CITY OF OREGON CITY
TRANSPORTATION ADVISORY COMMITTEE (TAC)
AGENDA

Virtual Meeting
Tuesday, December 15, 2020 at 6:00 PM

Contact kdavis@orcity.org for the link to participate in the meeting

CALL TO ORDER

ROLL CALL

APPROVAL OF THE MINUTES

1. Approval of minutes from the November 17, 2020 Transportation Advisory Committee Meeting

ADOPTION OF AGENDA (Agenda Analysis)

Committee members have the opportunity to move items to New Business/Discussion Items from Communications if they are interested in discussion. The Committee may also add an item to the agenda with the consensus of the Committee.

PUBLIC COMMENTS

Citizens are allowed up to 3 minutes to present information relevant to the City but not listed as an item on the agenda,however, the Chair has the discretion to waive limitations. Prior to speaking, citizens shall complete a comment form and deliver it to the Staff Member.When the Chair calls your name, proceed to the speaker table and state your name and city of residence into the microphone.The Transportation Advisory Committee Officers do not generally engage in dialog with those making comments but may refer the issue to the City Manager.

NEW BUSINESS / DISCUSSION ITEMS

2. Resolution 20-37 Update to the Guidelines for Transportation Impact Analyses

3. Public Works Report

COMMUNICATIONS

ADJOURNMENT

PUBLIC COMMENT GUIDELINES

Citizens are allowed up to 3 minutes to present information relevant to the City but not listed as an item on the agenda. Prior to speaking, citizens shall complete a comment form and deliver it to the Staff Member. When the Chair calls your name, proceed to the speaker table and state your name and city of residence into the microphone. To assist in tracking your speaking time, refer to the timer on the table.

As a general practice, the Transportation Advisory Committee (TAC) does not engage in discussion with those making comments.

Electronic presentations are permitted but shall be delivered to the City Recorder 48 hours in advance of the meeting.

ADA NOTICE

The location is ADA accessible. Hearing devices may be requested from the City Staff Member prior to the meeting. Individuals requiring other assistance must make their request known 48 hours preceding the meeting by contacting the City Recorder's Office at 503 657 0891

Agenda Posted at City Hall, Pioneer Community Center, Library, City Web site.

Video Streaming & Broadcasts: The meeting is streamed live on Internet on the Oregon City's Web site at www.orcity.org and available on demand following the meeting. The meeting can be viewed live on Willamette Falls Television on channel 28 for Oregon City area residents. The meetings are also rebroadcast on WFMC. Please contact WFMC at 503 650 0275 for a programming schedule

CITY OF OREGON CITY

Staff Report

625 Center Street
Oregon City, OR 97045
503-657-0891

To: Transportation Advisory Committee **Agenda Date:** 12/15/2020

From: Senior Administrative Assistant-Kim Davis

SUBJECT:

Approval of minutes from the November 17, 2020 Transportation Advisory Committee Meeting

STAFF RECOMMENDATION:

Approve the minutes

OPTIONS:

1. Approve the minutes
2. Disapprove the minutes

OREGON CITY

Transportation Advisory Committee Minutes

November 17 , 2020

1. CALL TO ORDER AND ROLL CALL

The Transportation Advisory Committee (TAC) meeting of **Tuesday November 17, 2020** was called to order by Chair Henry Mackenroth at 6:00 PM via a virtual Zoom Meeting.

Committee members present included Henry Mackenroth, John Anderson, Ray Atkinson, Cedomir Jesic, Ben Simmons, Vance Tong, and Tim Wuest. Bob LaSalle was absent.

Staff members present included John Lewis, Public Works Director, Vance Walker, Assistant Public Works Director, Dayna Webb, City Engineer, and Kim Davis, Senior Administrative Assistant.

2. APPROVAL OF THE MINUTES

Mr. Simmons **moved to approve** the minutes of **October 17, 2020** and it carried **unanimously** by the following vote: Aye: Atkinson, Mackenroth, Simmons, and Tong.

3. AGENDA ANALYSIS

Nothing added.

4. CITIZEN COMMENTS

No new citizen comments made.

5. NEW BUSINESS/DISCUSSION ITEM

a. Public Works Report

Major points were as follows:

Glen Oak Road Update:

- Vance Walker Talked about the results from the covert speed study that was done on Glen Oak Rd.
- Mr. Walker said he went and looked at the condition of the speed humps on Glen Oak Rd. He said they are showing some wear, but minimal wear on a street with a traffic count of 16,872 vehicles.
- Mr. Walker said he reached out to Code Enforcement about parking issues after hours. He said they do not typically patrol and enforce after hours. He said the recommendation from Code Enforcement is the citizen take picture

of violations and submit them to the Police Department for follow up. He said the other recommendation, that would yield the best results, is to call the non-emergency dispatch number (503-655-8211) when the violations are occurring, and an officer will be dispatched to respond.

Frontier Parkway Update:

- Mr. Walker gave results from the covert speed box that was placed on Frontier Parkway.
- Mr. Walker said he drove frontier Parkway and speed humps seem to be holding up well and the signage seems to be visible up and down Frontier Parkway, as far as speed signs.
- Mr. Walker said there are a couple of different things we could look into as far as speed is concerned.
- Matt Dale, a citizen that lives in the Frontier Parkway neighborhood, said the traffic volume is more of an issue than the speed.
- Mr. Wuest said there is nothing that can be done about the bulk of the traffic because there are a couple thousand homes in the neighborhood. He said traffic circles will slow the traffic down and that is the only solution.
- Mr. Lewis said he would like to pursue and gather more data from the neighborhood, as far as traffic volume, and look at different options.
- Mr. Lewis said he feels like the neighborhood has done a good job of doing things, like paying for the existing speed humps, and the City could justify contributing paying for a solution in the future.
- Mr. Lewis said he would like to take some more time and consideration and collect more data once traffic numbers move back to normal.
- It was decided the traffic concern would be brough back to the TAC in May of 2021, after more data is collected.

I-205 - ODOT:

- Mr. Lewis gave an update on the I-205 corridor improvement (Stafford Road to OR 213). He shared a project website and encouraged everyone to go to the website and get more information.
- Mr. Lewis said the tolling and congestion topic is still out there. He shared the website and said although the corridor improvements and tolling are related, they are addressed on their websites differently. Mr. Lewis said there is nine-page detailed letter that was sent to the Commission indicating why tolling has a lot of problems for the City. He said the letter raises a lot of concerns regarding tolling. Ms. Webb said a draft version is available to look at on the City's website.

Transportation – Grants:

- Mr. Lewis gave an update on transportation grants the City has been awarded and talked about the projects that will be done with the grant money.
- Mr. Lewis said the Safe Routes to School Grant for the Holcomb Blvd. neighborhood has been submitted, but we have yet to hear the results.

- Mr. Lewis said the City was not awarded the Transportation Growth Management Grant, but the City is still moving forward with the Park Place Urbanization Study.
- Mr. Lewis said there is a grant the City is pursuing for the Loder Road Alignment Concept Plan.
- Mr. Lewis said we have received a grant for the Molalla Avenue Cross Street Banner.
- Mr. Lewis talked about a couple of upcoming grants the City will be pursuing, one is for ODOT's 2021 Oregon Community Paths Grant Mcloughlin to Canemah Trail, and the other is 2025-2028 ARTS – Signal Safety Upgrades.

Oregon City Transportation Updates:

- Mr. Lewis gave an update on the Molalla Avenue Streetscape Project. He said the main goal is to keep traffic moving, keep businesses open, and keep pedestrians safe. He said it is preferred that bicyclist use Beavercreek Road. He said this is a two-step project and we are currently in step one.
- Mr. Lewis gave an update on Meyers Road and said its way ahead of schedule. He said the City was working on a grand opening event, but due to COVID, we had to pull the plug on that.
- Mr. Lewis shared a list of various improvement projects and talked about each one.

Facilities Update:

- Mr. Lewis gave an update on the Oregon City Public Works Operations Complex. He shared a rendering of the complex. He said we are reutilizing most of the front warehouse but are significantly modifying it.

Public Works Code Amendments:

- Mr. Lewis talked about some Public Works Code Amendments. These include, but are not limited to Long Term Temporary Obstructions, Driveways, and Public Utility Easements. He shared dates when they were going to Planning Commission and City Commission.
- Mr. Lewis talked about the Transportation Analysis Update. He said its on the City Commission agenda for December 2, 2020.

Oregon City 2020 Wildfire Evacuation Routes:

- Mr. Lewis shared the evacuation routes that were created during the 2020 wildfires and discussed them with the members.

TAC Goals Discussion:

- It was decided the TAC goal discussion would be brought back at the December 15th meeting.

Vance Tong and John Anderson Farewell:

- Vance Tong and John Anderson's memberships are expiring. John Lewis, along with other members, shared their appreciation for their volunteer hours on the Committee.

6. COMMUNICATION

7. FUTURE AGENDA ITEMS

No future items discussed

8. ADJOURNMENT

There being no further business, the meeting adjourned at 7:45 pm.

Respectfully Submitted,

Kimberly Davis
Senior Administrative Assistant

CITY OF OREGON CITY

Staff Report

625 Center Street
Oregon City, OR 97045
503-657-0891

To: Transportation Advisory Committee **Agenda Date:** 12/15/2020

From: Community Development Director Laura Terway

SUBJECT:

Resolution 20-37 Update to the Guidelines for Transportation Impact Analyses

STAFF RECOMMENDATION:

Provide comments as needed.

EXECUTIVE SUMMARY:

The Guidelines for Transportation Analyses is used by consultants to complete proper Traffic Impact Study (TIS) documents and Transportation Analysis Letter (TAL) to address impacts created by new development. The Guidelines identify the items which transportation engineers need to analyze to demonstrate that development will minimize traffic impacts. The results of the analysis demonstrate how much impact a development will have on the transportation system. The results of the analysis are then reviewed against the criteria in the Oregon City Municipal Code in order to determine if any improvements such as a turn lane or traffic signal is needed due to the increase in traffic. The Guidelines for Transportation Impact Analyses were last updated in 2005 and the proposed minor changes bring the Guidelines in line with current codes, standards, and practices.

BACKGROUND:

The Guidelines for Transportation Analyses is used by consultants to complete proper Traffic Impact Study (TIS) documents and Transportation Analysis Letters (TAL) to address impacts created by new development. The Guidelines identify the items which transportation engineers need to analyze to demonstrate that development will minimize traffic impacts. The results of the analysis demonstrate how much impact a development will have on the transportation system. The results of the analysis are then reviewed against the criteria in the Oregon City Municipal Code in order to determine if any improvements such as a turn lane or traffic signal is needed due to the increase in traffic.

The updates include:

1. Amending the Transportation System Plan (TSP) Goals to be consistent with the currently adopted TSP.
2. Clarifications and details to direct consultants how to properly address Traffic Impacts created by a development.
3. Revisions based on current standards in the area of Traffic Engineering.
4. Revisions based on the most recent adopted Mobility Standards.
5. Clarifications on who is qualified to submit a TIS or TAL.

Site Traffic Impact Study procedures were first approved on December 15, 1990 and replaced by the Guidelines for Transportation Analyses (Resolution 05-30) on November 2, 2005. The proposed update will bring the Guidelines in line with current codes, standards, and policies. The policy has been reviewed by the Planning Commission and preliminarily reviewed by the City Commission. The City Commission asked staff to review the policy for the following:

- Require the City's review be completed by a Professional Engineer licensed in Oregon;
- The language in section 1.1 be reworded for clarity in plain language;
- The off-site impacts are properly analyzed in section 2.2; and
- Accessory dwelling units are subject to review.

Staff will return to the City Commission after review by the Transportation Advisory Committee with changes and/or responses to the City Commission questions in January.

OPTIONS:

1. Provide comment.
2. Do not provide comment.

BUDGET IMPACT:

Amount: Not Applicable

FY(s): Not Applicable

Funding Source(s): Not Applicable

Summary of Proposed Draft Amendments to the Guidelines for Traffic Impact Analyses
For City Commission – 12.02.20 Draft
This is a summary. Please notify staff of any errors or omissions.

Page Number / Section	Summary	Explanation
Cover Sheet		
Page 1	Added original adoption date and new revision date.	This is a date change to show the most recent version of the guideline
1.1 Transportation Planning and Transportation Impact Analyses		
Page 2	Added the acronym TIA	TIA is the acronym for Traffic Impact Analyses and is a commonly used expression
Page 2	Added a statement about what transportation facilities are defined as.	This summarizes for applicants the entire list of modes of transportation that should be considered.
Page 2	Changed the Transportation System Plan (TSP) Goals. Expected growth from the TSP is through 2035.	Goals changed from 2001 to 2013. Updated the expected growth year.
Page 3	Added a statement on what to do when conflicts occur with other documents. Deleted general potential conflicts with OCMC	Allows OCMC to govern if/when a conflict exists rather than trying to list potential conflicts.
1.3 The Level of Analysis and Documentation		
Page 4	Adjusted reference of code.	Code reference has changed.
2.2 Content of Transportation Impact Anlayses Generally		
Page 4-5	Added that the impacts are “multi” modal. Added that mobility standards shall be addressed. Added the TSP projects should be addressed. Added that phasing should be addressed.	These additions were items that have been regularly required by the City’s traffic consultant but were not listed within this document.
2.4 Responsibilities and Authority for the City		
Page 5	Added designated City staff and City consultant as authority persons for review using the document	This reflects current practices.
3.0 Transportation Impact Analysis Documents		
Page 5	Added ADUs, lot line adjustments and right of way permits as exempt from completing a Traffic Impact Analysis. Some clarification wording was also added.	The items of exemption have historically been exempted, but were not stated in the document. Cleaned up some wording for clarification.

3.1 Determining the Required Level of Transportation Analysis and Documentation		
Page 6	Changed multi-family review requirement to 42 or fewer units.	This has been changed to be in compliance with industry standards.
Page 6	Changed LOS to Mobility	This change was made to reflect what we now called Level of Service (LOS) standards which is Mobility Standards.
4.3 Completeness Review		
Page 8	Defined that incompleteness will result if no TIS or TAL is received as part of the application. Defined what completeness is.	This is the current process. This was provided for clarification.
5.0 Transportation Analysis Letter Contents		
Page 9	Added that all engineers preparing TALs should be registered in the State of Oregon	Provides clarification
Page 9	Added requirement to show driveway spacing.	Enhances study to capture all possible traffic conflicts and align with City Code
Page 9	Added requirement for driveway width	Enhances study to capture all possible traffic conflicts and align with City Code
Page 9	Added requirement to consider sight obstructions	Enhances study to capture all possible traffic conflicts and align with City Code
Page 9	Added requirement to address safety issues	Enhances study to capture all possible traffic conflicts and align with City Code
6.0 Transportation Impact Study Contents		
Page 9	Removed requirement to use a checklist	Current practice only recommends, does not require
Page 10	Added clarification language to existing conditions criteria	Based on current practice
Page 10	Added a reference of mobility standards to item 6	Mobility standards were added to the code since the creation of this guideline.
Page 11	Add an intersection analysis of roundabout vs. traffic signal	The TSP suggests intersection improvements but analysis has not been completed to determine the best solution for an intersection improvement
7.1 Preparer Qualifications		
Page 12	Required the preparer by a Professional Engineer registered in the State of Oregon	Creates consistency within document
7.2 TIS Study Area		
Page 12	Better defined the study area	Clarified the study area

7.9 Intersection Operational Standards		
Page 17	Clarifies situational standards as well as references the ODOT standard	Provides clarification
7.9.1. Intersection Level of Service Standards		
Pages 17-22	Replaced existing guideline with the most recently adopted Mobility Standards, line for line	Updates the guideline to current standards
7.10 Access Spacing Standards		
Page 23	Changed reference to City Code 16.12	Updates guideline to current reference and standard
7.12 Crash History		
Page 25	Changed crash history data to a four year period from a three year period	Updates to current industry standard
9.0 TIS Checklist		
End of document	Removed requirement to use a checklist	Updates to current practices

This is a summary. Please notify staff of any errors or omissions. Please refer to complete code amendment chapters for all changes.

CITY OF OREGON CITY

GUIDELINES FOR

TRANSPORTATION IMPACT ANALYSES

Adopted : NOVEMBER 2, 2005
Revised : November, 18, 2020

1.0 PURPOSE

1.1 TRANSPORTATION PLANNING AND TRANSPORTATION IMPACT ANALYSES (TIAs)

Oregon City strives to accommodate growth in a responsible and sustainable manner. With regard to land use and transportation, this involves a need to balance property owners' rights to develop their land and the City's goal to plan for and provide a transportation system that serves its intended function in a safe, reliable, and predictable manner for the public.

It should be noted that the transportation system includes "transportation facilities" as defined by OCMC 17.04.1312 which more commonly include the roadway, sidewalk, and offsite pathways for vehicles, bicycles, pedestrians, transit, freight, and other modes of transportation.

The City adopted its Transportation System Plan (TSP) in 2001 and was updated on August 16, 2013, outlining a plan to provide a multi- modal transportation system to accommodate expected growth through year 20352020. *The Guidelines for Transportation Impact Analyses* are consistent with the TSP Goals:

1. Health and Safety – Enhance the health and safety of residents.Mobility – Develop a transportation system that serves the mobility needs of all Oregon City residents.
2. Effective and Efficient – Emphasize effect tiveeffective and efficient management of the transportation system.Safety – Develop a transportation system that provides adequate safety for the transportation system users.
3. Sustainable – Foster a sustainable transportation system.Capacity – Develop a transportation system that provides adequate capacity to serve the system user's needs.
4. Equitable, Balanced, and Connected – Provide an equitable, balanced, and connectd connected multi-modal transportation system.Travel Options – Develop a transportation system that incorporates, provides for, and encourages a variety of multi-modal travel options.
5. Fundable – Identify solutions and funding to meet system needs.Environment – Develop a transportation system that preserves, protects, and supports the environmental integrity of the Oregon City community.
6. Convenient and Available – Increase the convenience and availability of pedestrian, bicycle, and transit modes.Economic Development – Develop a transportation system that facilitates the desired economic development and viability of the community.
7. Prosperity – Ensure the transportation system supports a prosperous and competitive economy.Transportation Funding – Develop reasonable and effective funding and financing strategies for the recommendations and improvements contained within the Transportation System Plan.
8. Compliant – Comply with state and regional transportation plan.Accessibility – Develop a transportation network that ensures adequate and efficient accessibility for all desired land uses, modes of travel, and system users.
9. Coordination – Develop a transportation system plan that is consistent with the goals, objectives, and vision of Oregon City residents, participating agencies, and the community in general.
10. Consistency – Provide Oregon City with a transportation system and transporta

policies that allow the community to manage its transportation facilities in a manner consistent with the City's goals and philosophies.

In addition, *The Guidelines for Transportation Impact Analyses* are intended to be consistent with the provisions of the Oregon City Municipal Code (OCMC); however, if differences or conflicting language are found, the OCMC governs.

OCMC 17.68.020 sets forth the criteria for a zone change and includes the provisions:

B. That public facilities and services (water, sewer, storm drainage, transportation, schools, police and fire protection) are presently capable of supporting the uses allowed by the zone, or can be made available prior to issuing a certificate of occupancy.

C.

Service shall be sufficient to support the range of uses and development allowed by the zone.

The land uses authorized by the proposal are consistent with the existing or planned function, capacity and level of service of the transportation system serving the proposed zoning district or plan amendment.

OCMC 16.04.060 specifies that:

The decision-maker may impose reasonable conditions of approval on any approval granted under this title to ensure that the application meets, or will meet, any application approval standard.

OCMC 16.12.010 specifies that:

All land divisionsdevelopment shall be in conformance with the policies and design standards established by this chapter [Chapter 16] and with applicable standards in the city's public facility master plan and city design standards and specifications.

1.2 THE NEED FOR TRANSPORTATION ANALYSES FOR INDIVIDUAL DEVELOPMENTS

The City's development review process is designed to help the City achieve its goal of managing growth in a responsible and sustainable manner. The applicant for development is required to submit full and accurate information upon which the City staff and elected officials can base decisions. A developer-submitted transportation study prepared by a professional engineer qualified in the traffic engineering field is a critical tool used by the City to assess the expected transportation system impacts associated with a proposed development and the long-term viability of the transportation system. A study must highlight development-specific issues, present a mitigation plan to mitigate for traffic impacts, and alert the City to the potential need to program specific projects from the TSP into the Capital Improvement Program (CIP).

1.3 THE LEVEL OF ANALYSIS AND DOCUMENTATION

This document establishes analysis and submittal requirements for developments in accordance with their expected transportation impacts. Under certain conditions, the City allows a lesser level of

analysis and documentation for small developments. In addition, other developments meeting specific criteria are exempted from long-range analyses.

The City's overriding concern, as stated in Oregon City Municipal Code (OCMC) 17.02.01520, is "to promote public health, safety, and general welfare through standards and regulations…and to facilitate adequate provision for transportation…." It is the responsibility of the applicant to help the City achieve this goal through the analysis and submittal of appropriate documentation.

2.0 OVERVIEW

2.1 DIFFERENT DOCUMENTATION FOR DIFFERENT DEVELOPMENT PROPOSALS

This document describes the City's required content for a **Transportation Analysis Letter** (TAL) and for a **Transportation Impact Study** (TIS). In general terms, the TAL is applicable to smaller developments that are presumed to have a lesser transportation impact. The TIS applies to larger developments that are presumed to have a greater transportation impact.

Whether the development requires a TAL or a TIS, a professional engineer must prepare it and must use appropriate data, methods, and standards. TAL and TIS documents share many common elements, but the scope of TALs is more limited. Furthermore, there will be more variability in the scope for TISs depending on the type, location, and size of the development being proposed.

Section 3.1 provides criteria used to determine whether a TAL or TIS is required.

2.2 CONTENT OF TRANSPORTATION IMPACT ANALYSES GENERALLY

Transportation analyses, whether conducted to support a TAL or a TIS, are required to provide an objective assessment of the potential multi-modal transportation impacts associated with a specific land use action (e.g., the development of vacant land, the redevelopment of an existing land use, a comprehensive plan amendment or zoning change). The analysis and the documentation provided by the applicant must help answer several important transportation related questions including:

- Will the existing transportation system accommodate the proposed development from a capacity and safety standpoint?
- What on-site and off-site transportation system improvements will be necessary to accommodate the proposed development?
- How will access to the proposed development affect the traffic operations on the existing transportation system and how will each study area intersection operate relative to the city's mobility standards?
- How will transportation impacts of the proposed development impact the land uses, including commercial, institutional, industrial, and residential uses within the development's influence area?
- How will the proposed development meet current city standards for roadway design?
- How will the proposed development ensure the safe and efficient circulation on and adjacent to the site?
- How will the proposed development provide needed connections to abutting parcels (developed or undeveloped) for motorized as well as non-motorized traffic?
- What TSP projects are proposed that or elements of TSP projects and projects consistent with

derived from specific polices in the TSP will be needed to accommodate the proposed development?

- If the development or certain public improvements are proposed to be completed in phases, how will the various phases impact the transportation system throughout the development timeline, and how will the future phases be developed?

2.3 RESPONSIBILITIES OF THOSE PREPARING TRANSPORTATION ANALYSES GENERALLY

The responsibility for assessing the traffic impacts associated with a proposed land use action rests with the landowner or land use permit applicant. Transportation analyses submitted to the City must be prepared by or under the direct supervision of a Professional Engineer with competence in traffic engineering and registered in the State of Oregon. The report shall be signed and stamped by the professional engineer.

Under state law, engineers shall recognize at all times that their primary obligation is to protect the safety, health, property and welfare of the public in the performance of their professional duties.

These Guidelines in no way serve as a substitute for the application of sound professional engineering judgement expected to be used by practitioners in the preparation and submittal of transportation analyses.

2.4 RESPONSIBILITIES AND AUTHORITY FOR THE CITY

Throughout this document the term "City Engineer" is used as the individual with authority for certain actions and for interpretation of aspects of these guidelines. For the purposes of this document, the term "City Engineer" should be taken to mean the "City Engineer or his/her designee including but not limited to designated staff or City consultant."

~~The term "City decision maker" is used to identify the individual or body with responsibility for certain actions. The "City decision maker" and city decision-making process are defined in OCMC Section 17.50.030.~~

3.0 TRANSPORTATION IMPACT ANALYSIS DOCUMENTS

An analysis and appropriate documentation is generally required when a development application and/or application for re-zoning is filed with the City. A transportation impact analysis (TIA) is required when application is made for land to be subdivided as provided for in OCMC 16.12; when application is made for a conditional use as specified in OCMC 17.56; and when application is made for a change in zoning districts as provided for in OCMC 17.68.

A transportation analysis is not required for modification of a single-family dwelling, ~~or for~~ construction of a replacement dwelling, accessory dwelling unit (ADU), lot line adjustment, or an application for work in the right of way. In most other circumstances and for most other development applications, some level of transportation analysis is required.

Recognizing that not all developments will have a significant impact on the transportation system, ~~the City of Oregon City has developed~~ these guidelines include criteria to help determine the need for and level of transportation analysis required in relation to the proposed development.

3.1 DETERMINING THE REQUIRED LEVEL OF TRANSPORTATION ANALYSIS AND

DOCUMENTATION

A Transportation Impact Study (TIS) is required for developments that are expected to have an impact on the transportation system. When specific criteria generally associated with small developments are met, a Transportation Analysis Letter (TAL) may be substituted for the required TIS.

traffic control,

At the discretion of the City Engineer, a TAL may satisfy the City's transportation analysis requirements, in lieu of a TIS, when a development meets all of the following criteria:

A. The development generates fewer than 24 peak hour trips during either the AM or PM peak hour and fewer than 250 daily trips.

ETwo examples of common developments generating fewer trips than these threshold levels are: a subdivision containing 24 or fewer single-family residences, or a general office building less than 15,000 square feet, a multi-family building with 2442 or fewer units, or any proposed partition.

B. The development is not expected to further impact intersections that currently fail to meet the City's level of servicemobility standards or intersections that are operating near the limits of the acceptable level of service thresholds during a peak operating hour. (LOS Mobility standards are defined in 7.9.1)

B.C. The development is not expected to significantly impact adjacent roadways and intersections that are high accident locations, areas that contain an identified safety concern, or high concentration of pedestrians or bicyclists such as school zones

The specific requirements for and content of a TAL are contained in Section 5.0. The specific requirements for and content of a TIS are contained in Section 6.0.

4.0 PROCESS AND PROCEDURES

This section describes in general terms the process and procedures followed by the City in relation to the processing and review of transportation impact analyses. Nothing in this section is intended to replace or supercede the City's process, code requirements, or obligations under state law with regard to land use actions.

4.1 PRE-APPLICATION MEETING

A landowner or developer seeking to develop/redevelop property shall contact the City and schedule a pre-application meeting as required by OCMC 17.50.050. The City's pre-application form specifies the City's requirements applicable to land use actions. An applicant should be prepared to present, preferably in writing, the following:

- type of uses within the development
- the size of the development
- the location of the development
- proposed new accesses or roads
- estimated trip generation and source of data
- proposed study area

4.2 ESTABLISHING THE SCOPE OF WORK

During, or within a reasonable time following the pre-application meeting, the City will establish whether a TAL or TIS is required. (See Section 3.1). If a TIS is required, the City will provide a scoping summary detailing the study area and any special parameters or requirements beyond the requirements set forth in this document. An applicant is encouraged, but not required, to propose a scope of work and a study area using the guidance presented in Section 7.2.

4.2.1 Potential for Expansion of the Scope of Work

In the scoping summary the City will establish expectations and a study area within which significant impacts of the development are expected. The City's final decision on the land use criteria cannot be bound by the specifications or limitations in the scoping summary because additional information or concerns may come to light over the course of the analysis that causes the City to require additional analysis or information. Ultimately, it is the applicant's responsibility to demonstrate compliance with the criteria in the Oregon City code.

The City Engineer reserves the right to require additional analysis, especially when the need for such analysis becomes evident from information gathered by or presented by the applicant. The applicant's engineer should be alert to this possibility and expand his/her scope of work to address issues, especially those of public safety, or at least advise the City of such issues if they arise.

The City Engineer may at his/her discretion expand the requirements and/or study area of a TIS or TAL if needed to address any issue that comes to light after the preparation of the scoping summary.

4.2.2 Time Limit on the Scoping Summary

The City's scoping summary and review requirements are to be considered valid for a reasonable period of time, but are not to be considered binding on the city. Applicants are advised that delays of more than a few months before submitting TAL or TIS documents significantly increases the likelihood that the City will need additional information to adequately evaluate the impacts of a proposed development.

4.3 COMPLETENESS REVIEW

Upon completion of the TIS or TAL, the applicant will submit the number of copies specified by the City in accordance with OCMC 17.50.080 to the City for review. At that time, City staff will perform an initial review of the document to determine whether there are obvious omissions or concerns. The City will rely upon and make use of the completed and signed TIS checklist, described in more detail in Section 9.0., and which is to be incorporated as one of the first inside pages of the submittal to determine whether or not it is "complete."The lack of a submission of a TIS or TAL will result in a determination of "Incomplete".

A determination of Completeness is not a determination that the applicant's data, methods, of accuracy of the analysis, or meeting the standardsconclusions and recommendations are valid.

Once the overall development application, including the required TAL or TIS, as appropriate, is deemed "complete," the 120-day land use review process will begin.

4.4 TECHNICAL REVIEW

Once the land use review process is initiated, the City Engineer will conduct a technical review of the TIAS to determine the adequacy and quality of the work including, but not limited to the study data sources, methods, findings and recommendations. The City Engineer and/or his/her designee(s) will provide findings for use by the City regarding expected transportation impacts from the proposed development.

If substantive errors or omissions are discovered during review, the applicant will be notified and asked to address the comments prior to a land use decision. The applicant should promptly rectify omissions and respond with any additional analysis or information; a delay or refusal to respond may result in the denial of an application if the information and analysis submitted is insufficient to show compliance with the applicable criteria.

The lack of specificity on the part of the City in the scoping summary or confusion in its interpretation does not alter the applicant's responsibility to perform a thorough and comprehensive transportation analysis nor does it preclude City decision maker from determining that a TAL or TIS that fully complies with the scoping requirement is insufficient to show compliance with all applicable criteria.

Issues or problems discovered during the Technical Review may, at the discretion of the City's decision maker, be resolved through the use of condition of approval.

5.0 TRANSPORTATION ANALYSIS LETTER CONTENTS

If the City determines based on information provided by the applicant and in accordance with the criteria specified in Section 3.1 that a TAL is the appropriate document to submit, the following requirements shall apply.

The TAL shall be prepared by or prepared under the direct supervision of a ~~Registered~~ Professional Engineer registered in the State of Oregon who shall sign and stamp the TAL.

The TAL shall include the following:

1. The expected trip generation of the proposed development including the AM peak hour, the PM peak hour, daily traffic, and other germane periods as may be appropriate, together with appropriate documentation and references.
2. Site plan showing the location of all access driveways, ~~or~~ private streets, or alleys where they intersect with public streets plus driveways of abutting properties and driveways on the opposite side of the street from the proposed development. Dimensions of driveway spacing as measured at the right of way from edge to edge of driveway shall be shown and shall meet or exceed the minimum driveway spacing standards.
3. ~~Documentation~~Site plan showing width of all~~that all site access~~ driveways and shall meet Oregon City ~~Private Access~~ Driveway Approach Size~~Width~~ Standards.
4. ~~Documentation~~Site plan showing that all ~~site access driveways~~public roads meet Oregon City's ~~Minimum City~~ Street Design~~Intersection Spacing~~ Standards including alignment, intersection angles, cul-de-sacs, and block standards.
5. Documentation that all new site accesses and/or public street intersections meet AASHTO intersection sight distance guidelines.

~~5.~~6. Preliminary analysis that all new streets comply with traffic sight obstructions in OCMC 10.32.

~~6.~~7. Documentation that there are no inherent safety issues associated with the design and location of the site access driveways.

~~7.~~8. Documentation that the applicant has reviewed the City's TSP and that proposed streets and frontage improvements do or will comply with any applicable standards regarding the functional classification, typical sections, access management, traffic calming and other attributes as appropriate.

9. When required of the development, documentation that no inherent safety issues are associated with the design and location of pedestrian, bicycle, or transit safety.

6.0 TRANSPORTATION IMPACT STUDY (TIS) CONTENTS

The following information shall be included in each TIS submitted to the City. Additional information specified by the City in the scoping summary or through the pre-application meeting or other project meetings shall also be included.

~~1. Completed TIS checklist signed by the Professional Engineer responsible for the preparation of the TIS.~~

~~2.~~1. Table of Contents – Listings of all sections, figures, and tables included in the report.

3.2. Executive Summary – A summary of key points, findings, conclusions, and recommendations including a mitigation plan.

4.3. Introduction:

- Proposed land use action including site location, zoning, building size, and project scope.
- Map showing the proposed site, building footprint (s), access driveways, and/or parking facilities.
- Map of the study area that shows site location and surrounding roadway facilities .

5.4. Existing Conditions:

- Existing site conditions and adjacent land uses.
- Roadway characteristics of ~~important~~ transportation facilities ~~and modal opportunities~~ located within the study area, including roadway functional classifications, street cross-section, ~~intersection configurations (signals, turn lanes, etc),~~ posted speeds, general sight distance, bicycle and pedestrian facilities, on-street parking, and transit facilities.
- Existing lane configurations and traffic control devices at the study area intersections.
- Existing traffic volumes and operational analysis of the study area roadways and intersections.
- Roadway and intersection crash history analysis.
- Intersection and stopping sight distance related to new and impacted (existing) driveways and intersections.

6.5. Background Conditions (without the proposed land use action)

- Approved in-process developments and funded transportation improvements in the study area.
- Traffic growth assumptions.
- Addition of traffic from other planned developments.
- Background traffic volumes and operational analysis.

7.6. Full Buildout Traffic Conditions (with the proposed land use action)

- Description of the proposed development plans.
- Trip generation characteristics of proposed project (including trip reduction documentation).
- Trip distribution assumptions.
- Full buildout traffic volumes and intersection operational analysis including the performance relative to the applicable mobility standards for each intersection.
- Site circulation and parking.
- Intersection and site-access driveway queuing analysis.
- ~~Impact to mobility standards.~~
- Recommended roadway and intersection mitigation measures (if necessary).
- ~~-~~

8.7. Conclusions and recommendations

9.8. Appendix- With dividers or tabs

- Traffic count summary sheets.
- Crash analysis summary sheets.

- Existing, Background, and Full Buildout traffic operational analysis worksheets with detail to review capacity calculations.
- Signal, left-turn, and right-turn lane warrant evaluation calculations.
- Signal timing sheets depicting the timing and phasing used in analysis.
- Intersection analysis – Roundabout vs. Traffic Signal
- Mobility Standards Analysis
- Other analysis summary sheets such as queuing.

To present the information required to analyze the transportation impacts of development, the following figures shall be included in the TIS:

1. Vicinity Map
2. Existing Lane Configurations and Traffic Control Devices
3. Existing Traffic Volumes and Levels of Service for each required time period
4. Future Year Background Traffic Volumes and Levels of Service for each required time period
5. Proposed Site Plan, including access points for abutting parcels and for those across the street from the proposed development
6. Future Year Assumed Lane Configurations and Traffic Control Devices
7. Estimated Trip Distribution/Assignment Pattern
8. Trip reductions (pass-by trips at site access (es))
9. Site-Generated Traffic Volumes for each required time period
9.
10. Full Buildout Traffic Volumes and Levels of Service for each required time period -
10.

7.0 STANDARDS AND PROCEDURES

To help ensure consistency in the preparation and review of each TIS and TAL, the City of Oregon City has established a set of guidelines and procedures. These standards and procedures include the following:

- Preparer qualifications
- TIS study area
- Analysis years and time periods
- Data collection guidelines
- Trip generation guidelines
- Trip distribution and assignment guidelines
- Minimum intersection operational standards
- Minimum access spacing standards
- Other analysis guidelines

7.1 PREPARER QUALIFICATIONS

Each TIS and TAL shall be prepared by or under the direct supervision of a Professional Traffic Engineer registered in the State of Oregon or a Professional Engineer registered in the State of Oregon qualified to perform traffic engineering as defined by OAR 820-040-0030. The engineer must have background and experience in the methods and concepts associated with transportation impact studies. Each TIS and TAL shall be sealed and signed by the Professional Engineer registered in the State of Oregon prior to acceptance by the City for a technical review.

7.2 TIS STUDY AREA

Each TIS shall include a vicinity map that shows the site, the study area, and the surrounding transportation system. A brief description of the site location and study area shall be provided. The study area shall be based on engineering judgement and an understanding of existing and future land use and traffic conditions in the vicinity of the site. The following considerations shall form the basis of establishing the study area.

The following facilities shall be included in the study area for all TIS's:

- All site-access points and intersections (signalized and unsignalized) adjacent to the proposed site. In particular, if the proposed site fronts an arterial or collector street, the analysis shall address all intersections and driveways along the site frontage, including those serving parcels on the opposite side of the street(s) and parcels directly adjacent to the proposed development.
- Roads through and adjacent to the proposed development~~site~~.
- Any intersection of two streets, each with a classification of collector or arterial, where site traffic will exceed 20 vehicles during a peak hour or, in the case of a rezone, if the trip differential resulting from the rezone will exceed 20 vehicles during a peak hour.

- All intersections needed for signal progression analysis.

As indicated in Section 4.1, the applicant is encouraged to propose a study area at the pre-application meeting or in response to the discussions between the applicant and the City's representatives.

In addition to these requirements, the City Engineer may determine any additional intersections or roadway links that may be adversely affected as a result of the proposed development. The applicant reduces his risk of having an adverse staff report if the applicant reaches agreement with the City Engineer prior to the start of the transportation impact analysis.

7.3 ANALYSIS YEARS TO BE ANALYZED IN THE TIS

To adequately assess the impacts of a proposed land use action, several study periods should be addressed in the transportation impact analysis. These study periods or horizon years consist of the following:

- **Existing Year**
- **Background** – The conditions in the year in which the proposed land use action will be completed and occupied, but without the expected traffic from the proposed land use action. This analysis should include all in-process developments, or city approved developments that are expected to be fully built out in the proposed land use action horizon year. It should also account for all in-process/planned transportation system improvements.

  Note: Depending on funding or project development issues, it may not be appropriate to assume that certain planned transportation system improvements will be in place on opening day. Applicants should contact the City Engineer to confirm appropriate assumptions.
- **Full Buildout –** The background condition plus traffic from the proposed land use action assuming full build-out and occupancy.
- **Phased Years of Completion** – If the project involves construction or occupancy in phases or for master plans, the applicant is expected to assess the expected roadway, intersection, and land use conditions resulting from major development phases. Phased years of analysis will be determined in coordination with City staff.
- **20-Year or TSP Horizon Year** – For master plans, zone changes, and conditional uses, the applicant shall assess the expected future roadway, intersection, and land use conditions resulting from deviations from approved comprehensive planning documents.

A twenty-year or TSP Horizon Year analysis will not be required for the following development proposals:

- For out-right permitted uses under the current zoning.
- For residential-to-residential rezoning proposals when the rezoning produces an increase of twenty-five (25) or fewer peak hour trips.

7.4 ANALYSIS PERIODS TO BE ANALYZED IN THE TIS

Within each analysis year, specific consideration should be directed to the time period(s) that experience the highest degree of network travel. These periods typically occur during the weekday morning (7:00AM to 9:00AM) and weekday evening (4:00 PM to 6:00 PM) peak commuting hours.

The TIS shall address the weekday AM and PM peak hours when the proposed land use action is expected to generate 25 trips or more during the peak time periods. If the applicant can demonstrate that the peak hour trip generation of the proposed land use action is fewer than 25 trips during one of

the two peak study periods and the peak trip generation of the land use action corresponds to the roadway system peak, then only the worse of the two peak periods must be analyzed. This does not mean, however, that all aspects of the other peak period can be ignored. The applicant should consider, for example, the possibility that inbound and outbound trips at the site driveway have specific operational issues that may need to be addressed for both peak hours.

Depending upon the proposed land use action and the expected trip generating characteristics of that development, other time periods may be specified, either as a substitute for, or in addition to the AM and PM peak hours. Examples of land uses that have non-typical trip generating characteristics include schools, restaurants, movie theatres, nightclubs, and churches. Applicants should assume that the City will require additional analysis periods for certain uses as summarized below:

- Schools – End of the school day (early afternoon) peak hour
- Churches and worship facilities – Peak period prior to and after worship services.
- Restaurants – Mid-day weekday peak hour
- Shopping centers, home improvement centers, superstores, and retail facilities of more than 60,000 square feet – Saturday peak hour.

When the additional hours for analysis are specified, the applicant need not necessarily carry the analysis through all steps if the data and the engineer's analysis shows that some time periods clearly represent the worst case. If, for example, the mid-day peak period traffic volumes at a restaurant are lower than the other peak periods, except at the site driveway, the mid-day peak need only be analyzed for the driveway location. The engineer preparing the TIS is advised to provide thorough documentation of the reasons for reducing the scope of the extra time periods. The applicant may choose to bring such issues to the attention of the City Engineer for discussion prior to submittal of the TIS.

The above list is not necessarily an all-inclusive list of uses for which additional analysis periods is required. The City Engineer and applicant should discuss the potential for additional study periods prior to the start of the transportation impact analysis.

7.5 APPLICATIONS INVOLVING ZONE CHANGES

In the case of a land use proposal involving a zone change, the TIS must analyze a 20-year horizon period as required by the Oregon Transportation Planning Rule (TPR) and may require interim years in the case of a master plan that also requires a zone change. Applicants seeking a rezoning are advised that in addition to any requirements specified by the City, it is their obligation to address requirements in OAR 660-12-0060. The City's exemption from the requirement for 20-year analysis for certain rezoning actions as specified in Section 7.3 may not exempt the applicant from addressing TPR requirements.

For proposals involving rezoning, the applicant shall compare the traffic generated by his/her development proposal, a reasonable worst-case development under the proposed zoning and a reasonable worst-case development under current zoning.

7.6 TRAFFIC COUNT REQUIREMENTS

Once the TIS study area and analysis periods have been determined, turning movement counts shall be collected at all study area intersections to determine the base traffic conditions. These turning movement counts should typically be conducted during the weekday (Tuesday through Thursday)

between 7:00 a.m. – 9:00 a.m. and 4:00 p.m. – 6:00 p.m. and for other periods depending upon the proposed and/or surrounding land uses. Historical turning movement counts may be used if the data is not more than 12 months old at the time the TIS is deemed complete for review. Historical counts shall be factored accordingly to meet the existing traffic conditions. In high traffic locations where congestion is present or traffic peaks early or late, extended or altered count periods may be required.

7.7 TRIP GENERATION FOR THE PROPOSED DEVELOPMENT

To determine the impacts of a proposed development on the surrounding transportation network, the trip generation characteristics of that development must be estimated. Trip generation characteristics should be obtained from one of the following acceptable sources:

- Institute of Transportation Engineers (ITE) *Trip Generation* (latest edition).
- Specific trip generation studies that have been conducted for the particular land use for the purposes of estimating peak hour trip generating characteristics, subject to approval by the City Engineer prior to their inclusion in the transportation impact analysis.

In addition to new site generated trips, several land uses typically generate additional trips that are not added to the adjacent traffic network. These trips include pass-by trips and internal trips and are considered to be separate from the total number of new trips generated by the proposed development. The procedures listed in the (ITE) *Trip Generation Handbook* should be used *where appropriate* (emphasis added) to account for pass-by trips and internal trips. The applicant's engineer shall not use any pass-by or internal trip reductions with prior approval of the method or data sources by the City Engineer.

Special Attention Items

The ITE *Trip Generation Handbook* maintains limited data regarding pass-by, diverted-linked, and internal shared trip-making characteristics. Professional judgment needs to be used in applying this data. For example, it is not appropriate to apply PM peak hour pass-by percentages to AM or daily periods where AM and daily percentages do not exist. Also, ITE's internal shared trip characteristics are based on a limited number of studies from the early 1990's in Florida. These sites included a mix of commercial, residential, retail, and other uses. For developments that contain only one or two of these uses, a maximum shared trip reduction of five (5) percent will be allowed without appropriate justification and supporting data from the applicant.

The ITE *Trip Generation Handbook* outlines specific guidelines for use of weighted average trip rates versus regression equations. These guidelines shall be followed unless the applicant provides valid justification for deviation.

7.8 TRIP DISTRIBUTION AND ASSIGNMENT

Estimated site generated traffic for the proposed development should be distributed and assigned to the existing or proposed arterial and collector street network. Trip distribution methods should be based on a reasonable assumption of local travel patterns and the locations of off-site origin/destination points within the site vicinity. Acceptable trip distribution methods should be based on one or more of the following procedures:

- A select zone analysis of the proposed site can be obtained from METRO's regional planning model. When using the regional planning model for distribution purposes, the engineer preparing the TIS should make sure that the model assumes the proper existing and future year land use and zoning designations and that he/she understands model load points (centroid

- connectors). The applicant should also be aware that Metro's model is a regional model and that professional judgement must be applied when using it for specific developments.
- An analysis of local traffic patterns and intersection turning movement counts can be used as long as the data has been gathered within the previous twelve months.
- A detailed market study specific to the proposed development and surrounding land uses may be used to determine the specific influence area. Site generated traffic within the identified influence area should be distributed based on principles and concepts associated with the gravity model theory. Note that if a market study is to be used as a basis for trip distribution, the entire market study must be made available to the City and it shall become part of the public record and, as such, any client confidentiality is lost.

Special Attention Items

In the case of retail developments, the applicant shall clearly distinguish between pass-by and non-pass-by trips to allow the reviewer to understand how the pass-by trips were accounted for and applied throughout the study area. The treatment of pass-by trips at the site entrance may be most easily addressed through separate figures depicting the total site trips and the individual pass-by and non-pass-by components.

7.9 INTERSECTION OPERATIONAL STANDARDS

To assess the impacts of the proposed land use action on the transportation system, the TIS shall compare the existing, background, and full buildout intersection traffic volumes to the minimum intersection operational standards.

The City of Oregon City evaluates intersection operational performance based on the volume-to-capacity ratio (v/c) or the Level of Service (LOS) as defined in the *Highway Capacity Manual (HCM)* published by the Transportation Research Board depending on the specifics of the intersection and location.

~~LOS calculations for signalized intersections are based on the average control delay per vehicle, while LOS calculations for unsignalized intersections are based on the average control delay and volume-to-capacity (v/c) ratio for the worst or critical movement.~~ All LOS definitions should be consistent with the most recent version of the *HCM*. The v/c ratio used by Oregon City is based on the Oregon Department of Transportation's *Analysis Procedures Manual.*

7.9.1 Intersection Level of Service Standards

The City of Oregon City requires all intersections within the study area to maintain an acceptable ~~level of service (LOS)~~performance upon full buildout of the proposed land use action as defined below.~~:~~

~~Oregon City's minimum acceptable Level of Service (LOS) is defined as follows for signalized intersections in the city that are located outside the Regional Center (Downtown Community Plan) boundaries:~~

~~LOS "D" or better for the intersection as a whole *and* no approach operating at worse than LOS "E" *and* a v/c ratio not higher than 1.0 for the sum of critical movements.~~

~~For signalized intersections within the Regional Center boundaries, the following minimum LOS standards will be allowed:~~

~~LOS "D" can be exceeded during the AM and PM peak hour; however, during the second hour of each two-hour peak period, LOS "D" or better will be required for the~~

~~intersection as a whole *and* no approach operating at worse than LOS "E" *and* a v/c ratio not higher than 1.0 for the sum of the critical movements.~~

~~Oregon City's minimum acceptable LOS is defined as follows for unsignalized intersections throughout the city:~~

~~LOS "E" or better for the poorest operating approach *and* with no movement serving more than 20 peak hour vehicles operating at worse than LOS "E." In other words, LOS "F" will be tolerated for minor movements during a peak hour.~~

~~The Regional Transportation Plan (RTP) recognizes that congestion will occur more readily within regional centers. Policy 13.0 and Table 1.2 of the 2000 RTP establish motor vehicle LOS policy and Regional Motor Vehicle Performance Measures for regional facilities. These measures are applicable at a planning level and the LOS values are calculated on a link basis using the volume to capacity ratio for a given link or segment. Intersection analysis and improvements also generally fall outside of the RTP, and capacity improvements recommended in the RTP generally apply to links in the regional system, not intersections.~~

~~However, to be consistent with RTP policy for accepting some limited congestion in regional centers, the City will allow reduced standards solely for the first peak hour. For signalized intersections within the Regional Center boundaries, the following minimum LOS standards will be allowed:~~

~~LOS "D" can be exceeded during the peak hour; however, during the second peak hour, LOS "D" or better will be required as a whole and no approach operating at worse than LOS "E" and a v/c ratio not higher than 1.0.~~

~~When approving land use actions, the City of Oregon City requires all relevant intersections to be maintained at the above LOS upon full build-out of the proposed land use action.~~

Development shall demonstrate compliance with intersection mobility standards. When evaluating the performance of the transportation system, the city of Oregon City requires all intersections, except for the facilities identified in subsection E below, to be maintained at or below the following mobility standards during the two-hour peak operating conditions. The first hour has the highest weekday traffic volumes and the second hour is the next highest hour before or after the first hour. Except as provided otherwise below, this may require the installation of mobility improvements as set forth in the transportation system plan (TSP) or as otherwise identified by the city engineer.

~~A.~~

A. For intersections within the regional center, the following mobility standards apply:

~~1.~~

1. During the first hour, a maximum v/c ratio of 1.10 shall be maintained. For signalized intersections, this standard applies to the intersection as a whole. For unsignalized intersections, this standard applies to movements on the major street. There is no performance standard for the minor street approaches.

~~2.~~

2. During the second hour, a maximum v/c ratio of 0.99 shall be maintained at signalized intersections. For signalized intersections, this ~~-~~standard ~~-~~applies to the intersection as a whole. For unsignalized intersections, this ~~-~~standard ~~-~~applies to movements on the major street. There is no performance standard for the minor street approaches.

~~3.~~

3. Intersections located on the regional center boundary shall be considered within the regional center.

~~B.~~

B. For intersections outside of the regional center but designated on the arterial and throughway network, as defined in the regional transportation plan, the ff~~~~ollowing ~~-~~mobility ~~-~~standards ~~-~~apply:

~~1.~~

1. During the first hour, a maximum v/c ratio of 0.99 shall be maintained. For signalized intersections, this standard applies to the intersection as a whole. For unsignalized intersections, this standard applies to movements on the major street. There is no performance standard for the minor street approaches.

~~2.~~

2. During the second hour, a maximum v/c ratio of 0.99 shall be maintained at signalized intersections. For signalized intersections, this standard applies to the intersection as a whole. For unsignalized intersections, this standard applies to movements on the major street. There is no performance standard for the minor street approaches.

~~C.~~

C. For intersections outside the boundaries of the regional center and not designated on the arterial and throughway network, as defined in the regional transportation plan, the following mobility standards apply:

~~1.~~

1. For signalized intersections:

~~a.~~

a. During the first hour, LOS "D" or better will be required for the intersection as a whole and no approach operating at worse than LOS "E" and a v/c ratio not higher than 1.0 for the sum of the critical movements.

~~b.~~

b. During the second hour, LOS "D" or better will be required for the intersection as a whole and no approach operating at worse than LOS "E" and a v/c ratio not higher than 1.0 for the sum of the critical movements.

~~2.~~

2. For unsignalized intersections outside of the boundaries of the regional center:

~~a.~~

a. For unsignalized intersections, during the peak hour, all movements serving more than twenty vehicles shall be maintained at LOS "E" or better. LOS "F" will be tolerated at movements serving no more than twenty vehicles during the peak hour.

~~D.~~

D. For the intersection of OR 213 and Beavercreek Road, the following ~~-~~mobility ~~-~~standards ~~-~~apply:

~~1.~~

1. During the first, second and third hours, a maximum v/c ratio of 1.00 shall be maintained. Calculation of the maximum v/c ratio will be based on an average annual weekday peak hour.

~~E.~~

E. Until the city adopts new performance measures that identify alternative ~~-~~mobility ~~-~~targets, the city shall exempt proposed development that is permitted, either conditionally, outright, or through detailed development master plan approval, from compliance with the above-referenced mobility standards for the following state-owned facilities:

I-205/OR 99E Interchange.

State intersections located within or on the regional center boundaries.

~~1.~~

1. In the case of conceptual development approval for a master plan that impacts the above references intersections:

~~a.~~

a. The form of mitigation will be determined at the time of the detailed development plan review for subsequent phases utilizing the code in place at the time the detailed development plan is submitted; and

~~b.~~

b. Only those trips approved by a detailed development plan review are vested.

~~2.~~

2. Development which does not comply with the mobility standards for the intersections identified in OCMC ~~-~~16.12.033 ~~-~~shall provide for the improvements identified in the transportation system plan (TSP) in an effort to improve intersection mobility as necessary to

offset the impact caused by development. Where required by other provisions of the code, the applicant shall provide a traffic impact study that includes an assessment of the development's impact on the intersections identified in this exemption and shall construct the intersection improvements listed in the TSP or required by the code.

7.9.2 Intersection Design Features and Queuing Calculations

The TIS shall contain sufficient data and information derived from the traffic analysis to provide the roadway/intersection designer and City staff with information on which to assess intersection design features such as the length of storage required for lanes on each approach.

Queue lengths shall be calculated for each lane of all approaches to signalized intersections for the 95th percentile queue. Queue lengths shall also be calculated for unsignalized locations, such as site driveways, where standing queues can interfere with other movements, especially if such interference can contribute to safety problems. Appropriate analysis methods should be used that account for the actual arrivals of vehicles at an intersection.

Special Attention Items

The applicant's engineer shall use professional judgment in selecting the appropriate analysis tools and methods for evaluation of intersection operations. The HCM, for example, states "The [HCM] methodology does not take into account the potential impact of downstream congestion on intersection operation. Nor does the methodology detect and adjust for the impacts of turn-pocket overflows on through traffic and intersection operation." If these conditions are present or can reasonably be expected to exist as a result of the proposed development, the applicant's engineer shall supplement his/her initial analysis with other analysis tools and methods that account for such conditions.

The applicant's engineer also must use reasonable signal timing and consider corridor timing plans where appropriate.

When calculating queues, Poisson distribution may be used for locations subject to random arrivals. Other analysis methods shall be used where signal systems cause different arrival patterns and when congestion causes accumulation from one cycle to the next. Queue lengths shall be based on average vehicle length of twenty-five (25) feet, or longer where appropriate.

7.10 ACCESS SPACING STANDARDS

Access locations on roadway sections must be located to ensure safe and efficient travel along a transportation facility to limit potential conflicting turning movements, weaving maneuvers over short distances, and congestion along facilities. Access management standards vary depending upon the functional classification and purpose on a given roadway. Roadways in the upper echelon of the functional classification system (i.e. arterials) tend to have stringent spacing standards, while facilities ranked lower in the functional classification system allow more closely spaced accesses.

The applicant shall use the standards in OCMC 16.12 ~~Section 2.2 – Access Management Standards of Oregon City's Design Standards Manual~~ and discuss whether the following standards are met through their proposed development:

- Minimum city street intersection spacing (the distance between adjacent intersections),
- Minimum private access spacing (the distance between adjacent driveways and between driveways and street intersections),
- Minimum traffic signal spacing (the distance between adjacent signalized intersections),
- Minimum private access driveway widths (the measurement of the individual driveway surface)

Exception Process:

In cases where physical constraints or unique site characteristics limit the ability for the above access spacing standards to be met, the City decision maker may grant an access spacing exception. Typically, access exceptions are available only for a parcel whose roadway frontage, topography, or location would otherwise preclude issuance of a conforming permit and the parcel would either have no reasonable access or cannot otherwise obtain reasonable alternate access to the public road system. However, if the limitation or condition is one that the applicant or owner has contributed to by any previous subdivision of property, sale, building activity, or site development, the limitation or condition shall not constitute a basis for an access exception. Note also that the City may choose to prohibit some movements (e.g. left turns) at the site access location, especially if such access is in a location where an access exception is needed.

When an exception is required, the transportation impact analysis must show that the new access will not adversely impact the existing transportation system. A high burden is placed on the applicant and his/her engineer to prove that the system will not be adversely impacted and that public safety will not be compromised.

7.11 SIGHT DISTANCE

For all new proposed site driveways and public street intersections, an evaluation of stopping sight distance (SSD) and intersection sight distance (ISD) shall be conducted consistent with procedures outlined in the current version of the AASHTO *Policy on Geometric Design of Highways and Streets.* At the discretion of the City Engineer, the applicant may be exempted from a need to assess sight distance.

The City standard for new driveways and intersections requires that ISD meet the minimum distance specified in AASHTO. The applicant may apply for a design exception allowing a driveway or intersection that meets SSD rather than ISD. A high burden is placed on the applicant and his/her engineer to prove that the system will not be adversely impacted and that public safety will not be compromised. The City Engineer may grant a design exception if the following conditions are met:

1. ~~1)~~ The intersection or driveway is proposed to intersect with a local or neighborhood collector street (not a major collector or arterial street), and
2. ~~2)~~ The approach is forecast to serve fewer than forty (40) vehicles per day, and
3. ~~3)~~ The intersection will not adversely impact the existing transportation system.

The City Engineer may also grant a design exception if the intersection is forecast to serve less than 100 vehicles per day for a period of not more than twenty-four (24) months. Should the City Engineer choose to grant a design exception, he/she may place additional conditions on the applicant, such as, but not limited to placement of warning signs or the use of flaggers for manual traffic control as prescribed by

the *Manual on Uniform Traffic Control Devices* (MUTCD).

Special Attention Items

Under AASHTO procedures, intersection sight distance is evaluated based on the roadway design speed – not the roadway posted speed. Where design speed is not known, it shall be estimated using procedures outlined in the AASHTO *Policy on Geometric Design of Highways and Streets*. This generally results in a design speed anywhere from 5 to 10 mph above prevailing posted speed.

7.12 CRASH HISTORY

Within the study area for each TIS, a crash history evaluation shall be conducted for the most recent fourthree-year period. The intent of the evaluation is to identify any apparent trends in the -data -that reflect a safety issue that may be exacerbated by the proposed development and to identify mitigation to resolve the issue(s). At a minimum, the analysis shall summarize the number of crashes per year -by type and severity. Intersection crash rates shall be calculated and evaluated. The engineer shall assess the overall results of the safety analysis.

7.13 SAFE ROUTES TO SCHOOL

For proposed residential developments, the TIS shall include a brief discussion of routes to the nearest schools. The applicant shall identify the primary walking/biking route between the proposed development and the nearest elementary, middle, and high school. Specifically, the applicant shall describe the general bicycle and pedestrian environment between the proposed development and each school, including the presence and condition of pedestrian and bicycle facilities and the roadway environment (speed, lanes, etc.) along the routes. This section requires applicants to address the special need to link residential areas to area schools.

7.14 WARRANTS (TURN LANE, TRAFFIC CONTROL)

The following section provides guidance on evaluating turn lane and traffic signal warrants.

7.14.1 Traffic Control Warrants

An evaluation of traffic signal warrants shall be conducted for all unsignalized study area intersections where any approach is shown to operate at LOS E or worse under existing, background, or total traffic conditions. Signal warrant analysis shall be conducted in accordance with the current version of the *Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD).

Warrants to evaluate conversions between yield control, two-way STOP control, and multi-way- STOP control shall, as deemed necessary by the applicant's traffic engineer, comply with the MUTCD.

Special Attention Items

The reduction of minor street right turns is an important factor in evaluating traffic signal warrants and care must be taken to ensure the practice is not overlooked or improperly applied as it can affect warrant determinations. Both the MUTCD and the National Cooperative Highway Research Program (NCHRP) Report 457- *Evaluating Intersection Improvements: An Engineering Study Guide*, 2001 offer detailed discussions of the proper methods to address right turn reductions.

For state highways, ODOT's Transportation Planning Analysis Unit maintains specific guidelines regarding right turn reductions that shall be applied to highway intersections. Other methods such as delay-based reduction methods may be considered if reasonably explained and justified by the applicant.

The construction of a lane to accommodate right turns shall be considered as a mitigation measure before or in addition to the analysis of traffic signal warrants for the installation of a traffic signal.

Note that Warrant 3, Peak Hour according to the MUTCD "shall be applied only in unusual cases." The burden of proof is on the applicant that the case is truly unusual. The applicant must evaluate the conditions using other warrants before attempting to justify the use of the Peak Hour warrant.

7.14.2 Turn Lane Warrants

The provision of dedicated left- and right-turn lanes on the major approach to an unsignalized intersection can significantly improve operations and safety at an intersection. The provision of a second lane on minor street approaches at unsignalized intersections can significantly reduce side street delay for right-turning motorists.

The applicant's engineer shall exercise professional judgement in evaluating the need for, and benefits of, providing dedicated left-turn and right-turn lanes. Documentation of the engineer's analysis of turn lanes shall be provided in the TIS.

The following is a non-exclusive list of conditions where an evaluation of turn lanes is appropriate:

- When no lane is currently provided for left turns and when left turn movements from the major street are predicted to increase because of the proposed development. This is especially appropriate when a turn lane is included as part of the standard cross-section for a street of this classification in the *Transportation System Plan*.

- When an intersection has a crash rate above 1.0 crashes per million entering vehicles and includes crash types subject to improvement from a turn lane.

- When the speed and volume of through traffic and increases predicted in right turn volumes raise concerns in the engineer's professional judgment about safety or about impeding through traffic.

- When only a single lane is provided for minor street approaches and the approach LOS is calculated to be "E" or worse.

The following are some of the references that should be considered by the applicant's engineer.

- **State Highways –** The Oregon Department of Transportation (ODOT) maintains criteria that shall be used for evaluating development of left- and right-turn lanes along state highways at Unsignalized Grade Intersections.

- **Local Streets** – Much of the published information regarding warrant criteria are centered on highway facilities and practitioners have therefore applied these criteria to local streets. The applicant shall refer to pages 686-89 of the 2001 *AASHTO Policy on Geometric Design of Highways and Streets* when evaluating turn lane warrants. Specifically, the applicant shall draw

- from other sources [see sources 2, 11, 12, and 13] cited by AASHTO. This criteria shall be updated coinciding with future revisions to the AASHTO *Policy*. An additional resource not cited by AASHTO is the National Cooperative Highway Research Program (NCHRP) Report 457- *Evaluating Intersection Improvements: An Engineering Study Guide*, 2001.

8.0 COMMON ERRORS AND OMISSIONS

The following are some common errors and omissions-. Special care should be taken to address these items that are part of the TIS requirements identified herein.

- Failure to include a crash analysis.
- Failure to conduct a warrant analysis or incorrect methods, particularly a failure to account for right turns from minor streets.
- Failure to address access spacing.
- Lack of discussion of observed traffic flow.
- Failure to address intersection and/or stopping sight distance.
- Failure to discuss bicycle, pedestrian and transit facilities.
- Failure to present justification for some assumptions.
- Failure to account for downstream congestion, turn-pocket overflow, or signal timing of adjacent traffic signals (particularly with regard to the selection of software analysis tools)
- Use of unrealistic signal timing
- Use of inappropriate tools and assumptions for calculation of queues.

9.0 TIS CHECKLIST

All TISs submitted to the City of Oregon City must include the City's *Transportation Impact Study Checklist*. This checklist, presented on the following page, is designed to help the applicant address the City's requirements and to help the City staff determine whether it is complete as specified in Section 4.3.

The completed and signed checklist shall be incorporated into the bound TIS following the inside cover page and preceding the Table of Contents.

TRANSPORTATION IMPACT STUDY CHECKLIST

Project Name: _____
City Reference Code: _____

Provided? Yes	No	Page No.	
		_____	Study Required Comment:_____ Date: _____
			BACKGROUND INFORMATION
Yes	No	_____	Oregon PE Stamp and Signature
Yes	No	_____	**INTRODUCTION AND SUMMARY**
			EXISTING CONDITIONS
Yes	No	_____	Roadway Network - summary of roadway classifications, lanes, speeds, transit service and facilities, alternative mode service and facilities (e.g., sidewalks, bike lanes, crosswalks) and description of study area
Yes	No	_____	Analysis Periods Correct (☐AM, ☐Mid-day, ☐PM ☐Afternoon_, Saturday_____,
Yes	No	_____	Existing Traffic Operations (Existing LOS, traffic volumes (new counts), speeds , crash data)
			IMPACTS
Yes	No	_____	Trip Generation - Daily, peak hour trips generated by site development
Yes	No	_____	Level of Service Analysis -projected LOS with site build out, existing, and background traffic growth
Yes	No	_____	Future year 20-year analysis required for zone change or conditional use
Yes	No	_____	Signal Warrant Analysis
Yes	No	_____	Turn Lane Warrant Analysis
Yes	No	_____	Access Spacing Standards
Yes	No	_____	Analysis of intersection and stopping sight distance at frontage road access point(s)
Yes	No	_____	Identify safe route to school or school bus stop (Contact with school district)
Yes	No	_____	Analysis of safe pedestrian/bicycle access to nearest transit stop (if within 1/2 mile of project site)
Yes	No	_____	Identify accessibility to public transit
Yes	No	_____	Account for planned roadway improvements at future build year ☐and 20-year horizon
			MITIGATION
Yes	No	_____	Identify need for right/left turn lanes, storage capacity and length
Yes	No	_____	Identify possible corrections of any LOS deficiencies
Yes	No	_____	Identify any access deficiencies (including transit/pedestrian/bicycle connections)
Yes	No	_____	Identify any TDM measures
			FIGURES
Yes	No	_____	Vicinity Map
Yes	No	_____	Site Plan
Yes	No	_____	Existing peak hour turn movement volumes (counts conducted within previous 12 months)
Yes	No	_____	Trip Distribution (%) including Added Project Peak Hour Traffic Volumes (see sample)
Yes	No	_____	Approved Projects Peak Hour Traffic Volumes (see sample)
Yes	No	_____	Programmed transportation improvements and transportation mitigation outlined in study
			TABLES
Yes	No	_____	Intersection Performance Existing Conditions
Yes	No	_____	Project Trip Generation
Yes	No	_____	Intersection Level of Service
			OTHER
Yes	No		Technical appendix - sufficient material to convey complete understanding of traffic issues (e.g. HCM or similar analyses, trip generation calculations, signal warrant analyses, turn lane warrant analyses, queuing calculations, signal timing sheets, traffic counts, etc.)

Completed By: _____ [SEAL]
Date: _____

CITY OF OREGON CITY

GUIDELINES FOR

TRANSPORTATION IMPACT ANALYSES

Adopted: NOVEMBER 2, 2005
Revised: NOVEMBER, 18, 2020

1.0 PURPOSE

1.1 TRANSPORTATION PLANNING AND TRANSPORTATION IMPACT ANALYSES (TIAs)

Oregon City strives to accommodate growth in a responsible and sustainable manner. With regard to land use and transportation, this involves a need to balance property owners' rights to develop their land and the City's goal to plan for and provide a transportation system that serves its intended function in a safe, reliable, and predictable manner for the public.

It should be noted that the transportation system includes "transportation facilities" as defined by OCMC 17.04.1312 which more commonly include the roadway, sidewalk, and offsite pathways for vehicles, bicycles, pedestrians, transit, freight, and other modes of transportation.

The City adopted its Transportation System Plan (TSP) in 2001 and was updated on August 16, 2013, outlining a plan to provide a multi- modal transportation system to accommodate expected growth through year 2035. *The Guidelines for Transportation Impact Analyses* are consistent with the TSP Goals:

1. Health and Safety – Enhance the health and safety of residents.
2. Effective and Efficient – Emphasize effective and efficient management of the transportation system.
3. Sustainable – Foster a sustainable transportation system.
4. Equitable, Balanced, and Connected – Provide an equitable, balanced, and connected multi-modal transportation system.
5. Fundable – Identify solutions and funding to meet system needs.
6. Convenient and Available – Increase the convenience and availability of pedestrian, bicycle, and transit modes.
7. Prosperity – Ensure the transportation system supports a prosperous and competitive economy.
8. Compliant – Comply with state and regional transportation plan.

In addition, *The Guidelines for Transportation Impact Analyses* are intended to be consistent with the provisions of the Oregon City Municipal Code (OCMC); however, if differences or conflicting language are found, the OCMC governs.

1.2 THE NEED FOR TRANSPORTATION ANALYSES FOR INDIVIDUAL DEVELOPMENTS

The City's development review process is designed to help the City achieve its goal of managing growth in a responsible and sustainable manner. The applicant for development is required to submit full and accurate information upon which the City staff and elected officials can base decisions. A developer-submitted transportation study prepared by a professional engineer qualified in the traffic engineering field is a critical tool used by the City to assess the expected transportation system impacts associated with a proposed development and the long-term viability of the transportation system. A study must highlight development-specific issues, present a mitigation plan to mitigate for traffic impacts, and alert the City to the potential need to program specific projects from the TSP into the Capital Improvement

Program (CIP).

1.3 THE LEVEL OF ANALYSIS AND DOCUMENTATION

This document establishes analysis and submittal requirements for developments in accordance with their expected transportation impacts. Under certain conditions, the City allows a lesser level of analysis and documentation for small developments. In addition, other developments meeting specific criteria are exempted from long-range analyses.

The City's overriding concern, as stated in Oregon City Municipal Code (OCMC) 17.02.015, is "to promote public health, safety, and general welfare through standards and regulations…and to facilitate adequate provision for transportation…." It is the responsibility of the applicant to help the City achieve this goal through the analysis and submittal of appropriate documentation.

2.0 OVERVIEW

2.1 DIFFERENT DOCUMENTATION FOR DIFFERENT DEVELOPMENT PROPOSALS

This document describes the City's required content for a **Transportation Analysis Letter** (TAL) and for a **Transportation Impact Study** (TIS). In general terms, the TAL is applicable to smaller developments that are presumed to have a lesser transportation impact. The TIS applies to larger developments that are presumed to have a greater transportation impact.

Whether the development requires a TAL or a TIS, a professional engineer must prepare it and must use appropriate data, methods, and standards. TAL and TIS documents share many common elements, but the scope of TALs is more limited. Furthermore, there will be more variability in the scope for TISs depending on the type, location, and size of the development being proposed.

Section 3.1 provides criteria used to determine whether a TAL or TIS is required.

2.2 CONTENT OF TRANSPORTATION IMPACT ANALYSES GENERALLY

Transportation analyses, whether conducted to support a TAL or a TIS, are required to provide an objective assessment of the potential multi-modal transportation impacts associated with a specific land use action (e.g., the development of vacant land, the redevelopment of an existing land use, a comprehensive plan amendment or zoning change). The analysis and the documentation provided by the applicant must help answer several important transportation related questions including:

- Will the existing transportation system accommodate the proposed development from a capacity and safety standpoint?
- What on-site and off-site transportation system improvements will be necessary to accommodate the proposed development?
- How will access to the proposed development affect the traffic operations on the existing transportation system and how will each study area intersection operate relative to the city's mobility standards?
- How will transportation impacts of the proposed development impact the land uses, including commercial, institutional, industrial, and residential uses within the development's influence area?
- How will the proposed development meet current city standards for roadway design?

- How will the proposed development ensure the safe and efficient circulation on and adjacent to the site?
- How will the proposed development provide needed connections to abutting parcels (developed or undeveloped) for motorized as well as non-motorized traffic?
- What TSP projects or elements of TSP projects and projects consistent with and derived from specific polices in the TSP will be needed to accommodate the proposed development?
- If the development or certain public improvements are proposed to be completed in phases, how will the various phases impact the transportation system throughout the development timeline, and how will the future phases be developed?

2.3 RESPONSIBILITIES OF THOSE PREPARING TRANSPORTATION ANALYSES GENERALLY

The responsibility for assessing the traffic impacts associated with a proposed land use action rests with the landowner or land use permit applicant. Transportation analyses submitted to the City must be prepared by or under the direct supervision of a Professional Engineer with competence in traffic engineering and registered in the State of Oregon. The report shall be signed and stamped by the professional engineer.

Under state law, engineers shall recognize at all times that their primary obligation is to protect the safety, health, property and welfare of the public in the performance of their professional duties.

These Guidelines in no way serve as a substitute for the application of sound professional engineering judgement expected to be used by practitioners in the preparation and submittal of transportation analyses.

2.4 RESPONSIBILITIES AND AUTHORITY FOR THE CITY

Throughout this document the term "City Engineer" is used as the individual with authority for certain actions and for interpretation of aspects of these guidelines. For the purposes of this document, the term "City Engineer" should be taken to mean the "City Engineer or his/her designee including but not limited to designated staff or City consultant."

3.0 TRANSPORTATION IMPACT ANALYSIS DOCUMENTS

An analysis and appropriate documentation is generally required when a development application and/or application for re-zoning is filed with the City. A transportation impact analysis (TIA) is required when application is made for land to be subdivided as provided for in OCMC 16.12; when application is made for a conditional use as specified in OCMC 17.56; and when application is made for a change in zoning districts as provided for in OCMC 17.68.

A transportation analysis is not required for modification of a single-family dwelling, construction of a replacement dwelling, accessory dwelling unit (ADU), lot line adjustment, or an application for work in the right of way. In most other circumstances and for most other development applications, some level of transportation analysis is required.

Recognizing that not all developments will have a significant impact on the transportation system, these guidelines include criteria to help determine the need for and level of transportation analysis required in relation to the proposed development.

3.1 DETERMINING THE REQUIRED LEVEL OF TRANSPORTATION ANALYSIS AND DOCUMENTATION

A Transportation Impact Study (TIS) is required for developments that are expected to have an impact on the transportation system. When specific criteria generally associated with small developments are met, a Transportation Analysis Letter (TAL) may be substituted for the required TIS.

At the discretion of the City Engineer, a TAL may satisfy the City's transportation analysis requirements, in lieu of a TIS, when a development meets all of the following criteria:

A. The development generates fewer than 24 peak hour trips during either the AM or PM peak hour and fewer than 250 daily trips.

Examples of common developments generating fewer trips than these threshold levels are: a subdivision containing 24 or fewer single-family residences, a general office building less than 15,000 square feet, a multi-family building with 42 or fewer units, or any proposed partition.

B. The development is not expected to further impact intersections that currently fail to meet the City's mobility standards or intersections that are operating near the limits of the acceptable thresholds during a peak operating hour. (Mobility standards are defined in 7.9.1)

C. The development is not expected to significantly impact adjacent roadways and intersections that are high accident locations, areas that contain an identified safety concern, or high concentration of pedestrians or bicyclists such as school zones

The specific requirements for and content of a TAL are contained in Section 5.0. The specific requirements for and content of a TIS are contained in Section 6.0.

4.0 PROCESS AND PROCEDURES

This section describes in general terms the process and procedures followed by the City in relation to the processing and review of transportation impact analyses. Nothing in this section is intended to replace or supersede the City's process, code requirements, or obligations under state law with regard to land use actions.

4.1 PRE-APPLICATION MEETING

A landowner or developer seeking to develop/redevelop property shall contact the City and schedule a pre-application meeting as required by OCMC 17.50.050. The City's pre-application form specifies the City's requirements applicable to land use actions. An applicant should be prepared to present, preferably in writing, the following:

- type of uses within the development
- the size of the development
- the location of the development
- proposed new accesses or roads
- estimated trip generation and source of data
- proposed study area

4.2 ESTABLISHING THE SCOPE OF WORK

During, or within a reasonable time following the pre-application meeting, the City will establish whether a TAL or TIS is required. (See Section 3.1). If a TIS is required, the City will provide a scoping summary detailing the study area and any special parameters or requirements beyond the requirements set forth in this document. An applicant is encouraged, but not required, to propose a scope of work and a study area using the guidance presented in Section 7.2.

4.2.1 Potential for Expansion of the Scope of Work

In the scoping summary the City will establish expectations and a study area within which significant impacts of the development are expected. The City's final decision on the land use criteria cannot be bound by the specifications or limitations in the scoping summary because additional information or concerns may come to light over the course of the analysis that causes the City to require additional analysis or information. Ultimately, it is the applicant's responsibility to demonstrate compliance with the criteria in the Oregon City code.

The City Engineer reserves the right to require additional analysis, especially when the need for such analysis becomes evident from information gathered by or presented by the applicant. The applicant's engineer should be alert to this possibility and expand his/her scope of work to address issues, especially those of public safety, or at least advise the City of such issues if they arise.

The City Engineer may at his/her discretion expand the requirements and/or study area of a TIS or TAL if needed to address any issue that comes to light after the preparation of the scoping summary.

4.2.2 Time Limit on the Scoping Summary

The City's scoping summary and review requirements are to be considered valid for a reasonable period of time, but are not to be considered binding on the city. Applicants are advised that delays of more than a few months before submitting TAL or TIS documents significantly increases the likelihood that the City will need additional information to adequately evaluate the impacts of a proposed development.

4.3 COMPLETENESS REVIEW

Upon completion of the TIS or TAL, the applicant will submit the number of copies specified by the City in accordance with OCMC 17.50.080 to the City for review. At that time, City staff will perform an initial review of the document to determine whether there are obvious omissions or concerns. The City will rely upon and make use of the TIS checklist, described in more detail in Section 9.0. The lack of a submission of a TIS or TAL will result in a determination of "Incomplete".

A determination of Completeness is not a determination that the applicant's data, methods, accuracy of the analysis, or conclusions and recommendations are valid.

Once the overall development application, including the required TAL or TIS, as appropriate, is deemed "complete," the 120-day land use review process will begin.

4.4 TECHNICAL REVIEW

Once the land use review process is initiated, the City Engineer will conduct a technical review of the TIA to determine the adequacy and quality of the work including, but not limited to the study data sources, methods, findings and recommendations. The City Engineer and/or his/her designee(s) will provide findings for use by the City regarding expected transportation impacts from the proposed development.

If substantive errors or omissions are discovered during review, the applicant will be notified and asked to address the comments prior to a land use decision. The applicant should promptly rectify omissions

and respond with any additional analysis or information; a delay or refusal to respond may result in the denial of an application if the information and analysis submitted is insufficient to show compliance with the applicable criteria.

The lack of specificity on the part of the City in the scoping summary or confusion in its interpretation does not alter the applicant's responsibility to perform a thorough and comprehensive transportation analysis nor does it preclude City decision maker from determining that a TAL or TIS that fully complies with the scoping requirement is insufficient to show compliance with all applicable criteria.

Issues or problems discovered during the Technical Review may, at the discretion of the City's decision maker, be resolved through the use of condition of approval.

5.0 TRANSPORTATION ANALYSIS LETTER CONTENTS

If the City determines based on information provided by the applicant and in accordance with the criteria specified in Section 3.1 that a TAL is the appropriate document to submit, the following requirements shall apply.

The TAL shall be prepared by or prepared under the direct supervision of a Professional Engineer registered in the State of Oregon who shall sign and stamp the TAL.

The TAL shall include the following:

1. The expected trip generation of the proposed development including the AM peak hour, the PM peak hour, daily traffic, and other germane periods as may be appropriate, together with appropriate documentation and references.
2. Site plan showing the location of all access driveways, private streets, or alleys where they intersect with public streets plus driveways of abutting properties and driveways on the opposite side of the street from the proposed development. Dimensions of driveway spacing as measured at the right of way from edge to edge of driveway shall be shown and shall meet or exceed the minimum driveway spacing standards.
3. Site plan showing width of all driveways and shall meet Oregon City Driveway Approach Size Standards.
4. Site plan showing that all public roads meet Oregon City's Street Design Standards including alignment, intersection angles, cul-de-sacs, and block standards.
5. Documentation that all new site accesses and/or public street intersections meet AASHTO intersection sight distance guidelines.
6. Preliminary analysis that all new streets comply with traffic sight obstructions in OCMC 10.32.
7. Documentation that there are no inherent safety issues associated with the design and location of the site access driveways.
8. Documentation that the applicant has reviewed the City's TSP and that proposed streets and frontage improvements do or will comply with any applicable standards regarding the functional classification, typical sections, access management, traffic calming and other attributes as appropriate.
9. When required of the development, documentation that no inherent safety issues are associated with the design and location of pedestrian, bicycle, or transit safety.

6.0 TRANSPORTATION IMPACT STUDY (TIS) CONTENTS

The following information shall be included in each TIS submitted to the City. Additional information

specified by the City in the scoping summary or through the pre-application meeting or other project meetings shall also be included.

1. Table of Contents – Listings of all sections, figures, and tables included in the report.
2. Executive Summary – A summary of key points, findings, conclusions, and recommendations including a mitigation plan.
3. Introduction:
   - Proposed land use action including site location, zoning, building size, and project scope.
   - Map showing the proposed site, building footprint (s), access driveways, and/or parking facilities.
   - Map of the study area that shows site location and surrounding roadway facilities
4. Existing Conditions:
   - Existing site conditions and adjacent land uses.
   - Roadway characteristics of transportation facilities located within the study area, including roadway functional classifications, street cross-section, posted speeds, general sight distance, bicycle and pedestrian facilities, on-street parking, and transit facilities.
   - Existing lane configurations and traffic control devices at the study area intersections.
   - Existing traffic volumes and operational analysis of the study area roadways and intersections.
   - Roadway and intersection crash history analysis.
   - Intersection and stopping sight distance related to new and impacted (existing) driveways and intersections.
5. Background Conditions (without the proposed land use action)
   - Approved in-process developments and funded transportation improvements in the study area.
   - Traffic growth assumptions.
   - Addition of traffic from other planned developments.
   - Background traffic volumes and operational analysis.
6. Full Buildout Traffic Conditions (with the proposed land use action)
   - Description of the proposed development plans.
   - Trip generation characteristics of proposed project (including trip reduction documentation).
   - Trip distribution assumptions.
   - Full buildout traffic volumes and intersection operational analysis including the performance relative to the applicable mobility standards for each intersection.
   - Site circulation and parking.
   - Intersection and site-access driveway queuing analysis.
   - Recommended roadway and intersection mitigation measures (if necessary).
7. Conclusions and recommendations
8. Appendix- With dividers or tabs
   - Traffic count summary sheets.
   - Crash analysis summary sheets.
   - Existing, Background, and Full Buildout traffic operational analysis worksheets with detail to review capacity calculations.
   - Signal, left-turn, and right-turn lane warrant evaluation calculations.
   - Intersection analysis – Roundabout vs. Traffic Signal
   - Other analysis summary sheets such as queuing.

To present the information required to analyze the transportation impacts of development, the

following figures shall be included in the TIS:

1. Vicinity Map
2. Existing Lane Configurations and Traffic Control Devices
3. Existing Traffic Volumes and Levels of Service for each required time period
4. Future Year Background Traffic Volumes and Levels of Service for each required time period
5. Proposed Site Plan, including access points for abutting parcels and for those across the street from the proposed development
6. Future Year Assumed Lane Configurations and Traffic Control Devices
7. Estimated Trip Distribution/Assignment Pattern
8. Trip reductions (pass-by trips at site access (es))
9. Site-Generated Traffic Volumes for each required time period
10. Full Buildout Traffic Volumes and Levels of Service for each required time period

7.0 STANDARDS AND PROCEDURES

To help ensure consistency in the preparation and review of each TIS and TAL, the City of Oregon City has established a set of guidelines and procedures. These standards and procedures include the following:

- Preparer qualifications
- TIS study area
- Analysis years and time periods
- Data collection guidelines
- Trip generation guidelines
- Trip distribution and assignment guidelines
- Minimum intersection operational standards
- Minimum access spacing standards
- Other analysis guidelines

7.1 PREPARER QUALIFICATIONS

Each TIS and TAL shall be prepared by or under the direct supervision of a Professional Traffic Engineer registered in the State of Oregon or a Professional Engineer registered in the State of Oregon qualified to perform traffic engineering as defined by OAR 820-040-0030. The engineer must have background and experience in the methods and concepts associated with transportation impact studies. Each TIS and TAL shall be sealed and signed by the Professional Engineer registered in the State of Oregon prior to acceptance by the City for a technical review.

7.2 TIS STUDY AREA

Each TIS shall include a vicinity map that shows the site, the study area, and the surrounding transportation system. A brief description of the site location and study area shall be provided. The

study area shall be based on engineering judgement and an understanding of existing and future land use and traffic conditions in the vicinity of the site. The following considerations shall form the basis of establishing the study area.

The following facilities shall be included in the study area for all TIS's:

- All site-access points and intersections (signalized and unsignalized) adjacent to the proposed site. In particular, if the proposed site fronts an arterial or collector street, the analysis shall address all intersections and driveways along the site frontage, including those serving parcels on the opposite side of the street(s) and parcels directly adjacent to the proposed development.
- Roads through and adjacent to the proposed development.
- Any intersection of two streets, each with a classification of collector or arterial, where site traffic will exceed 20 vehicles during a peak hour or, in the case of a rezone, if the trip differential resulting from the rezone will exceed 20 vehicles during a peak hour.
- All intersections needed for signal progression analysis

As indicated in Section 4.1, the applicant is encouraged to propose a study area at the pre-application meeting or in response to the discussions between the applicant and the City's representatives.

In addition to these requirements, the City Engineer may determine any additional intersections or roadway links that may be adversely affected as a result of the proposed development. The applicant reduces his risk of having an adverse staff report if the applicant reaches agreement with the City Engineer prior to the start of the transportation impact analysis.

7.3 ANALYSIS YEARS TO BE ANALYZED IN THE TIS

To adequately assess the impacts of a proposed land use action, several study periods should be addressed in the transportation impact analysis. These study periods or horizon years consist of the following:

- **Existing Year**
- **Background** – The conditions in the year in which the proposed land use action will be completed and occupied, but without the expected traffic from the proposed land use action. This analysis should include all in-process developments, or city approved developments that are expected to be fully built out in the proposed land use action horizon year. It should also account for all in-process/planned transportation system improvements.

  Note: Depending on funding or project development issues, it may not be appropriate to assume that certain planned transportation system improvements will be in place on opening day. Applicants should contact the City Engineer to confirm appropriate assumptions.
- **Full Buildout –** The background condition plus traffic from the proposed land use action assuming full build-out and occupancy.
- **Phased Years of Completion** – If the project involves construction or occupancy in phases or for master plans, the applicant is expected to assess the expected roadway, intersection, and land use conditions resulting from major development phases. Phased years of analysis will be determined in coordination with City staff.
- **20-Year or TSP Horizon Year** – For master plans, zone changes, and conditional uses, the applicant shall assess the expected future roadway, intersection, and land use conditions resulting from deviations from approved comprehensive planning documents.

A twenty-year or TSP Horizon Year analysis will not be required for the following development proposals:

- For out-right permitted uses under the current zoning.
- For residential-to-residential rezoning proposals when the rezoning produces an increase of twenty-five (25) or fewer peak hour trips.

7.4 ANALYSIS PERIODS TO BE ANALYZED IN THE TIS

Within each analysis year, specific consideration should be directed to the time period(s) that experience the highest degree of network travel. These periods typically occur during the weekday morning (7:00 AM to 9:00 AM) and weekday evening (4:00 PM to 6:00 PM) peak commuting hours.

The TIS shall address the weekday AM and PM peak hours when the proposed land use action is expected to generate 25 trips or more during the peak time periods. If the applicant can demonstrate that the peak hour trip generation of the proposed land use action is fewer than 25 trips during one of the two peak study periods and the peak trip generation of the land use action corresponds to the roadway system peak, then only the worse of the two peak periods must be analyzed. This does not mean, however, that all aspects of the other peak period can be ignored. The applicant should consider, for example, the possibility that inbound and outbound trips at the site driveway have specific operational issues that may need to be addressed for both peak hours.

Depending upon the proposed land use action and the expected trip generating characteristics of that development, other time periods may be specified, either as a substitute for, or in addition to the AM and PM peak hours. Examples of land uses that have non-typical trip generating characteristics include schools, restaurants, movie theatres, nightclubs, and churches. Applicants should assume that the City will require additional analysis periods for certain uses as summarized below:

- Schools – End of the school day (early afternoon) peak hour
- Churches and worship facilities – Peak period prior to and after worship services.
- Restaurants – Mid-day weekday peak hour
- Shopping centers, home improvement centers, superstores, and retail facilities of more than 60,000 square feet – Saturday peak hour.

When the additional hours for analysis are specified, the applicant need not necessarily carry the analysis through all steps if the data and the engineer's analysis show that some time periods clearly represent the worst case. If, for example, the mid-day peak period traffic volumes at a restaurant are lower than the other peak periods, except at the site driveway, the mid-day peak need only be analyzed for the driveway location. The engineer preparing the TIS is advised to provide thorough documentation of the reasons for reducing the scope of the extra time periods. The applicant may choose to bring such issues to the attention of the City Engineer for discussion prior to submittal of the TIS.

The above list is not necessarily an all-inclusive list of uses for which additional analysis periods is required. The City Engineer and applicant should discuss the potential for additional study periods prior to the start of the transportation impact analysis.

7.5 APPLICATIONS INVOLVING ZONE CHANGES

In the case of a land use proposal involving a zone change, the TIS must analyze a 20-year horizon period as required by the Oregon Transportation Planning Rule (TPR) and may require interim years in the case of a master plan that also requires a zone change. Applicants seeking a rezoning are advised that in addition to any requirements specified by the City, it is their obligation to address requirements

in OAR 660-12-0060. The City's exemption from the requirement for 20-year analysis for certain rezoning actions as specified in Section 7.3 may not exempt the applicant from addressing TPR requirements.

For proposals involving rezoning, the applicant shall compare the traffic generated by his/her development proposal, a reasonable worst-case development under the proposed zoning and a reasonable worst-case development under current zoning.

7.6 TRAFFIC COUNT REQUIREMENTS

Once the TIS study area and analysis periods have been determined, turning movement counts shall be collected at all study area intersections to determine the base traffic conditions. These turning movement counts should typically be conducted during the weekday (Tuesday through Thursday) between 7:00 AM – 9:00 AM and 4:00 PM – 6:00 PM and for other periods depending upon the proposed and/or surrounding land uses. Historical turning movement counts may be used if the data is not more than 12 months old at the time the TIS is deemed complete for review. Historical counts shall be factored accordingly to meet the existing traffic conditions. In high traffic locations where congestion is present or traffic peaks early or late, extended or altered count periods may be required.

7.7 TRIP GENERATION FOR THE PROPOSED DEVELOPMENT

To determine the impacts of a proposed development on the surrounding transportation network, the trip generation characteristics of that development must be estimated. Trip generation characteristics should be obtained from one of the following acceptable sources:

- Institute of Transportation Engineers (ITE) *Trip Generation* (latest edition).
- Specific trip generation studies that have been conducted for the particular land use for the purposes of estimating peak hour trip generating characteristics, subject to approval by the City Engineer prior to their inclusion in the transportation impact analysis.

In addition to new site generated trips, several land uses typically generate additional trips that are not added to the adjacent traffic network. These trips include pass-by trips and internal trips and are considered to be separate from the total number of new trips generated by the proposed development. The procedures listed in the (ITE) *Trip Generation Handbook* should be used *where appropriate* (emphasis added) to account for pass-by trips and internal trips. The applicant's engineer shall not use any pass-by or internal trip reductions with prior approval of the method or data sources by the City Engineer.

Special Attention Items

The ITE *Trip Generation Handbook* maintains limited data regarding pass-by, diverted-linked, and internal shared trip-making characteristics. Professional judgment needs to be used in applying this data. For example, it is not appropriate to apply PM peak hour pass-by percentages to AM or daily periods where AM and daily percentages do not exist. Also, ITE's internal shared trip characteristics are based on a limited number of studies from the early 1990's in Florida. These sites included a mix of commercial, residential, retail, and other uses. For developments that contain only one or two of these uses, a maximum shared trip reduction of five (5) percent will be allowed without appropriate justification and supporting data from the applicant.

The ITE *Trip Generation Handbook* outlines specific guidelines for use of weighted average trip rates versus regression equations. These guidelines shall be followed unless the applicant provides valid justification for deviation.

7.8 TRIP DISTRIBUTION AND ASSIGNMENT

Estimated site generated traffic for the proposed development should be distributed and assigned to the existing or proposed arterial and collector street network. Trip distribution methods should be based on a reasonable assumption of local travel patterns and the locations of off-site origin/destination points within the site vicinity. Acceptable trip distribution methods should be based on one or more of the following procedures:

- A select zone analysis of the proposed site can be obtained from Metro's regional planning model. When using the regional planning model for distribution purposes, the engineer preparing the TIS should make sure that the model assumes the proper existing and future year land use and zoning designations and that he/she understands model load points (centroid connectors). The applicant should also be aware that Metro's model is a regional model and that professional judgment must be applied when using it for specific developments.
- An analysis of local traffic patterns and intersection turning movement counts can be used as long as the data has been gathered within the previous twelve months.
- A detailed market study specific to the proposed development and surrounding land uses may be used to determine the specific influence area. Site generated traffic within the identified influence area should be distributed based on principles and concepts associated with the gravity model theory. Note that if a market study is to be used as a basis for trip distribution, the entire market study must be made available to the City and it shall become part of the public record and, as such, any client confidentiality is lost.

Special Attention Items

In the case of retail developments, the applicant shall clearly distinguish between pass-by and non-pass-by trips to allow the reviewer to understand how the pass-by trips were accounted for and applied throughout the study area. The treatment of pass-by trips at the site entrance may be most easily addressed through separate figures depicting the total site trips and the individual pass-by and non-pass-by components.

7.9 INTERSECTION OPERATIONAL STANDARDS

To assess the impacts of the proposed land use action on the transportation system, the TIS shall compare the existing, background, and full buildout intersection traffic volumes to the minimum intersection operational standards.

The City of Oregon City evaluates intersection operational performance based on the volume-to-capacity ratio (v/c) or the Level of Service (LOS) as defined in the *Highway Capacity Manual (HCM)* published by the Transportation Research Board depending on the specifics of the intersection and location

All LOS definitions should be consistent with the most recent version of the *HCM.* The v/c ratio used by Oregon City is based on the Oregon Department of Transportation's *Analysis Procedures Manual.*

7.9.1 Intersection Level of Service Standards

The City of Oregon City requires all intersections within the study area to maintain an acceptable performance upon full buildout of the proposed land use action as defined below.

Development shall demonstrate compliance with intersection mobility standards. When evaluating the performance of the transportation system, the city of Oregon City requires all intersections, except for the facilities identified in subsection E below, to be maintained at or below the following mobility

standards during the two-hour peak operating conditions. The first hour has the highest weekday traffic volumes and the second hour is the next highest hour before or after the first hour. Except as provided otherwise below, this may require the installation of mobility improvements as set forth in the transportation system plan (TSP) or as otherwise identified by the city engineer.

A. For intersections within the regional center, the following mobility standards apply:

   1. During the first hour, a maximum v/c ratio of 1.10 shall be maintained. For signalized intersections, this standard applies to the intersection as a whole. For unsignalized intersections, this standard applies to movements on the major street. There is no performance standard for the minor street approaches.

   2. During the second hour, a maximum v/c ratio of 0.99 shall be maintained at signalized intersections. For signalized intersections, this standard applies to the intersection as a whole. For unsignalized intersections, this standard applies to movements on the major street. There is no performance standard for the minor street approaches.

   3. Intersections located on the regional center boundary shall be considered within the regional center.

B. For intersections outside of the regional center but designated on the arterial and throughway network, as defined in the regional transportation plan, the following mobility standards apply:

   1. During the first hour, a maximum v/c ratio of 0.99 shall be maintained. For signalized intersections, this standard applies to the intersection as a whole. For unsignalized intersections, this standard applies to movements on the major street. There is no performance standard for the minor street approaches.

   2. During the second hour, a maximum v/c ratio of 0.99 shall be maintained at signalized intersections. For signalized intersections, this standard applies to the intersection as a whole. For unsignalized intersections, this standard applies to movements on the major street. There is no performance standard for the minor street approaches.

C. For intersections outside the boundaries of the regional center and not designated on the arterial and throughway network, as defined in the regional transportation plan, the following mobility standards apply:

   1. For signalized intersections:

      a. During the first hour, LOS "D" or better will be required for the intersection as a whole and no approach operating at worse than LOS "E" and a v/c ratio not higher than 1.0 for the sum of the critical movements.

      b. During the second hour, LOS "D" or better will be required for the intersection as a whole and no approach operating at worse than LOS "E" and a v/c ratio not higher than 1.0 for the sum of the critical movements.

   2. For unsignalized intersections outside of the boundaries of the regional center:

      a. For unsignalized intersections, during the peak hour, all movements serving more than twenty vehicles shall be maintained at LOS "E" or better. LOS "F" will be tolerated at movements serving no more than twenty vehicles during the peak hour.

D. For the intersection of OR 213 and Beavercreek Road, the following mobility standards apply:

   1. During the first, second and third hours, a maximum v/c ratio of 1.00 shall be maintained. Calculation of the maximum v/c ratio will be based on an average annual weekday peak hour.

E. Until the city adopts new performance measures that identify alternative mobility targets, the city shall exempt proposed development that is permitted, either conditionally, outright, or through detailed development master plan approval, from compliance with the above-referenced mobility standards for the following state-owned facilities:

I-205/OR 99E Interchange.

State intersections located within or on the regional center boundaries.

1. In the case of conceptual development approval for a master plan that impacts the above references intersections:

   a. The form of mitigation will be determined at the time of the detailed development plan review for subsequent phases utilizing the code in place at the time the detailed development plan is submitted; and

   b. Only those trips approved by a detailed development plan review are vested.

2. Development which does not comply with the mobility standards for the intersections identified in OCMC 16.12.033 shall provide for the improvements identified in the transportation system plan (TSP) in an effort to improve intersection mobility as necessary to offset the impact caused by development. Where required by other provisions of the code, the applicant shall provide a traffic impact study that includes an assessment of the development's impact on the intersections identified in this exemption and shall construct the intersection improvements listed in the TSP or required by the code.

7.9.2 Intersection Design Features and Queuing Calculations

The TIS shall contain sufficient data and information derived from the traffic analysis to provide the roadway/intersection designer and City staff with information on which to assess intersection design features such as the length of storage required for lanes on each approach.

Queue lengths shall be calculated for each lane of all approaches to signalized intersections for the 95th percentile queue. Queue lengths shall also be calculated for unsignalized locations, such as site driveways, where standing queues can interfere with other movements, especially if such interference can contribute to safety problems. Appropriate analysis methods should be used that account for the actual arrivals of vehicles at an intersection.

Special Attention Items

The applicant's engineer shall use professional judgment in selecting the appropriate analysis tools and methods for evaluation of intersection operations. The HCM, for example, states "The [HCM] methodology does not take into account the potential impact of downstream congestion on intersection operation. Nor does the methodology detect and adjust for the impacts of turn-pocket overflows on through traffic and intersection operation." If these conditions are present or can reasonably be expected to exist as a result of the proposed development, the applicant's engineer shall supplement his/her initial analysis with other analysis tools and methods that account for such conditions.

The applicant's engineer also must use reasonable signal timing and consider corridor timing plans where appropriate.

When calculating queues, Poisson distribution may be used for locations subject to random arrivals. Other analysis methods shall be used where signal systems cause different arrival patterns and when congestion causes accumulation from one cycle to the next. Queue lengths shall be based on average vehicle length of twenty-five (25) feet, or longer where appropriate.

7.10 ACCESS SPACING STANDARDS

Access locations on roadway sections must be located to ensure safe and efficient travel along a transportation facility to limit potential conflicting turning movements, weaving maneuvers over short distances, and congestion along facilities. Access management standards vary depending upon the functional classification and purpose on a given roadway. Roadways in the upper echelon of the functional classification system (i.e. arterials) tend to have stringent spacing standards, while facilities ranked lower in the functional classification system allow more closely spaced accesses.

The applicant shall use the standards in OCMC 16.12 and discuss whether the following standards are met through their proposed development:

- Minimum city street intersection spacing (the distance between adjacent intersections),
- Minimum private access spacing (the distance between adjacent driveways and between driveways and street intersections),
- Minimum traffic signal spacing (the distance between adjacent signalized intersections),
- Minimum private access driveway widths (the measurement of the individual driveway surface)

Exception Process:

In cases where physical constraints or unique site characteristics limit the ability for the above access spacing standards to be met, the City decision maker may grant an access spacing exception. Typically, access exceptions are available only for a parcel whose roadway frontage, topography, or location would otherwise preclude issuance of a conforming permit and the parcel would either have no reasonable access or cannot otherwise obtain reasonable alternate access to the public road system. However, if the limitation or condition is one that the applicant or owner has contributed to by any previous subdivision of property, sale, building activity, or site development, the limitation or condition shall not constitute a basis for an access exception. Note also that the City may choose to prohibit some movements (e.g. left turns) at the site access location, especially if such access is in a location where an access exception is needed.

When an exception is required, the transportation impact analysis must show that the new access will not adversely impact the existing transportation system. A high burden is placed on the applicant and his/her engineer to prove that the system will not be adversely impacted, and that public safety will not be compromised.

7.11 SIGHT DISTANCE

For all new proposed site driveways and public street intersections, an evaluation of stopping sight distance (SSD) and intersection sight distance (ISD) shall be conducted consistent with procedures outlined in the current version of the AASHTO *Policy on Geometric Design of Highways and Streets.* At the discretion of the City Engineer, the applicant may be exempted from a need to assess sight distance.

The City standard for new driveways and intersections requires that ISD meet the minimum distance specified in AASHTO. The applicant may apply for a design exception allowing a driveway or intersection that meets SSD rather than ISD. A high burden is placed on the applicant and his/her engineer to prove that the system will not be adversely impacted, and that public safety will not be compromised. The City Engineer may grant a design exception if the following conditions are met:

1. The intersection or driveway is proposed to intersect with a local or neighborhood collector street (not a major collector or arterial street), and
2. The approach is forecast to serve fewer than forty (40) vehicles per day, and
3. The intersection will not adversely impact the existing transportation system.

The City Engineer may also grant a design exception if the intersection is forecast to serve less than 100 vehicles per day for a period of not more than twenty-four (24) months. Should the City Engineer choose to grant a design exception, he/she may place additional conditions on the applicant, such as, but not limited to placement of warning signs or the use of flaggers for manual traffic control as prescribed by the *Manual on Uniform Traffic Control Devices* (MUTCD).

Special Attention Items

Under AASHTO procedures, intersection sight distance is evaluated based on the roadway design speed, not the roadway posted speed. Where design speed is not known, it shall be estimated using procedures outlined in the AASHTO *Policy on Geometric Design of Highways and Streets*. This generally results in a design speed anywhere from 5 to 10 mph above prevailing posted speed.

7.12 CRASH HISTORY

Within the study area for each TIS, a crash history evaluation shall be conducted for the most recent four-year period. The intent of the evaluation is to identify any apparent trends in the data that reflect a safety issue that may be exacerbated by the proposed development and to identify mitigation to resolve the issue(s). At a minimum, the analysis shall summarize the number of crashes per year by type and severity. Intersection crash rates shall be calculated and evaluated. The engineer shall assess the overall results of the safety analysis.

7.13 SAFE ROUTES TO SCHOOL

For proposed residential developments, the TIS shall include a brief discussion of routes to the nearest schools. The applicant shall identify the primary walking/biking route between the proposed development and the nearest elementary, middle, and high school. Specifically, the applicant shall describe the general bicycle and pedestrian environment between the proposed development and each school, including the presence and condition of pedestrian and bicycle facilities and the roadway environment (speed, lanes, etc.) along the routes. This section requires applicants to address the special need to link residential areas to area schools.

7.14 WARRANTS (TURN LANE, TRAFFIC CONTROL)

The following section provides guidance on evaluating turn lane and traffic signal warrants.

7.14.1 Traffic Control Warrants

An evaluation of traffic signal warrants shall be conducted for all unsignalized study area intersections where any approach is shown to operate at LOS E or worse under existing, background, or total traffic conditions. Signal warrant analysis shall be conducted in accordance with the current version of the *Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD).

Warrants to evaluate conversions between yield control, two-way STOP control, and multi-way- STOP control shall, as deemed necessary by the applicant's traffic engineer, comply with the MUTCD.

Special Attention Items

The reduction of minor street right turns is an important factor in evaluating traffic signal warrants and care must be taken to ensure the practice is not overlooked or improperly applied as it can affect warrant determinations. Both the MUTCD and the National Cooperative Highway Research Program (NCHRP) Report 457- *Evaluating Intersection Improvements: An Engineering Study Guide,* 2001 offer detailed discussions of the proper methods to address right turn reductions.

For state highways, ODOT's Transportation Planning Analysis Unit maintains specific guidelines regarding right turn reductions that shall be applied to highway intersections. Other methods such as delay-based reduction methods may be considered if reasonably explained and justified by the applicant.

The construction of a lane to accommodate right turns shall be considered as a mitigation measure before or in addition to the analysis of traffic signal warrants for the installation of a traffic signal.

Note that Warrant 3, Peak Hour according to the MUTCD "shall be applied only in unusual cases." The burden of proof is on the applicant that the case is truly unusual. The applicant must evaluate the conditions using other warrants before attempting to justify the use of the Peak Hour warrant.

7.14.2 Turn Lane Warrants

The provision of dedicated left- and right-turn lanes on the major approach to an unsignalized intersection can significantly improve operations and safety at an intersection. The provision of a second lane on minor street approaches at unsignalized intersections can significantly reduce side street delay for right-turning motorists.

The applicant's engineer shall exercise professional judgement in evaluating the need for, and benefits of, providing dedicated left-turn and right-turn lanes. Documentation of the engineer's analysis of turn lanes shall be provided in the TIS.

The following is a non-exclusive list of conditions where an evaluation of turn lanes is appropriate:

- When no lane is currently provided for left turns and when left turn movements from the major street are predicted to increase because of the proposed development. This is especially appropriate when a turn lane is included as part of the standard cross-section for a street of this classification in the *Transportation System Plan*.

- When an intersection has a crash rate above 1.0 crashes per million entering vehicles and includes crash types subject to improvement from a turn lane.

- When the speed and volume of through traffic and increases predicted in right turn volumes raise concerns in the engineer's professional judgment about safety or about impeding through traffic.

- When only a single lane is provided for minor street approaches and the approach LOS is calculated to be "E" or worse.

The following are some of the references that should be considered by the applicant's engineer.

- **State Highways –** The Oregon Department of Transportation (ODOT) maintains criteria that shall be used for evaluating development of left- and right-turn lanes along state highways at Unsignalized Grade Intersections.

- **Local Streets –** Much of the published information regarding warrant criteria are centered on highway facilities and practitioners have therefore applied these criteria to local streets. The applicant shall refer to pages 686-89 of the 2001 *AASHTO Policy on Geometric Design of Highways and Streets* when evaluating turn lane warrants. Specifically, the applicant shall draw from other sources [see sources 2, 11, 12, and 13] cited by AASHTO. This criteria shall be updated coinciding with future revisions to the AASHTO *Policy*. An additional resource not cited by AASHTO is the National Cooperative Highway Research Program (NCHRP) Report 457- *Evaluating Intersection Improvements: An Engineering Study Guide*, 2001.

8.0 COMMON ERRORS AND OMISSIONS

The following are some common errors and omissions. Special care should be taken to address these items that are part of the TIS requirements identified herein.

- Failure to include a crash analysis.
- Failure to conduct a warrant analysis or incorrect methods, particularly a failure to account for right turns from minor streets.
- Failure to address access spacing.
- Lack of discussion of observed traffic flow.
- Failure to address intersection and/or stopping sight distance.
- Failure to discuss bicycle, pedestrian, and transit facilities.
- Failure to present justification for some assumptions.
- Failure to account for downstream congestion, turn-pocket overflow, or signal timing of adjacent traffic signals (particularly with regard to the selection of software analysis tools).
- Use of unrealistic signal timing
- Use of inappropriate tools and assumptions for calculation of queues.

TRANSPORTATION IMPACT STUDY CHECKLIST

Project Name:_____

City Reference Code:_____

Provided?		Page No.	
Yes	No	_____	Study Required Comment:_____ Date:_____
			BACKGROUND INFORMATION
Yes	No	_____	Oregon PE Stamp and Signature
Yes	No	_____	**INTRODUCTION AND SUMMARY**
			EXISTING CONDITIONS
Yes	No	_____	Roadway Network - summary of roadway classifications, lanes, speeds, transit service and facilities, alternative mode service and facilities (e.g., sidewalks, bike lanes, crosswalks) and description of study area
Yes	No	_____	Analysis Periods Correct ☐AM ☐Mid-day ☐PM ☐Afternoon ☐Saturday _____ ☐Other _____
Yes	No	_____	Existing Traffic Operations (Existing LOS, traffic volumes (new counts ☐), speeds ☐, crash data ☐)
			IMPACTS
Yes	No	_____	Trip Generation - Daily, peak hour trips generated by site development
Yes	No	_____	Level of Service Analysis -projected LOS with site build out, existing, and background traffic growth
Yes	No	_____	Future year 20-year analysis required for zone change or conditional use
Yes	No	_____	Signal Warrant Analysis
Yes	No	_____	Turn Lane Warrant Analysis
Yes	No	_____	Access Spacing Standards
Yes	No	_____	Analysis of intersection and stopping sight distance at frontage road access point(s)
Yes	No	_____	Identify safe route to school or school bus stop (contact with school district)
Yes	No	_____	Analysis of safe pedestrian/bicycle access to nearest transit stop (if within 1/2 mile of project site)
Yes	No	_____	Identify accessibility to public transit
Yes	No	_____	Account for planned roadway improvements: ☐ At future build year ☐ 20-year horizon
			MITIGATION
Yes	No	_____	Identify need for right/left turn lanes, storage capacity and length
Yes	No	_____	Identify possible corrections of any LOS deficiencies
Yes	No	_____	Identify any access deficiencies (including transit/pedestrian/bicycle connections)
Yes	No	_____	Identify any TDM measures
			FIGURES
Yes	No	_____	Vicinity Map
Yes	No	_____	Site Plan
Yes	No	_____	Existing Peak Hour Turn Movement Volumes (counts conducted within previous 12 months)
Yes	No	_____	Trip Distribution (%) including Added Project Peak Hour Traffic Volumes (see sample)
Yes	No	_____	Approved Projects Peak Hour Traffic Volumes (see sample)
Yes	No	_____	Programmed Transportation Improvements and Transportation Mitigation Outlined in Study
			TABLES
Yes	No	_____	Intersection Performance Existing Conditions
Yes	No	_____	Project Trip Generation
Yes	No	_____	Intersection Level of Service
			OTHER
Yes	No	_____	Technical Appendix - sufficient material to convey complete understanding of traffic issues (e.g., HCM or similar analyses, trip generation calculations, signal warrant analyses, turn lane warrant analyses, queuing calculations, signal timing sheets, traffic counts, etc.)

[SEAL]

Completed By: _____

Date: _____

CITY OF OREGON CITY

Staff Report

625 Center Street
Oregon City, OR 97045
503-657-0891

To: Transportation Advisory Committee **Agenda Date:** 12/15/2020

From: Public Works Director John M. Lewis, PE

SUBJECT:

Public Works Report

TOPICS:

1. Park Place Transportation Updates
    - Holcomb Blvd RRFB
    - Holcomb Blvd Speed Limit
    - Safe Routes to School Infrastructure Grant
    - Holcomb Blvd Mailbox Relocation Project
    - Park Place Urbanization Study