



SANTA CLARA VALLEY  
TRANSPORTATION AUTHORITY

# CONGESTION MANAGEMENT PROGRAM

## TRANSPORTATION ANALYSIS GUIDELINES

ADOPTED JUNE 2025

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# **PART I**

## STATUTE & AUTHORITY

# CHAPTER 1. CMP STATUTE AND INTENT OF VTA TA GUIDELINES

On January 1, 1995, the Santa Clara Valley Transportation Authority (VTA) was designated as Santa Clara County's Congestion Management Agency. The Congestion Management Program (CMP) statute requires that uniform methods be used for evaluating transportation operation effects of land use decisions on the CMP System. Furthermore, the current statute allows the agency responsible for the CMP to choose the analysis methods.

This document presents VTA's guidelines for preparing Transportation Analyses (TAs) for CMP purposes. TAs are prepared to assess the transportation operation effects of land development projects and to assist in identifying improvements to minimize a development project's effects. TAs are prepared by local jurisdictions as part of their review process for development proposals. These *Guidelines* are intended to be used by Member Agencies as part of their regular process of evaluating land use decisions and may be viewed as a minimum scope for assessing transportation effects. Member Agencies may maintain their own guidelines that supplement the procedures in the *VTA TA Guidelines*, and Member Agencies may also have a lower size threshold for when a transportation analysis must be prepared in their jurisdiction. Therefore, a TA may not be required by the CMP but may be required by Member Agencies.

The *VTA TA Guidelines* are intended for transportation analysis related to land development projects. The *VTA TA Guidelines* may be used as a reference point for the analysis of transportation improvement projects, subject to the judgment of the Lead Agency.

It is not intended that TAs following the *VTA CMP TA Guidelines* may provide all information required for California Environmental Quality Act (CEQA) purposes. VTA encourages Member Agencies to include any other pertinent information not outlined in the *VTA TA Guidelines* to identify environmental effects.

Finally, VTA encourages the development of transit-friendly, pedestrian-friendly, and bicyclist-friendly land use projects. In particular, projects in Transit-Oriented Communities as defined in the *VTA Community Design and Transportation (CDT) Manual of Best Practices for Integrating Transportation and Land Use* are encouraged to follow the *CDT Design Guidelines*.

## 1.1 Updates

Three key changes were made to the 2025 TA Guidelines:

1. Use of the new Vistro software to conduct the analysis of traffic conditions at the CMP Intersections. More guidance is provided in the Transportation Operations Analysis Guidelines.
2. Use of the most current Highway Capacity Manual methodologies to evaluate traffic conditions for the CMP roadway networks.
3. Clarification on the application of Senate Bill (SB) 743 Vehicles Miles Traveled (VMT) Policy and Congestion Management Program requirements as part of the countywide Land Use and Development Review Program.

### Senate Bill 743 (SB 743), Vehicle Miles Traveled Analysis, and Level of Service

VTA recognizes and supports the implementation of SB 743 to provide more travel options, improve public health through active transportation, and to promote the following goals and actions:

- Reducing greenhouse gas emissions to address climate change,
- Developing multimodal transportation networks
- Encouraging infill development and diversity of land uses to instead of urban sprawl.

While SB 743 ended the use of Level of Service (LOS) to measure environmental effects under the California Environmental Quality Act (CEQA) and led to the use of Vehicle Miles Traveled (VMT) in its place, **SB 743 also preserved local government authorities to make planning decisions. Local jurisdictions can still use LOS and analysis of congestion for issues not related to the CEQA review requirements.**

## 1.2 Background

The *TA Guidelines* were originally included in Santa Clara County's 1991 Congestion Management Program (CMP). In 1993, the CMP technical documents, including the *VTA TA Guidelines*, were published in a document titled *Technical Standards and Procedures for the Santa Clara County Congestion Management Program*. Since then, the *VTA TA Guidelines* were updated in 2009 and 2014 to align with the Complete Streets Act of 2008 and SB 743 VMT Policy in 2013. This document, now titled the *VTA Transportation Analysis Guidelines*, supersedes the 2014 Transportation Impact Analysis Guidelines to reflect current methodologies and includes the following sections in accordance with California Statute, Government code 65088:

## **Part I: Statute and Authority**

Chapter 1. CMP Statute and Intent of VTA *TA Guidelines*

Chapter 2. TA Scoping

## **Part II: Notification and Review**

Chapter 3. TA Notification, Preparation and Review Process

## **Part III: TA Contents and Methodology**

Chapter 4. Recommended TA Table of Contents

Chapter 5. Analysis Periods and Methodologies

Chapter 6. Existing Conditions

Chapter 7. Background Conditions

Chapter 8. Trip Generation and Auto Trip Reductions

Chapter 9. Project Conditions and Impacts/Effects

Chapter 10. Improvement Measures and Multimodal Improvements

Chapter 11. Future Year Scenarios (Cumulative Conditions)

## **Part IV: Other Considerations**

Chapter 12. Special Project Types

## **1.3 Definition of Transportation Analysis (Effects/Impacts)**

Transportation Analysis (TA) is the term used for the study of the expected effects of development projects on transportation facilities. TA Reports are also intended to assist in identifying improvements to minimize a development project's transportation effects, which may include reducing the number of automobile trips the project generates. This documentation helps decision makers determine whether to approve the project and what conditions to impose on the project.

## **1.4 Legislative Requirement**

California's CMP statute requires that all CMAs develop a uniform program for evaluating the transportation effects of land use decisions on the designated CMP System. Specifically, CMP Statute requires:

*A program to analyze the impacts (effects) of land use decisions made by local jurisdictions on the regional transportation systems, including an estimate of the costs associated with mitigating those impacts (effects). [California Government Code: 65089 (b) (4).]*

The *TA Guidelines* are designed to meet the requirement for a uniform land use impact analysis program in the CMP Statute.

In order to conform with the CMP, Member Agencies must follow the methodologies described in this document to evaluate the transportation impacts of development projects on the CMP System.

In addition, as part of the CMP Land Use Impact Analysis Program, all Member Agencies are required to forward a summary of land use changes and their transportation effects to VTA on an annual basis. The purpose of collecting land use data on an annual basis is to ensure that development projects that do not meet the threshold for preparing a TA are evaluated in the CMP process. This land use data may be incorporated into the countywide transportation model maintained by VTA and may be used to monitor conformance with the CMP. Please see the latest version of VTA's *CMP Annual Monitoring and Conformance Requirements*, for more information on land use monitoring.

As part of the Congestion Management Program, LOS may continue to be used for analyzing and monitoring the CMP roadway facilities. However, cities, counties, and other agencies generally refer to VTA analysis methodology in the Technical Advisory on Evaluating Transportation Impacts in CEQA, December 2018. More information is available on Caltrans' SB 743 Implementation Resources website.

VTA continues to work with Member Agency staff to provide assistance with SB 743 implementation, in parallel with CMP transportation analysis. As of Summer 2024, VTA is also currently working with Member Agencies to explore the possibility of establishing an Equitable VMT Mitigation Program for Santa Clara County. More information on the status of this effort can be found on the Equitable VMT page of VTA's website at [vta.org](http://vta.org).

Further discussion of SB 743, LOS and VMT analysis, and updates to the CMP in response to SB 743, is included in Chapter 3 – Transportation Analysis Standards Element of the 2023 Congestion Management Program Document adopted on March 7, 2024.

## **1.5 CMP Transportation Analysis Requirements**

Member Agencies must follow the methodologies presented in this document to prepare TAs for land use decisions that impact the CMP System. In order to conform with the CMP, Member Agencies must do the following:

1. Use the VTA *TA Guidelines* to evaluate the transportation effects of all land use decisions within the Member Agency's jurisdiction that are projected to generate 100 or more net new weekday (AM or PM peak hour) or weekend peak hour trips, including both inbound and outbound trips.
2. Submit a copy of the TA Report to VTA at least 20 calendar days before the development decision or recommendation is scheduled by the Member Agency.

## 1.5 CMP Transportation Analysis Guidelines

The most significant benefit of these *Guidelines* is that they promote the use of uniform procedures for performing TAs and evaluating land use decisions on CMP facilities in Santa Clara County. The use of these common procedures helps ensure that the performance of the CMP transportation system is not adversely affected by land use decisions, and that opportunities to minimize effects and improve the transportation system are identified. Moreover, the use of a common set of Guidelines allows each Member Agency to understand the effects of development projects in other jurisdictions. Furthermore, it allows a Member Agency to request improvement measures on its transportation facilities as a result of a project under development in another jurisdiction.

The use of a standard set of *TA Guidelines* is the first step in developing stronger linkages between transportation and land use planning, which is a goal of VTA.

## 1.6 Exemption Process

Portions of the *TA Guidelines* described in this document may need to be modified for use in analyzing the effects of a specific situation. The following process should be used in order to obtain approval for modifying the requirements of the *Guidelines* contained herein:

1. The Member Agency should contact VTA requesting modification of a specific *TA Guidelines* requirement for a project.<sup>1</sup> The Member Agency should provide the reasons for the request(s). VTA staff may take action on the request if the request requires immediate action and is of a nature to not require action by VTA Committees.
2. If action cannot be taken by VTA staff, the VTA Technical Advisory Committee (TAC), with input from the Systems Operations & Management (SOM) and Community Design and Transportation Network (CDTN) Working Groups, may review the request and recommend an action to the VTA Board.
3. The VTA Board may review the TAC's recommendation(s) and take action.

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<sup>1</sup> Modifications to VTA *TA Guidelines* regarding the following aspects of a project's analysis do not require CMP action: trip generation rates, trip distribution/assignment, and default values used in the Auto LOS analysis. However, these modifications should be clearly documented in the TA. Documentation should include source and comparison with values or procedures specified in the VTA *TA Guidelines*.

## 1.7 CMP Technical Standards and Procedures Amendment Process

The VTA *TA Guidelines* are part of the *Technical Standards and Procedures for the Santa Clara County Congestion Management Program* (referred to throughout this document as the *Technical Standards and Procedures*). The most recent versions of the *Technical Standards and Procedures*, including the *TA Guidelines*, are posted on the Congestion Management Agency page of the VTA website. The intent is to update the *Technical Standards and Procedures* on a regular basis by providing revisions where appropriate.

Technical Update Memos may be prepared periodically to address technical questions regarding standards and procedures as these questions are raised by Member Agencies. Technical Update Memos are divided into two categories, each having its own approval process, as described below:

1. Memos with New or Revised Requirements: These memos are to be prepared by VTA staff, reviewed by the SOM and CDTN Working Groups and TAC, and approved by the VTA Board.
2. Memos with Clarifications or Additional Information: These memos are to be prepared by VTA staff, and received by the SOM and CDTN Working Groups and TAC.

Once adopted or received, these technical update memos have precedence over or clarify previously adopted procedures. Technical update memos are to be posted on the VTA website and emailed to all members of the VTA TAC, SOM Working Group, and CDTN.

The VTA *TA Guidelines* must be reviewed and revised on a regular basis to incorporate all technical update memos adopted since the last revision and to address new policy direction adopted by the VTA Board. With VTA Board approval the revised *TA Guidelines* shall be distributed to Member Agencies for incorporation into the *Technical Standards and Procedures*.

## 1.8 Local Transportation Model Consistency

If travel demand forecasting models are used to evaluate transportation effects of land use decisions, they must be consistent with the VTA Countywide Transportation Model. VTA has developed procedures for Member Agencies to use in developing consistent models. These procedures are described in the *Local Transportation Model Consistency Guidelines* of the *Technical Standards and Procedures*.

## 1.9 Document Conventions

Throughout this document, certain conventions are used, which are listed below. In addition to these document conventions, a Glossary with definitions of key terms is provided at the end of the document.

1. The acronym “TA” is used throughout this document to indicate Transportation Analysis.
2. Unless explicitly identified, all references to documents in these VTA *TA Guidelines* shall mean the most recent version of the document published.
3. In this document, the word “should” is used to indicate a recommended action. The words “shall” or “must” are used to indicate required actions.
4. The word “facility” is used generally in this document to refer to CMP System roadway facilities, which include CMP intersections, freeways, and rural highways. CMP facilities also include the CMP Transit Network and the CMP Bicycle Network, but these are generally called out specifically in the text.
5. The agency responsible for preparing the TA is referred to in this document as the “Lead Agency.”

# CHAPTER 2. TA SCOPING

This section provides direction on the scoping of TA studies. The Lead Agency is responsible for scoping the TA, with input from VTA and other agencies through the process described in *Chapter 3*. The description of TA scoping focuses on three areas:

1. Determining when and if a TA needs to be completed;
2. Determining roadway facilities to be included in the analysis;
3. Determining other transportation issues to assess.

## 2.1 When Must a TA be Completed?

The **Trip Threshold** for when a TA must be completed is the following:

A complete TA for CMP Purposes shall be performed for any project in Santa Clara County expected to generate 100 or more net new weekday (AM or PM peak hour) or weekend peak hour trips, including both inbound and outbound trips.

The following are points that expand or provide detail on the above statement:

1. **Net New Peak Hour Trip**: Net new peak hour trips are defined as those proposed project trips not associated with an existing development on the site and not included in an approved project. If the proposed project involves a vacant or underutilized site with development rights, the number of net new trips that count towards the Trip Threshold are the proposed project trips minus the trips originally associated with the prior development. If the proposed project involves a vacant or underutilized site without development rights, all project trips are considered net new trips and count towards the Trip Threshold. Discounting of trips from existing or entitled development on the project site is subject to Lead Agency discretion. The Lead Agency may always take a more conservative approach than the one outlined in this document. For further guidance on trips from vacant or underutilized development, refer to item 7, below and *Section 7.2*.

2. **Pass-by and Diverted Linked Trips:** The number of pass-by and diverted linked trips of the proposed project shall not be used to reduce the number of new peak hour trips for determining whether a TA is to be completed except for the following uses:

- Gas stations;
- Fast food restaurants; and
- Stand-alone mini-markets.

For these uses, if the pass-by trip reduction results in less than 100 net new weekday peak hour trips, a TA is not required. However, an operational analysis of the adjacent CMP facilities should be conducted with input from VTA staff. This analysis should be submitted to VTA.

3. **Trip Reductions:** The application of trip reductions (as described in *Chapter 8, Trip Generation and Auto Trip Reductions*) shall not be used to reduce the number of new peak hour trips for determining whether a TA is to be completed.

4. **Special Events:** Special events that do not require issuance of a discretionary permit or environmental review do not require a TA. For example, holding a one-day “Harvest Festival” in a downtown area would not require a TA, while building a theater for use on an irregular basis would require a TA.

5. **Addition to Existing Development Project:** A TA must be completed for an addition to an existing development when the addition is projected to generate 100 or more net new AM or PM peak hour trips.

6. **Revision to Approved Unbuilt Development Project:** A TA must be completed for an approved but unbuilt development that originally was not projected to generate 100 or more net new weekday peak hour trips, if the development is revised so that it is projected to generate 100 or more net new peak hour trips.

7. **Re-Occupancy of Vacant or Underutilized Development:** Generally, Member Agencies may not require a new TA to be conducted for the re-occupancy of vacant or underutilized buildings or developments unless a discretionary permit is required from the jurisdiction. A vacant or underutilized building is generally understood to have development entitlement. Two situations are described below that note whether a TA is required:

- a. **Same Land Use:** A new tenant on a site who is planning to use the site for the same use (*i.e., the land use designation for trip generation calculation purposes would not change*) may not need to conduct a new TA. For example, if the tenant improvements necessary to re-occupy the site do not require discretionary permits, a TA is not required by VTA (though a TA may be required by the Member Agency). However, if the tenant improvements require a discretionary permit and the project produces net new trips that meet or exceed 100 during the peak hour, a TA is required.
- b. **Change of Land Use:** A new tenant occupying a vacant development or building who is *changing the original use (and, therefore, the site's trip generation characteristics)* may need to conduct a new TA. If the change of use requires a discretionary permit and the number of net new trips during a peak hour meets or exceeds 100, a TA is required. If the new land use is expected to generate significantly different travel patterns from the previous use (e.g. conversion from employment to residential), based on engineering judgment, net new trips may be calculated without subtracting all trips associated with the prior development.

See **Section 7.2** for analysis approach for projects involving vacant and underutilized developments.

8. **General Plan Amendment:** General Plan Amendments (GPAs) may be of several types depending upon the jurisdiction and the specific situation. If the GPA approval grants an entitlement to build a specific development project (or allows approval of a project in the future as a right, or through a ministerial act) then a TA must be completed for the GPA. Conversely, if the GPA does not grant an entitlement, then no TA is required until a specific project application is considered by the Lead Agency.

A TA is not required for a GPA when:

- a. The GPA grants no specific project entitlement;
- b. The GPA is prepared for a citywide plan; or
- c. The GPA is submitted with an entitlement for a specific project, but that project is not expected to generate 100 or more net new peak hour trips.

As long as a transportation analysis is being completed, VTA recommends that the analysis be consistent with the *TA Guidelines* to the extent possible. Please refer to **Section 11.3, Long-Term General Planning Efforts**, for details.

9. **Special Project Types:** For further guidance on large or unique projects; projects on the jurisdiction border; multi-agency projects; projects generating large numbers of pedestrian, bicycle or transit trips; or large projects or plans involving more extensive transit delay analysis, see *Chapter 12*.
10. **Conformance Exemptions:** Some types of projects and situations are statutorily exempt from conforming with the CMP Auto LOS standard. If this is the case for the project under consideration, a TA must still be completed, but the particular exemption should be identified in the TA Report.

The types of projects and situations exempted from the CMP Auto LOS standards are described in California Government Code Section 65089.44(b). For complete information on how these exemptions is to be addressed in a TA, see the VTA *Traffic Operations Analysis Guidelines*.

Although these projects or situations are exempt from the CMP Auto LOS standard, these exemptions may not apply to the CEQA process. For example, the effects of freeway ramp metering on Auto LOS are exempt from the CMP standards; however, the effects of freeway ramp metering should be reflected in evaluating effects under CEQA to properly address improvements.

## 2.2 Which Roadway Facilities Should be Included in a TA?

The Lead Agency is responsible for determining which CMP roadway facilities should be included in a TA. The remainder of this section describes procedures for determining inclusion of intersections, freeway segments and rural highway segments on the CMP roadway network in a TA.

### 2.2.1 Intersections

A CMP intersection shall be included in a TA if it meets any one of the following conditions:

1. The proposed development project is expected to add 10 or more peak hour vehicles per lane to any intersection movement;
2. The intersection is adjacent to the project;
3. Based on engineering judgment, Lead Agency staff determines that the intersection should be included in the analysis.

Study intersections should be selected without consideration for jurisdictional boundaries. The 10 or more vehicles per lane requirement applies to any intersection movement (left turn, through or right turn). If a movement uses a shared lane, the shared lane shall be considered a full lane for these calculation purposes. For example, 40 new left turns in two lanes (one left turn lane and one shared left-through lane) should be calculated as 20 vehicles per lane. It should be remembered that this calculation is only intended for determining inclusion of an intersection in a TA. The allocation of new trips to travel lanes for operational analysis purposes could be quite different from this equal allocation of trips to the travel lanes.

## 2.2.2 Freeway Segments

A freeway segment shall be included in a TA if it meets any one of the following conditions:

1. The proposed development project is expected to add traffic equal to or greater than one percent of the freeway segment's capacity. The TA must provide a tabulation, as shown in [Appendix A \(Table A-1: Sample of Freeway Analysis Requirement Determination\)](#), to show that freeway segments have been assessed to determine if freeway analysis is required, even in the case where it is determined that no freeway segments meet the one percent threshold, or include text indicating that this assessment has been conducted;
2. The proposed development project is adjacent to one of the freeway segment's access or egress points;
3. Based on engineering judgment, Lead Agency staff determines that the freeway segment should be included in the analysis.

The freeway segments analyzed in a TA shall correspond to the segments included in the latest VTA CMP Monitoring and Conformance Report, which also correspond to Caltrans segment definitions.

For calculating the amount of added traffic compared to freeway segment capacity, the following default volumes shall be used for CMP analysis purposes [based on capacities cited in *Highway Capacity Manual 2000 (HCM 2000)*]: 2,200 vehicles per hour per lane (vphpl for four-lane freeway segments and 2,300 vphpl for six-lane or larger freeway segments). For five-lane freeway segments, 2,200 vphpl shall be used for the two-lane direction and 2,300 vphpl for the three-lane direction. Auxiliary lanes shall not be considered for the purpose of this calculation.

### 2.2.3 Rural Highway Segments

A rural highway segment shall be included in a TA if it meets any one of the following conditions:

1. The proposed development project is expected to add traffic equal to or greater than one percent of the rural highway segment's capacity;
2. The rural highway segment is adjacent to the project;
3. Based on engineering judgment, Lead Agency staff determines that the rural highway segment should be included in the analysis.

For calculating the amount of added traffic based on rural highway segment capacity, the capacities cited in *HCM 2000* shall be used. For two-lane highways, the capacity shall be 1,700 vph for each direction of travel. For four-lane highways, the capacity shall be 2,200 vphpl. For special conditions, refer to Chapter 20 of *HCM 2000* for guidance.

### 2.2.4 Determining Other Transportation Issues to Address

In addition to an Auto LOS analysis covering the facilities identified in **Section 2.2**, the TA shall include an analysis of auto trip reductions; transit, bicycle and pedestrian conditions; project access and circulation; and other issues identified in **Chapters 6, 7, 8** and **9** of these Guidelines. In addition, the TA may also include an analysis of other issues as determined by the Lead Agency. These analyses are not required for CMP purposes but may be included in a TA to address local requirements or CEQA, and may include:

- Adequacy of automobile parking supply compared to demand or local standards;
- Queuing on local (non-CMP) facilities;
- Existing Plus Project analysis scenario (see **Chapter 4, Recommended TA Table of Contents**).

The Lead Agency may require that additional scenarios be analyzed in the TA. For example, unfunded transportation facility improvements may be evaluated as part of an additional scenario. Phased projects may also require additional scenarios.



**PART II**  
NOTIFICATION  
& REVIEW

# CHAPTER 3. TA NOTIFICATION, PREPARATION AND REVIEW PROCESS

This chapter outlines the process for notifications regarding TAs, the preparation of TAs, and review of TAs. The chapter begins with an overview of the process including a step-by-step summary and figure. This chapter also defines the roles of the Lead Agency and VTA by listing the key responsibilities of each in preparing or reviewing TAs.

## 3.1 Overview of Process

The following is an outline of the key steps in the TA Notification, Preparation and Review Process. These steps are shown in *Figure 1*. Note that the term “Lead Agency” in this context refers to the agency responsible for preparing the TA.

1. **Lead Agency Submits TA Notification Form:** Lead Agencies are required to send notification that a TA is being started to VTA, as well as to designated contacts for cities, towns, the County, and Caltrans as appropriate. The purpose of this notification is to inform interested agencies of the study and to allow them to comment on the scope of the analysis.

A sample of the **TA Notification Form** is provided in *Appendix B*. The Lead Agency is encouraged to submit the draft work scope of the TA along with the TA Notification Form. Lead Agencies are encouraged to submit TA Notification Forms and work scopes electronically rather than in hardcopy format wherever possible. Comments from interested agencies on the TA scoping must be received by the Lead Agency *within 15 calendar* days of notification mailing.

2. **Lead Agency Submits TA with Hearing Date:** Upon completion of the study and *at least 20 calendar days before* the project is considered for approval (e.g., City Council or Board of Supervisors hearing) or is “recommended for approval” (e.g., Planning Commission meeting), the Lead Agency is required to submit the TA Report to VTA, as well as to designated contacts for cities, towns, the County, and Caltrans as appropriate.

With the TA submittal, the Lead Agency should indicate the expected hearing date for project approval or recommendation. Lead Agencies are encouraged to submit TA Reports electronically (via an email with an attachment, or a link to the TA location online) rather than in hardcopy

format wherever possible. A draft version of the TA may also be submitted earlier in the process for preliminary feedback from VTA and other agencies.

VTA may grant exceptions to this submittal time frame. The Lead Agency must request the exemption to the submittal date **at least 25 calendar days prior** to the appropriate hearing dates.

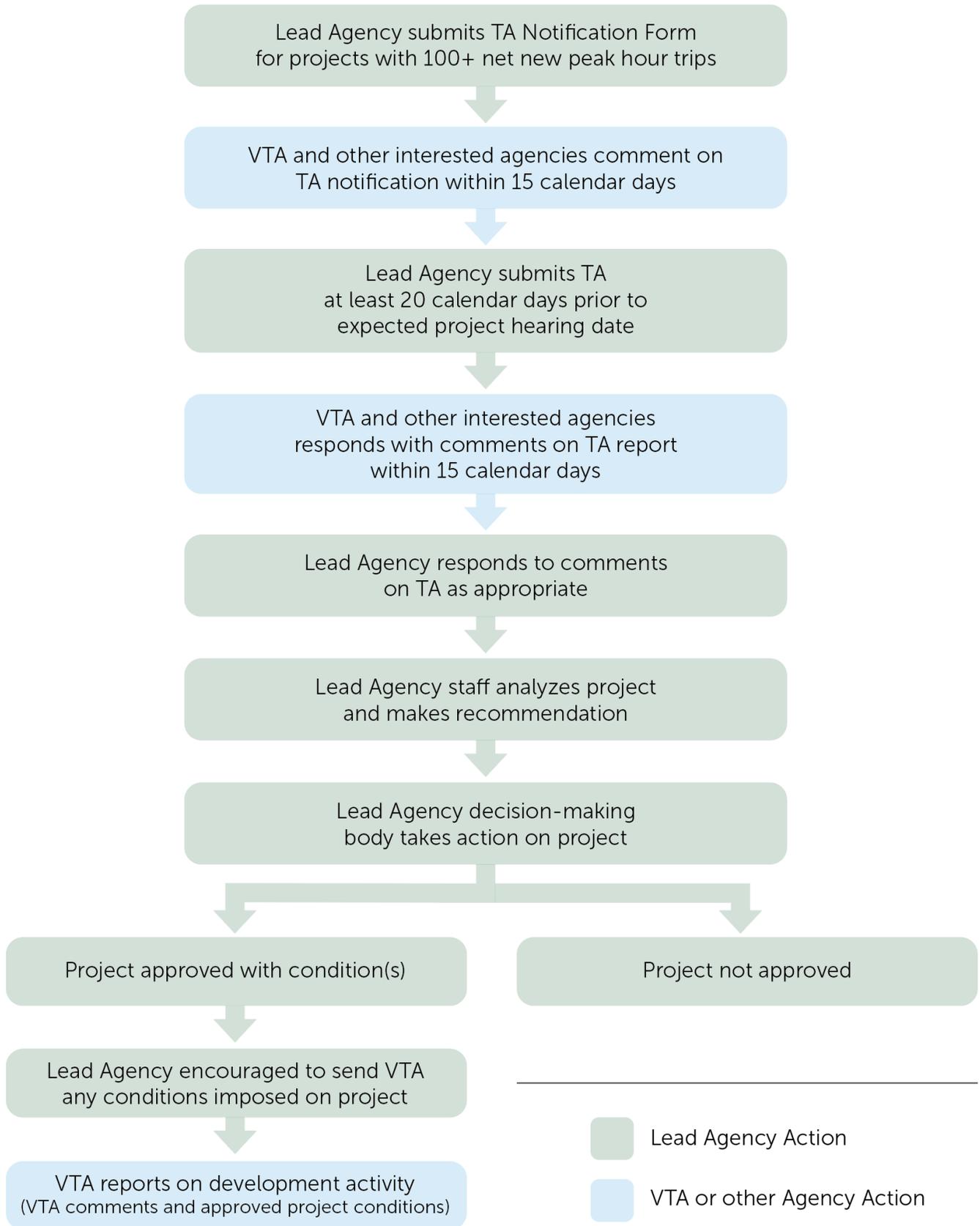
The deadline and process for TA submittal are intended to apply to cases where the TA is not submitted with an environmental document. When a TA is submitted along with an environmental document following CEQA guidelines, the time frame provided by the CEQA process is considered to be sufficient.

3. **VTA and Other Agencies Respond:** VTA may review the TA for consistency with CMP standards and with VTA's *CDT Manual*. VTA may forward a response to the Lead Agency staff prior to action by the Planning Commission and/or City Council with copies sent to the jurisdiction's members on the VTA Technical Advisory Committee (TAC), Policy Advisory Committee (PAC) and TAC Working Groups, as appropriate. Other interested agencies may offer suggestions for the Lead Agency at this point as well. Comments from interested agencies on the TA Report must be received by the Lead Agency **within 15 calendar days** of the TA mailing.

The deadline and process for agency comments on TAs are intended to apply to cases where the TA is not submitted with an environmental document. When a TA is submitted along with an environmental document following CEQA guidelines, the time frame provided by the CEQA process is considered to be sufficient.

4. **Lead Agency Addresses Comments:** Upon receiving comments on the draft TA Report from VTA or other agencies, the Lead Agency should address these comments. If an EIR is being prepared for the project, the Lead Agency shall respond in writing to comments on the TA and transportation analysis if they are received through the CEQA comment process, pursuant to the requirements of CEQA. If an EIR is not being prepared, the Lead Agency should contact the agency that submitted comments to discuss them. For comments that address the compliance of the TA with CMP requirements, the Lead Agency shall submit a written response to VTA and other agencies as appropriate. The response may take the form of a revised TA, supplemental memo, or email clarification, as appropriate. For other comments not related to CMP compliance, the Lead Agency is encouraged to respond to VTA and other agencies.

**Figure 1 | TA Notification and Review Process**



5. **Lead Agency Decision and Project Conditions:** The Lead Agency staff analyzes the project and makes recommendations to the appropriate decision-making body (Planning Commission, City Council and/or County Board of Supervisors). The decision-making body takes action on the project. If the decision-making body rejects the project, no further action by the Lead Agency is required. If the project is modified substantially so that a new TA is required, the Lead Agency must complete the TA process again, beginning with TA notification. If the project is approved, the Lead Agency is encouraged to send text of the relevant adopted conditions relating to the CMP Transportation System and the promotion of alternative transportation modes to VTA.
6. **VTA Reports on Development Activity:** VTA may prepare regular reports summarizing relevant VTA comments on projects reviewed by VTA, and relevant conditions on projects approved by Member Agencies that improve CMP facilities, relate to alternative transportation modes, and/or meet other goals such as those related to VTA's CDT Manual. The report is typically presented on a quarterly basis to the VTA Board, the Congestion Management Program and Planning (CMPP) Committee, and the Technical, Citizen, Bicycle and Pedestrian, and Policy Advisory Committees (TAC, CAC, BPAC and PAC), and TAC Working Groups. VTA may also report on Member Agency compliance with CMP requirements through the CMP Monitoring and Conformance Program.

## 3.2 Key Lead Agency Responsibilities

1. The agency that is responsible for certifying the project's CEQA environmental document shall be responsible for performing the TA.
2. The Lead Agency is responsible for notifying all appropriate jurisdictions that a TA is being prepared by submitting a **TA Notification Form** to all appropriate jurisdictions.
3. The Lead Agency is responsible for providing direction on the TA study scope including:
  - a. Determining roadway facilities to be included in analysis (following the procedure set forth in **Section 2.2** in these Guidelines);
  - b. Defining analysis scenarios (following the procedures outlined in **Chapters 4** and **5** of these Guidelines);
  - c. Determining the proper analysis method to use in a study when more than one approach is possible.

4. The Lead Agency is responsible for preparing and submitting the TA Report that meets all the requirements included in these Guidelines to VTA within the time frame outlined in **Section 3.1** of these Guidelines.
5. The Lead Agency is responsible for addressing comments on the draft TA Report as described in **Section 3.1**. The Lead Agency is encouraged to consult with VTA in preparing any Conditions of Approval that relate to improving CMP facilities and promoting alternative transportation modes.
6. After project approval, the Lead Agency is encouraged to send to VTA any adopted Conditions of Approval that relate to improving CMP facilities and promoting alternative transportation modes.

### 3.3 VTA Review for Conformance

VTA shall review TA Reports for consistency with the *TA Guidelines*. This review shall not constitute approval or disapproval of the project that is the subject of the report. VTA does not have the authority to approve or reject projects; that decision rests with the Lead Agency. However, VTA may provide comments to the Lead Agency on the TA Report based on staff review. When appropriate, Lead Agency staff should discuss these comments with the preparer of the TA Report to insure that future TAs comply with CMP requirements. VTA may monitor the final project TA Reports to ensure that they are consistent with CMP standards.

VTA may prepare regular reports of projects that were approved through the TA process. These reports may summarize adopted conditions that improve CMP facilities and relate to alternative transportation modes, and may be presented to the VTA Board and its committees as described earlier in this chapter.

# **PART III**

## TA CONTENTS & METHODOLOGY

# CHAPTER 4. RECOMMENDED TA TABLE OF CONTENTS

This chapter presents a recommended outline and organization of a TA for CMP analysis only. For more detailed guidelines, the chapter is noted where the guidelines are further discussed.

## 1. Executive Summary

The executive summary should summarize major findings from the TA. At a minimum, topics covered should include:

- Project Description;
- Existing Conditions;
- Brief summary of project trip generation and auto trip reductions, including Auto Trip Reduction Statement – See *Appendix C*;
- Project multimodal operation effects and proposed improvements.

## 2. Project Description, Study Area and Analysis Parameters

This section should provide a description of the project, the transportation context surrounding it and the parameters of the transportation analysis.

Topics covered should include:

- Location of Proposed Project;
- Proposed Land Use and Project Size;
- Site Plan, indicating buildings, vehicular access, and pedestrian and bicycle accommodations – See *Section 9.4, Project Access and Circulation*;
- Study Intersections and Freeway Segments – See *Chapters 2 and 5*;
- Analysis Periods and Methodologies – See *Chapter 5*;
- Analysis Scenarios – See *this chapter* and *Chapter 11, Future Year Scenarios (Cumulative Conditions)*.

### 3. Existing Conditions

This study scenario shall evaluate existing conditions. Topics in this section should include:

- Roadway Network;
- Existing Transit System;
- Existing Bicycle and Pedestrian Facilities and TDM Programs;
- Existing Volumes and Lane Configurations;
- Existing Intersection Auto LOS;
- Existing Freeway Segment Auto LOS;
- Field Observations.

See **Chapter 6** for more information on what is required in the existing conditions section.

### 4. Trip Generation and Auto Trip Reductions

This section shall document the methods used in the TA for estimating trip generation associated with a project, approaches for reducing automobile trips to and from the project and documenting these reductions in a TA Report, and assumptions about how trips are distributed throughout the transportation network.

Topics covered in this section should include:

- Trip Generation;
- Auto Trip Reductions and Transportation Demand Management;
- Trip Distribution and Assignment;
- Pass-by Trips and Diverted Linked Trips.

See **Chapter 8** for more information on these topics.

### 5. **Optional: Existing Plus Project Conditions**

This study scenario typically evaluates the addition of the project, along with estimated project-generated trips, to the existing conditions. This section typically identifies project effects on the surrounding transportation network, including an analysis of roadways, freeway segments, and queuing. For any effects identified, improvement measures are typically developed based on the results of this study scenario. If improvement measures are proposed, then an analysis with the mitigations measures is typically conducted.

**Note:** *This scenario is not required for CMP purposes but may be included in a TA to address local requirements or CEQA. However, Existing + Project freeway analysis is required for CMP purposes for all projects meeting*

freeway analysis requirement conditions. Please refer to [Section 2.2.2](#) regarding analysis conditions and [Section 5.2.8](#) regarding analysis methods.

## **6. Background Conditions (Existing + Approved Projects)**

This study scenario shall evaluate background conditions, based on the sum of existing trips and trips from approved developments in the area, along with any changes to roadways and intersections associated with approved development or other funded changes to the transportation network.

Topics covered in this section should include:

- Approved Development Projects;
- Secured Roadway/Intersection Improvements;
- Background Intersection Analysis and Auto LOS.

See [Chapter 7](#) for more information on how to conduct the Background Conditions analysis.

## **7. Background Plus Project Conditions (Existing + Approved Projects + Project)**

This study scenario shall evaluate the addition of the project, along with estimated project-generated trips, to the background conditions. This section shall identify project effects on the surrounding transportation network, including an analysis of roadways and queuing. The Lead Agency is encouraged, but not required, to include an analysis of freeway segments under Background Plus Project Conditions. For any effects identified, improvement measures shall be developed based on the results of this study scenario. If improvement measures are proposed, then an analysis with the mitigations measures shall be conducted.

See [Chapter 9](#) for more information on how to conduct the Project Conditions analysis.

## **8. Multimodal Evaluation, Site Access and Circulation**

This section shall include an analysis of transit, bicycle and pedestrian modes under Plus Project Conditions (Existing, Background and/or Cumulative conditions with the addition of the project), if not included elsewhere in the TA. In addition, this section shall include an analysis of project access and circulation.

See [Chapter 9](#) for more information on how to conduct this analysis.

## **9. Future Year (Cumulative) Conditions**

This study scenario shall evaluate the addition of the project, along with estimated project-generated trips, to longer term conditions than those described under Background Plus Project conditions. In general,

the Cumulative Conditions scenario is analyzed as the combination of Background Conditions (Existing Conditions + Approved Projects) + Expected Growth + Project. This section shall identify project effects on the surrounding transportation network. For any effects identified, improvement measures shall be developed based on the results of this study scenario. The parameters of the Cumulative Conditions scenario should be clearly defined in the TA. Cumulative scenarios can be near- or long-term, as follows:

- **Near-Term Development Cumulative Conditions:** This scenario is a near-term cumulative analysis scenario to be provided for each jurisdiction's planning and information purposes. The analysis shall include expected growth until the project is expected to be available for final occupancy;
- **Alternate Cumulative Conditions Analysis** - The Lead Agency may substitute an alternate Cumulative Conditions analysis for the near-term Cumulative Conditions analysis described above. For example, the long-term Cumulative Conditions analysis conducted as part of an environmental analysis may be provided in place of the near-term Cumulative Conditions analysis.

See **Chapter 11** for more information on Cumulative Scenario analysis.

# CHAPTER 5. ANALYSIS PERIODS AND METHODOLOGIES

This section describes the typical analysis parameters to be included in the TA. The Lead Agency shall be responsible for defining the analysis periods and documenting the analysis methodologies in the TA.

## 5.1 Analysis Period

The TA shall include, at a minimum, an analysis of transportation conditions in the peak hours for which the project generates 100 or more net new trips. In other words:

- If the project is expected to generate 100 or more net new weekday trips during both the AM and PM peak hours, then both weekday peak hours must be analyzed;
- If the project is expected to generate 100 or more net new weekday AM peak-hour trips but less than 100 new weekday PM peak hour trips, then only the AM peak hour must be analyzed;
- If the project is expected to generate 100 or more net new weekday PM peak hour trips but less than 100 new weekday AM peak hour trips, only the PM peak hour must be analyzed.

The TA Report must document the project's trip generation for both the weekday AM and PM peak periods to justify the peak period(s) analyzed in the TA.

The Lead Agency may require that additional periods be analyzed, based on engineering judgment. For example, additional analysis of midday or weekend peak periods may be required.

## 5.2 Analysis Methodologies

This section describes analysis method requirements for the various types of CMP roadway facilities: arterials, intersections, freeways, and rural highways. This section also describes analysis methodologies for non-vehicular facilities, i.e. bicycle, pedestrian and transit facilities. Much of this information is also described in the *VTA Traffic Operations Analysis Guidelines*. This section also includes

discussion about the use of the VTA travel demand forecast model and other local models.

A more detailed description of analysis requirements and thresholds for determination of Auto LOS effects are provided in *Chapter 9, Project Conditions and Impacts/Effects*.

### **5.2.1 Urban Arterials**

The analysis of CMP urban arterials, including County Expressways, is accomplished by evaluating designated intersections along the arterials. The analysis of these intersections is to be conducted following the guidelines and the default values for CMP intersection analysis in the latest Board-adopted *VTA Traffic Operations Analysis Guidelines*. Thresholds for determination of an impact are described in *Chapter 9*.

When conducting Auto LOS analysis on County Expressway and/or Caltrans intersections, the Lead Agency should consult with County and/or Caltrans staff to determine the appropriate actual signal timing information for the analysis. Lead Agencies are also encouraged to obtain appropriate actual signal timing information for local intersections with traffic-adaptive signal timing.

In certain situations, more detailed analysis may be needed than what can be provided using isolated intersection analysis software. In these cases, such as on corridors with coordinated or adaptive signal control, the Lead Agency may choose to conduct additional analysis using other software programs, such as microsimulation software for operational analysis, when appropriate.

### **5.2.2 Rural Highways**

The analysis of rural highways shall be based on the methodology described in latest Board-adopted *VTA Traffic Operations Analysis Guidelines*. The analysis is primarily segment-based, but in some cases, it may also be appropriate to evaluate adjacent rural highway intersections, as discussed in the *VTA Traffic Level of Service Analysis Guidelines*.

### **5.2.3 High Occupancy Vehicle Lanes**

In cases where roadways with High Occupancy Vehicle (HOV) lanes are analyzed and project trips are assigned to the HOV facility, HOV lane usage and operation effects must be evaluated. The following applies to the evaluation of an HOV lane:

- Assignment of trips to an HOV lane shall be described and justified in the TA Report;
- Operational analysis of an HOV lane (including analysis of operation effects) shall be documented in the TA Report;
- Auto LOS analysis for an HOV lane should be performed according to *VTA Traffic Operations Analysis Guidelines*;
- Caltrans recommends maintaining LOS C operations on HOV facilities, which occurs at approximately 1,650 vehicles per hour per lane (vphpl);<sup>2</sup>
- For County Expressway HOV lane capacity, the Lead Agency should consult with County staff to determine the saturation flow rate as it varies depending on the Expressway segment.

Refer to the latest *CMP Monitoring and Conformance Report* for existing performance data for freeway HOV lane segments. Consult with County staff for the latest Expressway HOV lane volumes, including volumes at Expressway intersections.

## 5.2.4 Express Lanes

In cases where roadways with Express Lanes are analyzed and project trips are assigned to the Express Lane facility, Express Lane usage and operation effects must be evaluated. The following applies to the evaluation of an Express Lane:

- Assignment of trips: Lead Agency shall consult with VTA, and assignment shall be described and justified in the TA Report;
- Operational analysis of an Express Lane (including analysis of operation effects) shall be documented in the TA Report;
- Auto LOS analysis for an Express Lane should use the following saturation flow rates: 1,650 vehicles per hour per lane (vphpl).<sup>3</sup>

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<sup>2</sup> “The occupancy requirements for HOV facilities should be based on the following considerations: ... C. Maintaining a free flow condition, preferably LOS-C... For buffered or contiguous HOV facilities, Caltrans considers LOS-C occurs at approximately 1,650 vehicles per hour, less if there is significant bus volume or if there are physical constraints.” Caltrans, *High-Occupancy Vehicle Guidelines*, 2020, and *Federal Highway Administration Freeway Management and Operations Handbook*, Chapter 8 Managed Lanes, 2011.

<sup>3</sup>For Express Lanes, which function to provide a time savings over non-tolled lanes, the relevant performance measure is the maintenance of LOS C operations. Per Caltrans Guidelines (see footnote 2), this occurs at approximately 1,650 vphpl.

The CMP *Monitoring and Conformance Report* includes performance data for freeway Express Lane segments.

### 5.2.5 Bicycle

A Quality of Service (QOS)-based methodology, such the one in the current version of the *Highway Capacity Manual* or a similar methodology,<sup>4</sup> is encouraged for analysis of bicycle conditions. Bicycle QOS methodologies typically measure features of the physical environment that affect the comfort and safety of bicyclists from the user's perspective, such as the presence of dedicated bicycle facilities (lanes, paths, etc.), intersection delay and exposure to automobile traffic. The TA should include a description of the methodology being used as part of the analysis. See [Section 9.3](#) for more information on bicycle analysis requirements.

### 5.2.6 Pedestrian

A Quality of Service (QOS)-based methodology, such the one in the current version of the *Highway Capacity Manual* or a similar methodology,<sup>5</sup> is encouraged for analysis of pedestrian conditions. Pedestrian QOS methodologies typically measure features of the physical environment that affect comfort and safety for pedestrians from the user's perspective, such as lateral separation from traffic, crossing distance and delay, and presence of landscaped buffer or trees. The TA should include a description of the methodology being used as part of the analysis. See [Section 9.3](#) for more information on pedestrian analysis requirements.

### 5.2.7 Transit

The transit analysis shall consider the effects of the project on transit delay and transit access and facilities. See [Section 9.2](#) for more information on transit analysis requirements.

### 5.2.8 Freeway Segments

The analysis of freeway segments is to be conducted following the guidelines in the latest Board-adopted VTA *Traffic Operations Analysis Guidelines*. One criterion for assessing the impact of a development project on freeways is Auto LOS. As in the CMP Monitoring and Conformance Program, density is

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<sup>4</sup> Alternative QOS methodologies, including City of San Francisco's Bicycle Environmental Quality Index, are described in [Appendix G](#).

<sup>5</sup> Alternative QOS methodologies, including City of San Francisco's Pedestrian Environmental Quality Index, are described in [Appendix G](#).

the parameter for determining Auto LOS for freeway segments in TAs in Santa Clara County. The relationship between density, speed and flow rate (or traffic volume) is described as follows:

$$d = V/(N \times S) \quad (\text{Eqn. 1})$$

where:  $d$  = density (vehicles per mile per lane, vpmpl)  
 $V$  = peak hour volume (vehicles per hour, vph)  
 $N$  = number of travel lanes (lanes)  
 $S$  = average travel speed (miles per hour, mph)

A table of Freeway Auto LOS criteria based on density ranges is provided in the *Traffic Operations Analysis Guidelines*. For Existing Conditions, the number of lanes as well as performance data for freeway segments in Santa Clara County are included in the most recent *CMP Monitoring and Conformance Report* produced by VTA.

For the analysis of project conditions, the volume ( $V$ ) used in the density calculation (Equation 1) is:

$$V = V_o + V_p \quad (\text{Eqn. 2})$$

where:  $V_o$  = existing peak hour volume (vph)  
 $V_p$  = peak hour project trips distributed on the freeway segment (vph)

The Lead Agency is encouraged, but not required, to include an analysis of freeway segments under Background Plus Project Conditions and Cumulative Conditions. The TA should include a description of the methodology being used to forecast future traffic volumes on freeways, which could include use of a transportation model.

The TA shall include freeway analysis table(s) identifying whether the project would have an impact on the freeway system. Tables for the freeway analysis determination and impact analysis should include detailed data such as project trips, density and speed. Sample tables are shown in [Appendix A \(Table A-1: Sample of Freeway Analysis Requirement Determination and Table A-2: Sample of Freeway Analysis Summary\)](#).

## 5.3 Use of Transportation Models

Travel demand forecasting models may be used for long-term analysis of development projects, planning efforts or transportation facilities. The use of a forecasting model for a buildout scenario should only be used for a period of at least five years from the preparation of a TA Notification Form. If the project were to be built entirely within five years, the “near-term” development approach discussed in *Section 11.1.1, Opening Year/Short-Term Analysis*, shall be used.

The long-term analysis may include the use of either the countywide transportation model or local transportation models as described below:

- 1. Countywide Transportation Model:** The countywide transportation model developed and maintained by VTA may be used for transportation impact analyses. Use of this model may be appropriate for the long-term analyses of large projects and general planning efforts. The cost for this modeling may be borne by the Lead Agency on the work effort.
- 2. Local Transportation Models:** In some cases, local sub-area transportation models are appropriate. Under the CMA statutes, VTA must approve any local sub-area transportation models used for TAs. VTA has adopted guidelines for developing local land use transportation impact models that are designed to ensure that local models are consistent with the countywide model. These guidelines are documented in the *Local Transportation Model Consistency Guidelines* in the *Technical Standards and Procedures*.

# CHAPTER 6. EXISTING CONDITIONS

The TA Report shall include a description of the existing transportation system in the area affected by the project. The project area transportation system shall include all CMP system facilities affected by the project (see [Section 2.2](#), Which Roadway Facilities Should be Included in a TA?). The following section details the items that should be included in the description of roadways, transit, bicycle and pedestrian facilities, and other transportation elements.

## 6.1 Counts and Data Collection

Field data, including counts and field observations, may be needed in order to accurately assess existing conditions. The following are key points regarding data collection for TA completion:

- Data for Existing Study Scenario Analysis:** Freeway and intersection data collected as part of VTA's CMP Monitoring and Conformance Program are available for use in all TAs. When possible, these data from VTA shall be used in the TA.
- Additional Data:** In some cases, additional data may need to be collected for a different time period or to more accurately reflect existing travel that differs from the most recent CMP Monitoring data. The study should not use traffic volume data more than two years old. The use of growth factors should be considered if the traffic volume data is older than one year. Other data collected as required by the Lead Agency shall be provided to VTA (as part of the TA Report) so that VTA's database may be updated. Submittal of data electronically (i.e., in files that can be used with traffic analysis software) is encouraged, where feasible.
- Bicycle and Pedestrian Data:** The collection of pedestrian and bicycle counts is encouraged whenever new traffic volume counts are conducted.
- Field Data Collection Methodology:** Field data should be collected using procedures outlined in the most recent version of the Institute of Transportation Engineers (ITE) *Manual of Transportation Engineering Studies*, or in the most recent version of the Transportation Research Board's *Highway Capacity Manual*.
- Field Observations:** Field observations of traffic conditions, access points, intersection geometries, traffic signal operations, pedestrian and bicycle

accommodations, transit facilities and access, and adjacent land uses should be conducted in the study area for the proposed project. The Lead Agency may also request additional information from the field. Field observations should be noted and may be used to refine or revise Auto LOS calculations when there are discrepancies in the observed and calculated Auto LOS.

## 6.2 Description of Existing Roadways

The following information shall be provided for the project area's CMP Roadway System:

- a. Local/arterial roadway, County Expressway, and freeway network description and map; all County Expressway and freeway descriptions must include a description of High Occupancy Vehicle (HOV) facilities (including HOV lanes and ramp metering bypasses) and Express Lane facilities;
- b. Intersection geometry, traffic controls, and traffic signal timing parameters;
- c. Recent turning movement counts (see *Section 6.1, Counts and Data Collection*);
- d. Existing Auto LOS evaluated using VTA-approved Auto LOS methodology and standard values (see *Chapter 5, Analysis Periods and Methodologies*). In most cases, the existing Auto LOS should be those presented in the latest *CMP Monitoring and Conformance Report*. However, counts may need to be taken to reflect a change in travel patterns since the last monitoring cycle;
- e. Existing locations of congested traffic conditions (as identified with assistance of Lead Agency staff and field observations). This information includes description of queues extending into the upstream intersection(s), queue "spill-back" in turn lanes, effects of ramp metering, and duration of congestion;
- f. Funded and planned roadway improvements.

It may be necessary to provide field measurements of delay and queuing to accurately reflect existing conditions. Field measurements could account for situations where the congestion is more than that represented by the calculated Auto LOS. Additional information gathered from field observations may also be included in the TA.

## 6.3 Description of Existing Transit System

The following information shall be provided for the project area's transit system (the project area transit system shall be defined as transit routes within 2,000 feet of the project boundaries):

- a. Transit route description and map;
- b. Transit station/stop locations;
- c. Site access to major regional transit providers (BART, Caltrain, etc.);
- d. Transit hours of operation and headway information;
- e. Public or private shuttle services provided in the project area;
- f. Location of park-and-ride lots in project area;
- g. Planned transit facilities within the project area; determination of planned transit facilities or services should occur in consultation with VTA and other operators, as appropriate.

## 6.4 Description of Existing Bicycle and Pedestrian Facilities and TDM Programs

The following information shall be provided for the bicycle facilities within the project area:

- a. Existing bicycle paths, lanes, and routes as well as bicycle/pedestrian over and under crossings;
- b. Future planned or programmed bicycle improvements including, but not limited to, those facilities, routes, and programs in the Lead Agency's adopted Bicycle Plan, Pedestrian Plan, Trails Master Plan, and/or bicycle/circulation element of their General Plan, and in other agencies' plans (e.g., adjacent cities' Bicycle Plans or Pedestrian Plans, cross-county bicycle corridors in the VTA *Santa Clara Countywide Bicycle Plan*, Bay Trail Plan);
- c. A basic characterization of existing bicycling conditions in terms of safety, ease of access to the project site, and Quality of Service indicators, emphasizing gaps and deficiencies in the bicycle network near the site (e.g., missing bicycle lanes, narrow outside lanes);
- d. Map showing existing bicycle facilities within 2,500 feet of the project boundaries. This map should indicate bicycle paths, lanes, and routes as well as bicycle/pedestrian over and under crossings;
- e. The description and map of existing bicycle conditions should focus on the project street frontages and paths to major attractors such as

transit facilities, schools, shops and services, and major residential developments.

The following information shall be provided for the project area's pedestrian facilities:

- a. Existing pedestrian facilities in project area including sidewalks, crosswalks and other crossing control devices (e.g. beacons, refuge islands, etc.), and other non-motorized connections and paths in project area;
- b. Future planned or programmed pedestrian improvements including, but not limited to, those facilities, improvements, and programs in Member Agencies' pedestrian elements and plans;
- c. A basic characterization of existing walking conditions in terms of safety and Quality of Service indicators such as tree barriers, landscape buffers, and sidewalk width, emphasizing gaps and deficiencies in the pedestrian network near the site (e.g., missing crosswalks, missing pedestrian signal heads/phases, inadequate Americans with Disabilities Act (ADA) accommodations);
- d. Map showing existing pedestrian facilities within 1,000 feet of the project boundaries. This map should indicate sidewalks (showing each side of a street), sidewalk gaps, crosswalks, other crossing control devices (e.g., beacons, refuge islands, etc.), and bicycle/pedestrian over and under crossings;
- e. The description and map of existing pedestrian conditions should focus on the project street frontages and paths to major attractors such as transit facilities, schools, shops and services, and major residential developments.

When applicable, the following information shall be provided on Transportation Demand Management (TDM) or unique transportation or land use plans affecting the project area:

- a. TDM ordinances in effect for the project site (reference to ordinance and key aspects affecting project is sufficient);
- b. TDM programs at an existing site, in the case of a project that is an expansion or a relocation from a nearby site;
- c. Other transportation plans or land use plans unique to the project area.

# CHAPTER 7. BACKGROUND CONDITIONS

This study scenario shall evaluate Background Conditions, based on the sum of existing trips and trips from approved developments in the area, along with any changes to roadways and intersections associated with approved development or other funded changes to the transportation network.

The following sections present additional information on estimated trips from approved development projects, appropriate transportation facility improvements to include in the analysis, and other considerations.

## 7.1 Approved Development Projects

Approved projects include not yet completed or occupied projects that have undergone an approval process (i.e., been granted a land use entitlement). Approved projects may be projects within the Lead Agency's jurisdiction or a neighboring jurisdiction. Local jurisdictions are encouraged to maintain an inventory of "approved trips." This inventory would include anticipated intersection turning movement volumes from approved projects. This information is useful in ensuring consistency among TAs in the analysis of Background and Cumulative Conditions.

## 7.2 Vacant or Underutilized Buildings

If the proposed project involves a vacant or underutilized site with development rights, the number of trips originally associated with that development may be included in the Background Conditions. The background trips associated with the vacant or underutilized development should be estimated from driveway counts or trip generation rates, size, and land use type of the existing site. The "project trips" would be the additional trips generated by the redevelopment and/or re-occupancy of the site, i.e., the total number of trips generated by the proposed project minus the estimated background trips of the vacant or underutilized development. If the proposed project involves a vacant or underutilized site without development rights, all trips generated by the proposed project would be "project trips." The Lead Agency always has the discretion to consider trips associated with prior development rights to be project trips, rather than background trips.

### **7.3 Addition to Existing Development Project**

If the proposed project involves the addition of a new use or expansion of an existing use at the site of an existing development, the number of trips originally associated with that site would be included in the Background Conditions. The background trips associated with the existing development should be estimated from driveway counts or trip generation rates, size, and land use type of the existing site. The “project trips” would be the additional trips generated by the addition or expansion project.

### **7.4 Transportation Facility Improvements**

The transportation network for Background Conditions shall include all funded transportation facility improvements expected to be completed within one year of the proposed development project’s completion. With VTA approval, a Lead Agency may request inclusion of other funded improvements or other developer-conditioned improvements.

### **7.5 Background Auto Level of Service Analysis**

Transportation system operations for Background Conditions should be analyzed in a manner consistent with the analysis presented under Existing Conditions and following the methodology in *Chapter 5, Analysis Periods and Methodologies*.

# CHAPTER 8. TRIP GENERATION AND AUTO TRIP REDUCTIONS

This chapter describes methods for estimating trip generation associated with a project; approaches for reducing automobile trips to and from the project and for documenting these reductions in a TA Report; and assumptions about how trips are distributed throughout the transportation network.

## 8.1 Trip Generation

The TA should clearly identify the source of each trip generation rate used in the transportation analysis.

### 8.1.1 Sources and Methodologies

The Lead Agency may use trip generation rates from the most recent version of the Institute of Transportation Engineers' (ITE's) *Trip Generation Manual*, rates developed from local data, or rates developed using alternative trip generation methodologies.

For the most common land uses, numerous studies have been used in developing the ITE trip generation rates. In some cases, however, the published ITE trip generation rates are based on very limited data. There are at least four cases in which the Lead Agency should consider using alternative sources for trip generation rates:

- When *ITE data is insufficient* (e.g. small sample size, not statistically valid);
- When a project's *specific land use* is not covered by the ITE manual or is known to show trip generation characteristics that differ from the categories covered in the ITE manual;
- When the *land use context*, such as high-density infill or development adjacent to transit, is not addressed by the ITE manual;
- When the project includes a mix of land uses (*mixed-use development* type).

Lead Agencies may also develop trip generation rates based on local data specifically for use in the transportation impact analysis. If custom trip generation rates are developed, techniques in the ITE's *Manual of Transportation Engineering Studies* should be used. The local data used to develop a custom rate should

either be included in the TA or made readily available by the Lead Agency.

Trip generation rates from other methodologies may be used instead of ITE rates, where defensible and appropriate. Alternative methodologies include:

- SANDAG Traffic Generation Manual & Trip Generation for Smart Growth;
- City of San José Trip Generation Rates;
- MXD Model/SANDAG Model – US EPA;
- NCHRP 8-51 – Enhancing Internal Trip Capture Rate for Mixed-Use Development;
- Station Area Resident Survey – MTC;
- California Smart Growth Trip Generation Tool – Caltrans/UC Davis;
- Travel demand forecasting models;
- California Emissions Estimator Model (CalEEMod)<sup>6</sup>

Additional information on the research and professional practice basis of alternative trip generation methodologies can be found in [Appendix D](#).

Professional judgment should always be used when selecting a trip generation data source or methodology. When using trip rates from any of the alternate trip generation methodologies listed, the Lead Agency shall include in the TA Report a full description of the trip generation methodology used and a summary of all inputs and assumptions. Professional judgment should be exercised to avoid double counting when using an alternate trip generation methodology. Some methodologies already account for attributes contained in the Standard Trip Reductions, which should not be taken on top of reductions provided by an alternate methodology.

In cases where the chosen trip generation methodology is based on a limited sample size, Lead Agencies are encouraged to conduct additional research or use local data to validate the trip rates before applying the suggested trip reductions from the alternate methodology.

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<sup>6</sup> CalEEMod is recommended for Vehicle Miles Traveled (VMT) analysis by the California Air Pollution Control Officers Association (CAPCOA) and the Bay Area Air Quality Management District (BAAQMD). CalEEMod may be useful as a supplemental resource for verification and justification of trip generation and trip reductions. However, since CalEEMod does not produce detailed trip generation estimates, it is not recommended that Lead Agencies rely on CalEEMod as their primary source for trip generation when preparing a TA. See [Appendix D](#) for more detail.

## 8.1.2 Documentation of Trip Rates

A summary table showing trip generation for each type of land use in the project for each period of analysis (daily, AM peak, PM peak, etc.) shall be provided. The summary table shall include a quantification (square feet, number of units, etc.) upon which the trip generation calculation is based for each land use type, the trip generation rates used, and resulting generated trips.

The choice of trip generation rates shall be justified in the TA. This includes any trip generation rate used for High Occupancy Vehicles.

Additionally, any unique project attributes affecting the trip generation calculations shall be documented. For example, assumptions regarding peak spreading and pass-by trips shall be documented.

## 8.1.3 Mode Split

For large projects that use a transportation model (either the countywide model or a local model), the Lead Agency is encouraged to prepare a summary table for either the daily or peak hour that indicates the number of vehicle trips, transit trips, bicycle trips and pedestrian trips generated for each type of land use. The Lead Agency may determine the project mode split based on factors from the VTA countywide model, in consultation with VTA. Based on engineering judgment, some projects may need further analysis of bicycle and pedestrian trips generated by the project. See *Chapter 12, Special Project Types*, for more information.

## 8.2 Automobile Trip Reductions and Transportation Demand Management

An important goal of VTA's CMP is to encourage development that reduces system wide traffic congestion and improves air quality in the region. Several strategies can be used to encourage this type of development and to accomplish these goals, including:

- Mixed-use development (which increases internal trips);
- A strong Transportation Demand Management (TDM) program (which provides incentives and services to encourage alternatives to the automobile);
- Project location and design features that encourage walking, bicycling and transit usage;

- Parking demand management programs, which discourage drive-alone trips; and
- Development near frequent transit services.

These strategies are most effective when combined into a comprehensive program that is integrated into the project’s design and operation.

Implementation of one or more of these strategies may encourage reductions in automobile trips generated by new development projects compared to standard automobile-trip rates. Projects that incorporate these concepts into their design may be awarded trip reduction credits, which may be applied to the total number of trips generated by the project. Trip reduction credits are subject to Lead Agency approval and discretion.

This section outlines three approaches for developing automobile trip reductions for a TA:

- **Standard Trip Reductions** are established percentage reductions based on research or local policy that are provided within the TA Guidelines. They can be taken for projects which include a mix of land uses, are located near transit, and/or have certain programs for TDM;
- **Target-Based Reductions** may be taken when the project applicant has entered into an enforceable agreement with the Lead Agency that limits the number of automobile trips traveling to and from the project site. The trip reduction program must include a commitment to monitor trip generation and determine whether targets are met, an enforcement structure, and a commitment to summary-level data sharing;
- **Peer/Study-Based Trip Reductions** may be taken when studies of similar projects, or of other sites occupied by the project applicant, have demonstrated comparable trip reductions through survey results or other data. The trip reduction program must include a commitment to monitor trip generation, and a commitment to summary-level data sharing.

*All auto trip reductions must be clearly explained, documented, and justified in the project’s TA Report. Lead Agencies must state which of the above approaches is being used to develop auto trip reductions, if any reductions are claimed.*

Trip reductions shall be summarized in an Auto Trip Reduction Statement in the Executive Summary of the TA Report, using the form provided in **Appendix C**.

## 8.2.1 Standard Trip Reductions

VTA has developed the following guidelines for estimating auto trip reductions due to mixed-use development (internal trips), certain TDM programs, and

transit station proximity. These guidelines should be used to determine the standard reductions in project vehicle trip generation from the estimates produced using the trip generation sources and methodologies referred to in **Section 8.1.1**. It must be emphasized that the vehicle trip reduction values or percentages should be applied carefully using professional judgment. In some cases, following the guidelines for standard trip reductions outlined in this section would overestimate trip generation from the project. **Sections 8.2.2, Target-Based Trip Reductions,** and **8.2.3, Peer/Study-Based Trip Reductions,** provide guidance for cases when trip reduction percentages are likely to be higher than those detailed in this section. These subsequent sections also provide the procedures for documenting and justifying larger trip reductions for “special circumstances” which are referred to in this section.

The effectiveness of mixed-use development, TDM programs, and location near transit at reducing project vehicle trip generation should be monitored by Lead Agencies as part of the CEQA improvement measure monitoring process and/or the agency’s TDM effectiveness monitoring program. Lead Agencies are encouraged to provide this type of monitoring data to VTA, when available, to assist in revising the vehicle trip reduction guidelines in the future. VTA may gather data on trip reduction experiences from Member Agencies through the CMP Monitoring and Conformance Program, and may share this data online to assist agencies in preparing TAs.

### ***Table 1: Standard Auto Trip Reduction Rates***

Summarizes the maximum trip reduction rates that can be applied under the Standard Trip Reduction Approach. It should be noted that standard vehicle-trip generation rates already include some measure of transit use, biking, walking and TDM programs, so trip reductions summarized in Table 1 may be smaller than measured transit use and TDM program participation in a given project. The trip reduction values in this chapter may be revised as new information is gathered.

#### ***8.2.1.1 Mixed-Use Developments***

The Standard Reduction approach allows the largest trip reductions (i.e., 10 to 15%) for mixed-use developments that combine retail uses with a housing or hotel component. Based on a review of mixed-use developments, other mixed-use projects may be allowed smaller trip reductions due to the reduced amount of internal trip-making found in these projects. **Table 1: Standard Auto Trip Reduction Rates** summarizes the maximum trip reductions for mixed-use developments under the Standard Reductions approach.

**Table 1 | Standard Auto Trip Reduction Rates**

TRIP REDUCTION STRATEGY	STANDARD TRIP REDUCTION
<b>Mixed-Use Development Project</b>	
with housing and retail components	15.0% off the smaller trip generator <sup>7</sup>
with hotel and retail components	10.0% off the smaller trip generator <sup>8</sup>
with housing and employment	3% off the smaller trip generator <sup>9</sup>
with employment and employee-serving retail	3% off employment component <sup>10</sup>
<b>Effective TDM Program<sup>11</sup></b>	
Financial Incentives	up to 5.0% <sup>12</sup>
Shuttle Program <sup>13</sup>	
- Project-funded dedicated shuttle	3.0%
- Partially-funded multi-site shuttle	2.0%
<b>Location Within 2,000-Foot Walk of Transit Facility<sup>14</sup></b>	
Housing near LRT, BRT or Caltrain station	9.0%*
Housing near a Major Bus Stop <sup>15</sup>	2.0%*
Housing near a BART station	Case-by-Case**
Employment near LRT, BRT or Caltrain Station	6.0%*
Employment near a Major Bus Stop <sup>16</sup>	2.0%*
Employment near a BART station	Case-by-Case**

\* Note: The LRT/BRT/Caltrain Station, BART Station, and Major Bus Stop reductions cannot be combined.

\*\* Note: See [Section 8.2.1.3 Proximity to Transit \(Rail or Major Bus Line\)](#), below, for a description of the case-by-case method for proximity to BART stations

<sup>7</sup> The proposed trip reductions calculated for all land uses within the development area shall be based on the land use that produces the least amount of new trips. In other words, the same trip reduction rate for the land use that produces the least number of new trips should be used to determine the trip reduction for all developments.

<sup>8</sup> Same as footnote 7.

<sup>9</sup> Same as footnote 7.

<sup>10</sup> All trips made to retail services (employee-serving retail) within the proposed development/complex may be considered internal trips. However, to qualify for this reduction, the employee-serving retail must be integrated into the employment complex and must not have a dedicated parking area.

<sup>11</sup> In order for a project applicant to claim a TDM reduction, a commitment to make the TDM program available to all current and future occupants of the development must be included in a legally enforceable document. See [Section 8.2.1.2, Transportation Demand Management \(TDM\) Program](#) for more details.

<sup>12</sup> Financial incentives must be offered on an ongoing basis and must be roughly equivalent to or higher than the monthly maximum pre-tax commuter benefit allowed under federal law at the time of TA preparation in order for the project to receive full trip reduction. See [Section 8.2.1.2](#) for more details.

<sup>13</sup> If the shuttle trip reduction is being combined with the "Employment near LRT, BRT or Caltrain Station" reduction, the maximum shuttle trip reduction that can be taken is 1.5%.

<sup>14</sup> See [Section 8.2.1.3, Proximity to Transit \(Rail or Major Bus Line\)](#), below, for further detail.

<sup>15</sup> A major bus stop is defined as a stop where six or more buses per hour from the same or different routes stop during the peak period in Core, Corridor or Station Areas.

<sup>16</sup> Same as footnote 15.

The following are further descriptions of the trip reduction categories listed in *Table 1*:

1. **Housing/Retail Mixed-Use Projects:** Mixed-use development projects that include a substantial housing component and a retail component can reduce vehicle trips by increasing internal trips. For example, project residents patronizing the retail uses would reduce the number of external retail and residentTAI trips. Hence, a reduction in vehicle trips can be taken off the smaller trip generator of the project in an amount not to exceed fifteen percent (15%) unless special circumstances are justified in the project's TA.<sup>17</sup> The trips generated by the larger trip generator should be reduced by no more than the same number of trips reduced for the smaller trip generator.
2. **Hotel/Retail Mixed-Use Projects:** Mixed-use projects combining hotel and retail components may also increase internal trips. Hotel guests patronizing the project's retail uses would reduce the number of external retail and hotel trips. A reduction on the trips generated by the smaller trip generator can be taken in an amount not to exceed ten percent (10%) unless special circumstances are justified in the project's TA.<sup>18</sup> The trips generated by the larger trip generator should be reduced by no more than the same number of trips reduced for the smaller trip generator.
3. **Housing/Employment Mixed-Use Projects:** Mixed-use projects combining housing and employment components may have trips made between the two uses if some housing residents are also employed on-site. No more than a three percent (3%) reduction off the trips generated by the smaller of the two trip generators shall be taken unless special circumstances are justified in the project's TA.<sup>19</sup> The trips generated by the larger trip generator should be reduced by no more than the same number of trips reduced for the smaller trip generator.
4. **Retail/Employment Mixed-Use Projects:** Mixed-use projects combining employment and employee-serving retail components, such as dry

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<sup>17</sup> This value is based on data cited in "Transit Oriented Development, Using Public Transit to Create More Accessible and Livable Neighborhoods" from the Victoria Transport Policy Institute, April 4, 2006; this value is comparable to Metropolitan Transportation Commission's *Characteristics of Rail and Ferry Station Area Residents in the San Francisco Bay Area: Evidence from the 2000 Bay Area Travel Survey (Volume I)*, September 2006.

<sup>18</sup> This value is based on VTA's review of mixed use literature available in 1998. Values for mixed-use trip reductions varied from 7% to 13%. See Institute of Transportation Engineers, *Trip Generation: An Informational Report, 5th Edition*, 1991, p. I-48 and California Air Resources Board, *Transportation-Related Land Use Strategies to Minimize Motor Vehicle Emissions: An Indirect Source Research Study*, June 1995, Appendix B.

<sup>19</sup> This value is based on Member Agency policies to encourage mixed-use development.

cleaning, gift store, and service-oriented uses offer opportunities for employees to run errands during the day that they may have otherwise done during a peak period. In order to qualify for a trip reduction, the employee-serving retail must be integrated into the employment complex, with no designated parking area for the retail. The TA should document that the project is eligible for a reduction. No more than a three percent (3%) reduction off the trips generated by the employment site shall be taken unless special circumstances are justified in the project's TA.<sup>20</sup> All of the employee-serving retail trips may be considered to be internal to the project.

### **8.2.1.2 Transportation Demand Management (TDM) Program**

A reduction in project vehicle trip generation can be made for provision of a Transportation Demand Management (TDM) program. In the VTA *TA Guidelines*, reductions for certain TDM programs may be taken through the Standard Trip Reduction approach below. It should be understood that most trip generation rates include a certain ambient level of non-single occupant vehicle trips. Therefore, the actual effectiveness of the TDM program is assumed to be greater than the values listed below, but the maximum trip reduction that may be taken from trip generation rates must comply with the guidelines below, for TAs that take the Standard Trip Reductions approach.

In order for a project applicant to claim a TDM reduction in a TA, a commitment to make the TDM program available to all current and future occupants of the development must be included in a legally enforceable document. Examples of such documents, for trip reduction documentation purposes, include Conditions of Approval, Development Agreements, CEQA Mitigation Monitoring & Reporting Programs (MMRPs), and/or Covenants, Conditions, & Restrictions (CC&Rs). The commitment to participate in a TDM program must be documented in the TA.

VTA offers Standard Trip Reduction values for two types of TDM programs:

1. **Financial Incentives:** TDM programs that are based on financial incentives have the greatest effect on reducing trip generation. Trip reductions can be taken for projects which include the following types of financial incentives: transportation allowance for alternative modes to driving alone; parking cash-out; pre-tax commuter benefits for biking, carpooling, vanpooling,

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<sup>20</sup> This value is based on Member Agency policies to encourage mixed-use development.

and using transit; and subsidies such as free transit passes or transit fare incentives provided by employers and/or residentTAl complexes. In addition, charging for parking is a financial disincentive for solo driving and is considered a TDM measure. The maximum trip reduction that can be taken for such TDM programs is five percent (5%) unless special circumstances are justified in the project's TA.<sup>21</sup>

The actual trip reduction that can be used in the TA may depend on the level of financial subsidy provided to residents and/or employees and the number of residents and/or employees eligible for the subsidy. The standard 5% reduction can be taken if the financial subsidy is offered to all residents and/or employees of the development on an ongoing basis and is roughly equivalent to or higher than the monthly maximum pre-tax commuter benefit allowed under federal law at the time of TA preparation.

The level of financial incentives to be provided must be documented in the TA Report.

2. **Shuttle Programs:** Projects which participate in shuttle programs linking the site to major transit facilities or other locations with high employee densities may be allowed a three percent (3%) trip reduction unless special circumstances are justified in the project's TA.<sup>22</sup> The full 3% trip reduction may be taken only when the project is committed to fully funding a dedicated shuttle to light rail, Caltrain, or BART facilities or other locations with high employee densities. A 2% reduction may be taken if the project is committed to parTAlly funding a shuttle that serves other sites in addition to the project site. If the shuttle trip reduction is being combined with the 'Employment near LRT, BRT or Caltrain Station' reduction, the maximum shuttle trip reduction that can be taken is one and one-half percent (1.5%).

### **8.2.1.3 Proximity to Transit (Rail or Major Bus Line)**

Housing and employment projects that are located near transit have different mode splits resulting in generally lower vehicle-trip generation characteristics. The extent is different for different types of transit facilities. To qualify for the Proximity to Transit trip reduction rates, developments must be located near existing or future Light Rail Transit (LRT) stations, Caltrain stations, BART stations, Bus Rapid Transit (BRT) stations, or major bus stops. For a project to

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<sup>21</sup> This figure is based on two sources: US Department of Transportation, "The Effects of Land Use and Travel Demand Management Strategies on Commuting Behavior," November, 1994, which indicated a reduction in Drive Alone mode of approximately 5% for sites providing financial incentives; and Donald Shoup, "Parking Cash Out," Chicago: Planning Advisory Service, 2005, indicating reductions in vehicle trips of at least 5% at employers offering parking cash-out.

<sup>22</sup> Based on VTA's review of 1997 Caltrain and LRT shuttle ridership to and from Santa Clara County employment sites.

qualify for an auto trip reduction near a future transit station, the transit capital project that may include the station must be under construction at the time of the TA Notification Form issuance. A major bus stop for the purposes of trip reductions is defined as a stop where six or more buses per hour (from the same or different routes) stop during the peak period. A development qualifies as being located near transit if the project entrance (housing front door, office pedestrian entrance) and greatest density of the project are within approximately 2,000-foot walking distance of the specified transit facility.

Projects that take any of the trip reductions described in this section shall provide a map or text description indicating the walking route from the project to the transit stop. The TA should identify any pedestrian barriers that affect access from the development to the transit facility, including gaps in the sidewalk network and/or street crossings that lack pedestrian crossing facilities. If any pedestrian barriers as described above exist in the route between the project site and the transit stop, the project would be disqualified from taking a trip reduction for proximity to transit unless the project commits to fully funding any improvements needed to close the gap.

It is recognized that the 2,000 foot walking distance is not all or nothing – since many residents and employees outside that radius still walk to transit, though at diminishing rates as the distance from the station increases. In the case where the full development is not within a 2000-foot walk, placement of the more concentrated land uses closest to the transit facility is recommended. Projects located greater than 2,000 foot walking distance may qualify for the trip reductions described below. To qualify, the TA must include a justification for the trip reduction based on evidence from studies of similar projects. The evidence provided should demonstrate that the proposed trip reduction is likely to be achieved given the land use context, distance from transit, type of transit service available, and pedestrian and bicycle conditions between the project site and the station. The Lead Agency may consider using the Peer/Study-based Approach to trip reductions (see [Section 8.2.3](#)), if appropriate.

To bolster the case for a trip reduction at a distance of greater than 2,000 feet from transit, VTA recommends that the project increase the quality of the walk experience between the development and the transit facility. Examples of these types of improvements include constructing sidewalks greater than the minimum sidewalk width, providing pedestrian scale lighting and landscaping, and adding signs to direct pedestrians and bicyclists to transit. In addition, the project must show that safe, pedestrian-friendly sidewalks or paths extend all the way from the project site to the transit stop.

Professional judgment should be used when taking transit proximity-related trip reductions from trip generation developed using alternative methodologies. Where a travel demand model or mixed-use trip generation model is used to estimate trips on all modes (i.e., including a mode choice component), care should be taken to not double-count the effect of proximity to transit.

The trip reduction values allowed for each type of project are as follows:

1. **Housing Near Light Rail, Bus Rapid Transit or Caltrain Station:** Housing developments where the walking distance from the unit or the front door of the housing complex to the station is 2,000 feet or less may reduce their trip generation volumes by nine percent (9%).<sup>23</sup> *In the case that a development is located near a rail/BRT station and a major bus stop, a reduction can only be taken for either the major bus stop or the rail/BRT station, and not a combination of the two transit facilities.*
2. **Housing Near a Major Bus Stop:** Housing developments where the walking distance from the unit or the front door of the housing complex to the major bus stop is 2,000 feet or less may reduce their trip generation volumes by two percent (2%).<sup>24</sup> *This reduction may not be combined with the trip reduction for housing located near light rail, BRT or Caltrain.*
3. **Employment Near Light Rail, Bus Rapid Transit or Caltrain Station:** Employment sites where the walking distance from the front door of the development to the station is 2,000 feet or less may reduce their trip generation volumes by six percent (6%).<sup>25</sup> *In the case that a development is located near a rail/BRT station and a major bus stop, a reduction can only be taken for either the major bus stop or the rail/BRT station, and not a combination of the two transit facilities.*
4. **Employment Near a Major Bus Stop:** Employment sites where the walking distance from the front door of the development to the major bus stop is 2,000 feet or less may reduce their trip generation volumes by two percent (2%). *This reduction may not be combined with the trip reduction for employment sites located near light rail, BRT or Caltrain.*

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<sup>24</sup> Santa Clara County Transportation Agency, "Transit-Based Housing Survey," September 1995.

<sup>25</sup> Same as previous footnote.

<sup>26</sup> Lund, Cervero, Wilson, *Travel Characteristics of Transit-Oriented Development in California*, Bay Area Rapid Transit District and California Department of Transportation, 2004.

5. **Case-by-Case Approach for Proximity to BART Stations:** ResidentAl and employment developments where the walking distance from the front door of the development to an existing or future BART station is 2,000 feet or less may apply a trip reduction in a TA. When proposing such a reduction, Lead Agencies must obtain concurrence from VTA and provide a description of the methodology, source data and justification for the trip reduction in the TA Report. The trip reduction for proximity to BART should take into account the attributes of the station area (land uses, transportation network, pedestrian and bicycle connections to the station) to ensure that the requested reductions are appropriate for the context. VTA may in the future provide suggested trip reduction rates (standard reductions) when data from the Santa Clara County BART stations becomes available.

#### **8.2.1.4 Standard Trip Reduction Combinations**

Projects that combine two or more trip reduction strategies for which Standard Reductions are specified may take reductions off the trips generated by individual project components, as discussed below. The reductions shall be clearly explained, documented, and justified in the project's TA Report and shall conform to the values listed in **Section 8.2** unless special circumstances are justified in the project's TA.

Application of multiple trip reduction strategies may depend on the type and ratio of uses present in the project under study. For example, a mixed-use project composed mostly of housing with some retail that also participates in a shuttle program is allowed a 15% mixed-use reduction on the retail trip generation of the project. The housing trips should be reduced by no more than the same number of retail trips internal to the project. In addition, the housing component of the project may be allowed a 3% reduction for participation in a shuttle program. However, if the shuttle may serve the retail use as well as the housing component, and the retail use is large and generates a majority of the daily project trips, the 3% reduction for shuttle participation may be applied to both the retail and housing components of the project.

Similarly, a mixed-use housing and retail project located near transit may be allowed 15% reduction on trips generated by the retail portion of the project to account for the mixed-use nature of the project. Again, the housing trips should be reduced by no more than the same number of retail trips internal to the project. In addition, the housing portion may be allowed a 9% reduction for the location near transit.

If the TDM shuttle trip reduction is being combined with the 'Employment near LRT, BRT or Caltrain Station' reduction, the maximum shuttle trip reduction that can be taken is one and one-half percent (1.5%).

### **8.2.1.5 Parking and Automobile Trip Reduction**

Recognizing that parking oversupply may itself have negative secondary effects, the TA should discuss the project's approach to parking management. A parking management plan, shared parking, parking cash out, unbundled parking, carpool parking, and parking layout and design can be ways to encourage the use of alternative modes and reduce auto trips. If the project is using any of these measures as part of its overall TDM/trip reduction strategy, the Lead Agency shall document it in the TA, and note it in the Auto Trip Reduction Statement. The parking analysis must explicitly discuss the relationship between the project's parking supply, parking demand and parking costs (if any) to vehicle trip reductions applied to the project.

## **8.2.2 Target-Based Trip Reductions**

In addition to Standard Trip Reduction and Peer/Study-Based Trip Reduction approaches, projects may take a Target-Based Trip Reduction if documentation and justification are provided in the TA Report, based on the guidance below. This approach may be taken when the project applicant has entered into an enforceable agreement with the Lead Agency that limits the number of automobile trips traveling to and from the project site. The trip reduction program must include a commitment to monitor trip generation and determine whether targets are met, an enforcement structure, and a commitment to summary-level data sharing.

It is recognized that Lead Agencies ultimately make decisions on project approvals, and therefore commitments to certain elements that would justify a Target-Based Trip Reduction may occur as an agreement between the project applicant and the Lead Agency, and it is responsibility of the Lead Agency to enforce those commitments. For the purpose of a TA, stating a commitment and providing the documentation noted below is sufficient, provided that the commitment also appears in a legally enforceable document. Examples of such documents, for trip reduction documentation purposes, include Conditions of Approval, Development Agreements, CEQA Mitigation Monitoring & Reporting Programs (MMRPs), and/or Covenants, Conditions, & Restrictions (CC&Rs).

The following elements are **required** in a TA Report for a project taking a

## Target-Based Trip Reduction:

- State a commitment to a specific reduction target (percentage trip reduction, non-auto mode split or trip cap). This statement should specify the starting point for the reduction (e.g., ITE auto trip generation rates based on square footage or number of units, total person-trips based on employee/resident count) and the time period for the reduction (peak hour, peak period and/or full day). For targets based on mode split, the statement should include a clear explanation of how to convert these figures back to auto trip generation rates to allow later monitoring and comparison;
- Provide a description of the types of TDM/trip reduction measures that are proposed in the program. It is recognized that the list may be preliminary and may change over time;
- State a commitment to periodic monitoring of project trip reduction. The methodology should follow industry standards to determine auto trip generation rates or mode splits and should be conducted by the Lead Agency or a third party. The TA Report should describe the proposed monitoring approach;
- State a commitment to an enforcement/penalty structure. Lead Agencies retain flexibility to determine the parameters, and the enforcement/penalty structure may take the form of a 'reinvestment clause' where the project applicant/owner is required to invest more in trip reduction efforts if not meeting the target;
- State a commitment to provide summary level monitoring data (e.g., auto trip generation rates, mode shares) to VTA, through the Lead Agency. Data shall be provided on a biennial basis as part of the CMP Monitoring and Conformance Program.

The following elements are **encouraged** in a TA Report for a project taking a Target-Based Trip Reduction:

- Detailed description of the TDM/trip reduction measures that are proposed in the program;
- Sharing of trip monitoring reports or more in-depth trip generation or survey data for the purpose of improving the *TA Guidelines in the future*.

### 8.2.3 Peer/Study-Based Trip Reductions

In addition to Standard Trip Reduction and Target-Based Trip Reduction approaches, projects may take a Peer/Study-Based Trip Reduction if documentation and justification are provided in the TA Report, based on the guidance below. This approach may be used to justify a trip reduction based

on a project's similarity to other projects with demonstrated trip reductions or a project occupant's track record of reducing trips at other sites, or to provide additional justification for trip rates based on local data collection efforts.

The following describes the requirements for documenting and justifying a Peer/Study-Based Trip Reduction percentage:

- Provide Data/Documentation in TA Report: Lead Agencies may rely on existing studies or conduct their own study, as appropriate to develop the Peer/Study-Based trip reductions, and this data and documentation must be included in the TA Report or its appendices. The documentation must include the data used to justify the Peer/Study-Based trip reduction rate, the source(s) referenced, and a detailed discussion of the assumptions and methodologies used. The methodology used to develop the Peer/Study-Based trip reduction rate should follow industry standards and in cases where the trip reduction rate is based on a limited sample size, professional judgment should be used to determine the suitability of the sample data;
- Ensure Appropriateness: Care must be taken to use data that is applicable to Santa Clara County conditions. As part of the documentation, Lead Agencies must specify the sample size, urban context, quality and type of transit services available, and any other relevant findings pertaining to the particular project attribute(s) in question;
- Provide a description of the types of TDM/trip reduction measures that are proposed in the program, if applicable;
- State a commitment to periodic monitoring of project trip reduction: The methodology should follow industry standards to determine auto trip generation rates or mode splits and should be conducted by the Lead Agency or a third party. The TA Report should describe the proposed monitoring approach;
- State a commitment to provide summary level monitoring data (e.g., auto trip generation rates, mode shares) to VTA, through the Lead Agency. Data shall be provided on a biennial basis as part of the CMP Monitoring and Conformance Program.

See [Table 2](#), for a comparison of Standard, Peer/Study-Based and Target-Based trip reduction approaches.

**Table 2 | Comparison of Trip Reduction Approaches**

	STANDARD REDUCTION	PEER/STUDY-BASED REDUCTIONS	TARGET-BASED REDUCTIONS
Maximum percentages in VTA TA Guidelines?	Yes, see <i>Table 1: Standard Auto Trip Reduction Rates</i>	No	No
Data required in TA Report?	No	Yes, existing or new studies	No
Commitment to a target required?	No	No	Yes
Description of measures required?	No	Yes, if applicable	Yes
Monitoring required?	No	Yes	Yes
Enforcement required?	No	No	Yes
Data Sharing required?	No	Yes	Yes

### 8.3 Trip Distribution and Assignment

The trip distribution step of a TA consists of forecasting the travel direction of project-generated trips to and from the project site.

The trip distribution percentages shall be included in the TA Report on a figure showing an area map with transportation facilities (roadways, transit lines, etc.) and the project site. The trip distribution figure should, at a minimum, show trip percentages at gateways, on nearby freeway segments, and along major arterials that provide direct access to the project site.

The trip assignment step of a TA consists of assigning trips to specific transportation facilities on the basis of the trip distribution percentages. Assignment of trips should be based on existing traffic volumes, existing travel patterns or expected future travel patterns. The assignment of trips shall account for pass-by and diverted linked trips on transportation facilities near the project site (see [Section 8.3.1](#)). The trip assignments shall be included in the TA Report on a figure showing project trips at study intersections.

The following are points that expand or provide detail regarding trip distribution and assignment:

1. **Review by Other Jurisdictions:** The Lead Agency shall be responsible for developing the trip distribution and assignment for a project. The trip distribution and assignment shall be reviewable by other jurisdictions (other cities, towns, the County, Caltrans, and/or VTA). Review by other jurisdictions should occur at the TA Notification Form stage of the TA

preparation process. It is the responsibility of other jurisdictions to request trip distribution and assignment information from the Lead Agency once they are notified about a project.

2. **Use of VTA or Local Agency Models:** Model data may be used to develop trip distribution assumptions for a project. The use of this data is most appropriate for long-term projects or for near-term development projects where the roadway network in the vicinity of the project may change substantially. VTA can also provide trip tables by trip purpose and travel networks to Member Agencies that may be used to develop trip distribution assumptions for a project.
3. **Documentation of Assumptions:** The project's trip distribution and assignment assumptions shall be clearly documented in the TA Report.

### 8.3.1 Pass-by Trips and Diverted Linked Trips

Some projects may attract a large number of trips already on the system. For example, many people who would stop at a new neighborhood convenience store would do so on their way home from work; these people would not be making new vehicle-trips on the roadway. These pass-by trips are generally captured by small neighborhood services such as dry cleaners, convenience stores, gas stations and coffee shops and to a lesser extent such uses as grocery stores, pharmacies, shopping centers and restaurants. Such trips are classified into two categories: pass-by and diverted linked trips. According to the ITE *Trip Generation Handbook*, pass-by trips are attracted from traffic passing a site on an adjacent street that contains direct access to the generator. Pass-by trips do not require a diversion from another roadway. Diverted linked trips are attracted from roadways in the vicinity of a site and require a diversion from one roadway to another to gain access to the site.<sup>26</sup>

### 8.3.2 Allowable Reductions for Pass-by Trips and Diverted Linked Trips

A reduction in project vehicle trip generation can be made for pass-by and diverted linked trips, provided that the reduction is applied according to the methodology outlined in the following section. *This reduction must be clearly explained, justified, and documented in the TA Report.* The trip reduction for pass-by and diverted linked trips shall be determined from established sources,

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<sup>26</sup> Institute of Transportation Engineers, *Trip Generation Handbook*, 2nd Edition, 2004, Chapter 5, pp. 29-82.

such as ITE's *Trip Generation Handbook*, SANDAG, or surveys of similar land uses. Note that reductions for pass-by trips often differ from those for diverted linked trips. The pass-by and diverted linked trip reduction may only be taken for commercial land uses and should not be more than a **thirty percent (30%) combined pass-by and diverted linked trip reduction**. In addition, pass-by and diverted linked trips may not be excluded from the calculation of the 100 net new peak hour trip threshold that triggers the requirement for conducting a TA except as noted in *Section 2.1*.

There are a few exceptions where pass-by and diverted linked trips may account for more than 30% of the trips made, such as at gas stations, fast food establishments, community centers, local public libraries, and isolated mini-markets. A higher trip reduction rate may be applied to these uses with approval of the Lead Agency and VTA. As with other pass-by trip reductions, the reduction rate must be clearly explained, justified, and documented in the TA.

### **8.3.3 Application of Pass-by Trip and Diverted Linked Trip Reductions**

Subtracting pass-by and diverted linked trips from a site's trip generation volumes lowers the number of new trips added to the surrounding transportation system. However, additional turning movements or changes to the turning movements due to pass-by and diverted linked trips should be taken into account in transportation analyses to determine their impact on adjacent roadways. Answers to questions such as whether left turn pockets are long enough, whether U-turns are allowed, and whether additional turning movements may slow or conflict with other traffic are dependent on all project trips including the pass-by and diverted linked trips. *Appendix E* includes a methodology for applying pass-by and diverted linked trip reductions.

# CHAPTER 9. PROJECT CONDITIONS AND IMPACTS/EFFECTS

The TA Report shall evaluate the addition of the project, along with estimated project-generated trips, to the “without project” analysis scenario (Existing, Background, or Cumulative Conditions without the project, as appropriate). This shall include the identification of any project effects on CMP roadway facilities, and any negative effects on bicycle, pedestrian or transit conditions or vehicle queuing.<sup>27</sup> Improvement measures and their associated costs shall be identified for effects that exceed the impact thresholds described below. In some cases, such as a development project that closes a sidewalk gap or adds a bicycle lane to its frontage, effects on the transportation system may be beneficial as well as adverse. Lead Agencies are encouraged to describe the beneficial effects of a project; this information may also be included in a CEQA document.

## 9.1 Traffic

The TA Report shall contain an evaluation of project effects to traffic operations. Evaluation of effects to traffic operations shall include, but not be limited to Auto LOS analysis and queuing analysis.

### 9.1.1 Auto Level of Service Analysis

The CMP Auto LOS standard is LOS E. *If the analysis shows that a development project is projected to cause Auto LOS on a CMP facility (roadway or intersection) to fall from LOS E or better to LOS F under project conditions, then the project is said to impact the facility.*

In addition, for facilities determined to have been at LOS F under the without project analysis scenario (Existing, Background or Cumulative Conditions without the project), a project is said to impact the facility if the analysis shows that the project will cause Auto LOS to deteriorate by a given threshold amount. The threshold amounts for each of the three CMP facility types are described as follows:

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<sup>27</sup> The determination of which facilities to evaluate is described in [Section 2.2](#) of these Guidelines.

1. **Intersections at LOS F:** A project is said to impact an intersection determined to have been at LOS F under the without project analysis scenario if:
  - *addition of the project traffic increases the average control delay for critical movements by four (4) seconds or more, and*
  - *project traffic increases the critical v/c value by 0.01 or more.*The exception to this threshold is when the addition of project traffic reduces the amount of average control delay for critical movements, i.e., the change in average control delay for critical movements are negative. In this case, the threshold is when the project increases the critical v/c value by 0.01 or more.
2. **Freeway Segments at LOS F:** A project is said to impact a freeway segment determined to have been at LOS F under the without project analysis scenario if *the number of new trips added by the project is more than one percent of the freeway capacity*. This calculation shall be for each direction of travel. Analysis should be conducted for all freeway lane types to which project trips are assigned, including HOV and Express Lanes, if applicable. Tables for the freeway analysis determination and impact analysis should include detailed data such as density and speed. Sample tables are shown in *Appendix A (Table A-1: Sample of Freeway Analysis Requirement Determination and Table A-2: Sample of Freeway Analysis Summary)*.
3. **Rural Highway at LOS F:** A project is said to impact a rural highway determined to have been at LOS F under the without project analysis scenario, if *the number of new trips added by the project is more than one percent of the rural highway capacity*. This calculation shall consider both directions of travel.

### 9.1.2 Queuing Analysis

A queuing analysis shall be included in a TA, at a minimum, in the following instances:

- At CMP intersections where Auto LOS analysis indicates that there may be a significant impact according to the CMP LOS standard;
- At on-ramps with existing or planned operational ramp meters;
- At off-ramps controlled by signals at junctions with local streets;
- At any other intersection or freeway on-ramp, based on engineering judgment, proximity of the project to a freeway interchange, existing queuing situations (such as spillback onto local streets from on ramps), or localized conditions along the project's frontage.

Negative effects of queuing on CMP facilities shall be identified by comparing the calculated design queue to the available queue storage. Queuing effects to be identified include, but are not limited to the following:

- Spillback queues from turn lanes at intersections that block through traffic;
- Queues from one intersection or closely-spaced intersections that extend back and impact other intersections;
- Queues from bottleneck locations such as lane drops that impact the operation of the facility;
- Spillback queues on ramps that impact surface street or freeway operations;
- Queues at intersections in proximity to freeway ramps.

Evaluation of queuing effects is required for only the near-term analysis. However, Lead Agencies may require this analysis for longer term projects to plan for improvements in later years.

Refer to the VTA *Traffic Operations Analysis Guidelines* for further information on ramp queuing analysis. Lead agencies should contact Caltrans staff to obtain current ramp metering rates.

## 9.2 Transit

The TA Report shall include an analysis of project effects on the transit system. The evaluation shall consider transit vehicle delay, transit access and facilities, as described below.

**Transit Vehicle Delay:** The TA Report shall include an analysis of the effects of the project on transit vehicle delay. This analysis shall include the following components:

- A quantitative estimate of additional seconds of transit vehicle delay that may result from automobile congestion caused by the project and any changes to signal operations proposed by the project. This analysis may utilize information produced by the intersection Auto LOS analysis or other sources, if available;
- A qualitative assessment of additional transit vehicle delay caused by any roadway or intersection geometry changes proposed by the project, taking into account unique considerations of transit vehicles compared to autos (e.g., pulling into and out of stops, longer gaps needed for left turns). These qualitative considerations may also inform the assessment of transit vehicle delay caused by auto congestion.

If increased transit vehicle delay is found in this analysis, the Lead Agency should work with VTA to identify feasible transit priority measures near the affected facility and include contributions to any applicable projects that improve transit speed and reliability in the TA. Refer to [Section 10.2](#) for more information on improvements to address congestion effects on transit travel times.

More information on the practice and research basis for transit delay analysis can be found in [Appendix F](#).

**Transit Access and Facilities:** The TA Report shall include an assessment of transit access and facilities near the project site. The assessment shall include the following elements:

- Description of pedestrian access from the project to nearby transit stops. This should include both an assessment of access within the site (i.e., from buildings on the site to the public sidewalks) and off-site (i.e., presence/absence of continuous sidewalks and safe crossings to access transit);
- Disclosure of any permanent or temporary reduction of transit availability or interference with existing transit users (e.g., relocation/closure of a transit stop or vacation of a roadway utilized by transit);
- Disclosure of project location more than 1/2 mile from existing or planned transit services, with the potential for generating a demand for such services. Such projects are encouraged to identify funding sources to provide public or private transit services, if needed;
- Description of proposed actions to enhance transit service, access or facilities (e.g., bus stop improvements on a project frontage), or to mitigate negative effects on existing transit systems or facilities that result from the proposed project.

## 9.3 Bicycle and Pedestrian

The TA Report shall include an analysis of bicycle and pedestrian modes under project conditions. The analysis shall address project effects on existing bicyclists and pedestrians as well as the effects and benefits of site development and associated roadway improvements on bicycle/pedestrian infrastructure, circulation, Quality of Service (QOS), and conformance to existing plans and policies. (Bicycle/pedestrian site access and circulation are addressed in [Section 9.4](#).)

### *Quality of Service Analysis*

Projects that propose changes to existing roadway or intersection geometry, or changes to signal operations, shall include a QOS analysis for bicyclists and pedestrians for those locations where changes are proposed.

Lead Agencies have the discretion to select appropriate methodologies for bicycle and pedestrian QOS analysis. Agencies must include a description and justification of the methodology being used, and identify key data inputs and assumptions for the methodology. Agencies are encouraged to use the methodology in the latest Highway Capacity Manual, or a similar methodology, for the QOS analysis. See [Chapter 5](#) and [Appendix G](#) for more information on pedestrian and bicycle QOS methodologies. VTA staff can act as an additional resource to Lead Agencies in selecting QOS methodologies.

Projects that do not propose changes to existing roadway or intersection geometry, or changes to signal operations, are not required to include a QOS analysis, but such analysis is encouraged for project frontages.

### ***Descriptive Analysis***

In addition to the QOS analysis (if applicable), the TA Report shall include a descriptive evaluation of project effects on and benefits to bicycle and pedestrian conditions. The descriptive analysis should encompass a radius of 2,500 feet from the project site for bicycle facilities, and a radius of 1,000 feet from the project site for pedestrian facilities. Within this radius, the descriptive analysis should focus on the project street frontages, paths to major attractors (such as transit facilities, schools, shops and services, and major residential developments), and bicycle and pedestrian deficiencies identified in the Existing Conditions analysis.

The following questions should be addressed:

#### 1. Consistency with Existing Adopted Plans

- How does the project implement, preclude, modify, or otherwise affect proposed bicycle and pedestrian projects and/or policies identified in the Lead Agency's adopted Bicycle Plan, Pedestrian Plan, Trails Master Plan, and/or bicycle/circulation element of their General Plan?
- How does the project implement, preclude, modify, or otherwise affect proposed bicycle and pedestrian projects and/or policies identified in other agencies' plans (e.g., Countywide Bicycle Plan, adjacent cities' Bicycle Plans or Pedestrian Plans, Bay Trail Plan)?
- What provisions for bicycle parking and storage are provided by the project? Calculate the required bicycle parking in accordance with the City's ordinance or, if none, *VTA Bicycle Technical Guidelines (BTG)*, and indicate proposed type of Class 1 and Class 2 parking to be provided by the project. Proposed bicycle parking locations should be noted on the site plan. Refer to [Appendix H](#) for a table of Bicycle Parking Supply Recommendations from the VTA *BTG*.

## 2. Effects on Existing Bicyclist/Pedestrian Circulation in the Project Area

- Would the project benefit or enhance existing bicycle and pedestrian access and circulation? For example, would it provide bicycle-friendly and pedestrian-friendly improvements like those identified in VTA *BTG*, *Pedestrian Technical Guidelines*, or *CDT Manual*? If so, describe;
- Would the project reduce, sever or eliminate existing bicycle or pedestrian access and circulation? If so, describe;
- How does the project address bicycle and pedestrian deficiencies identified in the Existing Conditions analysis?
- If a new traffic signal is being installed as part of the project or project mitigation, the TA should note that adequate bicycle and pedestrian detection and signal timing should be provided. (See VTA *BTG*, Chapter 6.)

## 9.4 Site Circulation and Access

The TA Report shall include an analysis of site circulation and access. The evaluation of site circulation and access shall consider the following issues:

- The assessment of site circulation and access must explicitly discuss the relationship between site design and any vehicle trip reductions that are applied to the project. The assessment should include the pass-by and diverted trips that would access the site;
- The assessment of access shall include an analysis of trips entering and exiting the site at each driveway. Distribution of trips to access points should consider street configuration, storage lanes, acceleration and deceleration lanes, and sight distance;
- A Site Plan shall be provided with adequate detail to show auto, bicycle and pedestrian circulation within the site and connections to the outside transportation network;
- The site circulation and access assessment shall include an analysis of the proposed bicycle access and onsite circulation with recommendations to encourage bicycle trips to and within the site. Address adverse circulation issues, if any, which were identified in the Existing Conditions analysis;
- The assessment of site access shall include an analysis of the proposed pedestrian access and onsite circulation with recommendations to encourage pedestrian trips to and within the site. Include an assessment of pedestrian access between the site and the nearest bus stops. Address adverse site circulation issues, if any, which were identified in the Existing Conditions analysis. Also address the extent to which the ability of bicyclists and pedestrians to access the project site is inhibited by

manmade and natural barriers such as railroad crossings, rivers, freeways, dead-end streets, and cul-de-sacs;

- The site circulation and access assessment may also include analysis of emergency vehicles and service vehicles, including delivery and garbage trucks.

# CHAPTER 10. IMPROVEMENT MEASURES AND MULTIMODAL IMPROVEMENTS

This chapter describes the analysis required to evaluate 1) improvement measures to address project effects per CMP standards, and 2) improvements to address other project-related effects on the transportation system, including changes that affect transit, pedestrian and bicycle modes and queuing at ramps and intersections. Throughout this section, “impact” is used to refer to project effects on the CMP system as determined by the standards and impact thresholds established by VTA, and “improvement” is used to refer to changes that address those effects (impacts). The term “effect” refers to project-related effects on elements of the transportation system for which no CMP standard or impact threshold has been established, and “improvement” is used to refer to changes that address those effects. The TA should particularly focus on project-related effects that tend to degrade pedestrian, bicycle and transit conditions.

## 10.1 Mitigations to Address CMP Standards

The TA Report shall include a discussion of improvement measures to address any effects per CMP standards identified in the analysis. The TA shall identify those mitigations for which the sponsor of the proposed project is responsible. The following issues regarding improvement measures shall be addressed:

1. The goal of the Lead Agency shall be to maintain the CMP Auto Level of Service (LOS) standard on CMP facilities, and to mitigate any other effects identified in the TA Report. However, if this is not possible, improvement measures that minimize effects by limiting the degree or magnitude of the action and its implementation, and/or compensate for the impact by replacing or providing substitute resources shall also be considered. The improvement measure could be fully-funded and implemented by the project sponsor or the project sponsor could make a contribution to the cost of implementing the measure, in coordination with other agencies. Information on voluntary contributions to regional transportation improvements can be found in *Appendix I, Board Memorandum: Update on Voluntary Contributions to Transportation Improvements*.

2. The Lead Agency shall consider all of the following categories of improvement measures for effects identified through the analysis:
  - Physical or capacity-enhancing improvements to the affected transportation facility (e.g., adding a turn lane to an intersection to address an Auto LOS impact);
  - Operational and/or efficiency improvements to the affected transportation facility (e.g., changing signal operations at an intersection or contributing to the implementation of Express Lanes on a freeway segment to address an Auto LOS impact);
  - Projects and programs used to reduce project auto trip generation, including TDM programs as well as capital improvements to transit, bicycle and pedestrian facilities, if not already included in the proposed project description. Examples could include constructing wider sidewalks, adding a bicycle lane or non-motorized trail, or a shuttle service from the proposed development to a nearby transit facility (e.g., BRT stop or light rail station).
3. The Lead Agency shall identify the feasibility of the proposed improvement measures. Feasibility of physical improvements shall be verified in the field. Feasibility of all measures shall be confirmed with the appropriate agency or agencies (e.g., the agency responsible for maintaining a roadway or for implementing an operational improvement). Proposed improvement measures for effects to CMP facilities must be reviewed with VTA staff prior to the issuance of the TA Report.
4. The description of all improvement measures shall include identification of who is responsible for implementing each improvement measure, when the improvement measure may be implemented as it relates to the occupancy of the proposed project, and the cost of implementation, as appropriate. The cost estimate for improvement shall be based on the feasibility analysis and/or a Capital Improvement Program estimate, if available. Lead Agencies are encouraged to have a registered civil engineer develop the cost estimate for any physical mitigations.
5. *If a project causes a transportation impact that cannot be mitigated to the CMP Auto LOS standard, a Multimodal Improvement Plan must be provided along with the TA, or the project applicant must agree in advance to participate in the implementation of the Multimodal Improvement Plan after project approval.* Multimodal Improvement Plans are plans to identify offsetting measures to improve transportation conditions on CMP facilities in lieu of making physical traffic capacity improvements such as widening an

intersection or roadway. Further information regarding steps for developing Multimodal Improvement Plans, and how Multimodal Improvement Plans relate to the land use approval process, is provided in the *VTA Deficiency Plan Requirements*.

Multimodal Improvement Plans can range in size from Areawide (such as an entire city) to Specific Area (such as a roadway segment within a downtown area) to Mini (covering a single intersection). If the need arises for the preparation of a Multimodal Improvement Plan, VTA may work with the Lead Agency to tailor the level of the Multimodal Improvement Plan to match the scope of the deficiency. VTA may work with the Lead Agency as necessary to identify action items (or offsetting measures) as described in the *VTA Deficiency Plan Requirements*. Action items from the *Deficiency Plan Requirements* are provided in [Appendix J](#).

6. If a project effects a CMP System facility that has a Multimodal Improvement Plan, it is subject to the conditions of the Plan. The project's TA Report shall identify what role the project may play in implementing the Multimodal Improvement Plan actions.
7. improvement measures for Auto Level of Service (LOS) shall not unreasonably degrade bicycle, pedestrian or transit access, and circulation. If a project proposes improvement for Auto LOS involving a change to existing roadway or intersection geometry, or changes to signal operations, the TA shall analyze and disclose secondary effects on other modes, i.e., whether the improvement would affect pedestrian or bicycle conditions or increase transit vehicle delay.

For the bicycle and pedestrian secondary effects analysis, a QOS-based methodology (as cited in [Sections 5.2.5](#) and [5.2.6](#)) is encouraged, although a text description of changes may be substituted. At a minimum, the TA shall disclose any of the following effects that would result from a recommended improvement measure:

- Reducing, severing or eliminating existing bicycle or pedestrian access and circulation;
- Narrowing of sidewalk or removal of sidewalk (even if only on one side of street);
- Removal of crosswalk;
- Increased crossing distances;
- Longer signal cycles;

- Removal of a buffer between pedestrians and automobiles;
- Decreasing bike lane width or eliminating bike lane including at intersection approach due to addition of right-turn only lane;
- Reducing shoulder width to less than five feet on roadways without bike lanes (see VTA *BTG*, Section 7.4.2);
- Decreasing outside lane width on roadway without bike lanes or shoulders (see VTA *BTG*, Section 7.2);
- Installation of double right-turn lane, a free right-turn lane, or free-flowing freeway on and off ramps (see VTA *BTG*, Section 5.1);
- Revised signal timing and inadequate detection (see VTA *BTG*, Chapter 6, for recommendations on bicycle signal timing and detection at intersections);
- Changes to existing bike paths such as alignment, width of the trail ROW or trail tread, length of the trail, horizontal and vertical clearance;
- Precluding, modifying, or otherwise affecting proposed bicycle and pedestrian projects and/or policies identified in the Lead Agency's adopted Bicycle Plan, Pedestrian Plan, Trails Master Plan, and/or bicycle/circulation element of their General Plan; or other agencies' plans, e.g., Countywide Bicycle Plan, adjacent Cities' Bicycle Plan or Pedestrian Plan, Bay Trail Plan;
- Other roadway modifications that adversely impact bicycle or pedestrian conditions.

The analysis of secondary effects on transit vehicle delay resulting from proposed improvement measures shall include the following components:

- A quantitative estimate of additional seconds of transit vehicle delay that may result from any signal operations changes proposed by the improvement. This analysis may utilize information produced by the intersection Auto LOS analysis or other sources, if available;
- A qualitative assessment of additional transit vehicle delay caused by any change to existing roadway or intersection geometry proposed by the improvement, taking into consideration unique considerations of transit vehicles compared to autos (e.g., pulling into and out of stops, longer gaps needed for left turns).

## 10.2 Improvements to Address Other Project-Related Effects

Per the requirements set forth in *Chapter 9, Project Conditions and Impacts/Effects*, the *TA Guidelines* require Lead Agencies to analyze project effects on certain parts of the transportation system for which no CMP standard or impact

threshold has been established. For the bicycle and pedestrian analysis of Project Conditions, a QOS-based methodology is required in certain situations and a descriptive analysis is required in all cases (as described in [Section 9.3](#)). For the transit analysis of Project Conditions, an analysis of transit vehicle delay, transit access and facilities is required (as described in [Section 9.2](#)).

As no CMP standards or impact thresholds have been established for these modes, Lead Agencies may opt to use this analysis in the TA for informational purposes only. However, if the bicycle, pedestrian and/or transit analysis shows that the project would degrade conditions for one or more of these modes, the Lead Agency is encouraged to identify improvements that would reduce the effects. Improvements may include, but are not limited to:

- Providing or improving sidewalks, providing pedestrian crossing facilities or pedestrian wayfinding systems, or modifying intersections to shorten crossing distances (e.g., by installing curb extensions);
- Providing additional bicycle lane markings at intersections, bicycle signage, and/or increasing bicycle lane widths;
- Modifying signal timing and/or signal equipment for bicyclists and pedestrians;
- Adding a queue jump lane or bulb-out transit stop to address a congestion effect on transit travel speed;
- Contributing to the implementation of Transit Signal Priority<sup>28</sup> to address a congestion effect on transit travel speed.

Some improvements to address congestion effects on transit travel speed may be feasible to implement on a case-by-case basis, such as queue jump lanes and bulb-out transit stops, while some measures would require closer coordination with VTA to determine whether an applicable project exists, such as transit priority signal timing and dedicated transit lanes. In all cases, the Lead Agency should consult with VTA to determine the feasibility of any improvement.

If the TA includes queuing analysis (see [Section 9.1.2](#)) and finds that freeway ramp spillback may occur, potential improvements include additional lanes (either HOV or mixed-flow) on ramps, or restriping. If the Lead Agency proposes a change to freeway ramps, including ramp metering flow rates, it should consult Caltrans. If the queuing analysis finds that spillback may occur at intersections, potential improvements include lengthening turn pockets, re-striping, or changes to signal operations.

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<sup>28</sup> VTA may coordinate with the Lead Agency before implementing Transit Signal Priority.

# CHAPTER 11. FUTURE YEAR SCENARIOS (CUMULATIVE CONDITIONS)

This chapter provides guidance for future year (Cumulative Conditions) scenario analysis for CMP purposes. In general, the Cumulative Conditions scenario is analyzed as the combination of Background Conditions (Existing Conditions + Approved Projects) + Expected Growth + Project.

Lead Agencies should note that future year/Cumulative Conditions scenarios may be defined differently for CEQA documents than for TAs. The analysis method that shall be used for preparing a Cumulative Conditions Scenario in a TA depends on the type of project under development or planning effort underway, as well as the time horizon. Analysis methods for preparing a TA for near-term development projects, long-term development projects and long-term general planning efforts are presented in this chapter. Definitions for terms used in this chapter are provided in *Appendix L*.

## 11.1 Near-Term Development Project (occupancy within five years of approval)

Near-term development projects include most development projects encountered by local agencies as part of their day-to-day operations. The development proposal for a near-term project, when approved, may generally result in the granting of an entitlement for the construction of a specific type and size development. A near-term project may usually be built and occupied within five years of project approval.

The *TA Guidelines* must be followed to analyze transportation traffic operation effects associated with near-term specific development projects. For near-term development projects, Lead Agencies may use two cumulative analysis scenarios for planning and information purposes: Opening Year/Short-Term and Long-Term.

### 11.1.1 Opening Year/Short-Term Analysis

The opening year/short-term Cumulative Conditions analysis of a near-term development project shall consist of an analysis of growth expected until the project is available for final occupancy. The Lead Agency shall be responsible for determining the approach for calculating Expected Growth. Expected

Growth can be estimated in three ways:

- a. Apply an annual growth rate to Background Conditions;
- b. Estimate trips generated by other proposed development projects in the area; or
- c. Apply an annual growth rate and estimate trips generated by other proposed development projects in the area.

Data from the CMP Monitoring and Conformance Program can be used to estimate an annual traffic growth rate for near-term developments. If other proposed development projects are expected to generate more trips in the area than the estimated trips using a growth rate, then the Expected Growth should be based on method (b) or (c) above.

### 11.1.2 Long-Term Analysis

The Lead Agency may choose to conduct a long-term Cumulative Conditions analysis (e.g., over a 20 or 25-year time horizon) for CEQA or local purposes. The Lead Agency shall be responsible for determining the approach for calculating Expected Growth. In this case, Expected Growth is typically analyzed in one of two ways:

- a. Apply an annual growth rate to Background Conditions; or
- b. Use information from a travel demand forecasting model for the Expected Growth in the horizon year for existing and future years.

## 11.2 Long-Term Development Project (occupancy beyond five years from approval)

Long-term development projects include those that have a specific development proposal that is expected to be built and occupied in more than five years from the date of approval. Due to this project completion time, most long-term development projects are phased-development projects. The following describes the analysis approach for a long-term project with full entitlement and a long-term project with phased entitlement:

- **Entire Project Granted Full Entitlement:** If the entire long-term project is to receive development entitlement, the *TA Guidelines* must be followed to analyze transportation effects associated with the entire long-term project. This analysis shall set the likely magnitude of mitigations required of the developer.
- **Phased Project with Phased Entitlement:** The approach to assessing the effects of a long-term project where development entitlement may be

phased consists of initially completing a long-term analysis for the entire project at buildout. This analysis shall set the likely magnitude of mitigations required of the developer. This may require the use of a transportation demand model to assist in estimating traffic volumes or travel patterns and conduct the analysis for the buildout scenario. The approach also consists of following the *TA Guidelines* to analyze transportation effects for each phase of the project.

With the analysis of each subsequent project phase after the first phase, the long-term analysis for the entire project at buildout shall be re-evaluated. If conditions have not changed, the initial improvement measures for buildout conditions would remain valid. If conditions have changed, a revised set of improvement measures for buildout conditions would be developed. The advantage of this approach is that it is unlikely that there may be significant unanticipated transportation effects of the project that the Member Agency itself may need to mitigate.

Use of the countywide transportation model developed and maintained by VTA or a local transportation sub-model may be appropriate for the analyses of long-term development projects. Refer to [Section 5.3, Use of Transportation Models](#), for more information on modeling procedures and consistency.

### **11.3 Long-Term General Planning Efforts**

Long-term general planning efforts typically include General Plan Amendments, General Plan updates, Precise Plans and Specific Plans, which grant no entitlements for any specific development project. In many cases, preparation of these planning efforts will require environmental review, which may consider transportation. As long as a transportation analysis is being completed, VTA recommends that the analysis be consistent with the *TA Guidelines* to the extent possible.

Use of the countywide transportation model developed and maintained by VTA may be appropriate for the analyses of long-term general planning efforts. Refer to [Section 5.3](#) for more information on modeling procedures and consistency.

In many cases, the transportation analysis for a long-term general planning effort may produce freeway and arterial volumes, but there may not be enough data to perform detailed intersection-level analyses. The analysis of intersection turning movements as part of a long-term general planning effort analysis should recognize the difficulty in predicting specific travel patterns within a long-term planning horizon. The Lead Agency may wish to supplement the analysis with other, broader measures, such as percent of congested lane-miles, Vehicle Miles Traveled, changes in mode share, and/or measures of network connectivity and distance to destinations for pedestrians and bicyclists.

# **PART IV**

OTHER

CONSIDERATIONS

# CHAPTER 12. SPECIAL PROJECT TYPES

## 12.1 Large or Unique Projects

Lead Agencies that are evaluating large or unique development projects such as arenas, stadiums, large scale mixed-use developments, and large Transit-Oriented Developments (TODs), should facilitate early coordination with the agencies whose jurisdictions may be affected by the projected increased vehicle and person trips by using the TA Notification Form. Examples of transportation related areas that may require early coordination are trip assignment and trip distribution, assessment of approved projects for the Background Conditions, and assumptions that may be used to identify improvement measures and improvements.

## 12.2 Projects on a Jurisdiction Border

Similar to the early coordination process recommended for large or unique projects, a Lead Agency evaluating a development project that is located near or on the city or county border and projected to generate 100 or more net new peak hour trips, should coordinate with the adjacent jurisdiction(s) to discuss transportation related issues such as assessment of existing conditions, trip assignment, trip distribution, and improvement measures and improvements as appropriate.

## 12.3 Multi-Agency Projects

For projects that extend in multiple jurisdictions such as shopping centers or large developments, the Lead Agency should facilitate early coordination with the participating agencies. Examples of transportation-related areas that may require early coordination are assessment of approved projects for Background Conditions, assumptions for the travel demand model, and feasibility of and responsibility for improvement measures and improvements.

## 12.4 Projects Generating Large Numbers of Pedestrian, Bicycle or Transit Trips

For projects that generate unusually large volumes of pedestrian, bicycle or transit trips, it may be necessary to include a quantitative analysis of demand

and capacity for these modes. Examples of typical land uses that may require a pedestrian, bicycle or transit capacity analysis are arenas and stadiums, special event sites, large mixed-use developments and TODs, and schools.

The transit capacity analysis should consider the existing ridership and load factors of transit routes near the proposed project, which can be obtained by consulting with VTA and other transit operators that may be affected (e.g. Caltrain, ACE, etc.). If the new transit ridership generated by the project causes the load factor of one or more transit routes to exceed the standard established by the applicable transit agency, the project should contribute to transit improvements to enhance the capacity of the affected route or provide alternative facilities.

Projects that generate unusually large pedestrian or bicycle volumes should consider the effects of those volumes on pedestrian or bicycle facilities. VTA recommends using a methodology that accounts for pedestrian and bicycle capacity, spacing, and conflicts, such as the current version of the *Highway Capacity Manual*, or similar methodologies. If the additional bicycle or pedestrian volumes generated by the project would unreasonably degrade conditions on bicycle and pedestrian facilities, the project should contribute to improvements to the conditions of the affected facility or provide alternative facilities.

## **12.5 Transit Delay Analysis for Large Projects, General Plans and Areawide Plans**

Large development projects, General Plan Amendments and updates, and area-wide plans should include a more extensive quantitative analysis of transit delay than the analysis discussed in [Section 9.2](#). VTA recommends using travel demand model data, when available, to estimate transit delay on transit corridors within the project study area. If a travel demand model is not prepared for the project, VTA recommends that transit delay be analyzed based on the methodology discussed in [Section 9.2](#).

If increased transit vehicle delay is found in this analysis, the Lead Agency should work with VTA to identify feasible transit priority measures near the affected facility and include contributions to any applicable projects that improve transit speed and reliability in the TA. Refer to [Section 10.2](#) for more information on improvements to address congestion effects on transit travel times.

# APPENDIX

## APPENDIX A: Sample Freeway Analysis Tables

**TABLE A-1: SAMPLE OF FREEWAY ANALYSIS REQUIREMENT DETERMINATION**

Freeway	Segment	Direction	Peak Hour	Lanes	Capacity	Project Trips	< 1%
101	Capitol to Tully	NB	AM	3	6600	45	Yes
101	Capitol to Tully	NB	PM	3	6600	40	Yes
			AM				
			PM				
			AM				
			PM				

**TABLE A-2: SAMPLE OF FREEWAY ANALYSIS SUMMARY**

Freeway	Segment	Direction	Peak Hour	EXISTING					PROJECT			
				Lanes	Average Speed	Volume	Density	LOS	Project Trips	Denisty	LOS	% Impact
101	Capitol to Tully	SB	AM	2	45	2500	45.5	D	68	46.5	D	----
101	Capitol to Tully	SB	PM	3	25	4500	65.0	F	85	----	F	1.8%
101	Capitol to Tully	NB	AM									
101	Capitol to Tully	NB	PM									
101	Capitol to Tully	SB HOV	AM	1	----	----	----	----	----	----	----	
101	Capitol to Tully	SB HOV	PM	0								
101	Capitol to Tully	NB HOV	AM	0								
101	Capitol to Tully	NB HOV	PM	1								
			AM									
			PM									
			AM									
			PM									
			AM									
			PM									

Note: HOV lanes shall be analyzed if project trips are assigned to the HOV lane. See *TA Guidelines* for details.

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## APPENDIX B: TA Notification Form

# Congestion Management Program Transportation Analysis (TA) NOTIFICATION FORM

<p>Lead Agency: _____</p> <p>Lead Agency File Number: _____</p> <p>Project: _____</p> <p>Project Size (SF or DU): _____</p> <p>Net New Trips: _____</p> <p>Project Address: _____</p> <p>Analysis Periods: _____</p> <p>Analysis Scenarios: _____</p> <p>Study Intersections: <i>(continue in attachment if necessary)</i> _____</p> <p>Study Freeway Segments: <i>(continue in attachment if necessary)</i> _____</p> <p>Agency Contact: _____</p> <p>Telephone: _____</p> <p>E-mail: _____</p> <p>Developer: _____</p> <p>Transportation Consultant: _____</p> <p>Form Prepared By: _____</p> <p>Date: _____</p> <p><small>* SF=square feet; DU=dwelling units</small></p>	<p>This form sent to:</p> <table border="1"> <thead> <tr> <th style="text-align: left;">Agency</th> <th style="text-align: left;">Name of Person(s)</th> </tr> </thead> <tbody> <tr><td><input type="checkbox"/> City of Campbell</td><td>_____</td></tr> <tr><td><input type="checkbox"/> City of Cupertino</td><td>_____</td></tr> <tr><td><input type="checkbox"/> City of Gilroy</td><td>_____</td></tr> <tr><td><input type="checkbox"/> City of Los Altos</td><td>_____</td></tr> <tr><td><input type="checkbox"/> Town of Los Altos Hills</td><td>_____</td></tr> <tr><td><input type="checkbox"/> Town of Los Gatos</td><td>_____</td></tr> <tr><td><input type="checkbox"/> City of Milpitas</td><td>_____</td></tr> <tr><td><input type="checkbox"/> City of Monte Sereno</td><td>_____</td></tr> <tr><td><input type="checkbox"/> City of Morgan Hill</td><td>_____</td></tr> <tr><td><input type="checkbox"/> City of Mountain View</td><td>_____</td></tr> <tr><td><input type="checkbox"/> City of Palo Alto</td><td>_____</td></tr> <tr><td><input type="checkbox"/> City of San Jose</td><td>_____</td></tr> <tr><td><input type="checkbox"/> City of Santa Clara</td><td>_____</td></tr> <tr><td><input type="checkbox"/> City of Saratoga</td><td>_____</td></tr> <tr><td><input type="checkbox"/> City of Sunnyvale</td><td>_____</td></tr> <tr><td><input type="checkbox"/> County of Santa Clara</td><td>_____</td></tr> <tr><td><input type="checkbox"/> Caltrans</td><td>_____</td></tr> <tr><td><input type="checkbox"/> VTA</td><td>_____</td></tr> </tbody> </table>	Agency	Name of Person(s)	<input type="checkbox"/> City of Campbell	_____	<input type="checkbox"/> City of Cupertino	_____	<input type="checkbox"/> City of Gilroy	_____	<input type="checkbox"/> City of Los Altos	_____	<input type="checkbox"/> Town of Los Altos Hills	_____	<input type="checkbox"/> Town of Los Gatos	_____	<input type="checkbox"/> City of Milpitas	_____	<input type="checkbox"/> City of Monte Sereno	_____	<input type="checkbox"/> City of Morgan Hill	_____	<input type="checkbox"/> City of Mountain View	_____	<input type="checkbox"/> City of Palo Alto	_____	<input type="checkbox"/> City of San Jose	_____	<input type="checkbox"/> City of Santa Clara	_____	<input type="checkbox"/> City of Saratoga	_____	<input type="checkbox"/> City of Sunnyvale	_____	<input type="checkbox"/> County of Santa Clara	_____	<input type="checkbox"/> Caltrans	_____	<input type="checkbox"/> VTA	_____
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<input type="checkbox"/> VTA	_____																																						

**Note: The Lead Agency is encouraged to submit the draft TA work scope along with this form when circulating it to other agencies. Comments from interested agencies on the TA scoping must be received by the Lead Agency within 15 calendar days of the mailing of this TA Notification Form.**

## APPENDIX C: Auto Trip Reduction Statement

## Introduction

The Auto Trip Reduction Statement is intended to provide a concise summary of automobile trip reduction efforts made by a project. It is intended only as a summary; any automobile trip reductions claimed for the development must be fully documented and justified in the TA. Lead Agencies must complete an Auto Trip Reduction Statement for all TAs and include the Statement in the TA Executive Summary, whether or not trip reductions are claimed. **Section 8.2** of the VTA TA Guidelines describes three different approaches to auto trip reduction in TIAs.

The Auto Trip Reduction Statement must describe trip reductions claimed in the trip generation section of the TA. It may also be used to describe additional trip reduction efforts undertaken in order to mitigate project impacts. A Lead Agency may choose to provide an initial Statement with the reductions that are used in the Project Conditions analysis, and a revised statement with the final reductions reflecting mitigation measures. Examples have been provided of Auto Trip Reduction Statements for typical projects using the Standard, Peer/Study-Based and Target-Based trip reduction approaches.

## Brief Guidelines for filling out the Auto Trip Reduction Statement

**Project Auto Trip Generation** – Specify trip generation methodology (ITE or Other). If “Other” is selected, briefly describe methodology used. Refer to **Section 8.1** for more information about trip generation methodologies.

**Auto Trip Reduction Approach** – Specify the approach taken in the TA. See **Section 8.2** for further information about the three approaches.

**Standard Approach** – List any reductions claimed based on the Standard Reductions described in **Table 1** of the TA Guidelines. See **Section 8.2.1** for further information.

**Peer/Study-Based Approach** – Document the project’s Peer/Study-Based approach to trip reduction, if applicable (see **Section 8.2.3**). This approach may be used to justify a trip reduction based on a project’s similarity to other projects with demonstrated trip reductions or a project occupant’s track record of reducing trips at other sites, or to provide additional justification for trip rates based on local data collection efforts. The “Basis of Reduction” box should note the starting point for the trip reduction claimed, whether starting from ITE auto trip generation rates based on square footage or number of units, or total person-trips based on employee/resident count. The “Total Reduction Claimed” box should

also reference the starting point. Note that in some cases the “Total Reduction Claimed” box may not be applicable, depending on the methodology.

**Target-Based Approach** – Document the project’s Target-Based approach, if applicable (see *Section 8.2.2*). This approach may be taken when the project applicant has entered into an enforceable agreement with the Lead Agency that limits the number of automobile trips traveling to and from the project site. The “Description” should note the starting point for the trip reduction claimed, whether starting from ITE auto trip generation rates based on square footage or number of units, or total person-trips based on employee/resident count. The “Total Reduction Claimed” box should also reference the starting point. Note that in some cases the “Total Reduction Claimed” box may not be applicable, depending on the methodology.

# AUTO TRIP REDUCTION STATEMENT

UPDATED: October 2014



PROJECT INFORMATION		Relevant TA Section:	
Project Name:			
Location:			
Description:			
Size (net new):	D.U. Residential	Sq. Ft. Comm.	Acres (Gr.)
Density:	D.U. / Acre	Floor Area Ratio (FAR)	
Located within 2000 feet walking distance of an LRT, BRT, BART or Caltrain station or major bus stop? Yes/No			

PROJECT AUTO TRIP GENERATION		Relevant TA Section:	
Auto Trips Generated:	AM Pk Hr	PM Pk Hr	Total Weekday
Methodology (check one)	<input type="checkbox"/> ITE	<input type="checkbox"/> Other (Please describe below)	
Describe alternative trip generation methodology, if applicable			

AUTO TRIP REDUCTION APPROACH		Relevant TA Section:	
<input type="checkbox"/> Standard <i>Complete Table A below</i>	<input type="checkbox"/> Peer/Study-Based <i>Complete Table B below</i>	<input type="checkbox"/> Target-Based <i>Complete Table C below</i>	<input type="checkbox"/> None Taken

TRIP REDUCTION REQUIREMENTS		Relevant TA Section:	
Is the project required to meet any trip reduction requirements or targets? Yes/No		If so, specify percent:	
Reference code or requirement:			

## TRIP REDUCTION APPROACHES

A. STANDARD APPROACH		Relevant TA Section:		
Type of Reduction <i>Specify reduction. See Table 2 in TA Guidelines</i>	% Reduction from ITE Rates	Total Trips Reduced (AM/PM/Daily)	TOTAL REDUCTION CLAIMED	
Transit			Specify AM, PM, and/or Daily reduction	Specify AM, PM, and/or Daily reduction
Mixed-Use				
Financial Incentives				
Shuttle				

B. PEER/STUDY-BASED APPROACH		Relevant TA Section:	
Basis of Reduction		TOTAL REDUCTION CLAIMED	
Summarize basis of reduction, addressing: -Data used to justify trip reduction rate -Source(s) referenced -Assumptions and methodologies used to develop the trip reduction -How the trip reduction rate is appropriate for the proposed development		%	Trips
		Specify AM, PM, and/or Daily reduction	Specify AM, PM, and/or Daily reduction

## ATRS Form Page 2

C. TARGET-BASED APPROACH			Relevant TA Section:		
Type of Reduction (check all that apply)				TOTAL REDUCTION CLAIMED	
<input type="checkbox"/> % Trip Reduction	<input type="checkbox"/> % SOV mode share	<input type="checkbox"/> Trip Cap		%	Trips
If checked, state reduction here	If checked, state reduction here	If checked, state cap here		Specify AM, PM, and/or Daily reduction	Specify AM, PM, and/or Daily reduction
<b>Description</b>	e.g., ITE auto trip generation rates based on square footage or number of units, total person-trips based on employee/resident count				
<b>Time period for reduction</b>	<b>Peak Hour</b>	<b>Peak Period</b>	<b>Full Day</b>		
	<input type="checkbox"/> AM/PM	<input type="checkbox"/> AM/PM	<input type="checkbox"/>		

OTHER TDM/REDUCTION MEASURES			
<b>Bicycle/Pedestrian</b>	Yes/No	Relevant TA Section:	
Describe any bicycle/pedestrian improvements related to the project. Note both infrastructure (improvements to sidewalks, bicycle facilities, etc.) and programs (subsidies, bike share, etc.)			
<b>Parking Management</b>	Yes/No	Relevant TA Section:	
Describe any parking management strategies that would lead to reduced auto trips, such as parking pricing, parking cash-out, unbundled parking, etc.			
<b>Transit</b>	Yes/No	Relevant TA Section:	
Describe any transit service or access improvements that would lead to reduced auto trips, such as improved pedestrian connections to transit, added shuttle service, etc.			
<b>Site Planning and Design</b>	Yes/No	Relevant TA Section:	
Describe features of the site plan and design of the project that encourage walking, biking, and transit use, while discouraging solo automobile trips.			
<b>TDM Program</b>	Yes/No	Relevant TA Section:	
Describe any other TDM program elements at the site, such as: carpool/vanpool programs, emergency ride home service, trip planning, on- site mobile services, etc.			

IMPLEMENTATION		Relevant TA Section:
Have the project sponsor and Lead Agency agreed to any of the following measures?		
<input type="checkbox"/> <b>Monitoring</b>	Describe.	
<input type="checkbox"/> <b>Enforcement</b>	Describe.	
<input type="checkbox"/> <b>Data Sharing</b>	Describe.	

# ATRS Form Page 1 - Standard Reduction Approach Example

## AUTO TRIP REDUCTION STATEMENT

UPDATED: October 2014



<b>PROJECT INFORMATION</b>		<b>Relevant TA Section:</b>		Chapter 2: Project Description	
<b>Project Name:</b> Baytown Apartment Complex					
<b>Location:</b> Baytown, CA					
<b>Description:</b> Construct 250 apartment units on a 5-acre vacant site. Main complex entrance located 1,250 feet walking distance from Baytown Light Rail Station.					
<b>Size (net new):</b>	250 D.U. Residential	Sq. Ft. Comm.	Acres (Gr.)		
<b>Density:</b>	50 D.U. / Acre	Floor Area Ratio (FAR)			
<b>Located within 2000 feet walking distance of an LRT, BRT, BART or Caltrain station or major bus stop?</b>					Y

<b>PROJECT AUTO TRIP GENERATION</b>		<b>Relevant TA Section:</b>		Chapter 2: Project Description	
<b>Auto Trips Generated:</b>	126 AM Pk Hr	155 PM Pk Hr	1639 Total Weekday		
<b>Methodology (check one)</b>	<input checked="" type="checkbox"/> ITE	<input type="checkbox"/> Other (Please describe below)			
<i>Describe alternative trip generation methodology, if applicable</i>					

<b>AUTO TRIP REDUCTION APPROACH</b>		<b>Relevant TA Section:</b>		Chapter 2: Project Description	
<input checked="" type="checkbox"/> Standard <i>Complete Table A below</i>	<input type="checkbox"/> Peer/Study-Based <i>Complete Table B below</i>	<input type="checkbox"/> Target-Based <i>Complete Table C below</i>	<input type="checkbox"/> None Taken		

<b>TRIP REDUCTION REQUIREMENTS</b>		<b>Relevant TA Section:</b>			
<b>Is the project required to meet any trip reduction requirements or targets?</b>					N
<b>If so, specify percent:</b>		<b>Reference code or requirement:</b>			

### TRIP REDUCTION APPROACHES

<b>A. STANDARD APPROACH</b>		<b>Relevant TA Section:</b>		Chapter 2: Project Description	
Type of Reduction <i>Specify reduction. See Table 2 in TA Guidelines</i>		% Reduction from ITE Rates	Total Trips Reduced (AM/PM/Daily)	TOTAL REDUCTION CLAIMED	
Transit	Proximity to LRT (within 2000 ft walk)	9.0%	11/14/148	9.5%	AM - 12 PM - 15 Daily - 156
Mixed-Use					
Financial Incentives	Unbundled Parking	0.50%	1/1/8		
Shuttle					

<b>B. PEER/STUDY-BASED APPROACH</b>		<b>Relevant TA Section:</b>			
Basis of Reduction			TOTAL REDUCTION CLAIMED		
<i>Summarize basis of reduction, addressing:</i>			%	Trips	
<ul style="list-style-type: none"> <li>Data used to justify trip reduction rate</li> <li>Source(s) referenced</li> <li>Assumptions and methodologies used to develop the trip reduction</li> <li>How the trip reduction rate is appropriate for the proposed development</li> </ul>			Specify AM, PM and/or Daily reduction	Specify AM, PM and/or Daily reduction	

## ATRS Form Page 2 - Standard Reduction Approach Example

C. TARGET-BASED APPROACH			Relevant TA Section:		
Type of Reduction (check all that apply)				TOTAL REDUCTION CLAIMED	
<input type="checkbox"/> % Trip Reduction	<input type="checkbox"/> % SOV mode share	<input type="checkbox"/> Trip Cap		%	Trips
<i>If checked, state % reduction here</i>	<i>If checked, state % reduction here</i>	<i>If checked, state cap here</i>			
<b>Description</b>	<i>e.g., ITE auto trip generation rates based on square footage or number of units, total person-trips based on employee/resident count</i>			<i>Specify AM, PM and/or Daily reduction</i>	<i>Specify AM, PM and/or Daily reduction</i>
<b>Time period for reduction</b>	<b>Peak Hour</b> <input type="checkbox"/> <i>Specify AM, PM or both</i>	<b>Peak Period</b> <input type="checkbox"/> <i>Specify AM, PM or both</i>	<b>Full Day</b> <input type="checkbox"/>		

OTHER TDM/REDUCTION MEASURES			
<b>Bicycle/Pedestrian</b>	Y	<b>Relevant TA Section:</b>	Chapter 7: Multimodal Evaluation
<ul style="list-style-type: none"> <li>- Fill sidewalk gaps on south side of project site</li> <li>- Pedestrian and bicycle crossing improvements at adjacent intersections: bicycle detector loops, high-visibility ladder crosswalks</li> <li>- Bicycle parking: 85 spaces in locked section of garage, 20 outdoor spaces near building entrances</li> </ul>			
<b>Parking Management</b>	Y	<b>Relevant TA Section:</b>	Chapter 9: TDM Plan
- Unbundled parking: First parking space included in rent, \$300/month for second parking space			
<b>Transit</b>	N	<b>Relevant TA Section:</b>	
<b>Site Planning and Design</b>	Y	<b>Relevant TA Section:</b>	Chapter 8: Site Access and Circulation
<ul style="list-style-type: none"> <li>- Building entrance oriented to face street, with small public plaza</li> <li>- Mixed use pedestrian and bicycle paths within site to connect buildings</li> </ul>			
<b>TDM Program</b>	Y	<b>Relevant TA Section:</b>	Chapter 9: TDM Plan
<ul style="list-style-type: none"> <li>- On-site transit and alternative travel information kiosk</li> <li>- Unbundled parking as noted above</li> </ul>			

IMPLEMENTATION		Relevant TA Section:
Have the project sponsor and Lead Agency agreed to any of the following measures?		
<input type="checkbox"/> <b>Monitoring</b>	Describe.	
<input type="checkbox"/> <b>Enforcement</b>	Describe.	
<input type="checkbox"/> <b>Data Sharing</b>	Describe.	

# ATRS Form Page 1 - Peer/Study-Based Reduction Approach Example

## AUTO TRIP REDUCTION STATEMENT

UPDATED: October 2014



<b>PROJECT INFORMATION</b>		<b>Relevant TA Section:</b>	Chapter 2: Project Description
<b>Project Name:</b> Technology Office Expansion			
<b>Location:</b> Techville, CA			
<b>Description:</b> Replace 1.4 Million SF of office space in one building with 1.5 Million SF of office in one building and 620 KSF of R&D space in another building, on a 49-acre site.			
<b>Size (net new):</b>	D.U. Residential	720,000 Sq. Ft. Comm.	Acres (Gr.)
<b>Density:</b>	D.U. / Acre	1.0 Floor Area Ratio (FAR)	
<b>Located within 2000 feet walking distance of an LRT, BRT, BART or Caltrain station or major bus stop?</b>			N

<b>PROJECT AUTO TRIP GENERATION</b>		<b>Relevant TA Section:</b>	Chapter 3: Trip Generation and Distribution
<b>Auto Trips Generated:</b>	1,316 AM Pk Hr	1,358 PM Pk Hr	14,769 Total Weekday
<b>Methodology (check one)</b>	<input type="checkbox"/> ITE	<input checked="" type="checkbox"/> Other (Please describe below)	
<i>Driveway counts at existing 1.4 Million sf office space were used to calculate per-employee trip rates. These rates were multiplied by net new employees projected for the new office space.</i>			

<b>AUTO TRIP REDUCTION APPROACH</b>		<b>Relevant TA Section:</b>	Chapter 3: Trip Generation and Distribution
<input type="checkbox"/> Standard <i>Complete Table A below</i>	<input checked="" type="checkbox"/> Peer/Study-Based <i>Complete Table B below</i>	<input type="checkbox"/> Target-Based <i>Complete Table C below</i>	<input type="checkbox"/> None Taken

<b>TRIP REDUCTION REQUIREMENTS</b>		<b>Relevant TA Section:</b>	
<b>Is the project required to meet any trip reduction requirements or targets?</b>			N
<b>If so, specify percent:</b>		<b>Reference code or requirement:</b>	

### TRIP REDUCTION APPROACHES

<b>A. STANDARD APPROACH</b>		<b>Relevant TA Section:</b>	
Type of Reduction <i>Specify reduction. See Table 2 in TA Guidelines</i>	% Reduction from ITE Rates	Total Trips Reduced (AM/PM/Daily)	TOTAL REDUCTION CLAIMED
			%      Trips
Transit			<i>Specify AM, PM and/or Daily reduction</i>
Mixed-Use			<i>Specify AM, PM and/or Daily reduction</i>
Financial Incentives			<i>Specify AM, PM and/or Daily reduction</i>
Shuttle			<i>Specify AM, PM and/or Daily reduction</i>

<b>B. PEER/STUDY-BASED APPROACH</b>		<b>Relevant TA Section:</b>	Chapter 3: Trip Generation and Distribution
Basis of Reduction		TOTAL REDUCTION CLAIMED	
Trip generation studies were conducted at the existing campus. The rates used in the TA are based on number of employees rather than building square footage and assume that Technology Employer's existing TDM program may be expanded to the expanded campus.		%	Trips
		30% non-SOV mode share for all AM and PM peak hour trips	

# ATRS Form Page 2 - Peer/Study-Based Reduction Approach Example

## AUTO TRIP REDUCTION STATEMENT

UPDATED: October 2014



<b>PROJECT INFORMATION</b>		<b>Relevant TA Section:</b>	Chapter 2: Project Description
<b>Project Name:</b> Technology Office Expansion			
<b>Location:</b> Techville, CA			
<b>Description:</b> Replace 1.4 Million SF of office space in one building with 1.5 Million SF of office in one building and 620 KSF of R&D space in another building, on a 49-acre site.			
<b>Size (net new):</b>	D.U. Residential	720,000 Sq. Ft. Comm.	Acres (Gr.)
<b>Density:</b>	D.U. / Acre	1.0 Floor Area Ratio (FAR)	
<b>Located within 2000 feet walking distance of an LRT, BRT, BART or Caltrain station or major bus stop?</b>			N

<b>PROJECT AUTO TRIP GENERATION</b>		<b>Relevant TA Section:</b>	Chapter 3: Trip Generation and Distribution
<b>Auto Trips Generated:</b>	1,316 AM Pk Hr	1,358 PM Pk Hr	14,769 Total Weekday
<b>Methodology (check one)</b>	<input type="checkbox"/> ITE	<input checked="" type="checkbox"/> Other (Please describe below)	
<i>Driveway counts at existing 1.4 Million sf office space were used to calculate per-employee trip rates. These rates were multiplied by net new employees projected for the new office space.</i>			

<b>AUTO TRIP REDUCTION APPROACH</b>		<b>Relevant TA Section:</b>	Chapter 3: Trip Generation and Distribution
<input type="checkbox"/> Standard <i>Complete Table A below</i>	<input checked="" type="checkbox"/> Peer/Study-Based <i>Complete Table B below</i>	<input type="checkbox"/> Target-Based <i>Complete Table C below</i>	<input type="checkbox"/> None Taken

<b>TRIP REDUCTION REQUIREMENTS</b>		<b>Relevant TA Section:</b>	
<b>Is the project required to meet any trip reduction requirements or targets?</b>			N
<b>If so, specify percent:</b>		<b>Reference code or requirement:</b>	

### TRIP REDUCTION APPROACHES

<b>A. STANDARD APPROACH</b>		<b>Relevant TA Section:</b>		
Type of Reduction <i>Specify reduction. See Table 2 in TA Guidelines</i>	% Reduction from ITE Rates	Total Trips Reduced (AM/PM/Daily)	TOTAL REDUCTION CLAIMED	
			%	Trips
Transit			Specify AM, PM and/or Daily reduction	Specify AM, PM and/or Daily reduction
Mixed-Use				
Financial Incentives				
Shuttle				

<b>B. PEER/STUDY-BASED APPROACH</b>		<b>Relevant TA Section:</b>	Chapter 3: Trip Generation and Distribution
Basis of Reduction		TOTAL REDUCTION CLAIMED	
Trip generation studies were conducted at the existing campus. The rates used in the TA are based on number of employees rather than building square footage and assume that Technology Employer's existing TDM program may be expanded to the expanded campus.		%	Trips
		30% non-SOV mode share for all AM and PM peak hour trips	

# ATRS Form Page 1 - Peer/Study-Based Reduction Approach Example

C. TARGET-BASED APPROACH			Relevant TA Section:		
Type of Reduction (check all that apply)				TOTAL REDUCTION CLAIMED	
<input type="checkbox"/> % Trip Reduction	<input type="checkbox"/> % SOV mode share	<input type="checkbox"/> Trip Cap		%	Trips
<i>If checked, state % reduction here</i>	<i>If checked, state % reduction here</i>	<i>If checked, state cap here</i>		Specify AM, PM and/or Daily reduction	Specify AM, PM and/or Daily reduction
<b>Description</b>	e.g., ITE auto trip generation rates based on square footage or number of units, total person-trips based on employee/resident count				
<b>Time period for reduction</b>	<b>Peak Hour</b> <input type="checkbox"/> Specify AM, PM or both	<b>Peak Period</b> <input type="checkbox"/> Specify AM, PM or both	<b>Full Day</b> <input type="checkbox"/>		

OTHER TDM/REDUCTION MEASURES			
<b>Bicycle/Pedestrian</b>	Y	<b>Relevant TA Section:</b>	Chapter 9: Multimodal Evaluation
<ul style="list-style-type: none"> <li>- Improve off-campus bicycle facilities: Connect bicycle lanes on Woodland Lane to campus main entrance</li> <li>- Construct curb extensions at intersection of Woodland Lane and Techville Avenue (at corner of site) to shorten pedestrian crossing distance</li> <li>- Bike lockers (275) in parking garage, 75 short-term bicycle parking spaces outside main entrance</li> </ul>			
<b>Parking Management</b>	N	<b>Relevant TA Section:</b>	
Describe any parking management strategies that would lead to reduced auto trips, such as parking pricing, parking cash-out, unbundled parking, etc.			
<b>Transit</b>	Y	<b>Relevant TA Section:</b>	Chapter 9: Multimodal Evaluation
<ul style="list-style-type: none"> <li>- Long-distance private commuter shuttles</li> <li>- Financial contribution to shuttle service to nearest Caltrain station (Downtown Techville)</li> <li>- Transit subsidy for commuters: VTA Eco Pass and Caltrain Go Pass provided at no cost on ongoing basis</li> </ul>			
<b>Site Planning and Design</b>	Y	<b>Relevant TA Section:</b>	Chapter 10: Site Access and Circulation
<ul style="list-style-type: none"> <li>- Parking located far from work areas to discourage driving for commuting</li> <li>- Long-distance commuter shuttle and Caltrain shuttle pick-up and drop-off at main building entrance</li> </ul>			
<b>TDM Program</b>	Y	<b>Relevant TA Section:</b>	Chapter 11: TDM Plan
<ul style="list-style-type: none"> <li>- Carpool matching service provided to all employees</li> <li>- Flexible work schedules and telecommuting encouraged as company policy</li> <li>- On-site amenities (free cafeteria, coffee stand, dry cleaning pick-up and drop-off)</li> </ul>			

IMPLEMENTATION		Relevant TA Section:	Chapter 11: TDM Plan
<b>Have the project sponsor and Lead Agency agreed to any of the following measures?</b>			
<input checked="" type="checkbox"/> <b>Monitoring</b>	Annual monitoring via driveway surveys and employee TDM surveys may be conducted by outside consultants and reported to City of Techville.		
<input type="checkbox"/> <b>Enforcement</b>			
<input checked="" type="checkbox"/> <b>Data Sharing</b>	City of Techville may share annual monitoring reports with VTA after staff approval of reports.		

# ATRS Form Page 1 - Target-Based Reduction Approach Example

## AUTO TRIP REDUCTION STATEMENT

UPDATED: October 2014



PROJECT INFORMATION		Relevant TA Section:	Chapter 3: Project Description
<b>Project Name:</b> Large Company Campus Expansion			
<b>Location:</b> Treeview, CA			
<b>Description:</b> Redevelop 9 acre site into two office buildings totalling 470,000 sf of office with structured parking, to replace four existing buildings totalling 123,000 sf of office space and surface parking, resulting in 347,000 sf of net new growth.			
<b>Size (net new):</b>	D.U. Residential	347,000 Sq. Ft. Comm.	Acres (Gr.)
<b>Density:</b>	D.U. / Acre	1.2 Floor Area Ratio (FAR)	
<b>Located within 2000 feet walking distance of an LRT, BRT, BART or Caltrain station or major bus stop?</b>			Y

PROJECT AUTO TRIP GENERATION		Relevant TA Section:	Chapter 3: Project Description
<b>Auto Trips Generated:</b>	507 AM Pk Hr	467 PM Pk Hr	3,477 Total Weekday
<b>Methodology (check one)</b>	<input checked="" type="checkbox"/> ITE	<input type="checkbox"/> Other (Please describe below)	
Describe alternative trip generation methodology, if applicable			

AUTO TRIP REDUCTION APPROACH		Relevant TA Section:	Chapter 3: Project Description
<input type="checkbox"/> Standard Complete Table A below	<input type="checkbox"/> Peer/Study-Based Complete Table B below	<input checked="" type="checkbox"/> Target-Based Complete Table C below	<input type="checkbox"/> None Taken

TRIP REDUCTION REQUIREMENTS		Relevant TA Section:	Chapter 2: Existing Conditions
<b>Is the project required to meet any trip reduction requirements or targets?</b>			Y
<b>If so, specify percent:</b>	Daily - 20%, Peak Hour - 30%	<b>Reference code or requirement:</b> Treeview Business Park Specific Plan (2013)	

### TRIP REDUCTION APPROACHES

A. STANDARD APPROACH		Relevant TA Section:	
Type of Reduction	% Reduction from ITE Rates	Total Trips Reduced (AM/PM/Daily)	TOTAL REDUCTION CLAIMED
Specify reduction. See Table 2 in TA Guidelines			%      Trips
Transit			Specify AM, PM and/or Daily reduction
Mixed-Use			Specify AM, PM and/or Daily reduction
Financial Incentives			
Shuttle			

B. PEER/STUDY-BASED APPROACH		Relevant TA Section:	
Basis of Reduction		TOTAL REDUCTION CLAIMED	
Summarize basis of reduction, addressing:		%	Trips
<ul style="list-style-type: none"> <li>Data used to justify trip reduction rate</li> <li>Source(s) referenced</li> <li>Assumptions and methodologies used to develop the trip reduction</li> <li>How the trip reduction rate is appropriate for the proposed development</li> </ul>		Specify AM, PM and/or Daily reduction	Specify AM, PM and/or Daily reduction

## ATRS Form Page 2 - Target-Based Reduction Approach Example

C. TARGET-BASED APPROACH		Relevant TA Section:		Chapter 3: Project Description	
Type of Reduction (check all that apply)				TOTAL REDUCTION CLAIMED	
<input checked="" type="checkbox"/> % Trip Reduction	<input type="checkbox"/> % SOV mode share	<input type="checkbox"/> Trip Cap		%	Trips
Daily - 20%, Peak Hour - 30%	If checked, state % reduction here	If checked, state % reduction here		AM: -30% PM: -30% Daily: -20%	AM: - 152 PM: - 467 Daily: - 695
Description	Target reduction based on ITE trip generation estimates for Large Company site. Reduction taken in compliance with Treeview Business Park Specific Plan (2013).				
Time period for reduction	Peak Hour	Peak Period	Full Day		
	Both		Yes		

OTHER TDM/REDUCTION MEASURES		Relevant TA Section:	
<b>Bicycle/Pedestrian</b>	Y	Chapter 8: Multimodal Evaluation	
<ul style="list-style-type: none"> <li>- Improving project's street frontage with wider sidewalks and landscape buffer with street trees to help offset effect of increased auto traffic</li> <li>- Bike lockers (58), showers (2), pumps and tools provided in bicycle center (Building A), plus mobile bicycle repair services 1x/week</li> <li>- Free bike share program for employees traveling between buildings and within Treeview Business Park</li> </ul>			
<b>Parking Management</b>	N		
Describe any parking management strategies that would lead to reduced auto trips, such as parking pricing, parking cash-out, unbundled parking, etc.			
<b>Transit</b>	Y	Chapter 8: Multimodal Evaluation	
<ul style="list-style-type: none"> <li>- Vanpool service provided to all employees</li> <li>- FreeCaltrain and VTA passes provided to employees on an ongoing basis</li> </ul>			
<b>Site Planning and Design</b>	Y	Chapter 7: Site Circulation and Access	
- Multi-use paths between buildings designed to encourage bicycle and pedestrian travel on campus			
<b>TDM Program</b>	Y	Chapter 8: TDM Program	
<ul style="list-style-type: none"> <li>- Carpool matching provided for all employees</li> <li>- Telecommuting encouraged</li> <li>- Guaranteed ride home program</li> </ul>			

IMPLEMENTATION		Relevant TA Section:	
Chapter 8: TDM Program			
<b>Have the project sponsor and Lead Agency agreed to any of the following measures?</b>			
<input checked="" type="checkbox"/> <b>Monitoring</b>	Monitoring agreement with City of Treeview: quarterly trip generation monitoring via driveway counts for first two years of full occupancy; annual monitoring thereafter.		
<input checked="" type="checkbox"/> <b>Enforcement</b>	City of Treeview may assess a \$1000 per-trip fee for vehicle trips that exceed peak hour or daily trip generation estimated in TA.		
<input checked="" type="checkbox"/> <b>Data Sharing</b>	Monitoring reports may be made available to VTA after City of Treeview staff approval.		

## APPENDIX D: Alternative Trip Generation Resources

## Introduction

*Chapter 8* of the *TA Guidelines* presents several trip generation methodologies that may be appropriate for development projects in Santa Clara County. Typically, Lead Agencies rely on trip generation rates published by the Institute of Transportation Engineers (ITE). In some cases, however, the published ITE trip generation rates are based on very limited data. There are at least four cases in which the Lead Agency should consider using use alternative sources for trip generation rates:

- When *ITE data is insufficient* (e.g. small sample size, not statistically valid);
- When a project's *specific land use* is not covered by the ITE manual or is known to show trip generation characteristics that differ from the categories covered in the ITE manual;
- When the *land use context*, such as high-density infill or development adjacent to transit, is not addressed by the ITE manual;
- When the project includes a mix of land uses (*mixed-use development* type).

Professional judgment should always be used when selecting a trip generation methodology. When using trip rates from any of the alternate trip generation methodologies identified in *Chapter 8* and in this appendix, the Lead Agency shall include in the TA Report a full description of the trip generation methodology used and a summary of all inputs and assumptions.

This appendix includes information on the research and practice basis of several alternative trip generation methodologies identified in the *TA Guidelines*. *Table D-1*, next page, provides an overview of trip generation methods and tools identified in the *TA Guidelines*. The following pages present profiles that may be helpful to Lead Agencies selecting between methodologies.

**TABLE D-1: SUMMARY OF TRIP GENERATION METHODOLOGIES**

Tool/ Method	Tool Type	Project Type/ Context	Validation Locations	Level of Effort	Outputs	Notes
City of San José	Rate Table and Guidelines	Typically used for projects in San Jose	National, San Diego, Other	Low	N/A	For alternative rates, seek approval from City of San Jose staff
NCHRP 684	Spreadsheet tool	Mixed use developments	Georgia and Texas	High	<ul style="list-style-type: none"> <li>• Internal trip capture</li> <li>• External trip mode split</li> <li>• AM peak, PM peak, and Daily periods</li> </ul>	Recommended for developments of up to 300 acres; not recommended for larger developments, suburban activity centers or new towns
EPA MXD	Spreadsheet tool	Mixed use developments	National with a California emphasis	High	<ul style="list-style-type: none"> <li>• Internal trip capture</li> <li>• External trip mode split</li> <li>• AM peak, PM peak, and Daily periods</li> </ul>	Sensitive to 7D's (land use characteristics); combined MXD/ NCHRP 684 model has been adapted for use in several TAs in Santa Clara County
SANDAG MXD	Trip Generation table with Spreadsheet tool	Site within a Priority Development Area	San Diego	High	<ul style="list-style-type: none"> <li>• Internal trip capture</li> <li>• External trip mode split</li> <li>• AM peak, PM peak, and Daily periods</li> </ul>	This was developed for "Smart Growth Opportunity Areas" in San Diego, but may be appropriate for use in the Priority Development Areas in Santa Clara County.
CalEEMod	Model with option to adjust rates	Air quality analysis for any site	California	Med.	<ul style="list-style-type: none"> <li>• Criteria pollutant and greenhouse gas (GHG) emissions</li> </ul>	Required by BAAQMD for air quality analysis. Not recommended as primary source for trip generation, but may be useful as supplemental resource for justification of trip reductions.
MTC STARS	Mode share tables	Site within 1/2 to 1 mile of rail or ferry stops	San Francisco Bay Area	Low	N/A	May be a resource to help justify a reduction in trip generation rates based on non-auto mode share data.
Caltrans/UC Davis	Spreadsheet tool	Single use sites within smart growth areas	California	Low	<ul style="list-style-type: none"> <li>• Reduction to ITE rate</li> <li>• Adjustment can be applied to AM peak, PM peak, and Daily rates</li> </ul>	For use only with a single land use that is part of a multi-use site, and only at sites located in smart-growth areas. Other limitations may apply – see documentation.

## Methodology Profiles

### City of San José Trip Generation Rates

The City of San Jose maintains a *Traffic Impact Analysis Handbook* which includes a set of trip generation rates based on the Institute of Transportation Engineers (ITE) *Trip Generation* report, San Diego *Traffic Generators*, data from other agencies and publications, reports and estimates. ITE rates and rates obtained through surveys of similar land uses may also be used when appropriate. The trip generation rates provided in the tables do not account for mixed use environments or proximity to transit, however the City of San Jose *TIA Handbook* allows for standard reductions to trip generation using the VTA methodology included in VTA TA Guidelines. The City of San Jose has final authority to approve the trip generation rates used in the TA analysis.

- City of San Jose. *Traffic Impact Analysis Handbook*. (Search for current version on-line.)

### NCHRP 684 – Enhancing Internal Trip Capture Rate for Mixed-Use Development

The National Cooperative Highway Research Program (NCHRP) Report 684, *Enhancing Internal Trip Capture Estimation for Mixed-Use Developments*, analyzed the internal-capture relationships of mixed use sites and examined the travel interactions among six individual types of land uses: office, retail, restaurant, residential, cinema, and hotel. The study looked at three master-planned developments in Georgia and Texas to ascertain the interactions among these six land use types within each of the sites. The study considered site context factors and described percentage reductions in site-wide traffic generation that might result from the availability of transit service and other factors. Researchers then verified analysis results by comparing them to trip generation for three earlier ITE studies at Florida mixed use sites. The validation confirmed that the estimated values were a reasonable match for observed traffic. The interaction percentages among the land use types are then used to discount ITE trip-generation rates by the number of trips that would remain internal to the project site due to the presence of multiple land uses.

The tool provides peak period trips and requires the user to input mode split, vehicle occupancy by land use, and distance between land uses. Researchers recommend its use for developments of up to 300 acres, but do not recommend use of this method for larger developments, suburban activity centers or new town types of development. This method could be used for mixed-use developments in an urban context, including station area plans or transit oriented developments. Recently findings from this study and the MXD tool developed by EPA were combined into one comprehensive tool – MXD+. (See below.)

- National Cooperative Highway Research Program. (2011). *NCHRP Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments*. 2011. Washington, D.C.: Transportation Research Board, National Research Council. (Search for current version on-line.)
- Walters, J., B. Bochner, R. Ewing. (2013). *Getting Trip Generation Right: Eliminating the Bias Against Mixed Use Development*. American Planning Association: Planning Advisory Service Report, May 2013. Chicago, Illinois: American Planning Association. (Search for current version on-line.)

## MXD Model – US EPA

This spreadsheet tool is based on a robust national sample of 239 mixed-use developments in six metro areas and has been validated at 40 sites, mostly in California. The tool applies elasticities for transportation behavior response to land-use variables from peer-reviewed literature. It is sensitive to 7 “D’s” factors: density, diversity, design, distance from transit, destination accessibility, development scale, and demographics. More recently, a tool has been developed that combines the EPA MXD model with the National Cooperative Highway Research Program Report 684 (see above). The combined EPA/NCHRP MXD model has been adapted for use in several transportation impact analysis studies in Santa Clara County, including the Apple Campus II EIR, the Lawrence Station Area Plan for the City of Sunnyvale, as well as a number of impact analysis projects in other Bay Area counties.

- Ewing, et al. (2011). *Traffic Generated by Mixed-Use Developments – A Six Region Study Using Consistent Built Environment Measures*. Washington, D.C.: United States Environmental Protection Agency. (Search for current version on-line.)
- Walters, J., B. Bochner, R. Ewing. (2013). *Getting Trip Generation Right: Eliminating the Bias Against Mixed Use Development*. American Planning Association: Planning Advisory Service Report, May 2013. Chicago, Illinois: American Planning Association. (Search for current version on-line.)
- Alameda County Transportation Commission. Congestion Management Program Update. (Search for current version on-line.)

## **SANDAG Traffic Generation Manual & Trip Generation for Smart Growth**

The San Diego Association of Governments (SANDAG) published the San Diego Traffic Generators Manual in 2000, which includes trip generation rates based on traffic counts collected at four to seven sites for each land use category provided within the manual. In 2010, SANDAG released Trip Generation for Smart Growth: Planning Tools for the San Diego Region as a supplement to the manual in order to provide reductions for mixed use that accounted for the specific context of a site.

The study resulted in a spreadsheet tool which is based on the MXD tool developed for EPA (see above), but modified for use by SANDAG. The study validated the MXD tool for use within the San Diego region by comparing the method's trip generation estimates to actual travel data from twenty of the region's Smart Growth Opportunity Areas (SGOAs) and six smaller mixed-use/transit-oriented development (TOD) sites. Travel data for a representative group of SGOAs was compiled from the SANDAG 2006 Regional Household Travel Behavior Survey and 24 hour counts were conducted for use in the study. Based on observed data, the MXD tool was an excellent predictor of external vehicle trips generated by smart growth development. SANDAG's SGOAs are similar to Priority Development Areas (PDAs) as planned for in the San Francisco Bay Area's Regional Transportation Plan and Sustainable Communities Strategy, or One Bay Area Plan. This tool could be useful for developments within PDAs as it has been refined for this type of focused growth.

- San Diego Association of Governments. (2010). Trip Generation for Smart Growth: Planning Tools for the San Diego Region. (Search for current version on-line.)

## **CalEEMod – CAPCOA/BAAQMD**

The California Emissions Estimator Model (CalEEMod) was released by the California Air Pollution Control Officers Association (CAPCOA) and is used by the Bay Area Air Quality Management District (BAAQMD) for determining air quality conformity. The tool calculates vehicle trips and vehicle miles traveled (VMT) in order to estimate air pollution and greenhouse gas emissions arising from development. ITE Trip Generation (8th Edition) trip generation rates are used as default in the program, although users have the option to manually add rates. Trip types are broken down by residential and commercial trips. Residential trips include home-work, home-shopping and home-other trips. The trip type breakdown is from the 1999 Caltrans Statewide Travel Survey; however, users can overwrite these inputs if sufficient justification for alternative sources of data (e.g.,

project-specific traffic study) can be provided. The tool also identifies a number of mitigation measures that can be chosen by the user, such as changes to land use, parking policies, transportation systems management and transportation demand management that can be used to reduce the resulting VMT. It should be noted, however, that the CalEEMod trip model does not produce detailed trip generation estimates or output reductions to vehicle trips, but rather reductions to VMT. The tool may be therefore be most appropriate for analyses that primarily examine VMT rather than peak-hour trip generation.

- California Air Pollution Control Officers Association (CAPCOA). California Emissions Estimator Model Users Guide. (Search for current version on-line.)

### **Station Area Resident Survey – MTC**

The Metropolitan Transportation Commission (MTC) Station Area Residents Survey (STARS) was conducted in 2006. It characterizes the demographic and travel characteristics of transit station area residents in the San Francisco Bay Area. A GIS analysis was conducted using county-level results from the 2000 Bay Area Travel Survey to group residents based on population density and their proximity to rail or ferry stations. MTC's website provides tables showing mode split by population densities and proximity to rail and ferry stops. The STARS tables can be used to help justify a reduction in trip generation rates based on actual survey data for Santa Clara County that shows residents near transit have higher non-auto mode shares.

- Metropolitan Transportation Commission (MTC). (2006). *Characteristics of Rail and Ferry Station Area Residents in the San Francisco Bay Area: Evidence from the 200 Bay Area Travel Survey*. (Search for current version on-line.)
- Alameda County Transportation Commission. Congestion Management Program Update. (Search for current version on-line.)

### **California Smart Growth Trip Generation Tool – Caltrans/UC Davis**

This spreadsheet tool provides ITE rate adjustment factors based on a database of vehicle trip counts and site/context data for a sample of 50 smart growth sites in California. The tool can be used for daily or peak rates. The tool was validated at 11 mixed-use sites for the AM peak period and 13 mixed-use sites for the PM peak period. Rates are based on density, land use mixture, regional location, transit service, and parking. The research team defined specific criteria that should be met in order to apply the model, which can be found in the California Smart-Growth Trip Generation Rates Study report cited below. Resulting models are only appropriate for analysis for a single land use that is part of a multi-use site, and only at sites located in smart-growth areas. (UCSD, 2013 p. 10) For example, for

residential development analysis, the input for the tool is the number of dwelling units for an entire residential-only site or targeted residential use within a multi-use building or multi-use site.

- University of California, Davis for the California Department of Transportation. (2013). California Smart-Growth Trip Generation Rates Study. (Search for current version on-line.)
- Alameda County Transportation Commission. Congestion Management Program Update. (Search for current version on-line.)

## APPENDIX E: ITE Methodology for Applying Pass-By and Diverted Linked Trip Reductions

## ITE Methodology for Applying Pass-by and Diverted Linked Trip Reductions

The Institute of Transportation Engineers methodology for applying pass-by and diverted linked trip reductions should be used in TAs and is summarized below.<sup>1</sup>

1. Obtain peak hour traffic volumes passing the project site driveway(s) in both directions for a two-way street or the travel direction on a one-way street.
2. Obtain driveway volumes entering and exiting the site. The driveway volumes are determined from the project size and trip rates.
3. For each driveway, calculate the number of pass-by and diverted linked trips by multiplying the total number of project trips by the appropriate reduction percentage. (Other methods may be used to determine the reduction. See Chapter VII of ITE's Trip Generation report.) Note that reductions for pass-by trips often differ from those for diverted linked trips.
4. Determine the trip distribution on roadways adjacent to the site for pass-by trips, and determine the trip distribution on roadways that would be used by diverted linked trips.
5. Determine pass-by and diverted linked trip distribution based on the volume of traffic passing the driveway in both directions.
6. Assign pass-by and diverted linked trip volumes to the driveway based on the distributions calculated in Step 5 above. These trips should also be analyzed on the street system to accurately reflect the turning movements necessary to access the site.

Figure C-1 illustrates the application of the pass-by trip methodology. Diverted linked trips are not included in this example but should be analyzed in TAs. In Figure C-1, the 50 pass-by trips should be examined in the context of the turning movements already handled by existing facilities. For example, can the existing left turn pockets and/or signal timing accommodate the eight additional U-turns added by the project?

# Figure C-1: Application of Pass-by Trips

(Note: Diverted linked trips are not included in this example but should be analyzed in TIAs.)

Base Peak Hour Traffic Volumes on Street

420 VPH Southbound

80 VPH Northbound

Total Project Trips

200 VPH In

200 VPH Out

Pass-by Trips = 25%

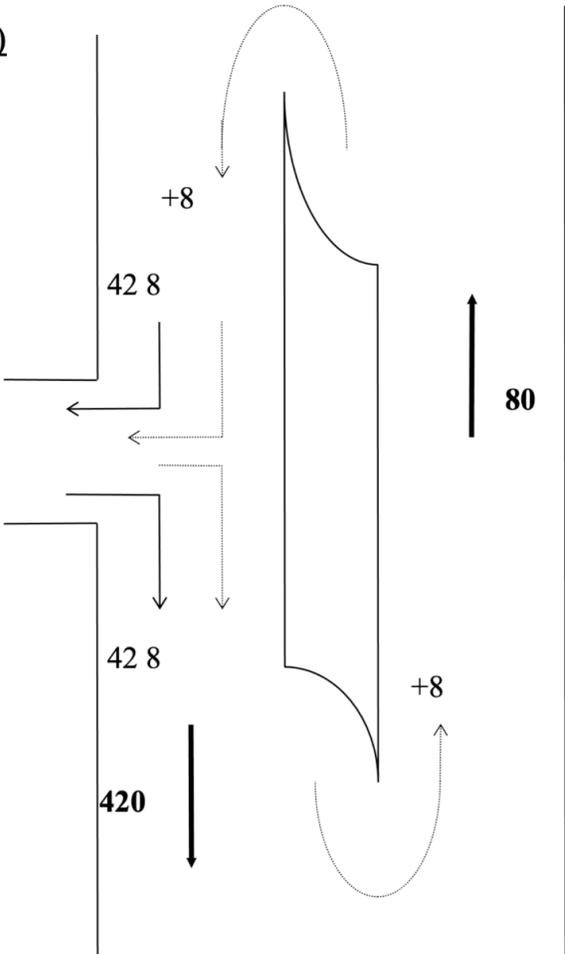
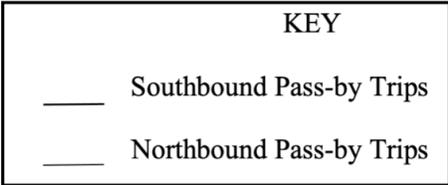
50 VPH In

50 VPH Out

Based on Base Volumes (84% SB, 16% NB)

Southbound Pass-by Trips = 42 VPH

Northbound Pass-by Trips = 8 VPH



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## APPENDIX F: Transit Delay Analysis Resources

## Introduction

To provide a more meaningful and relevant analysis of project effects on transit service, the 2014 TA Guidelines shifted a portion of the transit analysis requirements from a capacity-based to a delay-based approach for most projects. The TA Guidelines require basic analysis of project effects on transit vehicle delay and on transit access and facilities near the project site. For large or unique projects that are likely to generate high numbers of transit trips, the Guidelines recommend a transit capacity analysis as well as the delay analysis. The following section provides additional information on the research and professional practice basis of the transit delay analysis requirement.

## Transit Delay Analysis Overview and Methodology

Current research thoroughly documents the impacts of roadway congestion on transit performance. Traffic congestion has negative impacts on bus travel time and service reliability (McKnight et al. 2003) (Perk et al. 2008). This congestion also leads to higher operational costs for the transit provider due to more vehicle hours in service for the transit vehicle (McKnight et al. 2003).

To date, some Transportation Analysis (TA) reports in Santa Clara County have examined transit delay as part of the analysis of a proposed land use development or general planning effort.

The Apple Campus II TA (2013) examines transit delay due to increased traffic from the proposed development. The TA found that project traffic may result in increased congestion at intersections, which may increase travel time for transit vehicles. The project is also likely to indirectly increase transit ridership. This is due to the conversion of current auto trips in the project area to transit trips to avoid increased roadway congestion. Near the project site, this may affect bus routes traveling in the vicinity. To mitigate this impact, the TA proposed improving amenities at bus stops near the project site by adding elements such as shelters, benches, and lighting.

The San Antonio Village Phase II TA (2014) also examines transit delay due to increased traffic from future development. The TA found that the project may increase congestion on the surrounding roadway network, which may also increase travel time for transit vehicles. Intersection capacity improvements are proposed to mitigate impacts due to project traffic; these capacity improvements may also benefit transit vehicles. Transportation Demand Management (TDM) policies for the project may also reduce the number of trips during the peak hour, which may further reduce impacts due to project traffic on the roadway network used by transit.

In addition to being evaluated in published TA Reports, transit delay analysis is required or encouraged in several technical guidelines and policy documents in the San Francisco Bay Area, notably Alameda County TA Technical Guidelines and the City of San Jose's General Plan.

The Alameda County Transportation Commission has a requirement for analyzing transit delay as part of its 2013 Congestion Management Program TA Technical Guidelines. This requirement states that "The analysis should evaluate if vehicle trips generated by the project may cause congestion that degrades transit vehicle operations. Analysis may be qualitative and may be based on auto traffic circulation analysis."

The Envision San Jose 2040 Plan, published by the City of San Jose in 2011, is a General Plan for development and smart growth in the City. The plan provides goals and policies for many different aspects of development, including land use and transportation. In the Environmental Impact Report for the plan, the City analyzed the effects of future proposed growth in the plan on transit travel times and speeds along 14 key corridors, referred to as "Grand Boulevards." These key corridors connect city neighborhoods and serve as primary routes for public transit vehicles. Transit vehicles are given priority in the roadway design over automobiles, trucks, and other vehicles. The plan also details what transit impacts would be considered significant, including when they would:

- Disrupt existing, or interfere with planned transit services or facilities;
- Cause the average speed on a transit priority corridor (referred to as a Grand Boulevard in the General Plan Update's Draft Circulation Element) to drop below 15 mph or decrease by 25% or more during the AM peak hour; or
- Cause a transit priority corridor with an existing average speed below 15 mph to decrease by one mph or more during the AM peak hour.

A TA in the City of San Jose could implement these policies by evaluating delay to transit vehicles as a result of project-related congestion.

## References

- Alameda County Transportation Commission. (2013). Congestion Management Program 2013. Oakland, California: Author.
- City of San Jose. (2011). Program Environmental Impact Report for the Envision San Jose 2040 General Plan. San Jose, California: Author.
- McKnight, C. E., H. S. Levinson, K. Ozbay, C. Kamga, R. E. Paaswell. (2003). Impact of Congestion on Bus Operations and Costs. New York City: Region 2 University Transportation Research Center.
- Perk, V., J. Flynn, J. Volinski. (2008). Transit Ridership, Reliability, and Retention. Tampa, Florida: National Center for Transit Research.

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## APPENDIX G: Pedestrian and Bicycle Quality of Service Analysis Resources

## Introduction

To provide a more meaningful and relevant analysis of project effects on pedestrian and bicycle conditions, the 2014 TA Guidelines shifted a portion of the pedestrian and bicycle analysis requirements from a capacity-based to a Quality of Service (QOS)-based approach for most projects. For large or unique projects that are likely to generate high numbers of pedestrian or bicycle trips, the Guidelines recommend a capacity analysis as well as the QOS analysis.

For additional detail on bicycle and pedestrian analysis, refer to Chapter 5, Section 9.3 and Chapter 12 of the TA Guidelines. The following section provides additional information on the research and professional practice basis of the pedestrian and bicycle QOS analysis requirement.

This appendix provides selected QOS methodologies that TA preparers may find useful for evaluating bicycle and pedestrian conditions. This summary is adapted from materials prepared by Fehr & Peers in their MMLOS Toolkit.

At a minimum, methodologies used to evaluate bicycle and pedestrian QOS should:

- Directly address bicycling and/or walking
- Measure factors that can be addressed by project sponsors and/or Lead Agencies (such as sidewalk widths, presence of bicycle lanes, signal operations, etc.)
- Be readily adaptable for use in Santa Clara County

VTA has not evaluated all of these methodologies in depth and does not recommend one methodology over another. The methodologies described below address different priorities and some may be more appropriate than others for specific projects. In some cases, the TA preparer may need to calibrate or otherwise adapt a methodology to better reflect local conditions. Quality of Service methodologies continue to be developed, and other methodologies not included in this appendix may be more appropriate than those presented here, depending on the nature of the project. Over time, VTA and its Member Agencies may revisit these methodologies and provide further guidelines for TA preparers. Therefore, professional judgment should be applied when selecting a QOS methodology for TAs.

Table G-1, next page, summarizes major features of the methodologies presented in this appendix.

**Table G.1 | QOS Methodologies Comparison**

Methodology	Analysis Level		Project Type		Mode		Data Required	Reference
	Intersection	Street Segment	Development	General Plan	Pedestrian	Bicycle		
Charlotte Bicycle and Pedestrian LOS	X		X	*	X	X	Medium	City of Charlotte <i>Urban Street Design Guidelines</i> , Appendix B
Pedestrian/Bicycle Environmental Quality Index	X	X	X	*	X	X	High	San Francisco Dept of Public Health, <i>Bicycle and Pedestrian Environmental Quality Index</i>
HCM 2010 Bicycle and Pedestrian LOS	X	X	X	*	X	X	High	<i>HCM 2010: Highway Capacity Manual</i>
Layered Network Approach		X		X	X	X	Varies	<i>LA Street Classification and Benchmarking System</i> , 2010.
Level of Traffic Stress	X	X	X	X		X	Medium	Mekuria, Furth and Nixon, 2012. <i>Low Stress Bicycling and Network Connectivity</i>
Built Environment Factors	X	X	X	X	X	X	Varies	<ul style="list-style-type: none"> <li>Fort Collins, Colorado, <i>Pedestrian Plan</i>, 2011. Level of Service</li> <li>Burien, Washington, <i>Transportation Master Plan</i>, 2012. Table 4, Pedestrian LOS Checklist.</li> </ul>

\* This methodology is appropriate for General Plan level goal setting, but evaluating an entire street network would involve a substantial effort.

## Research and Practice Basis of QOS Methodologies

Several bicycle and pedestrian quality of service (QOS) methodologies have been developed to measure how well transportation infrastructure and streetscape features support bicycling and walking. The VTA *TA Guidelines* identify several QOS methodologies that could be used in TAs in Santa Clara County. This section describes the research and professional practice basis for these methodologies. Summaries of each methodology, with links to web-based resources for applying them, are presented on pages G-6 through G-11 of this appendix.

Numerous recent research studies have shown that the built environment has a substantial effect on travel behavior, particularly walking and bicycling. Access to destinations and a well-connected street network correlate to higher levels of walking and bicycling (Ewing and Cervero 2010; Saelens et al. 2003). Infrastructure design is also tied to walking and bicycling. People are more likely to walk where sidewalks are present (Saelens and Handy 2008), to prefer walking on wide sidewalks with landscaping separating them from vehicle traffic, and to feel more comfortable at intersections with short crossing distances (Transportation Research Board, 2008). People also prefer to ride bicycles in dedicated lanes and on low-traffic streets (Buehler and Pucher 2012; Broach et al. 2012).

- Buehler, R. and J. Pucher. (2012). Cycling to Work in 90 Large American Cities: New Evidence on the Role of Bike Paths and Lanes. *Transportation* 39 (2), 409-432.
- Broach, J., J. Dill, J. Gliebe. (2012). Where do cyclists ride? A route choice model developed with revealed preference GPS data. *Transportation Research Part A: Policy and Practice*. 46 (10), 1730-1740.
- Ewing, R. and R. Cervero. (2010). Travel and the Built Environment. A Meta-Analysis. *Journal of the American Planning Association*. 76 (3), 265-294.
- Ewing, R., A. Hajrasouliha, K. Neckerman, M. Purciel, A. C. Nelson. (2014). Streetscape Features Related to Pedestrian Activity. *TRB 93rd Annual Meeting Compendium of Papers*. Washington, D.C.: Transportation Research Board, National Research Council.
- Saelens, B. and S. Handy. (2008). Built Environment Correlates of Walking: A Review. *Medicine & Science in Sports & Exercise*. 40 (7 Suppl): S550-S566.
- Saelens, B., J.F. Sallis, L.D. Frank. (2003). Environmental correlates of walking and cycling: findings from the transportation, urban design, and planning literatures. *Annals of Behavioral Medicine*, 25(2), 80-91.
- Transportation Research Board. *NCHRP Report 616: Multimodal Level of Service Analysis for Urban Streets*. (2008). Washington, D.C.: Transportation Research Board, National Research Council.

## Pedestrian and Bicycle Environmental Quality Indices (PEQI and BEQI)

The San Francisco Department of Public Health developed the Pedestrian Environmental Quality Index (PEQI) and Bicycle Environmental Quality Index (BEQI) based on reviews of existing literature and with input from bicycle and pedestrian experts, advocates and facility users. To develop the PEQI, researchers conducted a literature review to identify specific indicators of pedestrian quality of service, such as vehicle speeds and sidewalk widths. These indicators were then assigned weights based on results from surveys of transportation experts and pedestrian advocates. The BEQI was developed using a similar two-part process: first identifying indicators of bicycle quality of service, such as bicycle lane width and pavement quality, and then weighting those indicators based on surveys of experts, advocates and local bicyclists. Site assessments are conducted via a walking audit and checklist; this data can be collected using an Android smart phone application and integrated into a GIS database. The PEQI has been used for community planning and health assessment projects in San Francisco, Los Angeles, Denver and Massachusetts. The BEQI has been used primarily in San Francisco.

- San Francisco Department of Public Health. *The Pedestrian Environmental Quality Index (PEQI)*. (2008). San Francisco, California: Program on Health, Equity and the Environment, San Francisco Department of Public Health.
- San Francisco Department of Public Health. *The Bicycle Environmental Quality Index (BEQI)*. 2007. Program on Health, Equity and the Environment, San Francisco Department of Public Health.

## Charlotte Pedestrian and Bicycle LOS

In 2007 the City of Charlotte, North Carolina, developed a methodology to assess design features that impact pedestrians and bicyclists crossing signalized intersections. The methodology was developed with input from several professional standards documents published by the Federal Highway Administration, the Institute of Transportation Engineers, Florida DOT and the City of Portland. Developers also consulted with local government staff and transportation consultants when identifying and ranking variables. These variables were compiled into two intersection scoring tools that grade intersections from A to F for pedestrian and bicycle travel. The City of Charlotte uses these tools to evaluate proposed intersection improvements. If automobile-oriented improvements would degrade pedestrian and bicycle conditions, alternative improvements or capacity enhancements are considered.

- Steinman, N. K. Hines. (2003). A Methodology to Assess Design Features for

Pedestrian and Bicyclist Crossings at Signalized Intersections. Presented at the 2nd Urban Street Symposium, Anaheim, California.

- Charlotte Department of Transportation. 2007. Pedestrian & Bicycle Level of Service Methodology for Crossings at Signalized Intersections. Charlotte, North Carolina: Author.

## HCM 2010 Bicycle and Pedestrian Level of Service

The Highway Capacity Manual 2010 (HCM 2010) is published by the Transportation Research Board (TRB) of the National Research Council, the preeminent transportation research organization in the United States. HCM 2010 bicycle and pedestrian evaluation methodologies were developed via a user-focused research effort that built on two decades of prior research on bicycle and pedestrian level of service. Researchers conducted a literature review and pilot tests to determine which factors in the bicycling and pedestrian environments are most important to street users. Locations that represented a mix of these factors were identified in Tampa, Florida (bicycle and pedestrian modes) and San Francisco (pedestrian only). At these locations, video footage was collected showing street segments and intersections from bicyclist and pedestrian points of view. Over one hundred survey participants in four cities around the United States then ranked video clips from A (excellent quality of service) to F (extremely poor quality of service). Regression models were developed to determine which variables had the greatest influence on user ratings of street segments, and equations were created to evaluate pedestrian and bicycle quality of service on street segments and at intersections.

- Transportation Research Board. *NCHRP Report 616: Multimodal Level of Service Analysis for Urban Streets*. (2008). Washington, D.C.: Transportation Research Board, National Research Council.

## Layered Network Approach

The Layered Network Approach is a planning-level evaluation of a local area's transportation network. The approach was articulated in a white paper developed for the City of Los Angeles in its most recent update of the Transportation Element of its General Plan. The methodology is based on planning practice in cities that have assigned travel mode priorities to streets in order to create a complete streets network. Several cities have adopted this method, including Seattle, Austin, Denver, Alameda, CA and Glendale, CA. In cities that have identified the creation of layered networks as transportation planning priorities, the TA can identify how a proposed project would contribute to or detract from that network.

- Fehr & Peers, Rifkin Transportation Group and NelsonNygaard Consulting. (2010). LA Street Classification and Benchmarking System.

## Level of Traffic Stress

Researchers at the Mineta Transportation Institute developed the Level of Traffic Stress methodology to evaluate level of service for bicycle travel. Based on Dutch design standards for bicycle facilities and resident surveys from Portland, Oregon, the method classifies bicycle facilities on a scale from one to four. Lower numbers are assigned to facilities with low exposure to auto traffic and easy crossings at intersections, indicating low-stress environments attractive to many types of cyclists. The researchers piloted a network-wide analysis of San Jose, California using the Level of Traffic Stress model. Their analysis measured the street network's connectivity for each of the four levels of traffic stress. Researchers then identified and tested intersection improvements that could increase the low-stress connectivity throughout the city.

- CROW (The National Information and Technology Centre for Transport and Infrastructure). (1994.) *Sign Up for the Bike: Design Manual for a Cycle-friendly Infrastructure*. Ede, The Netherlands: CROW.
- Geller, R. (c. 2007). *Four Types of Cyclists*. Portland, Oregon: City of Portland Office of Transportation.
- Mekuria, M.C., P.G. Furth., H. Nixon. (2012). *Low-Stress Bicycling and Network Connectivity*. San Jose, California: Mineta Transportation Institute.

## Built Environment Factors

As described in the introduction to this section, many variables in the built environment affect whether a street or intersection supports walking and bicycling. QOS methodologies measuring these built environment factors have been customized for specific urban contexts, notably San Francisco, California, Charlotte, North Carolina (as described above) and Fort Collins, Colorado. Similar methodologies could be developed for other local areas, relying on existing research, professional judgment and local knowledge. The papers cited below and under the introduction to this section provide a starting point for developing such a methodology.

- Dill, J., S. Handy, J. Pucher. (2013). *How to Increase Bicycling for Daily Travel*. A Research Brief. Princeton, NJ: Active Living Research, a National Program of the Robert Wood Johnson Foundation.
- Ewing, R., S. Handy, R. Brownson, O. Clemente, E. Winston. (2006). Identifying and Measuring Urban Design Qualities Relating to Walkability. *Journal of Physical Activity and Health*, 3, Suppl 1, S223-S240.

# CHARLOTTE BICYCLE AND PEDESTRIAN LOS

## Summary

The City of Charlotte, North Carolina, developed a methodology to assess bicyclist and pedestrian safety and comfort at intersections. Quality of service is calculated based on a point system, with points awarded for design and operational features that improve or worsen conditions for bicyclists or pedestrians. The sum of the points accumulated for each mode establishes the LOS, with LOS A receiving the highest points and LOS F receiving the lowest points.

For pedestrian LOS, key characteristics include crossing distance, signal phasing and timing, corner radius, right-turn on red, crosswalk treatment, and adjustment for one-way street crossings. For bicycle LOS, key characteristics include width of bicycle travel way, speed of adjacent traffic, signal features, right-turning vehicle conflicts, right-turn on red, and crossing distance.

## Reference

City of Charlotte, North Carolina. 2007. Appendix B of Urban Street Design Guidelines.



## Advantages

- Medium level of data input required
- Focused on factors within the public right-of-way, which can be addressed through planning and engineering
- Intersection-level analysis allows straightforward comparison with auto LOS

## Disadvantages

- Does not address bicycle and pedestrian QOS between intersections

## Data Requirements

- Signal phasing
  - RTOR
  - Left-turn conflicts
  - Pedestrian phasing
  - Countdown timer
- Intersection measurements:
  - Crosswalk type
  - Crossing distances
  - Lane widths
  - Curb radii
  - Presence and width of bicycle lanes
- Motorized traffic speeds

# PEDESTRIAN/BICYCLE ENVIRONMENTAL QUALITY INDEX (PEQI & BEQI)

## Summary

The San Francisco Department of Public Health developed the Pedestrian Environmental Quality Index (PEQI) and Bicycle Environmental Quality Index (BEQI) to measure the effects of built environment factors on bicycle and pedestrian environmental quality, activity and safety.

The PEQI and BEQI evaluate QOS for pedestrians and bicyclists at the intersection and street segment levels. The intersection-level assessment looks only at safety features that aim to protect pedestrians and bicyclists from vehicle traffic, while the segment-level assessment looks at land use, traffic and design features as well as perceived safety from crime and safety measures to increase cyclist visibility.

## Reference

San Francisco Department of Public Health Program on Health, Equity and Sustainability. 2010.

*Bicycle Environmental Quality Index.*

*Pedestrian Environmental Quality Index.*



## Advantages

- Straightforward application: checklist and index
- Basic software requirements (Microsoft Access, ArcGIS) for network analysis

## Disadvantages

- Does not address street connectivity and presence of pedestrian attractors
- May not address all relevant design factors
- Not designed for use outside urban areas
- Requires extensive data inputs, many of which must be measured in the field

## Data Requirements

Substantial data requirements for:

- Intersection safety features (e.g. pedestrian crossing treatments, signal operations)
- Auto speeds and volumes
- Street design (e.g. sidewalks, bicycle facilities, landscaping signage)
- Land use (e.g. street-fronting retail, bicycle parking)
- Perception of safety (e.g. lighting, litter, abandoned buildings)

# HCM 2010 BICYCLE AND PEDESTRIAN LOS

## Summary

The 2010 Highway Capacity Manual (HCM 2010) provides detailed instructions on calculating QOS for bicycles and pedestrians on urban streets (at the link, segment and facility levels) and at signalized and 2-way stop intersections. QOS scores are based on pedestrian or cyclist perception of their travel experience, taking into account dedicated facilities, accommodation at intersections, and exposure to automobiles.

Note that early testing in Santa Clara and Los Angeles Counties has indicated that this methodology is not fully sensitive to all input changes; in some cases (e.g. road diets) it produces results that are inconsistent with expectations or typical professional judgment. Further information on VTA's evaluation of HCM 2010 methodology is available on request from VTA staff.

## Reference

National Research Council (U.S.). 2010.

*HCM 2010: Highway Capacity Manual*. Washington, D.C: Transportation Research Board.

*Santa Clara Valley Transportation Authority  
Transportation Impact Analysis Guidelines*

## Advantages

- Provides a comprehensive evaluation of bicycle and pedestrian QOS at different scales
- Focused on factors within the public right-of-way, which can be addressed through planning and engineering
- Letter scoring enables straightforward comparison to auto LOS

## Disadvantages

- Requires extensive data inputs
- Scores are heavily influenced by automobile volumes, which are difficult to mitigate in a planning or engineering context
- May not address all relevant design factors
- Can be insensitive to some input changes; some scenarios (e.g. road diets) produce inconsistent results

## Data Requirements

Substantial data requirements for:

- Street segment and intersection geometry
- Intersection operations
- Automobile traffic speed and volumes
- Locations of landscaping, parking and sidewalk obstructions

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# LAYERED NETWORK APPROACH

## Summary

This approach, which is suitable for General Plan-level analysis, designates travel mode priority by street to create a complete streets network. Layered networks recognize that while all travel modes need to be accommodated within a community, no single street can accommodate all transportation users at all times.

The layered network concept envisions streets as systems, with each street type designed to create a high quality experience for its intended users. A layered network approach can also use context-sensitive land use and mode overlays to enhance additional transportation modes. This approach can also be integrated with methodologies that measure quality of service for bicyclists and pedestrians at the intersection and corridor level. Implementing this methodology may require a commitment to rethinking the transportation network of an entire city or plan area.

## Reference

Fehr & Peers, Rifkin Transportation Group and Nelson\Nygaard Consulting. 2010.  
*LA Street Classification and Benchmarking System.*

## Advantages

- Helps mitigate the challenge of accommodating all users on every roadway
- Creates flexibility and options with multiple travel routes, accommodating different travel modes on different streets
- Allows network layout and roadway design for ideal bicycle or transit networks
- Works well with other QOS methodologies

## Disadvantages

- May require additional street connectivity and redundancy to create the multi-modal network
- Less effective if land uses do not support design of layered networks

## Data Requirements

Data requirements vary, depending on whether the approach includes QOS methodologies and on which methodologies are used.



# LEVEL OF TRAFFIC STRESS

## Summary

The Level of Traffic Stress (LTS) method evaluates bicycle QOS by measuring low-stress connectivity, defined as “the ability of a network to connect traveler’ origins to their destinations without subjecting them to unacceptably stressful links.”

Based on Dutch standards for bicycle facility design, the method classifies bicycle facilities on a scale from one to four. Better scores are assigned to facilities with low exposure to auto traffic and easy crossings at intersections, indicating low-stress environments which are attractive to many types of cyclists.

Level of traffic stress can be mapped onto an entire transportation network, producing stress maps and making it possible to evaluate how well an entire network serves bicyclists.

## Reference

Mekuria, M.C., Furth, P.G., Nixon, H. 2012.  
Low-Stress Bicycling and Network Connectivity.  
Mineta Transportation Institute, San José State University; San Jose, California.

*Santa Clara Valley Transportation Authority  
Transportation Impact Analysis Guidelines*

## Advantages

- Focuses on factors that government planners and engineers can control
- Most data are readily available in public records

## Disadvantages

- May require further adaptation to be used outside San José
- Stress mapping requires GIS extensions developed specifically for LTS evaluation
- Does not address pedestrian QOS

## Data Requirements

- Street geometry: width, number of lanes, bicycle lane widths, presence of parking and width of parking lanes
- Other data: intersection control type, functional street classification or average daily traffic, percent of time bicycle lane is blocked

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# BUILT ENVIRONMENT FACTORS

## Summary

An inventory of each category of physical features translates to a facility's perceived quality of service based on the elements of the built environment. This QOS approach evaluates two levels of physical features: basic (key) elements and enhancement elements.

For example, when assessing the pedestrian experience, key features would include: travel and crossing lane widths and presence of sidewalks, crosswalks and pedestrian signals. Enhancement features would include: pedestrian refuges, curb extensions, landscape buffers and pedestrian-oriented lighting. A similar approach could be used to evaluate bicycle QOS. Use of this methodology should involve a rating system with weights assigned to key and enhancement features, which would then be translated into a QOS score for the facility.

To adapt this methodology for use in TIAs, the Lead Agency should identify sets of basic and enhanced features for bicycle and pedestrian facilities and consider adding a rating system, in consultation with VTA staff. The methodology should be documented in the TIA.

## Examples

Fort Collins, Colorado, *Pedestrian Plan*, 2011. Level of Service.

Burien, Washington, *Transportation Master Plan*, 2012. Table 4, Pedestrian LOS Checklist.

## Advantages

- Design and intervention-focused
- Straightforward measurement of variables
- Can readily be adapted to specific contexts

## Disadvantages

- Does not necessarily address presence of motor vehicles, which can have significant effect for bicycles and pedestrians
- Lead Agency must use discretion in determining relevant factors

## Data Requirements

Data requirements vary significantly based on what factors are considered. This method may require traffic volumes, posted speed limits, bicycle facility locations, transit system data, and measurements and inventory of streetscape amenities.

Most local governments do not collect detailed information about the built environment as it applies to pedestrians. Information on the presence and attributes of bicycle facilities are generally easier to obtain.



**APPENDIX H: Bicycle Parking Supply Recommendations  
(Table 10-3 of VTA Bicycle Technical Guidelines)**

**Table 10-3: Bicycle Parking Supply Recommendations**

Use	Recommended Long-Term Spaces	Recommended Short-Term Spaces
	Minimum: For communities with bicycle commute rates less than 2% Goal: For communities with higher mode shift goals	
Residential (such as apartments, condominiums & townhouses)	Minimum: 1 per unit Goal: 1 per bedroom	Minimum: 1 per 20 units
Schools <ul style="list-style-type: none"> <li>• Elementary schools</li> <li>• Middle schools</li> <li>• High schools</li> <li>• Colleges - Student residences</li> <li>• Academic buildings and other university facilities</li> </ul>	Minimum: 1 per 20 employees  Minimum: 1 per 20 employees  Minimum: 1 per 20 employees  Minimum: 1 per 3 beds + 1 per 20 employees Goal: 1 per 2 beds + 1 per 10 employees  Minimum: 1 per 10 employees + 1 per 10 student seats	Minimum: 1 per 10 students (in secure area) Goal: 1 per 8 students (in secure area)  Minimum: 1 per 8 students (in secure area) Goal: 1 per 5 students (in secure area)  Minimum: 1 per 6 students (in secure area) Goal: 1 per 4 students (in secure area)  Minimum: 4 per building entrance  Minimum: 1 per 8 student seats Goal: 1 per 3 student seats
Parking Garages not associated with specific land use type(s)	Minimum: 5% of auto parking Goal: Provide 25% of ground-floor auto parking space to secure bicycle parking	Minimum 5% of auto parking
Transit Centers (work with VTA)	Minimum: 1.5% of daily boardings Goal: 10% of daily boardings	Minimum: 0.5% of daily boardings Goal: 5% of daily boardings
Cultural/Recreational (includes theaters, museums, & religious institutions)	Minimum: 1 per 20 employees Goal: 1 per 10 employees	Minimum: 1 per 1,500 sq. ft. or per 60 seats (whichever is greater) Goal: 1 per 1,000 sq. ft. or per 40 seats (whichever is greater)
Government/Public Uses (includes libraries or city halls)	Minimum: 1 per 20 employees Goal: 1 per 10 employees	Minimum: 1 per 3,000 sq. ft. or per 20 visitors, if known (whichever is greater) Goal: 1 per 2,000 sq. ft. or per 15 visitors, if known (whichever is greater)
Parks/Recreational Fields	Minimum: 1 per 20 on-site employees Goal: 1 per 10 on-site employees	Minimum: 1 per 5,000 sq. ft. of outdoor recreation space Goal: 1 per 5 users/visitors
Retail Sales/Shopping Center/ Financial Institutions/Supermarkets	Minimum: 1 per 20 employees Goal: 1 per 10 employees	Minimum: 1 per 4,000 sq. ft. Goal: 1 per 2,000 sq. ft.
Office Buildings/Offices	Minimum: 1 per 4,000 sq. ft. Goal: 1 per 2,000 sq. ft. or 5% of employees (whichever is greater)	Minimum: 4 per building entrance Goal: 10 per building entrance
Hotels/Motels/Bed-&-Breakfasts	Minimum: 1 per 20 rooms + 1 per 20 employees Goal: 1 per 10 rooms + 1 per 10 employees	Minimum: 1 per 20 rooms Goal: 1 per 15 rooms
Hospitals	Minimums: 1 per 20 employees Goal: 1 per 10 employees	Minimum: 1 per 45 beds Goal: 1 per 30 beds
Restaurants	Minimum: 1 per 20 employees Goal: 1 per 10 employees	Minimum: 1 per 800 sq. ft. of dining space or per 40 seats (whichever is greater) Goal: 1 per 800 sq. ft. of dining space or per 20 seats (whichever is greater)
Industrial	Minimum: 1 per 20 employees OR per 10,000 sq. ft. Goal: 1 per 10 employees OR per 5,000 sq. ft.	Minimum: 1 per 5,000 sq. ft.
Day Care Facilities	Minimum: 1 per 20 employees Goal: 1 per 10 employees	Minimum: 1 per 45 children Goal: 1 per 25 children

**Table 10-3: Bicycle Parking Supply Recommendations**

Auto-Oriented Services	Minimum: 1 per 20 employees Goal: 1 per 10 employees	
Amphitheaters or Event Centers	Minimum: 1 per 20 employees	Minimum: 1 per 500 seats Goal: Utilize/ implement valet services
Other Uses	Same as most similar use listed	Same as most similar use listed
<p><b>Notes</b></p> <ul style="list-style-type: none"> <li>• For cities with less than 2% bicycle commuter rate. Cities with different bicycle commute rates should pro-rate these accordingly.</li> <li>• The minimum number of required long-term bicycle parking spaces is 4, except when the code would require 1 or less, in which case, 2 bicycle spaces must be provided.</li> <li>• Employees = maximum number of employees on duty at any one time.</li> </ul>		

Reference:

[https://www.vta.org/sites/default/files/2023-11/vta\\_bicycle\\_technical\\_guidelines\\_complete.pdf](https://www.vta.org/sites/default/files/2023-11/vta_bicycle_technical_guidelines_complete.pdf)

<https://www.vta.org/programs/bicycle-program>

**APPENDIX I: Board Memorandum: Update on Voluntary  
Contributions to Transportation Improvements  
(March 6, 2014)**



Date: February 26, 2014  
 Current Meeting: March 6, 2014  
 Board Meeting: March 6, 2014

## **BOARD MEMORANDUM**

**TO:** Santa Clara Valley Transportation Authority  
 Board of Directors

**THROUGH:** General Manager, Nuria I. Fernandez

**FROM:** Chief CMA Officer, John Ristow

**SUBJECT:** Update on Voluntary Contributions to Transportation Improvements

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### **FOR INFORMATION ONLY**

#### **BACKGROUND:**

Santa Clara County is projected to continue to add substantial population and jobs in the coming years, and travel demand for all freeway segments is projected to grow. Many development projects, especially those closest to freeway ramps, will likely have significant impacts on the already congested freeway segments. However, the ability to add freeway capacity is limited due to right of way, financial and environmental constraints, making traditional capacity increasing improvements no longer feasible. As a result, local agencies are increasingly turning to other approaches to mitigate impacts to freeways.

One approach taken by certain Member Agencies in Santa Clara County is to identify contributions to improvements of freeway, transit and other regional facilities as mitigation measures for significant freeway impacts resulting from proposed land development projects. Other Member Agencies are also recognizing the value and need of pursuing mitigation for freeway impacts even if the impacts are not fully mitigated, and some have had conversations with VTA on this topic.

#### **DISCUSSION:**

At the request of some Member Agencies, VTA developed a structure for a program of Voluntary Contributions to Transportation Improvements. This structure provides guidance for local agencies pursuing contributions and provides VTA staff a consistent approach to commenting on projects with significant transportation impacts. The structure is also designed for flexibility recognizing that different circumstances will present different opportunities to contribute. Local agencies can use this voluntary program structure in their “tool box” of measures to address freeway impacts as part of their project approval process. The proposed voluntary program includes the following process and responsibilities:

- a. VTA, as the Congestion Management Agency, comments on projects with significant impacts on the Congestion Management Program (CMP) facilities, including freeways, County Expressways, CMP intersections, bicycle and pedestrian facilities, and the transit system;
- b. The Member Agency (City or County) approving the project, in its role as the California Environmental Quality Act (CEQA) Lead Agency, could choose to request a voluntary contribution from the developer toward transportation improvements as a mitigation measure for impacts to freeways using one or more of the agreed upon formulas;
- c. The local agency would subsequently condition the project to pay the determined voluntary contribution toward regional transportation projects, and may cite this contribution in their CEQA documentation;
- d. VTA and the local jurisdiction would execute agreements that would provide for the transfer of funds to regional transportation projects.

Benefits for VTA and local jurisdictions:

- VTA can follow a consistent process to comment on development projects with significant impacts on CMP freeway facilities;
- VTA can collect funds for regional transportation improvements that are already planned or under development and would otherwise could take longer to implement;
- Member Agencies, in their role as CEQA Lead Agencies, may benefit from a streamlined and more predictable CEQA process, specifically related to freeway impacts;
- In some cases, the Lead Agency may not need to issue a Statement of Overriding Considerations for significant freeway impacts that are mitigated through this Program; In other cases, the Lead Agency may be able to present findings, including efforts to reduce impacts, when issuing the Statements of Overriding Considerations;
- The transportation projects that receive funding from voluntary contributions would improve overall mobility in Santa Clara County and thereby increase business competitiveness, economic vitality, and quality of life.

Voluntary Contribution Commitments to Date

As of January 2014, four projects in Santa Clara County, in the Cities of Cupertino and Sunnyvale, have included commitments to provide voluntary contributions to transportation improvements within CEQA documents (summarized in Table 1, below). These contributions will be executed by funding agreements between the City and VTA, triggered when the project applies for a building permit or other development agreements. Two additional projects in the City of San José include commitments to contribute to transportation improvements tied to the issuance of permits such as a Caltrans Encroachment Permit, building permit, or tract/parcel map.

In the City of Cupertino, the Draft Environmental Impact Report (DEIR) for Apple Campus 2 found significant impacts on I-280 and SR 85 and included a commitment of approximately \$1.3 million to freeway and transit projects on these freeways and parallel corridors as mitigation. In the City of Sunnyvale, three projects, the NetApp Master Plan, Moffett Place and Moffett Gateway, found significant impacts on US 101 and SR 237 and identified contributions to Express Lanes projects on these facilities as mitigation. In the case of the Moffett Place project, the developer has applied for a building permit and the City has initiated a funding agreement to transfer the voluntary contributions to VTA to help fund the Express Lanes projects.

<b>Lead Agency</b>	<b>Project</b>	<b>City Action / Date</b>	<b>Contribution Amount</b>	<b>Transportation Improvements Identified for Contributions</b>
City of Cupertino	Apple Campus 2	Certified DEIR - 10/15/2013	\$1,292,215	SR 85 Express Lanes Project, improvements on SB I-280 between El Monte Rd. and Magdalena Ave., BRT stations, or an alternative improvement or study towards on the impacted I-280 corridor
City of Sunnyvale	NetApp Master Plan	Certified MND - 2/29/2012	Not yet identified	US 101 Auxiliary Lanes, US 101 Express Lanes Project, SR 237 Express Lanes Project Phase II
City of Sunnyvale	Moffett Place	Certified DEIR, - 12/3/2-13, Issued building permit and initiated agreement with VTA - Dec. 2013	\$577,062	US 101 Express Lanes Project, SR 237 Express Lanes Project Phase II
City of Sunnyvale	Moffett Gateway	Certified MND - 8/26/2013	\$1,162,042	US 101 Express Lanes Project, SR 237 Express Lanes Project Phase II
City of San José	America Center (Legacy Partners)	Approved March 2000, Contribution tied to Caltrans Encroachment Permit	\$1,000,000	SR 237 corridor improvements
City of San José	Valley Fair Expansion	Approved April 2007, Contribution tied to Tract/Parcel Map or Building Permit	\$2,500,000	I-800/Stevens Creek Boulevard Interchange Project

Notes:

DEIR - Draft Environmental Impact Report

MND - Mitigated Negative Declaration

### Outreach Summary and Committee Comments

Staff previously brought an item on voluntary contributions to the March 2013 of the Technical Advisory Committee (TAC) and brought a follow-up item to the August 2013 meetings of the TAC, Citizens Advisory Committee (CAC) and Policy Advisory Committee (PAC), and the September 2013 meeting of the Board of Directors as an information item. Staff also presented the item to the Systems Operations and Management (SOM) Working Group and the Land Use /Transportation Integration (LUTI) Working Group, two of TAC's working groups.

There was general concurrence from all groups that a structure for voluntary contributions could offer a useful tool for jurisdictions to consider when reviewing development projects. VTA can provide a suite of common methodologies or approaches to estimating voluntary contributions that all jurisdictions can use, cautioning that flexibility should be retained to allow jurisdictions to respond as effectively as possible to individual projects. The TAC asked VTA to proceed with more detailed development of a concept Voluntary Contribution Program for consideration by the Board of Directors. By request, VTA also brought a follow-up item to the October 2013 meeting of the SOM Working Group providing examples of potential contribution formulas for city staff to consider when conditioning a project to provide contributions.

There was general concurrence from all groups that a structure for voluntary contributions could offer a useful tool for jurisdictions to consider when reviewing development projects. VTA can provide a suite of common methodologies or approaches to estimating voluntary contributions that all jurisdictions can use, cautioning that flexibility should be retained to allow jurisdictions to respond as effectively as possible to individual projects. The TAC asked VTA to proceed with more detailed development of a concept Voluntary Contribution Program for consideration by the Board of Directors. By request, VTA also brought a follow-up item to the October 2013 meeting of the SOM Working Group providing examples of potential contribution formulas for city staff to consider when conditioning a project to provide contributions.

### Next Steps

VTA and City of Sunnyvale staff are working on finalizing the funding agreement for the voluntary contributions to Express Lanes projects included in Moffett Place project approval. Once the funding agreement is finalized, it will be brought before the Board of Directors as an Action Item for approval.

Voluntary contributions from the other projects listed in Table 1, as well as future projects that commit to contributions, will be executed by funding agreements between the Lead Agency and VTA and will be brought to the Board of Directors for approval.

### **ADVISORY COMMITTEE DISCUSSION/RECOMMENDATION:**

This item was on the Regular Agenda at the February 2014 Citizens Advisory Committee (CAC), Technical Advisory Committee (TAC), and Policy Advisory Committee (PAC).

CAC Chairperson Hadaya asked how contribution amounts are determined and staff responded that they are determined by agreement between the City and the project applicant. He further

asked if the contributions are part of a City's Transportation Impact Fee program and staff responded that the contributions are separate from that program. Committee member Blaylock asked if this would supersede other approaches to transportation demand management and staff responded that the approaches could be used in tandem. Member Powers and Vice Chair Wadler asked why the program is voluntary and staff responded that it will continue to be a voluntary program unless staff is directed by the Board to adopt a mandatory program, such as a Countywide Traffic Impact Fee program. Member Rogers asked if County Expressways are included and staff responded that the County has separately been collecting contributions for Expressway improvements.

At TAC, staff gave a brief presentation. Member Salvano noted that the City of San Jose conditioned the Valley Faire Mall Expansion project to contribute \$2.5 million to the I-880/Stevens Creek interchange and should be added to the list of projects. He also suggested a wording change to the America Center project. Committee member Saleh asked if there are any guidelines on calculating the contribution amount and staff responded that staff works with Cities to suggest contribution formulas but it is ultimately the City's decision which formula to use. Committee member Salvano asked about the time limit on the use of contributions. Committee member Batra commented that the time limit applies to the programming of funds and committee member Borden commented that the time limit does not apply when the contribution is part of a development agreement.

At PAC, staff gave a brief presentation. Member Jensen asked how a nexus is established between the contributions and the impacts and staff responded that the project's transportation analysis would establish the nexus by analyzing the impacts and their locations. Vice Chairperson Carr asked if there are transportation projects in every part of the County that developments could contribute to, and staff responded that in some cases there may not be an appropriate project for contributions. Committee member Abe-Koga asked if the purpose of the contribution is to fund a transportation improvement that would mitigate the level of service impact back to "less than significant" and staff responded that operational and efficiency improvements are acceptable even if they do not mitigate all the way to "less than significant." Member Allan asked staff to explain how contribution amounts are determined. Vice Chairperson Carr asked if the contributions would fully fund the transportation improvements and staff responded that the contributions would go towards project development and VTA would need to leverage other funds. He also asked if VTA would oppose an EIR if a project has significant impacts on the freeway. Staff responded that there is no action as "oppose" in the CEQA process. VTA's role is to comment on the transportation impacts and will continue to do so consistently. Committee members Kniss, Miller, Davis and Jensen questioned the use of the term "voluntary" and suggested changing the name of the program. Some of the members stated that if a City requires a contribution, it is not voluntary. Staff agreed and explained that the word "voluntary" distinguishes it from a mandatory regional impact fee program, as in some other Counties.

**STANDING COMMITTEE DISCUSSION/RECOMMENDATION:**

This item was on the Regular Agenda at the February 2014 Congestion Management Program & Planning Committee (CMPP). Staff gave a brief presentation, followed by questions from the committee. Committee Chairperson Pirzynski brought the committee's attention to the

comments made at the PAC meeting. He asked staff to explain how the program is voluntary when it is implemented through enforceable documents such as development agreements and Environmental Impact Reports. Staff responded that the program is voluntary on the part of the Cities because it is not part of a mandatory regional impact fee. Member Whittum expressed support for VTA's comments on development projects. He stated that the voluntary contribution doesn't necessarily have to be a CEQA mitigation, it could just be a condition for approval. Chairperson Pirzynski stated that the Silicon Valley continues to be a magnet for jobs and this could be a valuable tool to mitigate traffic impacts on the freeway system. Vice Chairperson Herrera stated that certainty in the development process is the key and this program is a "good carrot". She asked staff to confirm that contribution from the City of San Jose's Valley Fair Mall Expansion project would be added to the list of projects. She asked how this program relates to the Cities' own Traffic Impact Fees (TIF). Staff responded that Cities' own TIF programs don't include freeway improvements so this one would be in addition to the individual TIF programs. Committee Members had a discussion on how the contribution is calculated. Staff explained that VTA could provide some examples on how to calculate the contribution based on a percentage impact on specific freeway segments, but ultimately it is the City Council's decision to determine the amount through negotiation with the developer. Chairperson Pirzynski requested that staff continue to update the committee as future projects come forward with contributions. Member Whittum asked which Cities don't have TIF programs and staff responded that staff would provide the information separately. He also suggested VTA may facilitate a nexus study for several small Cities that don't have sufficient resource to conduct one.

Prepared By: Robert Cunningham  
Memo No. 4473

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## APPENDIX J: CMP Multimodal Improvement Plan Action List

## **Table 4-1 | Deficiency Plan Action List**

### **A. BICYCLE AND PEDESTRIAN MEASURES**

- A1. Improved Roadway Bicycle Facilities and Bike Paths
- A2. Transit and Bicycle Integration
- A3. Bicycle Lockers and Racks at Park and Ride Lots
- A4. Bicycle Facilities and Showers at Developments
- A5. Improved Pedestrian Facilities
- A6. Pedestrian Signals
- A7. Lighting for Pedestrian Safety

### **B. TRANSIT**

- B1. Improvement of Bus, Rail, and Ferry Transit Service
- B2. Expansion of Rail Transit Service
- B3. Expansion of Ferry Services
- B4. Preferential Treatment for Buses and In-Street Light Rail Vehicle (LRVs)
- B5. Transit Information and Promotion
- B6. Transit Pricing Strategies to Encourage Ridership and Reduce Transit Vehicle Crowding
- B7. Transit Fare Subsidy Programs
- B8. Transit Centers
- B9. Improved and Expanded Timed Transfer Programs
- B10. Improved and Expanded Fare Coordination
- B11. Signal Preemption by Transit Vehicles
- B12. Bus Stop Bulbs
- B13. School Bus Transit Service

### **C. CARPOOLING, BUSPOOLING, VANPOOLING, TAXIPOOLING, JITNEYS, CASUAL CARPOOLING AND OTHER SHARED RIDES (Ridesharing)**

- C1. Preferential Treatment for Shared Ride Vehicles
- C2. Increased Use of Commuter/Employer Services

### **D. HIGH OCCUPANCY VEHICLE (HOV) FACILITIES**

- D1. Preferential Treatment for HOVs
- D2. Bus and Carpool/Buspool/Vanpool/Taxipool Priority Lanes on Local Arterials
- D3. Accelerated Implementation of the 2005 HOV Master Plan
- D4. HOV to HOV Facilities
- D5. Direct HOV Lane Entrance/Exit Ramps to Arterials and Space Generators

### **E. OTHER TCMs, RELATED MEASURES**

- E1. Stricter Travel Demand Management/Trip Reduction Ordinance
- E2. Expanded Public Education Programs
- E3. Child Care Facilities at or close to Employment Sites, Transit Centers and Park and Ride Lots
- E4. Retail Services at or close to Employment Sites, Transit Centers and Park and Ride Lots
- E5. Telecommuting Centers and Work-at-Home Programs
- E6. Parking Management

## **F. TRAFFIC FLOW IMPROVEMENTS**

- F1. Preferential Treatment of HOVs (See measures B4 and C1)
  - F2. Ramp Metering
  - F3. Auxiliary Lanes
  - F4. Signalization Improvements
  - F5. Computerized Traffic and Transit Control/Management on Arterials
  - F6. Turn Lanes at Intersections
  - F7. Turn Restrictions at intersections
  - F8. Reversible Lanes
  - F9. One-Way Streets
  - F10. Targeted Traffic Enforcement Programs
  - F11. Restrictions on Curb Side Deliveries and On-Street Parking
- 

Source: Table 4-1, Santa Clara Valley Transportation Authority, *Deficiency Plan Requirements*, 2010. For more information, refer to Appendix C in the above document.

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# APPENDIX K: TA Preparation Checklist

## TA Preparation Checklist

This checklist is intended to provide a concise summary of the key items a Lead Agency must consider when preparing a TA Report for CMP purposes. It is designed to serve as an aid to assist agency staff and consultants. However, it is not intended to replace the TA Guidelines themselves, and does not provide the same level of detail or cover every required topic. Lead Agencies should still consult the main TA Guidelines document to ensure that all requirements are being addressed.

### TA Scoping, Notification and Preparation

- 1) Determine if a TA is required for CMP purposes (project generates > 100 net new trips without applying trip reductions), Section 2.1;
- 2) Determine whether the project falls into any of the Special Project Types identified in the TA Guidelines (Large or Unique Projects; Projects on a Jurisdiction Border; Multi-Agency Projects; Projects Generating Large Numbers of Pedestrian, Bicycle or Transit Trips; or Large Projects, General Plans or Areawide Plans where a more extensive transit delay analysis may be appropriate); If the project falls into any of these Types, refer to Chapter 12 for more guidance;
- 3) Notify all appropriate jurisdictions that a TA is being prepared using the TA Notification Form, see Section 3.1 and Appendix B;
- 4) Provide guidance to TA preparer/consultant on TA study scope, considering both Lead Agency direction and other agency input from the TA Notification process. This guidance may include:
  - Determination of roadway facilities that should be included in analysis, Section 2.2;
  - Determination of other transportation issues to address, Section 2.3;
  - Identification of the appropriate study scenarios, See Chapter 4, Recommended TA Table of Contents, and Chapter 11, Future Year Scenarios (Cumulative Conditions);
- 5) Prepare and submit a draft TA Report to VTA and other agencies within the time frame outlined in Section 3.1, Item 2;
- 6) Address comments received on the draft TA Report, Section 3.1, Item 4;
- 7) Send adopted conditions for approved projects that relate to the CMP Transportation System and the promotion of alternative transportation modes to VTA, Section 3.1, Item 5 (Encouraged).

### Project Description, Study Area and Existing Conditions

- 8) Provide a description of the project and the transportation context surrounding it. Topics covered should include: Location of Proposed Project; Proposed Land Use and Project Size; and Site Plan, See Chapter 4, Recommended TA Table of Contents;
- 9) Provide information about the existing Project Area roadway system, Section 6.2;
- 10) Use a table similar to Table A-1: Freeway Analysis Requirement Determination to assess whether freeway segment analysis is required; Section 5.2.8 and Appendix A;
- 11) Provide a description and map of the existing Project Area transit system, Section 6.3;
- 12) Provide a description and map of the existing Project Area bicycle system, Section 6.4;
- 13) Provide a description and map of the existing Project Area pedestrian system, Section 6.4;
- 14) When applicable, provide information on Transportation Demand Management (TDM) or unique transportation or land use plans affecting the Project Area, Section 6.4;

### Trip Generations and Trip Reductions

- 15) Clearly identify the source of each trip generation rate used in the transportation analysis; Include in the TA Report a full description of the trip generation methodology used and a summary of all inputs and assumptions, Section 8.1;

- 16) Consider all available options to reduce project-generated automobile trips, including mixed-use development, a strong TDM program, project location, parking management, and development near frequent transit service. Clearly explain, document and justify all auto trip reductions claimed in the TA Report; this includes stating which trip reduction approach (Standard, Peer/Study-Based, and/or Target-Based) is being used, Section 8.2;
- 17) Provide a trip generation rate summary table, Section 8.1.2; This table should show:
  - Quantification (e.g. square feet, number of units, etc.) of trip generation for each land use type;
  - Trip generation rates used;
  - Resulting trips generated;
  - If applicable, any trip reductions;
- 18) If the project is using parking management measures as part of its overall TDM/trip reduction strategy, document this in the TA Report and note it in the Auto Trip Reduction Statement, Section 8.2.1.5 and Appendix C;
- 19) For all projects, summarize trip generation and any trip reductions, if applicable, in an Auto Trip Reduction Statement in the Executive Summary of the TA Report, using the form provided in Appendix C;

### **Trip Distribution and Assignment**

- 20) Provide trip distribution percentages on an area map with transportation facilities and the project site, Section 8.3;
- 21) Provide clear explanation with justification and documentation of pass-by and diverted trip reductions, Sections 8.3.1, 8.3.2 and 8.3.3;
- 22) Provide trip assignments on a figure showing project trips at study intersections, Section 8.3;

### **Project Conditions**

- 23) Provide a Traffic Analysis of the “without project” scenario(s) (Existing, Background or Cumulative, as applicable); This analysis shall include, but not be limited to evaluation of Auto Level of Service and queuing impacts, Section 9.1;
- 24) Provide a Traffic Analysis of Project Conditions compared to the “without project” scenarios(s) (Existing, Background or Cumulative, as applicable); This analysis shall include, but not be limited to evaluation of Auto Level of Service and queuing impacts, Section 9.1;
- 25) Provide an analysis of project effects on the transit system; The evaluation shall consider transit vehicle delay, transit access and facilities, Section 9.2;
- 26) Provide an analysis of bicycle and pedestrian modes under project conditions; This analysis shall address project effects on existing bicyclists and pedestrians as well as the effects and benefits of site development and associated roadway improvements on bicycle/pedestrian infrastructure, circulation, Quality of Service (QOS), and conformance to existing plans and policies, Section 9.3;
- 27) Provide an analysis of site circulation and access, Section 9.4;

### **Mitigation Measures and Multimodal Improvements**

- 28) Discuss mitigation measures to address project impacts per CMP standards, and improvements to address other project-related effects on the transportation system; The discussion of mitigation measures and improvements shall take into account all the issues noted in Chapter 10 of the TA Guidelines, including consideration of all categories of mitigation measures and improvements (physical or capacity-enhancing improvements, operational and/or efficiency improvements, and projects and programs used to reduce project auto trip generation), identification of the feasibility of proposed measures, who is responsible for implementing each measure, when the measure will be implemented, and the cost of implementation, as appropriate;
- 29) If a project causes a transportation impact that cannot be mitigated to the CMP Auto Level of Service (LOS) standard, a Multimodal Improvement Plan must be provided along with the TA, or

the project applicant must agree in advance to participate in the implementation of a Multimodal Improvement Plan after project approval, Section 10.1, Item 5;

- 30) If a project impacts a CMP System facility that has a Multimodal Improvement Plan, it is subject to the conditions of the Plan; The project's TA Report shall identify what role the project may play in implementing the Multimodal Improvement Plan Actions, Section 10.1, Item 6;
- 31) Mitigation measures for Auto Level of Service (LOS) shall not unreasonably degrade bicycle, pedestrian or transit access, and circulation. If a project proposes mitigation for Auto LOS involving changes to roadway segment or intersection geometry, or changes to signal operations, the TA shall analyze and disclose whether the mitigation would affect pedestrian or bicycle conditions or increase transit vehicle delay, Section 10.1, Item 7;

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## APPENDIX L: Glossary of Terms

The following are definitions for terms used in the *TA Guidelines*:

**Approved Project:** A specific project for which an entitlement to build has been granted.

**Auto Level of Service:** Auto Level of Service (LOS) describes the operations of roadway segments or intersections in terms of vehicle speed, volume and capacity, freedom of movement, traffic delay, comfort, convenience and safety. Auto LOS measurements are given by letter designations, from A (least congested) to F (most congested). Procedures to analyze Auto LOS are defined in the VTA Traffic LOS Analysis Guidelines. Auto LOS evaluates operations for all common motor vehicle types, including automobiles, light and heavy trucks, and motorcycles. In addition, although congestion also affects transit vehicles operating in general purpose lanes, transit operations are affected by additional factors and are typically evaluated separately from Auto LOS.

**Background Conditions:** The analysis scenario including Existing Conditions and approved projects.

**Carpooling:** Commuting in a privately-owned vehicle with at least two passengers. Carpooling can be arranged informally or with employer assistance.

**CDT Manual:** VTA's Community Design & Transportation Program to integrate transportation and land use planning. The Program includes the Cores, Corridors and Station Areas framework, which shows VTA and local jurisdiction priorities for supporting concentrated development in the County.

**CEQA:** California Environmental Quality Act. This act requires that Lead Agencies disclose and evaluate the significant environmental impacts of proposed projects and adopt all feasible mitigation measures to reduce or eliminate those impacts. Although there is some overlap in the analysis of transportation impacts under CEQA and the CMP, it is not intended that TIAs following the VTA CMP *TA Guidelines* may provide all information required for CEQA purposes.

**Changes to Roadway Segment or Intersection Geometry:** Changes to the geometry of existing roadway segments or intersections, including, but not limited to, adding travel lanes on roadway segments, adding turn lanes at intersections, and changing pedestrian and/or bicycle crossing distance.

**Changes to Signal Operations:** Substantive changes to traffic signal operations, including, but not limited to, changes to phasing or cycle length.

**CMA:** Congestion Management Agency. The CMA is a countywide organization responsible for preparing and implementing the county's Congestion Management Program. In Santa Clara County, VTA is the designated CMA.

**CMP:** Congestion Management Program. A comprehensive program designed to reduce traffic congestion, to enhance the effectiveness of land use decisions, and to improve air quality. Unless otherwise specified, CMP means Santa Clara County's Congestion Management Program.

**CMP Facilities:** Selected intersections and roadways that are monitored as part of CMP Monitoring Process.

**Cumulative Conditions:** The analysis scenario including Background Conditions (Existing Conditions plus Approved Projects) and expected growth, plus the project.

**Deficiency Plan:** See Multimodal Improvement Plan.

**Diverted Linked Trip:** Trips generated by the proposed project that would be attracted from roadways in the vicinity of a proposed project site. This type of trip requires a diversion from one roadway to another to gain access to the site.

**Effect/Impact:** Used to refer to project-related effects on elements of the transportation system. The TA should particularly focus on project-related effects that tend to degrade pedestrian, bicycle and transit conditions.

**Existing Conditions:** Roadway, transit, bicycle and pedestrian conditions at the time that the Lead Agency issues the TA Notification Form.

**Express Lanes:** Express Lanes are HOV (high-occupancy vehicle) lanes which solo drivers can access by paying a toll. Tolls vary by congestion levels to keep the lanes operating at a minimum of 45 mph. In other areas outside Santa Clara County, Express Lanes may be called high-occupancy toll (HOT) or managed lanes.

**Facility:** A part of the transportation network, such as a roadway, intersection, bicycle lane, sidewalk or transit station. The word "facility" is used generally in this document to refer to CMP System roadway facilities, which include CMP intersections, freeways, and rural highways. CMP facilities also include the CMP Transit Network and the CMP Bicycle Network, but these are generally called out specifically in the text.

**Financial Incentives:** Transportation Demand Management (TDM) programs sometimes offer financial incentives to participants who choose to commute by carpooling, vanpooling, transit, bicycling or walking. Incentives can include: transportation allowances; parking cash-out; pre-tax commuter benefits; and subsidies such as free transit passes or transit fare incentives.

**General Planning Efforts:** General planning efforts are planning studies that are designed to provide basic guidelines for land uses, the transportation system, and design characteristics in a relatively large area. The key element of this definition is that these types of planning efforts do not confer, as a right, the ability to develop a specific project.

**HCM:** Highway Capacity Manual. A manual published by the Transportation Research Board (TRB) that contains concepts, guidelines, and equations to calculate the level of service on highways and intersections. In 2010 and subsequent versions of the manual was updated to include new level of service/ quality of service measures for transit, pedestrians, and bicycles.

**HOV:** High Occupancy Vehicle Lane. A lane on a street or highway reserved for the use of high occupancy vehicles either all day or during specified periods (for example, during rush hours). Buses, carpools, and/or vanpools are allowed to use HOV lanes.

**ITE:** The Institute of Transportation Engineers is a professional organization that publishes technical guidelines for transportation engineering. ITE Trip Generation is a standard reference for estimating trips based on the type and size of proposed development.

**Impact:** Used to refer to project effects on the CMP system as determined by the standards and impact thresholds established by VTA. Distinct from “effect,” which refers to project-related effects on elements of the transportation system for which no CMP standard or impact threshold has been established.

**Improvement:** A change that addresses the effects, particularly negative effects, of a development project on elements of the transportation system for which no CMP standard or impact threshold has been established.

**Lead Agency:** The agency responsible for preparing the Transportation Analysis report.

**Level of Service (LOS):** This is a measure used by transportation professionals to grade performance of transportation facilities. LOS is graded on a scale of A (the best performance) to F (the worst performance).

**Long-Term Development Project:** A specific development project expected to be completed beyond five years from the date of approval. Most long-term development projects may also be phased-development projects.

**Member Agency:** A local jurisdiction that is a signatory of the CMA's Joint Powers Agreement. This includes all cities within the county, Santa Clara County, and the Santa Clara Valley Transportation Authority.

**Mitigation/Improvement:** A change that addresses the impacts of a development project on elements of the transportation system for which a CMP standard or impact threshold has been established.

**Mixed-Use Development:** A project that combines one or more land uses. Depending on the land uses, the vehicle trips generated by the development may be fewer than if the uses were developed separately.

**Mode Split:** The share of all trips to and from a project site taken by each of the four major transportation modes (automobile, transit, bicycle and pedestrian).

**Multimodal Improvement Plan:** VTA terminology for "Deficiency Plan" as defined by CMA statute. Multimodal Improvement Plans are plans to identify offsetting measures to improve transportation conditions on CMP facilities in lieu of making physical traffic capacity improvements such as widening an intersection or roadway.

**Near-Term Development Project:** A near-term development project may be built and occupied within five years of project approval. Most near-term development projects may also be specific development projects.

**Net New Peak Hour Trip:** Proposed project trips which are not associated with an existing development on the site and not included in an approved project.

**Parking Management Program:** Parking policies that are designed to make the most efficient use of parking supply, and encourage alternatives to driving alone, such as parking charges, parking cash out, shared parking, or preferential parking for carpool or vanpool vehicles.

**Pass-By Trips:** Trips generated by the proposed project that would be attracted from traffic passing the proposed project site on an adjacent street that contains direct access to the generator.

