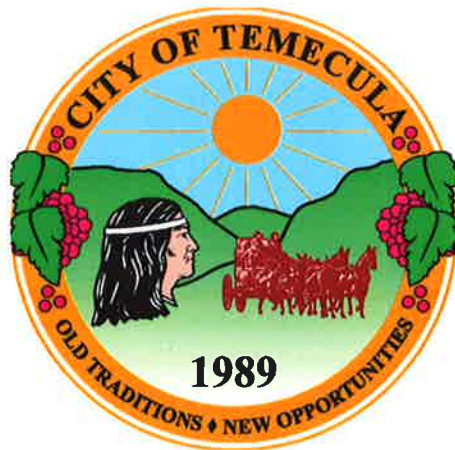
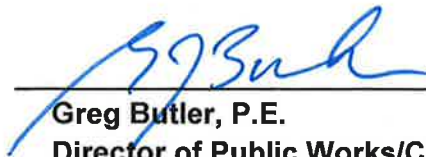


**CITY OF TEMECULA
PUBLIC WORKS DEPARTMENT
TRAFFIC IMPACT ANALYSIS
GUIDELINES**



May 2011



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Director of Public Works/City Engineer

TRAFFIC IMPACT ANALYSIS GUIDELINES

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1.0 INTRODUCTION

The purpose of the Traffic Impact Analysis (TIA) Guidelines is to provide a standard format and methodology for assessing potential traffic and circulation impacts of proposed development projects, General Plan Amendments, Specific Plans and changes in Land Use Zoning in the City of Temecula.

The Traffic Impact Analysis Report document shall be prepared, signed, and stamped by a Traffic Engineer or Civil Engineer (Engineer) registered in the State of California, qualified to practice traffic engineering.

2.0 PURPOSE

A Traffic Impact Analysis will be required for all General Plan Amendments, Specific Plans, and Change of Zone. At a minimum the TIA shall address the following:

- A. Will the ultimate circulation system planned for the area be able to provide the required General Plan Circulation Element Level of Service, even with the additional traffic impact of the proposed land use changes?
- B. If not, what mitigation measures will be necessary to maintain the required Level of Service?

A Focused Traffic Analysis may be required for Plot Plans, Public Use Permits, Conditional Use Permits, and other development projects. At a minimum the Focused Traffic Study shall address the following:

- A. Will the Level of Service required by the General Plan Circulation Element be maintained at all affected intersections with the addition of traffic from the proposed project?
- B. If not, what mitigation measures will be necessary to provide the required Level of Service?
- C. If mitigation measures are necessary, are they feasible to implement?

3.0 TRAFFIC IMPACT ANALYSIS EXEMPTIONS

The types of development projects that are generally exempt are:

- A. Residential Parcel Maps.
- B. Multi-Family Residential Projects with less than 50 units.
- C. Plot Plans, Use Permits, and Other Development Projects of One (1) Acre or less.
- D. Preschools, Elementary Schools, Middle Schools, and High Schools.
- E. Community Centers, Community Parks, Lodges, Neighborhood Parks, and Religious Facilities.
- F. Congregate Care Facilities that contain significant special services, such as medical facilities, dining facilities, recreation facilities and support retail facilities.
- G. Any use which can demonstrate, based on the most recent edition of Trip Generation, published by the Institute of Transportation Engineers (ITE), a trip generation of less than 100 vehicle trips during each peak hour.

The City, at its discretion, may require the preparation of a TIA or Focused Traffic Analysis for any development, if there are concerns about traffic safety, operational issues, or if the development is located near a major arterial intersection or area heavily impacted by traffic.

4.0 COORDINATION WITH CITY

In order to streamline the TIA preparation and review process, the Engineer shall solicit input and approval from the City prior to preparing a draft TIA document. The following key points shall be addressed in a Scoping Agreement (Exhibit A) prior to initiating the TIA:

- Determination of study area, intersections, and roadway links to be analyzed.
- Project trip generation and directional distribution.
- Identification of other proposed/approved projects for cumulative traffic, ambient (background) traffic growth assumptions, or integration with the City's model.
- For projects located within an adjacent jurisdiction's Sphere of Influence, the Engineer shall solicit comments on the above from the affected jurisdiction's staff. The Engineer shall submit all comments to the City of Temecula for review and consideration.
- For projects within one mile of a state highway, or any project that may create a significant impact on the state highway (see the trip generation thresholds in Caltrans Guide for the Preparation of Traffic Impact Studies), the Engineer shall coordinate with Caltrans.

5.0 TRAFFIC IMPACT ANALYSIS FORMAT

The TIA format and required elements are specified in Exhibit B, Traffic Impact Analysis Report Format. Any deviation from the format will require the City's approval prior to submitting the TIA document. At a minimum, the TIA document shall include the following major components:

- Study Area
- Analysis Scenarios
- Level of Service Analysis
- Traffic Signal Warrant Analysis
- On-Site Circulation Analysis
- Identification of Safety and Operational Improvements
- Proposed Mitigation Measures
- Project Fair Share
- General Plan Conformance Review

Projects that are "truck intensive" (warehouses, distribution centers, material distribution centers, surface mining permits) may be required to submit a TIA or Focused Traffic Study, which addresses the truck access routes, adequacy of the streets to be used (geometry and structural section), safety issues relating to the truck traffic, traffic signal operation and queueing, and potential impacts of truck traffic on existing residences or businesses. Application of a Passenger Car Equivalent (PCE) factor of 2.0 to the project trips may be required. Traffic count data with vehicle classifications may also be required.

Special event facilities that do not exhibit typical trip generation characteristics may require a unique analysis, including weekend and off-peak scenarios. Examples of such uses would be sports stadiums, racetracks, water parks, or uses that exhibit substantial traffic peaking on a periodic basis. The TIA for this type of facility shall include a traffic management plan to mitigate traffic impacts associated with the event. Adequate area wide access shall be provided to the site and all impacts shall be alleviated to the maximum extent possible.

5.1 Study Area

The study area shall include any intersection of "Collector" or higher classification street, with a "Collector" or higher classification street, that the proposed project will add 50 or more peak hour project trips. All intersections and roadway segments within the study area shall be analyzed to identify Level of Service and roadway capacity impacts.

At a minimum the TIA shall evaluate the following:

- A. Site access driveways (existing and proposed)
- B. Roadways adjacent to the project site.
- C. Intersections in the immediate vicinity of the project site.
- D. Any intersection of "Collector" or higher classification street, with a "Collector" or higher classification street, to which the proposed project will add 50 or more peak hour trips.
- E. When required, roadway links between study intersections and/or project driveways.

When a Focused Traffic Study is required, the study shall evaluate items A, B, and C. At the discretion of the City, an analysis of additional items may be required.

5.2 Traffic Impact Analysis Scenarios

The TIA shall include an evaluation of the following scenarios:

- A. **Existing Traffic Conditions.** Existing traffic volumes will be analyzed to determine current conditions. Traffic count data shall be new or recent. In some cases, data up to one year old may be accepted, upon approval by the City. The TIA shall identify any existing Level of Service (LOS) deficiencies.
- B. **Existing Traffic Conditions (With Project).** Project generated traffic shall be added to the existing traffic count data. The TIA shall identify and analyze impacts to the existing circulation system. This analysis will be used to determine direct project impacts to the existing circulation system.
- C. **Opening Year Traffic Conditions (Without Project).** Traffic conditions will be projected to the estimated project opening by increasing the existing traffic volumes by an appropriate growth rate to be provided by City staff. The TIA shall identify any LOS deficiencies.
- D. **Opening Year Traffic Conditions (With Project).** Project generated traffic shall be added to the Opening Year data. The TIA shall identify and analyze impacts to the circulation system. This will be the basis for determining project specific impacts, mitigation, and conditions of approval.
- E. **Cumulative Traffic Conditions.** Traffic generated by other approved projects within a one mile radius of the project site that will affect the study area shall be identified and added to the Opening Year traffic identified in Scenario D. This includes projects that are proposed and are in the review process, but not yet approved.
- F. **Project Phasing.** Traffic conditions at each project phase completion shall be analyzed using the same approach as Opening Year (with and without project), if applicable. Traffic associated with each project phase shall be included in the analyses of each successive phase of the proposed project.
- G. **General Plan Traffic Conditions.** Traffic projections for General Plan Buildout conditions shall utilize the City's traffic model or other approved model. The Engineer shall use the model projections as the basis for determining turning movement volumes for the required intersection analysis. A manual assignment of project traffic added to the General Plan Buildout traffic volumes may be used to determine total future traffic. This analysis will determine if the Circulation Element of the General Plan is adequate to accommodate projected traffic at the target LOS, or if additional mitigation is necessary.

When a Focused Traffic Study is required, the study shall analyze scenarios A, B, D, and E. At the discretion of the City, an analysis of additional scenarios may be required.

5.3 Level of Service Analysis Methodology

The City of Temecula's General Plan Circulation Element has established minimum LOS standards for the City's Arterial Highway network. The TIA shall determine if the required LOS can be achieved after the construction of the proposed project. The TIA shall include all LOS calculations for affected study area intersections and roadway links. All LOS calculations shall be performed utilizing the Synchro software program. The results of the "with-project" conditions shall conform to the City's LOS thresholds shown below:

- LOS "D" or better at all intersections
- LOS "E" or better for all arterial highway segments (links)
- LOS "F" or better will be permitted on Old Town Front Street from Second Street to Moreno Road North

All study area intersections or study area roadway links that do not achieve the required LOS, shall be reanalyzed using the proposed mitigation measures to determine if the required LOS can be achieved.

If added project traffic causes an increase in delay of 2.0 seconds or more at intersections operating at LOS "E" or "F", it shall be considered a significant impact and mitigation measures will be required to reduce the delay to pre-project or acceptable conditions.

Proposed projects with heavy truck usage shall apply Passenger Car Equivalent (PCE) factors to determine intersection delays. The PCE factors shall be approved by the City prior to the analysis.

Intersection Analysis

An intersection level of service analysis shall be performed using the methodology in the Transportation Research Board's Highway Capacity Manual 2000, or most recent release. Refer to Exhibit C for default input parameters.

In accordance with the City's General Plan Circulation Element, LOS "D" or better shall be maintained at all study area intersections.

Link Analysis

When required, a roadway link analysis shall be performed using the methodology Transportation Research Board's Highway Capacity Manual 2000, or most recent release.

In accordance with the City's General Plan Circulation Element, LOS "E" or better shall be maintained on all study area roadways.

5.4 Traffic Signal Warrant Analysis

A traffic signal warrant analysis shall be performed at un-signalized intersections within the study area, including project access points, for all TIA scenarios.

The traffic signal warrant analysis shall be performed using the latest version of the California Manual on Uniform Traffic Control Devices (CA MUTCD). The warrant analysis worksheets shall be included in the TIA document's appendices.

5.5 On-site Circulation Analysis

The TIA shall evaluate the proposed on-site circulation for the project and address the adequacy of the proposed circulation. This includes identifying the traffic control at project driveways and/or intersections.

5.6 Safety and Operational Analysis

The TIA shall evaluate the existing roadway conditions to determine if safety and/or operational improvements are necessary due to increase in traffic from the project or cumulative projects. The types of improvements needed may include, but are not limited to:

- Additional through and/or turn lanes, including free right-turn lanes
- Increased left and/or right turn lane length
- Parking restrictions
- Measures to reduce cut-through project traffic in adjacent residential areas
- Queue lengths and impacts to adjacent intersections
- Need for traffic signal coordination
- Need for CCTV camera facilities to monitor traffic conditions
- Bicycle Facilities

When a Focused Traffic Study is required, the study may include an analysis of Items 5.3 through 5.6, at the discretion of the City.

6.0 MITIGATION MEASURES

In accordance with the City's General Plan Circulation Element, at intersections where the Level of Service (LOS) falls below, or is expected to fall below an acceptable threshold with the addition of project traffic, feasible measures shall be identified to mitigate the project's impacts for the following conditions:

- Existing Conditions (With Project)
- Opening Year Traffic Conditions (With Project)
- Cumulative Traffic Conditions (With Project)
- General Plan Traffic Conditions

In all cases, the feasibility of the proposed improvements must be demonstrated and the availability of right-of-way must be verified. Acquisition of additional right-of-way, if necessary, shall be the responsibility of the project proponent.

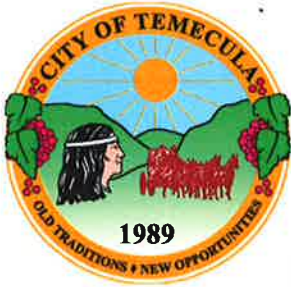
6.1 Project Fair Share

The Project Fair Share of mitigation costs shall be calculated based on the percentage of the proposed project's traffic contribution to each study area intersection. The Project Fair Share shall be calculated for each analyzed peak hour.

6.2 Conformance with General Plan Circulation Element

The TIA shall identify if the roadway system proposed in the City's General Plan Circulation Element is adequate to accommodate project traffic, or if changes to the General Plan roadway system are necessary as part of the project approval.

EXHIBIT A



SCOPING AGREEMENT FOR TRAFFIC IMPACT ANALYSIS

Project Name: _____

Project Address: _____

Project Description: _____

Case No. _____

Related Cases:

SP No. _____

EIR No. _____

GPA No. _____

CZ No. _____

Consultant

Developer

Name:	_____	_____
Address:	_____	_____
Telephone:	_____	_____
Fax:	_____	_____
E-Mail:	_____	_____

A. Trip Generation Source: *(ITE 8th Edition or other)* _____

Current GP Land Use	_____	Proposed Land Use	_____
Current Zoning	_____	Proposed Zoning	_____

Current Trip Generation

Proposed Trip Generation

	In	Out	Total	In	Out	Total
AM Trips	_____	_____	_____	_____	_____	_____
PM Trips	_____	_____	_____	_____	_____	_____

Internal Trip Allowance Yes _____ No _____ (_____ % Trip Discount)
 Pass-By Trip Allowance Yes _____ No _____ (_____ % Trip Discount)

A pass-by trip discount of 25% may be allowed for appropriate land uses. The pass-by trips at adjacent study area intersections and project driveways shall be shown on a figure in the report document.

B. Trip Geographic Distribution: N _____ % S _____ % E _____ % W _____ %
(Attach exhibit showing detailed distribution)

C. Cumulative Traffic:

Project Opening Year: _____ Annual Ambient Growth Rate: _____ %

Phase Year(s): _____

Other area projects to be analyzed: _____
(To be provided by City and/or agencies within one mile radius of project)

Model/Forecast Methodology: _____
(Build-out or travel demand model – identify model)

D. Study Area Intersections: *(NOTE: Subject to revision upon the discretion of the City Engineer).*

- | | |
|----------|-----------|
| 1. _____ | 6. _____ |
| 2. _____ | 7. _____ |
| 3. _____ | 8. _____ |
| 4. _____ | 9. _____ |
| 5. _____ | 10. _____ |

E. Study Area Roadway Segments: *(NOTE: Subject to revision upon the discretion of the City Engineer).*

- | | |
|----------|-----------|
| 1. _____ | 6. _____ |
| 2. _____ | 7. _____ |
| 3. _____ | 8. _____ |
| 4. _____ | 9. _____ |
| 5. _____ | 10. _____ |

F. Other Jurisdictional Impacts:

Is this project within a one mile radius of the Sphere of Influence of another City or County of Riverside boundary? Yes _____ No _____

If so, name of Jurisdiction: _____

G. Site Plan: *(please attach reduced copy)*

H. Specific Issues To Be Addressed: (in addition to the standard analysis described in the Guideline) (To be filled out by City of Temecula)

I. Existing Conditions:

Traffic count data must be new or recent (less than one year old). Provide date of traffic count, if using other than new counts. Date of Counts _____

Recommended By:

Approved Scoping Agreement:

Consultant's Representative

Date

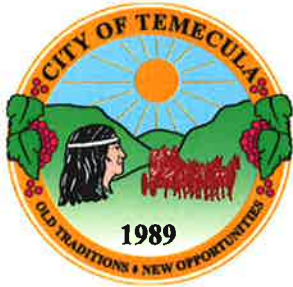
City of Temecula

Date

Scoping Agreement Submitted on _____

Revised on _____

EXHIBIT B

**TRAFFIC IMPACT ANALYSIS REPORT FORMAT**

The Traffic Impact Analysis Report shall consist of the following:

1. EXECUTIVE SUMMARY

- A. Site Location and Study Area
- B. Project Description
- C. Findings

2. INTRODUCTION

- A. Purpose of the Traffic Impact Analysis and Objectives
- B. Site Location and Study Area (**provide exhibit**)
- C. Project Identification – Case Number and Related Case Numbers
- D. Project Description
 - Project Size and Description
 - Existing Land Use and Zoning
 - Proposed Land Use and Zoning
 - Site Plan for Proposed Project (**provide exhibit**)
 - Proposed Project Opening Year
 - Proposed Phasing, if any
 - Indicate if proposed project is within an adjacent City's Sphere of Influence or adjacent to County boundary

3. EXISTING TRAFFIC CONDITIONS

- A. Identify Study Area and Intersections
- B. Existing Traffic Controls and Intersection Geometrics (**provide exhibit**)
 - Description of Roadway System within the Study Area
- C. Existing Traffic Volumes
 - AM/PM peak hour turning movement volumes and Roadway Average Daily Traffic (ADT) volumes (**provide exhibit**)
- D. Existing Level of Service and Delay at Study Intersections (**provide table**)
- E. Existing Roadway Link Level of Service and Delay (**provide table**)

4. FUTURE TRAFFIC CONDITIONS

A. Project Opening Traffic

- Project Trip Generation (**provide table**) – The latest edition of the Institute of Transportation Engineers (ITE), Trip Generation shall be used.
- Identify any factors used to adjust Project Trip Generation, such as pass-by trips and/or internal trips. Adjusted rates shall be included in (**provide table**).
- Project Trip Distribution and Assignment (**provide exhibit**)
- Project peak hour turning movement volumes and ADT (**provide exhibit**)
- Existing Plus Project peak hour turning movement volumes (**provide exhibit**)
- Ambient Growth Rate
- Opening Year peak hour turning movement volumes without project (**provide exhibit**)
- Total Opening Year peak hour turning movement volumes (**provide exhibit**)
(Additional Exhibits will be required for phased projects)

B. Cumulative Traffic

- Ambient Growth Rate
- Identify location of other approved or proposed development projects (**provide exhibit**)
- Trip Generation from other approved projects (**provide table**)
- Trip Distribution and Assignment of other approved development projects (**provide exhibit**)
- Peak hour turning movement volumes without project (**provide exhibit**)
- Total peak hour turning movement volumes with project (**provide exhibit**)

C. General Plan Traffic (*When Required*)

- Identify Traffic Controls and Intersection Geometrics (**provide exhibit**)
- Peak hour turning movement volumes without project (**provide exhibit**)
- Total peak hour turning movement volumes with project (**provide exhibit**)

5. TRAFFIC ANALYSIS

A. Capacity and Level of Service (LOS) Analysis – Project Opening Traffic

- Intersection LOS and Delay Existing Plus Project (**provide table**)
- Intersection LOS and Delay Opening Year without project (**provide table**)
- Intersection LOS and Delay Opening Year with project (**provide table**)
- Roadway Link LOS with project (**provide table**)
- Intersection LOS and Delay with improvements, if necessary to achieve LOS D (**provide table**)

B. Capacity and Level of Service (LOS) Analysis – Cumulative Traffic

- Intersection LOS and Delay without project (**provide table**)
- Intersection LOS and Delay with project (**provide table**)
- Roadway Link with project (**provide table**)
- Intersection LOS and Delay with improvements, if necessary to achieve LOS D (**provide table**)

C. Capacity and Level of Service (LOS) Analysis – General Plan Traffic

- Intersection LOS and Delay with project (**provide table**)
- Roadway Link with project (**provide table**)
- Intersection and Roadway Link LOS/Delay with additional improvements to achieve General Plan LOS (**provide table**)

6. FINDINGS AND RECOMMENDATIONS

- A. Proposed Mitigation Measures to Achieve LOS at Deficient Intersections for Existing, Opening Year, Cumulative, and General Plan traffic conditions (**provide table**)
- B. Proposed Mitigation Measures to Achieve LOS at Deficient Roadway Links for Existing, Opening Year, Cumulative, and General Plan traffic conditions (**provide table**)
- C. Traffic Signal Analysis
- D. Recommended Improvements
 - Intersection and Roadway Improvements
 - Traffic Control
 - On-Site Improvements
 - Parking Facility
 - Bicycle and Pedestrian Facility Improvements
- E. Project Fair Share (**provide table**)
- F. Conformance with General Plan Circulation Element

EXHIBIT C



SIGNALIZED INTERSECTION ANALYSIS INPUT PARAMETERS

<u>PARAMETER</u>	<u>VALUE</u>
Base Saturation Flow Rate	1800 pc/hr/lane (per City's Circulation Element)
Heavy Vehicle Factor	Determine % heavy vehicle in existing traffic stream based on count data or consultation with City. Projects with truck intensive uses must convert project trips to passenger car equivalents (PCE=2).
Grade	Include when indicated grade is greater than 8%
Exclusive Left-turn Lane	Peak hour volume > 100 vph
Dual Left-turn Lanes	Peak hour volume > 300 vph
Protected Left Turn Phasing	Left turn volume > 240 vph
Minimum Green Time	7 seconds for each movement
Cycle Length	60 seconds to 120 seconds. Verify traffic signal timing and cycle lengths with City
Lost Time	Per HCM

Intersection analyses shall be performed using the latest version of the Synchro software. Closely spaced intersections shall be evaluated based on the 85th percentile queue length, to insure that turn lane storage and queue lengths do not exceed the available turn pocket length.

Actual traffic signal timing and peak hour factors for intersection shall be collected in the field and utilized for the existing and near-term analyses. In cases where traffic is added from a significant number of cumulative projects, the consultant shall use their engineering judgment in the application of peak hour factors to maintain consistency with the existing conditions analyses. A peak hour factor of 1.0 shall be applied to Buildout traffic conditions.