Davis
CALIFORNIA

Public Works Engineering and Transportation
Traffic Impact Study Guidelines

The purpose of these guidelines is to identify when a traffic study is needed and provide requirements on what a traffic study will need to include. The City Traffic Engineer will make the final decision on the need for a traffic study. The purpose of a traffic study is to identify traffic impacts, traffic operations and safety.

The traffic study is intended to be a multimodal analysis of the potential impacts that a proposed project will have on the transportation system and at a minimum shall look at the automobile, bike, pedestrian and transit impacts a project might have.

Traffic Study Requirement Review

Public Works Engineering and Transportation shall do an initial assessment of the project based upon the project description and proposed use. This assessment may take place when a pre-application review or meeting is requested or it would be a component of the review of an entitlement application. When determining if a traffic study is required the following will be evaluated.

- The projects consistency with a study or plan that has considered traffic impacts in the area.

- Any state or local policy that might except the project from conducting a traffic study.

- The proposed project is estimated to generate 500 or more **new** daily two-way trips and/or likely to add 100 or more **new** AM or PM peak period two-way trips on a typical weekday.

- Where the traffic volume as measured by Average Daily Traffic (ADT), peak hour, or peak hour of the critical movement has increased more than 10%.

- Phased projects must be evaluated as a whole project, assuming full build-out conditions for purposes of determining the need for a traffic study.

- The proposed project is located in the vicinity of any intersection that currently operates at an unacceptable Level of Service (LOS) per the City General Plan.

- When the original Traffic study for the area the project is located in is more than three years old.

Trip Generation Estimates

1. **Trip Generation Rates**: Passenger vehicle trips shall be estimated using the rates and methodologies outlined in Trip Generation, latest edition, published by the Institute of Transportation Engineers (ITE). Approval must be obtained from the Traffic Engineer prior to using any other source to establish the project trips.

2. **Trip Generation Basis**: The basis of all trip generation calculations will depend on the type of land use proposed. The trips generated by most commercial and industrial uses should be based on gross floor area. The trips generated by most residential uses should be based on the number of dwelling units. The basis, for how trips are established, including any methodologies and assumptions, shall be noted in the report.

3. **Unknown Trip Generation Rates**: Some unique types of development or uses may not have rates/formulas published by ITE. In this case, a trip generation study may be conducted at a similar existing facility in order to determine acceptable trip generation rates to be used in the study. The type and location of the similar existing facility and the study methodology must be pre-approved by the Traffic Engineer.

4. **Pass-By and Diverted-Link Trips**: With Traffic Engineer approval, pass-by and/or diverted-link trips may be calculated and used in estimating the project-generated trips using the procedures specified in the latest edition of Trip Generation. The pass-by and/or diverted-link trips must be justified by appropriate calculations. However, the reduced or net trips generated by the project should not be used to analyze project driveways and intersection(s) immediately adjacent to the project site (i.e., driveways and intersections in the immediate vicinity shall be analyzed using the full trip generation of the project). Typically, pass-by trips are associated with new fast-food restaurants, gas stations and shopping centers, etc.

Traffic Study Preparation

If the Traffic Engineer has determined that a traffic study is needed for the project, then the following components shall be included.

Trip Distribution

The traffic study shall document the assumptions that are used to develop the trip distribution and they must be approved by the Traffic Engineer prior to completing the study. For large projects, use of the City's Travel Forecast Model or other approved model may be required to establish the project trip distribution.

Study Area

The scope of the traffic study shall include, at a minimum, any signalized intersections, roundabouts or any other intersection currently or anticipated to operate at or below the City's LOS performance targets per the General Plan that are within 1 ½ miles of the project site. Additional intersections might need to be analyzed and will be identified by the Traffic engineer based on the approved trip distribution. All key intersections and roadway segments within this study area must be analyzed to identify impacts to capacity, LOS, and queueing lengths. The study intersections and roadway segments should be clearly identified for review and approved by the Traffic Engineer prior to starting the study.

Analysis Procedure and Methodology

1. Existing Traffic Counts: Existing average daily traffic volumes for study intersections and roadways shall be collected. Existing peak period intersection turning movement volumes shall be estimated using skilled personnel/technicians or a recognized traffic counting agency or company. Typical count days are Tuesday, Wednesday and Thursday of a typical non-holiday work week and data shall be collected for a minimum 2 hours for turning movement counts and 3 days for hose counts. Counts taken on holidays and the day before and after a holiday should not be used. Non-school days at DJUSD and UC Davis and other days with abnormal traffic conditions (such as rains, construction activities, road closures, etc.) must be avoided. Counts in the vicinity of a school should be taken when the school is in session. New traffic counts will not be necessary if counts are available from another source, such as traffic studies and/or City records, provided that they have been obtained within the last two years.

Data from vehicle probe data or AI will not be allowed without the prior approval of the Traffic Engineer.

All data collected shall be provided to the City for input into our traffic count data collection database.

2. Peak Periods: Generally, both morning (7 to 9 a.m.) and evening (4 to 6 p.m.) peak periods should be used in the analysis to identify traffic impacts and level of service problems. In some cases, an off-peak period may be required as directed and approved by the Traffic Engineer, especially near schools. Ideally, the exact peak hours will be verified by new 24-hour volume counts.

3. Analysis Scenarios: The following analysis scenarios, in the order shown, should be included for roadway and intersection capacity analysis:

- Existing Traffic Conditions (identify any existing deficiencies)
- Existing plus Project Conditions
- Existing plus other Approved Projects Conditions
- Existing plus Approved Projects Plus Project Conditions
- Cumulative No Project Conditions
- Cumulative plus Project Conditions

4. Internal Circulation and Access Management: Include a discussion on internal circulation within the project and the proposed on-site motor vehicle, bicycle and scooter parking. Show and discuss how people in vehicles, on bicycles and scooters, transit riders and pedestrians would enter and exit via the main access driveways and other entrances and identify any on-site or off-site circulation problems. If the project includes a drive-thru a queueing analysis shall be completed showing the anticipated 85% queue for the driveway.

Requests for site access or access modification shall be addressed in the Traffic Study. Recommendations shall include site access and transportation improvements needed to maintain traffic flow to, from, within, and past the site in an acceptable and safe manner for all modes. Areas to address include:

- Separate conflict areas. Reduce the number of access points or increase their spacing so conflict areas or maneuver areas do not overlap.
- Limit the type of conflict areas by preventing certain maneuvers.
- Remove turning vehicles or queues from through lanes.
- Consider the safety of a proposed access (sight distance both horizontally and vertically), including pedestrian features.
- Reduce the speed differential in through lanes between through vehicles and turning vehicles.
- Consider the impact of access points on adjacent or nearby properties on both sides of the roadway.

Improvements include such things as: relocation, restriction, or elimination of access points, addition of turning lanes, right-of-way controls, and pedestrian and bicycle access enhancements.

The number of vehicle access points should be minimized by sharing driveways and linking parking lots between adjacent uses. Commercial developments shall provide coordinated internal circulation and connected parking facilities. Well-defined walkways must be designed into all parking lots, with interconnections between walkways to create safe walking conditions.

There shall be clear routes with delineation for people on bicycles and scooters to access device parking areas. Device parking areas shall be located near front entrances, in well-lit areas and away from trash storage areas. Also see #12.

5. Capacity Analysis Method: The latest version of the Highway Capacity Manual (HCM) shall be the basis for operational delay (LOS) calculations for signalized and unsignalized intersections.

6. Traffic Growth: Use of the City's Travel Forecast Model or other approved model may be required to determine the future traffic volumes and growth. It shall be the responsibility of the traffic consultant to obtain these from whatever source that provides the most accurate projection within that area.

In the absence of traffic model information, the future build-out year base traffic volumes shall be estimated using an annual growth factor of 3% per year, unless a different rate can be justified and is approved and/or required by the Traffic Engineer.

7. General Plan Consistency: The report shall identify intersections or roadway segments where the LOS is below the city target, as identified in the General Plan, and provide measures to improve the condition to an acceptable LOS.

8. Mitigation Fair-share Cost Calculations: The percentage of fair-share for the project shall be calculated at each location using the total trips generated by the project divided by the total "new" traffic, which is the net increase in traffic volume from all proposed projects and growth. The cost of mitigation shall be estimated using verifiable cost estimates from reliable and recognized sources. Fair-share cost of mitigation shall be calculated using the fair-share percentage of the project volumes multiplied by total estimated cost of mitigation.

9. Sight Distance: Sight distance restrictions shall be addressed in the Traffic Study for all modes. Specified areas along both intersection and multiuse pathways shall be clear of obstructions that might block a driver's view of potentially conflicting vehicles, people on bikes and scooters and pedestrians. These specified areas are known as clear sight triangles. The dimensions of the legs of the sight triangles depend on the design speeds of the intersecting roadways and the type of traffic control used at the intersection. Intersection sight distance calculations shall be based on the Davis Public Works Design Standards.

11. Active Mode Trips: The traffic study shall estimate the number of active mode two-way trips generated by the project and evaluate any potential impacts to the bicycle and pedestrian infrastructure such as green belts and on street bike facilities.

12. Bike/Device Parking: The traffic study shall identify the necessary types, number of spaces, and preferred locations of bicycle parking facilities pursuant to the Building Code, the City's Reach Code, and Article 40.25A Bicycle Parking Standards, as applicable. This includes identifying the necessary types and preferred locations for bicycle parking. Device parking shall accommodate electric device parking and charging areas.

13. Transit Stops and Amenities: The traffic study shall include an analysis of existing transit riders and project impacts to the transit system. This includes an analysis of the bus stops within ¼ mile of the project area and their amenities.

14. VMT Analysis: When necessary, a VMT analysis will use the SACSIM Travel Demand Model and be consistent with Office of Planning and Research Technical Advisory on Evaluating Transportation Impacts in CEQA as well as past methodologies used in the City.