Transportation Analysis Guidelines

1.0 Background

The previous version of the Sacramento County Traffic Impact Analysis Guidelines have been in use since 2004. The impetus to develop these revised guidelines is primarily related to the passage of Senate Bill 743 (SB 743) in the fall of 2013. This legislation led to a change in the way that transportation impacts are measured under the California Environmental Quality Act (CEQA). Starting on July 1, 2020, automobile delay and level of service (LOS) may no longer be used as the performance measure to determine the transportation impacts of land development projects under CEQA. Instead, an alternative metric that supports the goals of the SB 743 legislation will be required. Although there is no requirement to use any particular metric, the use of vehicle miles traveled (VMT) has been recommended by the Governor's Office of Planning and Research (OPR). This requirement does not modify the discretion lead agencies have to develop their own methodologies or guidelines, or to analyze impacts to other components of the transportation system, such as walking, bicycling, transit, and safety. SB 743 also applies to transportation projects, although agencies were given flexibility in the determination of the performance measure for these types of projects.

The intent of SB 743 is to bring CEQA transportation analyses into closer alignment with other statewide policies regarding greenhouse gases, complete streets, and smart growth. Using VMT as a performance measure instead of LOS is intended to discourage suburban sprawl, reduce greenhouse gas emissions, and encourage the development of smart growth, complete streets, and multimodal transportation networks.

Sacramento County would like to thank SACOG, its consulting team VRPA Technologies and Fehr & Peers, and other members of the local agency working group (LAWG) for technical input and regional coordination. The County would also like to acknowledge the work done by the Institute of Transportation Engineers, San Diego Section, Transportation Capacity and Mobility Task Force, SB 743 Subcommittee, and the Cities of San Jose, San Diego, and Rancho Cordova. Portions of this document were adapted from recommendations in San Diego ITE's technical paper "Guidelines for Transportation Impact Studies in the San Diego Region," the City of San Jose "Transportation Analysis Handbook," the City of San Diego "Transportation Study Manual (TSM)," and the City of Rancho Cordova "Transportation Impact Guidelines."

2.0 Purpose of Guidelines

The guidelines described in this document were prepared to provide methodologies for transportation engineers and planners to conduct CEQA transportation analyses for land development and transportation projects in compliance with SB 743. Lead agencies may opt-in to using VMT at any time but will be required to use it for analysis of transportation impacts of land development projects starting July 1, 2020. In addition, methodologies are provided to evaluate automobile delay and LOS outside of the CEQA process. Although no longer incorporated in CEQA (starting July 1, 2020), automobile delay and LOS continue to be of

interest to transportation engineers and planners who plan, design, operate, and maintain the roadway system. In addition, delay experienced due to traffic congestion is a concern to drivers and passengers of vehicles using the roadway system.

Given the need to prepare VMT-based CEQA transportation impact analyses to satisfy the requirements of SB 743, as well as the need to evaluate the performance of the roadway system to comply with policies in the General Plan Circulation Element, these guidelines are divided into separate parts. Part I is focused on CEQA transportation impact analyses, while Part II is focused on the more traditional LOS-based transportation analyses, called local transportation analysis (LTA) for the purpose of these guidelines. LTA includes evaluation of any multimodal transportation improvements (transit, bicycle, pedestrian) that are recommended to support a land development project, but may or may not be required as mitigation measures for a project's significant VMT impacts. An overview of the Transportation Analysis Process is shown in **Figure 2-1**. Background information for each part is provided below with more detail included in the sections that follow.

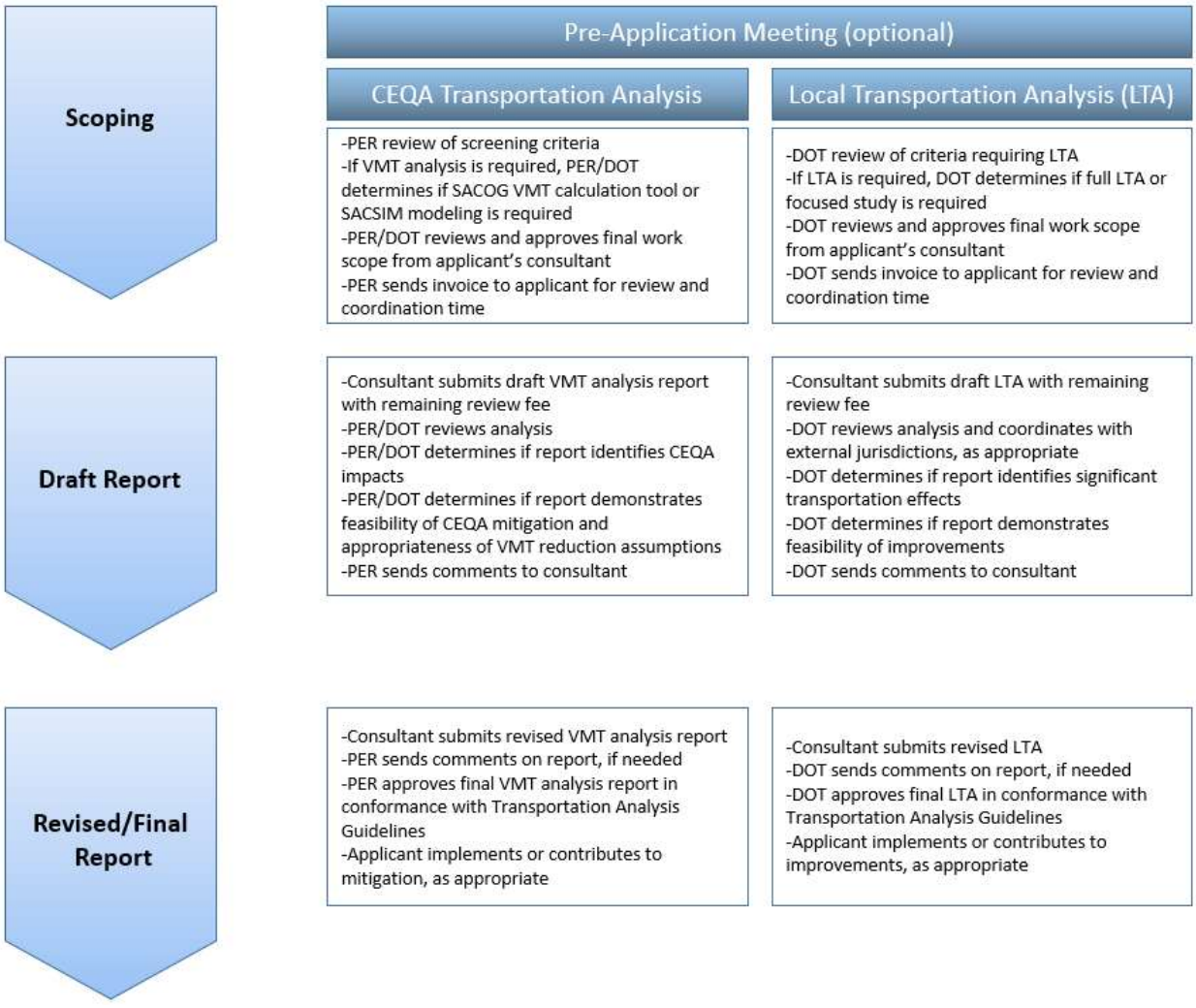


Figure 2-1: Transportation Analysis Process Overview

CEQA Transportation Impact Analysis

The SB 743 legislation specified that the Governor's Office of Planning and Research (OPR) prepare guidelines for the implementation of SB 743. During the period from the passage of SB 743 in 2013 to the fall of 2018, OPR prepared various sets of guidelines and sought public comments from stakeholders. At the time of preparation of these transportation impact study guidelines, guidance regarding the changes to CEQA initiated by SB 743 were contained in the following documents:

- CEQA Guidelines Revisions: Revisions to the CEQA Guidelines were adopted into CEQA in December 2018 through a formal process conducted by the Natural Resources Agency. Additional changes can only be made through a future CEQA update process.
- Technical Advisory on Evaluating Transportation Impacts in CEQA (Technical Advisory): The technical advisory provides recommendations for the preparation of transportation impact analyses under SB 743. It is not formally included in CEQA and can be revised by OPR at any time without going through a formal process. Updated versions of the technical advisory are expected to be issued by OPR as new information becomes available and as California agencies gain experience in applying SB 743 to actual projects. As of the time of preparation of these transportation impact study guidelines, the current version of the technical advisory was dated December 2018.

In addition to the differences described above, the CEQA Guidelines revisions and the technical advisory also differ in the extent to which they must be followed by local agencies. The CEQA Guidelines revisions are rules that must be followed in order to prepare an adequate CEQA document. In contrast, the technical advisory provides statewide guidance based on evidence collected by OPR that can be refined or modified by local agencies with appropriate justification and substantial evidence. (Refer to CEQA Guidelines Section 15384 for a definition of substantial evidence). As an example, the CEQA Guidelines revisions specify that a land development project's effect on automobile delay does not cause a significant environmental impact. The use of VMT is suggested as a performance metric, but there is no indication of what level of VMT increase would cause a significant environmental impact. The technical advisory suggests various thresholds for the significance of VMT impacts but does not require the use of a particular threshold. Therefore, lead agencies would be prohibited from using automobile delay to determine significant transportation impacts and would be required to use VMT instead. Lead agencies have discretion to select their preferred significance thresholds and could choose to use the thresholds suggested in the technical advisory or develop alternative thresholds. Either decision should be supported by substantial evidence that considers the legislative intent objectives of SB 743 and the specific direction the statute provides regarding setting thresholds (per the excerpts below):

> SB 743 Statute - Legislative Intent – Senate Bill No. 743, Section (b)(2)
> *More appropriately balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions.*

> SB 743 Statute – Section 21099(b)(1)
> *Those criteria shall promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses.*

Regardless of the changes described above, SB 743 is clear in its intent that CEQA documents continue to address noise, air quality, and safety (per the excerpt below):

> SB 743 Statute – Section 21099(b)(3)
> *This subdivision does not relieve a public agency of the requirement to analyze a project's potentially significant transportation impacts related to air quality, noise, safety, or any other impact associated with transportation. The methodology established by these guidelines shall not create a presumption that a project will not result in significant impacts related to air quality, noise, safety, or any other impact associated with transportation.*

Although State CEQA Guidelines section 15064.3 states that generally vehicle miles traveled is the most appropriate measure of transportation impacts, other relevant considerations may include the project's impact on transit and non-motorized travel. A complete environmental review will generally consider how projects effect VMT in addition to effects on walking, bicycling, transit, and safety.

The CEQA transportation impact analysis described in these transportation impact study guidelines is based on the technical advisory prepared by OPR, but refinements and clarifications have been added to reflect local conditions. For any subsequent revisions of the SB 743 technical advisory prepared by OPR, it would need to be determined whether the new information would suggest a change in the methodologies for conducting CEQA transportation impact studies in Sacramento County's jurisdiction.

Local Transportation Analysis (LTA)

Localized traffic congestion remains a concern to transportation engineers and planners, as well as the traveling public. Policies in the General Plan Circulation Element require that land development and transportation projects evaluate and mitigate adverse impacts to local and regional roadways. The LTA would provide that analysis, as well as evaluate the need for multimodal improvements in cases where there is the potential for the project to cause a substantial worsening of conditions for multimodal travel. Since any increases in traffic congestion or vehicular delay would not constitute a significant environmental impact, the local transportation analysis would be included in Conditions of Approval rather than as Mitigation Measures under CEQA. The purposes of the local transportation analysis may include, but are not limited to the following:

- Recommendations for any roadway improvements that should be built/implemented by the project (or should be built/implemented by the project in coordination with other nearby land development projects) based on the project's expected effect on vehicular delay and LOS.

- Recommendations for any multimodal transportation improvements (transit, bicycle, pedestrian) that should be built/implemented by the project (or should be built/implemented by the project in coordination with other nearby land development projects). Recommended multimodal transportation improvements may be required as mitigation measures for transportation impacts related to VMT increases, or they may be recommended for other reasons.
- Ensure compliance with various General Plan Circulation Element Policies, including:
    - CI-7: *Plan and construct transportation facilities as delineated on the Transportation Plan of the Sacramento County General Plan…*
    - CI-8: *Maintain and rehabilitate the roadway system to maximize safety, mobility, and cost efficiency.*
    - CI-9: *Plan and design the roadway system in a manner that meets Level of Service (LOS) D on rural roadways and LOS E on urban roadways…*
    - CI-10: *Land development projects shall be responsible to mitigate the project's adverse impacts to local and regional roadways.*
    - CI-11: *To preserve public mobility, freeways and thoroughfares should have limited access and maintain functional characteristics that predominantly accommodate through traffic.*
    - CI-12: *To preserve public safety and local quality of life on collector and local roadways, land development projects shall incorporate appropriate treatments of the Neighborhood Traffic Management Program.*
    - CI-13: *Collaborate with regional transportation planning agencies and neighboring jurisdictions to provide cross jurisdictional mobility.*
    - CI-19: *Collaborate with transit service providers to provide transit services within the County that are responsive to existing and future transit demand.*
    - CI-32: *Develop a comprehensive, safe, convenient and accessible bicycle and pedestrian system that serves and connects the County's employment, commercial, recreational, educational, social services, housing and other transportation modes.*
    - CI-35: *The applicant/developer of land development projects shall be responsible to install bicycle and pedestrian facilities in accordance with Sacramento County Improvement Standards and may be responsible to participate in the fair share funding of regional multi-use trails identified in the Sacramento County Bicycle Master Plan.*
    - CI-39: *Plan and implement intelligent transportation system (ITS) strategies within the County's high-demand travel corridors and support efforts to deploy ITS strategies on a regional level.*
    - CI-40: *Whenever possible, the applicant/developer of new and infill development projects shall be conditioned to fund, implement, operate and/or participate in TSM programs to manage travel demand associated with the project.*
    - CI-43: *The County shall promote transit-supportive programs in new development, including employer-based trip-reduction programs (employer incentives to use transit or nonmotorized modes), "guaranteed ride home" for commute trips, and car-share or bikeshare programs.*

The roadway and multimodal analysis methodologies recommended for conducting local transportation analysis, as detailed in Part II of these guidelines, are based on the previous traffic impact study guidelines, with changes to reflect evolution in the practice that has occurred since 2004. Users of these guidelines should note that transportation analysis advances occur each year. Further, new data vendors and new mobility options continue to evolve. As such, the recommended methodologies in this document may require ongoing updates and refinements.

Part I – CEQA Transportation Impact Analysis (VMT)

3.0 Individual Land Development Projects

The recommended methodology for conducting a VMT analysis is based on guidance prepared by the California Governor's Office of Planning and Research (OPR) as provided in the published Technical Advisory on Evaluating Transportation Impacts in CEQA. At the time of writing of these guidelines, the current version of OPR's technical advisory was dated December 2018. The guidance recommended by OPR has been modified to be better suited to local conditions in the Sacramento region. These modifications are noted in the details described later in this section.

The process for determining appropriate methodology to be used for conducting a VMT analysis for individual land development projects and specific plans is shown in **Figure 3-1**. The remainder of this section of the guidelines is divided into individual components that describe different aspects of the methodology. Other methodologies for VMT analysis could be considered at the discretion of the lead agency. However, it is recommended that any VMT methodologies within a particular analysis use consistent methodologies and that VMT analysis consider the differences between trip-based VMT analysis methodologies and tour-based VMT methodologies, as described in OPR's technical advisory. SACOG's regional travel demand model, SACSIM, is an activity-based tour model.

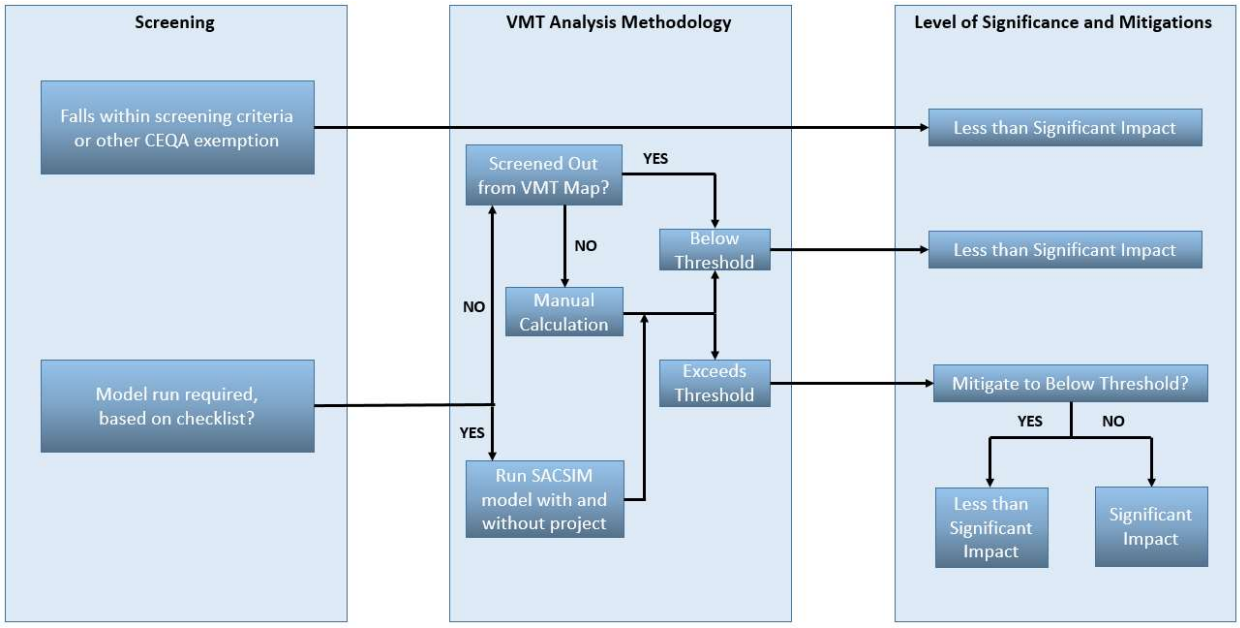


Figure 3-1: VMT Analysis for Individual Land Development Projects

A. Projects Exempt for Non-VMT Reasons

There are some non-VMT related CEQA principles that can be applied to certain projects to eliminate the need for VMT analysis. These include the following:

- The project is exempt from CEQA.
- The decision required for the project is not discretionary.
- The project was already analyzed in a prior certified EIR.
- The County's discretionary approval does not involve transportation issues, such as design review.

The County will consider whether a project meets these or other non-VMT CEQA principles on a case-by-case basis.

B. Screening Criteria

A detailed CEQA transportation analysis would not be required if a project meets the County's screening criteria. **Table 3-1** presents the screening criteria for projects that are expected to result in less-than-significant VMT impacts based on project description, characteristics, and/or location. If a component of a mixed-use project meets these screening criteria, only the component, not the entire project, would be screened from CEQA transportation analysis.

Table 3-1
Screening Criteria for CEQA Transportation Analysis for Development Projects

Type	Screening Criteria
1. Small Projects	• Projects generating less than 237 average daily traffic (ADT)
2. Local-Serving Retail[1]	• 125,000 square feet of total gross floor area or less in an infill setting; OR 200,000 square feet of total gross floor area or less in a greenfield setting; OR if supported by a market study with a capture area of 3 miles or less; AND • Local Serving: Project does not have regional-serving uses, as shown in Appendix A.
3. Local-Serving Public Facilities/Services	• Day care center • Public K-12 schools • Neighborhood park (developed or undeveloped) • Community center • Post offices • Police and fire facilities • Libraries • Government offices (primarily serving customers in-person) • Utility, communications, and similar facilities • Water sanitation, waste management, and similar facilities

4. Projects in VMT-Efficient Areas	• Residential Located in a VMT Efficient Area: Based on an approved screening map. • Office/Business Professional Employment Project Located in a VMT Efficient Area: Based on an approved screening map. • Industrial Employment Project Located in a VMT Efficient Area: Based on an approved screening map.
5. Projects Near Transit Stations	• High-Quality Transit: Located within ½ a mile of an existing major transit stop[2] or an existing stop along a high-quality transit corridor[3]; AND • Minimum Gross Floor Area Ratio (FAR) of 0.75 for office projects or components; AND • Parking: Does not include substantially more parking than required[4], such that it discourages transit use by making it too convenient to drive; AND • Affordable Housing: Does not replace affordable residential units with a smaller number of moderate- or high-income residential units; AND • Active Transportation: Project does not negatively impact transit, bike or pedestrian infrastructure.
6. Affordable Residential Projects	• Affordability: Screening criteria only apply to the affordable units; AND • Parking: Does not include substantially more parking than required[4], such that it discourages transit use by making it too convenient to drive; AND • Transit Access: Project has access to transit within a ½ mile walking distance; AND • Active Transportation: Project does not negatively impact transit, bike or pedestrian infrastructure.

[1] See Appendix A for land use types considered to be retail.
[2] Defined in the Pub. Resources Code § 21064.3 ("Major transit stop' means a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods").
[3] Defined in the Pub. Resources Code § 21155 ("For purposes of this section, a high-quality transit corridor means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours").
[4] Sacramento County Zoning Code Chapter 5: Development Standards

1. Small Projects

Projects that are too small to have any appreciable impact on VMT generation are screened out from analysis. The approach to developing minimum project size for analysis is based on guidance provided by SACOG, considering CEQA exemptions for small projects and information on VMT generation for the SACOG region from the 2012 California Household Travel Survey (CHTS). Minimum project size for VMT analysis is based on a maximum generation of 237 ADT/day, using the reasoning described below:

- OPR estimates that non-residential uses could generate 110-124 daily trips based on a project exemption size of 10,000 square feet.
- Using the lower end of this range to be conservative and the CHTS average trip length for office in the SACOG region (7.9 miles) results in a VMT generation of 869 VMT/day.
- A VMT of 869/day equates to approximately 20 single-family residential units based on a value of 42.9 VMT/household in the CHTS for the SACOG region.
- Based on the ITE Trip Generation Manual (10th Edition), 20 single-family homes would generate 237 daily trips, using the fitted curve methodology.

For informational purposes, this corresponds to the following equivalent single-uses, using current (10th Edition) ITE Trip Generation rates:

- Single-family detached housing of 20 units or less;
- Single-family attached or multi-family housing of 36 units or less;
- General office of 21,000 square feet of gross floor area or less
- General light industrial of 47,000 square feet of gross floor area or less

The above list are presented as examples. The ADT should be calculated using the ITE land use code(s) applicable to the project. Mixed-use projects should consider the combined trip generation of all components that are not screened out through another criteria (e.g. affordable housing).

2. Local-Serving Retail

The OPR Technical Advisory provides that "because new retail development typically redistributes shopping trips rather than creating new trips, estimating the total change in VMT (i.e., the difference in total VMT in the area affected with and without the project) is the best way to analyze a retail project's transportation impacts." Local serving retail generally shortens trips as longer trips from regional retail (or from neighborhood retail centers that are further away) are redistributed to the new local retail.

The International Council of Shopping Centers (ICSC) conducts research on shopping centers and classifies centers based on its characteristics. They describe a "neighborhood center" as having between 30,000 to 125,000 square feet of gross floor area with a market area of 3 miles. Thus, new shopping centers with 125,000 square feet or less should be considered local-serving.

The County's growth areas are very different than infill areas on how retail development will impact VMT. Infill areas are currently served by retail that is close to residential development, while the growth areas are currently largely residential and under-served by retail uses.

Based on the County's General Plan and adopted specific plans, a substantial amount of residential development is anticipated to occur in growth areas. While adequate land is zoned in growth areas for retail uses, its development will continue to lag behind residential uses in growth areas. Thus retail development in growth areas must be encouraged to limit growth in VMT per Capita for residential uses. While shopping centers greater 125,000 square feet in infill areas may be considered as regional centers, somewhat larger neighborhood centers (up to 200,000 square feet) can be allowed in growth areas without significant increases to overall VMT, if they do not include regional uses, such as entertainment venues. A retail project may also be defined as local-serving if a market area study makes such a finding, based on the size of its market area.

The presumption of being local-serving would not apply to a shopping center of any size with any of the following characteristics of regional retail:

- Greater than 125,000 square feet GFA in an infill area or greater than 200,000 square feet GFA in a growth area, unless otherwise shown to be local-serving based on a market area of 3 miles.
- Contains development with regional retail uses, based on Appendix A.
- Expansion of existing regional retail cannot be considered to be local-serving, even if less than the applicable size threshold.

3. Local-Serving Public Facilities and Services

Local-serving public facilities, services, and recreation are located within established communities and serve local needs. These include day care centers, K-12 public schools, libraries, neighborhood parks (developed or undeveloped), community centers, post offices, fire/police stations, libraries, utility and communication facilities, water sanitation and waste management facilities, etc. These services improve people's proximity to recreational, civic, and other necessary community needs. If a public facility or service is determined to be local-serving, the project would not require a detailed CEQA transportation analysis.

Public facilities, services, and recreation that are ***regional*** in nature are listed in Appendix A and typically require a CEQA transportation analysis to determine their effects on regional VMT, as described in Section F (Regional (Non-Locally Serving) Retail or Public Facilities/Services Projects or Components).

4. Projects in VMT-Efficient Areas

The following projects can be screened out, based on VMT analysis that has already been performed to develop screening maps:

- Residential Located in a VMT Efficient Area: The project is a residential project located in a "VMT efficient area" (in an area with 15% or more below the base year regional average household VMT/capita) based on an approved, location-based screening map using the SACSIM19 regional model.
- Office/Business Professional Employment Project Located in a VMT Efficient Area: The project is an office/business professional employment project located in a "VMT efficient area" (15% or more below the base year regional average VMT/employee) based on an approved, location-based screening map using the SACSIM19 regional model.
- Industrial Employment Project Located in a VMT Efficient Area: The project is an industrial project located in "VMT efficient area" (at or below the base year regional average VMT/employee) based on an approved, location-based screening map using the SACSIM19 regional model.

5. Projects Located Near Transit Stations

OPR's technical advisory contains the following guidance regarding projects located near transit stations:

Proposed CEQA Guideline Section 15064.3, subdivision (b)(1), states that lead agencies generally should presume that certain projects (including residential, retail, and office projects, as well as projects that are a mix of these uses) proposed within ½ mile of an existing major transit stop or an existing stop along a high quality transit corridor will have a less-than-significant impact on VMT. This presumption would not apply, however, if project-specific or location-specific information indicates that the project will still generate significant levels of VMT.

An existing major transit stop is defined 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."

For the purposes of these guidelines, the distance between the project site and the transit station should be based on direct walking distance without missing sidewalks or physical barriers.

Typically, a major transit stop would be considered to be applicable for cumulative analysis purposes if the future transit service/stop is included in the MTP/SCS.

6. Affordable Residential Projects

The project must have access to transit within a 1/2 mile walking distance. The project must wholly or have a portion that meets one of the following criteria: is affordable to persons with a household income equal to or less than 50% of the area median income (as defined by California Health and Safety Code Section 50093), housing for senior citizens, housing for transitional foster youth, disabled veterans, or homeless persons. The project shall provide no more than the minimum amount of parking per unit, per the Sacramento County Zoning Code. Only the portion of the

project that meets the above criteria is screened out. For example, if the project is 100 units with 10 affordable housing units, transportation VMT analysis would not be necessary for the 10 affordable units but would be necessary for the remaining 90 units (unless they meet one of the other screening criteria). For purposes of applying the small project screening criteria, the applicant would only include the trip generation for the non-affordable housing portion of the project (since the affordable housing portion is screened out).

OPR's technical advisory contains the following guidance regarding affordable residential development projects:

Adding affordable housing to infill locations generally improves jobs-housing match, in turn shortening commutes and reducing VMT. Further, low-wage workers in particular would be more likely to choose a residential location close to their workplace, if one is available. In areas where existing jobs housing match is closer to optimal, low income housing nevertheless generates less VMT than market-rate housing. Therefore, a project consisting of a high percentage of affordable housing may be a basis for the lead agency to find a less-than-significant impact on VMT. Evidence supports a presumption of less than significant impact for a 100 percent affordable residential development (or the residential component of a mixed-use development) in infill locations. Lead agencies may develop their own presumption of less than significant impact for residential projects (or residential portions of mixed use projects) containing a particular amount of affordable housing, based on local circumstances and evidence. Furthermore, a project which includes any affordable residential units may factor the effect of the affordability on VMT into the assessment of VMT generated by those units.

Affordable residential projects generate fewer trips than market rate residential projects[1]. The Sacramento County Zoning Code allows parking reductions for affordable housing. This supports the assumption that the rate of vehicle ownership is expected to be less for persons that qualify for affordable housing. Additionally, senior citizens, transitional foster youth, disabled veterans, and homeless individuals also have low vehicle ownership rates.

1 Newmark and Hass, "Income, Location Efficiency, and VMT: Affordable Housing as a Climate Strategy", The California Housing Partnership (2015).

C. Residential Projects or Components

Definition

Residential projects include all single-family and multi-family developments, mobile homes, retirement/senior housing, and congregate care facilities.

Metric

VMT per Capita is the metric used to evaluate residential projects. Additional guidance for estimating this metric is provided in Sections G (VMT Metrics) and Section H (Methods for Estimating VMT).

Significance Threshold

The project's VMT per capita is compared to the regional average of 17.6 VMT per capita. The target is to achieve a project VMT per capita that is 85% or less of the regional average, i.e. less than or equal to **15.0 VMT per capita**.

Other Considerations

It should be noted that OPR's technical advisory includes special considerations for projects near transit stations and affordable housing, and these considerations are recommended for use in Sacramento County. Infill locations have better than average access to transit and/or greater opportunities for walking and bicycling trips. Restricted affordable housing units typically generate fewer vehicle trips than non-restricted units. Qualified residential developments of both types can be presumed to have a less than significant VMT impact.

D. Office/Business Professional Employment Projects or Components

Definition

Office/Business Professional employment primarily applies to office and business professional uses that are not classified as retail, industrial, or related to public facilities/services. Some examples include general office and medical/dental/optical laboratories.

Metric

VMT per employee is the metric used to evaluate office/business professional employment projects or components. Additional guidance for estimating this metric is provided in Sections G (VMT Metrics) and Section H (Methods for Estimating VMT).

Significance Threshold

The project's VMT per employee is compared to the regional average of 16.4 VMT per employee. The target is to achieve a project VMT per capita that is 85% or less of the regional average, i.e. less than or equal to **13.9 VMT per employee**.

E. Industrial Employment Projects or Components

Definition

Industrial projects generally have a low employment density (higher square feet per employee) than office/business professional uses. Examples of industrial employment include agriculture, extractive uses, manufacturing and processing, storage and warehousing, and freight depots and terminals.

Metric

VMT per employee is the metric used to evaluate industrial employment projects or components. Additional guidance for estimating this metric is provided in Sections G (VMT Metrics) and Section H (Methods for Estimating VMT).

Significance Threshold

The project's VMT per employee is compared to the regional average of 16.4 VMT per employee. The target is to achieve a project VMT per capita that is equal to or less than the regional average, i.e. less than or equal to **16.4 VMT per employee**.

Justification

The OPR Technical Advisory provides that "of land use projects, residential, office, and retail projects tend to have the greatest influence on VMT. For that reason, OPR recommends the quantified thresholds described above for purposes of analysis and mitigation. Lead agencies, using more location-specific information, may develop their own more specific thresholds, which may include other land use types." Industrial uses are desired to be located in locations that are less dense and not within urban areas which typically have higher VMT per employee. Industrial land uses are land intensive; therefore, placing industrial land uses in less urban areas characterized by having higher VMT per employee allows land in efficient VMT areas to be more effectively utilized as high density residential and commercial or office/business professional uses. This threshold is consistent with achieving an overall reduction in regional VMT, as it recognizes that industrial uses, which are relatively lower total VMT generating uses, are most appropriate in areas that have a lower potential to reduce VMT because it results in more available land within areas with a high potential to achieve VMT reductions available for more dense development.

F. Regional (Non-Locally Serving) Retail or Public Facilities/Services Projects or Components

Definition

Regional retail is that which is not local-serving based on size or market capture area, which may result in higher VMT. Some examples of regional retail uses may include:

- Wineries/Breweries
- Golf courses
- Shopping malls
- Entertainment venues

Similarly, regional public facilities, services, and recreation typically draws from a larger area, potentially resulting in higher VMT. Some examples of regional public facilities, services, and recreation uses may include:

- Private K-12 schools
- Community colleges (public or private)
- Universities (public or private)
- Places of Worship
- Private Social Center, Social Club, Fraternal Hall/Lodge
- Nightclub, Dance Club or Hall
- Theaters and Performing Arts Centers
- Event Center/Reception Hall
- Hospitals
- Hotels/Motels/Resorts
- Campgrounds
- Recreation Vehicle Park, Travel Trailer Park
- Marina, Boat Dock/Launch
- Regional park (developed or undeveloped)
- Cemetery
- Most commercial recreation facilities

The above list is provided for illustrative purposes. Project and expected VMT characteristics will be used to determine whether a retail development, public facility, service, or recreational development is local-serving or regional.

Significance Threshold

When assessing a regional retail or public facilities, services, or recreation project, the project's significance threshold is zero increase in total regional VMT.

G. VMT Metrics

1. Regional Change in VMT

The SACSIM model should be run without and with the project. The total VMT for the region is calculated for each model run. The difference between the two scenarios is the net change in total VMT that is attributable to the project. Alternate methods of calculating VMT change may be proposed by the applicant, subject to review and approval by the Department of Transportation and Planning and Environmental Review.

2. VMT Per Capita

VMT per Capita is used to evaluate residential projects. It includes all vehicle "tours" (both work/commute vehicle tours and non-work vehicle tours) that start and end at residential units.

The VMT from these tours are grouped and summed to the home location of those tours. The VMT for each home is then summed for all homes in a particular area and divided by the total population of that area to arrive at VMT per Capita.

SACSIM19 is a "tour-based" travel demand model. The vehicle tours estimated by SACSIM19 that begin and end at home include intermediate stops. For example, a work/commute vehicle tour could include stops on the way to work to drop a child at school and get coffee and a stop on the way home to go to a gym or get groceries. A non-work vehicle tour that begins and ends a home can also include more than one stop. The VMT from these tours must include the full mileage of the entire round-trip tour including all stops based on the SACSIM19 model – both for Method 1 or Method 2, as described in Section H (Methods for Estimating VMT).

Tours made by a household resident that do not begin or end at home (called "business tours") are not included in the VMT per Capita estimates. Such tours that begin and end at a work site can include trips for lunch or personal business but also job-related tours, such as deliveries, business meetings etc. These "business tours" are not included for the following reasons:

- The amount of business tours made by individuals can vary more based on their job type then their residential location. In the regional model, the number and length of those tours can vary greatly.
- Including business tours would require that all projects, including small to medium size residential projects, be evaluated using SACSIM19. Excluding business tours from VMT per Capita allows use of Method 2, as described in Section H (Methods for Estimating VMT). Such methods can involve use of typical ITE-based trip generation estimates (adjusted for relevant factors) along with full tour lengths from SACSIM19 that can be provided by traffic analysis zone (TAZ).
- The trip generation aspect of the selected method is equivalent to use of only "home-based trips," which is recommended by the OPR Technical Advisory when the regional model is "trip-based". However, by using the full length of home-based tours from SACSIM19, the selected method provides a more accurate estimate of VMT.

3. VMT Per Employee

VMT per Employee is used to evaluate office/business professional and industrial employment projects. It includes all work/commute vehicle tours that start and end at employment location ("parcels" in SACSIM19). The VMT from these tours are grouped and summed to the employment location of those tours. The VMT for each employment location is then summed for all employment locations in a particular area and divided by the total employment of that area to arrive at VMT per Employee.

As described under VMT per Capita, the work/commute vehicle tours estimated by SACSIM19 include intermediate stops. The VMT from these tours must include the full mileage of the entire round-trip work/commute tour including all stops based on the SACSIM19 model – both for Method 1 or Method 2, as described in Section H (Methods for Estimating VMT).

The selected method is equivalent to the use of only "home-based work trips," which is recommended by the OPR Technical Advisory when the regional model is trip-based is used to estimate VMT per Employee for an office project.

H. Methods for Estimating VMT

SACSIM19 is an "activity-based" model that simulates people's activities on a "typical" weekday and it tracks travel of individuals throughout the day in trip "tours." It allocates household and employment to the parcel level, which allows the model to capture smaller-scale land use changes and differences. SACSIM19 is sensitive to the local physical environment, including the presence (or absence) of pedestrian and bicycle facilities, the patterns of local street networks (e.g., grid vs. cul-de-sacs), and the density, proximity and mix of surrounding land uses (i.e. employment destinations, schools, retail, parks, etc.). SACSIM forecasts automobile, transit, bicycle, and walk trips. SACSIM19 requires a detailed definition of household population/demographics and employment by type at a parcel-level of geography.

As part of the "SB 743 Implementation Tools Project," SACOG has two recommended methods for project-level VMT estimation:

- **Method 1**: Use of a "regional" transportation model, either by running the model directly to estimate VMT with and without the project (for large projects) or through use of screening methodologies (for small projects). The transportation model used for VMT estimation could either be the SACOG regional model (SACSIM19) or one of the many variants of the regional model developed by local agencies to provide more detailed analysis within their jurisdictions. If one of the local models is used, it should be sufficiently documented and maintained. Any edits to the model's network must be fully described and should only be made at the project site to 1) ensure that site access for the proposed project is properly represented in the model and 2) any changes in roadways, bikeways or transit networks that are part the proposed project are reflected.
- **Method 2**: Use of a customized spreadsheet or web-based tool for a specific study area or jurisdiction that uses information from a regional transportation model to provide VMT analysis

For land development projects in the County, the following methods should be used:

- Method 1 above (use of a regional travel demand model) should be used for all "large" projects or other projects that meet any of the checklist criteria outlined in **Table 3-2**. For the purposes of the selection of methods for VMT analysis, the County has defined "large" projects as those that generate more than 3,500 daily trip ends, which is equivalent to about 350 single family dwelling units or about 300,000 square feet of office. The County has determined that this level of development is reasonable for requiring use of a regional travel demand model.

- Method 1 or Method 2 (use of a customized spreadsheet or web-based tool) can be used for the analysis of projects that do not exceed the criteria in Table 4.

Table 3-2
Checklist to Determine When Running a Travel Demand Model is Necessary for VMT Analysis

Check if Applicable	Project Characteristic
	1. Project Type: Projects requiring a calculation of net change in VMT (e.g.; regional retail and public facilities/services) generally need to be modeled to account for redistribution.
	2. Large Projects: Projects that generate more than 3,500 daily trip ends.
	3. Multiple TAZs: Projects spanning multiple TAZs generally require project-specific modeling, unless VMT efficiency metrics are below the significance threshold in all TAZs.
	4. Insufficient Model Information: Base year trip length information from the travel demand model is not available for the project (or nearby representative) TAZ. This may be the case in greenfield areas.
	5. Plan Areas: General Plans and Community Plans.
	6. Unusual Project Characteristics: For example, projects that have longer or shorter trip lengths than a typical project of its type, or projects that affect the trip-making behavior of the surrounding area such that VMT increases would result for nearby land uses.
	7. Significant Roadway Component: Project includes land use and non-locally serving roadways that are not part of the General Plan or a Community Plan.
	8. Transit Interactions: Project is evaluating new transit service or may significantly increase demand on existing service.

In addition to the criteria noted in Table 3-2, the project applicant may always elect to perform project-specific modeling. For example, projects with a mixture of land use types may benefit from modeling that more accurately captures internal and multimodal trips. The Department of Transportation reserves the right to require project-specific modeling at its discretion. This may be required to ensure consistency with modeling performed for an LTA, likelihood of the project affecting regional travel patterns, or any other circumstances requiring project-specific modeling.

1. Method 1 – Project-Specific SACSIM Model Run

Method 1 may be required based on a checklist, but is always allowable. Method 1 involves the following basic steps:

- Input all project land uses into the base year version of the latest SACSIM model.
- Any edits to the model's network must be fully described and should only be made at the project site to 1) ensure that site access for the proposed project is properly represented in the model and 2) any changes in roadways, bikeways or transit networks that are part the proposed project are reflected.

- SACSIM19 requires that "buffers" be estimated for each parcel. Buffers identify the mix of land uses and transit stops that are near that parcel. Due to the change in land use caused by the project, the base year buffers need to be re-estimated for parcels that are within one-half mile of the project. The model's buffer input files need to be edited for those parcels. Buffers for parcels further than one-half mile from the project site should remain the same.
- The model needs to be run with the new model input files (for land use, buffers and networks) using the same model run scripts as the base year version of the model.
- VMT per Capita and VMT per Employee should be determined using the same method/scripts utilized to develop the County's VMT per Capita and VMT per Employee thresholds and screening maps.
- If a significant transportation VMT impact is identified, some types of mitigation measures can be reflected in SACSIM19, which allows the model to be rerun to determine if these measures reduce the level of impact. However, some types of travel demand management (TDM) measures cannot be fully reflected in SACSIM19, and a different methodology should be used to test the effectiveness of those measures at reducing project VMT.

SACOG's current base year is 2016, which was used for the 2020 MTP/SCS. To meet Federal requirements, SACOG will update their model every four years when it develops and approves a new Metropolitan Transportation Plan/Sustainable Community Strategy (MTP/SCS). As part of that process, SACOG will update both the land use and the transportation system inputs to the model for a new base year. The County can use SACOG's data for a new base year to prepare new estimates of regional VMT per Capita and VMT per Employee to monitor the County's progress on these key metrics.

Sufficient model detail should be provided to represent the study area and capture project effects. Typical modifications include splitting TAZs, adding minor roadways, revising speeds/capacity classes, inputting turn penalties, modifying the transit line file, and adding bicycle and multi-use trail facilities. Model data should be carefully verified to ensure accurate project and "other" cumulative project representation, if applicable. Model assumptions and modifications should be verified with the Department of Transportation; however, the Department does not provide modeling support. The consultant is responsible for modifying and running the travel demand model, including population generation, modifying parcel, household, and population files, editing the roadway and transit networks, and post-processing model outputs, including, but not limited to, tour data, trip lengths, VMT by speed bin, VMT per capita, VMT per employee, net change in regional VMT, and net change in VMT attributable to regional retail and regional public facilities/services.

Note that office/business professional employees do not include those associated with retail or public facilities/services components of the project. To isolate the tripmaking characteristics of each employment type in the model, different employment components (i.e. retail, office/business professional, or industrial) should not be mixed within a TAZ.

2. Method 2 – Manual Calculation

Method 2 can be used for a project that generates less than 3,500 daily trip ends unless it meets any of the other checklist criteria outlined in Table 3-2. This method generally involves the use of:

- Typical trip generation methods, such as ITE vehicle trip generation rates that may be adjusted based on supporting information (e.g. pass-by and internal trip reductions).
- A customized spreadsheet or web-based tool that uses trip length information from the SACSIM model to provide VMT analysis.

Method 2 may only be used if the project is generally consistent with land use assumptions in its TAZ in the model, or if a representative TAZ is identified and approved by the Department of Transportation. The average tour length for that TAZ is multiplied by an ITE trip generation calculation to determine project VMT. Project VMT is divided by the number of residents or employees to calculate VMT per capita/employee.

3. Alternate Methods

If project characteristics pose challenges to the application of Methods 1 or 2, alternate methods of calculating VMT metrics may be proposed by the applicant. Such alternate methods are subject to review and approval by the Department of Transportation and Planning and Environmental Review. Alternate methods must demonstrate consistency with the assumptions used to develop the thresholds of significance.

I. Redevelopment Projects

Recommendations for VMT analysis of redevelopment projects are based on guidance provided by OPR with the clarifications provided below.

Redevelopment projects represent a special case since the recommended VMT thresholds for SB 743 implementation represent an efficiency metric. Under SB 743, the primary goal is for all new land development projects to achieve efficiency from a VMT point of view. The efficiency or lack of efficiency of the existing land use is typically not relevant per OPR.

The following methodology is recommended:

- A redevelopment project that reduces absolute VMT (i.e. the total VMT with the project is less than the total VMT without the project) would be presumed to have less than significant VMT impacts.
- If a project increases absolute VMT, it is recommended that the VMT analysis methodology described in the previous section of this document be applied to the proposed land use, as if the project was proposed on a vacant parcel (i.e. the existing land use didn't exist).

In order to be considered a redevelopment project, the existing or terminated land use must not

have been terminated prior to six months before application submittal. Appropriate supporting documentation may be requested, such as copies of any building permit, certificate of occupancy, business license, lease agreement, affidavits, utility bills, or photographs, as well as documentation as to when the previous land use was terminated, if applicable. Documentation of any previous environmental review should be included in this submittal. The absence of documentation of previous environmental review may result in treating the parcel as vacant for VMT analysis purposes.

OPR's technical advisory includes specific recommendations that relate to redevelopment projects that replace affordable residential units with a smaller number of market-rate residential units. Those recommendations are also considered applicable for the purposes of these guidelines.

J. Mixed-Use Projects

Recommendations for VMT analysis of mixed-use projects are based on guidance provided by OPR with additional clarifications provided below.

Each component of a mixed use project should be evaluated independently, based on the applicable significance threshold. For purposes of applying the small project screening criteria, the applicant would only include the trip generation for portions of the project that are not screened out based on other screening criteria. For example, if a project includes residential and retail, and the retail component was screened out because it is locally serving, only the trip generation of the residential portion would be used to determine if the project meets the definition of a small project.

Analysis of mixed-use projects should account for internal trips, whether by use of the SACSIM model, MXD, or other methodology approved by the Department of Transportation.

K. Phased Projects

For projects proposed to be built in phases, each phase may be evaluated separately. This evaluation would include a determination of whether significant VMT impacts would occur and whether mitigation is recommended. The evaluation of VMT for each phase would include consideration of the previous project phases. For example, a project with three phases would include the following analyses:

- VMT Analysis of Phase 1: Assumes development of Phase 1 only.
- VMT Analysis of Phase 2: Assumes development of Phases 1 and 2.
- VMT Analysis of Complete Project: Assumes development of Phases 1, 2, and 3.

L. Land Development Projects with a Roadway Component

Some individual land development projects and community plans include the implementation of roadways as a component of the project. This requires additional consideration since land development and roadway projects have different significance thresholds for VMT analysis.

For land development projects and specific plans or community plans with a roadway component, the following recommendations are provided:

- Nearly all new local two-lane roadways that will be constructed will be intended to provide access to new development and provide local circulation/mobility. As such, they would be assumed to be implemented with new land development projects and thus be part of the land development VMT screening and, if needed, VMT analysis. These new local roadways would not require a separate VMT analysis.
- Roadway projects (or multimodal projects that include major roadways) that are included in the Circulation Element of the General Plan or an adopted Specific Plan or Community Plan would be presumed to have less than significant VMT impacts. In the case of some projects, a similar project may have been included in the General Plan or a Specific Plan, but revisions or refinements (e.g. a minor adjustment to alignment) have been incorporated. If the revisions or refinements are expected to cause increases in VMT, analysis should be conducted to compare the proposed project to the project description in the General Plan or Specific Plan, consistent with Section 5 (Transportation Projects).

M. Cumulative Analysis

Projects must demonstrate consistency with the General Plan to address cumulative impacts. Factors that contribute to a determination of General Plan consistency include a project's design, density, and conformance to General Plan goals and policies. If a project is consistent with the General Plan, it will be considered as part of the cumulative solution to meet the General Plan's long-term transportation goals, and therefore will result in a less-than-significant cumulative impact.

Projects that are not consistent with development assumptions in the General Plan but do not demonstrate a significant VMT impact under baseline conditions can be presumed to be less-than-significant in the Cumulative year. This is because projects that fall under the County's impact thresholds have already been shown to align with long-term VMT and greenhouse gas reduction goals in the MTP/SCS.

Projects that are not consistent with the General Plan and demonstrate a significant VMT impact under baseline conditions require a cumulative impact analysis to determine the project's cumulative effect on regional air quality, greenhouse gas emissions targets, and other performance metrics of the General Plan. For residential, office/business professional employment, and industrial employment projects or components, VMT per capita and/or VMT per employee should be compared to the regional average in the cumulative year, based on the latest MTP/SCS model. For all other projects, the net VMT change in the cumulative year should be calculated between a "no project" and "plus project scenario", based on the latest MTP/SCS model.

N. Summary of Significance Thresholds

Significance thresholds for development projects are shown below in **Table 3-3**. Appendix A contains specific land use designations assigned to each category. For some land development

projects, it may not be immediately obvious whether the project should be subject to VMT per capita, VMT per employee, or net increase in VMT thresholds. For these projects, Sacramento County Planning and Environmental Review and the Department of Transportation should be consulted.

Table 3-3
Significance Thresholds for CEQA Transportation Analysis for Development Projects

Project Type[1]	VMT Significance Criteria[2]	Threshold
Residential	Project VMT per capita exceeds 85 percent of the regional average VMT per capita	>15.0 VMT per capita
Office/Business Professional	Project VMT per employee exceeds 85 percent of the regional average VMT per employee	>13.9 VMT per employee
Industrial	Project VMT per employee exceeds the regional average VMT per employee	>16.4 VMT per employee
Regional Retail	Net increase in regional VMT	VMT increase
Regional Public Facilities/Services	Net increase in regional VMT	VMT increase
Redevelopment	Projects that result in a decrease to existing regional total VMT are presumed to have a less-than-significant VMT impact; otherwise, apply the relevant threshold based on the proposed land use (treating existing use as vacant)	Relevant threshold above
Mixed Use	Apply the relevant threshold to each land use component individually	Relevant threshold above
Phased	Apply the relevant threshold to each phase independently	Relevant threshold above
Land Development with Roadway Component	For locally-serving roadways, the significance determination is based on the land use component. For regional roadways, apply thresholds of significance for transportation projects.	Appropriate thresholds above or per Table 5-2

[1] Refer to Appendix A
[2] If not presumed to be less-than-significant per Table 3-1

O. Mitigation

If a project's VMT exceeds the thresholds identified above for individual land development projects and specific plans, it may have a significant transportation impact. According to the OPR's technical advisory, when a significant impact is determined, feasible mitigation measures must be identified that could avoid or substantially reduce the impact. Lead agencies are generally given the discretion to determine what mitigation actions are "feasible," but they must rely on substantial evidence in making these determinations. In addition, CEQA requires the identification of feasible alternatives that could avoid or substantially reduce a project's significant environmental impacts.

Not all mitigation measures are physical improvements to the transportation network. A sample mitigation measure might include telework options for employees to reduce vehicular travel.

Examples of other mitigation measures based on OPR's technical advisory are shown in **Table 3-4**.

Table 3-4
Example VMT Mitigation Measures

Category	Measure
Parking	• Limit or eliminate parking supply • Unbundle parking costs • Provide parking cash-out programs • Price workplace parking
Transit	• Improve or increase access to transit • Reduce transit headways • Implement neighborhood shuttle • Provide partially or fully subsidized transit passes
ITS	• Deploy management strategies (e.g., pricing, vehicle occupancy requirements) on roadways or roadway lanes. • Implementing or funding intelligent transportation systems (ITS) strategies to improve passenger throughput on existing lanes.
Education and Encouragement	• Provide incentives or subsidies that increase the use of modes other than a single-occupancy vehicle • Voluntary travel behavior change program • Promotions and marketing
Commute Trip Reductions	• Implement or provide access to a commute reduction program • Provide telework options • Provide on-site amenities at places of work, such as priority parking for carpools and vanpools, secure bike parking, showers and locker rooms, and bicycle repair services • Employer or association-sponsored vanpool, circulator, or shuttle • Rideshare program • Provide employee transportation coordinators at employment sites • Provide a guaranteed ride home service to users of non-auto modes
Shared Mobility	• Provide car-sharing, bike sharing, and ride-sharing programs • Shift single occupancy vehicle trips to carpooling or vanpooling by providing ride-matching services or shuttle services • Other shared mobility devices • School carpool program
Active Transportation/ Neighborhood Enhancement	• Orient the project toward transit, bicycle, and pedestrian facilities • Improve pedestrian or bicycle networks • Include outdoor bike parking • Include secure bike parking and showers • Traffic calming • Shared use paths/paseos
Project Changes	• Locate the project in an area of the region that already exhibits low VMT.

	• Locate the project near transit. • Increase project density. • Increase the mix of uses within the project or within the project's surroundings. • Increase connectivity and/or intersection density on the project site. • Increase access to common goods and services, such as groceries, schools, and daycare. • Incorporate affordable housing into the project. • Incorporate a neighborhood electric vehicle network.

Additional mitigation measures may become acceptable as agencies continue to innovate and find new ways to reduce vehicular travel. For example, OPR's technical advisory notes that because VMT is largely a regional impact, regional VMT-reduction programs (e.g.; VMT impact fee programs) may be an appropriate form of mitigation.

Other mitigation must be evaluated on a project-specific basis. Quantifying the reduction in VMT associated with potential mitigation measures for land development projects and specific plans is a relatively new endeavor for transportation engineers and planners. Therefore, these guidelines do not recommend a methodology that has been in practice or has generally been accepted for local use.

One current resource that has been identified to quantify the reduction in vehicle miles traveled associated with a particular mitigation measure is the latest edition of California Air Pollution Control Officers Association's Quantifying Greenhouse Gas Mitigation Measures, A Resource for Local Government to Assess Emission Reductions from Green Gas Mitigation Measures (CAPCOA, August 2010), also known as the CAPCOA Report. This report provides a methodology to quantify the reductions in vehicle miles traveled for many of the mitigation measures listed above. The following elements should be considered when utilizing the CAPCOA Report:

- The CAPCOA VMT reduction strategies include built environment changes and transportation demand management (TDM) actions. The built environment changes are scalable from the project site to larger geographic areas and are often captured in regional travel forecasting models such as the SACSIM model. Prior to any application of a built environment change to a project as mitigation, the project analyst should verify that the project VMT forecasting tool or model is appropriately accurate and sensitive to built-environment effects and that no double counting will occur in the application of the mitigation measure. The TDM actions are sensitive to the project site and ultimate building tenants. As such, VMT reductions associated with TDM actions cannot be guaranteed through CEQA mitigation without ongoing monitoring and adjustment.
- There are rules for calculating the VMT reduction when applying multiple mitigation measures. The CAPCOA Report rules should be considered.

- Only "new" mitigation measures should be included in the analysis to prevent double counting. For example, if the project is located near transit, the VMT reduction cannot be applied if the project utilized a model that factored in the project's proximity to transit.
- Mitigation measures should be applied to the appropriate user group (employees, guest/patrons, etc.). If a certain measure applies to multiple user groups, the weighted average should be considered as the effect of the mitigation measure will vary based on the user group.

It should be noted that the Sacramento Metropolitan Air Quality Management District (AQMD) has received a Caltrans SB 1 Adaptation Grant to update the CACOA report on quantifying greenhouse gas reduction measures. As of 2020, this update is anticipated to be available within the next few years. Analysts should consider the available substantial evidence at the time a study is prepared to determine the most appropriate approach for CEQA review.

4.0 Community Plans and General Plans

A. General Plan Considerations

In their December 2018 Technical Advisory, the Governor's Office of Planning and Research (OPR) recommends that a general plan may have a significant impact if its land uses in aggregate would exceed the OPR recommended thresholds used for individual land use projects. These thresholds are tied to a 15% reduction below baseline. This recommendation does require some interpretation because it focuses exclusively on the general plan's land use element and does not consider the plan as a whole, which also includes the circulation element and its effects on VMT. That said, the guidance is clear that the comparison is to baseline for impact determination purposes, which is the appropriate CEQA expectation.

There is one other CEQA requirement to note for general plans related to plan-to-plan comparisons. The general plan EIR shall also discuss any inconsistencies between the proposed general plan and the currently adopted general plan per CEQA Guidelines Section 15125(d). These inconsistencies should consider CEQA Guidelines Section 15125(e), which requires analysis that examines potential future conditions in the adopted plan. Note the use of the wording "discuss" and "analysis that examines". These requirements indicate that a comparison between general plan alternatives (especially no project and proposed project) is recommended, but is informational and does not serve as a basis for identifying impacts.

B. Guidance for Evaluating General and Community Plans

OPR guidance leads to the following conclusions regarding the analysis of General Plans and Community Plans under SB 743:

- The guidance in OPR's Technical Advisory recommends the use of efficiency metrics related to VMT. Therefore, VMT per capita and VMT per employee are the recommended performance measures for the General Plan and community plans. The reporting of total VMT may be useful for some purposes, but it does not seem to be appropriate for setting of significance thresholds.
- Comparison of horizon year conditions with the plan to baseline conditions is needed for CEQA impact analysis. For the General Plan, comparison between alternatives (including the no project condition) is recommended.

C. Thresholds of Significance

Transportation impacts should be evaluated based on the following procedures and thresholds of significance:

General Plan

For the General Plan, use of OPR's recommendations leads to use of a VMT significance threshold for a General Plan horizon year condition 15% below baseline conditions. Consideration may be

given to use of other thresholds such as VMT per capita below the baseline condition (with appropriate justification).

- Residential – Aggregate all residential land uses and compare the resulting VMT per Capita between the baseline and horizon years. The threshold is exceeding 85% of the baseline VMT per Capita per Table 3-3.
- Office/Business Professional Employment – Aggregate all office/business professional employment land uses and compare the resulting VMT per Employee between the baseline and horizon years. The threshold is exceeding 85% of the baseline VMT per Employee per Table 3-3.
- Industrial Employment - Aggregate all industrial employment land uses and compare the resulting VMT per Employee between the baseline and horizon years. The threshold is exceeding the baseline VMT per Employee per Table 3-3.

Community Plans

Community Plans seek environmental clearance to construct the proposed land use. Similar to redevelopment projects, existing land use to be replaced is considered vacant for analysis purposes. The relevant threshold for the proposed land use is applied as shown in Table 3-3 and described below:

- Residential – Aggregate all residential land uses and compare the resulting VMT per Capita to the regional average. The threshold is exceeding 85% of the regional average VMT per Capita per Table 3-3.
- Office/Business Professional Employment – Aggregate all office/business professional employment land uses and compare the resulting VMT per Employee to the regional average. The threshold is exceeding 85% of the regional average VMT per Employee per Table 3-3.
- Industrial Employment - Aggregate all industrial employment land uses and compare the resulting VMT per Employee to the regional average. The threshold is exceeding the regional average VMT per Employee per Table 3-3.
- Retail and Public Facilities/Services – Evaluate the effect that adding these land uses has on regional VMT. The threshold is increasing total regional VMT.

D. Mitigations

If VMT analysis for the General Plan or a community plan requires consideration of mitigation measures to mitigate significant VMT impacts, potential mitigation measures would be similar to those used for land development projects with some modifications. The following measures could be considered:

- Modify the land use plan to increase development in areas with low VMT/capita characteristics and/or decrease development in areas with high VMT/capita characteristics.
- Provide enhanced bicycle and/or pedestrian facilities.
- Add roadways to the street network if those roadways would provide shorter travel paths for existing and/or future trips.
- Improve or increase access to transit.
- Increase access to common goods and services, such as groceries, schools, and daycare.
- Incorporate a neighborhood electric vehicle network.
- Provide traffic calming to incentivize bicycling and walking.
- Limit or eliminate parking supply.
- Unbundle parking costs.
- Provide parking or roadway pricing or cash-out programs.
- Implement or provide access to a commute reduction program.
- Provide car-sharing, bike sharing, and ride-sharing programs.
- Shift single occupancy vehicle trips to carpooling or vanpooling by providing ride-matching services or shuttle services.
- Provide telework options beyond those already assumed in current plans.
- Provide incentives or subsidies that increase the use of modes other than a single-occupancy vehicle.
- Provide employee transportation coordinators at employment sites.
- Provide a guaranteed ride home service to users of non-auto modes.

Additional mitigation measures may become acceptable as agencies continue to innovate and find new ways to reduce vehicular travel.

5.0 Transportation Projects

Statewide guidance for the analysis of transportation projects after the implementation of SB 743 is based on the revisions to CEQA guidelines adopted in December 2018 and OPR's technical advisory dated December 2018. This guidance may be summarized as follows:

- The revised CEQA guidelines allow lead agencies the discretion to choose a performance measure and significance thresholds for the determination of the significant impacts of transportation projects.
- OPR's technical advisory recommends the use of VMT as the appropriate performance measure for transportation projects, but it does not include a recommendation for significance thresholds. It also states that transit, bicycle, and pedestrian projects can generally be presumed to have less than significant VMT impacts.
- If VMT is selected as the performance measure for roadway projects, OPR's technical advisory recommends the inclusion of induced travel demand in the VMT calculations for roadway projects. Induced travel demand is that which would be generated as a result of reduced travel times provided by a new roadway project or expanded capacity.

Most roadway projects are included in the General Plan Circulation Element and/or in the circulation elements of a community plan. Inclusion in the General Plan or a community plan is considered to be a point at which the project has been accepted into the future planning process. Thus, it is recommended that projects included in the General Plan or a community plan be presumed to have less-than-significant VMT impacts. Transit, bicycle, and pedestrian projects can also be presumed to have less than significant VMT impacts, since they will tend to reduce VMT.

For individual roadway projects that are not included in the General Plan or a community plan, VMT is the recommended performance metric for the analysis of transportation impacts. The SACSIM model should be run with and without the project. The regional (model-wide) VMT is calculated to determine the project's net effects on VMT. This inherently accounts for the effects of induced travel demand, as the model assignment iterates to minimize travel time. The project would have a significant transportation impact if there is a net increase in VMT compared to the no project condition. The VMT analysis process for transportation projects is shown in **Figure 5-1**.

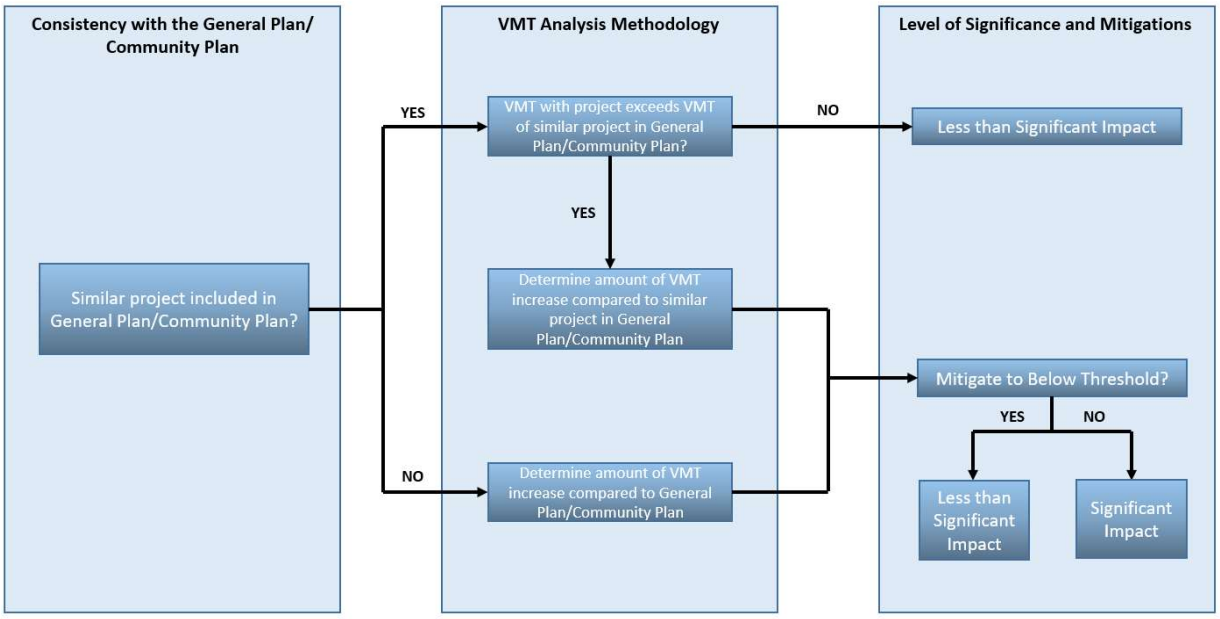


Figure 5-1: VMT Analysis for Transportation Projects

A. Screening Criteria

OPR's technical advisory presents a list of projects that are not considered to be VMT-inducing, and therefore result in a less-than-significant impact. The list of screened-out projects is shown below in **Table 5-1**, with revisions and clarifications based on conditions specific to Sacramento County.

Table 5-1
Screening Criteria for CEQA Transportation Analysis for Transportation Projects

Category	Measure
Maintenance	• Rehabilitation, maintenance, replacement and repair projects designed to improve the condition of existing transportation assets (e.g., highways, roadways, bridges, culverts, tunnels, transit systems, and assets that serve bicycle and pedestrian facilities) and that do not add motor vehicle capacity
Roadway Shoulder	• Roadside safety devices or hardware installation such as median barriers and guardrails • Roadway shoulder enhancements to provide "breakdown space," dedicated space for use only by transit vehicles, to provide bicycle access, or otherwise to improve safety, but which will not be used as automobile vehicle travel lanes
Non-Through Lanes	• Installation, removal, or reconfiguration of turn lanes at intersections that are intended to provide operational or safety improvements

	• Projects to bring an intersection or roadway into conformity with County design standards
Through Lanes	• Installation, removal, or reconfiguration of auxiliary through lanes (i.e. with a downstream lane drop) at intersections that are intended to provide operational or safety improvements • Addition of an auxiliary lane of less than two miles in length • Addition of roadway capacity on local or collector streets provided the project also includes appropriate improvements for pedestrians, cyclists, and, if applicable, transit • 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 • 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 • Conversion of streets from one-way to two-way operation with no net increase in number of traffic lanes • Roadway striping modifications that don't change the number of through lanes • Projects to bring an intersection or roadway into conformity with County design standards
Traffic Control Devices	• Installation, removal, or reconfiguration of traffic control devices, including Transit Signal Priority (TSP) features • Timing of signals to optimize vehicle, bicycle, or pedestrian flow
Traffic Circles	• Installation of roundabouts or traffic circles
Traffic Calming Devices	• Installation or reconfiguration of traffic calming devices
Parking	• 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)
Traffic Wayfinding	• Addition of traffic wayfinding signage
Active Transportation	• 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
Transit	• Initiation of new transit service • Addition of a new lane that is intended to be restricted to use only by transit vehicles

Intelligent Transportation Systems/ Managed Lanes	• 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 • Installation of traffic metering systems, detection systems, cameras, changeable message signs, and other electronics designed to optimize vehicle, bicycle, or pedestrian flow • Adoption of or increase in tolls • Addition of tolled lanes, where tolls are sufficient to mitigate any potential VMT increase
Fuel/Charging Infrastructure	• Installation of publicly available alternative fuel/charging infrastructure

B. Recommended Thresholds of Significance

The analysis would vary depending on the mode of travel associated with the project and based on whether the project is currently included in the General Plan or a community or specific plan.

Transit, Bicycle, and Pedestrian Projects

Transit, bicycle, and pedestrian projects that would encourage the use of these modes of travel would be expected to reduce VMT, would not require a detailed VMT analysis, and would be presumed to have a less than significant impact on transportation. For these project types, the presumption of a less than significant impact would apply even if the project was not in the General Plan or a community plan.

Roadway Projects

These guidelines recommend the use of VMT as the performance measure for roadway projects. The recommended significance threshold is the level of VMT expected based on the General Plan or community plan in which the project is located. This methodology is recommended for the following reasons:

- Although the new CEQA guidance allows for the use of any appropriate performance measure for the analysis of transportation projects, the intent of the SB 743 legislation was taken into consideration in the selection of a performance measure. SB 743 is intended to promote multimodal transportation networks, encourage infill development, and promote reduction of greenhouse gases. VMT is considered to be the performance measure that best reflects this intent.
- OPR's technical advisory encourages the use of VMT as a performance measure. Although this recommendation is not binding, the intent of these guidelines is to follow OPR's guidance, except in cases where there are regional or local factors that warrant a revision or clarification.
- The use of General Plan or community plan consistency as a VMT threshold is based on the process by which transportation projects are incorporated into the General Plan or a

community plan. In order for a transportation project to be incorporated into a community or general plan, a considerable amount of analysis is typically conducted. Community plans and General Plans typically include the preparation of an Environmental Impact Report that considers a variety of environmental impacts, including effects on vehicular travel, transit, and bicycle and pedestrian facilities. Since the General Plan and community plan are considered to represent sound urban planning decisions, consistency with these plans is considered to be a reasonable benchmark for the determination of a VMT significance threshold.

Roadway projects (or multimodal projects that include roadways) that are included in the General Plan or a community plan would be presumed to have less than significant VMT impacts. In the case of some projects, a similar project may have been included in the General Plan or a community plan, but revisions or refinements (e.g. a minor adjustment to alignment) have been incorporated. If the revisions or refinements are expected to cause increases in VMT, analysis should be conducted to compare the proposed project to the project description in the General Plan or community plan. Projects that result in VMT increases, in comparison to similar projects proposed in the General Plan or community plan, would need to reduce VMT levels below the level of VMT expected in the General Plan or community plan in order to avoid a significant VMT impact.

Nearly all new local roadways that will be constructed will be intended to provide access to new development and provide local circulation/mobility. As such, they would be assumed to be implemented with new land development projects and thus be part of the land development VMT screening and, if needed, VMT analysis. These new local roadways would not require a separate VMT analysis.

Roadway projects (or multimodal projects that include roadways) that are not included in the General Plan or a community plan would need a detailed analysis of VMT to determine whether the project would be expected to increase or decrease VMT as compared to VMT levels in the General Plan or community plan. For small projects, the VMT analysis could be conducted using sketch planning techniques. For medium or large projects, the analysis would generally require the use of the SACSIM model. Effects of induced demand are accounted for, as the model iteratively assigns traffic to minimize travel time. The model is sensitive to roadway capacity, volume, and uncongested and congested travel times.

Significance thresholds for transportation projects are shown below in **Table 5-2**.

Table 5-2
Significance Thresholds for CEQA Transportation Analysis for Transportation Projects

Project Type	VMT Significance Criteria[1]	Threshold
Roadway	(1) Project not included in the General Plan or a community plan, or (2) Project expected to result in higher VMT than project definition included in the General Plan or a community plan	Yes to any

[1] If not presumed to be less-than-significant per Table 5-1

C. Mitigation

Regardless of the project type and analysis method, projects that would be expected to have a significant VMT increase would be expected to consider mitigation measures. Potential VMT mitigation measures could include the following:

- Reducing the scope of the capacity increase
- Deploy management strategies (e.g., pricing, vehicle occupancy requirements) on roadways or roadway lanes to encourage carpooling.
- Improve pedestrian or bicycle networks, or transit service.
- Implementing or funding off-site travel demand management.
- Implementing or funding intelligent transportation systems (ITS) strategies to improve passenger throughput on existing lanes.

Additional mitigation measures may become acceptable as agencies continue to innovate and find new ways to reduce vehicular travel.

Appendix A – Land Use Classifications

Specific uses are classified in **Table A-1** based on the following project types, for purposes of VMT analysis: residential (RES), office/business professional employment (OBP), industrial employment (IND), local-serving public facilities/services (LPFS), regional public facilities/services (RFPS), retail (RET) (either local-serving or regional based on size), local-serving retail (LRET), and regional retail (RRET).

Project types are presented as general guidelines. The unique characteristics of a project and its VMT generation may require classification as a different project type than the one listed, as determined by the Office of Planning and Environmental Review.

Table A-1
VMT Project Types by Use

Agricultural Uses	**Project Type**
A. General Agricultural Uses	IND
B. Agricultural Equipment Repair, Maintenance and Manufacturing	IND
C. Agricultural Supplies and Services	IND
D. Primary processing of agricultural products	IND
E. Commercial Beekeeping	IND
F. Non-Commercial Beekeeping	IND
G. Crop Dusting Service	IND
H. Crops: Raising Harvesting	IND
I. Feedlot	IND
J. Hog Farm	IND
K. Kill Floor	IND
L. Stables and Corrals	IND
M. Roadside Crop Sales	IND
N. Small Wineries/Specialty and Craft Breweries	RRET[1]
O. Large Wineries/Breweries	RRET[1]
P. Food Processing Industry	IND
Q. Water Impoundment, Constructed Lake/Pond	N/A
[1] Industrial may apply to production-focused uses with no tasting or events. Note: IND = Industrial, RRET = Regional Retail	
Residential Uses	**Project Type**
A. Household Living Uses	
1. Dwelling, Duplex or Halfplex	RES
2. Dwelling, Multiple Family	RES
3. Dwelling, Single- family Attached	RES
4. Dwelling, Single- family Detached	RES
5. Family Day Care Home	RES
6. Mobile/Manufactured Home	RES
7. Mobile Home Park	RES
8. Residential Care Home	RES

9. Condominium Conversions	RES
B. Group Living Uses	
1. Boarding House	RES
2. Emergency Shelter	RES
3. Farm Worker Housing	RES
4. Fraternity/Sorority House	RES
5. Single Room Occupancy Unit	RES
Note: RES = Residential	
Public, Civic, and Institutional Uses	**Project Type**
A. Assembly Uses	
1. Places of Worship or Other Religious Institution	RPFS
2. Private Social Center, Social Club, Fraternal Hall/Lodge	RPFS
B. Educational and Cultural Uses	
1. Art Gallery, Art Studio	RET
2. College, University	RPFS
3. School, Private	RPFS
4. School, K-12, Public	LPFS
5. School, K-12, Private	RPFS
C. Government Uses	
1. Government and Local Agency Buildings and Uses	LPFS or RPFS[2]
D. Parks and Open Space	
1. Cemetery	RPFS
2. Community Garden	LPFS
3. Public Park	LPFS or RPFS[3]
4. Wildlife Preserve	LPFS or RPFS[3]
5. Market Garden	LPFS
E. Social Care Uses	
1. Ambulance Service	LPFS
2. Adult Day Care Center	LPFS
3. Child Day Care Center	LPFS
4. Congregate Care Facility	LPFS
5. Hospital	RPFS[4]
6. Hospital, Convalescent	RPFS[4]
7. Psychiatric Facility	RPFS[4]
8. Social Rehabilitation Center	RPFS[4]
F. Utility and Public Service Facility Uses	
1. Major Utility	LPFS
2. Minor Utility	LPFS
3. Solar Energy Facility	LPFS
4. Wind Turbine Facility	LPFS

G. Communication Uses and Facilities	
1. Wireless Communication Facilities (WCF)	LPFS
2. Small Cell WCF - Attached	LPFS
3. Small Cell WCF - Tower	LPFS
4. Eligible Facility WCF	LPFS
[2] LPFS generally applies to buildings providing local services and/or serving walk-up customers. Regional generally applies to large offices and/or without walk-up customers. [3] LPFS applies to local parks/preserves. RPFS applies to regional parks/preserves. [4] LPFS may apply, depending on project characteristics (e.g. anticipated capture area). Note: RET = Retail (local or regional depends on size and/or market area), LPFS = Local-Serving Public Facilities/Services, RPFS = Regional Public Facilities/Services	
Commercial Uses	**Project Type**
A. Commercial Service Uses	
1. Animal and Pet Services	RET
2. Business Services	RET
3. Personal Services	RET
4. Repair Services	RET
B. Eating/Drinking Uses	
1. Bar/Tavern	RET
2. Catering Service	RET
3. Restaurant, Carry- out/Drive- through/Sit-down	RET
4. On-Sale Alcoholic Beverages	RET
C. Entertainment / Recreation Uses	
1. General Recreation Facility, Indoor	RPFS[5]
2. General Recreation Facility, Outdoor	RPFS[5]
3. Driving Range	RPFS[5]
4. Adult Business	RET
5. Arcade, Electronic, Mechanical, Video Games, or Computer Gaming Center	RET
6. Boat Dock, Private	LPFS
7. Campground	RPFS
8. Card Room	RPFS
9. Dancing in a Bar or Restaurant, Incidental	RET
10. Hunting Club, Gun Club, Shooting Club, Outdoor	RPFS
11. Live/Motion Picture Theater and Performing Arts Center	RPFS
12. Marina, Boat Dock/Launch	RPFS
13. Nightclub, Dance Club or Hall	RPFS
14. Recreation Vehicle Park, Travel Trailer Park	RPFS
15. Stadium	RPFS
16. Internet Café	LPFS
17. Hookah/Smoking/Vape Lounges	RET
18. Event Center/Reception Hall	RPFS
D. Financial Institutions	
1. General Financial Institutions	RET
2. Payday Loan, Check Cashing	RET

E. Lodging Use	
1. Bed and Breakfast Inn	RPFS
2. Hotel, Motel	RPFS
3. Farm Stay	RPFS
4. Resort	RPFS
F. Office Use	
1. Office Use, General	OBP
2. Laboratory-Medical, Dental, or Optical	OBP
G. Retail, Auction, and Wholesale Uses	
1. General Retail Sales (Up to 49,999 sq. ft.)	LRET
2. General Retail Sales (50,000 – 350,000 sq. ft.)	LRET or RRET[6]
3. General Retail Sales (>350,000 sq. ft.)	RRET[6]
4. Neighborhood Convenience Store, Food Markets (Up to 6,000 sq. ft.)	LRET
5. Food Production and Wholesales	RET
6. Liquor Store/Off-Sale of Alcoholic Beverages	RET
7. Pawn Shop	RET
8. Thrift/Consignment	RET
9. Smoke Shop	RET
10. Public Auction, Flea Market	RET
11. Wholesale, not otherwise listed	RET
12. Nursery	RET
H. Vehicle Related Uses	
1. Armored Car Service	RET
2. Auto Sales, New and Used	RET
3. Auto Service Station	RET
4. Auto Wholesaler, Auto Broker	RET
5. Automobile Lease or Rental, Limousine Service	RET
6. Automobile Repair, Major	RET
7. Automobile Repair, Minor	RET
8. Automobile Wash Facilities	RET
9. Equipment Rental	RET
10. Package Delivery Service	RET
11. Parking Lot or Garage	N/A[7]
12. Small Vehicle and Trailer Lease, Rent, Repair, Sales, or Service	RET
13. Storage of Operable Boats, RVs, or Vehicles	RET
14. Towing Service (office only)	RET
15. Truck and Large Vehicle Lease, Rent, Repair, Sales, or Service	RET
16. Utility Truck and Trailer Rent, Sales, or Services	RET
17. Vehicle Auction	RET
18. Boat Sales and Rental	RET

[5] LPFS may apply, depending on project characteristics (e.g. anticipated capture area).
[6] Local retail is defined as less than 125,000 square feet in an infill setting, 200,000 square feet in a greenfield setting, or based on a market capture study.
[7] Parking lots/garages should generally be analyzed within the context of the land use they serve.
Note: COM = Commercial, RET = Retail (local or regional depends on size and/or market area), LRET = Local-Serving Retail, RRET = Regional Retail, LPFS = Local-Serving Public Facilities/Services, RPFS = Regional Public Facilities/Services

Industrial Uses	**Project Type**
A. Extractive Uses	
1. Borrow Mining, Short- term	IND
2. Gas or Oil Well	IND
3. Surface Mining	IND
B Manufacturing and Processing Uses	
1. Assembly, Manufacturing, and Processing – Heavy	IND
2. Assembly, Manufacturing, and Processing – Light	IND
3. Assembly, Manufacturing, and Processing – Outdoor	IND
4. Concrete Batch Plant	IND
5. Distilleries (See Ag Uses for Wineries and Breweries)	IND
6. Canneries	IND
7. Laboratory	IND
8. Service Yard, Workshop	IND
9. Heavy Equipment Storage, Sales, Rental, Service, and Repair Yard	IND
10. Animal Slaughter, Tannery, and Rendering	IND
11. Aircraft and Rocket Testing	IND
C. Storage and Warehousing Uses	
1. Household Moving, Storage Service	RET
2. Storage, Mini	RET
3. Storage, Moved Building	RET
4. Storage of Towed or Damaged Vehicles and Boats	RET
5. Warehousing	IND
D. Transportation Facilities and Services	
1. Airport	RPFS
2. Boat Dock/Pier – Commercial	IND[8]
3. Bus Depot	N/A[9]
4. Freight Depot	IND[10]
5. Taxi Cab Service and Storage Facility	IND
6. Truck, Freight, or Draying Terminal	IND[10]
E. Waste Handling and Disposal	
1. Hazardous Waste Storage/Disposal Facility	LPFS
2. Junk Tire Handling	IND
3. Junkyard, Vehicle/Equipment Wrecking Yard, Scrap or Used Materials Yard	IND
4. Recycling Facilities	LPFS
5. Greenwaste Facilities	LPFS
6. Solid Waste Facilitie	LPFS

7. Wastewater Disposal, Lagoon or Irrigation	LPFS

[8] RFPS may apply for marinas catering to recreation and tourism.
[9] Transit projects are generally presumed to be less-than-significant.
[10] The heavy vehicle component is generally not considered in VMT analysis.
Note: IND = Industrial, LPFS = Local-Serving Public Facilities/Services, RPFS = Regional Public Facilities/Services

Appendix B – Basis of Significance Thresholds

Calculations from the current version (2016) of the SACSIM model are provided below. **Table B-1** shows average round trip miles and VMT per capita for home-based tours. **Table B-2** shows average round trip miles and VMT per employee for commute tours.

Table B-1
2016 and 2040 Residential Tour Lengths and VMT per Capita

Model Scenario	Average Round Trip Miles Home-Based Tours of Residents			Average VMT per Capita Home-Based Tours of Residents		
	Commute	Non-Commute	All	Commute	Non-Commute	All
Regional 2016	28.1	21.8	23.7	6.3	11.3	17.6
Regional 2040	27.3	20.8	22.7	5.9	10.7	16.6
					85% of Regional 2016	**15.0**
					85% of Regional 2040	**14.1**

Table B-2
2016 and 2040 Employee Commute Tour Lengths and VMT per Employee

Model Scenario	Average Round Trip Miles Commute Tours of Workers	Average VMT per Capita Commute Tours of Workers
Regional 2016	28.6	16.4
Regional 2040	27.3	14.9
	85% of Regional 2016	**13.9**
	85% of Regional 2040	**12.7**

Part II – Local Transportation Analysis

A. Purpose

Sacramento County may require the preparation of a local transportation analysis (LTA) for both land development and transportation projects. The purpose of the LTA is to forecast, analyze, and describe how a development will affect existing and future circulation infrastructure for all users of the transportation system, including vehicles, bicycles, pedestrians and transit. The LTA assists transportation engineers and planners in both the development community and public agencies when making land use, infrastructure planning, and other development decisions. An LTA quantifies the expected changes in transportation conditions and evaluates the efficacy of potential improvements, if warranted.

These guidelines identify when an LTA is needed, what professional procedures should be followed, and what constitutes a "significant transportation effect" that would require improvements.

The transportation analysis included in an LTA is separate from the transportation impact analysis conducted as part of the environmental (CEQA) project review process, as described in Part I. The purpose of the local transportation analysis is to ensure that all projects provide a fair share of infrastructure improvements in order to accommodate their multimodal transportation demands.

The instructions outlined in these guidelines are subject to update as future conditions and experience become available. Special situations may call for variation from these guidelines. The scope of the LTA is subject to County review and approval. Caltrans and neighboring jurisdictions should be consulted on the specific methods to be used in LTA studies involving any facilities outside of the County's jurisdiction.

B. Need for Study

Local Transportation Analysis
An LTA is typically required if any of the following are true:

1. The project will generate 100 or more new a.m. or p.m. peak hour vehicle trip-ends.
2. The project will generate 1,000 or more daily vehicle trip-ends.
3. New project traffic will substantially affect an intersection or a roadway segment already identified as operating at an unacceptable level of service.
4. The project may result in a decrease in public safety on any roadway for any mode of travel.
5. The project will substantially change the off-site transportation system or connections to it.
6. Any other land development or transportation project requiring an LTA, at the sole determination of the Department of Transportation.

A trip-end is defined as either an origin or destination of a trip. For example, a round trip between two locations (home-shopping) creates two trip-ends at each location.

The a.m. peak hour is defined as the peak consecutive hour during the 7-9 a.m. peak period, and the p.m. peak hour is defined as the peak consecutive hour during the 4-6 p.m. peak period. Both are on a weekday. Special time periods may be required depending on the land use.

Focused Transportation Studies

Even if the above threshold rates are not met, a "focused transportation study" may still be required. Projects that may require a focused transportation study include, but are not limited to, those for which site access, circulation (on-site or in the immediate vicinity), parking, or queuing have the potential for adverse safety, operational, or neighborhood effects. Focused transportation studies may be allowed when the effects of a project are expected to be localized, and typically consist of a smaller scope (extent of study facilities and/or level of analysis requested) than an LTA. The Department of Transportation has the sole discretion to allow, require, and define the scope of a focused transportation study.

Early consultation with the County through the pre-application meeting (PAM) process is strongly encouraged. Additional information is available:
https://planning.saccounty.net/Pages/Planning-Applications.aspx

C. Scope of Study

A proposal for the scope of services shall be prepared by the consultant and submitted for review to the Department of Transportation. If applicable, the Department of Transportation may reach out to neighboring jurisdictions, Caltrans, and neighborhood groups to solicit feedback on the scope of work. For large studies using the regional travel demand model, the Department may request that the applicant's consultant conduct preliminary modeling (i.e. volume increase plots) to assist in scoping study facilities. The Department of Transportation will have final determination of the work scope of the LTA. Work on the traffic study should not commence until after the Department of Transportation has approved the scope of work. Please note that a review fee will be assessed and shall be collected prior to final approval.

In general, the scope of work should include the following:

1. **Site Access**: Review and evaluate access locations, driveway throat depths, and size of major on-site circulation facilities with respect to operations, safety and continuity with existing and planned facilities. The site plan review should include evaluation of sight distance, delivery truck routing, and emergency vehicles access.
2. **On-Site Circulation:** Review and evaluate the parking layout and circulation design, including for internal pedestrians. If applicable, evaluate drive through vehicle queuing, including adequacy of proposed storage and mitigation or management strategy for potential spillbacks. Identify any improvements (e.g. curb ramp upgrades, sidewalk

reconstruction) needed to comply with the Americans with Disabilities Act (ADA). For residential projects, livability on new residential streets should be addressed. Please note that new residential streets carrying over 4,500 vehicles per day are not allowed to have front on homes. The project should consult with County DOT staff prior to moving forward in these cases, as it would require a revision to the project's Site Plan.

3. **Off-Site Roadways**: Study all locations where: 1) the project circulation system intersects with the existing or planned surrounding street system; 2) project traffic may substantially affect the operation of a roadway or intersection; or 3) project traffic may cause substantial neighborhood effects, such as undesirable diversion. Traffic calming devices should be recommended to address speeding issues on neighborhood streets (either on-site or off-site). Please refer the Neighborhood Traffic Management Program (NTMP) on the County's webpage: https://sacdot.saccounty.net/Pages/NeighborhoodTrafficManagement.aspx
4. **Caltrans Facilities**: The scope of the analysis should be confirmed with District 3 planning and operations staff. In general, District 3 requires analysis of all freeway ramps that may be substantially affected by the project, including 95th percentile queue lengths (off-ramps and metered on-ramps). Interchanges should be evaluated for opportunities to improve bicycle and pedestrian connectivity and safety, especially considering uncontrolled, high-speed movements. Safety analysis of the mainline and ramp terminals should be provided, consistent with current requirements and guidance.
5. **Transit**: Discuss all existing and planned bus routes or rail lines that have, or will have, a station or stop within 1/2 mile of the project, including route description, service area, hours of service, and headways. For projects located greater than 1/2 mile from the project, (1) assess the potential for generating demand for such services; (2) large projects are encouraged to identify funding sources to provide public or private transit services; and (3) if there is an adopted plan to provide Bus Rapid Transit/Hi-Bus, the project may construct or contribute to buildout of the plan. Any permanent or temporary reduction of transit availability or interference with existing service should be discussed. If an existing or planned transit stop is located on the project frontage, transit stop improvements may be required as part of the project frontage improvements. If modeled using SACSIM, mode share and person trips by transit mode should be reported. Transit ridership forecasts for lines servicing the project should be provided (i.e. boardings by walk and drive access). If new transit service is proposed by the project, report the type and frequency of service, operator, usage metrics (e.g. load factor, boardings per revenue hour), and funding sources.
6. **Bicycle Facilities**: Identify and evaluate effects on existing or planned (Sacramento County Bicycle Master Plan) facilities adjacent to or within 1/4 mile of the project. The project's connectivity to the surrounding bicycle/transit network and adequacy of bike parking should be addressed. If modeled using SACSIM, mode share and person trips by bicycle mode should be reported.
7. **Pedestrian Facilities**: Identify any existing or planned (Sacramento County Pedestrian Master Plan) pedestrian facilities that will be affected by the project. The project's connectivity to the surrounding pedestrian and transit network should be addressed. If modeled using SACSIM, mode share and person trips by walk mode should be reported.
8. **Trucks**: For projects that are expected to generate substantial truck traffic (including, but not limited to, industrial, warehousing/distribution, and surface mining projects), identify

the number of truck trips that will be generated, design accommodations necessary to support these trucks, and if any of the affected roadways are STAA routes. As directed by the Department of Transportation, evaluate the current condition of the roadway pavement and any needed improvements to support projected loading.

Other type of analyses that may be requested in the LTA include, but are not limited to:

- Median island or channelization island movement restrictions
- Signal coordination plans
- Signal warrant analysis
- Development phasing analysis
- Crash analysis/safety evaluation
- Neighborhood cut-through traffic analysis
- Construction activity traffic analysis
- Traffic index/pavement condition index/ESAL calculations

D. Study Scenarios

An LTA should incorporate the following scenarios, unless directed otherwise by the Department of Transportation:

1. **Existing Conditions**: Document existing traffic levels and peak-hour levels of service in the study area. Identify locations where roadways do not meet target levels of service for existing conditions.

2. **Existing Plus Project Conditions**: Analyze the effect of the proposed project in addition to existing conditions. This scenario identifies the effect of a project on the transportation network with no other changes in conditions.

3. **Cumulative Conditions**: Identify traffic forecasts, typically 20 years in the future, consistent with the current Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) and latest version of the SACSIM model.

4. **Cumulative Plus Project Conditions**: Analyze the additional project traffic effect to the horizon year condition. When justified, and particularly in the case of very large developments or new general/community plans, a transportation model should be run with, and without, the additional development to show the net effect on all parts of the area's transportation system.

Cumulative year studies may be waived at the discretion of the Department of Transportation. The Cumulative scenario is typically waived if the proposed project is substantially similar to development assumptions in the General Plan. If applicable, Cumulative land use and roadway infrastructure assumptions shall be coordinated and verified with Department of Community Development and Department of Transportation staff.

The determination of study time periods for each project shall be made in consultation with the Department of Transportation and be based upon the peaking characteristics of the project traffic and the surrounding street system. Even though most studies would include weekday a.m. and/or p.m. peak hour analysis, special circumstances may require mid-day or weekend analysis.

E. Forecasting Methodologies

1. **Traffic Counts**: The data (e.g. PeMS, hose counts, turning movement counts) used in the LTA should generally not be more than two years old and should not reflect a temporary interruption (special events, construction detour, flooded roadways etc.) in the normal traffic patterns. If recent traffic data is not available, current counts should be made by the project applicant's consultant. Weekday traffic counts should be conducted on Tuesdays, Wednesdays, or Thursdays (excluding weeks with a holiday). If possible, the counts should be conducted on days when schools are in session. Peak hour counts should be conducted for the two hours between 7 and 9 a.m. for the a.m. peak, and between 4 and 6 p.m. for the p.m. peak. Mid-day and weekend counts are project-specific and should be conducted after consultation with the Department of Transportation. A traffic count firm should secure necessary encroachment permits from the County prior to data collection. Further information regarding the encroachment permit process is available at the permit center at County's public counter.

2. **Trip Generation**: The latest edition of the Institute of Transportation Engineers' (ITE) *Trip Generation*, or the San Diego Association of Governments' *San Diego Traffic Generators*, shall be used for trip generation forecasts. Counts at comparable locations may be acceptable for specific or unique uses, subject to approval of the Department of Transportation. Whenever possible, these rates should have data from multiple study locations. Trip generation rates should be verified by the Department of Transportation prior to commencing traffic analysis. Projects with significant truck generation should apply appropriate passenger car equivalent (PCE) factors, generally 2.5 - 3.0. Mode split assumptions (i.e. person trip generation) from travel demand model for transit, bicycle, and pedestrian trip generation should reported in the traffic study.

3. **Pass-By Trips**: Professional sources are acceptable as sources for pass-by trip percentages. All pass-by trips should be distributed through the project driveways and be redistributed at adjacent intersections, as appropriate. All pass-by trip percentages should be verified by the Department of Transportation.

4. **Existing Terminated Use**: When estimating the Project's net new trips, any claim for trip credits for an existing or terminated land use generally requires that the use of land must not have been terminated prior to six months. To fully ensure that trip credit claims are validated, appropriate supporting documentation may be requested, such as copies of any building permit, certificate of occupancy, business license, lease agreement, affidavits, utility bills, or photographs, as well as documentation as to when the previous land use was terminated, if applicable. Documentation of any previous environmental review should be

included in this submittal. The absence of documentation of previous environmental review may result in denial of the claim for trip credits.

5. **Trip Distribution**: Trip distribution patterns for a project can use existing traffic counts, a Sacramento Area Council of Governments (SACOG) model, or local knowledge. The trip distribution assumptions shall be reviewed by the Department of Transportation. Where Cumulative assumptions would be expected to substantially change the existing trip distribution (e.g. new roadway connections, substantial trip attractions to nearby development), a separate Cumulative trip distribution should be proposed. The LTA must include map(s) showing project trip distribution percentages (inbound and outbound).

6. **Cumulative Year Forecasting**: Cumulative forecasts should include background growth consistent with the most current version of the SACOG transportation forecasting model (i.e. SACSIM). Land use assumptions in the vicinity of the project should be verified by comparing the model assumptions with the project assumptions and other sources (general plan, specific plans, and community plans). The analysis should account for all known developments within 1/4 mile of the farthest outlying study intersections.

   The forecasting methodology shall be reviewed and approved by the Department of Transportation. For small projects, layering project traffic on top of an existing count or approved forecast is generally acceptable.

7. **Modeling Considerations**: For large projects that are likely to significantly affect regional travel patterns, as determined by the Department of Transportation, the project should be modeled in SACSIM. Sufficient model detail should be provided to represent the study area and capture project effects. Typical modifications include splitting TAZs, adding minor roadways, revising speeds/capacity classes, inputting turn penalties, modifying the transit line file, and adding bicycle and multi-use trail facilities. Centroid connectors should not load into study intersections. Model data should be carefully verified to ensure accurate project and "other" cumulative project representation, if applicable. Model assumptions and modifications should be verified with the Department of Transportation; however, the Department does not provide modeling support. The consultant is responsible for modifying and running the travel demand model, including population generation, modifying parcel, household, and population files, editing the roadway and transit networks, and post-processing model outputs, including ADT volumes, peak period/hour turning movement volumes, and VMT metrics (e.g. VMT by speed bin, VMT per capita or employee, net change in regional VMT). The consultant should have the ability to develop and run scripts, as some of these metrics may require additional functionality beyond SACOG's off-the-shelf model, or may need to be tailored to the project.

   Post-processing should be consistent with the "difference method." The forecast is calculated as the count plus the change in model volumes between two scenarios (e.g. with and without the project, or base and future year). If the study facility does not exist in the "no project" or baseline condition, raw model volumes are acceptable for forecasting. If the difference method would result in a negative forecast, the ratio of the model runs (e.g.

future divided by base) times the count should be used instead. SACSIM19 models individual peak hours from 7-8, 8-9, 9-10 AM, as well as 3-4, 4-5, and 5-6pm. A uniform peak hour should be set for the study, as determined from the traffic counts.

Care should be taken when post-processing around freeway interchanges, as multiple links (e.g. general purpose and HOV) may need to be added to represent one ramp, two-way segments may split into a one-way couplet, and the right turn movement onto a loop ramp may be represented as a left turn in the model.

8. **Trip Reduction**: Any trip reductions associated with a Transportation Management Plan (TMP) should not be included in the determination of significant effects because the effectiveness of the TMPs is not sufficiently predictable or enforceable. However, a trip reduction program can be considered to address a significant transportation effect, provided that results can be demonstrated for comparable projects and that a monitoring/enforcement mechanism is clearly defined. A comparable physical improvement measure shall be identified for all locations that rely upon a trip reduction program. The physical improvement measure will serve as a contingency should the predicted trip reduction not be achieved. A deposit/bond will be collected to implement the improvements needed due to the project, should the trip reduction requirement not be met.

F. Traffic Impact Analysis Methodologies

1. **Signalized Intersections**: The most recent version of Highway Capacity Manual (HCM) methodology should be applied for County facilities. For Caltrans or other jurisdictions intersections, HCM assumptions should be coordinated with the respective jurisdictions.

   Copies of existing traffic signal timing will be made available from the County and should be used for existing conditions and existing plus project conditions analysis to determine project effects.

   The following assumptions should be used to code Synchro networks, unless special circumstances justify otherwise:
   - **Peak Hour Factor**: A PHF of 1.0 should be used to represent average hourly conditions.
   - **Truck Percentage**: Use default truck percentage (2%) unless special circumstances justify otherwise.
   - **Control Type**: Traffic controller types are either actuated-uncoordinated or actuated-coordinated. Please contact our signal operations staff to determine the type of controller.
   - **Detectors**: Code the detectors as per County improvement standards. Refer to Section 5: Street Light Design, drawing 5-19 for placement of detectors. All of detectors should be "call+extend."
   - **Recall mode**: For actuated-coordinated controllers, recall mode should be set to minimum for the major street approach or as shown on the timing sheet.

- **Minimum Green**: For new signals, minimum green should be assumed to be 3.0 seconds for all phases.
- **Yellow Intervals**: For new signals, the yellow interval for through movements should be determined based on the 90th percentile speed of the approach as shown in **Table E-1**. If not available, the posted speed limit plus five miles per hour may be assumed. Left turn phases may be assumed to have a yellow of 3.5 seconds.

Table F-1
SACDOT Yellow Interval Criteria

90th Percentile Speed	SACDOT Yellow (s)	Caltrans Yellow (s)*
25	3.5	3.0
30	3.5	3.2
35	3.9	3.6
40	4.3	3.9
45	4.6	4.3
50	4.8	4.7
55	5.0	5.0
60	5.4	5.4
65	5.8	5.8
70	6.1	6.1
*Applicable to state-owned intersections, i.e. state routes and ramp terminals.		

- **Red Clearance Intervals**: For new signals, all-red intervals will be implemented using SACDOT's methodology. For analysis purposes, assuming 0.5 seconds for through movements and 2.0 seconds for left turn movements is acceptable.
- **Pedestrian Timing**: For new signals, 7.0 seconds of walk time should be assumed. The "flashing don't walk" (FDW) time should be calculated based on the center-to-center distance between curb ramps and an assumed walking speed of 3.5 feet per second (unless special circumstances justify a lower walking speed). If detailed plans are not available, the crossing distance may be estimated as the sum of the lane widths, median width, and bike lanes. There may be a few locations in the County where pedestrian push buttons do not exist, but pedestrian signal heads are present. In such cases, the walk time should be used as a minimum green for corresponding vehicle phase. Where push buttons are present, a minimum of 2 pedestrian calls per hour should be assumed for each pedestrian phase (or greater if higher pedestrian activity is expected, per the estimation procedure in the Synchro Manual).
- **Splits**: Minimum splits should be recalculated in Synchro after adjusting minimum green and pedestrian parameters. A minimum split less than walk+FDW (i.e. ped call throws the signal out of coordination) is acceptable for locations where pedestrian activity is light. Typically, "max 1" should be used for maximum green. In some cases, maximum green varies by time of day. Please confirm operations with our staff if more than one maximum green time exist on the timing sheets.
- **Cycle Length**: Cumulative no project conditions can assume optimized traffic signal timing with cycle lengths no less than 90 seconds (or the existing cycle

length) and no greater than 150 seconds (or the existing cycle length), for intersections which are coordinated with adjacent signalized intersections. Coordinated intersections should all have the same cycle length (or half cycle length, if appropriate).

- **Optimization**: Once cumulative no project conditions signal timing is optimized, the same set of parameters should be used for cumulative plus project conditions to determine the project's significant transportation effects. The exception is where the project proposes to construct a physical improvement, such as a turn lane or through lane. In such cases, re-optimization is allowable.
- **Improvements**: Optimizing traffic signal timing shall not be used as the default recommended improvement. Physical improvements consistent with the County's improvement standards (e.g. standard intersection turn lanes, maximum number of through lanes allowed by the general plan) should be identified that will improve operations to within acceptable thresholds. If standard improvements are not successful, alternative improvements (e.g. signal retiming, non-standard turn lanes, free turn movements, overlap phases) may be recommended. Where retiming is recommended, the consultant should be specific in describing the recommendation.

2. **Unsignalized Intersections**: The most recent HCM methodology should be applied. A signal warrant analysis should be prepared for all intersections and scenarios where the level of service of an intersection movement exceeds the County's acceptable threshold. A PHF of 1.0 (to represent average hourly conditions), unless special circumstances justify otherwise.

   SIDRA Intersection software should be used to evaluate existing or proposed roundabouts, based on the most recent HCM methodology.

3. **Roadway Segments**: Roadway segment analysis should be based on the daily traffic volume thresholds shown on **Table E-2**.

Table F-2
Level of Service Criteria for Roadway Segments

Facility Type	# of Lanes	Maximum Volume for Given Service Level				
		A	B	C	D	E
Residential	2	600	1,200	2,000	3,000	4,500
Residential collector with frontage	2	1,600	3,200	4,800	6,400	8,000
Residential collector without frontage	2	6,000	7,000	8,000	9,000	10,000
Arterial, low access control	2	9,000	10,500	12,000	13,500	15,000
	4	18,000	21,000	24,000	27,000	30,000
	6	27,000	31,500	36,000	40,500	45,000
Arterial, moderate access control	2	10,800	12,600	14,400	16,200	18,000
	4	21,600	25,200	28,800	32,400	36,000
	6	32,400	37,800	43,200	48,600	54,000
Arterial, high access control	2	12,000	14,000	16,000	18,000	20,000
	4	24,000	28,000	32,000	36,000	40,000
	6	36,000	42,000	48,000	54,000	60,000
Rural, 2-lane road, 24' of pavement, 6' paved shoulders	2	2,200	4,300	7,100	12,200	20,000
Rural, 2-lane road, <24' of pavement, < 6' shoulders	2	1,000	2,100	3,400	6,000	12,800

Facility Type	Stops/Mile	Driveway	Speed
Arterial, low access control	4+	Frequent	25-35 MPH
Arterial, moderate access control	2-4	Limited	35-45 MPH
Arterial, high access control	1-2	None	45-55 MPH

4. **Substandard Rural Roadway Functionality**: Of specific concern in various locations in the County is the functionality of substandard rural roadways. The County's current rural roadway standard consists of two-twelve foot wide travel lanes and six-foot wide paved shoulders. Any rural roadway not fitting this definition can be considered substandard.

   The County expects that the functionality of these roadways will change over time with development, population increase, the introduction of various modes of travel, and the addition of traffic on these substandard roadways. With these changes in functionality of the roadway comes the possibility of increased interactions between varying modes of travel (i.e. pedestrians, bicyclists, etc.), as well as the increased interaction between a greater number of vehicles on substandard roads. Significant effects to these roadways are identified in Section G and improvements in Section H.

5. **Caltrans Facilities**: The methodologies acceptable by Caltrans should be used when analyzing Caltrans facilities. These methodologies are listed in the Caltrans *Draft VMT-Focused Transportation Impact Study Guide (Draft TISG)*[2] and *Interim Land Development and Intergovernmental Review (LDIGR) Safety Review Practitioners Guidance*[3].

6. **Connector JPA Facilities**: The latest guidance[4] should be used to evaluate transportation effects on Connector facilities. These procedures, as of January 1, 2020, are summarized in this section.

   The County's General Plan-Transportation Plan defines the Connector designation as an Expressway Segment and Thoroughfare Segment. Please refer to the latest General Plan – Transportation Plan for the limits of the specific segment designations. Phase 1 is defined as a four-lane connector facility with at-grade signalized intersections. Phase 2 is defined as a multilane connector facility with grade separated interchanges.

   Roadway segment analysis is not conducted on Connector facilities for which Phase 1 improvements have already been implemented. Rather, service volumes are used to screen segments for which a more detailed operational analysis should be conducted. Once 85 percent of the roadway LOS E service volume threshold for the ultimate facility is reached (see **Table E-3**), operational analysis should be undertaken using the latest edition of the Highway Capacity Manual for multilane highways to ensure the segment LOS is E or better.

2 https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/sb-743/2020-02-26-transmittal-and-draft-vmt-focused-tisg.pdf
3 https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/sb-743/2020-07-01-interim-ldigr-safety-guidance-a11y.pdf
4 Capital SouthEast Connector Transportation Impact Study Guidance.

Table F-3
Service Volume Thresholds for Segment Operational Analysis

Facility Type	Number of Lanes	Service Volume Threshold		85% Service Volume	
		Daily	Peak-Hour	Daily	Peak-Hour
Expressway	4	78,200	3,870	66,470	3,290
Arterial	4	36,800	1,820	31,280	1,550
	6	55,300	2,740	47,010	2,330

Source: Capital SouthEast Connector Planning and Evaluating Traffic Conditions White Paper, January 25, 2017.

Analysis assumptions are listed below and shown graphically in **Figure E-1**.

a. Existing Plus Project Scenario

i) For a roadway segment/intersection that *Phase I Connector improvements have not been implemented*: County urban LOS E policy applies for both roadway segment and intersections analysis (unless a more conservative policy applies, if shared with another jurisdiction). Segment improvements, if needed, are capped at 4 lanes.

ii) For a roadway segment/intersection that *Phase I Connector improvements have been implemented*: If roadway segment volumes are less than 85 percent of the service volume, no additional roadway segment analysis is performed. If roadway segment volumes exceed 85 percent of the service volume, a detailed operational analysis is performed using the latest edition of the HCM multilane highway methodology, to ensure the segment LOS is E or better. Intersection analysis is conducted using the Connector LOS C policy (LOS D on Special Segments). Intersection improvements, if needed, can consist of up to three turn lanes (with no more than two for the same movement). If the significant effect cannot be improved with standard improvements, then a geometric or LOS exception should be considered (thoroughfare intersections), or a fair share payment for a grade-separated interchange should be made (expressway intersections).

b. Cumulative Plus Project Scenario

It is assumed that the Phase I Connector project has been implemented. If roadway segment volumes are less than 85 percent of the service volume, no additional roadway segment analysis is performed. If roadway segment volumes exceed 85 percent of the service volume, a detailed operational analysis is performed using the latest edition of the HCM multilane highway methodology, to ensure the segment LOS is E or better. Intersection analysis is conducted using the Connector LOS C policy (LOS D on Special Segments). Intersection improvements, if needed, can consist of up to three turn lanes (with no more than two for the same movement). If the significant effect cannot be improved with standard improvements, then a geometric or LOS exception should be considered (thoroughfare intersections), or a fair share payment for a grade-separated interchange should be made (expressway intersections).

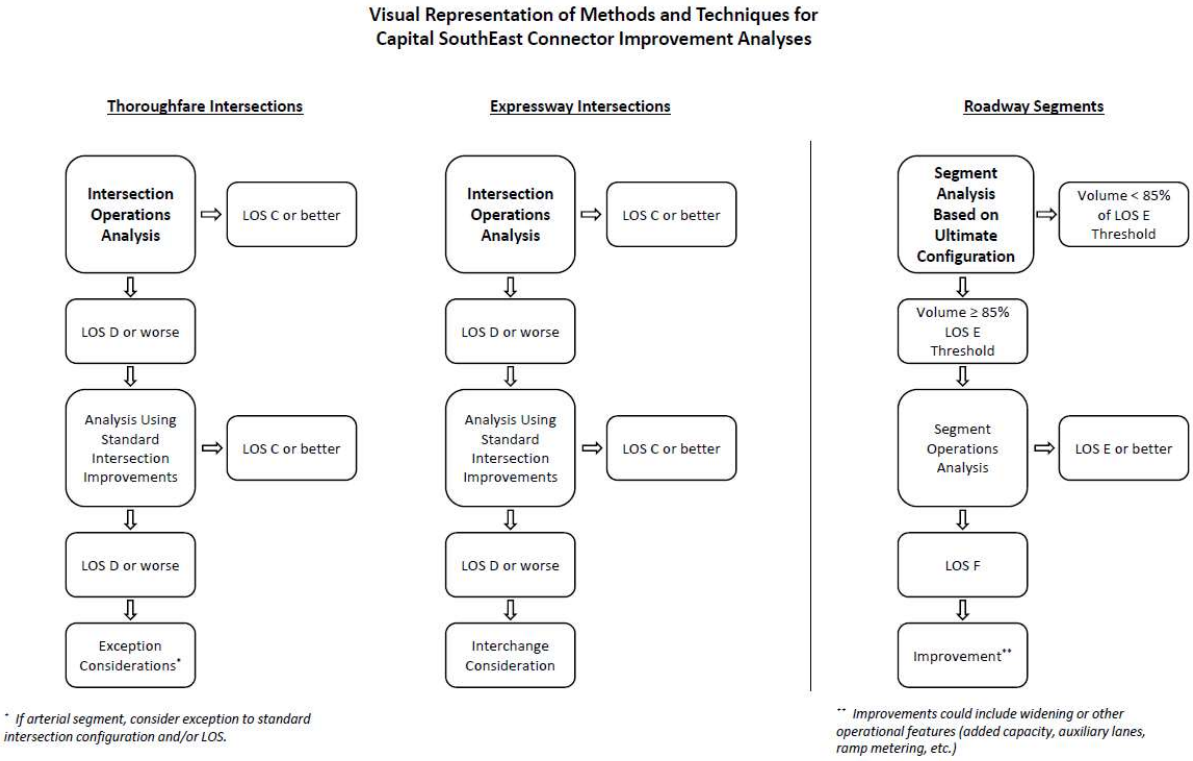


Figure F-1: Methods and Techniques for Capital SouthEast Connector Improvement Analyses

Source: Capital SouthEast Connector Planning and Evaluating Traffic Conditions White Paper, January 25, 2017.

7. **Microsimulation**: The use of microsimulation (e.g. Simtraffic, VISSIM) to evaluate difficult or complex traffic conditions is acceptable, and may be required by the Department of Transportation. Examples of situations that may require microsimulation include closely-spaced intersections operating on one signal controller or known queue spillback between closely-spaced signals. The method of analysis and assumptions need to be approved by the Department of Transportation prior to use.

8. **Vehicles Miles Travelled (VMT)**: The methodology the County uses in greenhouse gas analyses of mobile emissions relies on vehicle miles traveled (VMT). As an output of the traffic study, the County will need daily vehicle miles traveled for all analysis scenarios. The mileage should be reported in speed bins, rather than as a single total, because vehicle emissions vary depending on the speed of travel. If using the SACSIM model, speed bin data should typically be calculated separately for freeways/rural roadways and urban/intrazonal roadways. Discussion of other VMT metrics for CEQA purposes, such as VMT per capita or employee, are included in Part I of this document.

G. Acceptable Levels of service

1. **County of Sacramento**: The County defines the minimum acceptable operation level for its roadways and intersections to be **LOS D for rural areas** and **LOS E for urban areas**. The urban areas are those areas that are dominated with urban type land uses and transportation infrastructure and are located within the Urban Service Boundary (USB), as shown in the Land Use Element of the Sacramento County General Plan and **Figure F-1**. The rural areas are those areas that are either outside the Urban Service Boundary or are dominated with rural type land uses and transportation infrastructure and are located within the USB.

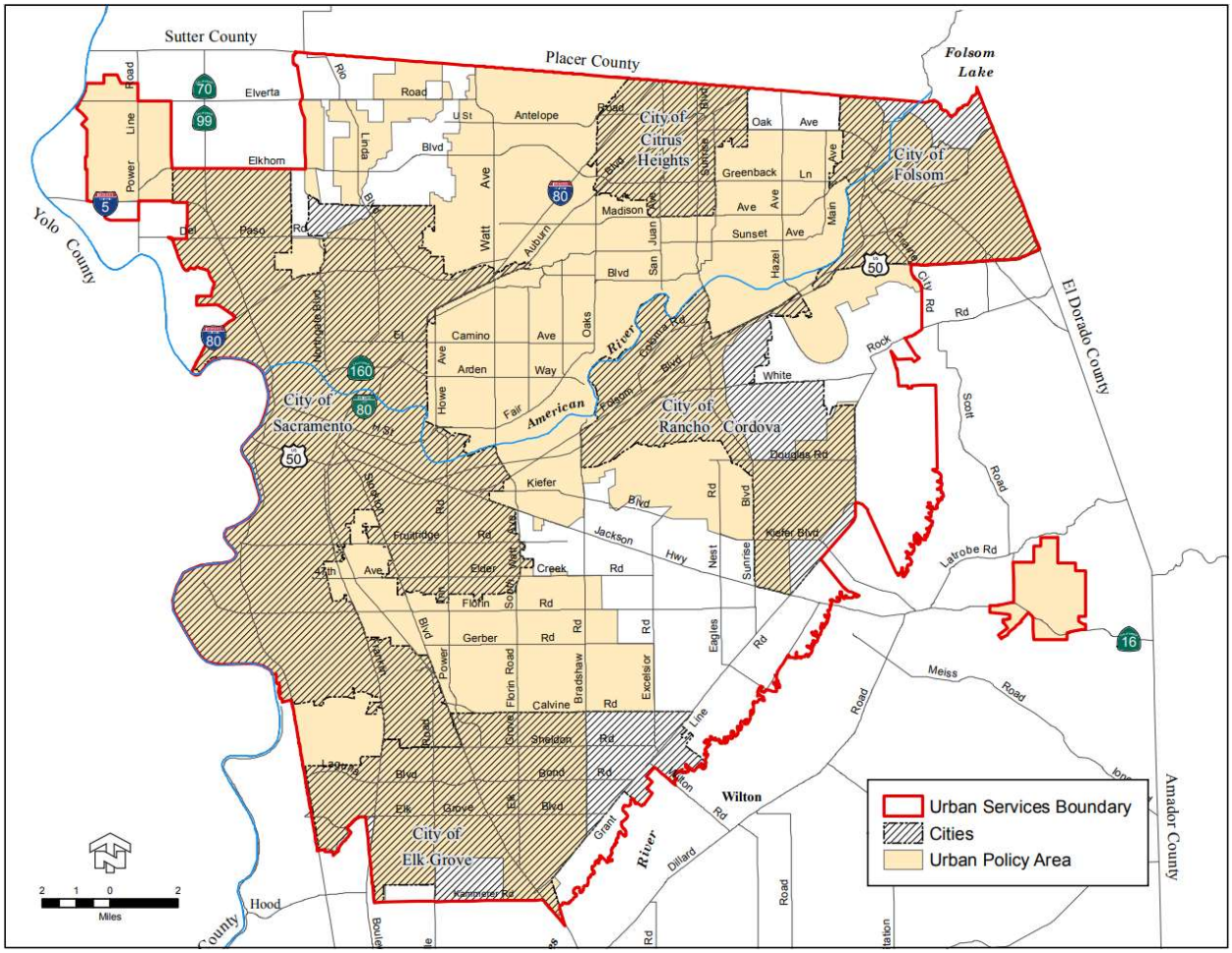


Figure G-1: Urban Services Boundary Map (as of January 1, 2020)

2. **Caltrans**: In District 3, ramp terminal intersections are typically analyzed using the LOS standard of the surrounding city or unincorporated county jurisdiction. For mainline analysis, Caltrans publishes a concept LOS in the facility's transportation concept report (TCR). The LOS policy to be used in the LTA should be confirmed with the Department of Transportation and Caltrans.

3. **Other City/County Jurisdictions**: The LOS policy used in the LTA should be confirmed with the applicable jurisdiction.

4. **Connector JPA**: The JPA Guidelines[5] require signalized intersections to operate at LOS C or better (except at Connector Special Segments where LOS D is considered acceptable). Special Segments are currently defined from Bond Road to Calvine Road in the Sheldon community. Analysis procedures for Connector JPA intersections and roadway segments were described in Section E and included in Appendix C.

H. Significant Transportation Effects

The LTA must identify the significant transportation effects of the proposed project. In describing the significant effects, the LTA should identify whether the effects can be improved to a less-than-significant level (through implementation of an improvement), or are unavoidable (where no feasible improvement is available).

The following thresholds of significance shall be used to determine if an effect is significant and requires improvements:

Roadways Segments: A project is considered to have a significant effect if it would:

- result in a roadway segment operating at an acceptable LOS to deteriorate to an unacceptable LOS; or
- increase the V/C ratio by more than 0.05 at a roadway segment that is operating at an unacceptable LOS without the project.

Signalized Intersections: A project is considered to have a significant effect if it would:

- result in a signalized intersection operating at an acceptable LOS to deteriorate to an unacceptable LOS; or
- increase the average delay by more than 5 seconds at a signalized intersection that is operating at an unacceptable LOS without the project.

Unsignalized Intersections: A project is considered to have a significant effect if it would:

- result in an unsignalized intersection movement/approach operating at an acceptable LOS to deteriorate to an unacceptable LOS, and also cause the intersection to meet a traffic signal warrant; or
- for an unsignalized intersection that meets a signal warrant, increase the delay by more than 5 seconds at a movement/approach that is operating at an unacceptable LOS without the project.

Freeway Ramps: A project is considered to have a significant effect if it would:

- result in or significantly lengthen ramp queues exceeding storage capacity; or
- result in a decrease in safety.

5 Capital Southeast Connector JPA Project Design Guidelines, Version 4.0, February 13, 2016.

Freeway Mainline Segments: A project is considered to have a significant effect if it would:

- result in a decrease in safety.

Substandard Rural Roadway Functionality: A project is considered to have a significant effect if it would:

- cause the substandard rural roadway to exceed an average daily traffic volume of 6,000 daily vehicles; or
- add 600 or more new daily vehicle trips to a substandard rural roadway that already carries 6,000 or more daily vehicles.

Bicycle and Pedestrian Facilities: A project is considered to have a significant effect if it would:

- eliminate or adversely affect an existing bikeway or pedestrian facility in a way that would discourage its use;
- interfere with the implementation of a planned bikeway as shown in the Bicycle Master Plan, or be in conflict with the Pedestrian Master Plan; or
- fail to provide adequate access for bicyclists and pedestrians, resulting in unsafe conditions, including unsafe bicycle/pedestrian, bicycle/motor vehicle, or pedestrian/motor vehicle conflicts.

Transit: A project is considered to have a significant effect if it would:

- eliminate or adversely affect existing transit access, service, or operations; or
- interfere with the implementation of transit service as planned in the Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS); or
- substantially increase transit demand and fail to provide adequate transit service.

Safety: A project is considered to have a significant effect if it would:

- substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

I. Need for Improvements

For each significant transportation effect identified in the LTA, the study must discuss feasible improvements to avoid or substantially reduce the project's significant effects. To be considered adequate, improvements should be specific, feasible actions that will actually improve adverse conditions. Improvements should be measurable to allow monitoring of their implementation. The LTA should also discuss whether the measure reduces the effect to a less-than-significant level (i.e. below the threshold of significance), and should report the conditions after the implementation of the improvement. The LTA should also identify responsibility for implementation of each measure.

Note that improvements should be consistent with the County's General Plan Transportation Plan and the County's latest Improvements Standards. Some exceptions may occur where special

circumstances warrant a General Plan amendment of a roadway facility or additional turn lane requirements above and beyond the standard intersection.

In general, the guidelines below can be used in discussing recommendations for improvements, and identifying responsibility for implementation of each measure:

Existing Condition: Existing deficiencies should be identified.

Existing Plus Project: If a project causes a facility to operate at an unacceptable level of service, then an improvement should be identified for which the project would be 100 percent responsible. If a project causes a significant effect to a facility operating at an unacceptable level of service, then an improvement should be identified for which the project should pay a "fair share." The project's fair share will be defined as its percentage of the facility's total traffic. The LTA should calculate the project's fair share of the improvement.

Cumulative: Projected deficiencies should be identified.

Cumulative Plus Project: If a project causes a significant effect to a facility, then an improvement should be identified for which the project should pay a "fair share". The project's fair share will be defined as its percentage of the facility's growth (i.e. total cumulative traffic less existing traffic). The traffic study should calculate the project's fair share of the improvement.

Substandard Rural Roadway Functionality: Where substandard rural roadways are affected as identified in Section G (substandard rural roadway functionality), improvements shall include the reconstruction of the substandard rural roadway to the County standard of 12-foot vehicle lanes with 6-foot paved shoulders.

J. Reports

One copy of the LTA should be submitted to the Department of Transportation for review and comments. Technical calculations should be included in an attached or separate appendix, and should be submitted to the Department with the LTA. Synchro files shall also be provided to the Department. The name, phone number, and address of a contact person who can respond to the Department's questions should be provided. The cover page of the final LTA is required to be stamped and signed by a California-licensed Professional Engineer (Traffic or Civil).

Appendix C – Capital SouthEast Connector Transportation Impact Study Guidance

CAPITAL | SOUTHEAST CONNECTOR JPA
Connecting Communities

Capital SouthEast Connector Joint Powers Authority
Transportation Impact Study Guidance

The Connector PDG provides generalized technical guidance regarding the design, geometry, and operational aspects of the Connector project. For at-grade signalized intersections, the PDG specifies that the planning and design should conform to the Sacramento County Improvement Standards for a thoroughfare and the AASHTO Green Book, Chapter 9 Intersections. The PDG further states that proposed signalized intersections should meet a LOS C or better criteria. If the intersection does not meet the LOS C standard, then an alternative intersection configuration, consistent with the Connector PDG, should be considered. As shown in **Table 1**, the PDG has been updated to include roadway service volumes for LOS E, based on the Highway Capacity Manual (HCM) 6th Edition, and states that when forecasted traffic volumes exceed 85% of that service volume, a detailed operational analysis should be performed to determine whether widening or other operational improvements are necessary.

Table 1 – Service Volumes for Connector JPA Facilities

Facility Type	Number of Lanes	Service Volume Threshold		85% Service Volume	
		Daily	Peak-Hour	Daily	Peak-Hour
Expressway	4	78,200	3,870	66,470	3,290
Arterial	4	36,800	1,820	31,280	1,550
	6	55,300	2,740	47,010	2,330

- For intersections that have already been improved to Phase I Connector improvement standards and for improvement projects that will implement Phase I Connector improvements, the LOS policy for Connector roadway intersections is defined as LOS C for Connector Expressway and Thoroughfare segments and LOS D for Connector Special segments.

- Consistent with updated guidance prepared for the Connector PDG, at such time as 85% of the Connector PDG's LOS E service volume is exceeded, detailed operational analysis should be performed to determine whether widening or other operational improvements are necessary.

- The number of through travel lanes on Connector roadway segments shall not exceed the number of through travel lanes specified for the Phase I Connector roadway functional classifications. The functional classes along the Connector can be observed in **Exhibit 1**.
    - Connector Expressway segments: 4 through travel lanes.
    - Connector Thoroughfare segments: 4-6 through travel lanes.
    - Connector Special segment: 4 through travel lanes.

- For Connector at-grade signalized intersections that Phase I Connector improvements have already been implemented or will be implemented with the subject roadway improvements, LOS C criteria should be met utilizing standard intersection geometry in order to minimize throwaway improvements. The standard intersection geometry, as defined in the Connector PDG, is:
    - 0 to 3 total turn lanes with a maximum of two per movement (i.e. no more than 2 left or right turn lanes)
    - 2 to 3 through travel lanes.

- For thoroughfare intersections where it is determined that the standard intersection improvements cannot reduce the delay to achieve LOS C, exceptions may be made with concurrence from the Sacramento County Department of Transportation, the County

Environmental Coordinator, and the Connector JPA. These exceptions may be geometric, such as allowing triple lefts, or policy exceptions allowing for conditions resulting in LOS D or E.

- Should the intersection improvements not meet the applicable LOS criteria, then the standard intersection geometry shall be implemented and a fair share payment towards a Connector grade separation shall be made.

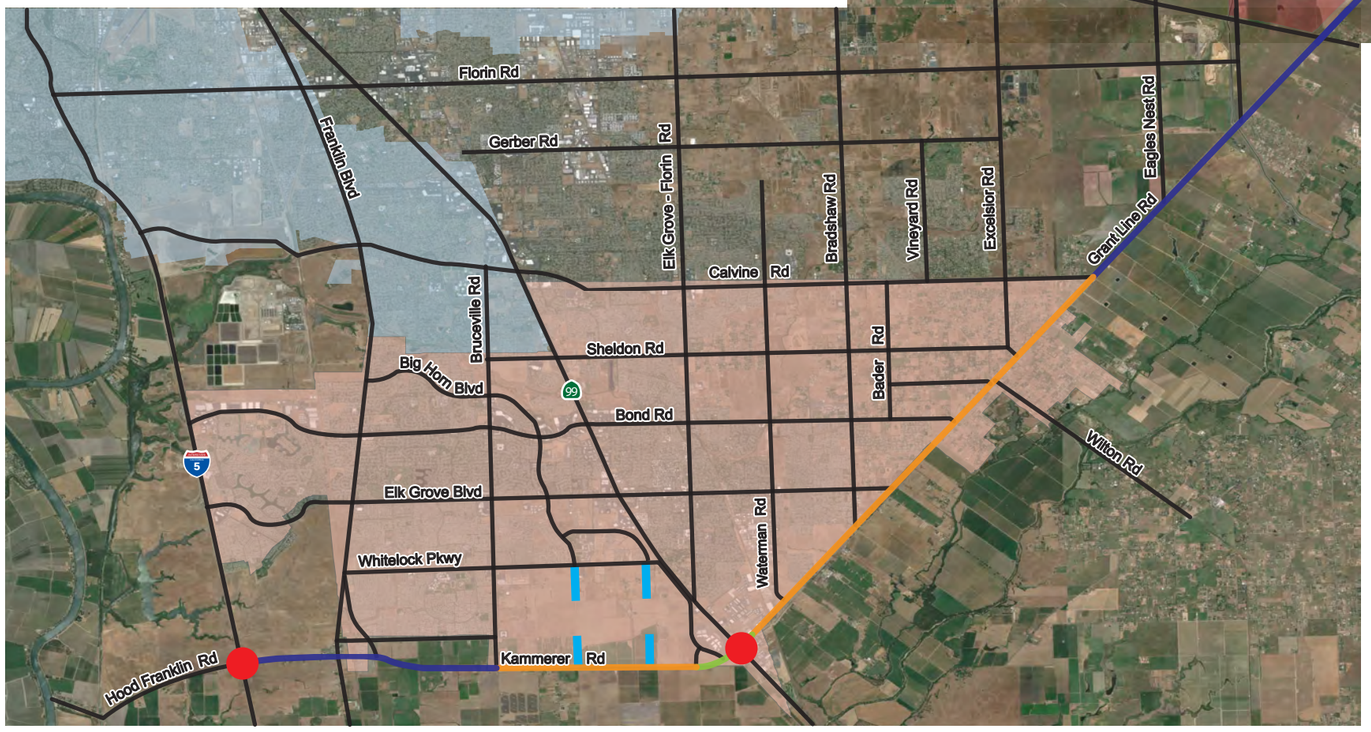
It is recommended that all analysis utilize the Connector JPA model for all facilities located along the Connector. The Connector model was based on SACOG's SACSIM model, which has been refined for both the roadway network and land use assumptions in the vicinity of the Connector. The recommended coding of the Connector for the SACSIM future year model is shown in Exhibit 2 where the number of lanes described are a total of both directions. The selection of a 55-mph model speed for the expressway segments is consistent with the project as envisioned by the JPA. Namely that the project as planned will be constructed to accommodate higher speed traffic, have only limited access, and in the long term accommodate traffic interchanges. Arterials are anticipated to have significantly more side friction from driveways and closer intersection spacing, as well as having lower posted speeds than expressways.

Attachments:

Exhibit 1 – 2036 Connector Phase 1 Roadway System
Exhibit 2 – Recommended SACSIM Coding

Capital SouthEast Connector

NOT TO SCALE



Legend:

- 2036 MTP Roadways[1]

Thoroughfare:

- 4 Lanes
- 6 Lanes

Expressway:

- 4 Lanes
- Interchange

City and County Limits:

- City of Rancho Cordova
- City of Folsom
- El Dorado County
- City of Elk Grove
- City of Sacramento

[1]Source: Final 2016 SACOG MTP/SCS

Kimley»Horn

Exhibit 1

2036 Connector Phase 1 Roadway System

Capital SouthEast Connector

Kimley»Horn

Exhibit 2
Recommended SACSIM Coding