Policy for Transportation Impact Studies

City of Tempe
Engineering & Transportation Department
Transportation Division

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2. POLICY FOR TRANSPORTATION IMPACT STUDIES (TIS) AND TRIP REDUCTION PLANS (TRP)

This policy is to provide for consistency in preparation of Transportation Impact Studies and Trip Reduction Plans 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.

2.1 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, and transportation demand management strategies that are necessary to mitigate transportation deficiencies.

2.2 WHAT IS A TRIP REDUCTION PLAN (TRP)?

A Trip Reduction Plan (TRP) shall identify the transportation demand management (TDM) strategies or policies that reduce the travel demand or redistribute that demand in space or in time. Transportation demand management strategies or policies shall be implemented either in the development or through policies and programs. Recommended TDM policies and strategies are provided in Section 5 of this policy guide. Each TDM strategy is assigned trip reduction points reflecting its relative effectiveness in reducing peak hour single-occupancy vehicle trips.

All applicable Trip Reduction fees, penalties, reporting requirements, program implementation, and other Trip Reduction obligations are the sole responsibility of the property owner. The Trip Reduction requirements are part of the entitlement associated with the property. Trip Reduction requirements apply to the property regardless of property ownership.

2.3 WHEN IS A TIS OR A TRP NECESSARY?

A Transportation Impact Study (TIS) and a Trip Reduction Plan (TRP) 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 TIS and a TRP 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 TIS and/or TRP as deemed necessary by the Engineering and Transportation Director or designee. All final submittals for transportation impact studies and associated reports shall be signed and sealed by an Arizona Registered Professional Engineer (Civil).

2.3 TIS AND TRP TIMELINE

All Transportation Impact Studies (TIS) and Trip Reduction Plans (TRP) shall be submitted to the Transportation Division of the Engineering & Transportation Department for first review with application submittal to Community Development for processing. An initial meeting/conversation should be set up with Traffic Engineering and Transportation Planning prior to the submittal to discuss and receive approval of study assumptions and study area requirements. Projects requiring Trip Reduction Plans shall meet jointly with Traffic Engineering and Transportation Planning.

2.4 TIS AND TRP REVIEW

A draft TIS and TRP will be submitted for first review. The reports 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.

3. TRANSPORTATION IMPACT STUDY (TIS) THRESHOLDS AND OUTLINES

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. Additionally, a Trip Reduction Plan may be required of development as described in Section 4 of this policy.

3.1 Level 1 TIS

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 TIS; however, it provides useful information that can be used by City staff in developing traffic models for the City.

Projects that require a Level 1 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, trip generation, and transportation demand management strategies used to reduce the number of vehicular trips. 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 Level 1 Transportation Impact Studies 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 Engineering & Transportation Director or designee. The Engineering & Transportation Director or designee also has the ability to waive requirements for this study.

Projects requiring a Level 1 TIS typically also require a Level 1 Trip Reduction Plan (as defined in Section 4 of this policy).

3.2 Level 2 TIS

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 Transportation Impact Study if the following threshold is reached:

- A Level 2 TIS 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 Impact Study as deemed necessary by the Engineering & Transportation Director or designee. The Engineering & Transportation Director or designee also has the ability to waive requirements for a Transportation Impact Study.

Projects requiring a Level 2 TIS typically also require a Level 2 Trip Reduction Plan (as defined in Section 4 of this policy).

3.3 TIS OUTLINES

The following outlines indicate what should be included in each type of TIS. 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 TIS is as follows:

Level 1 TIS Outline

I. Introduction (study area)

II. Existing Conditions

   A. Street Network and traffic volumes (from the City's website)

   B. Local Mode Split (table)

   C. Transit System (if service is available, provide information. If none, state that.)

   D. Bike routes (location of nearest)

   E. 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)
D. Transportation Demand Management measures (see Trip Reduction Plan)

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 TIS 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. Local Mode Split (table)
E. Transit System/Services (include bus types, schedules, stops, and shelters)
F. Bike routes
G. Sidewalk and pedestrian amenities
H. 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)

i. The Internal Trip Capture Rate shall not exceed a maximum of 15% unless deemed appropriate by the City Traffic Engineer.

D. Mode Split Target (table) - potential transit ridership, bicyclists, and pedestrians must be commensurate with services and facilities available and consistent with trip distribution

i. If the modal split percentages exceed the U.S. Census' latest reporting on Commute to Work by mode in Tempe, the Trip Reduction Plan shall include travel demand management mitigation measures that will result in an increase in the particular mode of transportation.

VI. 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)

VII. 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. Transportation Demand Management measures (see Trip Reduction Plan)

G. Neighborhood Traffic Mitigation/Calming

VIII. Conclusions and Recommendations

4. TRIP REDUCTION PLAN (TRP) THRESHOLDS, TARGETS, REPORTING, AND OUTLINES

Trip Reduction Plans shall identify the transportation demand management (TDM) strategies or policies that reduce the travel demand or redistribute that demand in space or in time. Transportation demand management strategies or policies shall be implemented either in the development or through ongoing policies and programs. Recommended TDM policies and strategies are included in Section 5 of this policy guide.

The Engineering and Transportation Director or designee will review each Trip Reduction Plan to ensure it is complete. Once deemed complete, the Engineering and Transportation Director or designee will review to ensure the required target has been achieved by a selection of the Trip Reduction policies or strategies. The Trip Reduction Plan shall be submitted in conjunction with the development plan review application. The requirement for a Trip Reduction Plan and the selected policies and strategies shall be incorporated as a Condition of Approval of the Development Project.

4.1 TRP THRESHOLDS AND TARGETS

There are two levels of Trip Reduction Plans. A Level 1 Trip Reduction Plan shall be required of developments that will generate 75 to 149 peak hour trips. Level 1 Trip Reduction Plans have a lower minimum reduction target than Level 2 Trip Reduction Plans and do not have an annual reporting requirement. A Level 2 Trip Reduction Plan shall be required of developments that generate 150 or more peak hour trips. Level 2 Trip Reduction Plans have a higher minimum reduction target than Level 1 Trip Reduction Plans and have an annual reporting requirement, as defined in Section 4.3 of this policy.

Each TDM strategy is assigned trip reduction points reflecting its relative effectiveness in reducing peak hour single-occupancy vehicle trips. The Trip Reduction Targets for

development proposals are determined on the number of peak hour trips generated and are listed below.

Trip Reduction Targets for Developments		
Peak Hour Trips	**Trip Reduction Plan Required**	**Minimum Reduction Target**
0-74	No	-
75-149	Yes, Level 1	10 points
150 +	Yes, Level 2	20 points

TRP Thresholds and Targets When Reducing the Minimum Vehicle Parking Requirements

Development proposals, at the applicant's option, may reduce the minimum vehicle parking requirements as defined in the Urban Code District zoning code or if determined appropriate by the Community Development Department. Development proposals that apply for exceptions to the minimum vehicle parking requirement are required to submit a Trip Reduction Plan with an increased reduction target. The Trip Reduction Targets for development proposals that reduce the minimum vehicle parking requirement are determined on the number of peak hour trips generated and are listed below.

Trip Reduction Targets for Reduced Minimum Vehicle Parking Requirements		
Peak Hour Trips	**Trip Reduction Plan Required**	**Minimum Reduction Target**
0-74	Yes, Level 1	10 points
75-149	Yes, Level 1	15 points
150 +	Yes, Level 2	25 points

4.2 EXCEPTIONS TO THE TRIP REDUCTION PLAN REQUIREMENT

Residential uses in developments that provide a minimum of 10% of residential units between 0% and 80% of Area Median Income (AMI) shall not be counted in the trip generation totals. Residential units in developments that provide a minimum of 20% of residential units between 81% and 120% of Area Median Income (AMI) shall not be counted in the trip generation totals. Retail and restaurant use, as a component of vertical mixed-use development shall not be counted in the trip generation totals.

4.3 TRP MONITORING AND REPORTING REQUIREMENT

Employment, school, and multi-family developments that are required to submit a Level 2 Trip Reduction Plan shall meet the requirements of this section. Conducting monitoring and reporting at these sites provides the City with additional information on how people are traveling to and from these frequently trafficked areas and the effectiveness of TDM strategies in Tempe. Throughout the life of the development project, the property owner shall:

- Maintain a Transportation Coordinator who shall coordinate with the City on the Development Project's compliance with its approved Trip Reduction Plan.

- Submit an Annual Trip Reduction Report to the City's Transportation Division on the calendar year of the Certificate of Occupancy.

- Allow City staff access to relevant portions of the property to conduct site visits, surveys, inspection of physical improvements, and/or other empirical data collection, and facilitate in-person, phone, and/or e-mail or web-based interviews with residents, tenants, employees, and/or visitors. City staff shall provide advance notice of any request for access and shall use all reasonable efforts to protect personal privacy during visits and in the use of any data collected during this process.

Annual Trip Reduction Report

Employment, school, and multi-family developments that are required to submit a Level 2 Trip Reduction Plan shall report on travel demand management measures annually in an Annual Trip Reduction Report. In instances where multiple employment tenants occupy one development, the property owner shall compile the TDM measures of each employer and include in the annual report for the property. The Annual Trip Reduction Report shall be submitted to the Engineering and Transportation Director or designee and shall include the following items. An outline for the Annual Trip Reduction Report may be requested from the City's Transportation Division.

A. The property's assigned transportation coordinator's name, address, telephone number, email address, and signature indicating the report is accurate and complete.
B. Name, address, telephone number, and email address of any additional transportation coordinators responsible for implementing the TDM strategies (e.g. individual employer's may have their own transportation coordinator).
C. A description of the prior year's TDM measures and any comments related to the effectiveness of the measures.
D. Employers and schools must submit the percent drive alone commutes provided by the Maricopa County Travel Reduction Program.
E. A description of new TDM measures that will be implemented.
F. A description of mechanisms for regular distribution of alternative mode transportation information.

G. Such other information as may be required by the Engineering and Transportation Director or designee.

Enforcement steps will be taken, if needed, to attain compliance with the Annual Trip Reduction Report requirements.

4.6 TRP OUTLINES

The following outlines indicate what should be included in each type of TRP. 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 TRP is as follows:

Level 1 TRP Outline

A. The property's assigned transportation coordinator's name, address, telephone number, email address, and signature indicating the Trip Reduction Plan is accurate and complete.

B. Estimate of onsite employee, student and resident population (table).

C. Mode Split Target (table).

D. A table with description of TDM measures that will be implemented (table).

E. A description of mechanisms for regular distribution of alternative mode transportation information.

F. Such other information as may be required by the Engineering and Transportation Director or designee.

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

Level 2 TRP Outline

A. The property's assigned transportation coordinator's name, address, telephone number, email address, and signature indicating the Trip Reduction Plan is accurate and complete.

B. Name, address, telephone number, and email address of any additional transportation coordinators responsible for implementing the TDM strategies on site (e.g. individual employers within one property may have their own transportation coordinator).

C. Estimate of onsite employee, student and resident population (table).

D. Mode Split Target (table).

E. A table with description of TDM measures that will be implemented (table).

F. A description of mechanisms for regular distribution of alternative mode transportation information.

G. A statement indicating acknowledgement of annual reporting requirements of this policy.

H. Such other information as may be required by the Engineering and Transportation Director or designee.

5. MITIGATION MEASURES

Mitigation measures need to be realistic and cost effective. The Transportation Impact Study (TIS) should first recommend Transportation Demand Management (TDM) measures to mitigate vehicular transportation impacts. The measures need to be specific and identify the mitigation (i.e., mode split) that is being achieved. The TDM measures should be documented as a Trip Reduction Plan in the TIS. Additional measures may then include capital projects to address unmitigated transportation impacts when TDM measures are insufficient. Mitigation measures may include offsite improvements deemed necessary by the study and the City. The cost of all improvements should be addressed.

5.1 TDM POLICIES AND STRATEGIES

Trip Reduction Plans shall identify the TDM strategies or policies that reduce the travel demand or redistribute that demand in space or in time. Transportation Demand Management (TDM) measures shall be implemented either in the development or through policies and programs. Recommended TDM policies and strategies include: Alternative Mode Strategies; Employer Scheduling Policies; and Parking Reduction Strategies. Each TDM strategy is assigned trip reduction points reflecting its relative effectiveness in reducing peak hour single-occupancy vehicle trips.

Alternative Mode Policies and Strategies

Alternative Mode Policies and Strategies include on-site facilities or subsidy programs where the commute trip cost is reimbursed by employer, school, or building management when an alternative mode is used. Developments may combine strategies for a maximum of 10 Points in the Alternative Mode Strategies category.

Alternative Mode Strategies (Maximum 10 Points)		
TDM Strategy	**Description**	**Points**
Carpooling or Vanpooling, including Guaranteed Ride Home	Provide carpool or vanpool matching services for employees and students. Provide free rides for emergency and unplanned trips home for employees or students that cannot get home via their normal commute mode.	10
Rideshare, Carshare or Bikeshare	Offer incentives or subsidize rideshare, carshare or bikeshare memberships.	5
Transit Passes	Provide free or discounted transit passes if purchased for every employee in a business, for every resident in a community, or for every student in a school.	10
Commute Management	Employer or building management participation in a commute management program (e.g. Transportation Management Association) or software that captures commute data, manages commute programs, and provides commuter benefits.	10
Multimodal Infrastructure	Provide infrastructure beyond existing code requirements, such as transit shelters, bicycle/pedestrian paths, wayfinding sign, bicycle lockers/enclosures, and bicycle safety classes.	5
Commuter Facilities	Provide showers and lockers as commuter facilities in the building design.	5
On-site Services	Provide additional on-site services that reduce trips for daily needs including ATM, deli/corner store, daycare, etc. that reduce the need for additional automobile trips.	5
Shuttle Bus Service	The development provides free shuttle service between the site and regional transit hubs, commercial centers, or residential areas. Shuttle service lines shall not duplicate transit service unless if recommended for approval by the City's Transportation Division.	10
Real Time Transportation Information Displays ("Transit Screens")	The development project provides real time transportation information displays (e.g. large television screens or computer monitors) in prominent locations (e.g. entry/exit areas, lobbies, elevator bays) on the site to highlight sustainable transportation options specific to the site and to support informed trip-making.	5

Employer Scheduling Policies

Employer Scheduling Policies includes employer policies used to reduce the travel demand or to redistribute that demand in space or in time. Developments may include a maximum of 5 Points in the Employer Scheduling Policies category.

Employer Scheduling Policies (Maximum 5 Points)		
TDM Policy	**Description**	**Points**
Telecommuting	Allow employees to work from home or a non-office location at least once a week.	5
Compressed Work Week	Enable employees to conduct work hours in fewer days.	5
Flexible Schedule	Allow employees to offset work hours from typical peak period traffic demand.	5
Staggered Shifts	Set employees' schedules to offset work hours from typical peak period traffic demand.	5

Parking Reduction Strategies

Parking Reduction Strategies are used to reduce the number of single-occupancy vehicle trips. Developments may combine strategies for a maximum of 10 Points in the Parking Management Strategies category.

Parking Management Strategies (Maximum 10 Points)		
TDM Strategy	**Description**	**Points**
Parking Cash Out	Employees and students are given a bonus or incentive to not use parking.	5
Pay for Parking / Unbundled Parking	Parking is leased or sold separately from the residential or non-residential unit or employees and students are charged for parking. This strategy allows the tenant, employee or student to decide if parking is necessary.	10
Bicycle Parking above Zoning Code Requirement	Development projects that double the minimum bicycle parking requirement of the zoning district.	5
Bicycle Services	Developments that supplement bicycle parking requirements with bicycle repair stations, bicycle maintenance services, a fleet of rentable bicycles, or bicycle valet parking.	5
Carpool or Carshare Preferential Parking	Developments provide carpool or carshare reserved spaces according to the land uses on site: • Residential uses must provide one (1) carpool/carshare space for every 80 dwelling units, with a minimum of two (2) carpool/carshare parking spaces. • Office uses must provide one (1) carpool/carshare space for each 20,000 square feet of occupied floor area, with a minimum of two (2) carshare/carpool parking spaces. • Retail uses must provide two (2) carshare/carpool parking spaces for each 20,000 square feet of occupied floor area, with a minimum of four (4) carpool/carshare parking spaces. If these spaces are provided, the following shall apply: • The spaces must be those closest to the building entrance or elevator, but not closer than the spaces for Americans with Disabilities Act parking. • Signs must be posted indicating spaces are reserved for these uses. • All carsharing spaces must be accessible to carshare subscribers 24 hours a day, seven days a week. Prior to issuance of a building permit, the parking spaces must be recorded identifying the number and location of the carshare parking spaces and shall be documented in the development entitlement. • Carpool or Carshare spaces may not be dedicated in on-street parking areas within the public right-of-way. The Carpool or Carshare spaces must be located within the development site.	5

6. 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.

Transportation Demand Management: Transportation Demand Management (TDM) is the application of strategies and policies to reduce travel demand (specifically that of single-occupancy vehicles) in space or in time.

Internal Trip Capture: Internal Trip Capture is the portion of trips that stay within the development. The Internal Trip Capture Rate is the percentage of trips that remain internal to the site.

Mode Split: Mode split (modal split) is the percentage of trips taken by a particular type of transportation (e.g. walk, bike, drive, transit). The most recent mode split data shall be obtained from the U.S. Census Bureau under Journey to Work.

7. CONTACTS

Traffic Impact Study Requirements and Signal Timing	John Hoang Senior Civil Engineer (480) 350-8629
Growth Factors, Modeling Information and Trip Reduction Plan Requirements	Robert Yabes Principal Planner (480) 350-2734