



Vehicle Miles Traveled-Focused

Transportation Impact Study Guide

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Use of this Guidance

The Transportation Impact Study Guide (TISG) was prepared by the State of California, Department of Transportation (Caltrans) to provide guidance to Caltrans Districts, lead agencies, tribal governments, developers and consultants regarding Caltrans review of a land use project or plan's transportation analysis using a vehicle miles traveled (VMT) metric. This guidance is not binding on public agencies and it is intended to be a reference and informational document. The guidance may be updated based upon need, or in response to updates of the Governor's Office of Planning and Research's *Technical Advisory on Evaluating Transportation Impacts in CEQA*.

The TISG replaces the *Guide for the Preparation of Traffic Impact Studies* (Caltrans, 2002) and is for use with local land use projects, not for transportation projects on the State Highway System.

1. Introduction

The Transportation Impact Study Guide (TISG) is used by the California Department of Transportation's (Caltrans) Local Development-Intergovernmental Review (LD-IGR) program during environmental review of land use projects and plans. As owner/operator of the State Highway System Caltrans may review projects and plans as a commenting agency or responsible agency under the California Environmental Quality Act (CEQA).

Caltrans LD-IGR program works with local jurisdictions early and throughout their land use planning and decision making processes, consistent with the requirements of CEQA and state planning law. Caltrans seeks to reduce single occupancy vehicle trips, provide a safe transportation system, reduce per capita VMT, increase accessibility to destinations via cycling, walking, carpooling, and transit, and reduce greenhouse gas (GHG) emissions. Those goals along with standard CEQA practice create the foundation of Caltrans review of proposed new land use projects.

1.1 Changes to CEQA

For 50 years CEQA has required that public agencies examine, disclose, and minimize the anticipated environmental impacts of public and private investments in the state. These investments include both land development projects and infrastructure investments such as freeway projects. Senate Bill 743, approved in 2013 and incorporated into the State's CEQA Guidelines in 2018, better aligned CEQA with the State's climate goals. It is changing CEQA analysis of transportation impacts associated with both land development and infrastructure projects.

For Caltrans, SB 743 means major changes in two activities:

1. Review of land use project or plan's potential impact to the State Highway System, which are generally addressed through the Caltrans LD-IGR program, and
2. CEQA analysis of capacity increasing transportation projects on the State Highway System

These changes follow both the CEQA Guidelines and the Governor's Office of Planning and Research's (OPR) [Technical Advisory on Evaluating Transportation Impacts in CEQA](#). Caltrans supports implementation of the guidance published by its State Agency partners.

A key change for the LD-IGR program is that CEQA documents will now consider different types of transportation impacts than previously examined. When analyzing the impact of VMT on the State Highway System resulting from local land use projects, the focus will no longer be on traffic at intersections and roadways immediately around project sites. Instead, the focus will

be on how projects are likely to influence the overall amount of automobile use. SB 743 specifies that “...automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion, shall not be considered a significant impact on the environment” (California Public Resources Code Section 21099).

Caltrans supports these changes, which aim to reduce automobile use while increasing use of more sustainable modes that are essential to supporting a growing population and economy while meeting climate goals.

1.2 Caltrans Updates Its Review of Land Use Decisions and Projects

For land use projects and plans, automobile delay is no longer considered a significant impact on the environment under CEQA (SB 743, 2013). Caltrans review of land use projects and plans is focused on a VMT metric, consistent with changes to the CEQA Guidelines (California Code of Regulations Section 15064.3(b)(1)). This VMT-focused TISG provides a foundation for review of how lead agencies apply the VMT metric to CEQA project analysis.

Beyond or in addition to the use of the VMT metric, determining how the State Highway System may otherwise be affected by a land use project may still be necessary at times, particularly as it relates to the safety of the traveling public. **Additional future guidance will include the basis for requesting transportation impact analysis that is not based on VMT. This guidance will include a simplified safety analysis approach that reduces risks to all road users and focuses on multi-modal conflict analysis as well as access management issues. With this guidance the Department will transition away from requesting LOS or other vehicle operations analyses of land use projects.**

This VMT-Focused Transportation Impact Study Guide is intended for use by the Caltrans LD-IGR program, lead agencies, tribal governments, developers, and consultants when reviewing or analyzing land use projects or plans that may impact or affect the State Highway System. It supports CEQA streamlining for qualifying projects as identified by CEQA Guidelines (California Code of Regulations Section 15064.3(b)(1)).

The objectives of this Guide are to provide:

- a. Guidance in determining when a lead agency for a land use project or plan should analyze possible impacts to the State Highway System, including its users.
- b. An update to the *Guide for the Preparation of Traffic Impact Studies* (Caltrans, 2002) that is consistent with SB 743 and the CEQA Guidelines adopted on December 28, 2018.
- c. Guidance for Caltrans land use review that supports state land use goals, state planning priorities, and GHG emission reduction goals.

- d. Statewide consistency in identifying land use projects' possible transportation impacts, to the State Highway System, and to identify potential non-capacity increasing mitigation measures.
- e. Recommendations for early coordination during the planning phase of a land use project to reduce the time, cost, and/or frequency of preparing a Transportation Impact Study or other indicated analysis.

The TISG replaces the *Guide for the Preparation of Traffic Impact Studies* (Caltrans, 2002). Caltrans continues to emphasize the importance of coordination early in the land use project approval/CEQA review process. Early coordination helps to ensure transportation impact analysis and/or site design elements that address the needs of all users are identified. Early coordination can also minimize costs and time associated with analysis of transportation impacts. The information herein may be used as part of a land use project's CEQA transportation analysis as well as for other elements of a project's review, analysis, or approval processes to determine impacts or potential and appropriate changes or mitigation necessitated by such projects.

2. Reducing Greenhouse Gas Emissions and Vehicle Miles Traveled

California law, including Assembly Bill 32 (Nunez, 2006) and SB 32 (Pavley, 2016), known as the California Global Warming Solutions Act of 2006, requires GHG reductions. California Air Resources Board (CARB) developed a Scoping Plan that describes the approach California will take to reduce greenhouse gas emissions. CARB finds per capita vehicle travel needs to be below what today's policies and plans would achieve. CARB's assessment is based on data in the 2017 Scoping Plan Update and 2016 Mobile Source Strategy. In those documents, CARB examined the relationship between VMT and the state's GHG emissions reduction targets. Most recently, CARB's 2018 Progress Report stated:

“With emissions from the transportation sector continuing to rise despite increases in fuel efficiency and decreases in the carbon content of fuel, California will not achieve the necessary greenhouse gas emissions reductions to meet mandates for 2030 and beyond without significant changes to how communities and transportation systems are planned, funded, and built.” (https://ww2.arb.ca.gov/sites/default/files/2018-11/Final2018Report_SB150_112618_02_Report.pdf Page 5)

SB 743, through a new CEQA metric for transportation impacts, sought to promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses (Public Resources Code Section 21099 (7)(b)(1)). That is, it sought to modernize CEQA transportation analysis in a way that supports these goals. A new metric, VMT, was selected for land use development based on the expectation that a vehicle miles traveled metric will better support greenhouse gas emission reductions and improve multimodal transportation options for land use development.

3. Caltrans Review of Local Development Projects

Caltrans LD-IGR program's focus is aligned with Caltrans Strategic Management Plan's goals and targets to reduce single occupancy vehicle trips, provide a safe transportation system, reduce per capita VMT, increase accessibility to destinations via cycling, walking, carpooling, and transit, and reduce GHG emissions.

CEQA Guidelines and OPR's Technical Advisory distinguish types of development projects that are presumed to have a less than significant impact on VMT and therefore, a less than significant adverse impact on transportation. Caltrans review of land use projects is attentive to the distinction and encourages development in low VMT areas while at the same time maintaining safety for the State Highway System and all its users.

3.1 VMT Analysis is Caltrans' Focus

Many lead agencies are adopting VMT metrics in advance of it becoming the standard CEQA transportation metric on July 1, 2020. VMT analysis replaces level of service, the prior widely applied metric used for CEQA transportation analysis. Caltrans' primary review focus for a land use project's impacts is now VMT.

Caltrans references OPR's December 2018 SB 743 Technical Advisory as a basis for this guidance document. Caltrans recommend use of OPR's recommended thresholds for land use projects. As each lead agency develops and adopts its own VMT thresholds for land use projects, Caltrans will review them for consistency with OPR's recommendations, which are consistent with the state's GHG emissions reduction targets and CARB's Scoping Plan.

To assist in the determination of significance, many lead agencies rely on "thresholds of significance" based on substantial evidence. Caltrans will review VMT thresholds as a lead agency sets them by policy, resolution, ordinance, etc. After this one time review, there may be no need for Caltrans to comment on the thresholds as it reviews individual land use projects, unless the Agency updates its threshold.

If a lead agency sets a VMT threshold on a case by case basis, Caltrans will review it along with the individual land use project.

Caltrans supports CEQA streamlining for land use projects in defined transit priority areas and other areas identified with existing low VMT, as described in OPR's Technical Advisory. Caltrans recommends following the guidance on methods of VMT assessment found in OPR's Technical Advisory. **Caltrans comments on a CEQA document may note methodological deviations from those methods and may recommend that significance determinations and mitigation be**

aligned with state GHG reduction goals as articulated in OPR's guidance, CARB's Scoping Plan, and related documentation. OPR's Technical Advisory is available [online](#).

If work is required within the State Highway System Right of Way a local land use project will need a Caltrans Encroachment Permit. In such cases, follow procedures within Caltrans Encroachment Permit Manual.

3.2 VMT Calculation

A lead agency has discretion to choose the most appropriate methodology to evaluate a project's VMT (Public Resources Code 15064.3 (b)(4)). Caltrans will review an agency's VMT calculator or VMT calculation for consistency with technical considerations in OPR's Technical Advisory.

Because direct and indirect impacts due to VMT are regional in nature, Caltrans may review and comment on a proposed land use project's potential transportation impacts even if the project is not immediately adjacent to the State Highway System.

4. Projects Presumed to Have a Less than Significant Transportation Impact

Certain types of projects as identified in statute, the CEQA Guidelines, or in OPR's Technical Advisory are presumed to have a less than significant impact on VMT and therefore a less than significant impact on transportation. Generally, the identified projects contribute to efficient land use patterns enabling higher levels of walking, cycling, and transit as well as lower average trip length. This section addresses how Caltrans will determine which projects will be presumed to have a less than significant transportation impact. These projects include, for example, projects in transit priority areas, projects consisting of residential infill or those located in low VMT areas.

Caltrans references OPR's December 2018 *Technical Advisory on Evaluating Transportation Impacts in CEQA*, which identifies projects and areas presumed to have a less than significant transportation impact. Those include:

1. Residential, office, or retail projects within a Transit Priority Area, where a project is within a ½ mile of an existing or planned major transit stop or an existing stop along a high-quality transit corridor.
 - a. A 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 (Pub. Resources Code, § 21064.3).
 - b. A high-quality transit corridor is defined as a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours (Pub. Resources Code, § 21155).
2. An area pre-screened by an agency as having low residential or office VMT:
 - a. An area where existing residential projects exhibit VMT per capita 15 percent or more below city or regional average.
 - b. An area where existing office projects exhibit VMT per capita 15 percent or more below regional average.
3. Residential projects composed of 100 percent or near-100 percent affordable housing located in any infill location. Additionally, per OPR's Technical Advisory, "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.”

4. A locally-serving retail project (such a project typically reduces vehicle travel by providing a more proximate shopping destination, i.e., better accessibility).
5. Mixed-use projects composed entirely of the above low-VMT project types.
6. In any area of the state, absent substantial evidence indicating that a project would generate a potentially significant level of VMT, or inconsistency with a Sustainable Communities Strategy (SCS) or general plan, projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than significant transportation impact.

Caltrans supports CEQA streamlining for these projects and acknowledges the importance of streamlining them in improving access to destinations, livability, and community vibrancy. Further, Caltrans encourages these projects because they will help achieve VMT reduction and mode shift goals.

Note, however, a land use project near transit may have a significant impact on VMT if it:

1. Has a floor area ratio less than 0.75.
2. Includes more parking than required by the local permitting agency.
3. Is inconsistent with the region’s Sustainable Communities Strategy (i.e., development is outside region’s development footprint, or in area specified as open space).
4. Replaces affordable residential units with a smaller number of moderate- or high-income residential units.

In very limited situations, analysis or mitigation may be appropriate in low VMT areas to address specific multimodal access management issues directly caused by the project such as issues related to line of sight caused by the placement of a driveway. These situations are to be determined based on the details of specific development proposals and their setting and will be addressed in future guidance.

4.1 Caltrans’ Review of Projects Presumed to Have A Less Than Significant Impact

Caltrans will review a proposed land use project in a low VMT area to determine consistency with the OPR SB 743 Technical Advisory’s recommendations and that the proposed project is presumed to have a less than significant transportation impact (using a VMT metric). Where projects will further California’s VMT goals consistent with CARB’s Scoping Plan and OPR’s Technical Advisory, Caltrans may provide comments to underscore that consistency and achievement. For example, Caltrans may send a comment letter to describe how the project

helps achieve state planning priorities contained in state law (i.e., AB 857, 2002 Wiggins) and meets state policy goals on transportation (improving access to destinations), VMT reduction, GHG emissions reduction, and/or betterment of the environment and human health.

5. Projects Without Presumption of Less Than Significant Impact

This section addresses how Caltrans will review projects that are not presumed to have a less than significant transportation impact (using a VMT metric).

For residential and office projects, OPR's Technical Advisory recommends VMT per capita or per employee thresholds 15% below existing city or regional VMT per capita. The recommended thresholds align with the reduction in per capita VMT required to achieve GHG reductions sufficient to achieve targets contained in State law. Caltrans suggests use of OPR's recommended thresholds of significance for land use projects and may request mitigation from projects and plans which do not meet those thresholds.

Caltrans' comments on the transportation impacts portion of a particular CEQA document may note methodological deviations from OPR's Technical Advisory and may strongly recommend significance determinations and project changes or mitigation aligned with state GHG and VMT reduction goals as articulated in that guidance and in the California Air Resources Board's Scoping Plan and related documentation.

5.1 Caltrans' Review of Projects Without Presumption of Less Than Significant Impact

Caltrans will review a land use project not presumed to be less than significant (as defined by Statute, CEQA Guidelines, or OPR's Technical Advisory) to determine consistency with OPR's Technical Advisory. Where projects would not support reduction of vehicle miles traveled and greenhouse gas emissions, or where VMT analysis deviates from recommendations for analysis thereby preventing a clear determination, Caltrans may provide comments on the analysis, project details or mitigation. Caltrans may comment in the following instances.

1. Where project VMT analysis and significance determination are undertaken in a manner consistent with OPR's Technical Advisory and state GHG emissions reduction goals, and where transportation impacts (using a VMT metric) are found to be less than significant:
 - a. Caltrans may send a comment letter to describe how the project helps achieve state planning priorities codified in state law (i.e., AB 857, 2002 Wiggins) and meet state policy goals on transportation (improving access to destinations), VMT reduction, GHG emissions reduction, and/or betterment of the environment and human health.
2. Where project VMT analysis and significance determination are undertaken in a manner consistent with OPR's Technical Advisory and state GHG emission reduction goals, and the

project is found to have a significant transportation impact (using a VMT metric), Caltrans may provide comments:

- a. Recommending changes in the proposed project or mitigation which would reduce the impact to less than significant
3. Where VMT analysis and significance determination are undertaken in a manner which is inconsistent with OPR's Technical Advisory or state GHG emissions reduction goals, Caltrans may provide comments:
- a. Noting methodological deviations from OPR's Technical Advisory in VMT assessment;
 - b. Recommending significance determinations, project changes or mitigation which is aligned with state GHG reduction goals as articulated in OPR's Technical Advisory and in the California Air Resources Board's Scoping Plan and related documentation;
 - c. Pointing out inconsistency with the region's Sustainable Communities Strategy (development is outside region's development footprint, or in area specified as open space); or
 - d. Suggesting project revisions or mitigation be undertaken to reduce project-generated VMT

6. Rural Areas Outside of Metropolitan Planning Organizations (MPOs)

OPR's Technical Advisory indicates significance thresholds for projects in rural areas of non-MPO counties may be best determined on a case-by-case basis. In these rural areas, programmatic VMT mitigation is sometimes the most effective. Caltrans may comment requesting VMT-reducing strategies for the rural area be included programmatically, including at the General Plan level, for example. Caltrans will also recommend establishment of programs or methods to reduce VMT and support appropriate bicycle, pedestrian, and transit infrastructure, services or incentives.

A future update of Caltrans' Transportation Impact Study Guide may add flexibility in the approach to rural areas within MPO counties.

7. Mitigating Transportation Impacts

For years, transportation impacts under CEQA often led to mitigation in the form of roadway widening or otherwise addressing traffic operations with the intention of improving automobile level of service. Based on SB 743, the historic approach to mitigating transportation impacts is being modified.

Caltrans reviews projects for consistency with the recommendations in the VMT Mitigation and Alternatives section of OPR's Technical Advisory with a focus on:

- 1) Whether the lead agency considered applicable measures to reduce VMT from the project, and
- 2) Whether the lead agency identified feasible alternatives that could avoid or substantially reduce a project's significant transportation impacts.

As noted above, reducing or mitigating VMT will serve many state goals, including providing more multimodal transportation options and supporting air quality, public health, and climate goals.¹ The TISG Appendix includes a partial list of resources to reference for supporting information on VMT reduction measures. Caltrans supports both on-site and off-site mitigation measures to reduce VMT.

On-site design features that reduce VMT may minimize or eliminate mitigation necessary to achieve a less than significant transportation impact. For example, a project may incorporate transportation demand management strategies (e.g., parking supply reduction, on-street bicycle facilities improvements, or pedestrian network improvements) into project design to reduce project VMT. Some local agencies provide online calculator tools to assess a project's VMT and estimate reduction achieved through project design features.

Where further on-site design features are infeasible or not proven to be effective, direct investments in off-site VMT mitigation may be appropriate and feasible to mitigate VMT associated with a project. Off-site mitigation measures may include programmatic methods that implement mitigation in advance of and in anticipation of transportation impacts generated by land use projects or plans. Programmatic methods may include, but are not necessarily limited to, VMT mitigation banks, VMT mitigation exchanges, or VMT impact fee programs:

1. Jurisdictions that document appropriate nexus and proportionality between a transportation impact fee and VMT reduction may rely on such fees to mitigate VMT

¹ Documented benefits of VMT reduction are available at <http://opr.ca.gov/ceqa/updates/sb-743/>

transportation impacts from land use development projects. For example, a nexus study that contemplates a capital improvement program consisting of projects that would demonstrably reduce VMT within the jurisdiction's geographic scope and within the buildout time horizon of the proposed project could serve as adequate fair share VMT mitigation.

Similar support for this "fair share" approach comes from CEQA Guidelines and OPR's General Plan Guidelines which advise jurisdictions to collaborate proactively with their regional public and private sector partners to develop and adopt multi-party fair share impact fee programs needed to finance planned transportation infrastructure improvements. The guidelines suggest basing such impact fee programs on multi-modal system improvements with a demonstrated ability to reduce the VMT generated by new development.²

2. Jurisdictions can pool fees from individual development projects to facilitate feasible project-level mitigation at a programmatic level, known as a VMT mitigation bank.
3. Jurisdictions can also develop a VMT mitigation exchange which would allow a developer to fund off-site VMT mitigation projects from a pre-approved list of mitigation projects that are proportional in size to the transportation impact (using a VMT metric) from the development project.

Lead Agencies should consider the legal requirements and practical implications of programmatic mitigation strategies. For example, some additional considerations for VMT mitigation exchanges and banks are outlined in a University of California Berkeley research paper (link in Appendix). The considerations include "additionality" (generally meaning the improvements would not have occurred without funding from the VMT mitigation bank), equity (with respect to geographical distribution of beneficial mitigation projects), verifiability, and exhaustion of on-site mitigation strategies.

Caltrans supports efforts to identify and pilot reasonable, feasible, and enforceable programmatic mitigation mechanisms that equitably reduce transportation impacts to the greatest extent feasible.

Caltrans will coordinate with cities, counties, and regional transportation planning agencies to develop and pilot programmatic methods that fund off-site VMT mitigation projects. Such a framework could provide funding necessary for projects that reduce VMT, while providing more

² Governor's Office of Planning and Research. 2017. *General Plan Guidelines Update*. Chapter 9: Implementation. Available at: http://opr.ca.gov/docs/OPR_C9_final.pdf. (Page 251)

transportation options, safer connections between new development and the existing community, and a pathway to mitigating transportation impacts from land use projects to less-than-significant levels.

8. Appendix

Links to key resources

1. Governor's Office of Planning and Research December 2018 [Technical Advisory](#) on Evaluating Transportation Impacts in CEQA
2. California Air Resources Board [Scoping Plan-Identified VMT Reductions and Relations to State Climate Goals](#)
3. California Air Resources Board [California's 2017 Climate Change Scoping Plan: the strategy for achieving California's 2030 greenhouse gas target](#)
4. California Air Resources Board [2018 Progress Report: California's Sustainable Communities and Climate Protection Act](#)
5. Public Resources Code, Chapter 2.7: Modernization of Transportation Analysis for Transit-Oriented Infill Projects, [Section 21099](#) (SB 743 in Public Resources Code)
6. California Code of Regulations, Title 14, Division 6, Chapter 3, [Section 15064.3](#) (SB 743-related CEQA Guidelines)
7. VMT Mitigation Resources.
Strategies to mitigate VMT are available within the following resources. Additional mitigation resources will be added to [Caltrans SB 743 Implementation webpage](#).
 - a. Governor's Office of Planning and Research's CEQA Guidelines Update and Technical Advisory [website](#) has information on VMT reduction strategies, even for rural areas.
 - b. California Air Pollution Control Officers Association's (CAPCOA) [2010 Quantifying GHG Mitigation Measures](#) is a current source of VMT reduction by mitigation strategy.
 - c. A 2018 [research paper](#) from University of California Berkeley School of Law's Center for Law, Energy & the Environment focuses on two innovative models that could be used to implement programmatic VMT mitigation strategies for land use or transportation projects. VMT mitigation "banks" and "exchanges"

are compared, and examples provided of ways to mitigate VMT under CEQA or the mitigation fee act. These models are conceptually similar to existing mitigation frameworks such as regional impact fee programs or habitat conservation banks.

- d. A 2020 white paper prepared by Fehr & Peers [VMT Mitigation Through Banks and Exchanges: Understanding New Mitigation Approaches](#) highlights potential VMT mitigation programs including impact fee programs, mitigation exchange, and mitigation bank.
 - e. State Smart Transportation Initiative (SSTI) 2018 report [Modernizing Mitigation: A Demand-Centered Approach](#) outlines partnerships possible to reduce the demand for driving.
8. Additional Resources
- a. Governor's Office of Planning and Research [Key Resources on SB 743](#): Studies, Reports, Briefs, and Tools