Community Development Code: Related Document

Traffic Impact Study (TIS) Guidelines

Introduction

The City of Lake Oswego has a comprehensive transportation network serving multiple modes. With a moderately growing community and significant infill opportunities, the City desires to maintain a high level of safety and efficiency within the network and encourage greater utilization of alternate modes (Comp Plan, Connected Community, Policies A-1 – A-7, B-1 – B-3, C-1 – C-7). As noted in Policies F-4 and F-5 of the Comprehensive Plan Connected Communities chapter and Section 40 of the City Charter, major roadway widening and expansion of lane miles is discouraged. Maintaining the efficient operation of this network requires a review of traffic conditions and capacity with each new development.

Traffic Impact Studies

The Community Development Code (LOC 50.07.003.1) requires submittal of a Traffic Impact Study for development applications that meet certain thresholds of traffic or that may have traffic safety or operational concerns. The reasons for requiring a Traffic Impact Study (TIS) include protecting future operations and the safety of transportation facilities and major transit corridors, and implementing the TSP and Comprehensive Plan.

A TIS is required when the development reaches a specific intensity through new construction or a change of use [LOC 50.07.003.iii (2)], or for a zone change request (TPR Sec. 0060).

The TIS evaluates the impacts of proposed development on existing public transportation facilities and recommends needed mitigation measures to ensure Level of Service standards are met and the transportation system will continue to operate safely and effectively. LOC Chapter 42 provides the standards for transportation improvements.

The purpose of these TIS Guidelines are to:

- Guide the City Engineer and applicants as to the expected level of analysis for various development intensities;
- Provide consistency in evaluation of the impact of development upon the transportation system;
- Encourage early coordination in the planning and engineering of a project; and
- Protect the substantial community investment in the transportation system.

The scope of a TIS depends on the complexity of the proposed development and its location. A TIS should:

- Consider the development's impact with regard to the goals and policies in the current Transportation System Plan;
- Identify the capacity and safety impacts that a particular development will have on streets within the study area;

- Determine whether the development's transportation impacts will meet the City's minimum transportation standards for roadway and intersection capacity and safety, as defined in the City's TSP;
- Determine how a development meets, or may be conditioned to meet, the City's requirements for pedestrian, bicycle and transit facilities;
- Determine the traffic impacts of the development, and establish the development's proportional share of mitigation measures required to address the impacts so that the minimum transportation standards are met; and
- Include a TPR analysis for "significant effect" for zone text change, zoning map amendment, comprehensive plan text amendment, or comprehensive plan map amendment. [See OAR 660, Division 12, Section 0060, Transportation Planning Rule.]
- For projects along or impacting ODOT highways or freeways (as defined by ODOT's Design Review Guidelines, Chapter 3), comply with ODOT's Design Review Guidelines, Chapter 3 and/or the Oregon Highway Plan.

Code Criteria for Requiring a Traffic Impact Study*

As provided in LOC 50.07.003.1.a.iii(2), a traffic impact study is required when any of the following conditions are met:

- the proposed development or site modification will generate at least 25 trips in the roadway peak hour traffic period or at least 250 daily trips, prior to applying trip reduction factors; or
- the site is subject to a zoning map or text amendment or comprehensive plan or map amendment that increase the intensity (potential vehicle trip generation) of allowed uses (this will require an analysis of "significant effect" under OAR 660, Division 12, Section 0060, Transportation Planning Rule, as well); or
- the daily use of the site increases by ten or more vehicles with a gross vehicle weight rating of 26,000 pounds or greater; or
- the traffic generated by a proposed development will result in a traffic volume increase that could potentially change the functional classification of an existing or planned transportation facility (e.g., traffic volume exceeds local street classification); or
- The City Engineer finds:
    - the City or other roadway authority has documented traffic safety or operations concerns within the study area, such as frequent crashes, poor roadway alignment, limited sight distance; or
    - existing Level of Service of a nearby intersection is at or below LOS 'D'; or
    - a proposed development is expected to alter traffic patterns on a local street or neighborhood collector within ~~500 ft.~~1/2 mile of the subject lot, such that access to individual properties or traffic safety is adversely impacted; or
    - the site lies within a quarter mile of the terminal of an interchange ramp, as traveled along roadways (per ODOT Development Review Guidelines, 2014).

TIS Document Scope and Outline

Prior to report presentation, the applicant shall submit a proposed scope and analysis assumptions including proposed study area to the City Engineer for pre-approval, approximately 1-2 pages. See Recommended Outline for Traffic Impact Study included in this document. The scope of a TIS analysis may be reduced or waived if recent data or a TIS not more than two years old determines the nearby roadways and intersections have adequate capacity.

Categories

There are two different categories for Traffic Impact Studies: Level 1 for smaller developments that might have a significant impact other than just increased traffic; and Level 2 for larger developments that will clearly generate increased traffic.

Level 1 –

- Developments generating less than 25 trips in the peak hour traffic period, or
- Less than 250 daily trips prior to applying trip reduction factors , and

the development may cause one or more impacts identified in LOC 50.07.003.iii(2)(e).

Level 2 – Developments generating over 25 trips in the peak hour traffic period or more than 250 new daily trips, prior to applying trip reduction factors.

The scope of a Level 1 analysis includes:

- Study area
- Existing roadways, background traffic
- Proposed Site Development: zoning, access, phasing
- Proposed Site Traffic: Trip generation, Trip distribution
- Emergency vehicle access
- Total traffic impact
- Findings

The scope of a Level 2 includes all items required for a Level 1 analysis, plus the following analysis items:

- Long range forecast conditions, if applicable
- Trip reductions
- Multi-modal analysis
- Queuing and storage
- Intersection capacity: level of service and/or volume-to-capacity
- Warrants, turn lanes, signs, signals
- Off-site parking, loading zones
- Safety history

- Planned transportation projects, programs
- Recommended improvements, mitigation

TIS Preparer Qualifications

All Traffic Impact Studies shall be prepared by a Professional Civil or Traffic Engineer currently licensed to practice within the State of Oregon and with special training and experience in transportation analysis and planning. The engineer shall certify the Study by providing a signature and engineer stamp or seal. (LOC 50.07.003.a.iii(3)).

Extent of Study Area

The TIS should include a vicinity map that shows the site, study area, and surrounding transportation system. The study area boundary should be based on engineering judgment and an understanding of existing and future land use and traffic conditions. The following facilities should be included in the study area for the TIS:

- All site access points and intersections, both signalized and unsignalized
- Intersection(s) impacted by 25 or more Peak Hour* traffic period vehicle trips generated by the development. [See LOC 50.10.003.2 for definition of Peak Hour].
- The vehicle trips should not be tracked beyond ½ of a mile from where vehicle trips enter a collector or higher classification roadway.
- The City Engineer shall approve the defined study area prior to commencement of the TIS [LOC 50.07.003.1.a.iii(3)(a)].

Analysis Periods

The City Engineer will provide information on the future traffic background conditions anticipated for the study area for the analysis periods. The TIS should provide traffic forecasts for:

1. Existing Conditions and background growth – traffic volumes and Level of Service of the roadway system within the study area.
2. Build-out Year Analysis – background traffic conditions and total traffic at the time of anticipated occupancy of the development. If the project will be phased over several years, it may be necessary to provide phased build-out scenarios.
3. Long Range Forecast Analysis – For Level 2 Analysis, the TIS shall include an analysis of the potential long-range planning horizon (2035 or 15 years, whichever is longer) based on the proposed development and the future traffic background conditions.

Analysis Components

Traffic count data – Traffic counts are required in the study area, capturing the volumes (by mode, as required of the project: autos, trucks, bikes, and pedestrians) at peak period(s). City recommends 48-hour counts to calculate an average ADT for roadway segments or 4-hour intersection turn counts during estimated peak hour traffic periods. Count periods shall be sensitive to holidays, special events, extreme weather incidents, school days, or other identified traffic anomaly. Previous count data less than two years old may be utilized on a case-by-case basis.

Trip Generation, Distribution, Assignment – The number of trips for each specific land use[1] on the site shall be determined by using the most current version of the Institute of Transportation Engineers (ITE) *Trip Generation Manual*. In the case of unique land uses, the engineer may provide land use-specific trip data. Applicants should specifically identify the land use categories for the given site. If a land use category in *Trip Generation* does not coincide with the proposed use or the exact use is unknown, the most similar ITE land use or the highest trip-generating use allowed in that zone should be used. Applicants may report a range of trips as applicable (e.g., to assist in identifying the need and timing of mitigation). Applicants may incorporate trip reductions, such as internal, pass-by, diverted link tips, as applicable to the particular site or development using the most current version of *Trip Generation*. Trip distribution, mode split, and trip assignment should be based on the gravity model supplemented with land use experience, engineering judgment, and knowledge of local conditions. Large developments or corridor studies should utilize the current regional travel demand model.

Intersection Capacity Analysis – Intersection and segment or network analysis should use the *2010 Highway Capacity Manual,* Highway Capacity Software, or other industry-standard software for determining volume-to-capacity ratios and Level of Service. Should an alternative method be necessary for analysis, the TIS should clearly define the source, its use in the transportation industry, and cite the reasons for its application. Upon analysis, each intersection, regardless of type, should be assigned a Level of Service. Mitigation measures to address the development's traffic impact shall be recommend by the applicant's traffic engineer in the TIS and may be conditioned by the City if the site development is forecasted to exceed the existing transportation capacity.

Safety Review – A complete review of the crash history (past five years) and any safety deficiencies identified by the City Engineer within the study area. Data may be collected from City staff, including Engineering and Police, TriMet, and ODOT. Intersection and stopping sight distance must also be evaluated at site access points and in areas where queue lengths impact available sight distance.

Queueing and Storage Analysis – Intersection operations shall include analysis of queuing, available storage, and blocking of an intersection or driveway. Average queue lengths and 95th percentile queue lengths shall be determined for each intersection in the study area. Generally, vehicles are reported in 25-foot lengths. Printouts generated from analysis software must also be included.

[1] On a site that has multiple uses, each use shall be looked at. For example, in a shopping center, each use shall be examined for the specific land use in the ITE Manual, rather than a broader ITE land use classification, e.g. shopping center. In a mixed use development, the residential and each commercial use shall be examined.

Planned Improvements; Programs – A complete review of in-process development applications and projects identified in the TSP that are within the study area. Additionally, analysis of existing or forthcoming programs that impact transportation operations within the study area. Information provided by the City Engineer.

Neighborhood Impacts – Because one-size does not fit all, the traffic impacts of one neighborhood may be different than those of another neighborhood or commercial district. A complete TIS may be required to analyze one or more of the following items: vehicle queuing, on-street parking, cut-through traffic, noise, loading zones/delivery traffic, signal progression, Safe Routes to School.

Multi-Modal Review – The TIS may be required to address multiple modes (e.g., pedestrian, bicycle and transit) based on development standards applicable to the development application, as stated in the Community Development Code. [LOC 50.06.002; 003.5]

System Evaluation – The functional classification of streets and the state of the transportation system within the study area should be analyzed using the minimum performance standards stated in the current Lake Oswego Transportation System Plan. Performance standards should be calculated using methods outlined in the current version of the *Highway Capacity Manual*. Performance standards may include: Level of Service, volume-to-capacity ratio, density-to-capacity ratio, pedestrian delay, control delay, safety, etc.

Recommendations and Mitigation – Based on the analysis components above, a TIS will include a recommendation of necessary transportation improvements or other measures to mitigate identified deficiencies and ensure a Level of Service 'E' or better at peak hour traffic period for intersections within the study area, after the future traffic impacts generated by the development are considered.

Technical Review

Staff will outline the specific requirements for a TIS during the pre-application conference for a prospective development. Upon submittal of the TIS (with the development application), the City Engineer or designated staff will conduct a technical review to determine completeness. Staff will prepare comments and requests for any additional information in coordination with other City departments' completeness review of the application. If no changes are necessary, staff will use the TIS as submitted to prepare findings for the staff report, including potential conditions of approval.

General Outline for Traffic Impact Study

The following information is guidance for outlining a traffic impact study to determine the potential impacts associated with a development proposal. The applicant is encouraged to meet with engineering staff to ask for input on the scope for the traffic impact study prior to beginning any analysis work. During the pre-application conference, staff will highlight items to be addressed for a prospective development. Depending on the magnitude of the proposed development, it may also be necessary to provide a draft analysis prior to submitting a draft for the completeness review of the land use action.

I. Introduction and Summary

1. Certification by Registered Civil or Traffic Engineer
2. Purpose of Report and Study Objectives
3. Executive Summary
    - Site location and study area
    - Proposed development descriptions
    - Findings
    - Recommendations and Mitigation

II. Proposed Development

1. Description
2. Location and vicinity map
3. Site plan
4. Proposed land use change, e.g., zoning, proposed development
5. Phasing and timing of development

III. Existing Conditions

- Definition of study area
- Existing Zoning and current uses
- In-Process or approved future development in study area
- Roadway System (functional classification, number of lanes, speed, etc.)
- Traffic Volumes and Conditions in study area
- Existing Safety and Capacity Deficiencies
- Transit Services
- Pedestrian and Bicycle Facilities

IV. Projected Traffic

1. Background Traffic
    - Base-year traffic volumes (typically within the past two years)
    - Method of traffic volume projection
    - Projected traffic volumes
    - Traffic volumes from other proposed/in-progress developments
    - Total Background traffic

2. Site Traffic
    - Trip Generation (per current edition of ITE Trip Generation Manual or local data from similar use)
    - Trip distribution
3. Future Traffic
    - Calculate future traffic impacts using a 1-2% annual growth rate, or as approved by City Engineer
4. Long-Range traffic forecast (correlation to TSP forecast year)

V. Traffic Analysis

1. Site Access
2. Intersection Capacity and Level of Service
    - Signalized intersection
    - Unsignalized Intersections
    - Review of adjacent roadway's functional classification
    - Queuing analysis for critical driveways and study intersections
3. Traffic safety
4. Site circulation and parking
5. Intersection sight distance check at intersections, driveways per AASHTO

VI. Improvement Analysis

1. Improvements to accommodate site generated and background traffic, including bicycle and pedestrian accommodations
2. Alternative improvements/mitigation
3. Status of improvements already funded, programmed or planned in the TSP, CIP

VII. Findings

1. Site Accessibility
2. Traffic Impacts
3. Compliance with Level of Service and capacity standards

VIII. Recommendations and Mitigation

1. Access and circulation plan
2. Roadway and intersection improvements
3. Other actions/recommendations as appropriate for the situation

IX. Appendices – Supporting Data

1. Existing traffic counts (with turn lane distribution)
2. Existing parking data (number of spaces and location, preferably shown in plan view)
3. Safety history data
4. Background traffic worksheets
5. Future conditions traffic worksheets
6. Queuing worksheets for critical driveways and study intersections
7. Long range modeling data, if applicable