The City of SAN DIEGO

Transportation Study Manual (TSM)

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Preface

This manual is intended to describe the required transportation analysis requirements for land development, roadway projects, and specific plans in the City of San Diego. The City has updated the manual several times as follows:

- 1987: The original traffic impact study requirements for projects subject to CEQA were outlined in Department Instructions.
- 1993: The City, with the assistance of a volunteer task force of traffic engineering consultants, produced the Traffic Impact Study Manual.
- 1998: The City updated the Traffic Impact Study Manual to reflect revisions to the City's Land Development Code, improvements in capacity analysis techniques, and consistency with the City's California Environmental Quality Act (CEQA) review process.
- 2020: The City changed the Traffic Impact Study Manual to this Transportation Study Manual (TSM or Manual) to implement the required shift from a level of service (LOS) analysis to a vehicle miles travelled (VMT) CEQA analysis as a result of Senate Bill 743 and to better address all transportation modes. New requirements are provided for both a project's CEQA transportation impact analysis and Local Mobility Analysis (LMA).

Introduction

PURPOSE

The purpose of this Manual is to provide guidance to consultants on how to prepare transportation studies in San Diego. It is intended to ensure consistency among consultants, predictability in preparation, consistency among reviewers, and conformance with all applicable City and State regulations, including CEQA.

Transportation studies are intended to identify the transportation impacts of proposed development projects and to determine the need for any improvements to the adjacent and nearby road system to achieve acceptable mobility for vehicles, bicyclists, pedestrians, and transit.

This Manual provides guidance for:

- The City's CEQA significance thresholds, screening criteria, and methodology for conducting the transportation vehicle miles travelled (VMT) analysis.
- Preparation of Local Mobility Analyses (LMA) to identify any off-site infrastructure improvements in the project vicinity that may be triggered with the development of the project, as well as to analyze site access and circulation and evaluate the local multi-modal network available to serve the project.

OVERVIEW OF PROCESS

Who Is Involved?

Preparer Qualification Requirements

Transportation Studies must be prepared under the supervision of a qualified, registered Traffic Engineer who has specific training and experience in preparing transportation analysis. The Traffic Engineer must possess the ability to forecast, interpret transportation data, and evaluate transportation needs for the development and roadway system. All transportation studies must be stamped by a California Registered Traffic Engineer or equivalent as approved by the Development Services Department's Senior Traffic Engineer.

City Review and Other Agency Coordination

Transportation studies for land development projects will be reviewed by the Development Services Department's Transportation Development Section. If a project will affect another jurisdiction, such as Caltrans, SANDAG, MTS, NCTD, other cities, or San Diego County, coordination with that jurisdiction may be required. City of San Diego staff can provide guidance and contact information for other jurisdictions.

Ethics and Objectivity

Although study preparers and reviewers will sometimes have different perspectives, all parties involved in the process should adhere to established engineering ethics and conduct all analysis and reviews objectively and professionally.

Summary of Process

Outline of Study Preparation and Review Process

The following summarizes the typical process for completing a transportation study in the City of San Diego:

- **Step 1 – Study Initiation:** The applicant's consultant will complete the Project Information Form (PIF), which describes the project location and site plan, provides trip generation estimates (trip distribution/assignment), reviews transportation screening criteria, and identifies study requirements.
- **Step 2 – Confirm Study Requirements:** The completed PIF is submitted to the City of San Diego for review and comment. The City will either provide a letter confirming the study requirements or revise the requirements in the PIF. The applicant's consultant may request a meeting to clarify the PIF and establish requirements.
- **Step 3 – Conduct Study/Submit Draft:** The applicant's consultant will prepare the Transportation Study consistent with the requirements established in Steps 1 and 2 and will submit a draft to the City. The City will provide written comments on the draft study.
- **Step 4 – Finalize Study:** The applicant's consultant will address all City comments and produce a Final Transportation Study. A record identifying how each comment was addressed shall also accompany the Final Transportation Study.

During this process, the applicant's consultant may request a meeting with City staff to clarify study requirements or comments received on the draft study. It is critical that the applicant's consultant

coordinate with City staff at an early stage in the planning process to ensure that the City's requirements are met.

Study Initiation

COMPLETING THE PROJECT INFORMATION FORM (PIF)

The applicant's consultant will prepare the PIF before coordinating with the City. This ensures that all the information necessary to determine study requirements is compiled and readily accessible. The PIF includes:

1. Project Information: Project location/context, site plan (including driveways and desired access control), project description, and trip generation and distribution.
2. Preliminary screening criteria review: This will determine the types of analysis that will be required (for example, whether a Local Mobility Analysis (LMA) and/or a transportation VMT CEQA analysis is required). If the project generates enough traffic to require a LMA/project access study (the project generates more than 500 daily unadjusted driveway trips and is inconsistent with the Community Plan/zoning or more than 1,000 daily unadjusted driveway trips and is consistent with the Community Plan/zoning); preliminary trip distribution/assignment should be provided on the project information form to help determine the geographic extent of the study.

Appendix A contains a blank PIF for use.

Once the PIF is completed, it is submitted along with a scoping letter to the City. City staff will review and provide any revisions. If necessary, City staff will initiate a meeting to discuss any additional information or unusual circumstances. The applicant/consultant may also contact Transportation Development Section staff to request a meeting to review the City's response to the scoping letter/PIF. In situations where Caltrans or another agency will also review the study, staff from these agencies should be notified of the project to foster coordination/collaboration and reduce the potential for study revisions. City staff can provide contact information for other agencies.

ELEMENTS OF THE PIF

The following items are required to complete the PIF:

Project Location/Context

- Project location map
- The project's Community Planning Area
- Indication of whether any portion of the project is located within ½ mile path of travel to a *Major Transit Stop*[1]
- The zoning and community plan land use designation of the project site and demonstration of consistency

Project Description

- Land uses and intensities
- Number of parking spaces: vehicle (including accessible spaces), motorcycle, bicycle (racks and secure storage)
- Any project features related to travel demand management. In addition, identify any transportation amenities or travel demand management measures that are required based on the San Diego Municipal Code Section 142.0528 (Parking Standards Transit Priority Area Regulations) or the Climate Action Plan Consistency Checklist. For example: transit pass subsidies, unbundled parking, shuttle services, car share, bicycle supportive features (bike repair station, bike lockers, etc.).
- For retail and recreation land uses, a market area study depicting the project's market capture area in miles and population to determine if the use is locally serving.

Site Plan

- Clearly identified land use types and quantities, and number of parking spaces provided (vehicle and bicycle)

[1] CEQA Section 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.

- Identified driveway locations and type (full access, partial access, right in/out only)
- Clearly identified pedestrian access, bicycle access, and on-site pedestrian circulation
- Location/distance of closest existing transit stops and proposed transit stops identified in the Regional Transportation Improvement Program (RTIP): measured as walking distance to project entrance or middle of parcel

Trip Generation/Distribution/Assignment

The applicant's consultant shall identify the number of new daily and peak hour driveway vehicle-trips added by the project as described below:

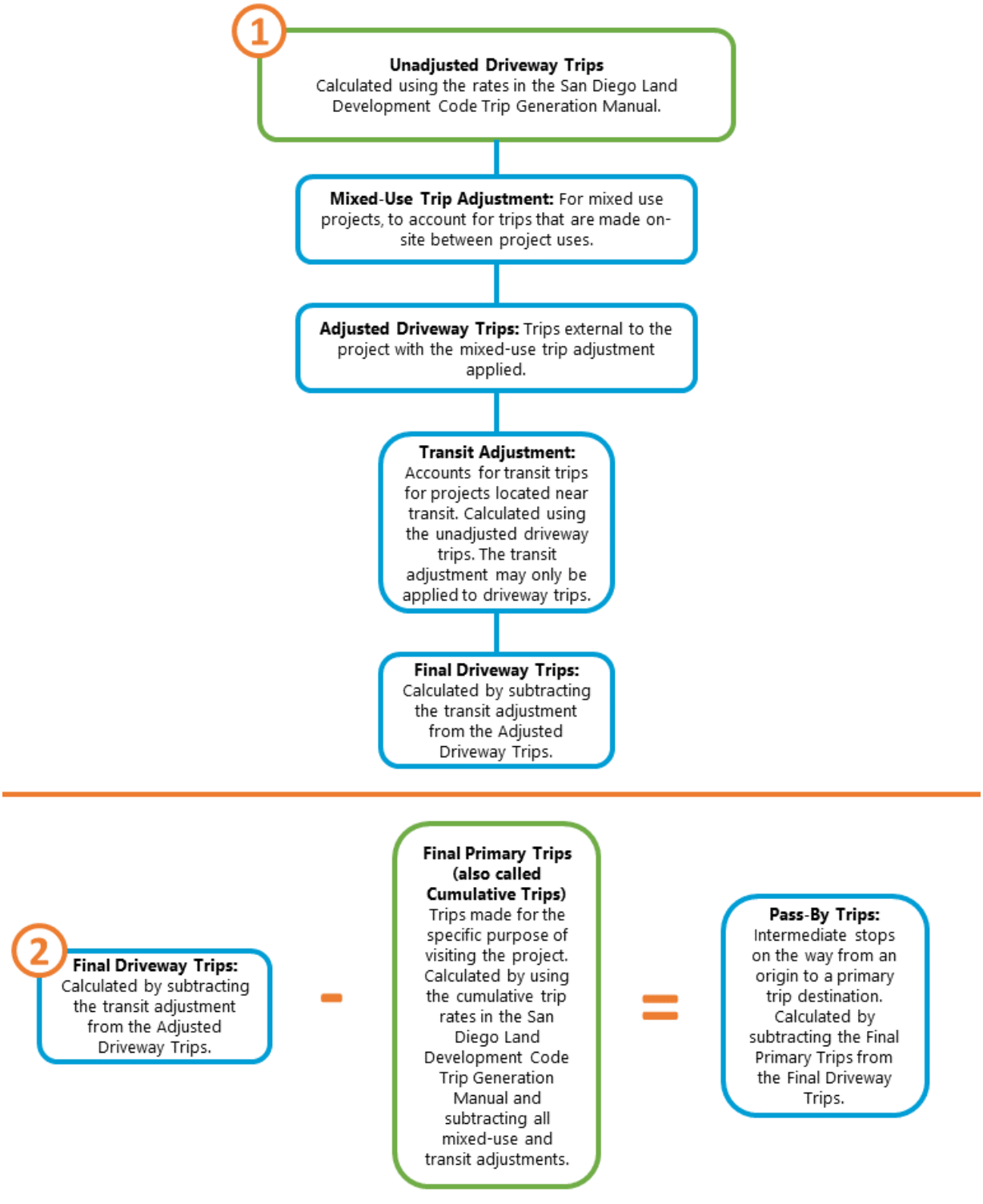
Trip Generation Procedure

Trip generation rates are commonly expressed in trips per unit of development - for example, trips per housing unit or trips per thousand square feet - and are derived by averaging trip generation data collected from existing land uses.

The following procedure shall be followed to determine the appropriate trip generation rates/equations to use:

1. Use the City of San Diego's Trip Generation Manual for trip generation rates of similar land use types.
2. If the City Trip Generation Manual does not provide rates for the project, utilize SANDAG's "Traffic Generators" publication or the current edition of the *Institute of Transportation Engineers (ITE) Trip Generation Manual,* with approval from the Transportation Development Section.
3. If the land use is unique and not included in either the City's Trip Generation Manual, SANDAG data, or the *ITE Trip Generation Manual*, then the applicant/consultant shall collect trip generation data at a minimum of four existing developments similar to the project. The existing developments selected as comparative projects shall be approved by City staff before any data is collected.

Once the trip generation rates/equations are established, the applicant's consultant may produce the vehicle trip generation for the project. The following chart describes the various elements that are part of the trip generation analysis.



* For redevelopment projects see "Identifying Existing Conditions" in the *Local Mobility Analysis (LMA) Requirements* Chapter for guidance on accounting for trips generated by an existing use.

Adjustments for Transit, Bicycling, Walking, and Transportation Network Companies (TNCs)

Most trip generation data (including data contained in the City of San Diego Trip Generation Manual) is based on suburban locations with little access to public transit. Additionally, given the suburban setting, bicycling and walking is also not a typical primary mode of transportation and is not generally captured in the trip generation data. For projects that are in close proximity to transit stops, transit use, bicycling, and walking must be specifically acknowledged to reduce the unadjusted driveway trip generation.

Table 1 displays driveway trip rate reductions that are allowable for development within a ½ mile path of travel to a *Major Transit Stop*. The applicant's consultant may also propose a method for determining reductions associated with transit, bicycling, and walking, with approval from the Transportation Development Section.

TABLE 1: DRIVEWAY TRIP REDUCTIONS TO ACCOUNT FOR TRANSIT, BICYCLE, AND PEDSTRIAN USE WITHIN ½ MILE PATH OF TRAVEL TO A MAJOR TRANSIT STOP

LAND USE TYPE*	DAILY	AM PEAK	PM PEAK
Residential	10%	14%	14%
Employment	4%**	15%	15%
Retail	N/A	N/A	N/A

Source: ITE Trip Generation Handbook, 3rd Edition

*See Appendix B: Land Use Definitions for each land use type

**Based on % of daily trips that occur during peak hour per the San Diego Trip Generation Manual for Commercial Office: 13% in AM and 14% in PM)

In addition, if a land use (such as a hotel, recreation, etc.) is expected to have a large amount of TNC pick-ups/drop-offs then the trip generation analysis should include an estimate.

Determining Internal Trips for Mixed-Use Projects

Most trip generation data (including data contained in the City of San Diego Trip Generation Manual) is based on isolated, single land use, suburban developments. When a mix of land uses are provided on a single site and are interconnected through internal roads and walkways, some of the raw vehicle trips are internalized; they never leave the project site. The effect that mixed-use development has on trip generation has been widely researched, including studies conducted by the Environmental Protection Agency (EPA)[2] and the Transportation Research Board[3].

To calculate the driveway trip generation rate reductions that are allowable for a mixed-use project, the applicant's consultant should use the *NCHRP 8-51 Internal Trip Capture Estimation Tool* created by the National Cooperative Highway Research Program. This spreadsheet requires the user to input the estimated entering and exiting trips associated with each project use, the expected vehicle occupancy, and the percentage of trips that are expected to be transit, bicycling, or walking trips. The percentages provided in **Table 1** can be used for the percentage of trips that are expected to be transit, bicycling, or walking trips if a project is located within ½ mile path of travel to a *Major Transit Stop*. If the project is not located within ½ mile path of travel to a *Major Transit Stop*, then these values should be entered as 0%.

The spreadsheet is available for download here: http://www.trb.org/Publications/Blurbs/165014.aspx.

The applicant's consultant may also propose a method for determining adjustments to trip generation for mixed-use projects, with approval from the Development Services Department's Transportation Development Section.

Determining Pass-By Trips

Pass-by trips are trips to the project that are intermediate stops on the way to another land use. For example, if you stop on your way home from work at the gas station (located on the street that you are already on as part of your commute), the trip to the gas station is a pass-by trip. Pass-by trips only

[2] *Traffic Generated by Mixed-Use Developments – A Six-Region Study Using Consistent Built Environment Measures* (Ewing et al, ASCE UP0146, September 2011).
[3] National Cooperative Highway Research Program (NCHRP) Report 684, *Enhancing Internal Trip Capture Estimation for Mixed-Use Developments*, 2011. This research served as the basis for the recommended mixed-use trip generation method in the 3rd Edition of the ITE *Trip Generation Handbook*.

apply to commercial/retail land-uses. The applicant's consultant should determine the number of pass-by trips by:

- Determining the appropriate percentage of pass-by trips using the City of San Diego Land Development Code Trip Generation Manual.
- Assigning pass-by trips to driveways to/from adjacent streets considering driveway locations and allowed turning movements. The pass-by reduction should not exceed 10% of the adjacent street volume.

Trip Distribution/Assignment Procedure

The following describes the procedure for assigning the primary/diverted link project trips to the roadway network. The trip distribution can be estimated using two methods:

- Method 1: Manual estimation using existing traffic volumes, location of complementary land uses, and engineering judgement. The trip distribution shall be clearly communicated on a map that shows the percent of project traffic on each roadway in the vicinity of the project site.
- Method 2: Use the current version of the SANDAG Regional Travel Demand Model to perform a select zone analysis. If a project generates more than 2,400 daily unadjusted driveway vehicle trips, the SANDAG Regional Travel Demand Model shall be used to estimate trip distribution.

The roadway network for trip distribution/assignment should include the existing and fully funded/programmed roadway network. In addition, projects that would contribute significant traffic to a planned and unfunded roadway segment may be required to analyze both with and without the roadway.

It is critical to consider project driveway location and allowed turning movements at driveways and intersections when estimating local trip distribution/assignment. The applicant's consultant may need to assign multiple routes between the project and the origin/destination, to account for one-way streets, turn prohibitions, etc.

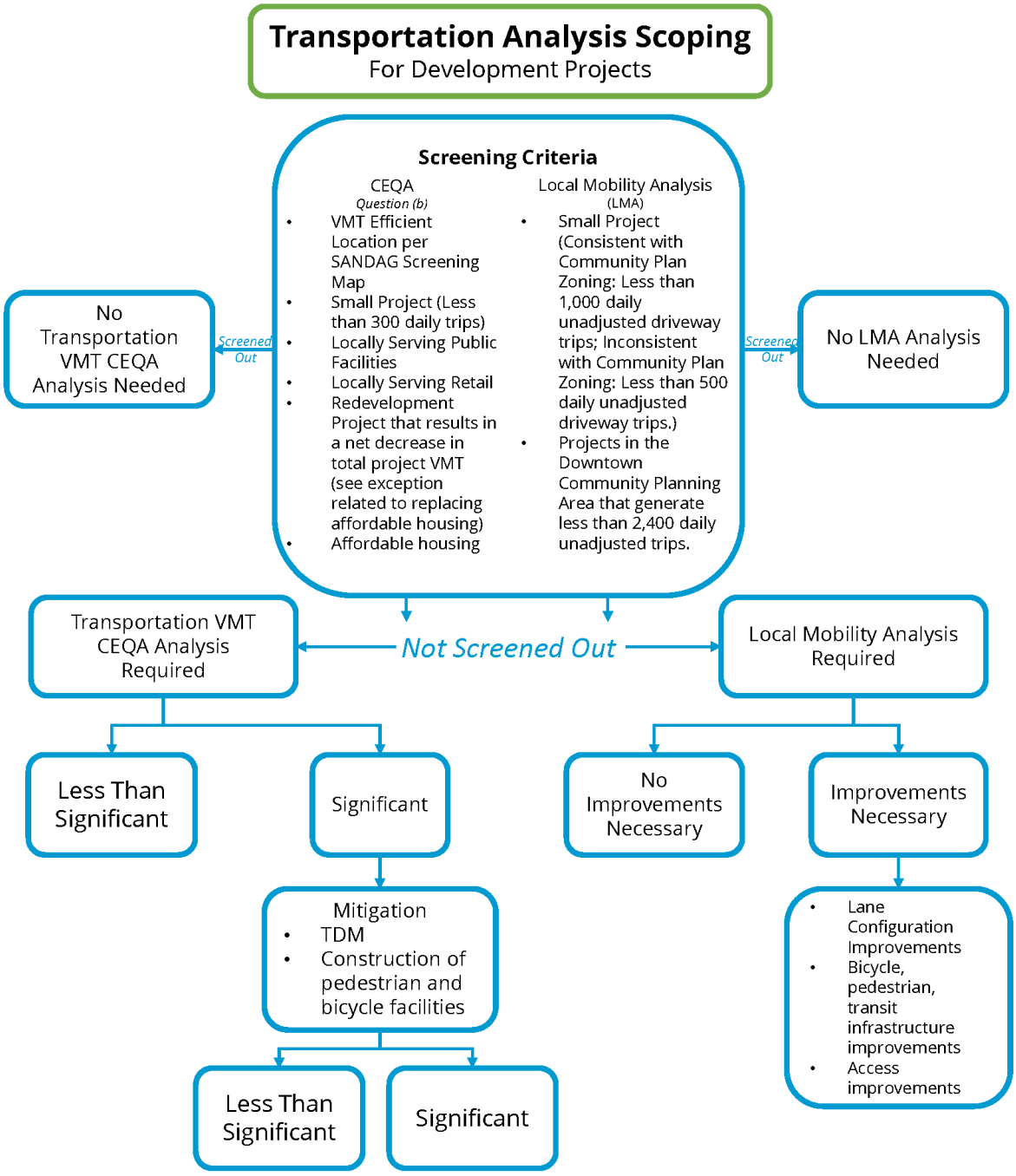
As noted above, a separate trip distribution/assignment estimate is required for the pass-by trips. Pass-by trips shall be assigned to driveways to/from adjacent streets and should consider driveway location and allowed turning movements. The pass-by reduction shall not exceed 10% of the adjacent street volume.

DETERMINING STUDY REQUIREMENTS

See the *Transportation VMT CEQA Requirements* chapter and *Local Mobility Analysis (LMA) Requirements* chapter for screening criteria and study requirements.

- Transportation VMT CEQA Study Requirements: Page 14
- LMA Requirements: Page 34

The following flowchart provides an overview of how to determine study requirements.



* City staff may request analysis or additional study requirements due to location, project complexity, local transportation system complexity, and other local context despite meeting the screening criteria listed in the flow chart.

CEQA Transportation VMT Requirements

SB 743 BACKGROUND & CONSISTENCY WITH CITY GOALS

On September 27, 2013, Governor Jerry Brown signed SB 743 into law and started a process intended to fundamentally change transportation impact analysis as part of CEQA compliance. The Office of Planning and Research (OPR) published its latest Technical Advisory on Evaluating Transportation Impacts in CEQA to the California Natural Resources Agency in December 2018. This Technical Advisory provides recommendations on how to evaluate transportation impacts under SB 743. These changes include elimination of auto delay, level of service (LOS), and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant CEQA transportation impacts. The OPR guidance covers specific changes to the CEQA Guidelines and recommends elimination of auto delay for CEQA purposes and the use of Vehicle Miles Travelled, or VMT, as the preferred CEQA transportation metric. This new legislation requires the selection of a VMT analysis methodology, establishment of VMT thresholds for CEQA transportation impacts, and identification of feasible mitigation strategies. SB 743 includes the following two legislative intent statements:

CEQA refers to the California Environmental Quality Act. This statute requires identification of any significant environmental impacts of state or local action including discretionary approval of new development or infrastructure projects. The process of identifying these impacts is typically referred to as the environmental review process.

LOS refers to "Level of Service," a metric that assigns a letter grade to network performance. The typical application of LOS in cities is to measure the average amount of delay experienced by vehicle drivers at an intersection during the most congested time of day and to assign a report card range from LOS A (fewer than 10 seconds of delay for signalized intersections) to LOS F (more than 80 seconds of delay for signalized intersections).

VMT refers to "Vehicle Miles Travelled," a metric that accounts for the number of vehicle trips generated and the length or distance of those trips. For transportation analysis, VMT is generally expressed as VMT per capita for a typical weekday.

1. Ensure that the environmental impacts of traffic, such as noise, air pollution, and safety concerns, continue to be properly addressed and mitigated through the California Environmental Quality Act.
2. More appropriately balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas (GHG) emissions.

VMT does not directly measure traffic operations but instead is a measure of network use or efficiency, especially if expressed as a function of population or employment (i.e., VMT per capita). VMT tends to increase as land use density decreases and travel becomes more reliant on the use of automobiles due to the long distances between origins and destinations. VMT can also serve as a proxy for impacts related to energy use, air pollution emissions, greenhouse gas (GHG) emissions, safety, and roadway maintenance. The relationship between VMT and energy or emissions is based on fuel consumption. The traditional use of VMT in environmental impact analysis is to estimate mobile air pollution emissions, GHGs, and energy consumption.

Consistency with City of San Diego Goals/Policies

The legislative intent of SB 743 has many consistencies with City of San Diego goals and policies contained in the General Plan, Climate Action Plan, and individual Community Plans.

The General Plan is the foundation upon which all land use decisions in the City are based. It expresses a citywide vision and provides a comprehensive policy framework for how the City should grow and develop, provide public services, and maintain the qualities that define the City of San Diego. Land use decisions influence transportation and greatly affect how much a person travels, the travel mode, and travel distance, which are all components of VMT. The community plans are a part of the Land Use Element of the General Plan. Community plans provide more detailed land use designations and site-specific policy recommendations than is practical at the citywide level. Community plans typically address community issues such as: the local street, bicycle, pedestrian, and transit networks; distinctive environmental characteristics; community landmarks; location, prioritization, and provision of public facilities; community urban design guidelines; and identification of gateways. Together, the General Plan and the Community Plans seek to guide future growth and development to achieve citywide and community-level goals.

The City's Climate Action Plan, adopted in 2015, addresses greenhouse gas emissions reduction targets through various strategies, including 100% renewable energy; implementing a zero-waste plan; and increasing non-auto commuter travel mode share. The Climate Action Plan helps achieve the greenhouse gas reduction targets set forth by the State of California.

The General Plan, Community Plans, and Climate Action Plan include policies related to the legislative intent of SB 743. These guidelines for SB 743 implementation in the City of San Diego consider OPR's Technical Advisory and consistency with the City's adopted policies. The following summarizes the aspects of the General Plan, Community Plans, and Climate Action Plan that inform SB 743 implementation.

City of San Diego General Plan (2008) and Community Plans

The General Plan goals and policies that support the intent of SB 743 are included in **Table 2**.

TABLE 2: CITY OF SAN DIEGO GENERAL PLAN GOALS AND POLICIES THAT SUPPORT SB 743

Land Use and Community Planning Element	
City of Villages Strategy	
GOAL	**Establish mixed-use villages located throughout the City and connected by high-quality transit.**
LU-A.1	B. Encourage further intensification of employment uses throughout Sub Regional Employment Districts. Where appropriate, consider collocating medium- to high-density residential uses with employment uses (see also Economic Prosperity Element).
	D. Revitalize transit corridors through the application of plan designations and zoning that permits a higher intensity of mixed-use development. Include some combination of: residential above commercial development, employment uses, commercial uses, and higher density-residential development.
LU-A.2	Identify sites suitable for mixed-use village development that will complement the existing community fabric or help achieve desired community character, with input from recognized community planning groups and the general public.
LU-A.4	Locate village sites where they can be served by existing or planned public facilities and services, including transit services.
LU-A.8	Determine at the community plan level where commercial uses should be intensified within villages and other areas served by transit, and where commercial uses should be limited or converted to other uses.
LU-A.10	Design infill projects along transit corridors to enhance or maintain a "Main Street" character through attention to site and building design, land use mix, housing opportunities, and streetscape improvements.
Balanced Communities and Equitable Development	
LU-H.6	Provide linkages among employment sites, housing, and villages via an integrated transit system and a well-defined pedestrian and bicycle network.
Environmental Justice	
GOAL	**Improve mobility options and accessibility in every community.**
LU-I.9	Design transportation projects so that the resulting benefits and potential burdens are equitable. Some of the benefits of transportation programs include improved accessibility, faster trips, more mobility choices, and reduced congestion. Common negative consequences include health impacts of air pollution, noise, crash-related injuries and fatalities, dislocation of residents, and division of communities.
LU-I.10	Improve mobility options and accessibility for the non-driving elderly, disabled, low-income, and other members of the population (see also Mobility Element, Section B).

	B. Increase the supply of housing units that are in close physical proximity to transit and to everyday goods and services, such as grocery stores, medical offices, post offices, and drug stores.
Mobility Element	
Walkable Communities	
ME-A.8	Encourage a mix of uses in villages, commercial centers, transit corridors, employment centers and other areas as identified in community plans so that it is possible for a greater number of short trips to be made by walking.
Transit First	
ME-B.9	Make transit planning an integral component of long-range planning documents and the development review process.
	A. Plan for transit-supportive villages, transit corridors, and other higher intensity uses in areas that are served by existing or planned higher-quality transit services, in accordance with Land Use and Community Planning Element, Sections A and C.
	D. Locate new public facilities that generate large numbers of person trips, such as libraries, community service centers, and some recreational facilities in areas with existing or planned transit access.
Street and Freeway System	
ME-C.8	Implement Traffic Impact Study Guidelines that address site and community specific issues.
	A. Give consideration to the role of alternative modes of transportation and transportation demand management (TDM) plans in addressing development project traffic impacts.
	B. Consider the results of site-specific studies or reports that justify vehicle trip reductions (see also ME-E.7).
	Implement best practices for multi-modal quality/level of service analysis guidelines to evaluate potential transportation impacts and determine appropriate mitigation measures from a multi-modal perspective.
Transportation Demand Management	
ME-E.7	Consider TDM programs with achievable trip reduction goals as partial mitigation for development project traffic and air quality impacts.
Housing Element	
Objective A	Identify and Make Available for Development Adequate Site to Meet the City's Diverse Housing Needs
HE-A.7	Work to develop a comprehensive strategy for addressing the critical need for more workforce housing serving moderate to middle income workers in San Diego. In keeping with the goals of SB 375 and the Sustainable Communities Strategy, the City should strive to promote the location of workforce housing proximate to employment and/or multimodal transportation facilities.
Objective F	Reduction of Governmental Constraints

HE-F.2	Continue to develop and maintain policies and programs that identify obstacles to affordable housing, infill, and smart growth development and provide regulatory relief strategies and tools that will streamline the implementation process.
HE-F.7	Continue to implement provisions of state law which exempt certain affordable housing projects from CEQA if specified criteria are met, and adopt new CEQA exemptions for infill projects that meet or exceed minimum green building standards and are transit-oriented, and/or affordable housing projects in accordance with SB 375.
Objective G	Infrastructure Strategy
HE-G.6	Advocate for state legislation authorizing tax-increment financing for Smart Growth Districts which have "transit priority" opportunities as defined by SB 375. Use tax increment revenue for infrastructure needed to support infill development.
Objective J	Promote the Reduction of Greenhouse Gas (GHG) Emissions in Accordance with SB 743 and the California Long-Term Energy Efficiency Strategic Plan; and Promote Consistency with the General Plan's City of Villages Strategy and Other Citywide Planning Efforts
HE-J.1	Utilize the planning and review processes to promote economically viable, environmentally sound, and socially equitable land use designations and development patterns which conserve non-renewable energy sources such as fossil fuels, water, and natural gas.
HE-J.2	Provide incentives for mixed-use development which include housing, retail, and office uses at transit nodes and other high-intensity locations as appropriate.
HE-J.3	Seek to locate higher-density housing principally along transit corridors, near employment opportunities, and in proximity to village areas identified elsewhere in community plans.
HE-J.4	Improve infrastructure systems throughout the City's communities as to support infill development and promote new affordable housing. A comprehensive funding strategy should be developed in order to address existing deficiencies and future needs.

Climate Action Plan (CAP) (2015)

The Climate Action Plan includes five strategies for reducing greenhouse gas emissions:

1. Water & Energy Efficient Buildings
2. Clean & Renewable Energy
3. Bicycling, Walking, Transit, & Land Use
4. Zero Waste (Gas & Waste Management)
5. Climate Resiliency

Strategy 3 (Bicycling, Walking, Transit, & Land Use) aligns closely with the legislative intent of SB 743. Strategy 3 includes commute mode share goals for bicycling, walking, and transit use for workers who

live in Transit Priority Areas (TPAs), leading to commute VMT reductions. Additionally, Strategy 3 promotes effective land use to reduce VMT (specifically implementing transit-oriented development within TPAs).

The Climate Action Plan also includes the CAP Consistency Checklist. The Consistency Checklist contains measures that are required to be implemented on a project-by-project basis to ensure that the specified emissions targets identified in the CAP are achieved. Implementation of these measures would ensure that new development is consistent with the CAP's assumptions for relevant CAP strategies toward achieving the identified GHG reduction targets. The CAP Consistency Checklist includes Transportation Demand Management Program requirements for employment-based projects with over 50 employees. The CAP Consistency Checklist allows the project applicant to choose from a menu of TDM strategies.

TRANSPORTATION SIGNIFICANCE DETERMINATION: QUESTION B

Question B from the Transportation Section of the ***City of San Diego's Significance Determination Thresholds*** is discussed in the remaining sections of this chapter. Refer to the ***City of San Diego's Significance Determination Thresholds*** document for a complete discussion of *all* transportation questions to be considered for CEQA analysis.

Transportation Question B establishes VMT as the metric to measure transportation environmental impacts in conformance with SB 743/CEQA.

The guidelines presented herein address the CEQA Analysis for Transportation Question B in the City of San Diego and are organized in this document as follows:

- **Screening Criteria:** Screening criteria for land use and transportation projects is provided to determine whether VMT analysis is required.
- **Significance Thresholds:** Significance thresholds define what constitutes an acceptable level of VMT and what requires mitigation measures. This process is governed by CEQA Guidelines Section 15064.7.
- **Analysis Methodology:** Analysis methodology provides procedures for evaluating VMT for land use and transportation projects.
- **Mitigation:** Projects that are found to have a significant impact based on the City's significance thresholds are required to implement mitigation measures to reduce impacts to a less than significant level (or to the extent feasible). The guidelines establish appropriate mitigation and the methodology for evaluating mitigation effectiveness.

In addition to the transportation analysis required under CEQA, the City also requires a Local Mobility Analysis (LMA) to identify any off-site infrastructure improvements in the project vicinity that may be triggered with the development of the proposed project. The LMA also evaluates site access and circulation and the local multi-modal network available to serve the project. LMA requirements begin on page 34.

Screening Criteria

The requirements to prepare a detailed transportation VMT analysis apply to all land development projects, except for those that meet at least one of the following criteria in the numbered list below. A project that meets at least one of the screening criteria below would be presumed to have a less than significant VMT impact due to project characteristics and/or location.

1. **Residential or Commercial Project Located in a VMT Efficient Area:** The project is a residential or commercial employment project located in a VMT efficient area (15% or more below the base year average household VMT/capita or VMT/employee) based on the applicable location-based screening map produced by SANDAG.

2. **Industrial or Agricultural Project Located in a VMT Efficient Area:** The project is an industrial employment or agricultural employment project located in VMT efficient area (in an area with average or below average base year VMT/employee) based on the applicable location-based screening map produced by SANDAG.

3. **Small Project:** The project is a small project defined as generating less than 300 daily unadjusted driveway trips using the City of San Diego trip generation rates/procedures.

4. **Locally Serving Retail/Recreational Project:** The project is a locally serving retail/recreational project defined as having 100,000 square feet gross floor area or less **and** demonstrates through a market area study that the market capture area for the project is approximately three miles (or less) and serves a population of roughly 25,000 people or less. Locally serving retail is consistent with the definitions of Neighborhood Shopping Center in the San Diego Municipal Code Land Development Code Trip Generation Manual. Locally serving recreation land uses are listed in **Appendix B**, if they meet the square footage and market capture area above. Adding retail/recreation square footage (even if it is 100,000 square feet gross floor area or less) to an existing regional retail shopping area is **not** screened out.

5. **Locally Serving Public Facility:** The project is a locally serving public facility defined as a public facility that serves the surrounding community or a public facility that is a passive use. The following are considered locally serving public facilities: transit centers, public schools, libraries, post offices, park-and-ride lots, police and fire facilities, and government offices. Passive public uses include communication and utility buildings, water sanitation, and waste management.

6. **Affordable Housing:** The project has access to transit[4] and is wholly or has a portion that meets one of the following criteria: is affordable to persons with a household income equal to or less than 50% of the area median income (as defined by California Health and Safety Code Section 50093), housing for senior citizens [as defined in Section 143.0720(e)], housing for transitional foster youth, disabled veterans, or homeless persons [as defined in 143.0720(f)]. The units shall remain deed restricted for a period of at least 55 years. The project shall provide no more than the minimum amount of parking per unit, per San Diego Municipal Code Section 143.0744. Only the portion of the project that meets the above criteria is screened out. For example, if the project is 100 units with 10 deed-restricted affordable housing units,

[4] Access to transit is defined as transit being located within a reasonable walking distance (1/2 mile) from the project driveway.

transportation VMT analysis would not be necessary for the 10 affordable units but would be necessary for the remaining 90 units (unless they meet one of the other screening criteria). For purposes of applying the small project screening criteria, the applicant would only include the trip generation for the non-affordable housing portion of the project (since the affordable housing portion is screened out).

7. **Mixed Use Project Screening Considerations:** The project's individual land uses should be compared to the screening criteria above. It is possible for some of the mixed-use project's land uses to be screened out and some to require further analysis. For purposes of applying the small project screening criteria, the applicant would only include the trip generation for portions of the project that are **not** screened out based on other screening criteria. For example, if a project includes residential and retail, and the retail component was screened out because it is locally serving; only the trip generation of the residential portion would be used to determine if the project meets the definition of a small project.

8. **Redevelopment Project Screening Considerations:** The project is a redevelopment project that demonstrates that the proposed project's total project VMT is less than the existing land use's total VMT. Exception: If a project replaces affordable housing (either deed restricted or other types of affordable housing) with a smaller number of moderate-income or high-income residential units, the project is not screened out and must analyze VMT impacts per **Table 3**.

Specific land use designations that fit within residential, commercial employment, industrial employment, agricultural employment, public facilities, and retail categories are provided in **Appendix B**. Evidence to support the screening criteria is provided in **Appendix C.**

For transportation projects, any project that results in an increase in additional motor vehicle capacity (such as constructing a new roadway or adding additional vehicle travel lanes on an existing roadway) has the potential to increase vehicle travel, referred to as "induced vehicle travel." Project types that would not result in increased vehicle travel have a less than significant impact and can be screened out from performing VMT analysis. These types of projects include:

- Rehabilitation/maintenance projects that do not add motor vehicle capacity
- Addition of bicycle facilities
- Intersection traffic signal improvements/turn-lane configuration changes
- Installation of roundabouts and traffic calming devices
- Implementation of roadways that are included in community plans approved after the comprehensive General Plan Update in 2008 if conditions are substantially improved for active transportation modes

- Additional capacity on local/collector streets if conditions are substantially improved for active transportation modes

If a roadway project classified as a major or primary arterial is included in a Community Plan that has been updated after the 2008 City of San Diego's comprehensive General Plan Update, it may be presumed to have a less than significant transportation impact and no additional transportation analysis of induced VMT is necessary because these roadway projects are required to support citywide planned growth and implement the General Plan Goals identified in Table 2, which are consistent with the intent of SB 743. See **Appendix D**: Transportation Project Screening Criteria for additional information and evidence that supports this presumption.

A complete list of transportation projects that are screened-out from performing VMT analysis is included in Appendix D.

Significance Thresholds

Projects that do not meet the above screening criteria must include a detailed evaluation of the VMT produced by the project. The significance thresholds and specific VMT metric used to measure VMT are described by land use type in **Table 3**.

TABLE 3: TRANSPORTATION VMT THRESHOLDS OF SIGNIFICANCE BY LAND USE TYPE

LAND USE TYPE (See Appendix B for Specific Land Use Designations)	THRESHOLD FOR DETERMINATION OF A SIGNIFICANT TRANSPORTATION VMT IMPACT**
Residential	15% below regional average* resident VMT/Capita
Commercial Employment	15% below regional average* employee VMT/Employee
Industrial and Agricultural Employment	Regional average* employee VMT/Employee
Regional Retail	Zero net increase in total regional VMT*
Hotel	See Commercial Employment
Regional Recreational	See Regional Retail
Regional Public Facilities	See Regional Retail
Mixed-Use	Analyze each land use individually per above categories
Redevelopment	Apply the relevant threshold based on proposed land use (ignore the existing land use)
Transportation Projects	Zero net increase in total regional VMT*

* The regional average and total regional VMT are determined using the SANDAG Regional Travel Demand Model. The specific model version and model year will be identified by the Development Services Department's Transportation Development Section.

** Projects that exceed these thresholds would have a significant impact.

Significance Thresholds for Large Land Use Plans

For large land use plans, such as Specific Plans, Master Plans, etc., the significance thresholds presented in Table 3 apply as follows:

- Residential – Aggregate all residential land uses and compare the resulting Resident VMT/Capita to the regional average. The threshold is 15% below the regional average Resident VMT/Capita per Table 3.
- Commercial Employment – Aggregate all commercial employment land uses and compare the resulting Employee VMT/Employee to the regional average. The threshold is 15% below the regional average Employee VMT/Employee per Table 3.
- Industrial and Agricultural Employment - Aggregate all industrial employment or agricultural employment land uses and compare the resulting Employee VMT/Employee to the regional average. The threshold is the regional average Employee VMT/Employee per Table 3.
- Retail, Public Facilities, and Recreational Facilities – Evaluate the effect that adding these land uses has on regional VMT.
- Transportation Projects – Evaluate the effect that adding new vehicular roadway capacity has on regional VMT.

SANDAG VMT Calculation Tool: Data Definitions

Resident VMT/Capita: Includes all vehicle-based resident trips grouped and summed to the home location of individuals on the trip. It includes **all** trips: home-based and non-home-based trips. The VMT for each home is then summed for all homes in a particular census tract and divided by the population of that census tract to arrive at Resident VMT/Capita.

Employee VMT/Employee: Includes all vehicle-based employee trips grouped and summed to the work location of individuals on the trip. This includes **all** trips, not just work-related trips. The VMT for each work location is then summed for all work locations in a particular census tract and divided by the number of employees of that census tract to arrive at employee VMT/employee. *This does not include employees whose work location is specified as home. The Employee VMT/Employee does not include employees that live*

Analysis Methodology

Transportation VMT analysis for CEQA shall be conducted using the SANDAG Regional Travel Demand Model. SANDAG produces base year Resident VMT/Capita and Employee VMT/Employee maps that display the regional average as well as VMT metrics at the census tract level. The call-out to the right defines Resident VMT/Capita and Employee VMT/Employee.

Table 4 provides guidance on conducting transportation VMT analysis for CEQA based on the land use.

TABLE 4: TRANSPORTATION VMT ANALYSIS METHODOLOGY BY LAND USE

LAND USE TYPE	ANALYSIS METHODOLOGY
Residential	**For projects that generate less than 2,400 daily unadjusted driveway trips:** Identify the location of the project on the SANDAG Resident VMT/Capita map. The project's Resident VMT/Capita will be considered the same as the Resident VMT/Capita of the census tract it is located in. Compare the project's Resident VMT/Capita to the threshold to determine if the impact is significant OR input the project into the SANDAG Regional Travel Demand Model to determine the project's Resident VMT/Capita. **For projects that generate greater than 2,400 daily unadjusted driveway trips:** Input the project into the SANDAG Regional Travel Demand Model for SANDAG to provide the project's Resident VMT/Capita. To perform the analysis, all project land uses should be inputted, and the VMT/Capita should be determined using the same method/scripts that SANDAG utilizes to develop the SANDAG Resident VMT/Capita maps.

LAND USE TYPE	ANALYSIS METHODOLOGY
Commercial Employment	**For projects that generate less than 2,400 daily unadjusted driveway trips:** Identify the location of the project on the SANDAG Employee VMT/Employee map. The project's Employee VMT/Employee will be considered the same as the Employee VMT/Employee of the census tract it is located in. Compare the project's Employee VMT/Employee to the threshold to determine if the impact is significant OR input the project into the SANDAG Regional Travel Demand Model to determine the project's Employee VMT/Employee. **For projects that generate greater than 2,400 daily unadjusted driveway trips:** Input the project into the SANDAG Regional Travel Demand Model for SANDAG to provide the project's Employee VMT/Employee. To perform the analysis, all project land uses should be inputted, and the VMT/Capita should be determined using the same method/scripts that SANDAG utilizes to develop the SANDAG Employee VMT/Employee maps.

LAND USE TYPE	ANALYSIS METHODOLOGY
Industrial or Agricultural Employment	**For projects that generate less than 2,400 daily unadjusted driveway trips:** Identify the location of the project on the SANDAG Employee VMT/Employee map. The project's Employee VMT/Employee will be considered the same as the Employee VMT/Employee of the census tract it is located in. Compare the project's Employee VMT/Employee to the threshold to determine if the impact is significant OR input the project into the SANDAG Regional Travel Demand Model to determine the project's Employee VMT/Employee. **For projects that generate greater than 2,400 daily unadjusted driveway trips:** Input the project into the SANDAG Regional Travel Demand Model to determine the project's Employee VMT/Employee. To perform the analysis, all project land uses should be inputted, and the VMT/Capita should be determined using the same method/scripts that SANDAG utilizes to develop the SANDAG Employee VMT/Employee maps.
Regional Retail	Calculate the change to regional VMT using the SANDAG Travel Demand Model. To calculate the change in regional VMT, the regional retail component of the project should be inputted into the travel demand model (year that is used to determine the VMT thresholds). The "with project regional retail" regional VMT produced by the model run is compared to the "no project" regional VMT.
Hotel	See Commercial Employment
Regional Recreational	See Regional Retail
Regional Public Facilities	See Regional Retail

LAND USE TYPE	ANALYSIS METHODOLOGY
Mixed-Use	Analyze based on appropriate land use above
Redevelopment	Analyze based on appropriate land use above Exception: If a project replaces affordable housing (either deed restricted or other affordable housing) with a smaller number of moderate-income or high-income residential units, the VMT assessment should incorporate an estimate of the aggregate VMT increase experienced by the displaced residents. The additional VMT due to displaced residents should be incorporated into the Resident VMT/Capita for the project.
Transportation Projects	Calculate the change to regional VMT using the SANDAG Travel Demand Model. To calculate the change in regional VMT, the roadway network in the model should be adjusted to include the proposed transportation project. The "with transportation project" regional VMT produced by the model run is compared to the "no transportation project" regional VMT do determine if there is an increase in regional VMT.

If the project includes transportation demand management (TDM) measures, required transportation amenities (related to the TPA Parking Standards or Complete Communities: Mobility Choices Ordinance), or measures required by the CAP Consistency Checklist, the reduction in VMT due to each measure shall be calculated and can be applied to the project analysis. There are several resources for determining the reduction in VMT due to TDM measures, such as the California Air Pollution Control Officers Association (CAPCOA) *Quantifying Greenhouse Gas Mitigation Measures* (2010) (Quantification Report) and the SANDAG Mobility Management Guidebook/VMT Reduction Calculator Tool (see Mitigation Section below). The applicant should coordinate with the Development Services Department's Transportation Development Section staff to determine the appropriate method for calculating TDM measure effectiveness.

The VMT reductions associated with project TDM should be applied to the appropriate metric(s) based on the project land uses. If the project does not include any TDM, then no reduction would be taken.

The resulting VMT values shall be compared to the appropriate threshold in **Table 4** to determine whether the project results in a significant CEQA transportation impact due to VMT.

Mitigation (Transportation Demand Management)

If a project is found to have a significant transportation VMT impact, the impact must be mitigated by reducing the project's Resident VMT/Capita or Employee VMT/Employee. Typically, VMT is reduced by implementing strategies that achieve one of the following:

- Reducing the number of automobile trips generated by the project or by the residents or employees of the project.
- Reducing the distance that people drive.

Strategies that reduce single occupant automobile trips or reduce travel distances are called TDM strategies.

The City of San Diego requires TDM and transportation amenities for certain project types pursuant to the San Diego Municipal Code Section 142.0528, the CAP Consistency Checklist, and regulations related to Complete Communities: Mobility Choices. Applicants should refer to the San Diego Municipal Code Section 142.0528, the CAP Consistency Checklist, and regulations related to Complete Communities: Mobility Choices to determine if the project must comply with any requirements. These would be considered as project features and would not count towards mitigation.

There are several resources for determining the reduction in VMT due to TDM measures such as the CAPCOA Quantification Report and the SANDAG Mobility Management Guidebook/VMT Reduction Calculator Tool (see Mitigation Section below). The applicant should coordinate with the Development Services Department's Transportation Development Section staff to determine the appropriate method for calculating TDM measure effectiveness. **Appendix E** provides a methodology for calculating TDM effectiveness based on the CAPCOA Quantification Report.

Strategies are categorized as primary or supportive. A primary strategy has a VMT reduction effectiveness that can be directly calculated using the CAPCOA Quantification Report. Typically, the effectiveness calculation requires assumptions regarding participation or eligibility rates. While VMT reductions may not be applied for supportive strategies, they boost participation or eligibility rates and make the primary strategy more effective.

All assumptions regarding participation, eligibility, and other variables must be clearly documented for each applied TDM strategy. Also, as described in the CAPCOA Quantification Report, strategies are not directly additive, and when determining the overall VMT reduction, the VMT reduction separately calculated for each of the individual strategies (within their overall TDM strategy category) shall be dampened, or diminished, according to a multiplicative formula to account for the fact that some of the strategies may be redundant or applicable to the same populations. The multiplicative equation to accomplish this adjustment is as follows:

Overall % VMT Reduction = 1-(1-A)*(1-B)*(1-C)*(1-D)*…

Where A, B, C, D … = individual mitigation strategy reduction percentages

For example, if two strategies were proposed with corresponding VMT reductions of 20% and 10%, the equation would be [1-(1-20%)*(1-10%)] or [1-(80%*90%)], which equates to a 28% reduction rather than the 30% reduction that would otherwise be seen with a direct sum.

The following TDM strategies are defined in **Appendix E**. They are categorized as either Primary (P) or Supportive (S) strategies. The applicant must demonstrate to the satisfaction of the Development Services Department Transportation Development Section that the measures are enforceable and effective.

Neighborhood / Site Enhancement

- Bicycle Infrastructure Improvements (P)
- Bike Share/Micromobility Fleet (P)
- Pedestrian Network Improvements (P)
- Traffic Calming (P)
- Neighborhood Electric Vehicle Dedicated Network (P)
- Car Share (P)
- Bicycle Riders Guide (S)
- Electric Bicycle/Micromobility Charging Station (S)
- Subsidized Bicycle Expenses (S)
- Bicycle Parking (S)
- Bicycle Supportive Programs (S)
- DIY Bicycle Repair Stand (S)
- On-Site Showers and Lockers (S)
- Walking Supportive Programs (S)
- Subsidized Walking Expenses (S)
- Passenger Loading Zones (S)
- Mobility Hub (S)

Parking Policy / Pricing

- Limited Parking Supply (P)
- Unbundled Parking (P)
- Priced Public Parking (P)
- Parking Cash Out Program (P)
- Residential Area Parking Permits (S)
- Time-Limited Street Parking (S)
- Real-Time Parking Information (S)

Transit System Improvements

- Transit Network Expansion (P)
- Increased Transit Service Frequency/ Speed (P)
- Transit Pass Subsidy/Partial Subsidy (P)
- Enhanced Transit Amenities (i.e. – bike parking, shelters, benches, trash receptacles) (S)
- Transit Encouragement Programs (S)
- Transit App (S)
- Onsite Transit Pass Outlet (S)

Commute Trip Reduction

- Voluntary Commute Trip Reduction Program
    - Carpooling Program and Encouragement (P)
    - Alternative Work Schedules (P)
    - Vanpool Programs (P)
    - Transportation Coordinator (S)
    - Preferential Carpool Parking (S)
    - Bicycle End Trip Facilities (S)
- Transit Pass Subsidy/Partial Subsidy (P)
- Price Workplace Parking (P)
- Telecommuting (P)
- Commute Trip Reduction Marketing (P)
- Guaranteed Ride Home Program (S)
- Last Mile Connections (S)

Applicants shall refer to **Appendix E** and the CAPCOA, *Quantifying Greenhouse Gas Mitigation Measures* (2010), Chart 6-2: Transportation Strategies Organization to quantify the effectiveness of the mitigation measures chosen. **Appendix E** and CAPCOA Quantification Report Chart 6-2 lists each mitigation measure and its maximum VMT reduction. It is critical that TDM effectiveness is calculated for the type of trip that it will influence. For example, a commute trip reduction program will only apply to commute related VMT. Other strategies or technologies that reduce VMT may be considered with documentation of effectiveness.

For transportation projects, potential mitigation could include managing travel (through pricing and/or vehicle occupancy requirements) and/or including/improving bicycle and pedestrian facilities on the roadway.

Significant and Unavoidable Impacts

Projects that have a significant impact that cannot be mitigated to a less than significant level must provide a detailed statement of overriding considerations and findings to support these considerations in accordance with CEQA Guidelines Section 15091 and 15093.

Local Mobility Analysis (LMA)

The Local Mobility Analysis (LMA) evaluates the effects of a development project on mobility, access, circulation, and related safety elements in the proximate area of the project. The LMA has the following objectives:

- Ensures that improvements identified in the Community Plan that support multi-modal circulation and access are constructed when needed.
- Identifies improvements needed to support and promote active transportation and transit modes.
- Ensures the project provides connections to the active transportation network and transit system.
- Addresses issues related to operations and safety for all transportation modes.

DETERMINING STUDY REQUIREMENTS

Screening Criteria

All projects must complete an LMA unless they meet the following trip generation screening criteria:

- Land uses consistent with Community Plan/Zoning designation: Generate less than 1,000 daily unadjusted driveway vehicle trips
- Land uses inconsistent with Community Plan/Zoning designation: Generate less than 500 daily unadjusted driveway vehicle trips
- Projects in the Downtown Community Planning Area that generate less than 2,400 daily unadjusted trips.[5]

The screening criteria provided serve as a guide to determine study requirements. City staff may determine additional study requirements apply due to location, project complexity, local transportation system complexity, and other local context. City staff will provide a written response

[5] Projects that exceed this threshold shall comply with mitigation measure TRF-A.1.1-2 of the Downtown Community Plan & Downtown Mobility Plan FEIR/SEIR Mitigation Monitoring and Reporting Program.

to the PIF and request a meeting with the applicant/consultant if the City has identified the need to perform an LMA despite meeting the screening criteria listed above.

Extents of Study

The extents of the LMA study will be determined for each mode as follows:

- Pedestrian: Documentation of pedestrian facilities and basic deficiencies (missing sidewalk, curb ramps, and major obstructions) within ½ mile walking distance measured from each pedestrian access point (for example, driveways, internal project sidewalk connections to the street, etc.).
- Bicycle: Documentation of bicycle facilities and basic deficiencies (bike lane gaps, obstructions) within ½ mile bicycling distance measured from the center of the intersection formed by each project driveway.
- Transit: Identification of the closest transit routes and stops to the project. If the transit stops are within ½ mile walking distance of each pedestrian access point, the condition of the stop amenities must be described/evaluated.
- Intersection Operations: Intersections are focal points within a mobility network where multiple modes interact and at times, conflict, in their movements. Understanding intersection operations is essential for understanding circulation and safety for all modes that traverse through the intersection.
    - For Projects that generate less than 2,400 daily final driveway[6] trips the typical study intersections are as follows:
        - All signalized intersections and signalized project driveways located within ½ mile path of travel distance measured from the center of the intersection formed by each project driveway AND the project will add 50 or more peak hour final primary (cumulative) trips[6] to any turning movement at the intersection.
        - All unsignalized intersections (side street stop controlled, all-way stop-controlled, and roundabouts) and unsignalized project driveways located within ½ mile path of travel distance measured from the center of the

[6] Refer to the trip generation chart in the Study Initiation chapter for trip generation definitions.

intersection formed by each project driveway AND the project will add 50 or more peak hour final primary (cumulative) trips[6] in either direction.

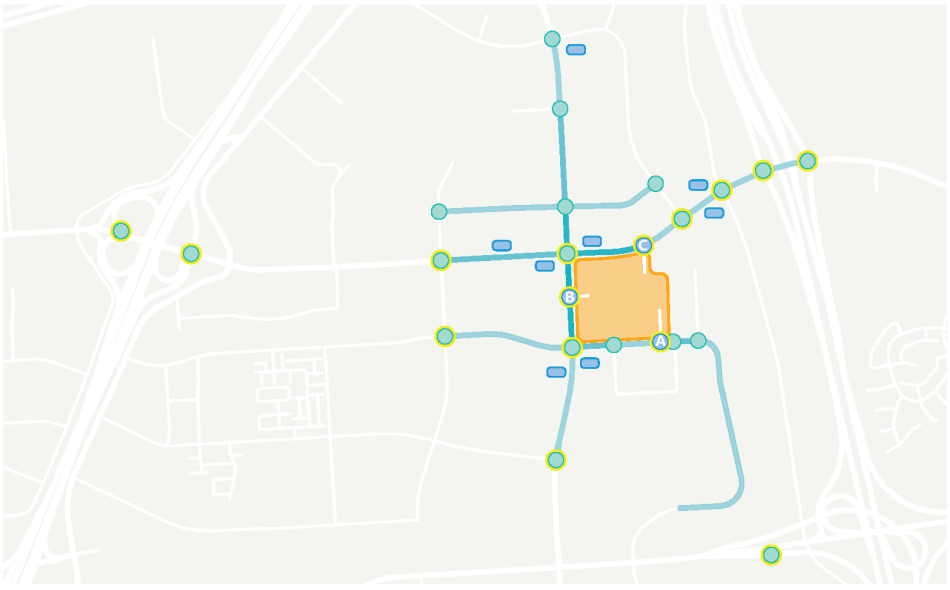
- All freeway ramp terminal intersections where a project adds 50 or more peak hour final primary (cumulative) (AM or PM)[6] net new trips in either direction must be analyzed regardless of their distance from the project site.

- For Projects that generate more than 2,400 daily final driveway[6] trips the typical study intersections are as follows:
  - All signalized intersections and signalized project driveways where the project will add 50 or more peak hour final primary (cumulative) trips[6] to any turning movement at the intersection.
  - All unsignalized intersections (side street stop controlled, all-way stop-controlled, and roundabouts) and unsignalized project driveways where the project will add 50 or more peak hour final primary (cumulative) trips[6] on any approach.
  - All freeway ramp terminal intersections where a project adds 50 or more peak hour final primary (cumulative) (AM or PM)[6] net new trips on any approach must be analyzed regardless of their distance from the project site.

- Roadway Segments: The study area should include any roadway segments where the project adds 1,000 or more daily final primary trips (cumulative trips)[6] if consistent with the Community Plan, or 500 or more daily final primary trips (cumulative trips) [6] if inconsistent with the Community Plan AND:
  - Have improvements identified in the community plan; OR
  - Not built to the community plan ultimate classification (including planned new circulation element roadways).
- City staff may determine additional study requirements apply due to location, project complexity, local transportation system complexity, and other local context.

For purposes of determining the extent of a the LMA, a project applicant may not segment or piecemeal project submittals to avoid studying a greater project area. If two or more adjacent and similar (in land uses and/or applicant/owner) are submitted as two separate projects within a two year timeframe of each other, City staff may determine if a larger study area is needed based on the combined trip generation of the projects.

The following graphic provides additional guidance on determining the extents of the study for a project that generates less than 2,400 final daily driveway trips.



Defining Your Local Mobility Analysis Study Area for Projects that Generate Less than 2,400 ADT

B Determine the locations of project access driveways and pedestrian access points and mark.

Highlight roadway segments where the project would add 1,000 or more final daily primary trips (if consistent with GP/CP) or add 500 or more final daily primary trips (if inconsistent with GP/CP); AND has identified improvements in the community plan (including planned new circulation element roadways).

Identify all signalized and unsignalized (side street contolled or all way stop controlled) that overlap with the highlighted roadways including intersections created by the project driveways.

Determine your project's trip assignment to the intersections identified in the step above and to freeway ramp intersections.

Highlight those signalized intersections at which 50 or more peak hour final primary trips are added to any turning movement. Highlight those unsignalized intersections where 50 or more peak hour final primary trips are added in any direction. Highlight freeway ramp intersections where 50 or more peak hour final primary trips are added in any direction even if these ramps are more than 1/2 mile away. **These highlighted intersections are your study intersections.**

Your pedestrian and bicycle study area are roadways up to 1/2 mile from pedestrian and bicycle access points. In this example all driveways are also the pedestrian and bicycle access points; however a project may have a pedestrian/bicycle access point that is not a vehicular driveway.

Identify the closest transit routes and stops to the project. **Any transit stops within 1/2 mile walking distance from pedestrian access points will be analyzed for the condition of the stop amenities.**

Study Scenarios

The following scenarios should be evaluated for the LMA:

- Existing Conditions
- Opening Year No Project Conditions: Analysis of the project's opening year. The traffic volumes should include any reasonably foreseeable projects and/or other ambient growth (background traffic that occurs naturally due to general population growth). Historical growth rates should be used to estimate ambient growth.

- Opening Year Plus Project Conditions: Analysis of the opening year volumes generated in the step above plus the project generated traffic.
- Phased Analysis: If the project is a large multi-phased development in which several stages of development activity are planned, each phase of the project may need to be evaluated to coincide with each major stage of development or increment of area transportation improvements. For example: Existing, Opening Year of Phase 1, Opening Year of Phase 2, etc.
- Horizon Year Analysis (Community Plan Amendments or Rezones): If the project requires a Community Plan Amendment or a rezone, community buildout horizon year analysis may be required. Coordinate with the Development Services Department's Transportation Development Section staff for study scenario requirements related to Community Plan Amendments or rezones.

Study Periods

The following study periods shall be analyzed:

- The morning and afternoon peak commute hours are analyzed, unless the land use is atypical and an alternate/additional study period is identified by City Staff. The peak hours are based on traffic counts (the procedure for collecting counts is described in the following section). For typical commute hours, the peak hour will fall between 7:00-9:00 AM and 4:00-6:00 PM.
- For areas near beaches or Mission Bay, the peak hours are during summer months (between Memorial Day and Labor Day, when public schools are not in session).
- Other timeframes may be required based on the project land uses and unique characteristics of the project.

CONDUCTING THE LOCAL MOBILITY ANALYSIS

Identifying Existing Conditions

A project is required to document the existing conditions of the local mobility system in the study area as identified in the "Extents of Study" section above, including field observations of biking, walking, transit, and roadway conditions/operations during study periods.

Existing conditions may include, but are not limited to, the following areas:

- Field Reconnaissance of:
  - Pedestrian facilities and observations on use of facilities
  - Bicycle facilities and observations on use of facilities
  - Location of nearby transit stops and observations of use of facilities
  - Roadway configurations, geometric features, sight distance, intersection lane configurations, intersection operations, presence of closely spaced or offset driveways or intersections, uneven lane utilization
  - Length of available turn lane storage and observations of typical maximum vehicle queues
  - Confirmation of traffic signal phasing and timing (from plans obtained from the City or Caltrans)
  - Adjacent land uses
  - Ramp meter queues and spill back onto local streets
- Transportation Data Collection
  - New transportation data is required if available data is older than two years, or if warranted by other changes in built environment conditions.
  - Pedestrian Counts: For each crosswalk leg at each study intersection.
  - Bicycle Counts: Turning movement counts at each study intersection.
  - Transit stations, routes, provision of bus-only lanes and/or turn-outs, and schedules.
  - Study period traffic counts: For typical commute hours, intersection turning movement data should be collected on Tuesday, Wednesday, or Thursday between 7:00-9:00 AM and 4:00-6:00 PM during non-holiday periods and not on the week of a holiday under fair

weather conditions. Counts should be taken when school is in session. Any intersection counts should include pedestrian and bicycle counts. For areas near beaches or Mission Bay, counts should be taken during summer months (between Memorial Day and Labor Day when public school is not in session) or should be adjusted to reflect typical summer conditions. Any deviation should be discussed with City Staff.

- If the project is a redevelopment project of which the existing uses are in operation at the time that the transportation data is collected, the trips associated with the existing use should be calculated by conducting driveway counts at all existing site driveways. The site trips should then be distributed to the study intersections and subtracted from the intersection traffic counts to represent the traffic volumes that would be present if the existing use were not in operation.

Analysis Methodology

Pedestrian Analysis

Pedestrian analysis should primarily focus on pedestrian connectivity, walkshed analysis, presence of adequate facilities, etc. However, in dense, urban environments featuring substantial pedestrian volumes, analysis of pedestrian facilities (i.e., sidewalks and crosswalks) may be required in accordance with the latest version of the HCM. Mid-block pedestrian crossing treatments should also be evaluated using available research and recommendations. Applicants should coordinate with the Development Services Department's Transportation Development Section on the need to perform HCM pedestrian analysis.

Bicycle Analysis

Project effects on existing and proposed bicycle facilities should be reviewed in consideration of the following:

- Bicycle analysis should primarily focus on bicycle connectivity, bikeshed analysis, presence of adequate facilities, etc.
- Consistency with the City's Bicycle Master Plan and the Community's Bicycle Mobility Element
- On-site bike parking supply as well as bikeshare bicycles that may be parked/stored on public sidewalks

Transit Analysis

Project effects on the transportation system should be evaluated in consideration of the following:

- Increased travel time for buses that could adversely affect on-time performance (intersection delay, corridor delay, movement delay (for transit))
- Conflicts (e.g., weaving, sight distance, etc.) involving buses at stop due to nearby driveways
- Planned and/or proposed transit improvements and stops identified in community plans, the RTIP and/or RTP within the study area

Project effects on transit system ridership is not typically considered an issue but may be evaluated under special circumstances (e.g., new office building along a bus line that already has substantial peak period ridership).

Systemic Safety Review

Study intersections should be compared to the City of San Diego Systemic Safety Hot Spot[7] map to determine if a study intersection has been identified on the map. If a study intersection is on the Systemic Safety Hot Spot map, the applicant should coordinate with the Development Services Department Transportation Development Section staff to determine appropriate intersection improvements.

Signalized Intersections

Traffic operational impacts at signalized intersections shall be analyzed using standard or state-of-the-practice procedures consistent with the latest edition of the Highway Capacity Manual (HCM) published by the Transportation Research Board.

The following provides general guidelines for the parameters necessary to perform the analysis. For existing and opening year conditions within five years of commencement of the LMA, the parameters should generally be based on field measurements taken during traffic data collection or field observation. For new study intersections or to analyze an opening year that is beyond five years of commencement of the LMA, the guidelines in **Table 5** can be used to determine input parameters.

[7] https://www.sandiego.gov/sites/default/files/systemic-safety-the-data-driven-path-to-vision-zero.pdf

TABLE 5: SIGNALIZED INTERSECTION ANALYSIS PARAMETERS

PARAMETER	GUIDANCE
Peak Hour Factor	Use the measured PHF by intersection approach that is obtained during traffic data collection. For new intersections or to analyze conditions beyond five years of commencing the LMA, refer to the HCM and maintain consistency across analysis periods, scenarios, and intersections.
Saturation Flow Rate	Use typical saturation flow rate presented in the HCM. The current typical saturation flow rate is 1,900 vehicles per hour per lane.
Signal Timing	Obtain signal timing plans from the appropriate agency and use the timing (by time of day if provided) for the analysis. For new traffic signals, typically use a maximum cycle length of 120 seconds for intersections near freeway interchanges or at the intersection of two arterial roadways. For all other conditions use a maximum of 90 seconds. For all conditions, ensure that the minimum pedestrian crossing times are utilized.
Conflicting Pedestrians and Pedestrian Calls	Use pedestrian count data if available. If not available, refer to the HCM for appropriate minimum values.
Heavy Truck Percentage	If available, use observed values from field observations or traffic counts. If unavailable, the minimum recommended value is 3%. Heavy truck percentages should be higher on truck routes.
Lane Utilization Factor	If applicable, adjust the lane utilization factor based on field observations. Otherwise, refer to the HCM.

At isolated intersections that are not heavily congested, deterministic methods that apply HCM equations for each intersection in isolation can be used. There are several software packages that use deterministic methods such as Synchro, Vistro (previously called Traffix), and Highway Capacity Software.

For intersections that are closely spaced, have a unique geometry, or are part of a congested corridor, micro-simulation analysis should be performed. Micro-simulation can more accurately evaluate intersections with unique characteristics or in congested systems because the method accounts for how intersections within a system interact with one another. For example, if a vehicle queue extends from an intersection and blocks a different intersection, micro-simulation will account for that condition, whereas deterministic methods will not. Micro-simulation should also be considered when determining required turn lane storage if the analyst believes deterministic methods are not producing reasonable maximum or 95th percentile queue lengths. There are several micro-simulation software packages, such as SimTraffic (which is a module of Synchro) and Vissim.

It is recommended that the method and software proposed for use is coordinated with City staff as part of the study initiation process.

Unsignalized Intersections

Traffic operational impacts at unsignalized intersections (all-way stop, side-street stop, and roundabout intersections) shall be analyzed using standard or state-of-the-practice procedures consistent with the latest edition of the Highway Capacity Manual (HCM) published by the Transportation Research Board.

Operational analysis should be reported as follows:

- All-way stop intersections: Delay and corresponding level of service reported for the entire intersection as an average value
- Side-street stop intersections: Delay and corresponding level of service reported for the worst-case movement
- Roundabouts: Delay and corresponding level of service reported for the entire intersection as an average value

The software packages and methods described for signalized intersections also apply to stop-controlled intersections. Roundabout evaluations shall be calibrated to California data (shown below). LOS for roundabouts shall be determined using the HCM delay LOS thresholds for **signalized** intersections.

- The following California-specific values for critical headway and follow-up headway should be used to calibrate capacity models to determine appropriate lane numbers and arrangements:
  - Single-lane roundabouts: critical headway = 4.8 s, follow-up headway = 2.5 s.
  - Multilane roundabouts, left lane: critical headway = 4.7 s, follow-up headway = 2.2 s.
  - Multilane roundabouts, right lane: critical headway = 4.4 s, follow-up headway = 2.2 s.
- Using the above calibrated values, the following capacity models can be used in a manner consistent with the recommendations from NCHRP 572, with c equal to capacity (passenger car equivalents per hour) and v_c equal to the conflicting flow rate (passenger car equivalents per hour):
  - Single-lane: $c = 1440 \cdot \exp(-0.0010 \cdot v_c)$
  - Multilane right lane: $c = 1640 \cdot \exp(-0.0009 \cdot v_c)$
  - Multilane left lane: $c = 1640 \cdot \exp(-0.0010 \cdot v_c)$

Roundabout Analysis Evaluation Parameters
(Source: **Tian et al., 2007, Roundabout Geometric Design Guidance for the California Department of Transportation, page vii**)

For intersections that are closely spaced, have a unique geometry, or are part of a congested corridor, micro-simulation analysis should be performed. Micro-simulation can more accurately evaluate intersections with unique characteristics or in congested systems because the method accounts for how intersections within a system interact with one another. For example, if a vehicle queue extends from an intersection and blocks a different intersection, micro-simulation will account for that condition, whereas deterministic methods will not. There are several micro-simulation software packages, such as SimTraffic (which is a module of Synchro) and Vissim.

Roadway Segment Analysis

Roadway segment analysis should be evaluated for any roadway segment that has identified improvements (including planned new circulation element roadways) in the Community Plan and the

project is expected to add 1,000 or more daily final primary trips (cumulative trips) if consistent with the Community Plan, or 500 or more daily final primary trips (cumulative trips) if inconsistent with the Community Plan. Roadways should be evaluated using **Appendix F**: Roadway Segment LOS by Classification and Average Daily Traffic (ADT). The intent of this analysis is to determine if the project results in the need to implement roadway improvements as identified in the Community Plan. The functional classification of the roadway segment should be evaluated in this analysis.

Freeway Interchange Analysis

Freeway analysis should focus on off-ramp queuing spillbacks onto freeway mainline. Studies should normally document changes in off-ramp maximum queues and propose mitigation for queues that spill back onto mainline (or exacerbate conditions already or projected to be) occurring. Freeway interchange analysis should be coordinated with Caltrans.

Identifying Off-Site Improvements

Off-site improvements to accommodate project traffic that address access, circulation and safety for all modes should be determined using the following analysis methods for each type of improvement:

Pedestrian Facilities

- Closing Sidewalk Gaps/Removing Obstructions:
  - The project should construct sidewalks to close sidewalk gaps adjacent to the project site.
  - The project should remove sidewalk obstructions that constrain pedestrian access route to less than four feet adjacent to the project site.
  - The project should construct curb ramps/meet accessibility standards for any intersections adjacent to the project site.
- Accommodating Pedestrian Demand:
  - The project should consider adding traffic calming and pedestrian-related signal timing changes (such as pedestrian hybrid beacons, leading pedestrian interval signal timing, etc.) to accommodate an increase in pedestrian demand on roadways and intersections adjacent to the project site.

Bicycle Facilities

- Accommodating Bicycle Demand:
  - The project should construct (or reserve space for) any planned bicycle facility per the Community Plan or Bicycle Master Plan.
  - The project should consider upgrading adjacent bicycle facilities by adding upgraded treatments (such as green bike lane paint, buffers, etc. where appropriate) to accommodate an increase in bicycle demand.

Transit Facilities

- Transit Priority Treatments/Improvements
  - The project should consider transit priority treatments when operational analysis determines a transit movement would experience LOS E or worse.
  - The project should consider transit priority treatments identified within the Community Plan for the study area.
- Proposed Transit Stops:
  - The project should consider accommodating transit stops to serve existing or proposed transit services, including those identified in the Community Plan, RTIP and/or RTP within the study area. The project should coordinate any identified transit stops with SANDAG, the Metropolitan Transit System (MTS) and/or the North County Transit District (NCTD).
- Transit Stop Amenities:
  - The project should coordinate with MTS and/or the NCTD, as applicable, to determine additional or upgraded transit stop amenities.

Signalized Intersections

- Adding or lengthening a turn lane:
  - Considerations for intersection improvements:
    - When considering intersection improvements for circulation, access, and safety for all modes, factors that should be considered include, but are not limited to, conflicting pedestrian movements, existing and proposed bicycle facilities, transit priority, protected or permissive turn movement phasing, number of lanes, speed of prevailing traffic and expected queue lengths.

- Left Turn Lane:
  - No Existing Left-Turn Lane: If the project adds traffic to an individual left turn movement causing the total number of peak hour left turns to exceed 100, consider adding a left turn lane.[8]
  - Existing Single Left-Turn Lane: If the project adds traffic to an individual left turn movement causing the total number of peak hour left turns to exceed 300, consider adding a second left turn lane.
- Right Turn Lane:
  - No Existing Right-Turn Lane: If the addition of a right turn lane will not negatively affect other roadway users, will maintain a comfortable roadway environment, AND the project adds traffic to an individual right turn movement causing the total number of peak hour right turns to exceed 500, consider adding a right turn lane.
  - Existing Single Right-Turn Lane: If the addition of a right turn lane will not negatively affect other roadway users, will maintain a comfortable roadway environment, AND the project adds traffic to an individual right turn movement causing the total number of peak hour right turns to exceed 800, consider adding a second right turn lane. In addition to the considerations previously stated, dual-right turn (or more) treatments may require supplementary improvements including but not limited to no right-turn on red with blank-out signs, lead pedestrian intervals (LPIs) for pedestrians and cycle track treatment for bicyclists.
- Lengthening a Turn Pocket:
  - If the project adds traffic to a turning movement and causes the 95th percentile queue to exceed the available turn pocket length, consider lengthening the turn pocket.

- Signal Timing Improvements/Signal Modifications:
  - Determined based on intersection operations analysis as follows:

[8] FHWA, *Signalized Intersections: Informational Guide*, August 2004. This source also provides additional factors which can be used to determine the need of a single left turn lane or additional left turn lanes including, left-turn volumes on the major and minor approaches, number of lanes, and vehicles per hour.

        - Within a 1/2 mile path of travel of a *Major Transit Stop*: If the project causes an intersection to degrade to LOS F, or if the project adds traffic to a signal already operating at LOS F.
        - Outside of a 1/2 mile path of travel of a *Major Transit Stop*: If the project causes an intersection l to degrade to LOS E or F, or if the project adds traffic to a signal already operating at LOS E or F.
    - Types of signal improvements that can be considered are:
        - Updating signal split times
        - Transit signal priority improvements
        - Right turn overlap phasing
        - Signal phasing changes
        - Intelligent Transportation Systems (ITS) improvements

Unsignalized Intersections

- Considerations for intersection improvements:
    - When considering intersection improvements for circulation, access, and safety for all modes, factors that should be considered include, but are not limited to, conflicting pedestrian movements, existing and proposed bicycle facilities, transit priority, protected or permissive turn movement phasing, number of lanes, speed of prevailing traffic and expected queue lengths.
- Constructing a Roundabout or Traffic Signal at an all-way stop-controlled intersection: If the project causes the operations at an all-way stop-controlled intersection to degrade (see below), perform an intersection control evaluation that includes a signal warrant analysis and a roundabout LOS analysis. Prepare a roundabout conceptual layout (prepared by a consultant qualified/experienced in roundabout design) to determine the geometric impact of a roundabout. Coordinate with Development Services Department Transportation Development Section staff on appropriate intersection control improvement. Staff may request additional lifecycle safety and mobility
    - The intersection control evaluation should be prepared If the project causes an all-way stop-controlled intersection to degrade as follows:
        - Within a 1/2 mile path of travel of a *Major Transit Stop*: If the project causes an all-way stop-controlled intersection located to degrade to LOS F, or if the project adds traffic to an all-way stop-controlled intersection already operating at LOS F.

        - Outside of a 1/2 mile path of travel of a *Major Transit Stop*: If the project causes an all-way stop-controlled intersection to degrade to LOS E or F, or if the project adds traffic to a adds traffic to an all-way stop controlled intersection already operating at LOS E or F.

- Constructing a Roundabout or Traffic Signal at a side-street stop-controlled intersection: If the project causes the operations at a side-street stop-controlled intersection to degrade (see below), perform an intersection control evaluation that includes a signal warrant analysis and a roundabout LOS analysis. Prepare a roundabout conceptual layout (prepared by a consultant qualified/experienced in roundabout design) to determine the geometric impact of a roundabout. Coordinate with Development Services Department Transportation Development Section staff on appropriate intersection control improvement. Staff may request additional lifecycle safety and mobility
    - The intersection control evaluation should be prepared If the project causes a side-street stop-controlled intersection to degrade as follows:
        - Within a 1/2 mile path of travel of a *Major Transit Stop*: If the project causes the **worst movement** of a side-street stop-controlled intersection to degrade to LOS F, or if the project adds traffic to the **worst movement** of a side-street stop-controlled intersection that is already operating at LOS F.
        - Outside of a 1/2 mile path of travel of a *Major Transit Stop*: If the project causes the **worst movement** of a side-street stop-controlled intersection to degrade to LOS E or F, or if the project adds traffic to the **worst movement** of a side-street stop-controlled intersection that is already operating at LOS E or F.
- Improvements to a Roundabout Intersection
    - If the project causes a roundabout intersection to degrade determined based on operations analysis as follows:
        - Within a 1/2 mile path of travel of a *Major Transit Stop*: If the project causes an intersection to degrade to LOS F, or if the project adds traffic to a roundabout already operating at LOS F.
        - Outside of a 1/2 mile path of travel of a *Major Transit Stop*: If the project causes an intersection to degrade to LOS E or F, or if the project adds traffic to a roundabout already operating at LOS E or F.
        - Determine improvements to the roundabout to reduce vehicle delay, such as metering traffic during peak hours or other geometric improvements - such

as adding a right turn bypass lane or multilane segments within the roundabout.

Roadway Segments

- Improvements identified in the community plan (including upgrading to ultimate classification):
    - If the project adds greater than 50% of total daily vehicle trips on the segment, the project should consider implementing the improvement as identified in the community plan.
    - If the project adds less than or equal to 50% of total daily vehicle trips on the segment, the project should evaluate its fair share towards the improvement.
- Planned new circulation element roadways:
    - If the project adds greater than 50% of total daily vehicle trips on the segment, the project should consider implementing the improvement as identified in the community plan.
    - If the project adds less than or equal to 50% of total daily vehicle trips on the segment, the project should evaluate its fair share towards the improvement.

In addition, the project should make improvements to study intersections and roadways to preserve consistency with Community Plan/PFFP/IFS identified improvements. The project applicant will have responsibility for the implementation of identified improvements.

The improvement types listed above are typical mobility improvements. Other types of mobility improvements may be proposed by the applicant or considered thorough coordination with the Development Services Departments Transportation Development Section staff.

Site Access and Circulation

The following items related to site access and circulation should be analyzed:

Driveway Analysis

- Review of proposed driveways (i.e., widths, curb returns, spacing, permitted turn movements, accommodation of delivery vehicles, etc.) for consistency with applicable City standards.

- Adequacy of throat depths to accommodate entering traffic. Detailed sight distance analysis (in accordance with the City's Street Design Manual) for driveways on streets with horizontal and/or vertical curvature (or with other potential sight distance constraints).

Internal Circulation

- Review of parking lots/garages for adequate vehicle circulation and parking maneuvers
- On-site circulation of bicycles and pedestrians including to/from parking areas and drop-off/pick-up activity
- On-site circulation of fire/emergency vehicles
- On-site circulation of delivery trucks and location of delivery bays/drop-off areas
- On-site circulation of trash trucks and location of trash enclosures

Parking/Loading Zones/Curbside Utilization

- On-Street Parking/Off-Street Parking
- Electric Vehicle (EV) Charging Stations
- Delivery Vehicle Space
- Areas for Transportation Network Company (TNC) Drop-Off/Pick-Up
- Bicycle/Scooter Share