

Guide for the preparation of Transportation Impact Studies

**City of Tempe
Public Works Department
Transportation Division**



Updated 05/2014



POLICY FOR TRANSPORTATION IMPACT STUDIES

This policy is to provide for consistency in preparation of Transportation Impact Studies using established criteria. It has been prepared for the purpose of assisting consultants, developers and others interested in evaluating transportation impacts within the City of Tempe. Consultants are invited to discuss proposed projects with Transportation Division staff prior to beginning the analysis. Doing so will provide an opportunity to discuss and determine parameters to be used and open a communication link between city staff and the developer/consultant. This communication will help in creating land uses with transportation characteristics that are in the best interest of the entire community.

WHAT IS A TRANSPORTATION IMPACT STUDY (TIS)?

A Transportation Impact Study (TIS) is a study which assesses the effects that a development's traffic will have on the transportation system and the community. They range in detail and complexity depending on the size and location of a development. Transportation Impact Studies should accompany developments which have the potential to impact the transportation system. The study can be used as a tool in determining whether a development is appropriate for a particular location and what improvements to the transportation system are necessary, if any.

Transportation Impact Studies can help the City to:

- Forecast additional traffic associated with a proposed development
- Assess the impacts of a proposed development
- Determine necessary improvements to accommodate the new development and minimize impacts to the transportation system.
- Assist in land use decision making

Based on the information provided in the TIS, city staff determines the adequacy of the existing or planned transportation improvements. The City may stipulate that certain items be the responsibility of the developer as a condition of approval. Such items could



include additional right-of-way, street improvements, traffic signals, transit shelters, sidewalks connections or transportation demand management programs that are necessary to mitigate transportation deficiencies.

WHEN IS A TRANSPORTATION IMPACT STUDY NECESSARY

A Transportation Impact Study is not necessary for every development; however, developments which will likely generate a significant amount of traffic need to be analyzed. Typically, trip generation and the size of the developments are factors that are used to determine whether a Study should be required of a particular development. The number of trips and size of development are compared to predetermined thresholds within an area. This criterion alone; however, may not be the only determining factor. In certain cases, there may be outside factors which make it necessary to provide a Study as deemed necessary by the Public Works Director or his/her designee. All final submittals for transportation studies and/or reports shall be signed and sealed by an Arizona registered Civil Engineer.

STUDY THRESHOLDS

The level of analysis required is based upon the size and magnitude of the proposed project. Threshold criteria for different levels of projects have been developed to avoid placing undue hardship on applicants with small projects, while ensuring that larger projects are evaluated adequately. The analysis required is broken down into two levels: Level 1 TIS and Level 2 TIS as described below.

Level 1 Traffic Impact Study

A Level 1 TIS is a study which provides the City with basic information about a proposed development or project. It contains less detail than a Level 2; however, it provides useful information that can be used by City staff in developing traffic models for the City. Projects that require a Level TIS usually have localized impacts to the transportation system. Information provided in a Level 1 assessment may include a basic site plan which shows the amount of building square footage as well as trip generation. In order to help the City with operation of the traffic signal system, the developer may also be



required to provide the City with turning movement counts (TMC) within the area of the development. Typical thresholds for TSA's are defined as follows.

- A Level 1 TIS shall be required for any development proposal which is expected to generate seventy-five (75) or more new trips during the am or pm peak hour.
- The above criteria alone; however, may not be the only determining factor. In certain cases, there may be outside factors which make it necessary to provide Level 1 assessment as deemed necessary by the Public Works Manager or his/her designee. The Public Works Director or his/her designee also has the ability to waive requirements for this study.

Level 2 Transportation Impact Study

Before the approval of any development that would appreciably affect the routing or volume of automobile or transit traffic in the vicinity of the site, the applicant may be required to submit a Level 2 Study if the following threshold is reached:

- A Transportation Impact Study shall be required for any development proposal which is expected to generate one hundred fifty (150) or more new trips during the am or pm peak hour.
- The above criteria alone; however, may not be the only determining factor. In certain cases, there may be outside factors which make it necessary to provide a Transportation study as deemed necessary by the Public Works Manager or his/her designee. The Public Works Director or his/her designee also has the ability to waive requirements for a Transportation Impact Study.



STUDY OUTLINES

The following outlines indicate what should be included in each type of study. At a minimum, all items included in the outlines should be addressed. Additional information may be provided as necessary. Suggested tables and figures for various sections are shown in parenthesis. An outline for a Level 1 Study is as follows:

LEVEL 1 OUTLINE

- I. Introduction (study area)
- II. Existing Conditions
 - A. Street Network and traffic volumes (from the City's website)
 - B. Transit System (if service is available, provide information. If none, state that.)
 - C. Bike routes (location of nearest)
 - D. Sidewalk and pedestrian amenities
- III. Proposed Development
 - A. Site Plan and description (figure)
 - B. Trip Generation (table) and Trip Distribution (table)
 - C. Trip Assignment to site driveways (figure)
- IV. Impact on Transportation System
 - A. Increase in vehicular traffic
 - B. Anticipated transit ridership
 - C. Bike system linkages
 - D. Pedestrian Access
- V. Summary

A detailed outline with the information required for a Level 2 TIS is shown below:

LEVEL 2 OUTLINE

- I. Executive Summary
- II. Introduction
 - A. Purpose of Study
 - B. General Description of the Project
 - C. Study Area (to include Vicinity Map)



- III. Existing Conditions
 - A. Surrounding Land Use
 - B. Street Network (figure with D and E below)
 - C. Traffic Volumes (daily volumes on segments and peak hour turning movement counts) (to include vehicular, transit, bikes, and pedestrians) (figure)
 - D. Transit System/Services (include bus types, schedules, stops, and shelters)
 - E. Bike routes
 - F. Sidewalk and pedestrian amenities
 - G. Intersection Operations (request signal timing from the City) (to include LOS) (table/figure)
- IV. Future Base Conditions (opening year and opening plus 5 years)
 - A. Approved Developments in the Area
 - B. Future Traffic and Intersection Operation (to include base LOS) (include information on expected queues and impacts of queue spillback)(figure)
 - C. Changes in Transit Service
 - D. Changes in Bike System
- V. Proposed Development
 - A. Land uses and Sizes (include site plan)
 - B. Transportation System Connections and Features (include site specific features that encourage access to all modes such as site driveways and gates, nearest bus stop, distance to nearest bike route/path, access to public sidewalk) (figure)
 - C. Site Generated Trips (trip generation table, trip distribution table, and trip assignment figure)
 - D. Potential transit ridership, bicyclists, and pedestrians (mode split)(must be commensurate with services and facilities available and consistent with trip distribution)



- VII. Transportation System Analysis and Impacts
 - A. Total Traffic (site and future base) (by mode) (figure)
 - B. Intersection Level of Service (include discussion on expected queues at signalized intersections due to additional site traffic) (table/figure)
 - C. Signal progression (may include time-space diagram)
 - D. Turn Lane Lengths
 - E. Projected capacity and usage of transit system
 - F. Neighborhood Impacts (identify any impacts to adjacent neighborhoods; if none state this)
 - G. On-site Circulation and site driveways (include sight distance)
- VIII. Potential Mitigation Alternatives
 - A. Intersection Operation
 - a. Signal timing changes (Signals are part of a system and cannot be treated as an isolated improvement.)
 - b. New signal (Warrants need to be analyzed. Peak hour warrant is only applied in select cases per MUTCD.)
 - B. Infrastructure Modifications
 - C. Transit Amenities
 - D. Bike System Gaps and Linkages
 - E. Improvements to Sidewalk and ADA compliance
 - F. Other TDM Measures
 - G. Neighborhood Traffic Mitigation/Calming
- IX. Conclusions and Recommendations



MITIGATION MEASURES

Mitigation measures need to be realistic and cost effective. The study should first recommend Transportation Demand Management (TDM) measures to mitigate transportation impacts. The measures need to be specific and identify the mitigation (i.e., trip reduction) that is being achieved. Secondary measures may then include projects to mitigate for additional transportation impacts where TDM measures are insufficient. Mitigation measures may include offsite improvements deemed necessary by the study and the City. The cost of such improvements should be addressed.

STUDY TIMELINE

All Transportation Impact Studies shall be submitted to the Transportation Division for first review with application submittal to Community Development for processing. An initial meeting/conversation should be set up with Traffic Engineering prior to the submittal to discuss and receive approval of study assumptions and study area requirements.

REPORT REVIEW

A draft study will be submitted for first review. The report will be reviewed by the City for accuracy, completeness, approval of assumptions and recommendations and validity of proposed mitigation measures and recommendations. Should the report not meet the requirements of the City, the report will be returned with appropriate comments for further evaluation. Final report submittal should include two paper copies and an **electronic version**. Any traffic counts conducted as part of the study should be submitted electronically also.

SOURCES and REFERENCES

Traffic Volumes: Daily traffic volumes may be obtained from the City's website if less than 2 years old. Any available turning movement counts will be provided by the City if the data is less than two years old. If City data is not available, then new counts need to be conducted for the study. To obtain representative data, traffic counts should be



scheduled for times when ASU is in session. The City requests any new traffic counts conducted for a study be submitted electronically (in a separate file) when the final report is submitted.

Trip Generation Rates: from the latest edition of Trip Generation published by the Institute of Transportation Engineers (ITE), unless otherwise approved by Transportation Staff.

Signal Timings: obtain from City staff. Do not assume timings or use software default values.

Trip Distribution: use MAG population and employment for region or approved method

Traffic Forecasts: percentage agreed to by City staff, MAG projections, or other approved method.

Level of Service: to be Based on latest Highway Capacity Manual.

CONTACTS

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| Study Requirements..... | Catherine Hollow Senior Civil Engineer (480) 350-8854 |
| Signal Timing..... | Christine Warren Senior Civil Engineer (480) 858-2060 |
| Growth Factors and Modeling Information..... | Robert Yabes Principal Planner (480) 350-2734 |