AMADOR COUNTY
TRAFFIC IMPACT STUDY GUIDELINES

July 5, 2006

When a Traffic Impact Study Is Required

Proposed developments for which at least one of the following criteria is met shall prepare a Traffic Impact Study (TIS) that complies with these guidelines:

1. The project would generate 350 or more daily trips[1]. If the project has the potential to affect a State highway facility, a TIS may be required at a lesser trip generation level as set forth by the Caltrans Guide for the Preparation of Traffic Impact Studies, which can be found at: http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf.

2. The project is inconsistent with the General Plan land use and/or zoning designations and could potentially generate greater levels of traffic than the General Plan land use; or

3. If the project is a Use Permit, the need for a TIS will be determined on a case by case basis based on an estimate of projected traffic generation.

If none of these cases apply, a TIS may still be necessary if the Public Works Director deems that special circumstances require analysis (e.g., existing traffic congestion, safety concerns, public controversy, etc.) In certain cases, the Public Works Director may require a less extensive analysis, which might include obtaining traffic counts, preparing signal warrants, a focused TIS, etc.

Geographic limits of the Traffic Impact Study shall extend at least one mile from the project's access point to the County roadway system or to the State highway system, whichever results in the greater area, or farther if needed to address safety concerns. The Public Works Director may require a more extensive study area if special circumstances exist (e.g., existing traffic congestion, safety concerns, public controversy, etc.).

Required Contents of a Traffic Impact Study

Exhibit 1 details the minimum contents of Traffic Impact Study report. The sections presented below provide important details on the minimum requirements for specific elements of the TIS.

Project Definition

The TIS must contain the following information for each proposed development project: size, location and planned land use, special features that could affect trip generation, and a site plan showing the circulation, access and parking.

Selection of Study Roadways and Intersections

As a rule, the analysis must include any intersection or roadway segment, regardless of jurisdictional boundaries, to which at least 10 project trips would be added during the morning or evening peak hour (or 100 daily trips). Projects just meeting the minimum threshold for traffic impact analysis will normally require analysis of only the intersection(s) or roadway segment(s) adjacent to the site. Larger developments will require the analysis of more intersections. In addition to off-site intersections, it is important that the TIS address the intersections/driveways proposed to provide access to the site. The Public Works Director must approve the study intersections and roadways, with input from other potentially affected agencies such as the ACTC, adjacent jurisdictions, and Caltrans.

[1] This assumes that a 50-lot subdivision is the "threshold" condition, and that 7 trips/day per DU is appropriate.

Data Collection

New peak hour intersection turning movement traffic counts and daily machine counts on road segments (if required by the study scope) must be collected at any study location for which the previous counts are more than 18 months old. Daily road segment counts can be estimated from the peak hour counts intersection counts by estimating the proportion of peak traffic to daily based on historical data. Daily counts along State highway segments may be obtained from Caltrans. Depending on the issues to be addressed in the study, the analyst may need to collect historic accident data, which can be obtained from the local agencies, the California Highway Patrol, or Caltrans (for State highways).

Trip Generation

Trip generation data has been developed for a wide variety of land uses. These are summarized in the latest edition of *Trip Generation*, published by the Institute of Transportation Engineers (ITE), as well as reports by the San Diego Association of Governments. The TIS must report the trip generation rates used and the sources for those rates. In cases where published trip generation rates are based on very limited data or do not adequately represent the proposed land use(s), trip generation rates should be verified through local field observation of similar uses, if possible.

Published trip generation rates represent an average for a number of observed projects. A particular project, however, may include specific characteristics that call for adjustments to the rate to reflect its trip generation characteristics adequately. Trip generation adjustments may be justified to account for pass-by trip reductions for retail uses or trip rate reductions for multi-use commercial centers, where the mix of uses could reasonably be expected to attract multi-purpose trips. Great care must be taken when adjusting trip generation rates. All trips, including pass-by trips, must be included in the analysis of the Project's driveways. The analyst must document the basis for proposed trip rate adjustments and receive approval from the Public Works Director.

Trip Distribution and Assignment

The trip distribution and assignment assumptions for the project may be developed based on the traffic counts in the vicinity of the proposed development and/or existing and projected distribution patterns of population and employment opportunities. For Cumulative conditions, the assumptions may be based on the 2025 traffic projections per the Amador County Traffic Model. In cases where a development would generate a substantial number of new trips, the analyst may choose to conduct a select zone assignment in the Traffic Model to determine the future trip distribution assumptions.

Thresholds of Significance for Traffic Impact Analysis

The analysis methodologies used for analyzing traffic capacity and levels of service (LOS) shall be those of the latest edition of the *Highway Capacity Manual*, Transportation Research Board, National Research Council (HCM), unless otherwise noted herein. Any capacity calculation software that accurately uses the methodologies of the HCM may be used to perform the traffic analysis; however, the results produced by the HCM methodology worksheets shall control in the case of discrepancies.

In this section's description of thresholds of significance and in other sections of these guidelines, the following definitions apply:

Acceptable levels of service	LOS A, B, and C.
Unacceptable levels of service	LOS D, E and F.
V/C Ratio	Volume-to-Capacity Ratio = projected vehicle volume divided by the calculated maximum volume (LOS E) that the roadway or intersection can accommodate in a given time period (either per hour or per day)

Without-project condition	The existing traffic condition or the cumulative (2025) traffic condition without the project's added traffic.
With-project condition	Includes the existing traffic, the traffic from approved and/or pending developments, and the proposed project's traffic. For the cumulative (2025) condition, it includes the General Plan projected future traffic volumes, the traffic from other pending general plan amendments, and the project's added traffic.
Pending developments	Other developments that are proposed, or reasonably can be anticipated, and that have potential to add traffic to the key traffic facilities to be analyzed in the proposed project's TIS. Though not yet approved, such developments need to be included in the analysis so that the proposed project's traffic impacts can be adequately assessed in light of the combined effects of other known or reasonably anticipated development proposals. The Public Works Director is the final determiner of what developments shall be considered "pending" for a given TIS.

A project is considered to have a significant effect if its traffic, when added to the traffic of the without-project condition, would cause any of the changes in traffic conditions described below. The appropriate methodology is indicated for each facility type.

1. On two-lane or four-lane roadway segments, without signalized or all-way stop intersections (Methodology: HCM Chs 20 and 21, respectively):
    a. Cause a roadway that is operating at an acceptable LOS to deteriorate to an unacceptable LOS; OR
    b. Cause the V/C ratio (on a peak hour or daily basis) to increase by more than 0.05 on a roadway that is operating at an unacceptable LOS.
2. At signalized intersections (Methodology: HCM Ch 19)
    a. Cause an intersection that is operating at an acceptable LOS to deteriorate to an unacceptable LOS; OR
    b. Cause the average delay to increase by more than 5.0 seconds at a signalized intersection that is operating at an unacceptable LOS.
3. At unsignalized intersections, including all-way stop and minor approach stop (Methodology: HCM Ch 17):
    a. Cause a movement or approach that is operating at an acceptable LOS to deteriorate to an unacceptable LOS, and cause the intersection to meet a traffic signal warrant; OR
    b. At an intersection that already meets a signal warrant, cause an increase in delay by more than 5.0 seconds for a movement or approach that is already operating at an unacceptable LOS.
4. On roadways with traveled way width of less than 18 feet[2] (essentially one-lane roadways) (Methodology: simple daily traffic volume calculation)
    a. Cause a roadway that already carries 100 vehicles per day (vpd) or less to carry more than 100 vpd; OR

[2] Assumes minimum of 8 feet per travel direction for vehicle width and edge-of-traveled-way clearance, plus 2 feet clearance between vehicles traveling in opposite directions.

b. Cause a roadway that already carries more than 100 vpd to carry any additional traffic.

Analysis of Traffic Impacts

Peak hour LOS must be calculated for each study location. In most cases, the weekday morning (AM) and weekday evening (PM) peak hours must be included in the analysis. For certain types of development (e.g., recreation facilities, churches, some retail uses, gaming developments) some peak hours may be added (e.g., midday or weekends) or eliminated (e.g., AM peak hour for low traffic generators) from the analysis, if approved by the Public Works Director. Unless determined otherwise by the Public Works Director, compliance with the LOS standards will be based solely on weekday AM and PM peak hour traffic analysis results. For unsignalized intersections, appropriate MUTCD (*Manual on Uniform Traffic Control Devices*, FHWA) signal warrants must also be checked for each scenario.

LOS must also be calculated for key roadway segments that are affected by project-generated trips This includes a determination of the volumes, LOS, volume-to-capacity (V/C) ratios, and other appropriate measures of effectiveness (MOE).

Analysis Scenarios

The complexity or magnitude of the traffic impacts of a proposed project and the existence of other approved or pending developments in proximity to the project will dictate the scenarios that need to be analyzed. To determine the potential traffic impacts of a proposed development the following scenarios shall be analyzed in the TIS when appropriate:

Existing	Current year traffic volumes (this is the existing *without-project condition*)
Existing + Approved	Approved development traffic added to the Existing traffic volumes
Existing + Approved + Project	Project traffic added to the Existing + Approved traffic volumes (this is an existing *with-project condition*)
Existing + Approved + Pending	Pending development traffic added to the Existing + Approved traffic volumes
Existing + Approved/Pending + Project	Project traffic added to the Existing + Approved + Pending traffic volumes (this is an existing *with-project condition*)

If the project is not consistent with the land uses anticipated for the site by the County General Plan or the land uses included in the traffic projections on which the Circulation Element of the General Plan are based, the following scenarios shall be analyzed:

Cumulative (2025)	Development that is consistent with the County General Plan and expected to occur by 2025 and other pending general plan amendments (this is the future *without-project condition*)
Cumulative + Project	Project traffic added to the Cumulative (2025) traffic volumes (this is the future *with-project condition*)

Additional scenarios may be required if the project is large and/or is to be developed in phases.

Evaluation of Transit, Bicycle, Pedestrian Facilities

In addition to the analysis of the roadway system, the Public Works Director may require that the TIS include an assessment of the development's impact on transit (including park-and-ride), bicycle, and pedestrian facilities adjacent to the site. This assessment is generally qualitative in nature, and impacts are identified based on the development's consistency with applicable policies of the County's General Plan and the *Amador County Regional Transportation Plan/Circulation Element.* The analysis must identify potential locations for transit stops and turnouts, where appropriate.

Mitigation Measures

The results of the traffic analysis must be compared to the significance criteria presented in the *Thresholds of Significance* section, above. Mitigation measures shall be identified in all cases where the results of the TIS indicate that the development would either create a significant impact by itself or would contribute to a significant impact under the various scenarios analyzed.

Levels of service at the study intersections and roadway segments must be calculated with and without the proposed mitigation measures. Mitigation measures must be feasible given the physical, environmental, and political constraints. In cases where the development would contribute to the need for a mitigation measure that would not be necessitated by the project's traffic alone, the project's percentage contribution to that impact must be identified in the TIS. The project's percentage shall be calculated as a percentage of the traffic growth between the Existing + Approved case and the Cumulative case. This percentage shall apply to any unfunded portion of the mitigation measure costs.

The TIS must include cost estimates for mitigation measures and a financing plan that identifies available funding sources, if any, for the recommended mitigation measures (e.g., State transportation funds, local and/or regional traffic mitigation fees, etc.), including the programming status (funded, programmed, or unfunded) of such funding sources.

Report Documentation

The TIS must fully document the approach, methodology, and assumptions of the analysis. It must clearly explain the reasons for any adjustments to the trip generation rates and assumptions used for trip distribution and assignment. Figures (drawings and maps) are to be used to help illustrate these assumptions. The report must summarize the results of the LOS calculations in table form, and include figures showing the traffic volumes for the project alone and for each scenario. Signal warrant worksheets and LOS calculation sheets must be included as appendices to the report.

What is the TIS Review Process?

A draft of the TIS must be submitted to the Public Works Director for review and comment. Once its comments are addressed, the Public Works Director will then distribute the draft report to other affected departments and agencies including adjacent jurisdictions, the ACTC, and Caltrans. The other agencies will have the opportunity to submit comments on the draft report, which will be addressed in the final report.

EXHIBIT 1

MINIMUM CONTENTS OF A TIS REPORT

I. EXECUTIVE SUMMARY

II. TABLE OF CONTENTS, WITH LIST OF FIGURES AND LIST OF TABLES

III. INTRODUCTION

A. Description of the proposed project, with details on size, land use types, and land use amounts (dwelling units, square footage)
B. Location of project
C. Site plan including all access to surrounding roadways (site plan, map)
D. Circulation network including all access to surrounding roadways (vicinity map)
E. Current and proposed land uses and zoning
F. Phasing plan (if applicable) including proposed dates of project (phase) completion
G. Project sponsor and contact person(s)
H. References to other traffic impact studies

IV. TRAFFIC ANALYSIS

A. Clearly state and describe methodologies and assumptions used in analyses, and how and when traffic data were collected
B. Existing and projected traffic volumes (including turning movements), facility geometry (including storage lengths), traffic controls (including signal phasing and multi-signal progression where appropriate), and any other traffic data collected. Include figure(s).
C. Project trip generation including references. Include table(s)
D. Project generated trip distribution assumptions, methodology, and trip assignment. Include figure(s).
E. LOS and signal warrant analyses for AM & PM peak hours (and weekend peak hours, if appropriate) for all required analysis scenarios. Include table(s)

V. CONCLUSIONS AND RECOMMENDATIONS

A Discuss and include the significance criteria that apply to the project
B. Evaluation of impacts to traffic facilities, including LOS and appropriate MOE levels (delay, V/C ratio, reserve capacity, etc.) for impacted facilities with and without mitigation measures. Include table(s)
C. Evaluation of impacts to transit, bicycle, and pedestrian facilities
D. Mitigation phasing plan including dates of proposed mitigation measures
E. Define responsibilities for implementing mitigation measures, including calculation of the project's fair share of mitigation measure costs. Include table(s)
F. Cost estimates for mitigation measures and financing plan

VI. APPENDICES

Worksheets used in the analyses (e.g., signal warrants, LOS, traffic count information, etc.)