City of San Rafael Transportation Analysis Guidelines

February 2022

Table of Contents

Attachments

List of Figures

List of Tables

Introduction

Transportation Analysis Guidelines

The guidelines define how to evaluate a project's effect on transportation access and circulation for all travel modes. The analysis may focus solely on the project site and access points and may also include an evaluation of the nearby transportation system to ensure infrastructure supports the traveling public.

The Transportation Analysis Guidelines provide a clear and consistent technical approach for projects that could have transportation effects (adverse or beneficial) on the City's transportation system and services. A glossary for terms is provided in Attachment A.

A transportation analysis provides essential information for decision-makers and the public when evaluating individual development, small- and large-scale area plans, and transportation infrastructure projects. A transportation analysis for projects in San Rafael serves three primary purposes:

- Evaluate a project's consistency with the City's *General Plan*.
- Evaluate a project's consistency with the Transportation Authority of Marin Congestion Management Program (CMP).
- Provide an evaluation of significant impacts and mitigation measures per the California Environmental Quality Act (CEQA).

Outcomes of the transportation analysis process include conditions of approval and/or mitigation measures under the California Environmental Quality Act (CEQA) that result in changes to the project site plan or program, or the implementation of off-site transportation system improvements.

Intent of the Guidelines

The Mobility Element in San Rafael General Plan 2040 seeks to improve multimodal access to key destinations in ways that are safe, efficient, and affordable yet also support the City's climate action and environmental quality goals, economic vitality goals, and social equity goals. The Guidelines support these goals by evaluating new projects against the policies of the *General Plan* and other relevant documents, including but not limited to the Downtown Precise Plan (2021), the Climate Change Action Plan 2030 (2019), the Bicycle and Pedestrian Master Plan (2018), and the Downtown Parking/Wayfinding Study (2017).

For environmental analysis, the Guidelines incorporate California's Senate Bill 743 (SB 743) and subsequent changes to CEQA Guidelines where vehicle delay is replaced with vehicle miles traveled (VMT).

The Guidelines outline the City's approach for determining the need for a transportation analysis, its content, and identifying acceptable transportation improvements for land use and transportation projects proposed within San Rafael. The Guidelines establish protocols for performing the following:

- Local Traffic Assessments (LTA) for projects
- LTA plus Intersection Operations Analysis (non-CEQA) for City's *General Plan* and CMP consistency analysis.
- Transportation Impact Analysis (TIA) for analyzing and determining impacts under CEQA.

City staff will review transportation studies and reports based on the process presented in these guidelines. ***However, each project is unique, and the Guidelines are not intended to be prescriptive beyond practical limits. Not all criteria and analyses described in these guidelines will apply to every project. Early and consistent communication with the Community Development Department and Public Works Department staff is encouraged to confirm the type and level of analysis required for each study.***

The resulting document is intended to provide decision-makers with information about the transportation system effects of a project and, when appropriate, recommend conditions of approval, or identify mitigation measures under CEQA.

Environmental Evaluation

SB 743 changed some of the transportation significance criteria used in CEQA analyses. Specifically, vehicle level of service (LOS) is no longer used as a determinant of significant environmental impacts, and a VMT analysis is required. These guidelines outline the required methodology and thresholds with which to evaluate projects consistent with the latest *CEQA Guidelines* (Governor's Office of Planning and Research, December 2018). Future updates in guidance by OPR on this topic are assumed to be incorporated herein.

Who can Conduct a Transportation Analysis?

Only a Professional Civil Engineer or Traffic Engineer, currently registered and in good standing with the California State Board of Professional Engineers and Land Surveyors, may prepare a Transportation Analysis for the City of San Rafael. The City of San Rafael may choose in the future to develop a pre-qualification process to identify consultants that may conduct traffic studies. The purpose would be to provide project applicants with a list of qualified consultants that have demonstrated knowledge of the guidelines and the ability to perform the multi-modal transportation analysis required.

Project Types

A transportation analysis is typically prepared for projects before a discretionary action is taken. The following types of projects, which involve development activity in and around San Rafael and affect the adjacent transportation system, may require a transportation analysis.

- **Land use entitlements** requiring discretionary approval by San Rafael, which includes *General Plan* amendments, precise roadway plans and specific plans (and related amendments), zoning changes, use permits, planned developments, site plan review committee approval, and tentative subdivision maps.
- **Land use activity** advanced by agencies other than San Rafael that is subject to jurisdictional review under state and federal law such as school districts, or advanced within San Rafael by agencies other than the City that is inconsistent with the City's *General Plan*.
- **Transportation infrastructure modification or expansion**, including proposed improvement projects on City roads, county roads and state highways that may impact City facilities and services. Roadway improvement projects that are identified in the *General Plan* and evaluated in the *General Plan Environmental Impact Report* (*EIR)* are subject to tiering for CEQA purposes. Such transportation projects would not require a TIA. Capital improvement projects (CIP) would address CEQA as required but would not prepare a TIA. Certain projects fall under the purview of the state, whereby comments are typically received from Caltrans will require a level of analysis upon state facilities such highways, freeways, ramps and intersections.
- **Controversial projects** would conduct the same transportation analysis as described for other comparable project types in these guidelines. As specified in the CEQA Guidelines, "the existence of public controversy over the environmental effects of a project shall not require preparation of an environmental impact report if there is no substantial evidence in light of the whole record." The preparation and scoping of a TIA, as required for CEQA, shall therefore be based on the methodology and thresholds identified in these guidelines.
- **Subsequent phased projects** are projects that were phased with no future plans of implementation or projects that remained stagnant for more than seven years.

The *Determining the Need for a Transportation Analysis* chapter identifies specific project parameters that may necessitate a transportation analysis.

CEQA and Non-CEQA Terminology

To distinguish the CEQA analysis from the non-CEQA analysis, the analyses apply different terminologies as summarized below in **Table 1**.

Table 1: Comparison of Select Non-CEQA and CEQA Terms

Non-CEQA Term	CEQA Term
Local Transportation Analysis (LTA) LTA plus Intersection Operations Analysis (LTA+IOA)	CEQA Transportation Analysis Transportation Impact Analysis (TIA)
Threshold or performance standard (LOS)	Significance criteria (VMT)
Substantial effect or deficiency	Significant impact
Required improvement	Mitigation measure
Existing Conditions	Baseline Conditions
Near-Term Conditions	Not applicable

Determining the Level of Transportation Analysis

What level of transportation analysis is required?

The need for a transportation analysis may stem from General Plan consistency, CMP consistency, CEQA compliance requirements, projects that are controversial in nature, or some combination thereof. The scope of the content will vary based on the type and scale of the project per the City's established screening criteria.

The applied screening criteria varies by the type of analysis being completed. This section outlines the different screening thresholds for General Plan consistency, CMP consistency, and CEQA impacts. All projects need to document and justify the applied screening criteria for City review and concurrence. The process used to determine the level and type of analysis required is discussed below and illustrated in **Figure** 1, which helps determine if projects are a) subject to CEQA analysis and b) required to prepare a TIA, LTA+IOA or a simpler LTA. This screening is to be performed by Traffic Engineering staff in the Public Works Department, Planners in the Community Development Department, and/or consultants retained to assist City staff. Attachment B includes an initial assessment form, with the first two pages to be filled out by the project applicant and the final determination on page 3 to be filled out by Public Works and Planning staff.

Trip Generation Screening

The level of transportation analysis required for projects is generally based on the expected level of daily vehicle trip generation; however, there may be exceptions based on the project location, such as in close proximity to a school, or project characteristics, such as a high level of truck trip generation. For purposes of trip generation screening, estimates should be made using the most recent edition of the ITE *Trip Generation Manual* and should apply an existing use credit only for currently active uses. Additional internalization or mode adjustments may be considered by City staff in scoping the analysis but should not be included in initial assignment of a project tier. Phased projects should be assessed based on build-out conditions.

- ***Tier 1: Less than 110 daily trips:*** The transportation study focuses on site plan review and assessment of site integration within the existing transportation system. For most projects, this review would likely be conducted at the staff level. A threshold of 110 daily trips is the level under which no VMT analysis is required. The 110 daily trip threshold equates to approximately 10 single-family units, 15 multi-family units, office developments of up to 10,000 square feet, and retail uses up to 3,000 square feet. Projects of this size do not require a TIA, LTA+IOA, or an LTA.
- ***Tier 2: Between 110 and 1,000 daily trips and less than 100 peak hour trips***: The transportation study includes site plan review, site access assessment for all travel modes, and

may include intersection evaluation including level of service, vehicle queues, signal warrants and collision assessment for two to four intersections immediately surrounding the Project site. Most development projects in San Rafael are expected to fall within the Tier 1 or Tier 2 threshold. The 1,000 daily trip threshold equates to approximately 100 peak hour trips. Multi-family home developments up to 165 units, office developments up to 100,000 square-feet, and retail uses up to 25,000 square feet (not accounting for pass-by trips) would fall into the Tier 2 level of analysis category. Projects of this size require an LTA and may require a LTA+IOA; projects of this size are also required to undergo additional assessment for CEQA applicability.

    - **Tier 2A: Between 110 and 250 daily trips and less than 25 peak hour trips:** In most cases, projects of this size will require an LTA only, as the addition of fewer than 25 vehicles to the roadway network across the peak hour is unlikely to lead to congestion or other traffic issues more than two blocks away from the project as traffic disperses, and the project is unlikely to add more than 20 vehicles to any single intersection.
    - **Tier 2B: Between 251 and 1,000 daily trips and less than 100 peak hour trips:** In most cases, projects of this size will prepare a LTA+IOA with additional intersection analysis, although they may not need to prepare cumulative operational forecasts (e.g., a project and growth in an area is consistent with the General Plan 2040 EIR cumulative analysis).

- ***Tier 3: Greater than 1,000 daily trips or 100 peak hour trips***: The Transportation Impact Analysis (TIA) prepared for projects in Tier 3 includes the elements discussed above, as well as additional intersection evaluation based on the expected influence of project trips. In addition, the study should discuss cumulative / long-term effects, and incorporate changes based on reasonably expected land use and transportation projects. This level of trip generation also meets the requirements for additional study in compliance with the Marin County CMP, and requires a TIA and CEQA review.

All projects are required to provide a site access and circulation analysis, including parking supply and loading evaluation to demonstrate that the project conforms to City policies and development standards as defined in the San Rafael Municipal Code. Key elements of this assessment are included in the checklist in **Attachment C: Site Access and Circulation Plan Review**.

CEQA VMT Screening Thresholds

This section describes screening thresholds that are applied to quickly identify when a project should be expected to cause a less-than-significant VMT impact without conducting a detailed VMT assessment for CEQA transportation assessment purposes (VMT calculations may still be needed for air quality, noise and climate change evaluations).

There are several instances where CEQA statute allows for projects to be "screened" out of more detailed analysis. The screening process refers to a relatively quick assessment of the project based on screening criteria discussed below; if the project passes the screening assessment, it can be presumed to have a less than significant impact on VMT. This type of screening is most appropriate for small to medium size land use projects that are consistent with the General Plan, are located in areas with

existing low VMT generation rates, and have characteristics conducive to travel by transit, walking, or bicycling. A qualitative discussion would be provided to justify this conclusion, and no mitigations would be required. Projects that are not screened out would need to conduct a detailed VMT impact analysis.

The following questions should be reviewed in determining whether a project should be screened out from performing a quantitative VMT analysis.

1. Location

    a. Is the project in a Low-VMT generating area?

    b. Is the project located within walking distance of frequent transit service?

    c. Are there supportive local retail or services withing walking distance?

    d. Do the existing pedestrian facilities connect the project to nearby supportive uses and/or transit services?

    e. Do the existing bicycle facilities connect the project to nearby supportive uses and/or transit service?

2. Project Characteristics

    a. Does the project have characteristics that indicate it would be a low VMT generator?

    b. Does the project include affordable housing?

    c. Does the project include local-serving retail that would improve retail destination proximity and thus shorten trips and reduce VMT?

    d. Does the project have a lower vehicle parking supply than is required by code?

    e. Does the project have more bicycle parking than required by code and/or that supports mode share targets?

    f. Does the project provide new pedestrian facilities to improve walking connectivity to nearby supportive uses or transit services?

    g. Does the project include provision for a transit stop or a mobility hub?

3. Plan Consistency

    a. Is the project consistent with adopted plans such as the General Plan?

    b. Is the project consistent with regional land use and transportation plans such as the MTC Plan Bay Area 2040 (a Regional Transportation Plan and Sustainable Communities Strategy)?

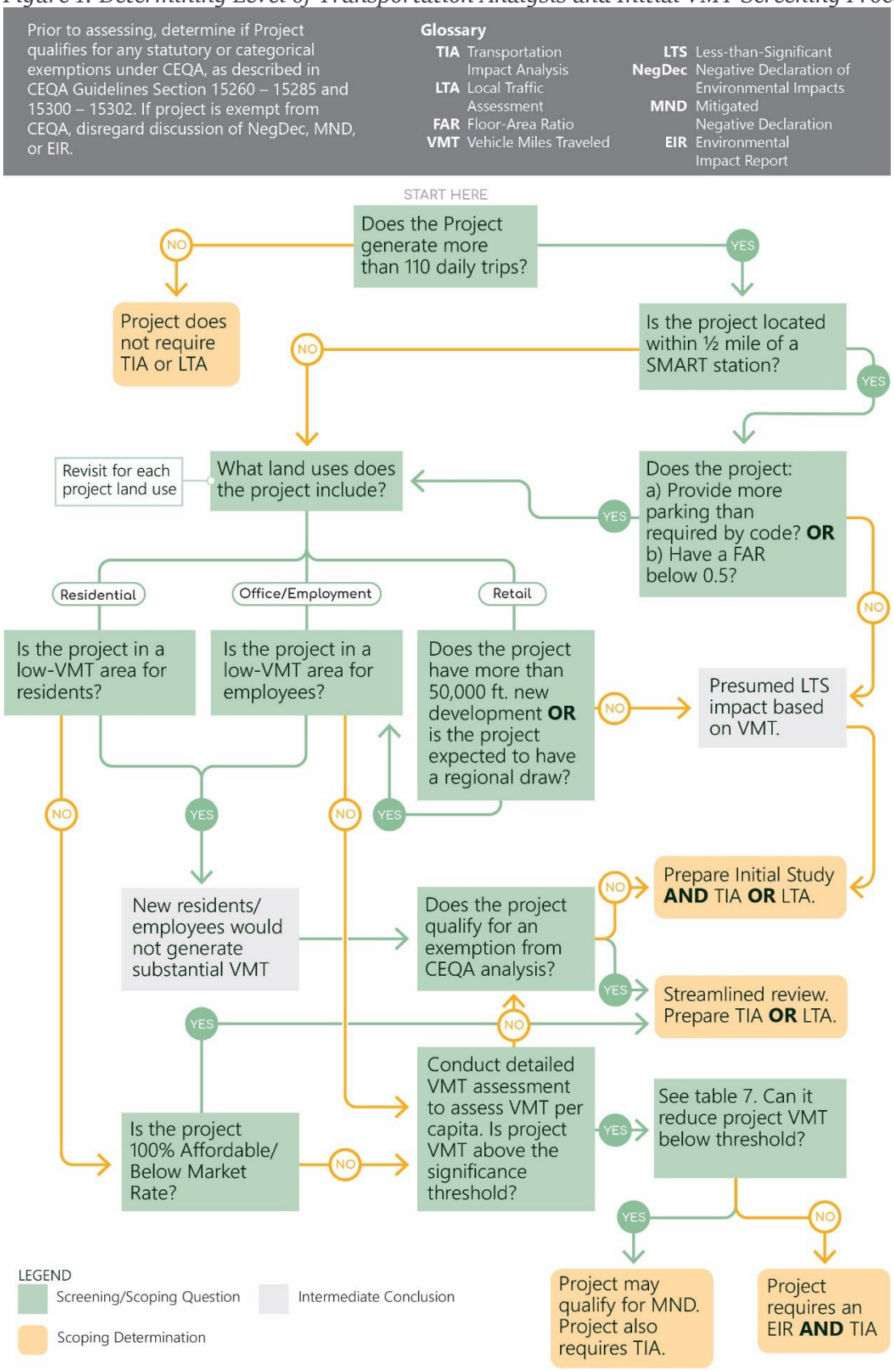
Based on the VMT evaluation conducted for the General Plan 2040 EIR and designated VMT thresholds described below, projects that are most likely to be screened out of a detailed VMT assessment include small projects, housing projects in Downtown San Rafael, projects within ½ mile walking distance of SMART stations that have characteristics that indicate they would be a low VMT generator, affordable housing in infill locations, neighborhood-serving retail projects, and locally serving public facilities.

Even if a project is exempt from a detailed VMT assessment, it is still required to evaluate under CEQA whether the Project would affect the transportation network in the following ways:

- Project conflicts with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadways, bicycle and pedestrian facilities
- Project substantially increases hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); or
- Project results in inadequate emergency access.

CEQA screening thresholds for land use and transportation projects are listed below. Projects that do not meet the screening thresholds must conduct a VMT analysis [see *Transportation Analysis (CEQA) for Land Use Projects* and *Transportation Analysis (CEQA) for Transportation Projects* chapters].

Figure 1: Determining Level of Transportation Analysis and Initial VMT Screening Process



Land Use Project VMT Screening Thresholds

Based on guidance from the State of California's Office of Planning and Research (OPR) *Technical Advisory* (December 2018, pages 13-15), land use projects that meet at least one of the following screening thresholds are presumed to not require CEQA VMT analysis:

- **Transit Priority Areas (TPA)**: Projects located within ½ mile walkshed around major transit stops[1] (i.e., the Downtown San Rafael and Civic Center SMART Stations) in San Rafael. However, TPA screening will **not** apply if the project meets *any* of the following thresholds:
    - The project has a Floor Area Ratio (FAR) of 0.75 or less;
    - The proposed parking exceeds the minimum required by the Zoning Code or applicable plan;
    - The Project is inconsistent with the *City's General Plan*, applicable Specific Plan, or applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC));
    - The Project removes or reduces the number of existing on-site affordable residential units; or,
    - Significant levels of VMT are projected through project-specific or location-specific information.
- **Affordable Housing**: 100% restricted affordable residential projects in infill locations (i.e., development within unused and underutilized lands within existing development patterns).
- **Small Projects**: Projects defined as generating 110 or fewer average daily vehicle trips, absent substantial evidence indicating that a project would generate a potentially significant level of VMT. Examples of projects that may generate less than 110 average daily trips include:
    - ~10 units of single-family residential
    - ~15 units of multifamily residential
    - ~10,000 square-feet office
    - ~15,000 square-feet industrial
- Each project is required to document the estimated number of trips it will generate.
- ***Locally Serving Public Facility***: Locally serving public facilities that encompasses government, civic, cultural, health, and infrastructure uses and activity which contribute to and support community needs. Locally serving public facilities include police stations, fire stations,

[1] "Major transit stop" is defined in Public Resources Code 21064.3 as 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.

passive parks (parks designed for use in an informal way and typically less developed), branch libraries, community centers, public utilities, and neighborhood public schools.

- **Neighborhood-Serving Retail Project**: Neighborhood-serving retail projects that are less than 50,000 square feet, which serve the immediate neighborhoods. Examples include dry cleaners, coffee shops, convenience markets, tutoring centers and daycare centers.[2]

Residential and Offices Projects in Low VMT Areas: The project is located within a low VMT area for its land use, or a transit priority area, as shown in **Figure 2** or **Figure 3**. Based on information from the TAM model, certain areas of San Rafael have lower rates of VMT generation than others. The VMT estimates that are the basis for Figures 2 and 3 are derived from an updated 2019 base year of the TAM model that was developed for the 2040 General Plan Update. These VMT estimates differ from those derived from the 2015 base year of the TAM model for several reasons including changes in land use (from 2015 to 2019 conditions), inclusion of SMART rail service that launched in 2017, and a targeted validation of the model for the City of San Rafael. In existing locations where VMT per capita is below the thresholds, projects may be screened from further VMT analysis. Figures 2 and 3, which also show the ½ walking distance screening area for the Downtown San Rafael SMART Station and adjacent San Rafael Transit Center, will be updated if the future location of the San Rafael Transit Center when relocated differs substantially from its present location. Each land use component of a mixed-use project is considered separately; therefore, each of the project's individual land uses should be compared to the screening thresholds. It is possible for some of the mixed-use project's land uses to be screened out and some to require further analysis. In addition, projects that do not require CEQA VMT analysis may still require a transportation study to assess other CEQA considerations such as emergency access, design hazards, and consistency with plans and policies.

[2] Daycare centers of 7,500 square feet or less would apply to the screening criteria.

Figure 2: San Rafael VMT Screening Map (Residential)

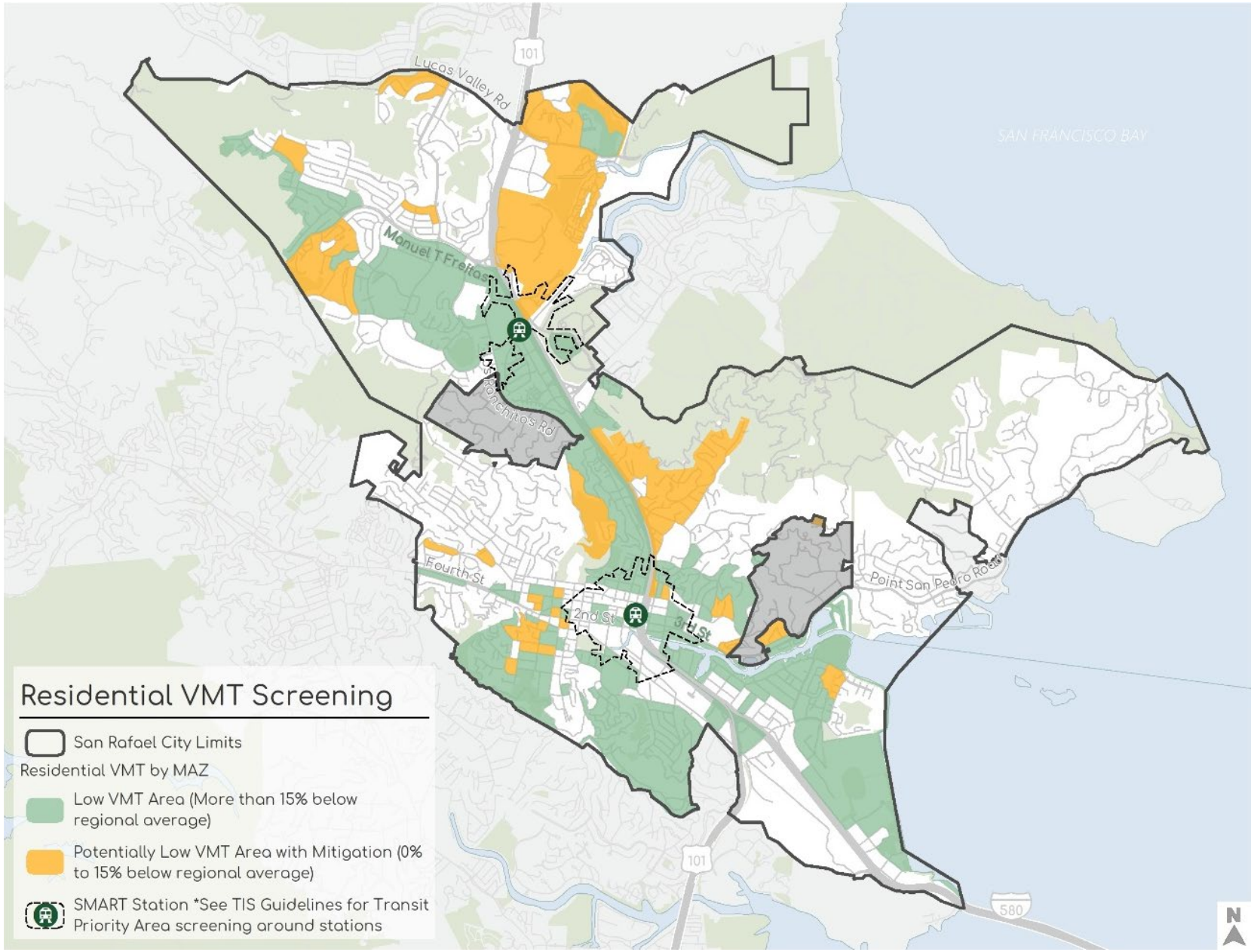
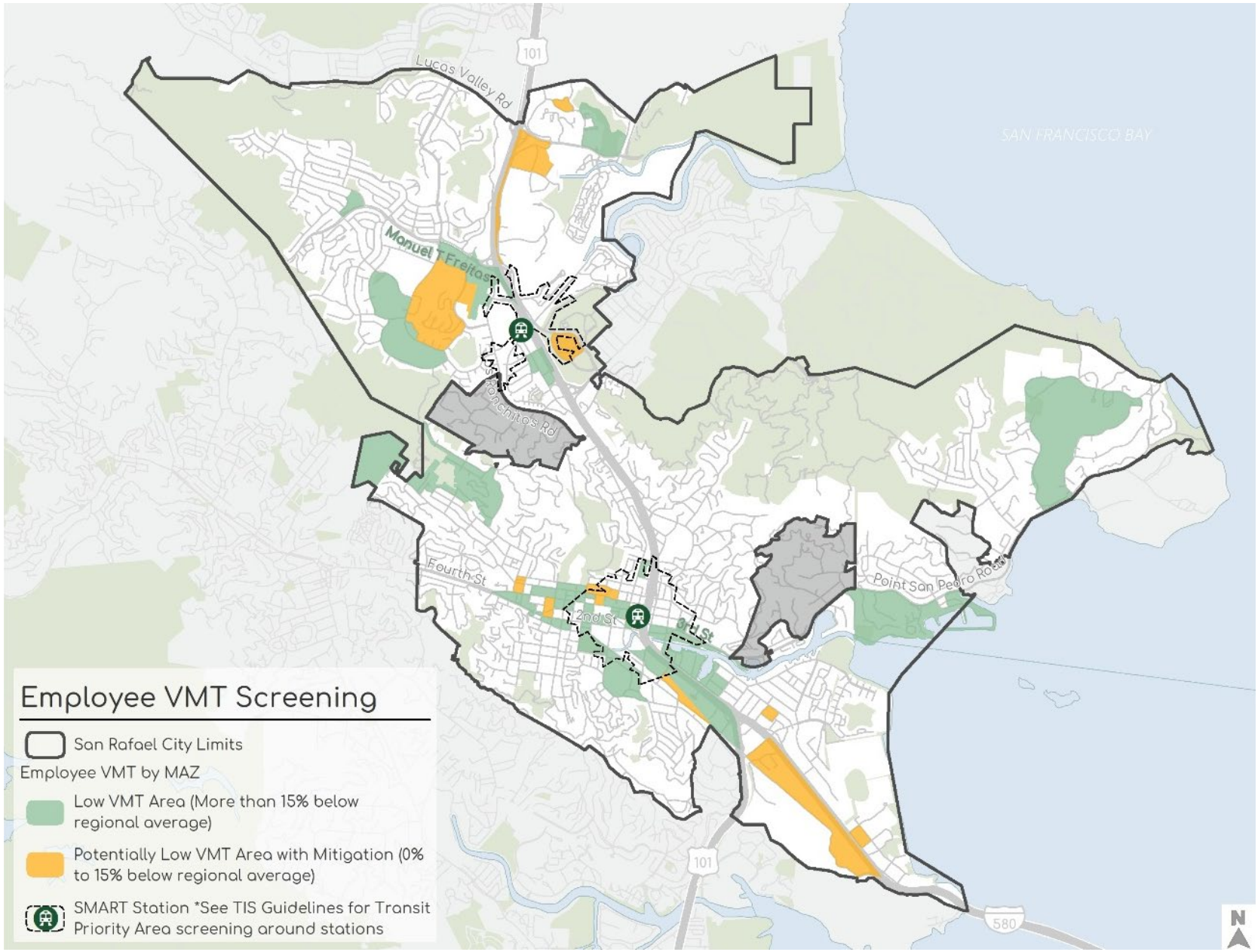


Figure 3: San Rafael VMT Screening Map (Employment)



Recommended Process and Documentation

The project applicant shall retain a professional transportation consultant to conduct the required transportation analysis; the City may seek to develop a list of qualified firms and it is the applicant's responsibility to ensure that the selected firm is acceptable to the City. The firm shall be licensed to perform such work in the State of California, and its preparation shall be overseen by a licensed Professional Engineer or Traffic Engineer. The applicant's consultant should seek City acceptance of the scope of work before initiation. In some cases, review by other affected jurisdictions will be required. **Attachment D: Transportation Analysis Report Outline** contains a recommended outline for the transportation analysis documentation, while the overall process for analysis is outlined in **Figure 4** through a simplified flow chart. The process for each individual project will be unique and based on the judgment of Community Development Department and Public Works staff; in particular, phased projects or large projects may evaluate a greater number of scenarios than shown in Figure 4.

Each transportation analysis will begin by preparing a scope of work that describes the project, site location, analysis methods, area-wide assumptions, study elements, study time periods, and transportation data collection methods. The transportation analysis scope of work along with initial estimates of the project trip generation, trip distribution, and VMT screening evaluation should be submitted to City staff for review and approval. Detailed guidance on selecting elements for inclusion in the analysis is presented in the *Scope of Analysis* section, beginning on page 24 of this document.

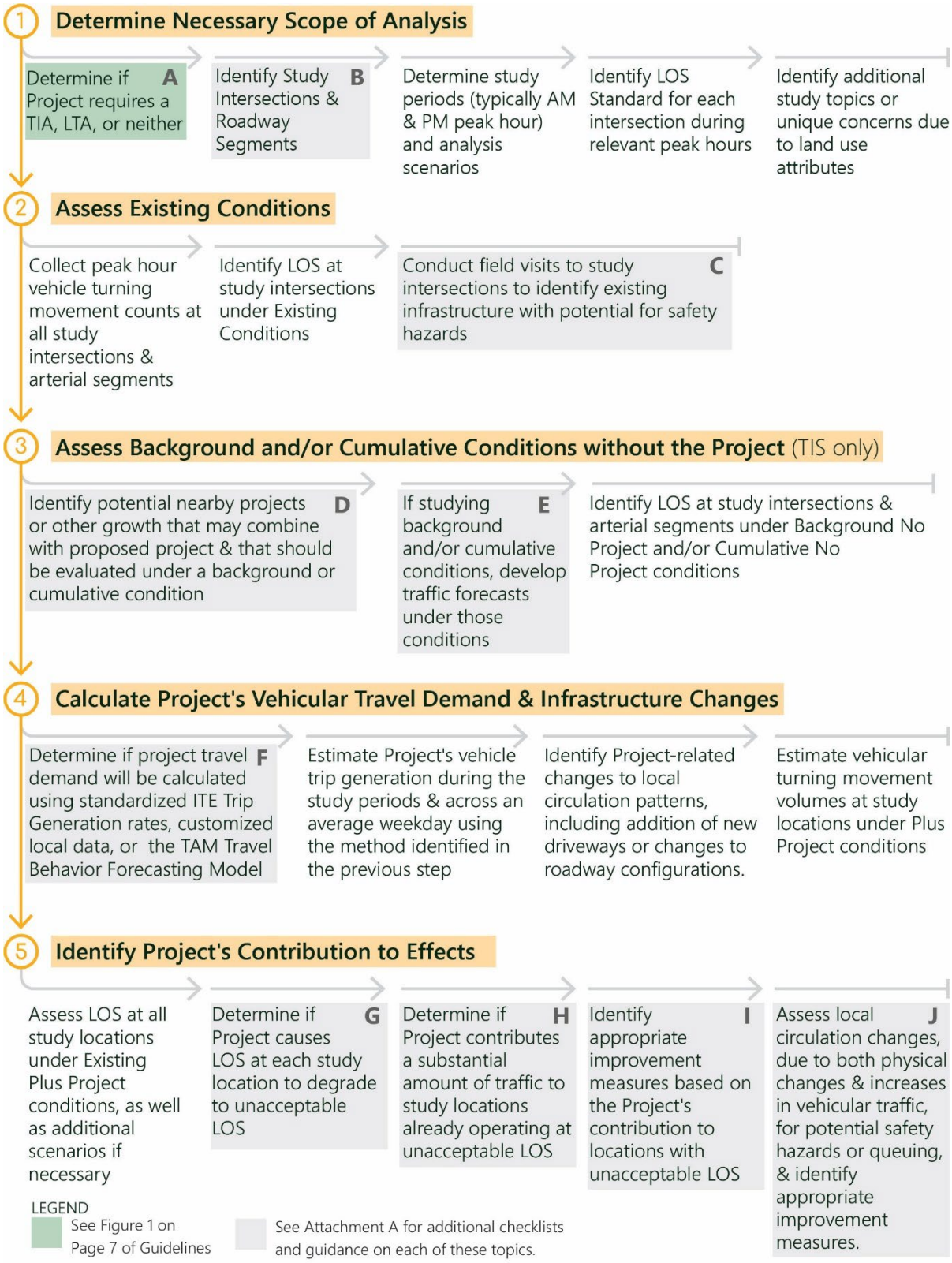
Role of City Staff

The transportation analysis will be prepared at the direction of City Public Works and Community Development Department staff. This will ensure that potential transportation improvements and environmental impacts are considered as early as possible in the planning process. Development of a transportation analysis should include:

- Pre-application coordination, which will include a discussion of the Transportation Analysis requirements.
- Approval of the scope of work, which includes field reconnaissance, trip generation, study area, analysis scenarios and parameters, data requirements, and provisions for pedestrian, bicycle and transit modes.
- Approval of the project trip generation (person and vehicle), trip distribution, and VMT approach and results.
- Review of all assumptions and the results of Existing Conditions analysis.
- Review of the administrative draft report, with adequate time for comments.
- Review of a draft report, with adequate time for comments.

If information from a transportation analysis will be incorporated into the transportation and circulation section of an environmental document (e.g., Initial Study, Mitigated Negative Declaration or Environmental Impact Report), the format of the transportation analysis report should be coordinated with the environmental consultant and City staff.

Figure 4: Flow Chart for Transportation Analysis and Documentation



Coordination with Other Jurisdictions

The need for coordination with other jurisdictions is a determination to be made by City staff based on a project location, size, and potential for impacting transportation facilities managed by other agencies. In general, coordination efforts would be limited to Tier 3 projects that generate more than 100 peak hour vehicle trips.

Section 15086 of the *CEQA Guidelines*[3] shall be followed as the basis for satisfying coordination requirements for environmental studies. In most cases, overlap will occur for roadway system analysis (i.e., not VMT) but may also include impact analysis of active transportation modes (bicycling and walking), as well as transit system facilities and services. If the study area overlaps with other jurisdictions, staff from those jurisdictions must be consulted to verify study locations, analysis methodologies, and the substantial effect thresholds. As appropriate, adjacent jurisdictions should be contacted to provide current development applications. Caltrans should be consulted for Tier 3 projects that have the potential to affect the state highway system, including US-101 and I-580.

Roadway crossings of rail lines are another overlap area that may require coordination with the California Public Utilities Commission (CPUC), particularly for large projects with parking facility driveways located in close proximity to at-grade rail crossings. The focus of any analysis related to rail crossings should be on whether the current crossing complies with current design standards and if the project has the potential to result in vehicle queue spillback across an active crossing.

[3] *The California Environmental Quality Act Guidelines*, California, 2019.

Trip Generation and Forecasting Tools

The local transportation analysis for General Plan and CMP consistency is based on vehicle trip generation, while CEQA analysis is based on VMT generation. This section describes how vehicle trip generation and VMT are estimated, and how cumulative traffic forecasts are developed.

Project Trip Generation

How do I Estimate the Project's Trip Generation Characteristics?

Person and vehicle trip generation rates are a way to estimate the number of expected pedestrian, bicycle, transit, and vehicle trips a proposed development will generate. These rates establish the basis of analysis for a proposed project and its effect on the transportation network. Person trip generation should be reported for walking, bicycle, and pedestrian trips; and vehicle trip generation should be reported for single-occupant, carpool, and transportation network company (TNC) (i.e., Uber/Lyft) trips.

Vehicle Trips

The state-of-the-practice is deriving vehicle trip generation rates from local empirical data, as this will provide the most accurate forecast for future land use vehicle trip-making. This typically requires surveying a similar existing land use at three unique locations to quantify the number of daily and morning, mid-day, and evening peak period person and vehicle trips generated.

The City understands that conducting new trip generation surveys may not be practical in all cases and that the latest Institute of Transportation Engineers' (ITE) *Trip Generation Manual* is a reasonable alternative when local data is not available. In the absence of empirical studies, the most recent vehicle rates published by ITE in the latest edition of the *Trip Generation Manual*[4] or other relevant sources may be used for trip rate estimation. When using ITE rates, the time period selected should reflect peak travel periods on adjacent streets and care shall be exercised in utilizing rates developed from a small study size (fewer than 20 studies) or containing a low R^2 value (less than 0.75).[5]

[4] *Trip Generation Manual* (10th Edition), Institute of Transportation Engineers, 2017 (or latest edition).

[5] R^2 is the coefficient of determination defined as the percent of variance in the dependent variable (number of vehicle trips) associated from the independent variable (size of the project). In regression analysis, the R^2 coefficient of determination is a statistical measure of how well the regression predictions approximate the real data points. An R^2 value of 1 indicates that the regression predictions perfectly fit the data.

In some cases, the peak hour of the generator may occur outside the typical peak commute hours and may require additional analysis (e.g., a regional shopping center on a Saturday or a school during the afternoon pick-up period).

The City reserves the right to require the project applicant to conduct local trip generation surveys for select projects depending on project characteristics as well as land use and travel conditions in the field.

Person Trips

If a project is located in an area where significant levels of walking, bicycling and/or transit use are expected, person trip generation should be presented for single occupant vehicles (SOV), carpool, rideshare, transit, bicycle, and pedestrian trips. Person trip generation rates should be developed from empirical studies, person travel survey data, or conversion of vehicle trip rates to person trip rates using a vehicle occupancy factor and adjustments based on travel behavior at the study location. In addition, person trip generation by mode may be derived using an approved analysis tool that incorporates data from the above sources. Either method may be used to apply a vehicle trip credit to the previously calculated vehicle trip generation totals using the processes discussed below.

Establishing Trip Generation Rates for an Unknown or Unique Use

For projects where the ultimate land-use is not certain (for example, a large subdivision of flexible commercial-industrial parcels), there are two options for establishing the trip generation rates:

- **Option 1:** City staff will recommend the use of the highest traffic intensity among all permitted uses to establish transportation impacts.
- **Option 2:** Estimates can be made using a lower intensity use if the City and developer establish a maximum trip allowance or cap. Once a proposed land use has been identified, then 1) a Transportation Demand Management (TDM) or trip reduction plan is developed and submitted to the City for review and approval; 2) where applicable, an association or entity is established to implement the TDM Plan; 3) trip levels are monitored regularly as buildings are occupied; 4) reports are submitted to the City to affirm compliance; and 5) new trip reduction strategies are implemented as needed to comply with the trip cap.

Trip Rate Credits for Existing Uses

For trip generation estimates and subsequent level of service analysis, the estimate of new trips generated by the proposed development project may include credit for trips associated with existing uses on the site. Uses are considered as existing if they are actively present on the project site at the time data is gathered for the transportation analysis. Additionally, if a planned (but not constructed) use was already permitted for the site, the baseline for analysis may be the permitted use if all mitigation measures from the approved use remains applicable, subject to City staff approval.

For the evaluation of vehicle miles of travel, VMT credit for the prior use may be considered if that use was active within the past three years, and if a similar type use could reoccupy the building without

needing to obtain a conditional use permit. However, this credit should only be applied to total project-generated VMT, and should not be included when calculating VMT per capita.

Transportation Mitigation Fee Calculation Method

The transportation mitigation fee calculation shall be based on calculating the weekday AM and PM peak hour vehicle trip generation and multiplying the sum of trips for the two peak hours by the current transportation mitigation fee rate. The peak hour vehicle trips shall be those trips that would occur at the proposed project driveway(s) and shall not be adjusted for pass-by or diverted linked trips.

For the calculation of transportation fees where a project involves reuse of existing building(s), the net peak hour trips generated by a project would be determined by applying a credit for existing uses if that use was occupied and functional within the past three years. The credit shall be based on peak hour vehicle counts collected at the project driveways. If counts can not be collected because the existing building is vacant but was occupied within the past three years, the credit applied requires verification of the prior occupancy level, justification of the estimated net peak hour trip reduction based on the actual prior occupancy level, comparison of the estimated net peak hour trip values to historic adjacent street volumes where available, and approval by City staff prior to preparation of the required transportation analysis.

The following projects are exempt from paying transportation mitigation fees per resolution of the San Rafael City Council.

- Accessory Dwelling Units (ADUs)
- Affordable Housing
- Childcare Facilities
- Cultural and Theater Facilities, excluding night clubs in Downtown San Rafael

Multi-modal and Other Trip Rate Reductions for Standard ITE Rates

Standard rates published by ITE are generally developed for suburban sites where access is primarily made via personal automobile. The City of San Rafael recognizes that the rates may overstate the traffic effect for developments that contain a mix of uses (and "capture" some vehicle trips internally) or are in denser areas such as downtown San Rafael. Additionally, certain commercial land uses attract vehicles on the roadway, rather than generating new trips. This section discusses reductions that may be taken under these circumstances.

Internalization / Walking, Bicycling or Transit Trips

Internal or captured trips are trips that do not enter or leave the driveways of a project within a mixed-use development. They are similar to active transportation trips (e.g., walking or bicycling) or transit trips in a setting like San Rafael, where destinations may be reached on foot (a "park once" environment). These trips do not add vehicle traffic to the local roadway system. Trip rate reductions are allowed for internalization for internal trips at mixed-use sites or in downtown San Rafael. A detailed discussion of recommended considerations for determining internal capture rates for mixed-use projects is provided in Attachment F. **City staff shall approve the use of any internal trip capture rates greater than 10 percent of the total new trip generation for a development.**

Specifically, trip generation estimates may use trip adjustments due to land use variables such as **D**ensity, **D**iversity, **D**esign and **D**estination to enhance its sensitivity to the built environment. These four most commonly discussed built environment factors and their effects on vehicle trips are summarized below:

- Net Residential and Employment **D**ensity – A wide body of research suggests that, all else being equal, denser developments generate fewer vehicle trips per unit than less dense developments.
- Jobs/Housing **D**iversity – Research suggests that having residences and jobs in close proximity will reduce the vehicle-trips generated by each land use by allowing some trips to be made on foot or by bicycle.
- Walkable/Bikeable **D**esign – Many pedestrian and bicycle improvement projects assume (supported by research findings) that improving the walking/biking environment will result in more active travel trips (e.g., walking, bicycling, etc.) and a resulting reduction in vehicle travel.
- **D**estination Accessibility – Research shows that, all else being equal, households situated near regional centers of activity generate fewer vehicle trips and VMT.

Other built environment factors such as demographics, distance to transit, and employment within 30 minutes by transit also affect vehicle trip-making. Reductions shall be based on empirical and peer-reviewed data, and quantitatively supported in the transportation analysis report. If trip rates are derived from a local survey of a similar land use or derived by a mixed-use trip generation estimator, additional trip reductions may be permitted based on location and other factors. Tools are available

from ITE and other sources to estimate these reductions. City staff may provide direction on which analysis tools are most appropriate for a project's transportation analysis.

Pass-by / Diverted Link

Pass-by, diverted, and linked trips are created by intermediate stops on a through trip. Pass-by trips are existing trips that enter the project site and then exit in the same direction of travel. They are attracted to the land use – typically service stations, fast food restaurants, and convenience stores – from an adjacent roadway with direct access to the project site. Diverted and linked trips are existing trips on nearby roadways that will divert from their existing routes to access the project site, typically larger retail development. These trips change existing through movements to turning movements or vice versa at nearby intersections. The latest edition of the *ITE Trip Generation Handbook* shall be used as the starting point to determine these reductions.

Pass-by trip reductions shall only be applied to shopping centers greater than 10,000 square feet, service stations, fast food restaurants, and convenience stores. The pass-by and diverted linked trip reduction should not be more than a **thirty percent (30%) combined pass-by and diverted linked trip reduction**. In addition, pass-by and diverted linked trips may not be excluded from the calculation of the peak hour trip threshold that triggers the requirement for conducting a transportation analysis or from calculation of transportation mitigation fees. Use of this reduction requires justification of the percent reduction based on existing volumes and an analysis of turning movements to and from the project driveways. To ensure adequacy of project driveways, the access analysis at these locations should reflect total site-generated trips, and not include any pass-by or similar reductions.

Diverted link trips are similar to pass-by trips in that they are vehicle trips already on the roadway network. However, the key difference is that diverted link (link meaning roadway) trips pull traffic from other roadways (not adjacent to the project site) onto the roadway(s) serving the development. Thus, these trips *do* add traffic to adjacent streets serving the site and should *not* be included as a reduction for the assessment of site access and circulation, but could be included as a reduction in the preparation of new vehicle trip estimates as inputs to air and noise analyses, and could also be considered in the VMT assessment.

As an example, a new gas station is proposed on a minor street one block away from a major arterial street. The trips that are attracted to the station site from existing traffic on the major arterial are diverted link trips. Those trips attracted to the site from existing traffic on the minor street in front of the new gas station are defined as pass-by trips. In both cases, these are not new trips to the overall network but come from existing volumes on adjacent or nearby roadways.

Transportation Demand Management Reductions

In addition to project characteristics that can reduce trip generation, transportation demand management (TDM) strategies can further reduce the vehicle trips from a project site such as:

- **Neighborhood / Site Enhancement** – Bicycle and pedestrian network, car sharing programs, traffic calming, and site design to support other travel modes;
- **Parking Policy / Pricing** – Parking supply limits, unbundled parking cost from property cost, and public parking pricing;
- **Transit System Improvements** – Built environment and access transit stop improvements; and,
- **Commute Trip Reduction** – Transit fare subsidy, employee parking cash-out, alternative work schedules, priced workplace parking, shuttles, and employer sponsored vanpools.

TDM strategies committed to by a project in their application and project description should be included in the analysis, with the corresponding recommended reduction in vehicle trip generation for each element clearly stated. Any trip rate reductions claimed for a TDM strategy are subject to approval by City staff and should be substantiated with either industry standard publications/tools (such as the California Air Pollution Control Officers Association (CAPCOA) *Guide to Mitigating Greenhouse Gas Emissions*, California Emissions Estimator Model (CalEEMod), etc) or local data. Trip rate reductions associated with a TDM strategy are also subject to a monitoring plan, to be developed by the project applicant and modified based on review and comment provided by City staff.

VMT Estimation and Cumulative Travel Forecasts

To conduct transportation forecasts and VMT analysis that meets environmental regulatory conditions and provides a high level of confidence in the analysis results, analysts should follow state-of-the-practice or best practice methods for transportation forecasting.

For consistency, analysts are required to use the TAM Travel Demand Model or other model as approved by City staff, for large plans or projects[6] that require a quantitative VMT assessment, and conduct checks to ensure it is sufficiently accurate and sensitive within the study area and for the types of land use and transportation changes associated with the project.

- Conduct sub-area validation[7] of the area being studied, if necessary
- Prepare the following model runs
    - Baseline without Project
    - Baseline with Project
    - Cumulative without Project
    - Cumulative with Project

Consultants should contact TAM staff directly to coordinate the process and identify any related costs for obtaining VMT forecasts for large plans or projects using the TAM Travel Demand Model.

Depending on the specific year represented by "base year" conditions, model output may need to be adjusted to represent "baseline" conditions for CEQA purposes.

For small projects that require a quantitative VMT assessment or large projects where a travel demand model may not be appropriate, alternative methods for quantifying VMT may be used including applying daily trip generation forecasts, trip length data for comparable uses from the TAM travel model or other applicable data sources, and project population estimates.

[6] Large plans or projects would generally include General Plan Updates, major General Plan Amendments, Specific Plans, and employment uses of 100,000 gross square feet or more.

[7] Sub-area model validation based on static validation criteria and thresholds, *2017 California Regional Transportation Plan Guidelines* (or most current version), California Transportation Commission.

Transportation Analysis and Circulation Studies (non-CEQA)

What is included in a local transportation analysis?

The contents and extent of a transportation analysis depend on the location and size of the proposed development, the prevailing transportation conditions in the surrounding area, and the technical responses to address questions being asked by decision-makers and the public. In general, projects will prepare either:

a. A Local Traffic Assessment (Tier 1 projects, Tier 2A projects, and Tier 2B projects in Downtown San Rafael); or,
b. A Transportation Impact Analysis (Tier 2B projects outside of Downtown San Rafael and Tier 3 projects)

The City is committed to a balanced level of analysis for all modes of travel. The methods presented in this chapter include robust data collection and analysis techniques for pedestrian, bicycle and transit networks, in addition to vehicle circulation.

Scope of Analysis

Study Area

The study area can be thought of as the area of influence of a project and is determined by evaluating the project location and how it may affect all transportation modes and facilities. It is not simply a map showing where the project is located. Each local transportation analysis will consider the adjacent transportation system for site access and circulation of land development projects and street modifications for transportation projects.

Local Transportation Analysis (LTA)

The study area for small projects should consist of, at a minimum, the roadways providing immediate access to the Project site, including any pedestrian, bicycle, or transit facilities. For most projects in this tier, analysis will focus on project driveways, and identify 2-4 intersections near the project to assess the effects on site access. This level of analysis is also appropriate for many projects located within Downtown San Rafael.

LTA plus Intersection Operations Analysis (LTA+IOA)

In addition to the level of study required for a Local Transportation Analysis, the City may require additional off-site intersection operations analysis or other multimodal analysis. Generally, intersections within a one-mile radius that are known to currently operate at LOS D or worse based on previous studies, are in close proximity to project driveways, and/or where the project adds at least ten or more peak hour trips per lane to any movement should be considered for analysis. The study

area should include the nearest CMP facility or CMP-monitored intersection to evaluate the proposed project's conformity with the CMP.

Applicants should consult with the City early regarding the study area and need for off-site multimodal analysis based on local or site-specific issues, especially those related to pedestrians, bicycles, rail crossings, and transit. The City requires the consultant to perform field reviews to completely assess existing conditions.

Key Study Elements

The extent and complexity of a transportation analysis can vary greatly. **Table 2** summarizes the potential study elements to be considered for every project that requires a complete transportation analysis, including both Site Access and Circulation Memoranda and Transportation Analyses. Specific significance criteria for each of the listed elements are described in further detail in the *Transportation Analysis (CEQA) for Land Use Projects* and *Transportation Analysis (CEQA) for Transportation Projects* chapters. To avoid the potential for identification of substantial off-site improvements or changes to the project site plan/description after the transportation analysis is completed, a preliminary site-plan shall be included for a "fatal flaw" evaluation.

Table 2: Local Transportation Analysis – Potential Study Elements and Evaluation Criteria

Study Element	Evaluation Criteria
***General Plan* Consistency**	Evaluate the project against goals, policies, and actions set forth in the *General Plan*
Parking (if required)	A parking assessment would only be required if a new use or a change in use is requested by the applicant as determined by City staff. Compare the project parking plan with City standards and expected demand and discuss how the proposed supply will affect demand for walking, bicycling, and transit modes. If a mix of land uses is proposed on-site, or complements adjacent land uses, justify how the development will make use of shared on-site parking.
On-Site Circulation	Review and evaluate site access locations, turning radii, truck loading areas, emergency access, and other site characteristics with respect to operations and safety for all modes of transportation. Projects with a drive-through component are required to evaluate vehicle queues at the drive-through. Projects with a gas station component are required to evaluate how fuel delivery trucks would access the site. The City may require other analyses based on specific uses. School Transportation Analyses will require on-site circulation plan integral to their preferred routes to school. Include on-site drop off / pick up plan.
Pedestrian Facilities	Identify any existing or planned pedestrian facilities that may be affected by the project. Document how the project will affect local pedestrian circulation (e.g., disclose how widening a road or adding a driveway will affect pedestrian safety and comfort).
Bicycle Facilities	Identify any existing or planned facilities (per *Bike Plan*) that may be affected by the project.

Table 2: Local Transportation Analysis – Potential Study Elements and Evaluation Criteria

Study Element	Evaluation Criteria
Transit	Identify any existing or planned transit facilities that may be affected by the project. If appropriate, document how the project improves access to or utilization of transit.
Trip Reduction Ordinance (TRO)	Evaluate project against trip reduction requirements of City of San Rafael Trip Reduction Ordinance.
Safety Assessment	Review relevant safety studies for previously identified safety issues and recommendations on local roads in the vicinity of the project. Where potential safety issues are identified in consultation with City staff, compile and evaluate collision data for latest three- to five-year period. Evaluate pedestrian and bicycle travel and facilities in the study area, determine whether increased walking/biking activity will result in multi-modal conflicts, and identify any required safety countermeasures. Identify any planned safety countermeasures identified by City staff for facilities adjacent to the project. If an LOS assessment is conducted at an adjacent highway off-ramp, evaluate whether queues on the freeway off-ramp would spill back and impact freeway mainline traffic.
Trucks (or Other Large Vehicles)	For relevant industrial projects, identify the number of truck trips that will be generated, including Surface Transportation Assistance Act (STAA) or large trucks, and design facilities necessary to accommodate these trucks.
Passenger Loading and Pick-up/Drop-Off	For projects that may have a large concentration of pick-up/drop-off activity, the project site circulation and pick-up/drop-off areas must be reviewed to identify opportunities and constraints of the project site. Modifications to the site circulation and/or pick-up/drop-off may be recommended. This analysis should include a discussion of TNC activity as appropriate.
Off-Site Traffic Operations	Vehicle Level of Service analysis should be conducted for all roadway segments and intersections included in the study area for Tier 2B projects outside of Downtown San Rafael and Tier 3 projects as determined by City staff. The City reserves the right to define the study area. All roadway facility analysis should be conducted using the latest version of the *Highway Capacity Manual* (HCM) unless other methods or tools that are more applicable to the study area or project context are approved by City staff.
Intersection Traffic Control	Evaluate unsignalized intersections located within the study area to determine appropriate traffic control. Analysis should consider the appropriateness of roundabouts as an alternative to traffic signals. The HCM 6th Edition provides analysis methods for roundabouts with one or two circulating lanes. This deterministic method is most appropriate for low volumes and isolated intersections. The HCM recommends the use of alternative analysis methods for larger and more complex multi-lane roundabouts, roundabouts operating near or at capacity, intersections with high pedestrian and/or bicycle volume, and intersections where upstream or downstream operation may interact with adjacent intersections. When comparing traffic control options (roundabout, signal, or stop) for a given location on the state highway, refer to the Caltrans Intersection Control Evaluation (ICE) directive dated August 30, 2013.

Table 2: Local Transportation Analysis – Potential Study Elements and Evaluation Criteria

Study Element	Evaluation Criteria
Other Issues	Consider other issues on a case-by-case basis (e.g., construction deficiencies, queuing between closely spaced intersections, emergency access, special event traffic)
Other Jurisdictional Requirements	In situations where several agencies must approve a development or are responsible for affected roadways, the applicant must contact lead and responsible agencies to determine issues to be addressed, scope of study, etc. In general, the applicant will be responsible for analyzing project impacts against appropriate jurisdictional thresholds; however, the analysis method will be determined by the City in compliance with CEQA and the impacts will be mitigated consistent with City standards.

Multimodal Site Access and Circulation

A detailed multimodal site access and circulation plan review is required for all projects. The transportation analysis should include a review and summary of findings of the following qualitative and quantitative features included in the checklist in **Attachment C: Site Access and Circulation Plan Review**.

An important aspect of a transportation analysis is to provide sufficient information for the City to determine if a project is consistent with the *General Plan*, other applicable City plans, and relevant design standards. Individual projects must be reviewed against relevant policies contained in the *General Plan* and other plans, policies, and standards. Applicants should review the full policy statements in the latest *General Plan Circulation Element*.

If the study area extends into an adjacent jurisdiction, the applicant may be responsible for analyzing project-generated operational impacts in these jurisdictions. These include intersection or segment locations in any other jurisdiction, including Caltrans-maintained facilities. The applicant shall refer to current policies in the respective jurisdiction to identify the appropriate significance criteria.

Details on how intersection and roadway segment LOS will be analyzed, and operations addressed, are discussed in the deficiency sections toward the end of this chapter. Per the *General Plan*, physical improvements focus on operational efficiencies (i.e., signal coordination, modified timings) and enhancements to improve bicycle and pedestrian travel as needed. Roadway expansions are considered in the developing areas of the City, consistent with major planned mobility improvements identified in the *General Plan*.

Analysis Time Periods

What time periods need to be analyzed?

Based on the land use of the proposed project and upon consultation with City staff, the study should typically analyze traffic operations during the peak one-hour of the following time periods:

- Weekday morning peak (7:00 – 9:00 AM)
- Weekday evening peak (4:00 – 6:00 PM)

For some projects, the City may substitute or require additional peak hour analysis for the following time periods.

- Weekday afternoon peak (2:00 – 4:00 PM)
- Friday evening peak (4:00 – 7:00 PM)
- Weekend mid-day peak (11:00 AM – 1:00 PM)

For example, retail commercial projects that are 100,000 square feet or larger should evaluate operations for Saturday mid-day peak hour conditions, in addition to the standard weekday morning and evening peak periods. The determination of study time periods should be made separately for each proposed project based upon the peaking characteristics of the project-generated traffic and peaking characteristics of the adjacent street system and land uses.

Scenarios for Local Transportation Analysis (non-CEQA)

How many local transportation analysis scenarios are required?

When a LOS analysis is required, the range of analysis scenarios is dependent on several factors:

- Project size and complexity
- Planned construction schedule (i.e., phasing)
- Location and potential impact relative to other approved development
- Consistency with the *General Plan*
- Consistency with the CMP

The range of scenarios includes Existing Conditions (typically for projects that generate between 110 and 2,000 daily trips), Near-term Conditions (potentially some that generate between 110 and 2,000 daily trips, and all projects that generate more than 2,000 daily trips), and Cumulative Conditions (all projects that generate more than 2,000 daily trips). Projects consistent with the *General Plan* will only be required to complete the Existing and Near-term conditions analysis; where Existing Conditions looks at the effect of the proposed project on the existing system within the next year or two, and Near-term Conditions typically looks at a longer time frame of about three to five years. Inclusion of all three analysis conditions (e.g., Existing, Near-term, and Cumulative), would typically occur for large development projects, General Plan Amendments, Precise Plans, and Specific Plans (and related amendments), with Cumulative Conditions having a time horizon of 15 to 20 years.

The following analysis scenarios will document existing or future conditions, any deficiencies, and identify deficiencies that will result from the addition of the project. Each scenario will include a qualitative description of transportation facilities for all modes (and any planned enhancements), traffic volumes, and a quantitative analysis of intersection LOS. Key study elements are identified in the *Multimodal Analysis Methods* section of this chapter. Details regarding each transportation analysis scenario are presented below.

Existing Conditions

Existing without Project

These conditions are based on recent field observations and recent (less than two years old) traffic count data. Counts more than two years old may be preferred, though, if traffic conditions are atypical due to unusual circumstances. This is currently the case due to the effect of COVID-19 on travel patterns. In December, 2020, Caltrans issued a policy directive that traffic analysis conducted on the state highway system shall not use traffic data collected after March 13, 2020 due to abnormal traffic patterns created by the pandemic. The directive identified alternatives to using recent counts including using counts up to three years old or using the regional travel demand model to forecast the traffic data to the current year with some adjustment factors based on observed traffic patterns using historic data and current land use.

Existing with Project

Traffic volume forecasts for roadway analysis reflecting Existing Conditions with traffic generated by the proposed project. For re-use or conversion projects, this will involve accounting for any existing use of the site that remains or will be removed. It should also qualitatively describe how the project will affect transportation for other modes including compliance or relation to other City documents. For phased projects, this will likely incorporate only the first phase, with later phases assessed against near-term conditions.

Near-term Conditions

This scenario will not be needed if the study area has limited or no approved developments expected to be operational along a similar timeline to the Project.

Existing plus Approved Development without Project

Traffic volume forecasts for roadway segment and intersection analysis should reflect Existing Conditions with growth due to approved development that is expected to be operational before or concurrently with the proposed project. A list of approved and pending projects can be obtained from City of San Rafael Community Development Department.

Existing plus Approved Development with Project

This scenario represents near-term conditions with vehicle trips added by approved development and the proposed project. This scenario provides decision-makers and the public with a view of conditions with all recently approved development and physical improvements including the proposed project.

For phased projects, there may be multiple Near-term plus Project scenarios representing individual phases.

Cumulative Conditions (General Plan Amendments and Specific Plans)

Cumulative without Project

Transportation conditions for all travel modes in the study area reflecting all approved projects, pending projects, or expected development of other areas of San Rafael designated for growth under the *General Plan*. In most cases, the project site will likely be vacant under this scenario. In some cases, this scenario may need to account for any existing uses on the site that could continue, and potential increases in development allowed by ministerial approvals.

Cumulative with Project

This scenario represents the cumulative future transportation conditions with anticipated changes to the transportation system and the additions of project trips and provides the long-range view of future traffic operations. For phased projects, this should reflect project build-out.

Data Collection

Accurate data is essential to achieve a high level of confidence in transportation analysis results. Existing transportation data shall be collected using the requirements set forth below. Data should be presented on maps or figures where appropriate. To address the specific needs of each project, the extent of data collected shall be at the discretion of City staff.

- **Pedestrian/Bicycle Facilities** – The report will document the existing pedestrian and bicycle facilities serving the project site. Elements will include presence and width of sidewalks, curb ramps, crosswalks or other pedestrian facilities within ½-mile walking distance of the project site, and bicycle facilities (e.g., routes, lanes or shared use paths) within a two-mile bicycling distance of the project site. Document barriers, deficiencies and high-pedestrian demand land uses including schools, parking, senior housing facilities, and transit stops or centers. Consider using evaluation tools such as *www.walkscore.com* or similar tools to quantify walkability. The report will note any deficiencies or enhancements planned or recommended in the *Bicycle Master Plan* or other planning documents.
- **Transit Analysis** – The report will document transit lines that serve the project site (e.g., within ½-mile walking distance), including stop locations, frequency of service, and any capacity issues. It will also describe transit stop amenities (e.g., benches, shelters, etc.).
- **Multimodal Peak-Period Turning Movement Counts** – Turning movement counts, including vehicles, heavy vehicles, bicycles, and pedestrians, will be collected for each study time period at all study intersections. The following parameters will be followed:
    - Data collection will cover at least two hours to ensure the peak hour is observed.
    - Traffic volumes should not be influenced by a holiday, weather, construction, or other temporary change, and should occur when area schools are in typical session.

- The percent of traffic that consists of heavy trucks will be noted/estimated during data collection.
- Some projects may require vehicle classification or occupancy counts. Consult with City staff on a case-by-case basis.
- Traffic counts that are older than two years at study initiation will not be used without consultation and approval by City staff. These counts may need to be re-counted or adjusted to reflect current year traffic volumes.

- **Roadway Geometry** – Document existing roadway and intersection geometries and lane configurations. Information from aerial photography and street views should be verified based on a site visit(s).
- **Intersection Controls, and Signal Timings** – For use in intersection analysis, intersection control types and signal timings and phasing should be based on signal timing sheets (available from City of San Rafael or Caltrans) and verified during site visits.

Traffic Operations Analysis

Traffic operational deficiencies shall be analyzed using standard or state-of-the-practice professional procedures. The main issues related to traffic operations analysis are the method, input data, and assumptions. These three items influence the level of confidence and the associated level of defensibility of the transportation analysis. For traffic operations, this requires following the procedures and techniques published in the most recent *Highway Capacity Manual* (HCM).

Traffic Signal Parameters

Traffic signal parameters are as important as accurate turning moving counts for determining intersection LOS. As summarized in **Table 3**, the following intersection data should be collected and/or calculated along with the traffic counts. Traffic signal timing information should be collected from City, County, or Caltrans staff, and verified by field observations.

Table 3: Traffic Signal Parameters

Parameter	Recommendation
Peak Hour Factor (PHF)	PHF for Existing Conditions should be collected and calculated from the traffic count data. It should be calculated individually for each isolated intersection and grouped for closely spaced intersections. For cumulative scenarios or Existing Conditions where the PHF is not available, refer to the most recent *Highway Capacity Manual* (HCM) and maintain consistency throughout the analysis periods. If a simulation model is used for analysis, the PHF should be applied over more than a 15-minute period.
Saturation Flow Rate	A field measurement of the saturation flow rate is recommended in accordance with procedure in the HCM, Chapter 31, Signalized Intersections: Supplemental. For Cumulative Conditions, use the value recommended in the most recent HCM unless physical conditions and traffic controls warrant a change.
Yellow Phase	Ranges from three to six seconds, with longer values in this range used with phases serving high-speed movements. If a traffic signal is present under Existing Conditions, use existing yellow phase (HCM, Chapter 19).
All Red Phase	One second per phase (if a traffic signal is present under Existing Conditions, use existing length of all red phase). This phase may be greater on high-speed roadways.
Pedestrian and Bicycle Conflicts	Pedestrian and bicycle signal calls and crossing conflicts at intersections can increase delay for vehicles. Outside of dedicated phases, they generally conflict with right-turning motorists and motorists making permitted left turns. The volume of each should be collected during traffic counts and used in the analysis. Otherwise refer to the most current version of the HCM.
Cycle Lengths	Replicate existing cycle length and phasing (e.g., leading left turns) when possible. For new signalized locations, use the cycle lengths of the following three categories unless other cycle lengths can be justified through the traffic operations analysis. • In and around downtown – limit signal cycle lengths to 60 seconds or less. • In and around suburban areas – limit signal cycle lengths to 90 seconds or less. • Near freeway interchanges/regional commercial – limit signal cycle lengths to 120 seconds or less. Ensure that minimum pedestrian crossing times and bicycle clearance intervals are satisfied.
Heavy Truck Percentages	Based on the existing heavy-truck percentage and adjusted to account for future planned development. In general, heavy-truck percentages should be greater on truck routes and main thoroughfares than on local streets. Minimum recommended value is 2%.
Lane Utilization Factor	If applicable, adjust lane utilization factors based on field observations.

Evaluation of Side Street Stop-Controlled Intersections

In addition to reporting the worst individual approach delay, the delay for the overall intersection shall be calculated and reported. This information will allow reviewers to gauge potential impacts to individual approaches against those for the entire intersection.

Methodology and Software

Intersection operations shall be analyzed using Synchro unless an alternative analysis methodology is identified through consultation with City staff. **Table 4** provides a matrix of software options for analysis. Special conditions related to congested conditions, state highway facilities, and roundabouts are discussed in more detail below.

Table 4: Software Analysis Options

Software/ Method[1]	Traffic Studies		Roundabouts		Arterial/ Interchange Operations	Microsimulation Analysis[4]		
	Operations[2]	Signal Coor-dination[3]	Planning	Design		Unique Geometrics	Heavily Congested Conditions	Multi-modal
Synchro/SimTraffic	X	X	X		X	X		
VISTRO/TRAFFIX	X		X					
HCS	X				X			
SIDRA for Roundabouts			X	X				
Microsimulation[5]		X		X	X	X	X	X

Notes:

1. The most current version of analysis software (with updated software patches) should be used.
2. Appropriate for isolated intersection operations or for signal systems that are not coordinated.
3. Mandatory for coordinated signal systems to maximize vehicle progression.
4. Should be applied to analyzing operations of congested conditions or non-standard conditions where traditional analytical approaches may not be appropriate.
5. Specific software program selection should be conducted in consultation with the City and consider the types of technical questions being asked in the study and the modes to be included.

Congested Conditions

Analysts should note that the HCM recommends the use of simulation models to analyze congested conditions or closely spaced intersections. Because simulation tools (e.g., VISSIM, SimTraffic, etc.) can simultaneously evaluate vehicle interactions across a complete network (including the interaction of multiple modes), they can provide a more complete understanding of traffic operating conditions during peak congested periods and what may happen when a specific bottleneck is modified or eliminated. Specifically, care should be taken in analyzing intersection LOS at closely spaced intersections. In such cases, standard intersection analysis does not adequately show the compound effects of intersection delay.

State Highway Analysis

The analysis of state highways, including freeways and on- and off-ramps, should be conducted consistent with CMP Guidelines.

Transportation Analysis Deficiencies

A transportation analysis evaluates all modes of transportation and includes analysis of elements such as parking and traffic operations that are not considered environmental impacts.

Roundabout Analysis

Typically, roundabout operations are analyzed in conjunction with a conceptual roundabout design. Different roundabout analysis methods (FHWA, Australian Gap Acceptance, UK Empirical, HCM 2010, and microsimulation) provide different delay results and corresponding capacities. The deterministic roundabout analysis methods described in the HCM can be used for roundabouts operating under low volume and isolated conditions (without influence from nearby intersections). HCM methods allow the use of calibration factors to reflect regional differences in roundabout capacity. Calibration factors specific to California are available in the report *Roundabout Geometric Design Guidance*, 2007, California Department of Transportation Division of Research and Innovation. Roundabout queue lengths should also be reviewed to ensure they do not spill beyond available storage or interfere with overall operations of the roundabout and/or transportation system.

As described in the HCM, the use of alternative analysis methods is needed for complex multi-lane roundabout designs, roundabouts operating near or at capacity, high pedestrian and/or bicycle volume, and at roundabout locations where upstream or downstream operation may interact with adjacent roundabouts or signals. Microsimulation of the roundabout and surrounding intersections may also be useful. Care must be taken in coding and calibrating the microsimulation models to accurately reflect the proposed roundabout design and operational characteristics.

When comparing roundabout versus signal control at a given location, long-term maintenance costs should be estimated and considered in the evaluation.

Mobility Deficiency Criteria

Transportation analyses evaluate intersection operations focused on specific traffic issues such as queuing and safety. An emphasis is placed on pedestrian, bicycle, and transit facilities and services, in part to reduce traffic congestion and air quality impacts associated with automobile use. **Table 5** outlines deficiency criteria for each mode, with local analysis thresholds presented below. The mobility deficiency criteria can be used to identify conflicts with existing or planned multimodal facilities. Table 5 also notes if the criteria is applicable for CEQA review or for local transportation analysis review only. Level of Service (LOS) consistency determinations shall be made based on General Plan Policy M-2.5 that identifies thresholds and a process for locations that exceed the thresholds.

CMP Deficiency Criteria

To determine consistency with the CMP, off-site intersection analysis may be needed. The analyst should refer to the most current TAM Congestion Management Program policy document.

Improvements

When deficiencies are identified, improvements should be incorporated into projects either as conditions of approval or CEQA mitigation, presuming that they are deemed feasible and consistent with the General Plan. Applicants will also be required to pay all applicable local and regional transportation impact fees. To the extent a project is conditioned to construct an improvement project that is included within the local or regional fee program, a reimbursement agreement may be sought for a portion of the improvement project.

All project deficiencies should be addressed consistent with the policies of the *General Plan*. Under these circumstances, the applicant should meet with City staff to identify transportation improvements that address the deficiencies. **Table 6** shows example types of improvements to address transportation deficiencies. Potential improvements may require a more detailed review, often including traffic operations, to demonstrate how they address a specific deficiency. This list is not intended to be an all-inclusive list but provide some options to consider. All improvements are subject to review and approval by City staff.

Selected improvements should be identified whether they will be implemented under Existing Conditions, Near-term Conditions or Cumulative Conditions. Near-term Conditions generally reflect conditions at the time of full occupancy of a project.

If a transportation improvement is selected to address a deficiency, it should include a description of how the improvement contributes to the multimodal transportation system in San Rafael. In addition, all transportation improvements need to consider whether they have secondary effects to VMT [i.e., whether the improvement is VMT inducing per guidance in **Attachment E: List of Transportation Projects Exempt from Environmental Analysis (CEQA)**].

Table 5: Mobility Deficiency Criteria

Study Element	Deficiency Determination	Applicability
Parking	Project increases off-site parking demand above a level required by the City Zoning Code or estimated demand.	Local
On-Site Circulation	Project designs for on-street circulation, access, and parking fail to meet City design guidelines. Where City standards are not defined, industry standards (*Highway Design Manual*, MUTCD, etc.) should be referenced, as appropriate. Failure to provide adequate access for service and delivery trucks on-site, including access to loading areas. Project will result in a hazard or potentially unsafe conditions without improvements.	Local and CEQA

Table 5: Mobility Deficiency Criteria

Study Element	Deficiency Determination	Applicability
Pedestrian Facilities	Project fails to provide safe and accessible pedestrian connections between project buildings and adjacent streets, trails, and transit facilities. Project adds trips to an existing facility along the project frontage that does not meet current pedestrian design standards.	Local and CEQA
Bicycle Facilities	Project disrupts existing or planned bicycle facilities or is otherwise inconsistent with the *Bicycle Master Plan* or future plans. Project adds bicycle trips along project frontage to an existing facility that does not meet current bicycle design standards.	Local and CEQA
Transit	Project disrupts existing or planned transit facilities and services or conflicts with City adopted plans, guidelines, policies, or standards.	Local and CEQA
TDM Program	A project does not comply with the City's Trip Reduction Ordinance.	Local and CEQA
Heavy Vehicles (Trucks and Buses)	A project fails to provide adequate accommodation of forecasted heavy traffic or temporary construction-related truck traffic consistent with City or industry standards (*Highway Design Manual*, MUTCD, etc.).	Local and CEQA
Off-Site Traffic Operations	95th percentile vehicle queues exceed the existing or planned length of a turn pocket or freeway off-ramp, resulting in a speed differential with the adjacent lane of travel; or where a queue exceeds the available storage without the project, project traffic increases the queue by more than 50-feet. The proposed project introduces a design feature that substantially increases safety hazards.	Local and CEQA
Intersection Traffic Control	Addition of project traffic causes an intersection to fail to maintain LOS Standards as specified in General Plan Policy M-2.5. If the intersection is already failing to maintain LOS standards under No Project conditions, a deficiency occurs if the project causes an increase in delay of five seconds or more at the intersection.	Local
General Plan Consistency	Evaluate the project against mobility, safety, and other related goals, policies, and actions set forth in the *General Plan*.	CEQA
Other Subject Areas	Consider other areas on a case-by-case basis (e.g., construction impacts, queuing between closely spaced intersections, emergency access, special event traffic, etc.).	Local and CEQA
Requirements for Other Jurisdictions	The project exceeds established deficiency thresholds for transportation facilities and services under the jurisdiction of other agencies.	CEQA

Table 6: Example Improvements

Study Element	Improvement
Project Modifications and Transportation Demand Management	• Alter density or diversity of project uses • Encourage flexible employee working hours • Allow parking "cash out" or require employee paid parking • Institute preferential parking for carpools • Encourage employees to use carpools and public transportation • Provide employee walk/bike incentives
Pedestrian and Bicycle Facilities	• Provide for access to, from, and through the development for pedestrians and bicyclist • Construct Class I bicycle paths, Class II bicycle lanes, and other facilities • Provide secure bicycle parking and shower amenities • Reduce travel lanes on a street to install a two-way left-turn lane and Class II bicycle lanes • Add corner bulbouts, reduce curb radii, add pedestrian refuges or implement other walking-related improvements • Dedicate right-of-way to provide bicycle or pedestrian facilities
Transit Facilities	• Provide bus turnouts, bus shelters, additional bus stops, and park-and-ride lots • Fund increases in transit service
Parking Facilities	• Design parking facilities to allow free-flow access to and from the street • Provide off-street parking per City standards or recommendations • Implement shared parking among complementary land uses
Traffic Control Modifications	• Provide for yield or stop control • Evaluate unsignalized intersections with substandard LOS for conversion to roundabout intersection control or for signalization. • Provide coordination/synchronization of traffic signals along a corridor • Provide turn-lane channelization through raised islands • Restrict selected turning movements
Street Operations Modifications	• Optimize location of access driveway(s) • Provide improvements to traffic signal phasing, or lengthen existing turning pocket • Provide additional through traffic lane(s), right-turn lane(s), and left-turn lane(s) if they do not adversely impact other modes or induce additional vehicle travel • Reduce travel lanes on a street to install a two-way left-turn lane • Congestion pricing on roads or within a specific area • Install a roundabout • Signalize an intersection, or replace a signalized intersection with a roundabout

Multimodal Analysis Methods

The report should provide a qualitative evaluation of the project's potential adverse or beneficial effects on transportation facilities and services related to pedestrians, bicycles, transit, and rail crossings.

For some projects, more detailed multimodal analysis may be required. Such analysis shall be decided upon in consultation with City staff and consider new tools, methods, and performance measures such as those listed below.

- **Multimodal LOS** – The *Highway Capacity Manual* (6th Edition) contains methods for multimodal LOS. Alternatively, simulation models can be used to measure performance (i.e., person-delay) for all modes within a transportation network.
- **Level of Traffic Stress (LTS)** – There are several methodologies for evaluating LTS for bicycle facilities. These methodologies generally rely on street widths/number of vehicle lanes, vehicle speeds, daily volumes, and type of bicycle facility to evaluate "low stress" bike networks.
- **Transit Capacity** – The project's person trip estimates can be used to forecast transit demand and evaluated against available transit capacity.
- **Activity Connectedness** – Travel time for each mode (e.g., walking, bicycles, transit, and vehicles) between the project and surrounding land uses can be used to gauge the degree of accessibility for a project. The City desires to minimize travel time to necessary destinations while minimizing unnecessary vehicle travel.

Tools such as geographic information systems or online tools (e.g., Index and Walk Score) can be used to gauge this measure specifically for walking. The main idea is to evaluate activity centers and destinations around projects to ensure that walk times to necessary destinations are minimized and the walking experience is comfortable.

Transportation Analysis (CEQA) for Land Use Projects

Does my land use project result in an environmental impact?

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. Specifically, **SB 743 removes the use of automobile delay, LOS, and other similar measures of vehicular capacity or traffic congestion for determining transportation impacts in environmental review**. According to the legislative intent contained in SB 743, the move away from LOS is necessary to 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 emissions.

The legislation also directed the State of California's Office of Planning and Research (OPR) to look at different metrics for identifying transportation impacts and make corresponding revisions to the *CEQA Guidelines*. OPR selected VMT as the preferred metric for assessing passenger vehicle-related impacts and issued revised *CEQA Guidelines* in December 2018, along with a *Technical Advisory: On Evaluating Transportation Impacts in CEQA* (December 2018) to assist practitioners in implementing the *CEQA Guidelines* revisions to use VMT as the new metric. The VMT methodology and thresholds are consistent with OPR's *Guidelines and Technical Advisory*.

Methodology

The following section provides details on if and how a VMT analysis should be conducted for land use plans and projects.

Initial Screening

San Rafael's VMT screening process for projects that can be presumed to cause a less-than-significant impact without conducting a detailed study is discussed on page 6. However, even if a project is exempt from VMT analysis, it may still be required to evaluate the following CEQA requirements:

- Conflicts with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadways, bicycle lanes, and pedestrian paths;
- Increases hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); or,
- Results in inadequate emergency access.

Additionally, other non-CEQA analysis may be required based on the project type, location, and level of daily trip generation. All projects need to document and justify the applied VMT screening thresholds.

Assessment for Non-Screened Projects

Projects not screened out through the thresholds listed in the *Determining the Level of Transportation Analysis* section are required to complete a VMT analysis using the City of San Rafael General Plan Model to determine if there would be a significant VMT impact. The impact analysis includes two types of VMT:

1. **Project generated VMT** per resident, employee, or service population (where the service population is the sum of residents and employees). The project generated VMT method relies on tracking trips to/from an individual project. In simple terms, it looks at the total number and distance each trip travels divided by the persons making those trips. As an example:
    a. **Residential projects** should present home-based VMT per resident
    b. **Office, R&D, and Industrial projects** should present work-based VMT per employee
    c. **Retail projects** should present total VMT per employee
    d. **Mixed Use projects and Land Use Plans** should present total VMT per service population or VMT metrics for each land use type evaluated individually against residential, office, and/or retail thresholds
    e. **Other Land Use projects** may apply an ad hoc threshold as developed by City staff
    f. **All other projects** should present total VMT per service population
2. **Project effect on VMT** compares how the project changes VMT on the network looking at total citywide VMT per service population. This VMT applies what is known as the boundary method[8], which captures all VMT on a network within a defined boundary (i.e., Marin County or the Bay Area region). This VMT captures the project's overall influence on the VMT generation of surrounding land uses.

The types of VMT analysis should be evaluated for the following scenarios:

- **Project Generated VMT** compares the existing project VMT efficiency measure (i.e., VMT per resident or per employee) to a value that is 15 percent below the existing regional average for that land use type. For the project scenarios, the VMT generation by land use is compared to the regional average for the 9-county Bay Area.

[8] The boundary method captures VMT that occurs within a selected geographic boundary (e.g., City, County, or region) by any type of vehicle. This captures all on-road vehicle travel on a roadway network for any purpose and includes local trips as well as trips that pass through the area without stopping.

- **Year 2040[9] Cumulative Conditions** evaluates project effect on VMT. The citywide total VMT per service population is compared between the cumulative "no project" and "plus project" scenarios. A project that falls below the Project Generated VMT threshold as defined above, that is also consistent with the General Plan and aligned with long-term environmental goals, would have no cumulative impact distinct from the project impact and would not require an evaluation of project effect on VMT. A finding of less than significant project VMT impact, for a project consistent with plans/goals, would also imply a less than significant cumulative VMT impact.

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

Scenarios for Transportation Analysis (CEQA)

Baseline Conditions

Baseline without Project

For compliance with CEQA Section 15125(a), the transportation impact analysis must include a description of the physical environmental conditions near the project, as they exist at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, from both a local and regional perspective. Baseline VMT estimates will be prepared based on the most recent base year using the TAM travel demand model.

Baseline with Project

All projects that do not meet the VMT screening thresholds are required to estimate project generated VMT for each land use type under Baseline Plus Project conditions. The project's land use characteristics will be entered into the model in the appropriate location, a model run will be completed, and the relevant VMT values will be generated.

Year 2040 Cumulative Conditions

Year 2040 Cumulative without Project

Projects requiring a General Plan Amendment are also required to evaluate the project effect on VMT under Year 2040 Cumulative Conditions. This scenario buildout of the region's land use and transportation system also provides the long-range view of future travel patterns. Cumulative without Project VMT estimates should be based on the horizon year of the San Rafael model, ensuring the model does not already contain the land uses or transportation improvements associated with the Project.

[9] The TAM Travel Demand model currently has a 2040 horizon year. The cumulative horizon year shall be updated to reflect the horizon year of the current version of the TAM model when a study is initiated.

Year 2040 Cumulative with Project

The environmental analysis also must evaluate a project's effect on VMT (*CEQA Guidelines* Section 21100(b)(5)). The project generated VMT analysis considers all trips as new trips and does not consider how the project influences travel within San Rafael. The project's effect on VMT under Year 2040 Cumulative Conditions considers the project's influence on the VMT generation of surrounding land uses.

The cumulative project effect on VMT shall be estimated using the Marin County limit boundary and extracting the total link-level VMT for both the no project and with project conditions.

VMT Impact Criteria for Land Use Projects

The following outlines the VMT impact criteria for land use projects that do not meet the City's VMT screening criteria.

Project Generated VMT Impact Thresholds (Baseline Conditions)

Listed in **Table 7** are the land use project-level impact criteria under the Baseline scenarios.

Projects Effect VMT Impact Threshold (Year 2040 Cumulative Conditions)

The cumulative threshold for the project effect on VMT is no change to the City's per capita VMT applying the boundary method.

CEQA Thresholds of Significance

Based on the updated Appendix G Environmental Checklist Form and City of San Rafael policies, a significant transportation-related impact could occur if a project would:

A. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including roadway, transit, bicycle and pedestrian facilities.

Roadway System – The project would create a significant impact related to the roadway system if any of the following criteria are met:

1. At unsignalized intersections, the project results in any of the traffic signal warrants included in the *CA Manual on Uniform Traffic Control Devices* (MUTCD) to be satisfied, or for a location where any of the warrants are satisfied prior to the project, the project increases overall travel through the intersection by more than 1 percent.
2. The project creates the potential for excessive vehicle queue spillback that could periodically block or interfere with pedestrian, bicycle or transit facilities.

Transit System - The project would create a significant impact related to transit service if the following criterion is met:

1. The project interferes with existing transit facilities or precludes the construction of planned transit facilities.

Bicycle System - The project would create a significant impact related to the bicycle system if any of the following criteria are met:

1. Disrupt existing bicycle facilities;
2. Interfere with planned bicycle facilities; or,
3. Create inconsistencies with adopted bicycle system plans, guidelines, policies, or standards.

Pedestrian System - The project would create a significant impact related to the pedestrian system if any of the following criteria are met:

1. Disrupt existing pedestrian facilities; or
2. Interfere with planned pedestrian facilities; or
3. Create inconsistencies with adopted pedestrian system plans, guidelines, policies, or standards.

B. Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b).[10]
C. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)
D. Result in inadequate emergency access

These criteria should be cross-referenced with the information presented in Table 5 as additional specific criteria may need to be evaluated depending on the project.

Mitigation Measures

When VMT impacts are identified, there are currently two types of project-based mitigation measures to consider:

- Physical Design at the project site (land use or transportation);
- Changes in project parking supply (relative to standard parking demand);
- Regional programs or facilities improvements (such as bicycle and pedestrian facilities); and,
- Transportation Demand Management (TDM).

Project-based features consider whether modifying the project in some way could reduce VMT. The four basic modifications include changing the physical land use or transportation network design of

[10] This section of the CEQA Guidelines relates to the evaluation of vehicle miles of travel (VMT).

the project, reducing the project's parking supply relative to industry standard rates, contributing to regional programs and facilities, or implementing transportation demand management (TDM) strategies such that residents, workers, or visitors of the site could make fewer or shorter vehicle trips.

When VMT impacts are identified, applicants shall coordinate with the City on the most appropriate VMT mitigation measures. To reduce an impact to less-than-significant levels the applicant would need to demonstrate, through substantial evidence, that the VMT would be reduced to the City's identified thresholds. Methods for calculating a VMT reduction based on parking reduction or the introduction of TDM measures should be substantiated through external sources such as the CAPCOA *Guide to Mitigating Greenhouse Gas Emissions* and CalEEMod, or through reliable local data and case studies. The CAPCOA guide describes VMT mitigation strategies and their estimated reduction levels based on research and analysis. CalEEMod is a is a statewide land use emissions computer model that provides a platform to quantify criteria pollutant and greenhouse gas (GHG) emissions for land use projects. The model also identifies mitigation measure to reduce criteria pollutant and GHG emissions along with calculating the benefits achieved from those measures.

It should be noted that program-based mitigation measures such as VMT impact fees, exchanges, and banks, are an emerging concept that will likely evolve over the next few years; this includes mitigation through contribution to regional programs or infrastructure. Since these are newer concepts and the City and/or County has not implemented such program-based mitigation measures, these are currently not valid options for consideration in San Rafael. The City will update these guidelines to incorporate program-based mitigations measures as they become available.

Table 7: Project Generated VMT Impact Thresholds

Project Type	Significance Criteria	Current Level	Impact Threshold
Residential	A project exceeds existing regional home-based VMT per capita minus 15 percent.	13.4 Home-based VMT per Capita (Average)	11.4 Home-based VMT per Capita
Office	A project exceeds regional home-based work VMT per employee minus 15 percent.	16.9 Home-based work VMT per Employee (Average)	14.35 Home-based work VMT per Employee
Retail	Project Total VMT rate exceeds 15 percent below existing Regional average rate for the 9-county Bay Area (per employee)		
Mixed-Use	• Aggregate metric (VMT per service population) rate exceeds 15 percent below existing regional average rate for the 9-county Bay Area • Each land use type evaluated individually against residential, office, and retail thresholds above		
Other Land Use Types	City to develop ad hoc (i.e., project specific) VMT threshold		
Redevelopment	If a redevelopment project leads to a net overall increase in VMT, based on evaluation of individual land uses, project exceeds respective thresholds above for applicable land-use types		
Land Use Plans	• Aggregate metric (VMT per service population) exceeds 15 percent below regional average rate for the 9-county Bay Area • Each land use type evaluated individually against residential, office, and retail thresholds above		

Transportation Analysis (CEQA) for Transportation Projects

Transportation projects have the potential to change travel patterns and may lead to additional vehicle travel on the roadway network, also referenced as induced vehicle travel. This is particularly true for roadway capacity expansion projects.

Does my transportation project result in an environmental impact?

Project types that would likely lead to a measurable and substantial increase in vehicle travel generally include addition of through lanes on existing or new highways, including general purpose lanes, HOV lanes, peak period lanes, auxiliary lanes, or grade separated interchanges. For transportation projects that increase roadway capacity, the VMT estimates and forecasts will also need to include induced travel effects. However, not all roadway projects lead to induced travel.

Methodology

The following sections provides details on if and how a VMT analysis should be conducted for transportation projects.

Screening Criteria

OPR's *Technical Advisory* identifies specific types of transportation projects that would likely lead to an increase in VMT, and, therefore, should undergo analysis. Transportation projects relevant to the City of San Rafael include:

- Added travel lanes;
- New roadway connections, including new roads or freeway overpasses; and,
- Lanes through grade-separated interchanges.

The General Plan 2040 EIR includes a Road Network VMT impact assessment for the 3.8 new lane miles of added roadway capacity that would result from the construction of new road improvements listed in Table 10-1 (Major Planned Mobility Improvements, 2020-2040) of the Mobility Element of the San Rafael General Plan 2040. The EIR analysis addresses the induced vehicle travel effect due to roadway system expansion that is not fully accounted for in travel demand models, estimating that the new lane miles of added road capacity would induce approximately 15.2 million additional VMT per year, or about 50,500 VMT on a daily basis. The EIR identifies a significant impact due to road network expansion, a mitigation measure, and a conclusion that the impact would be significant and unavoidable with the mitigation measure. CEQA analysis conducted for specific projects would tier off the analysis in the General Plan EIR and only need to address issues specific to the later project.

Specific types of transportation projects are presumed to have a less-than-significant transportation impact because they "would not likely lead to a substantial measurable increase in VMT." Projects that would not require a VMT analysis fall into four categories:

- Transit project (except for on-demand transit);
- Bicycle projects, such as bike lanes, projected bike lanes, or bike paths;
- Pedestrian projects, such as added sidewalks, crosswalks, or new trails; and,
- Roadway reconfigurations that are not intended to add vehicle capacity or substantially reduce vehicle delay, such as signal modifications, traffic calming projects, or intelligent transportation system (ITS) improvements.

Attachment E: List of Transportation Projects Exempt from Environmental Analysis (CEQA) includes a complete list provided in the OPR *Technical Advisory* for transportation projects that would **not** likely lead to a substantial or measurable increase in vehicle travel, and therefore generally should not require an induced travel analysis and are presumed to have a less-than-significant impact on VMT.

However, even if a project is exempt from VMT analysis, it may still be required to evaluate the following CEQA requirements:

- Conflicts with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadways, bicycle lanes, and pedestrian paths;
- Substantially increases hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); or,
- Results in inadequate emergency access.

All projects need to document and justify the applied VMT screening criteria.

Assessment for Non-Screened Projects

Projects not screened out through the criteria outlined above are required to complete a VMT analysis. Analysis methods and thresholds to evaluate the VMT effect of roadway projects will be assessed on a case-by-case basis, since the appropriate tool and methodology will vary based on the type and scope of transportation project proposed. Transportation projects that result in a net increase in total VMT may indicate a significant transportation impact.

Mitigation Measures

When VMT impacts are identified for roadway expansion projects, mitigation measure should consider and evaluate the reduction in scope of the capacity increase and/or enhancement to active transportation components.

Attachment A: Glossary

Activity based model (ABM): Disaggregate demand modeling process that models interrelated travel behavior of a synthetic population of individuals within individual households.

Baseline: Under CEQA, the impacts of a proposed project must be evaluated by comparing expected environmental conditions after project implementation to conditions at a point in time referred to as the baseline. The changes in environmental conditions between those two scenarios represent the environmental impacts of the proposed project. The description of the environmental conditions in the project study area under baseline conditions is referred to as the environmental setting. Ordinarily the appropriate baseline will be the actual environmental conditions existing at the time of CEQA analysis (typically when the Notice of Preparation [NOP] is published).

Best practice: The methodology generally accepted as superior to alternatives**.**

California Environmental Quality Act (CEQA): Generally requires state and local government agencies to inform decision makers and the public about the potential environmental impacts of proposed projects, and to reduce those environmental impacts to the extent feasible.

California Air Pollution Control Officers Association (CAPCOA): An Association of Air Pollution Control Officers representing all thirty-five local air quality agencies throughout California.

California Emissions Estimator Model (CalEEMod): Statewide land use emissions computer model, developed for CAPCOA in collaboration with the California Air Districts, designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects. The model quantifies direct emissions from construction and operation activities (including vehicle use), as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. Further, the model identifies mitigation measures to reduce criteria pollutant and GHG emissions along with calculating the benefits achieved from measures chosen by the user.

California Governor's Office of Planning and Research (OPR): The State's comprehensive planning agency, OPR studies future research and planning needs, fosters goal-driven collaboration, and delivers guidance to state partners and local communities, with a focus on land use and community development, climate risk and resilience, and high road economic development.

Commercial vehicle: Includes heavy vehicles such as trucks along with vehicles for hire such as taxis, Uber, and Lyft.

Complete streets: Transportation policy and design approach for streets to be planned, designed, operated, and maintained to enable safe, convenient, and comfortable travel and access for users of all ages and abilities regardless of their mode of transportation.

Discretionary approval: Granted following the exercise of judgment and deliberation; determinations require an analysis by agency staff followed by public hearing at which a final decision is made by a decision maker.

Diverted trips: An existing trip already on the network that diverts from its original path to make an intermediate stop.

Environmental Impact Report: A detailed statement prepared under CEQA describing and analyzing the significant environmental effects of a project and discussing ways to mitigate or avoid the effects.

Facility: Any physical portion of the transportation network, which may refer to roadway, transit, bicycle/scooter, pedestrian, or parking systems.

Feasible: Capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors. (CEQA Guidelines Section 15364)

Four-step model: An aggregate demand modeling processing that splits the trip making process into three to five discrete travel making decisions: trip generation, destination choice, time-of-day choice, mode choice, and route choice. Travelers are treated at the aggregate zone level.

Greenhouse gas (GHG): A gas that contributes to the greenhouse effect by absorbing infrared radiation. This includes both carbon dioxide, as well as other emissions.

High-quality transit corridor: A corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours. (Public Resources Code, § 21155)

Induced Vehicle Travel: The additional observed vehicle travel that is attributable only to reductions in travel times, delays, and costs caused by highway improvements.

Major transit stop: 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. (Public Resources Code, § 21064.3)

Metropolitan Transportation Commission (MTC): The transportation planning, financing and coordinating agency for the nine-county San Francisco Bay Area. MTC is responsible for preparing a long-range regional transportation plan that is updated at least every four years. The current regional plan is called Plan Bay Area 2040. MTC also maintains a travel demand model for the 9-county bay area.

Ministerial approval: Granted upon determination that a proposed project complies with established standards set forth in the zoning ordinance and/or other applicable policy documents; determinations are

made through reference to objective standards, involve little or no personal judgment, and are made by agency staff.

Mitigated Negative Declaration (MND): A negative declaration prepared for a project when the initial study has identified potentially significant effects on the environment, but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment.

Mode split: The proportion of person trips separated by mode (drive alone, shared ride, transit, bicycle/scooter, walk).

National Environmental Policy Act (NEPA): Requires federal agencies to assess the environmental effects of their proposed actions prior to making decisions.

Pass-by trips: An existing trip already on the network that makes an intermediate stop without diverting from its original path other than to enter and exit the intermediate stop driveways.

Place types: A tool for a general classification of towns, cities, and larger areas and can be used as a basis for making planning decisions and evaluating the context of a project.

Primary trips: Trips made for the primary purpose of accessing the destination land use.

Project-generated: Vehicle trips have at least one trip-end starting or ending at the project site location. References to project-generated VMT describe the multiplication of project-generated vehicle trips by vehicle trip lengths.

Regional transportation plan (RTP): Long-term blueprint of a region's transportation system.

Regional transportation plan/sustainable communities strategy (RTP/SCS): Long-range regional plan that aligns transportation, housing, and land use decisions toward achieving GHG emissions reduction targets set by the California Air Resources Board (CARB). In the Bay Area, the current RTP/SCS is Plan Bay Area.

Select link analysis: Traces all the trips through an individual transportation link in a travel model.

Select zone analysis: Traces all the trips to/from an individual traffic analysis zone (TAZ) or group of TAZs.

Senate Bill 743 (SB 743): Mandates a change in the way that public agencies evaluate transportation impacts of projects under the CEQA.

Smart mobility: Moves people and freight while enhancing economic, environmental, and human resources by emphasizing convenient and safe multi-modal travel, speed suitability, accessibility, management of the circulation network, and efficient use of land. (Smart Mobility 2010)

State of the practice: The methodology commonly used in a profession.

State Transportation System (STS): Includes more than 50,000 miles of California's highway and freeway lanes, inter-city rail service, park-and-ride lots, public-use airports, and special-use hospital heliports.

Substantial evidence: In a CEQA context, substantial evidence is supporting evidence for a finding. It ought be "more than a mere scintilla. It means such relevant evidence as a reasonable mind might accept as adequate to support a conclusion." Richardson v. Perales, 402 U.S. 389, 401 (1971). Generally, substantial evidence requires support by facts, research, data, and analysis. Further information is available in California Code of Regulations Section 15384.

Surface Transportation Assistance Act (STAA) Trucks: The 1982 federal Surface Transportation Assistance Act (STAA) allowed larger trucks on the National Network. These larger trucks are called "STAA trucks" and are the largest commercial shipping trucks designed for long-distance hauling and equipped with sleeper cabs for drivers.

Transportation Authority of Marin (TAM): TAM serves as Marin's Congestion Management Agency (CMA) and is responsible for coordinating funding for many of the transportation projects and programs in the County. One of TAM's major responsibilities as Marin County's CMA is to maintain a travel demand forecasting tool or model, to assess potential impacts on the transportation network from changes to the roadway network and local land use decisions. TAM is responsible for the development, maintenance, and application of a countywide travel demand model, consistent with regional land use and socio-economic database of the Association of Bay Area Governments, and assumptions of the Metropolitan Transportation Commission's regional travel demand model. TAM administers the expenditure plans for Measure A, the ½ cent sales tax measure passed in 2004, renewed as Measure AA in 2018, and Measure B, the $10 Vehicle Registration Fee passed in 2010. TAM coordinates a diverse mix of projects and programs that are necessary for improving overall mobility, including roads, highways, sidewalks, Safe Routes to School, bicycle lanes, transit and alternative commute options.

Transportation impact analysis (TIA): Study of the potential transportation effects of a proposed project.

Transit: All forms of shared passenger ground transportation in moderate to high-capacity vehicles ranging from dial-a-ride vans to buses, trolleys, light rail, and rail transportation.

Traffic analysis zone (TAZ): Unit of geography in a travel demand model.

Travel demand model: A complex computer model covering that predicts travel demand as a function of land use, socio-economic factors, and transportation infrastructure. The model may cover the entire state, a metropolitan area, an air basin, a county, or a city.

Trip generation: A set of equations or look up tables for predicting number of trips that would be generated by an individual, households, and commercial land uses.

Trip length: Distance traveled in miles for a single trip between an origin and a destination.

Trucks: A subset of heavy vehicles used for goods movement (see commercial vehicles).

Vehicle miles traveled (VMT): For an individual project site, VMT is typically the number of vehicle trips generated multiplied by their trip length (see Project-Generated). VMT can also be measured for network links or an aggregation of links across an area where the volume on the links is multiplied by the length of the link.

Attachment B: TA Assessment Form

SECTION 1: PROJECT AND APPLICANT INFORMATION (*TO BE COMPLETED BY APPLICANT*)

PROJECT TITLE	PROJECT LOCATION	APPLICATION NO.
APPLICANT	APPLICANT CONTACT	APPLICANT PHONE

SECTION 2: APPLICATION TYPE AND PROJECT DESCRIPTION (TO BE COMPLETED BY APPLICANT)

TYPE OF APPLICATION	(check)		(check)
ZONING		AMENDMENT TO DEVELOPMENT APPROVAL	
TENTATIVE MAP		NEW DEVELOPMENT / CONSTRUCTION	
USE PERMIT		OTHER:	

PROJECT DESCRIPTION (please attach a site plan):

PROPOSED LAND USE	(check)	Answer the corresponding question regarding the proposed project:	**Yes**	**No**
RESIDENTIAL		Is the proposed residential project greater than 10 single family or 15 multi-family dwelling units?		
		Is the proposed residential project 100 percent restricted affordable housing in an infill location?		
COMMERCIAL		Is the proposed commercial project building larger than 1,500 sq. ft.?		
		Is the proposed commercial project a neighborhood-serving retail project less than 50,000 sq. ft. in an underserved local market?		
		Does the proposed commercial project have a fast-food restaurant?		
		Does the project have a drive-through window?		
OFFICE		Is the proposed office project building larger than 10,000 sq. ft.?		
INDUSTRIAL		Is the proposed industrial project building larger than 15,000 sq. ft.?		
PUBLIC FACILITY		Is the proposed project a locally serving government, civic, cultural, health and infrastructure use that supports community needs?		
OTHER: (please describe)				

TRAFFIC GENERATION (AVERAGE WEEKDAY)

ITE Land Use Code	**Size**	**Unit Name (e.g. sq ft, units)**

Total Vehicle trips	_____Vehicle trips per day	
Peak Hour Trips	A.M. Peak Hour	P.M. Peak Hour
* New vehicle trips	_____Vehicle trips per hour	_____Vehicle trips per hour
* Pass-by vehicle trips	_____Vehicle trips per hour	_____Vehicle trips per hour
* Total vehicle trips	_____Vehicle trips per hour	_____Vehicle trips per hour
Total trips IN	_____Vehicle trips per hour	_____Vehicle trips per hour
Total trips OUT	_____Vehicle trips per hour	_____Vehicle trips per hour

Submitted by

_____ _____

Signature of Applicant Date

REMAINING SECTIONS TO BE COMPLETED BY CITY

SECTION 3: TRANSPORTATION IMPACT EVALUATION

Transportation / Circulation **Could the proposed project:**	**NO**	**MAYBE**	**YES**
Cause a substantial increase in traffic (100 peak hour trips) in relation to the existing traffic load and capacity of the street system?			
Cause any public or private street intersection to function below level of service specified in the City of San Rafael General Plan?			
Pose a potential vehicle safety hazard (i.e. change in the mix, volume or speed of traffic that would create an inconsistency with the existing design of the transportation network.)			
Pose a potential traffic hazard to pedestrians or bicyclists?			
Disrupt or interfere with truck, passenger vehicle, transit, bicycle or pedestrian access to surrounding uses?			

SECTION 4: DETERMINATION

On the basis of this initial assessment for significance:

I have determined that a Transportation Impact Analysis on the proposed project ____ WILL NOT BE required.

I have determined that a Transportation Impact Analysis on the proposed project ____ WILL BE required as part of an environmental document.

_____ _____

Public Works Department

Attachment C: Site Access and Circulation Plan Review Checklist

A detailed site plan review is required for all projects. The transportation analysis should include a review and summary of findings of the following qualitative and quantitative features, in addition to the site-plan criteria identified in Table 2.

- Existence of any current traffic problems in the local area such as a high-collision location, non-standard intersection or roadway, or an intersection in need of a traffic signal.
- Applicability of context-sensitive design practices compatible with adjacent neighborhoods or other areas that may be impacted by the project traffic.
- Proximity of proposed site driveway(s) to other driveways or intersections.
- Adequacy of the project site design to convey all vehicle types.
- Number and type of parking spaces provided, including vehicle and bicycle parking.
- On- and off-street loading requirements.
- Adequacy of site access and circulation for vehicles, bicycle, and pedestrian and provision of direct pedestrian paths from residential areas to school sites, public streets to commercial and residential areas, and the project site to nearby transit facilities. Delivery vehicle access and circulation, and the potential for vehicle queues at drive-through windows should be considered.

Attachment D: Transportation Impact Analysis Report Outline

Sections for All Transportation Impact Analysis

The preparer has the discretion to use the most appropriate documentation format depending on the complexity of the analysis, including memorandum and formal reports, so long as the required information is provided. Not all information noted below is appropriate for all studies, nor is the list inclusive of everything that may be required to fully analyze a project.

1. Introductory Items

- Front Cover/Title Page
- Table of Contents, List of Figures, and List of Tables
- Executive Summary

2. Introduction/Context

- Project description
- Type and size of development
- Site plan (include proposed driveways, roadways, traffic control, parking facilities, emergency vehicle access, and internal circulation for vehicles, bicyclists, and pedestrians)
- Location map (include major streets, study intersections, and neighboring zoning and land uses)
- Scope of transportation analysis

3. Project Screening

- Description of whether the project meets General Plan Consistency screening criteria
- Description of whether the project meets CMP Consistency screening criteria
- Description of whether the project meets VMT screening criteria

4. Current Conditions

- Description of existing street system within project site and surrounding area
- Location and routes of nearest public transit system serving the project
- Location and routes of nearest pedestrian and bicycle facilities serving the project
- Off-site intersection analysis for site access and circulation evaluation and CMP evaluation (if applicable)
    - Figure of study intersections with peak hour turning movement counts, lane geometries, and traffic control (if applicable)

    - Map of study area showing average daily traffic (ADT) of study roadways (if applicable)
    - Table of existing peak hour average vehicle delay and level of service (LOS)
- Environmental Analysis (if VMT screening criteria are not met)
    - Description of baseline VMT estimates (may include site and regional VMT estimates)

5. Project Trip Generation and Vehicle Miles Traveled

- Table of project generated trip estimates
- Figure/map of trip distribution (in percent)
- Table of project generated vehicle miles traveled estimates

6. Project Site Access and Circulation Evaluation

- Summary of a detailed site review for all modes of travel
- Mobility deficiency analysis for vehicle, transit, bicycle and pedestrian facilities (under Existing, Near-Term, and Cumulative Conditions)
- Summary of transportation improvements
- Other Technical Analysis discussion: LOS, Queueing, Signal Warrants, Traffic Share Analysis, Schools, Transit, Bicycles, Pedestrians, Trucks, Parking, Traffic Calming, Access Management, Sight Distance, Park & Ride, Compliance with Policies.

CEQA Transportation Analysis Report Section

7. VMT Analysis (For projects not meeting VMT screening criteria)

- Summary of project generated VMT under Baseline Conditions
- Summary of project's effect on VMT under Year 2040 Cumulative Conditions
- Identification of significant impacts
- Discussion of mitigation measures
- Evaluation of impacts of mitigation measures

8. Other CEQA Requirements

- Summary of conflicts with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadways, bicycle lanes, and pedestrian paths. Present mitigation measures, as needed.
- Evaluation of hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). Present mitigation measures, as needed.
- Emergency access evaluation. Present mitigation measures, as needed.

Local Transportation Analysis Report Section (Project Requiring Off-Site Analysis)

9. Existing with Project Conditions

- Maps of study area with applicable peak hour turning movements (Project Only and Existing with Project)
- Table of Existing and Existing with Project intersection peak hour average vehicle delay and LOS (or other multimodal performance measure)
- Traffic signal and other warrants
- Changes/Deficiencies to bike, pedestrian, and transit networks
- Findings of project deficiencies
- Improvements for project deficiencies (include a map showing physical improvements)
- Scheduling and implementation responsibility of improvements
- Deficiencies of proposed improvements

10. Baseline without Project Conditions

- Table of trip generation for approved project(s)
- Figure and/or table of approved projects trip distribution (in percent)
- Map of study area with applicable peak hour turning movements (Baseline without Project)
- Table of intersection peak hour average vehicle delay and LOS (or other multimodal performance measure)
- Changes/deficiencies to bike, pedestrian, and transit networks
- Traffic signal and other warrants

11. Baseline with Project Conditions

- Similar content to Existing with Project Conditions

12. Cumulative without and with Project Conditions

- Map of study area with Cumulative without Project peak hour turning movements
- Map of study area with Cumulative with Project peak hour turning movements
- Table of Cumulative without Project and Cumulative with Project intersection peak hour average vehicle delay and LOS (or other multimodal performance measure)
- Changes/Deficiencies to bike, pedestrian, and transit networks
- Traffic signal and other warrants
- Findings of project deficiencies
- Improvements for project deficiencies (include a map showing physical improvements)

- Scheduling and implementation responsibility of improvements
- Deficiencies of proposed improvements

As Needed Sections for Transportation Analysis Reports

13. Construction Deficiencies

- Trips due to construction workers
- Truck trips and truck access routes

14. Phasing Deficiencies (For Large Projects Only)

15. Appendices

- List of references
- List of authors
- Pedestrian, bicycle, and vehicle counts
- Technical calculations for all analyses

Attachment E: List of Transportation Projects Exempt from Environmental Analysis (CEQA)

The following complete list is provided in the OPR *Technical Advisory* (December 2018, Pages 20-21) for transportation projects that "would **not** likely lead to a substantial or measurable increase in vehicle travel, and therefore generally should not require an induced travel analysis:"

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

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

Attachment F: Internal Trip Considerations for Mixed-Use Projects

When trips occur between multiple land uses within the same mixed-use or multi-use development (MXD) without use of the adjacent roadway network (also known as internally-linked or internally-captured trips), there is typically a reduction in the number of trips entering/exiting the proposed MXD as one driveway trip can result in multiple trips between land uses within the development itself. Since trips between two or more land uses within the MXD can occur without use of the external street system, internally linked trips also reduce the amount of traffic the new development will add to the adjacent roadway.

Internal capture rates vary by the mix of land uses, the size of the land uses, the amount of potential interaction between complementary land uses, and the availability of convenient internal on-or off-street facilities and connections. Typically, MXD sites need to contain the necessary facilities and land uses to support a significant amount of interaction to justify that the development will capture some of the generated trips internally and thus allow the analyst to apply internal capture rates when estimating the development's trip generation potential.

MXD analysis may use either the Marin County Travel Demand Model (TAMDM), the US EPA Mixed-Use Trip Generation Model, the ITE *Trip Generation Handbook, 3rd Edition*, other comparable/relevant models or tools based on applicable travel data sources, and/or local data collected in Marin County to estimate internal trip capture and trip generation for mixed-use developments.

In evaluating a proposed internal capture rate, the analyst *should* consider the following general guidance:

- Sites having a mix of residential and nonresidential components have the highest potential for internal capture trips. Mixes of nonresidential land uses are less likely to have a significant internal capture rate unless there is a hotel or motel within the site.
- Residential and employment centers at the mixed-use development *should* be income compatible so residents have ample employment opportunities in the community.
- The design of the internal roadway system of the development as well as the pedestrian/bicycle facilities may affect the internal capture rate. A well-designed development with good internal connectivity can make it more convenient for trips to stay on the site.
- If there are nearby competing destinations, the analyst may need to adjust the internal capture rate.
- Internal capture rates are not applicable for the ITE land use code 820 (shopping centers) as the ITE trip rates for this land use already reflect the mixed-use nature of the shopping center. Therefore, the analyst *should not* use internal capture rates to forecast trips for this land use.
- Use the ITE land use code 750 (office park); rather than a MXD with internal capture rates, to estimate the trip generation potential for developments consisting of general office buildings and support services (e.g., banks, restaurants, gas stations) arranged in a park-or campus-like setting.

Likewise, use ITE land use code 710 (general office building) for office buildings with support retail or restaurant facilities contained within the same building.

- The analyst *should* not apply internal capture rates to hotels with an on-site restaurant or small retail, as the trip rates for ITE land use code 310 (hotel) already reflects the interaction of these land uses.
- The TIA preparer *should* calculate internal trip capture rates for each phase of a multi-use development. If, during the review process, the development plans change, the analyst *should* update all internal capture calculations and submit the TIA for additional review.

In absence of San Rafael-specific data, use the methodology outlined in Chapter 6 of the ITE *Trip Generation Handbook, 3rd Edition (or the latest edition)* to estimate internal trip capture and trip generation for mixed-use developments. A spreadsheet tool, which automates several of the calculations, is available for download from the ITE website. The analyst can also reference the *National Cooperative Highway Research Program (NCHRP) Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments*, which is the source for much of the ITE methodology, for additional details on the process for estimating the internal trip capture and trip generation of MXD sites.

The ITE process and spreadsheet tool described above enables the analyst to evaluate the morning and afternoon peak period internal capture rates at a MXD site with any combination of the following six land use categories:

- Office
- Retail
- Restaurant
- Residential
- Cinema/Entertainment
- Hotel

Refer to Chapter 6 of the ITE *Trip Generation Handbook, 3rd Edition (or the latest edition)* for suggested internal trip capture rates for each of the above land use pairs. Data on internal capture rates is currently only available for the six land use categories listed above for the morning and afternoon peak, thus the analyst *should not* apply the ITE internal capture rates and methodology to other land uses or time frames (e.g., weekend peak period, weekday midday peak period, daily period).

San Rafael encourages the analyst to make logical and supportable assumptions in the use of the ITE internal trip capture and mixed-use trip generation methodologies described above. After checking the results for reasonableness, the analyst *should* typically use the total estimated internal trip capture from the ITE spreadsheet estimation tool for estimating the trip generation potential of a proposed MXD site. Consult with City staff to determine a maximum acceptable value for internal capture rates. **City staff shall approve the use of all the internal trip capture rates greater than 10 percent of the total new trip generation for the development.**

Use the procedures described above only at those MXD sites that have characteristics that resemble the sites used to derive the internal capture rates. Per the ITE Trip Generation Handbook, 3rd Edition (or the latest edition), the TIA preparer and reviewer *should* consider the following factors when assessing the appropriateness of the procedure for a particular mixed-use development.

- "Development Type: The mixed-use development *should* be a single, physically and functionally integrated development on a single block or a group of contiguous blocks with two or more uses, with internal pedestrian and vehicular connectivity, and with shared parking among some or all uses. The site *should* have sufficient parking supply to meet demand although the most convenient parking may sometimes fill during peak demand periods.
- Development Location: The mixed-use development *should* be downtown fringe, general urban, or suburban. It *should* not be located either within or adjacent to a central business district (CBD). Trip Generation for a study site in a CBD setting is addressed in Chapter 7 of the ITE *Trip Generation Handbook, 3rd Edition (or the latest edition)*.
- Development Size: The mixed-use development *should* have between 100,000 and 2 million sq. ft. of building space within an overall acreage of up to roughly 300 acres. The mixed-use development can be a single site, a block, or a district or neighborhood (with multiple interconnected or interactive blocks within a defined boundary); however, this procedure *should* not be used for a development composed of different adjacent, but not directly connected, land uses. Adjacent blocks can be considered to be directly connected if there is an internal street, driveway, alley system, or pedestrian way by which person trips can be made to travel from one block to another. If the development site has multiple land uses but blocks are configured in such a way that these trips must use an external street system, then the site is not a mixed-use development.
- Land Use Mix: The mixed-use development *should* consist of a combination of at least two of the following uses: retail, restaurant, office, residential, hotel, and cinema/entertainment. Internal capture for land uses beyond these six *should* be considered to be zero (unless comparable

survey data for other land uses are provided) because there are no supporting data from which to derive an appropriate percentage. In addition, if a substantial portion of the land use at a mixed-use site is outside these six land uses, the ITE *Trip Generation Handbook* internal capture rates might not be appropriate. Alternatively, the analyst can collect internal capture data at proxy sites in the same area with similar land use and setting characteristics.

- ITE *Trip Generation Manual* Database: The mixed-use development *should* not already be covered in the ITE trip generation database as reported in the latest edition of the *Trip Generation Manual* or any supplements that have been released. Current ITE land use types that already account for internal trip-making include shopping center, office park with retail, office building with ground floor retail or on-site cafeteria, and hotel with limited retail and restaurant space.
- Time Period for Analysis: The internal capture rates contained in the latest version of the ITE *Trip Generation Handbook* methodology cover the weekday AM and PM peak periods for adjacent street traffic. Internal capture rates for weekend peak periods, for weekday midday peak periods, or for a daily period *should* not be assumed to be the same as or even a simple, direct function of the weekday AM and PM peak period rates. For an application that requires internal capture information outside the weekday AM and PM peak periods, the analyst *should* collect additional data."

All linked trip assumptions are subject to City staff approval and *should* be determined during the initial review process. It is important to note that linked trips refer to the internal capture of trips within a multi-use development site and *should* not be confused with diverted linked trips. Diverted linked trips refer to the number of trips attracted from the existing traffic on roadways within the vicinity of the generator but require a diversion from that roadway to another roadway to gain access to the site.