board (CARB) in 2014, Western Riverside Council of Governments (WRCOG) in March 2019, and City of San Jose in February 2018.

VMT mitigation measures that can be applicable to projects in the City are provided in Table 1. Information provided in the table includes the following:

- **Tier:** Mitigation measures can fall within one of two categories – Project Tier (strategies that would be implemented at a project site) and City/Community Tier (strategies that would be implemented at a community or citywide scale).
- **Measure Category:** Measures consist of multiple categories including commute strategies (aimed at employee trips), parking policies and programs (can apply to multiple land use and trip types), transit improvements (can include networkwide service and/or fare changes), neighborhood enhancements (to improve multimodal connectivity), and land use and location strategies (involve project location and land use mix).
- **Description:** A detailed description is included for each measure, including requirements to successfully implement the measure. In addition, some measures may overlap and should not be analyzed together as part of a mitigation program; this information is also included.
- **Range of Reductions:** The maximum allowable reduction per each measure is provided.
- **Land Use Applicability:** The applicable land use for each measure (primarily consisting of residential, office/employment, and retail) is provided. It is important to note that some measures may not be applicable to all project types; for example, commute trip reduction measures cannot be applied to residential projects.
- **Implementation Body:** The appropriate implementation body or bodies are included for each measure. For example, some measures are under the purview of the City or local transit agencies such as NCTD. Physical on-site improvements are generally implemented by the site developer. Programs or other continuous measures would generally be implemented by tenants or other bodies (such as homeowners associations).
- **Source:** For each measure, the source for the appropriate methodology and VMT reduction formula is included.

It is important to note that reductions between multiple measures are not additive, and the sum of VMT reductions across measures must be dampened using the following formula per CAPCOA:

$$\text{Total VMT Reduction \%} = 1 - (1 - A) * (1 - B) * (1 - C) * \dots$$

Where A, B, and C represent the reduction percentages from individual strategies

This calculation should be applied within each category, and then across all five categories to obtain the total VMT reduction percentage for a project undergoing VMT mitigation. For example, if an applicant estimates reductions from four mitigation measures (5% from Land Use and Location: Increase Site

Density, 8% from Land Use and Location: Major Transit Center Accessibility, 10% from Parking Management Strategies: Parking Supply Limits, and 3% from Parking Management Strategies: Parking Pricing), then the calculations would be as follows:

Total Land Use and Location Strategies Reduction % = $1 - (1 - 5\%) * (1 - 8\%) = 12.6\%$

Total Parking Management Strategies Reduction % = $1 - (1 - 10\%) * (1 - 3\%) = 12.7\%$

Total Global VMT Reduction % = $1 - (1 - 12.6\%) * (1 - 12.7\%) = \underline{\underline{23.7\%}}$

In addition, it is important to note that this is a limit to the amount of VMT reduction that can be applied to a development project. Within the City of San Marcos, with its suburban land use and transportation context, CAPCOA indicates that the maximum feasible total reduction combining all measures is 15%. There are also maximum feasible reductions within and across the five mitigation categories; these are indicated in Table 2. Care should be taken that any calculated VMT reductions do not exceed these maximums. In the example above, in a suburban setting the Land Use and Location strategies reduction of 12.6% would be capped at 5%, and the total reduction would be capped at 15%.

At this time, several VMT-reducing measures are already required for new developments by the City's Municipal Code, which should be considered project features to be applied during a project's VMT impact assessment and should not be used as part of mitigation calculations:

- Chapter 20.340.050 requires trip reduction measures for all major non-residential development projects and the non-residential portions of mixed-use development projects that exceed 25,000 square feet of gross floor area. Requirements include preferential carpool/vanpool parking, passenger loading areas, and shower or locker facilities. Developments that provide more shower and storage locker facilities or secure bicycle parking than required may reduce their parking requirement.
- Chapter 20.340.090 requires bicycle parking spaces in compliance with the minimum requirements listed in the Municipal Code.

iCommute (www.icommutesd.com) is the transportation demand management program for San Diego County. It provides valuable resources and assistance that can be utilized by developers and tenants looking to implement TDM programs. iCommute has an employer services program which provides assistance and tools to help organizations design and implement commuter programs. In addition, iCommute provides the following items:

- information about carpool services and a carpool incentive pilot program
- subsidized vanpool program and transit passes
- regional support for biking
- the Guaranteed Ride Home program
- information about teleworking
- bike and pedestrian safety support for schools

Table 1: Applicable VMT Reduction Strategies

Tier and Category	Mitigation Measure	Description	Maximum VMT Reduction	Land Use Applicability	Implementation Body/Method	Source
Project Tier: Land Use and Location	Increase Site Density	This measure increases the density of households and employment per acre for the project site over what was used in the initial project VMT estimation. Density can be measured in terms of jobs, residents, employees, or dwelling units per unit area. Floor area ratio may be used as a proxy for employment, when employment is not known, or when considering non-office commercial developments.	Up to 30%	Residential, Office, Retail	Developer, City	CAPCOA (1.1)
	Increase Site Diversity	This measure involves improving the mix of uses and jobs/housing balance within a project or a planning area, incorporating a range of complementary land uses that provide a balanced development approach relative to the surrounding neighborhood and encourage shorter trips and transportation alternatives.	Up to 30%	Residential, Office, Retail	Developer, City	SANDAG (2B)
	Major Transit Center Accessibility	This measure locates a project within half a mile or a ten minute walk of a major transit center, defined as a rail transit station or a bus rapid transit station, but can be any transit stop with frequent service (5 to 15 minute headways) and significant transfer opportunities to other transit routes. Residential and commercial centers designed around rail and bus stations are known as Transit-Oriented Development and contain bike and pedestrian access.	Up to 14.4%	Residential, Office, Retail	Developer, City	SANDAG (2A)
	Integrate Affordable Housing	This measure incorporates a higher proportion of affordable housing within the residential portion of a project, subdivision, or a planning area. Income has a statistically significant effect on whether someone will drive a single-occupant vehicle to work or for other trip purposes.	Up to 32.5% of home VMT	Residential, Office, Retail	Developer, City	San Jose (PC-003)
Project Tier: Commute Demand Management Strategies	Voluntary Employer Commute Program	This measure consists of a variety of measures to reduce single-occupant vehicle commuting through an employer, such as carpool/vanpool programs, subsidized transit passes, preferential carpool parking, bicycle facilities, and flexible work schedules. Unlike a mandatory program, this strategy does not require monitoring, reporting, or performance standards. Note, this measure cannot be analyzed in combination with a mandatory employer commute program. In addition, separate commute demand management measures should not be analyzed if already included under this measure.	Up to 6.2% of work VMT	Office, Retail	Tenant	SANDAG (1A)

Tier and Category	Mitigation Measure	Description	Maximum VMT Reduction	Land Use Applicability	Implementation Body/Method	Source
	Mandatory Employer Commute Program	<p>This measure consists of a variety of measures to reduce single-occupant vehicle commuting through an employer, such as carpool/vanpool programs, subsidized transit passes, preferential carpool parking, bicycle facilities, and flexible work schedules. Unlike a voluntary program, this strategy requires regular monitoring, reporting, and performance standards.</p> <p>Note, this measure cannot be analyzed in combination with a voluntary employer commute program. In addition, separate commute demand management measures should not be analyzed if already included under this measure.</p>	Up to 26% of work VMT	Office, Retail	Tenant	SANDAG (1B)
	Employer Carpool/Vanpool Program	This measure consists of supporting ride sharing through more convenient pick up/drop off locations, parking locations during workdays, and subsidies. Employers can encourage vanpooling and carpooling by providing ride-matching assistance, priority parking for carpool/vanpool vehicles, incentives, and subsidies.	Up to 7.1% of work VMT	Office, Retail	Tenant (in partnership with City or other agencies)	SANDAG (1E)
	Employer Transit Subsidy	This measure consists of employer-provided subsidized or discounted daily or monthly transit passes to employees; the employer would pay for a portion or the entirety of an employee's transit costs.	Up to 10.9% of work VMT	Office, Retail	Tenant (in partnership with transit agencies)	SANDAG (1D)
	Employer Telecommute and Alternative Work Schedules	This measure involves encouraging and supporting employers and employees interested in telecommuting or working alternative work schedules. It involves marketing, equipment, and infrastructure to support telecommuting. A telework program enables employees to work from home or a remote location one or more days per week. Alternative work schedules are usually compressed work weeks that allow workers to reduce the number of commute trips they make.	Up to 5.5% of work VMT	Office	Tenant	CAPCOA (4.6)/San Jose (TP-008)
	School Bus Program/ School Pool Program	This measure consists of two types of programs: supporting expanded school bus programs, or organizing groups of volunteer parents to provide shared rides to school. Developers and the City can work with school districts to expand school bus services in the project area and local community; alternatively, school carpool programs can fill service gaps for school buses.	Up to 6.3% of school VMT (school bus); Up to 15.8% of school VMT (school pool)	Residential	Developer, City	CAPCOA (4.10/ 4.13)
Project Tier: Parking Management Strategies	Parking Cash Out	This measure consists of providing cash to employees for not parking a vehicle on site, if free parking is provided for employees and is paid for by the employer. The cash payment would consist of the cash value of the space in lieu of the space itself. This measure can be used where free parking is prevalent and it is not feasible to directly charge for parking.	Up to 7.7% of work VMT	Office, Retail	Property Manager, Tenant	CAPCOA (4.15)

Tier and Category	Mitigation Measure	Description	Maximum VMT Reduction	Land Use Applicability	Implementation Body/Method	Source
City/Community Tier: Transit Strategies	Parking Pricing	This measure consists of charging drivers directly for parking. Parking pricing can be implemented on- or off-street. This measure can be implemented in several ways, including implementing residential parking permit programs, unbundling parking costs from rent or property costs, charging for on-street parking, and charging for workplace parking.	Up to 7.5%	Residential, Office, Retail	Property Manager, Tenant, City	SANDAG (3A)
	Parking Supply Limits	This measure sets the amount of available on-site and on-street parking available at some level below current peak demand. This measure can be implemented in several ways, including eliminating or reducing minimum parking requirements, establishing maximum parking requirements, requiring shared parking between different uses, limiting parking to residents with permits, and establishing parking time limits.	Up to 12.5%	Residential, Office, Retail	Developer, City	CAPCOA (3.1)
	New Transit Service and Coverage	This measure involves expanding transit service in terms of areas and/or times of day being served, in order to better accommodate existing and future demand and encourage a shift away from driving. This can include creating new transit routes.	Up to 5.9%	Residential, Office, Retail	City, Transit Agencies	SANDAG (5A)
	Reduce fares	This measure consists of lowering transit fares in specific zones or across the transit system service area to make transit accessible to an increased number of users. Unlike the Employer Transit Subsidy, this measure is not limited to a single project site and reduces fares rather than providing discounts or subsidies.	Up to 1.2%	Residential, Office, Retail	City, Transit Agencies	SANDAG (5D)
	Increased Transit Service Frequency	This measure consists of measures to increase the frequency of service on transit routes to improve the viability of taking public transit as an alternative to driving. Measures can be implemented systemwide or on specific routes to reduce headways and increase ridership by reducing travel times.	Up to 8.2%	Residential, Office, Retail	City, Transit Agencies	SANDAG (5B)
	Increased Transit Speed and Reliability	This measure consists of roadway, traffic control, and other infrastructure improvements that expedite transit service and improve schedule adherence (reliability). Transit supportive treatments to increase transit vehicle speed and service reliability can include transit signal priority, bus-only signal phases, queue jumps, curb improvements to increase the speed of passenger loading, and dedicated bus lanes.	Up to 0.4%	Residential, Office, Retail	City, Transit Agencies	SANDAG (5C)

Tier and Category	Mitigation Measure	Description	Maximum VMT Reduction	Land Use Applicability	Implementation Body/Method	Source
	Microtransit NEV Shuttle	Microtransit services use real-time ride-hailing, mobile tracking, and app-based payment to provide demand-based services to user; this can include services utilizing Neighborhood Electric Vehicles (NEVs). Microtransit services are flexible and can consist of point-to-point shuttles or first/last-mile shuttles connecting with major transit hubs to provide an alternative to short vehicle trips.	Up to 0.1%	Residential, Office, Retail	Property Manager, Tenant, City, Transit Agencies	SANDAG (5E)
City/Community Tier: Neighborhood Circulation Enhancements	Improved Street Connectivity	This measure consists of strategies to improve street connectivity by increasing the density of publicly accessible streets, resulting in shorter block lengths between intersections to shorten trip lengths to increase the comfort and connectivity of pedestrians and bicyclists.	Up to 6%	Residential, Office, Retail	Developer, City	SANDAG (4A)/San Jose (MI-003)
	Pedestrian and Bicycle Facility and Network Improvements	This strategy improves the accessibility, convenience, and perceived safety of sidewalks, bicycle lanes, and pedestrian/bicycle paths. Improvements to the pedestrian/bicycle network include removing physical barriers, adding crossing infrastructure, widening sidewalks and bike lanes, and creating network links. This consists of three types of improvements: <ul style="list-style-type: none"> • Pedestrian facility improvements (enhancing the existing streetscape and adding crossing improvements) • Bikeway network expansion (increasing the existing network of on- or off-street bikeways) • Bike facility improvements (implementing new bikeways) 	Up to 1.4% (pedestrian facility improvements); Up to 5.0% (bikeway network expansion); Up to 0.3% (individual bike facility improvement)	Residential, Office, Retail	Developer, City	SANDAG (4B/4C/4D)
	Support Bike Share	This measure consists of supporting bike sharing through parking facilities and subsidies. This can include partnering with docked and dockless bicycle, e-bike, and scooter share companies to provide on-demand active transportation options to residents and employees. Employers and cities can support these programs by providing bicycle parking, marketing bike share services, and subsidizing user cost.	Up to 0.1%	Residential, Office, Retail	Property Manager/HOA, Tenant, Developer, City	SANDAG (4E)
	Car Share	This measure consists of supporting car sharing through priority parking facilities and membership discounts and subsidies. This measure can help reduce automobile ownership. Types of carshare programs can include one-way (free-floating) programs that allow users to leave their vehicle at their final destination (without returning it to the origin) while roundtrip programs require users to return the vehicle to a designated location.	Up to 0.7%	Residential, Office, Retail	Property Manager/HOA, Tenant, Developer, City	SANDAG (4F)

Tier and Category	Mitigation Measure	Description	Maximum VMT Reduction	Land Use Applicability	Implementation Body/Method	Source
	Traffic Calming	<p>This measure consists of strategies to reduce the speeds of vehicle traffic on the street and improve the lateral separation between bicyclists, pedestrians, and motor vehicles; such strategies increase bicyclist and pedestrian comfort and can encourage a shift away from driving for shorter trips. Traffic calming strategies can include:</p> <ul style="list-style-type: none"> • Narrowing roadways • Vertical deflection such as speed bumps, humps, or tables • Horizontal deflection • Enforcement and education • Lowering speed limits 	Up to 1%	Residential, Office, Retail	Developer, City	CAPCOA (2.2)
	Community-Based Travel Planning	<p>This measure consists of an agency- or HOA-sponsored TDM program; unlike the Voluntary Employer Commute Program and Mandatory Employer Commute Program, this measure is focused on residents. The organization responsible for operating the TDM program utilizes advisors to engage residents and provide information, incentives, and support to encourage residents and visitors to use alternative modes of travel. It may or may not be monitored with reduction targets.</p>	Up to 2%	Residential	Property Manager/HOA, Tenant, Developer, City	SANDAG (4G)
	NEV Network	<p>This measure consists of establishing a neighborhood electric vehicle (NEV) network. NEVs are low speed vehicles which are electric powered, offering an alternative to traditional vehicle trips and can legally be used on roadways with speed limits of 35 MPH or less (unless specifically restricted). Creating an NEV network requires implementing the necessary infrastructure, including NEV parking, charging facilities, striping, signage, and educational tools.</p>	Up to 13%	Residential	Property Manager/HOA, Tenant, Developer, City	CAPCOA (2.3)
	Cordon Pricing	<p>This strategy consists of levying a toll on motor vehicles seeking to enter a specific area, such as a downtown area. The cordon pricing system would be set up to cover all entry points to the area, with funds potentially being utilized to improve multimodal facilities in the area.</p>	Up to 22%	Residential, Office, Retail	City	CAPCOA (6.1)

Table 2: Maximum VMT Reductions (Suburban Areas)

Max Category Reductions			Max Cross-Category Reductions	Global Max Reduction	
Project Tier	Commute Demand Management Strategies (including Parking Cash Out)	25% (work VMT)	15% overall; 25% work VMT; 65% school VMT	15% without NEV; 20% with NEV (all VMT)	
	Parking Management Strategies (excluding Parking Cash Out)	20%	10% without NEV; 15% with NEV (all VMT)		
	Land Use and Location	5%			
City/Community Tier	Transit Strategies	10%	5% without NEV; 15% with NEV	22%	
	Neighborhood Circulation Enhancements (excluding Cordon Pricing)	5% without NEV; 15% with NEV			
	Cordon Pricing				

Source: California Air Pollution Control Officers Association (CAPCOA) *Quantifying Greenhouse Gas Mitigation Measures: A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures* (August 2010)

Note: NEV signifies the Neighborhood Electric Vehicle network mitigation measure, which is within the Neighborhood Circulation Enhancements category.

Attachment D: Transportation Project Types
and VMT Analysis
Requirements

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 non-motorized 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