

Q&A: Caltrans TAF and TAC

Release 1 of 2

September 9, 2020

Overview

The questions and responses below were compiled based on input received during the informal review of the draft Caltrans *Transportation Analysis Framework* (TAF) and *Transportation Analysis under CEQA* (TAC) between April 3, 2020 and June 19, 2020, which are the guidance documents to support the implementation of SB 743.

Caltrans received feedback on the draft TAF and TAC guidance documents from over 50 different agencies and organizations representing state, regional, and local agencies as well as advocacy groups, consultants, and general public. Over 1,000 separate comments were received either via Caltrans' on-line comment portal or in correspondence. **Due to the comprehensive nature of the feedback received, this document will be released in two installments to provide responses to the broad range of topics included.**

To compile this document, the feedback received was first categorized into 24 topic areas. These covered technical comments specific to the TAF and TAC guidance documents, broader policy-related comments, and comments that related to both technical issues and policy. In order to prepare responses, similar comments and questions were grouped by theme. Of the 24 topic areas, those themes that are most relevant to the draft TAF and TAC guidance documents have been included in this Q&A document.

It is important to note that all responses to the draft TAF and TAC contained in this Q&A document relate to SB 743 implementation on transportation projects on the State Highway System (SHS) and not to land use projects, which are addressed by the *Transportation Impact Study Guide* (TISG) released in July 2020 and available at the Caltrans SB 743 website.

Project-specific questions are not included in this Q&A document. Questions and comments on documents that were more editorial in nature, such as format and organization, are also not included. Several questions and comments received relate to topics that have not yet been fully evaluated and may be addressed as part of future discussion and/or guidance, as SB 743 implementation continues to evolve beyond this First Edition of the guidance documents, posted on September 10, 2020.

Related Documents

This Q&A document includes references to several related documents available on the Caltrans SB 743 website (<https://dot.ca.gov/programs/transportation-planning/office-of-smart-mobility-climate-change/sb-743>):

- *Transportation Analysis Framework (TAF)*, First Edition, September 10, 2020
- *Transportation Analysis under CEQA (TAC)*, First Edition, September 10, 2020
- *Transportation Impact Study Guide (TISG)*, July 1, 2020
- *Interim Guidance for LD-IGR Safety Analysis*
- *Expert Panel Final Report* (forthcoming)
- *OPR Technical Advisory on Evaluating Transportation Impacts in CEQA* (December 2018)

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A. Implementation Process

A1. Local agencies can choose other parameters besides VMT. What happens if it is an oversight project or part of the project is on the SHS?

Projects on the SHS will require VMT-based significance determinations when Caltrans is the lead agency or when Caltrans designates another entity as lead agency.

A2. How does this apply, if at all, to local capacity-increasing projects that require a Caltrans encroachment permit (only) for work within a mainline facility right-of-way?

For Caltrans to issue the encroachment permit and fulfill their role as the CEQA Responsible Agency, the portion of work subject to the encroachment review may require a VMT-based approach if the project may have an induced travel impact. The size and scope of encroachment permits varies widely, so application of VMT analysis will be a case-by-case decision.

A3. The determination of significance of VMT impact will be required for capacity-increasing transportation projects on the SHS when Caltrans is lead agency or when Caltrans designates another entity as lead agency. What is the basis for Caltrans requiring another agency, designated as the lead agency, to use a prescribed methodology/metric?

Caltrans is the responsible agency under CEQA and is the owner of the SHS. Since the project is being built on the SHS, it must meet Caltrans requirements in order to proceed.

A4. When does this go into effect? How about projects that are in development already?

The September 10, 2020 Memorandum from Caltrans Chief Engineer Mike Keever and Caltrans Deputy Director of Sustainability detail the requirements for VMT analysis. An updated version of the Implementation Timing Memo initially released April 13, 2020 accompanies the September 10, 2020 memo. The Memos are available on the Caltrans SB 743 website.

Projects that began environmental studies between December 28, 2018, and September 15, 2020, will be evaluated by the Department in consultation with project sponsors on a case-by-case basis to determine if the use of a VMT-based transportation impact significance determination in the draft environmental document is warranted. Many projects that began environmental studies between those dates and all projects that begin environmental studies on or after September 15, 2020 will be required to be screened to determine whether to prepare VMT based-significance determinations.

A5. How are projects treated that must recirculate their draft EIR or previously approved EIR and the original environmental document did not evaluate induced travel effects and/or VMT significance?

For capacity-increasing projects, in general, if there is a substantial change in the transportation analysis requiring a new traffic study, then the induced travel analysis should be conducted, and a VMT-based significance determination should be included. Please see Section 2.3 of the Implementation Timing Memo on subsequent, supplemental, later tier, or other later CEQA documents since this will depend upon when the traffic study is re-initiated and whether the study is expected to result in a substantial change to the earlier results.

A6. Who served on the expert panel? How were panelists selected?

UC Berkeley's Tech Transfer Program organized the expert panel in response to a request from Caltrans for technical assistance. Led by UC Berkeley Professor Betty Deakin, the panel included panelists Fred Dock, Gordon Garry, Susan Handy, Michael McNally, Elizabeth Sall, Alex Skabardonis, and Joan Walker. Caltrans and its partner agencies selected the panel by mutual agreement. See TAF Appendix B for Panelists' biographies.

A7. What will determine whether Caltrans does the VMT analysis or the local agency?

For projects on the State Highway System, Caltrans follows existing procedures to determine who does the studies. The determination of who conducts the VMT analysis will vary by project. Caltrans enters into cooperative agreements with local agencies to ensure there is a clear understanding of roles and responsibilities.

A8. Would the VMT analysis be required for an improvement on the State Highway System that was listed as a mitigation measure for a planned development that was approved some time ago and is in the process of buildout with money just now becoming available?

If the improvement project was evaluated in the original environmental document and no supplemental analysis/recirculation is required, then a VMT-based determination is not required. If the improvement was evaluated, but a supplemental analysis/re-circulation is required, then please refer to the Timing Implementation Memo for further guidance regarding subsequent, later tier, and other later CEQA documents. If the improvement was not evaluated in the original environmental document, then a VMT-based analysis will be required.

A9. Per the Implementation Timing Memo, if current projects reach Caltrans' Milestone 020 ("Begin Environmental") before September 15, 2020, they would not require a SB 743/VMT analysis. We request that this be codified in the final guidance and in any related Caltrans documents.

The Implementation Timing Memo is appended to the September 10, 2020 Memorandum, "Caltrans Policy on Transportation Impact Analysis and CEQA Significance Determinations for Projects on the State Highway System."

This policy is contained in the memorandums posted on the SB 743 website.

A10. How will Caltrans help ensure current project schedules will stay on track while the guidance is under development and the need for additional reviews at the District and Headquarters? Is Caltrans committing additional resources to help keep current projects on schedule?

The guidance is now available. Caltrans will work with partners to minimize the impact of the new procedures on delivery commitments.

A11. As guidance comes out there will be some differences in interpretation from Caltrans District staff, local agencies, and consultants. How will Caltrans ensure that guidance is being applied consistently across the state and ensure that project schedules will not be impacted by implementation of this guidance?

The guidance documents are intended to support a consistent process. Training, outreach, and supplemental materials to support implementation will further support this aim. (See S. Training below.) Caltrans will work with partners to minimize the impact of the new procedures on delivery commitments.

B. Scoping

B1. Study Area. Explain how to define and justify the study area to fully account for VMT impacts attributable to the project.

According to the TAF, the transportation analysis must consider the "VMT attributable to the project," regardless of jurisdictional and model boundaries. The geographic area to be analyzed depends on the project and the selected methodology. The selected study boundary can be verified by examining the regional model output from iterative model runs to assess the likelihood that any substantial amount of VMT attributable to the project would spill outside of the study boundaries. Project study area limits can also be set at travel sheds if origin/destination data is available. Project Development Teams (PDTs) can make the determinations on a case-by-case basis while working with stakeholders. The TAF provides general guidance on selecting the study area boundaries but relies on the analyst to use professional judgement. Supplemental guidance may be provided as Caltrans gains more experience with VMT analysis. In the meantime, analysts will use their professional judgement in setting and confirming the appropriate study area boundaries for VMT analysis. The analyst should be particularly cautious that VMT impacts are not cut off at a jurisdictional or travel demand model boundary.

B2. Purpose and Need. How would the Purpose and Need (P&N) statements be revised or constructed to be more consistent with changes associated with SB 743, specifically regarding reducing congestion and delay?

The shift in P&N statements to a reduced focus on long-term congestion relief are part of change in progress at Caltrans, of which the TAF/TAC guidance are only a part. Caltrans will work with transportation agency partners in the development of P&N statements to confirm federal, state, and local objectives are being met in a manner that is consistent with the intent of SB 743.

B3. The guidance needs to recognize that LOS is still being used in determining the need for and designing of a highway project.

Use of LOS in planning and design activities separate from the CEQA process is outside the scope of these guidance documents. The TAF and TAC focus on using induced travel analysis to analyze transportation impacts under CEQA.

B4. What role do alternative modes of travel play in deciding what build alternatives to carry forward from the PID phase into PA&ED? Recognizing that Caltrans' typical projects of the past have been capacity-increasing, the draft TAC scoping section (p. 8) should have had a far more expansive discussion of alternatives to vehicular capacity increases.

In the future it is anticipated that more projects will be initiated under a pre-PID, comprehensive multimodal corridor planning approach. This comprehensive multimodal approach starts with the regional plan and considers all travel modes during early project planning. The TAC is not intended to provide specific guidance for the transportation planning phase.

B5. It was presented that a lower environmental document may be considered if the VMT increase is considered nominal. How do you scope and define nominal? What does Caltrans envision to be appropriate "substantial evidence" to support a finding of less-than-significant?

The TAC indicates that within the MPO areas, a project that leads to an increase in induced travel will generally be considered to be significant under CEQA. If the PDT determines that another finding is appropriate, this should be supported by substantial evidence in the project record. Substantial evidence is defined in CEQA Guidelines Section 15384. It means that there is enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion.

C. Screening

- C1. How do we decide whether an induced travel analysis is necessary or not? Will Caltrans be refining, adding additional project types, or clarifying various parts of the screened project list? What about situations where a specific project type is not on the screened list or slightly deviates from the list?**

The TAC includes a screening section to help practitioners determine which projects require an induced travel analysis and which may be screened out of the induced travel analysis. The project types listed include all of those listed in the OPR Technical Advisory as well as six project types added to the list as a result of recent discussions between Caltrans and OPR staff.

Section 5.1 of the TAC indicates that not all situations may be covered in the screening list. When concluding that a particular project may be screened out from further analysis, the practitioner should review and fully document the rationale supporting the conclusion that the particular project would not likely lead to a measurable and substantial increase in VMT. The type and level of documentation will vary depending on the unique circumstances of the project. In cases where projects lack supporting documentation, then an induced travel analysis will be necessary.

- C2. If a project includes features from the “screened-out” list, but adds in other features that are not on the list to help with operational issues, will only that part of the project require a induced travel analysis or will it be the whole project?**

The entire project should be analyzed for the potential to induce VMT.

- C3. If an alternative is dropped early on in PA&ED and/or before PA&ED begins, would it need to be analyzed for VMT comparison?**

Provided that the alternative was appropriately eliminated, a VMT analysis would not be required.

C4. For roadway improvement projects that are not screened from a VMT analysis, is there a minimum project size (expressed in travel time reduction, ADT, or project cost) below which the VMT increase would be considered to be less than significant?

Project size is not a basis for determining that the VMT increase would be considered to be less than significant.

C5. Has the State considered developing some sort of estimating or screening tool to identify if a VMT-inducing project could result in impacts that would likely not be able to be fully mitigated and which would trigger the need for an EIR?

Caltrans has not contemplated development of such a tool. The NCST calculator, which is described in TAF Section 3, is an easy-to-use tool for assessing induced travel, on applicable project types in MSA counties.

C6. Can the guidance provide examples of what constitutes "unusual circumstances" that might be found during screening and could lead to induced travel?

The screening list refers to project types that generally do not lead to VMT increases, however, there are some exceptions. Some examples of project types that may lead to a VMT increase are:

- Addition of a Class I bicycle path along a river that becomes a visitor/regional attractor could induce vehicle trips and VMT to and from the facility.
- A conversion from a general-purpose lane to a transit lane could redistribute vehicular traffic to a more circuitous path leading to measurable increases in VMT.
- Removal or relocation of off-street or on-street parking spaces could lead to increases in vehicles circling the block to find parking.

C7. Would the screening step be done during the Project Initiation Document (PID) phase?

The PID phase would be an appropriate time to determine traffic study scope and methodology. If not completed during the PID phase the screening step should be completed during PA&ED.

- C8. The list states that the screened projects would not likely lead to “a measurable or substantial increase in vehicle travel.” That is, it would seem reasonable to conclude that any project that does not lead to a substantial increase in VMT could be screened.**

As indicated in the TAC, “While the screened project list is thorough, it is not necessarily comprehensive. There may be types of projects in addition to those listed that would not lead to a measurable and substantial increase in VMT. When concluding that a particular project may be screened out from further analysis, the practitioner should review and fully document the rationale supporting the conclusion that the particular project would not likely lead to a measurable and substantial increase in VMT.”

- C9. How would you assess induced travel impacts when you are converting existing GP lanes into HOT and/or HOV lanes?**

Conversion of a GP lane to a HOT or HOV lane is likely to reduce capacity. As such they are included under the following statement on the list of screened project types, “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,” so VMT analysis will generally not be required for this project type. When concluding that a particular project may be screened out from further analysis, the practitioner should review and fully document the rationale supporting the conclusion that the particular project would not likely lead to a measurable and substantial increase in VMT. See Section 5.1 of the TAC.

- C10. Toll Lanes are included in the list of projects, with toll revenues able to mitigate the VMT increase. Fixing the tolling rates for a managed lane is not typically determined this early in the project. Could it be revenues collected in the corridor will be re-invested in VMT-reducing projects and strategies in the corridor?**

This category was included in the draft TAC for consistency with the OPR Technical Advisory. After considering its lack of potential applicability, a decision was made to eliminate the screened project category, “Addition of tolled lanes, where tolls are sufficient to mitigate VMT increase,” from the OPR Technical Advisory and the TAC.

Where a toll lane is added, it is possible that the revenues from tolls could be utilized to fund VMT-reducing projects and strategies at a level sufficient to mitigate for increased VMT. The impacts of the project and the mitigation measures would be part of the analysis for the project pursuant to the guidance provided in the TAF and TAC.

C11. How should auxiliary lanes be handled for screening? How about multiple auxiliary lanes, each one less than 1 mile?

Per the OPR Technical Advisory, the "addition of an auxiliary lane of less than one mile in length designed to improve roadway safety," is not likely to lead to a measurable and substantial increase in VMT and an induced travel analysis would not be required. For auxiliary lanes that are greater than 1 mile in length and/or not designed to improve roadway safety, an induced travel analysis will be necessary. For the situation of multiple auxiliary lanes, the determination of whether the project requires analysis would be based on whether the additive lane length of the multiple auxiliary lane segments is greater than 1 mile.

C12. For an auxiliary lane, how is the 1-mile distance determined? Is it actual project length or lane length?

The lane length would be most appropriate. The key is whether the new capacity would result in induced travel.

C13. When including aux lanes in the list of project types likely to lead to an increase in vehicle travel, should this be clarified to be "aux lanes longer than 1 mile", since aux lanes of less than 1 mile are included on the screened projects list?

Auxiliary lanes in general are included in the OPR Technical Advisory among the types of projects likely to lead to a measurable and substantial increase in vehicle travel. However, as noted, auxiliary lanes less than one mile are included on the screening list. If a project is on the list of project types that generally would not increase VMT, what is the Caltrans process to document that it meets the list criteria? For example, for projects that have auxiliary lanes that are less than 1 mile, does TASAS data have to demonstrate that it's for safety or that it has a purpose statement for safety? Explain what would trigger VMT analysis for one of those projects.

When concluding that a particular project may be screened out from further analysis, the practitioner should review and fully document the rationale supporting this conclusion. The type and level of documentation will vary depending on the situation and project type. For the example given, TASAS data is a potential source of data to document the rationale in that particular situation. In cases where projects lack supporting documentation, then an induced travel analysis will be necessary. See TAC section 5.1 for more details.

C14. Would adding a turning lane be considered capacity increasing if the project is an intersection improvement?

Turning lanes are among the project types that could be screened but the determination should be made based on the specific context and full project scope. See Section 5.1 of the TAC.

C15. What should the VMT analysis be if the project scope includes removing the on and off ramps at an existing interchange?

Project types not identified on the screening list in the OPR Technical Advisory will need to be evaluated on a case-by-case basis to determine if an induced travel analysis is necessary.

C16. Would traffic signals or roundabouts require induced travel analysis?

Traffic signals and roundabouts are among the project types that can be identified as not leading to measurable and substantial VMT increases. See Section 5.1 of the TAC.

C17. Operational improvements (including ITS features) could lead to increases in VMT. How should these be handled?

It is possible that some operational projects could result in induced travel. However, operational improvements are on the screening list of project types that are not likely to lead to a measurable and substantial increase in VMT, and therefore generally should not require an induced travel analysis.

C18. Would brand new interchanges require an induced travel analysis? What recommendations are there for analyzing interchange projects?

If new interchanges improve accessibility to the SHS, they will require an induced travel analysis depending upon the lanes through grade-separated interchanges and additional receiving lanes downstream. (See Section 5.1.a of the TAC.) According to its technical documentation, the NCST tool is not an appropriate tool for evaluating interchange improvements. The analysis could include travel demand models, other quantitative analysis, or qualitative assessment methods.

D. Consistency

- D1. Consistency with Local Plans and Policies. How do local agencies evaluate cumulative traffic impacts when Caltrans procedures differ from that of local agencies? What is the expectation for Local Assistance projects? Will Caltrans require an induced travel analysis?**

The guidance in the TAC and TAF are applicable only to projects on the SHS. For off-system projects, local agencies will follow their own CEQA procedures.

- D2. Consistency with other CEQA topics/EIR sections. How does the elimination of delay change the environmental justice analysis? What if a low-income neighborhood has higher levels of delay than a nearby high-income neighborhood?**

VMT is the required metric for transportation impacts under CEQA. If the environmental analysis reveals the potential for disproportionate impacts to EJ communities due to traffic delay this should be addressed in the EJ section of the environmental document.

- D3. Consistency with State Scoping Plan. If a project induces travel is it inconsistent with state GHG and climate goals? What justification and analysis are needed to support statewide versus regional GHG metrics and targets?**

The Scoping Plan is the state's primary document for the articulation of the state's GHG-reduction goals as mandated by the California Global Warming Solutions Act of 2006 (AB 32). As always, CEQA determinations must be supported by substantial evidence. As directed by the TAC, a project that results in an increase in VMT will likely be found to be inconsistent with the Scoping Plan. (See Section 5.5 of the TAC.)

E. Thresholds and Significance Determination

- E1. VMT-Related Significance Threshold. Multiple comments focused on what vehicle miles travelled (VMT) threshold Caltrans considers appropriate for projects on the State Highway System. Many comments sought clarity on whether Caltrans has adopted a threshold of significance to identify potentially significant impacts.**

Caltrans has not adopted a VMT-based CEQA significance threshold, consistent with the Department's CEQA practice generally. Caltrans will follow established CEQA practice by identifying and analyzing significant transportation impacts, and evaluating transportation impacts as discussed in the TAF and TAC.

F. Mitigation

- F1. Mitigating Potentially Significant Impacts. Many comments sought clarity on what types of mitigation Caltrans considers appropriate for projects on the State Highway System. Other comments focused on the proper geographic scale of mitigation, including whether it should take place at a regional or local level, and at a plan or project level. Some comments suggested that Caltrans quantify potential mitigation in its guidance documents and consider the cost of certain measures.**

CEQA requires mitigation of significant environmental impacts, to the extent such mitigation is feasible. Many potential mitigation options exist and the determination of whether any particular measure is feasible in connection with a specific project is ultimately made by the lead agency based on established CEQA standards. Appendix C in the TAC presents some of the strategies that may be appropriate, with citation to supporting literature and resources, in addition to information on the Caltrans SB 743 Implementation website.¹ Tables 1 and 2 further list mitigation strategies that Caltrans may consider when serving in a supporting role or when leading implementation of a strategy, and other quantifiable strategies with respect to VMT and GHG emissions.

¹ Caltrans, SB743 Implementation. Available at: <https://dot.ca.gov/programs/transportation-planning/office-of-smart-mobility-climate-change/sb-743>.

G. Air Quality/GHG/Conformity

G1. Federal Conformity and the California Environmental Quality Act. Comments suggested various links between federal transportation conformity (transportation conformity or conformity) requirements and CEQA.

Federally-required transportation conformity and CEQA both include analysis of a project's emissions of criteria pollutants, but federal conformity and CEQA contain differing standards and analytical requirements and each serves its own purposes. Federal conformity analyses can be relevant to addressing impacts analysis in CEQA, and a lead agency (including Caltrans) may disclose and consider a project's federal conformity analysis during its CEQA review and may also be considered in the CEQA context of overall compliance with adopted plans. However, CEQA law and guidance do not contain any authority to substitute conformity analysis for the required analysis under CEQA. One important distinction is that conformity analyses focus on compliance with ambient air quality standards that are regionally assessed for compliance; projects may have *local* impacts or "hot spots" even if they do not affect regional compliance. This may be of particular importance in disadvantaged communities, as the Governor's Office of Planning and Research has noted in its recent guidelines on incorporating environmental justice considerations into general plans.² Relatedly, these federal standards do not cover all relevant air pollutants – and, in particular, do not address toxic air contaminants – which may be of considerable relevance to projects. In light of these and other considerations, the TAF and TAC appropriately do not link the determination of significance under CEQA to compliance with federal conformity requirements.

² OPR, General Plan Guidelines Chapter 4 (July 2020), at 17 ("Note that even if a jurisdiction attains state and federal air quality standards generally, individual communities within the jurisdiction may still have significant air quality problems. Thus, attainment status does not, alone, guarantee equitable exposures.").

H. Regional Transportation Plans (RTP)

- H1. RTP/SCS and Tiering. Many comments suggested regional transportation plans and sustainable communities strategies (RTP/SCS) could be used for tiering purposes. Separately, several other comments questioned whether any RTP/SCS can meet CEQA requirements for tiering.**

The comments raise substantive issues beyond the scope of the TAF and TAC.

The State Legislature has clearly stated its preference that lead agencies tier environmental documents wherever feasible. (Pub. Resources Code, Sect. 21093(b).) Tiering is governed by section 15152 of the CEQA Guidelines, cumulative impacts are generally addressed in section 15130. In fact, the Legislature has created several tiering and streamlining methods that can reduce analytical duplication.

As discussed in the TAC, a lead agency may in some cases tier its transportation impact analysis from a programmatic level EIR, such as one prepared for an RTP/SCS. The three considerations outlined in TAC Section 5.1.b apply to analysis of projects on the State Highway System, ensuring that transportation impacts are adequately evaluated and mitigated at the programmatic level. First, the RTP/SCS EIR must adequately evaluate the phenomenon of induced travel. Second, the RTP/SCS EIR must demonstrate consistency with the State's planning relating to climate goals. Lastly, all feasible mitigation normally considered at a project-level must be identified at the plan level.

Caltrans reiterates the general concepts and mechanisms described in 15152 of the State CEQA Guidelines. Tiering from an earlier, broader environmental document that covers the general impacts of a program or larger-scale project can enable a lead agency preparing subsequent environmental documents for a related individual project to narrow and focus its analysis on unique or unanalyzed environmental issues. The concept applies to a host of long-range planning documents including an RTP/SCS.

I. Program EIRs

- 11. Tiering/Program EIRs: Can you develop a tiered approach for a corridor where there are multiple ongoing active projects? For program/tiered projects, how is induced travel proposed to be evaluated?**

Starting new programmatic documents focusing on a tiering strategy is encouraged. Tiering from the EIR prepared for the MTP/RTP or other planning document is also encouraged when that EIR meets the conditions outlined in Section 5.1.b of the TAC and noted above. The determination of whether or not a later tiered environmental document would require an induced travel analysis would be governed by existing CEQA practices.

- 12. Mitigation: If a project is identified in a comprehensive multimodal corridor plan (as required for SB 1 solutions for congested corridors funding) with other projects that are planned for implementation (not necessarily at the same time as), would it be possible for a project to take credit for those other projects as potential VMT minimization and mitigation measures.**

Yes, if there is an enforceable commitment to fund and implement those VMT reducing projects.

J. Induced Travel

J1. What is the definition of induced travel?

Induced travel (or induced VMT) is the increase in vehicle travel associated with an increase in roadway capacity. It is distinct from background increases in VMT that may be caused by other factors such as population growth, economic growth, declining gas prices, etc.

J2. What are the factors that contribute to induced travel?

Adding roadway capacity generally stimulate changes in driver behavior in response to reduced travel time and/or improved reliability. This generally leads to some combination of the following effects, each of which can contribute to induced travel:

- Longer trips. The ability to travel a long distance in a shorter time increases the attractiveness of destinations that are farther away, increasing trip length and vehicle travel.
- Changes in mode choice. When transportation investments are devoted to reducing automobile travel time, travelers tend to shift toward automobile use from other modes, which increases vehicle travel.
- Route changes. Faster travel times on a route attract more drivers to that route from other routes, which can increase or decrease vehicle travel depending on whether it shortens or lengthens trips.
- Newly generated trips. Increasing travel speeds can induce additional trips, which increases vehicle travel. For example, an individual who previously telecommuted or purchased goods on the internet might choose to accomplish those tasks via automobile trips as a result of increased speeds.
- Land Use Changes. Faster travel times along a corridor lead to land development farther along that corridor; that new development generates and attracts longer trips, which increases vehicle travel. Over several years, this induced growth component of induced vehicle travel can be substantial, making it critical to include in analyses.

J3. How do we know the induced travel effect is real, and how do we know its magnitude?

The expert panel cites multiple robust, peer-reviewed studies that have assessed the magnitude of the induced travel effect. (See References and Appendix A of the TAF.) Because the effect varies by the amount of existing traffic, induced travel studies express the magnitude of that effect as an elasticity:

Elasticity = %Change in VMT/%Change in Lane Miles

Because they are sensitive to the VMT per lane mile, i.e. the amount of traffic, the studies provide for variation in the strength of the effect among regions. For example, a region that has twice the existing traffic per lane mile would expect to see twice the amount of induced travel.

The amount of vehicle travel in a region is influenced by various other factors (e.g. population growth, economic growth, changes in gas prices). Induced travel studies apply various econometric approaches to distinguish the effect of roadway capacity projects--the induced travel effect--from these other effects. Studies have been published in top academic journals in multiple fields, and those examining the overall effect of capacity investments come to approximately the same conclusion as to the magnitude of its effect.

J4. Over what timescale does induced travel occur?

Many studies quantify both “short run” and “long run” induced travel elasticities. Generally, “short run” elasticities measure induced travel that occurs in the first year or two, while “long run” elasticities measure induced travel that occurs in 5-10 years. The long-run induced travel effect is the full effect of the project.

J5. Don't highway capacity projects just redistribute the same vehicle travel?

Research has shown that capacity increases generally result in net increases in vehicle travel. There may also be redistributive effects. Most induced travel studies, including those applied by the NCST Induced Travel Calculator, focus on the whole area over which travel is affected, rather than just on the corridor. So, they account for redistribution of trips (which may increase or decrease VMT) as

well as the other induced travel effects and examine the overall change in VMT. They show that overall VMT is generally increased. The Panel Report provides additional discussion of this issue.

J6. Where there is no congestion, wouldn't there also be no induced travel?

Induced travel occurs when it becomes easier to get somewhere by car. This phenomenon may occur whether or not there is existing congestion, as shown in the TAF Figure 2.

J7. Why don't we study induced travel along particular corridors to develop corridor-specific induced travel effect magnitudes?

The induced travel effect is not limited to the improved facility. A roadway capacity project generally changes travel patterns well beyond the immediate project area. Therefore, the geographic scale of analysis must go well beyond the corridor to capture the full effect of those changes.

J8. How well does VMT capture environmental impacts such as GHGs?

Generally, VMT correlates closely with GHG emissions and fairly well (at a minimum directionally) with an array of other environmental impacts (see Fang et al. (2017) *Cutting Greenhouse Gas Emissions Is Only the Beginning: A Literature Review of the Co-Benefits of Reducing Vehicle Miles Traveled.*)

J9. Will Cal B/C's approach on induced travel be updated?

At this point, the Cal B/C model is not proposed to be modified as a result of the TAF guidance document.

J10. Does SB 743 add a new requirement to study induced travel under CEQA?

Neither SB 743 nor the related CEQA Guideline section 15064.3 specifically identify induced travel. The Guidelines do state that "vehicle miles traveled" refers to the amount and distance of automobile travel attributable to a project, which is synonymous with induced travel. Accurate assessments of VMT require the consideration of induced travel. See the OPR Technical Advisory on Evaluating Transportation Impacts in CEQA and the TAF for further information on induced travel.

J11. Must effects on land use be factored in?

CEQA requires assessment of the full effects of the project, including the effects that result from changes in land use associated with the project.

J12. How should land use effects of the project be taken into account?

The easiest way to incorporate a capacity increasing project's land use effects is to apply the NCST Calculator where applicable, since it incorporates elasticities that reflect long-term changes associated with land use effects. As indicated in the TAF, an assessment using a travel demand model should ensure that the project's effect on land use is considered, i.e. the land use without the project should differ appropriately from the land use with the project. The best way to confirm appropriate land use changes in the travel demand model is to verify using the empirical approach provided data are available to substantiate selection of an elasticity (OPR VMT Technical Advisory p. 34).

K. Empirical Method (NCST Calculator)

K1. What is the accuracy of NCST tool for various lane types (GP, HOV, HOT)? What are the NCST tool inputs?

The research underlying the NCST tool covered general purpose and HOV lanes, and so it may be applied to those lanes in Metropolitan Statistical Areas. The NCST calculator is not applicable to toll lanes. The NCST tool is based on best available research and data, including multiple studies on induced travel and Caltrans VMT and lane mile data. The user inputs to the tool are lane miles and county/MSA location.

K2. Will the NCST tool be updated?

Yes, Caltrans is providing support to NCST to update the Calculator.

K3. The NCST tool shouldn't be applied for improvements that are not lane mile additions.

The commenter is correct that the NCST tool is not applicable for projects that do not add lane mile capacity.

K4. How does the NCST tool account for context?

The NCST Calculator accounts for context in several ways. Most importantly, the Calculator is not applicable in areas for which empirical data representative of the context is not available. Secondly, the Calculator reflects context through the use of two different elasticity levels. Lastly, context-specific VMT data is input to the Calculator.

K5. How does the NCST tool prevent confounding with other effects?

The NCST tool is based on academic studies that avoid confounding with other affects through the use of various econometric approaches to exclude effects such as population growth, economic growth, changes in fuel prices, and simultaneity bias.

K6. Does the NCST tool overestimate induced travel?

The NCST tool on average provides an accurate estimate of “long run” induced travel capturing the full effect on VMT. The Panel Report discusses the accuracy of the estimates, concluding that:

- The elasticities of VMT with respect to capacity increases in the NCST calculator are extracted from the best available peer-reviewed papers on the topic, and other recent high quality studies have reported similar elasticities. The cited studies control for other factors that could confound the estimates. The use of these elasticities in the estimation of induced travel is therefore reasonable.
- Because the elasticities used in the NCST calculator are long term average elasticities for the specific highway types and contexts studied and some project to project variation (higher or lower elasticity) is to be expected, there may be cases where the NCST elasticities do not apply. If analysts believe the elasticities are inappropriate for a particular location or project, evidence-based justifications should be given for a different elasticity or model-based analysis approach. (Evidence could include high quality peer-reviewed research that indicates a different level of response for the project or location type, under study for example.)

K7. How does the formula presented in OPR's VMT Technical Advisory ([% increase in lane miles] x [existing VMT] x [elasticity] = [VMT resulting from the project]) relate to the NCST tool?

The NCST tool applies this formula using Caltrans VMT and lane mile data and elasticities from the academic research on the magnitude of the induced travel effect.

K8. Isn't the NCST calculator based on old data, before key policies were in effect?

While the NCST tool is based directly on studies including those published in 2003 and 2011 and volume data from 2016, studies as recent as 2019 have corroborated the elasticities provided by those earlier studies. On balance, evidence does not indicate that the evolving policy landscape has changed that effect magnitude.

K9. Does the NCST tool assume an absence of land use controls?

The NCST tool is based on studies that use observed data, and those observations occurred in the context of then-existing land use controls.

K10. Does the NCST study apply in rural counties?

No. The data underlying the studies used by the NCST tool is from urbanized areas.

K11. Where can I learn more about how the NCST tool works?

The tool includes an "About" tab that provides the formula it uses and describes the research it is based on. For further information we recommend contacting the tool's developers. See <https://blinktag.com/induced-travel-calculator/about.html>.

K12. To which types of lanes does the NCST tool apply?

The data upon which the elasticities were developed for the NCST tool included both General Purpose and HOV lanes. So, the tool can be applied to either type of lane but does not distinguish between the two.

K13. Is the NCST tool sufficiently robust for CEQA analysis?

CEQA requires making a good faith effort and applying the best available information and tools to assess an environmental impact, and accounting for the entire effect to the extent possible ("rule of reason"). Some travel demand models exclude large portions of the induced travel effect (see responses L2 and L3 regarding travel demand model limitations). A panel of experts commissioned by Caltrans in conjunction with CARB and OPR to review recommended approaches confirmed that the NCST tool's approach, when applicable, provides an appropriate available assessment of induced travel for CEQA purposes. The panel report will be posted to the Caltrans SB 743 web page by mid-September.

K14. Instead of specifying the NCST tool, the TAF and TAC should describe the NCST tool's approach, and offer the tool as operationalizing that approach.

The TAF describes preferred approaches for various facility types and locations. Where applicable, the NCST Calculator is to be used either exclusively or to benchmark transportation demand model results, at the discretion of the analyst or project development team.

K15. Draft TAF P. 3 claims that the NCST tool won't work for Santa Clara county, when in fact it will work.

The commenter is correct. The information has been corrected in the September 2020 first edition.

K16. Can the NCST tool be used for horizon year induced VMT?

Yes. The NCST tool applies long-run elasticities, which incorporate the full induced travel effect that is the basis for the CEQA significance determination.

Appendix C of the TAF states, "The NCST calculator predicts only those changes in regional annual VMT that are due to capacity improvements. In order to isolate those effects, it purposefully excludes changes in VMT due to land use changes, population, employment, income, tolls, price of gasoline, or other travel cost changes"

K17. Project sponsors should choose the method for studying induced travel; Caltrans should provide guidance on which method to use for assessing induced travel.

Under CEQA, the lead agency is responsible for selecting the method and make a good faith effort to forecast using the best available information. Caltrans has fulfilled these responsibilities in the development of the TAF and TAC, consultation with stakeholders, and accepting the recommendations of the expert panel.

K18. Is use of the NCST tool aligned with OPR's technical advisory recommendation on studying induced travel?

Yes, OPR recommends use of the NCST tool for most roadway capacity increasing projects.

K19. HOV lanes pull cars off GP lanes, thereby offsetting or even reducing VMT.

HOV lanes may draw HOVs out of general purpose (GP) lanes. That in turn opens capacity in those in GP lanes, which can induce additional vehicle travel in those lanes. The research underlying the NCST tool included both GP and HOV lanes.

K20. Does use of the empirical approach (e.g. the NCST calculator) allow an "apples to apples" comparison with mitigation options?

OPR recommends that, for land use projects, VMT assessments, significance threshold, and mitigation be "apples to apples", i.e. focus on the same travel (for example home-based trips or home-based tours, but not mixing the two). The empirical approach simply assesses the total amount of VMT induced, so any mitigation measure for which VMT reduction is assessed with reasonable accuracy would be "apples to apples".

L. Travel Demand Model

L1. How can induced travel be assessed in absence of a county travel demand model?

If in a rural county, the county data from the California Statewide Travel Demand Model (CSTDm) may be extracted and used in a project level analysis.

L2. Does a travel demand model account for induced travel? What are Caltrans' recommendations for refining and validating travel demand models before using them to assess induced travel? (multiple)

From expert panel Final Report: Many improvements have been made to travel models over the last two decades, but there remains considerable variation in the level of detail and the sophistication of the models in use in California (and elsewhere). Depending on the specifics of model specification, estimation, and application, travel models may provide a reasonable estimate of induced travel, or they may be underestimating induced travel.

Caltrans recommendations for use of travel demand models to assess induced travel are provided in TAF Section 4.

L3. The development and maintenance of a land use model requires significant resources. Many typical Lead Agencies do not have access to run a land use model, in parallel with a travel demand model. In the San Francisco Bay Area, for example, ABAG/MTC runs UrbanSim as part of the development of scenarios for the RTP/SCS. However, CTAs and CMAs, who most often partner with Caltrans on project development and environmental review for transportation capital projects, do not have direct access to run UrbanSim themselves.

If the NCST Calculator is applicable, it is easy to use, incorporates land use effects, and sidesteps the other issues discussed previously with using travel demand models to assess induced travel. If using a travel demand model, off-model approaches can be used to assess land use changes. There are grant programs available for funding to support modeling improvement.

L4. There are extensive requirements placed on travel forecasting models in this section.

The work of the Expert Panel resulted in the inclusion in the First Edition of the TAF of a “pathway” for use of TDMs that may not have all desired functionality. What is meant by “halo zones”?

Halo Zones are simply TAZs outside the model boundary. They offer one way of accounting for trips that travel outside the model boundaries. The empirical approach does not rely on a model with boundaries, and so does not truncate the induced VMT analysis.

M. NCST vs Model

- M1. Are there examples of induced travel analysis (with details) of urban projects where both NCST elasticity calculator method and a travel demand model were applied?**

A comparison of use of the Calculator and travel demand models was recently reported in Volker, J., A. Lee, and S. Handy (2020). Induced vehicle travel in the environmental review process. Transportation Research Record, Vol 2674, Issue 7, 2020. National Research Council, Washington D.C.. DOI: <https://doi.org/10.1177/0361198120923365>.

- M2. The NCST tool provides the same results for a GP or HOV lane addition – shouldn't they be different?**

The research underlying the NCST tool included GP and HOV lane additions. Also, the magnitude of the induced travel effect is determined by the effective capacity of the new lanes, and HOV lanes frequently have similar capacity as GP lanes.

- M3. Which is the better forecast of induced travel, the empirical approach such as used in the NCST Induced Travel Calculator, or the travel demand models?**

See response to K6.

- M4. The project sponsor should choose which method to use to study induced travel.**

Caltrans is the lead agency under CEQA for projects on the SHS and therefore has the responsibility for determining the best approach under CEQA's requirements. CEQA requires the best available information and tools be used. Please see Section 4 in the TAF.

N. Reconciliation

N1. Request guidance on “reconciliation.” Having two results would be problematic.

We agree that presenting a single set of results is desirable and therefore the First Edition of the TAF advises either use of the NCST Calculator exclusively or use of Calculator as a benchmark for TDM results (when calculator is applicable). The concept of “reconciliation” has been eliminated.

N2. A “qualifying” RTP/SCS travel model used with a growth forecast that also includes long-term induced travel should obviate the need for elasticity-based calculation.

See TAF Section 4 for guidance on using the Calculator as a benchmark when it is applicable and there is also “qualifying” travel demand model available.

O. Projects in Rural Areas

O1. Rural areas within MPO boundaries ought to be treated like rural counties for VMT analysis screening.

All areas within MPOs are part of metropolitan statistical areas. The boundaries of MSAs are based on the interconnectedness between communities--for work, life and travel. Even if there is a rural area between communities, travel to and from communities takes place in such rural areas. Therefore, rural areas are susceptible to induced travel if adding capacity. Induced travel is a regional phenomenon. Caltrans held several meetings with rural agencies before and during the informal comment period for the guidance documents. However, this issue was discussed during coordination meetings and the agencies were encouraged to provide appropriate quantitative data to support the rural setting of their projects to aid in the VMT analysis, including evidence that trips generated are out of commute distance to job centers. Rural areas have limited opportunities for VMT mitigation.

Although VMT mitigation options may be more limited in rural areas than in urban settings, the mitigation resources in the guidance documents and on the Caltrans and OPR websites do include a number of options that are applicable in rural regions of the state.

O2. VMT analysis for rural areas should be conducted differently, taking the geographic, physical and traffic context into account.

Project sponsors are encouraged to include the unique circumstances in their project descriptions to assist in determining the need and extent of any possible VMT analysis in rural areas. The travel demand models used in rural regions should reflect these characteristics. Project sponsors working with Caltrans Project Development Teams will select methods for VMT analysis when Travel Demand Models with appropriate capabilities are not available.

O3. Rural areas have limited resources for modeling.

The guidance documents include information on a number of resources to use in the development of VMT analyses, should they

be required in rural areas. Caltrans understands that modeling tools around the state vary and will work with rural project sponsors to access the best information to guide any required VMT analysis, including the potential use of the California Statewide Travel Demand Model.

O4. Is there a need to make seasonal adjustments to traffic for VMT analysis?

This topic requires more thorough review before guidance is offered. Bringing forward a specific project where a VMT analysis is determined to be needed and seasonal traffic is involved will create an opportunity for consideration of this issue. There may be the potential to use an annual weighted average or other similar method to assess seasonal variation as well.

O5. Would Caltrans support a statewide VMT mitigation bank or exchange due to large areas covered by rural projects?

There is much interest in the concept of a VMT mitigation bank or exchange, Caltrans is initiating a research project to consider issues related to VMT mitigation banking, building on past sponsored research.

O6. How will Caltrans work with rural areas to develop a nuanced quantitative method for induced VMT analysis?

Given the current tools available for VMT analysis, the guidance documents do allow for some rural projects to use a qualitative approach. Caltrans will continue to monitor and support the development of modeling and analysis tools and should a reliable quantitative method become available for these unique projects, supplemental guidance can reference that method.

P. Truck/Freight

P1. Are trucks included in induced travel calculations and is mitigation required for truck VMT?

This should be treated on a case-by-case basis. Per SB 743 CEQA Guidelines, the VMT analysis focuses on passenger vehicles and light-duty trucks. Truck VMT may be included in analysis results at the discretion of the PDT or as a result of the analysis method used.

P2. Are truck climbing lanes capacity-increasing and do they result in increased VMT?

To the extent that there are issues other than congestion, such as safety, that are being impacted by truck traffic that can be alleviated by a truck climbing lane, then a VMT analysis may not be required. If, however, the project might induce passenger travel, an analysis would be required. See the example project of a truck climbing lane in the TAC.

P3. Would shifting freight from highway to rail transport as a means of reducing truck VMT (Hwy 101) be a possible VMT mitigation measure?

To the extent that freight can be efficiently added to the rail system, this strategy would be encouraged in many areas of the state. The shifting of freight from truck to rail might be used as VMT mitigation as long as an appropriate analysis is performed and commitments to the shift are substantiated.

P4. Some freeway projects in the Central Valley (I-5 and SR 99) are primarily for movement of freight. How does that impact VMT analysis?

A case-by-case analysis of a highway improvement project would need to assess the project impact on passenger vehicle and light duty truck VMT, regardless of project purpose

Q. Priced Facilities

Q1. How do you fully mitigate VMT by use of tolls for Managed Lanes?

The reference suggesting that tolls can fully mitigate VMT increases has been stricken from the guidance documents. However, pricing is recognized as a tool to help mitigate VMT impacts on projects and on a system in the long term.

Q2. How is social and economic equity considered when determining priced-based mitigation strategies used to reduce VMT?

Any projects considering the use of pricing/tolls will perform a study to assess the socioeconomic impacts of the pricing structure. Congestion pricing programs can be carefully crafted to minimize impacts and bring benefits to communities if designed with considerations for people's ability to pay and their ability to access alternative modes. Transportation modeling can identify which communities can be helped with expanded mode choice supported in part by toll revenues and where approaches such as toll discounts for certain groups may be appropriate. The OPR website has related resources: Article - Roadway congestion can be solved through pricing mechanisms (Access Magazine, Spring 2017, 4p); Traffic Congestion Is Counter-Intuitive, and Fixable - Academic Study: Assessment of roadway pricing v. sales tax funding (Transportation November 2008, Volume 35, Issue 6): Just pricing: the distributional effects of congestion pricing and sales taxes (infographic) Transform's Report: <https://www.transformca.org/transform-report/pricing-roads-advancing-equity>

Q3. Should new priced facility projects be screened out?

New priced lanes will generally have the potential to induce travel. Because priced lanes likely cannot fully mitigate VMT increases, a VMT analysis is required to determine differences in VMT levels and the ability of pricing to mitigate VMT impacts.

Q4. VMT analysis for projects that result in lower GHG due to high % of HOVs.

Many projects warrant case-by-case analysis. For projects that have evidence of high HOV %, the GHG benefit should be quantified separately and used in the VMT mitigation development. This is similar to the inclusion of alternative mode features as part of a highway project.

R. Analysis (Other)

- R1. Construction Impacts. How are short-term construction activities addressed under SB 743? What would Caltrans require for a methodology? This section is not clear and should be expanded to provide clarification.**

Section 5.3.c of the TAC has been updated with additional information on construction impact analysis. CEQA documents generally address direct, indirect, permanent, temporary, and cumulative impacts. In most cases, additional VMT arising from the construction of a project (i.e., workers traveling to the job site, travelers detouring around a construction area) would be unlikely to result in a significant impact because the effects are temporary. A qualitative discussion should be sufficient in most cases. As always, CEQA analysis should be commensurate with the anticipated impact. The Caltrans annotated outlines for environmental documents, which are required for projects on the SHS, address construction impacts.

- R2. Is the induced travel analysis included in the Traffic Operations Analysis Report (TOAR) or can it be a stand-alone report when PDPM updates are still pending?**

Whether the induced travel analysis will be documented in the TOAR or as a stand-alone report will vary by District. Future guidance may provide further direction regarding the format and placement of the induced travel analysis in the TOAR.

- R3. How is this incorporated into the CEQA checklist?**

The CEQA Guidelines which were updated effective December 28, 2018 included a revised version of the CEQA checklist that addressed the requirements of SB 743.

- R4. Cumulative and Indirect Impacts. Clarify how and when to assess cumulative and indirect impacts for induced VMT through the SB-743 lens. Explain the difference between cumulative for SB-743 v. general cumulative generally for CEQA.**

Cumulative and indirect impact analysis should be conducted according to CEQA requirements and existing Caltrans guidance.

The TAC is not intended to be a comprehensive guide on CEQA. Existing guidance on cumulative and indirect impacts can be found on the Caltrans Standard Environmental Reference under "Other Guidance." <https://dot.ca.gov/programs/environmental-analysis/standard-environmental-reference-ser/other-guidance>

R5. COVID-19 will result in permanent changes to transportation system. Does the data incorporate the growing Work-From-Home practices that many organizations are going to adopt as a result of COVID and beyond?

The COVID-19 pandemic has had a profound impact on the transportation system. However, it is not certain what the lasting effects of this ongoing health emergency will be. The goals of SB 743 and the need to assess the transportation impacts of projects in a fundamentally different way will remain. Helping to create vibrant communities, providing transportation choices and alternatives to driving alone and long commutes will still help to provide vital transportation services while addressing our environmental and climate commitments.

It would be speculative to revise the current guidance based on what may occur in the future or on the current situation. Future updates to the guidance documents may be warranted depending on trends that emerge.

R6. What statewide direction can be provided on how to approach significant and unavoidable determinations and when mitigation should be included?

Determinations regarding significance, mitigation, and the use of statements of overriding consideration should follow the guidance provided in the TAC and the CEQA Statute and Guidelines. Note that any project that will have a significant impact under CEQA will require mitigation.

R7. Clarify the use of "less than significant" for projects that reduce VMT or have no impact on VMT.

In order to fulfill the legislative intent of SB 743, and as further elaborated on in the TAC, projects on the SHS that increase VMT in an MPO area shall generally be considered to have significant impacts under CEQA, and those that reduce VMT shall generally be considered to have less-than-significant impacts under CEQA.

R8. Case studies. Will Caltrans be providing additional case studies, specifically examples for non-urban settings and qualitative assessments?

Caltrans provided two example projects and plans to add more as our practice deepens.

Caltrans has added an example project for a transportation project in a rural setting which demonstrates how a qualitative assessment could be conducted. Additional example projects or case studies may be added in the future.

R9. Protocol to resolve clarity issues when applying TAF/TAC. The TAF should state how lead agencies should resolve any questions or lack of clarity in the TAF when preparing CEQA documents. We recommend the following: “In situations where the application of the TAF is unclear, the lead agency should consult with their local Caltrans District representative to determine the appropriate analysis that should be used for the project, and to document the approach in the CEQA document/related transportation reports.”

TAF/TAC are new guidance documents, and they may bring up new issues in the project development process. These issues should be resolved through the well-established existing protocols in the project development process.

R10. Applicability of TAF. When should the TAF be applied?

The guidance in the Transportation Analysis Framework is intended for projects on the State Highway System determined through the screening process to require VMT analysis. See Figure 1.

R11. Intent of the TAF. Is the intent of the TAF to provide detailed instruction on performing VMT analysis? The TAF should provide additional detail and specific instructions on the VMT analysis, especially when practitioners are using tools other than the NCST calculator, and specifically for travel demand forecasting models.

The purpose of the TAF is to assist Caltrans district staff and others responsible for assessing likely transportation impacts as part of environmental review of proposed projects on the SHS by providing guidance on the preferred approach for analyzing the VMT attributable to proposed projects (induced travel) in various project settings. The TAF provides detailed guidance on methodology

selection and model adequacy evaluation. See Sections 1 and 4 of the TAF.

- R12. How will new access improvements (interchanges) be handled? Without access, development of an area may not occur or occur at a reduced level. In low-producing VMT areas, reducing the development results in spreading unaccommodated jobs or housing into higher-VMT production areas and/or greenfield areas. By focusing solely on "VMT that is attributable to the project" may result in not seeing the forest for the trees. Overall, a more regional comparison is needed to offer a full VMT impact-comparison of the project.**

The induced travel analysis is conducted at the county or region scale, as described in Sec. 3 of the TAF.

S. Training

S1. Existing training efforts

A webinar will be scheduled in Fall 2020 shortly after the final documents are released. Training materials for each of the guidance documents will also be released in e-module formats.

T. Land Use

The land use-related feedback will be addressed in the second release of this document.

U. Safety

The safety-related feedback will be addressed in the second release of this document.

V. Policy (Other)

Other policy-related feedback will be addressed in the second release of this document.

Appendix A. Glossary of Acronyms and Terms

Acronym	Explanation
AB	Assembly Bill
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CTF	Cleaner Technologies and Fuels Scenario
EIR	Environmental Impact Report (state)
FHWA	Federal Highway Administration
GHG	Greenhouse gas
HCM	Highway Capacity Manual
HOV	High Occupancy Vehicle
HOT	High Occupancy Toll
HSM	Highway Safety Manual
IS	Initial Study (state)
LD-IGR	Local Development-Intergovernmental Review
LOS	Level of Service
MND	Mitigated Negative Declaration (state)
MPO	Metropolitan Planning Organization
MTP	Metropolitan Transportation Plan
NCST	National Center for Sustainable Transportation
ND	Negative Declaration (state)
NEPA	National Environmental Policy Act
OPR	Governor's Office of Planning and Research
PDT	Project Development Team
PRC	Public Resources Code (state)
RTP	Regional Transportation Plan
RTPA	Regional Transportation Planning Agency
SB	Senate Bill
SCS	Sustainable Communities Strategy
SHS	State Highway System
TAF	Caltrans Transportation Analysis Framework
TISG	Transportation Impact Study Guide
VMT	Vehicle Miles Traveled

Acronym	Explanation
Capacity	The Sixth Edition of the Highway Capacity Manual defines capacity as: The maximum sustainable hourly flow rate at which persons or vehicles reasonably can be expected to traverse a point or a uniform section of a lane or roadway during a given time period under prevailing roadway, environmental, traffic, and control conditions.
Elasticity	Elasticity is a measure of a variable's sensitivity to a change in another variable. In economics, elasticity is the measurement of the percentage change of one economic variable in response to a change in another. In transportation forecasting, an example is elasticity of travel demand, which can be expressed as the percent change in regional VMT divided by the percent change in regional lane-miles of state highways.
Induced Travel (VMT)	Induced travel (or the VMT attributable to a transportation capacity increase) is the increased amount of vehicle travel on the transportation network that is caused by travel behavior changes associated with decreased cost of travel due to improved travel times, improved reliability, or reduced price of travel. Over the short run, travel behavior changes including longer trips, more trips, mode shift, and route shift all tend to occur as a result of a highway capacity increase. Over the long run, these effects intensify (e.g. as people shift job or residential location to benefit from the infrastructure), and also land use development may become more dispersed, adding additional vehicle travel; for these reasons, long run induced travel is generally greater than short run induced travel.
Network	The connectivity of a transportation system. Changes in connectivity may change travel time and cost. Travel demand models will usually represent network connectivity within modes and across modes through a set of links connecting nodes.

Acronym	Explanation
Travel Demand Model	A travel demand model is any relatively complex computerized set of procedures for predicting future trip making as a function of land use, demographics, travel costs, the road system, and the transit system. These models often cover an entire metropolitan area or the entire State, but may also focus on a single city or county.
Transit	Transit generally includes all forms of shared common carrier passenger ground transportation in moderate to high capacity vehicles ranging from dial-a-ride vans to buses, trolleys, light rail, commuter rail, and intercity rail transportation.
Trucks	Trucks are a subtype of the heavy vehicles category which includes trucks, intercity buses, and recreational vehicles. This Framework follows the Highway Capacity Manual definition of what constitutes a heavy vehicle: "A vehicle with more than four wheels touching the pavement during normal operation." This is consistent with the Caltrans Traffic Census definition of a truck: "The two-axle (truck) class includes 1-1/2-ton trucks with dual rear tires and excludes pickups and vans with only four tires."
Vehicle Miles Traveled (VMT)	The number of miles traveled by motor vehicles on roadways in a given area over a given time period. VMT may be subdivided for reporting and analysis purposes into single occupant passenger vehicles (SOVs), high occupancy vehicles (HOV's), buses, trains, light duty trucks, and heavy-duty trucks. For example, an air quality analysis may require daily VMT by vehicle class and average speed or vehicle operating mode (idle, acceleration, cruise, deceleration, etc.). For a CEQA compliant transportation impact analysis, automobile VMT (cars and light trucks) may be evaluated.
VMT Attributable to a Project.	In the context of a CEQA analysis, the VMT attributable to a transportation project, or induced travel, is the difference in passenger VMT between the with project and without project alternatives. VMT attributable to a project is equivalent to induced travel in this context.