TECHNICAL MEMORANDUM

Date:	July 14, 2025	**TG:**	1.23228.00
To:	Chrissandra Walker – City of Sumner Ryan Windish – City of Sumner		
From:	Jessica Lambert, PE – Transpo Group Stefanie Herzstein, PE, PTOE – Transpo Group		
Subject:	Sumner 2025 Annual Comprehensive Plan Amendments: Transportation Analysis		

This memorandum summarizes the traffic modeling and analysis completed for the City of Sumner as part of the 2025 Comprehensive Plan Amendments. This study builds on the analysis prepared for the City of Sumner Transportation Plan and 2024 Comprehensive Plan both dated January 6, 2025. The adopted Transportation Plan (January 6, 2025) outlines the transportation system needs related to the 2024 Comprehensive Plan. The intent of this study is to determine if there would be new transportation impacts and mitigation related to the amendments to the Comprehensive Plan.

Background

Every year, per city code, the City of Sumner allows amendments to the Comprehensive Plan and/or Zoning Code. The Planning Commission approved the 2025 amendments on March 6, 2025, which results in changes to the Sumner land use plan. The adopted Transportation Plan (January 6, 2025) provides the transportation system plans and improvement projects that are needed to accommodate the land use plan in the 2024 Comprehensive Plan.

This analysis evaluates potential transportation impacts as a result of changes to the City's land use. Land use changes are proposed in the Town Center Plan Area, along 166th Avenue E in the southeast portion of the urban growth area (UGA), and on 30th Street. The analysis focuses on three alternatives to help identify potential transportation impacts of the 2025 amendments. The alternatives include:

- Baseline – called Preferred Alternative in the 2024 Comprehensive Plan, this alternative land use is the basis of adopted Transportation Plan.
- Alternative 1 – 2025 amendments that have been proposed.
- Alternative 2 – Land use adjustments based on additional increases in density.

Specifics related to the land use changes are described in the following section. The foundation of the transportation analysis is a forecast year of 2044 consistent with the adopted Transportation Plan and the Sumner travel demand model.

Impacts

The potential impacts of the alternatives to the street system, and pedestrian and bicycle facilities are discussed in this section.

Street System

Traffic Forecasts

The Sumner travel demand model has traffic analysis zones (TAZs), which represents parcels where land uses (housing and jobs) are located. Land use changes were made to nine of the TAZs to reflect Alternatives 1 and 2. TAZs where changes are proposed as part of the 2025

Comprehensive Plan annual amendments are shown on Figure 1. The TAZs are primarily located in the Town Center, East Sumner, and the industrial area.

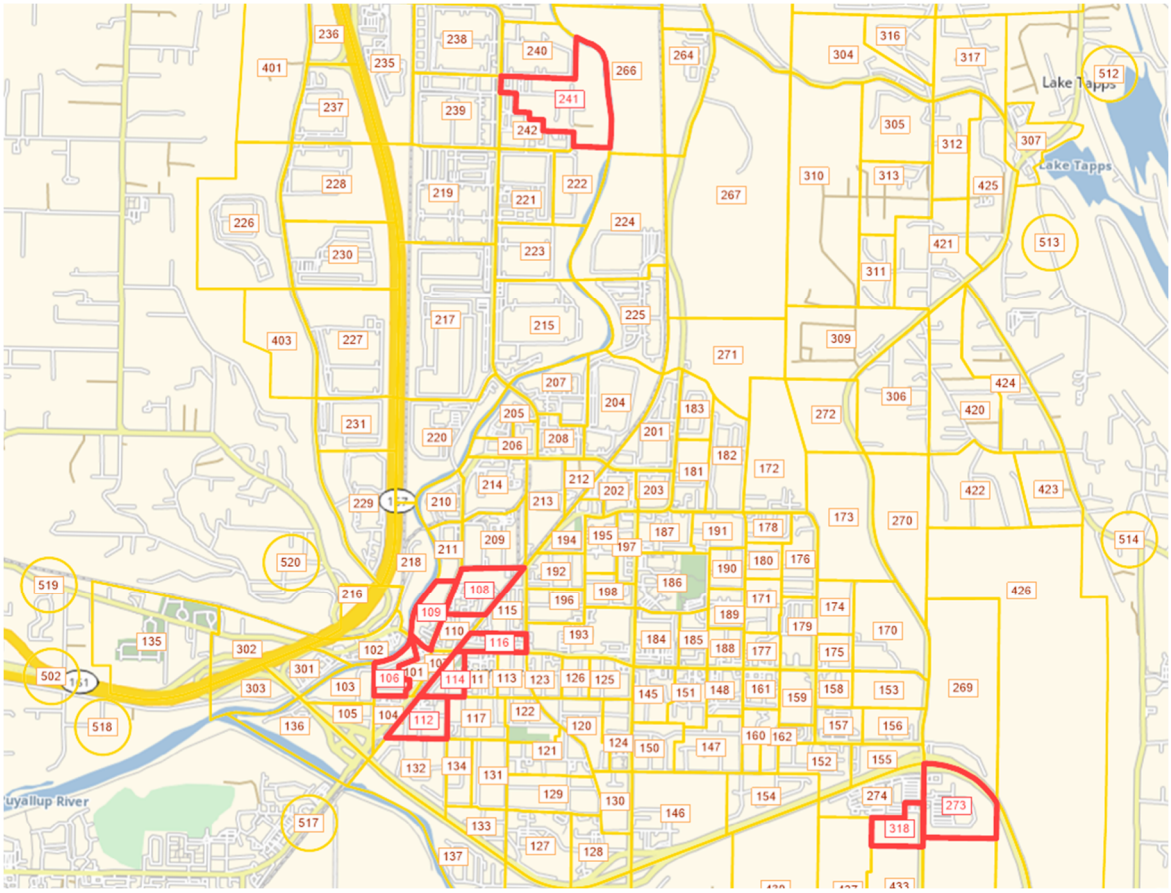

Figure 1 TAZ Land Use Changes

Land use changes are based on applications for amendments (Alternative 1) and potential additional increases in densities (Alternative 2). The changes in land use by TAZ compared to the Baseline are outlined in Table 1 and the land use totals by alternative are summarized in Table 2.

Table 1. Summary of Change in Land Use Compared to Baseline[1]

	Alternative 1		Alternative 2	
TAZ	**Households**	**Jobs**	**Households**	**Jobs**
106	0	0	0	0
108	-128	82	-128	82
109	148	0	148	0
112	0	0	0	0
114	-1	0	-1	0
116	-16	18	-16	18
241	-2	26	-3	36
273	33	0	97	0
318	112	0	205	0
Total	**146**	**126**	**302**	**136**

Source: BERK Consulting, 2025
1. Baseline represents the Preferred Alternative evaluated in the 2024 Comprehensive Plan.

As shown in Table 1, Alternative 1 would result in an additional 146 households and 126 jobs in the City compared to the Baseline evaluated in the currently adopted Transportation Plan. Alternative 2 would add 302 households and 136 jobs compared to Baseline. Table 2 summarizes the total land use under the Baseline and Alternatives 1 and 2 from this 2025 Comprehensive Plan amendment.

Table 2. Land Use Totals for 2025 Comprehensive Plan Amendment Alternatives

	Baseline[1]		Alternative 1		Alternative 2	
TAZ	**Households**	**Jobs**	**Households**	**Jobs**	**Households**	**Jobs**
106	100	19	100	19	100	19
108	144	137	16	219	16	219
109	155	57	303	57	303	57
112	95	56	95	56	95	56
114	67	21	66	21	66	21
116	32	123	16	141	16	141
241	47	40	45	66	44	76
273	14	249	47	249	111	249
318	24	32	136	32	229	32
Total	**678**	**734**	**824**	**860**	**980**	**870**

Source: BERK Consulting, 2025
1. Baseline represents the Preferred Alternative evaluated in the 2024 Comprehensive Plan.

Based on the land use presented above, the Sumner travel demand model was updated to determine the future 2044 forecasts by alternative. The travel forecasts provide a technical basis for identifying the transportation improvement projects in the transportation systems plan. A travel demand forecasting model was developed as part of the 2024 Comprehensive Plan efforts to assist in defining future transportation system needs. The model uses the VISUM software package and forecasts weekday PM peak hour traffic volumes based on the 2044 land use alternatives. Baseline traffic volume forecasts are based on modeling completed as part of the adopted Transportation Plan. Alternative 1 and 2 traffic volumes were determined based on the changes to the land use in specific TAZs, the City's travel demand model and using the same forecast method as the Baseline conditions. The model is a tool that is used to convert existing and future land uses into trips.

Traffic Operations

The operational characteristics of an intersection are determined by calculating the intersection level of service (LOS). For signalized locations, LOS is measured in average delay per vehicle and is reported for the intersections as a whole. At side-street stop-controlled intersections LOS is measured in average delay per vehicle during the peak hour of traffic and is reported for the worst operating movement of the intersection. Traffic operations for an intersection can be described alphabetically with a range of levels of service (LOS A through F), with LOS A indicating free-flowing traffic and LOS F indicating extreme congestion and long vehicle delays. Attachment A contains a detailed explanation of LOS criteria and definitions. The City of Sumner and WSDOT have a LOS D standard.

Weekday PM peak hour traffic operations for future (2044) conditions were evaluated under future conditions for each alternative. Operations were evaluated at the study intersections based on the procedures identified in the Highway Capacity Manual (HCM, 7th edition) and were evaluated using the *Synchro 12* and *Sidra 9* software programs. The 20-year planned transportation improvements are not assumed as part of this analysis to identify differences and impacts of the

alternatives and confirm mitigation needs. Future (2044) traffic operations are summarized in Table 3.

Table 3. Future (2044) Traffic Operations

Intersection	Baseline Traffic Control	Baseline			Alternative 1			Alternative 2		
		LOS[1]	Delay[2]	WM[3] or v/c[4]	LOS	Delay	WM or v/c	LOS	Delay	WM or v/c
Weekday PM Peak Hour										
1. Stewart Rd SE/Butte Ave SE	Signal	C	33	-	C	33	-	C	33	-
2. 140th Ave Ct E/Stewart Rd SE	Signal	A	7	-	A	7	-	A	7	-
3. W Valley Hwy E/24th St E	Signal	C	27	-	C	27	-	C	27	-
4. SR 167 NB Ramps/24th St E	Signal	C	34	-	C	34	-	C	34	-
5. 136th Ave E/24th St E	Signal	C	28	-	C	27	-	C	27	-
6. 142nd Ave E/24th St E	TWSC	C	15	WB	C	15	WB	C	15	WB
7. E Valley Hwy E/Forest Canyon Rd E	TWSC	F	>180	WB	F	>180	WB	F	>180	WB
8. W Valley Hwy E/SR 167 SB Ramps	Signal	C	21	-	C	21	-	C	21	-
9. 142nd Ave E/Costco Access	Signal	A	7	-	A	7	-	A	7	-
10. W Valley Hwy E/42nd St E	TWSC	B	14	WB	B	14	WB	B	14	WB
11. 142nd Avenue E/Tacoma Avenue	TWSC	C	16	EBL	C	16	EBL	C	16	EBL
12. Puyallup St/Tacoma Ave	AWSC	F	84	-	F	85	-	F	88	-
13. E Valley Hwy E/Puyallup St	Signal	B	16	-	B	16	-	B	16	-
14. E Valley Hwy E/Elm St E	TWSC	F	57	NBL	F	58	NBL	F	59	NBL
15. Valley Ave/Elm St E	TWSC	E	43	NBL	E	43	NBL	E	44	NBL
16. Fryar Ave/Zehnder St	TWSC	C	25	WB	C	25	WB	C	25	WB
17. Parker Rd E/Washington St	TWSC	B	11	EB	B	11	EB	B	11	EB
18. Sumner Heights Dr E/W Valley Hwy E	Signal	D	41	-	D	41	-	D	41	-
19. Sumner Heights Dr E/Valley Ave E/Cannery Way	Signal	C	31	-	C	31	-	C	31	-
20. Traffic Ave/Main St/Fryar Ave	Signal	E	58	-	E	58	-	E	59	-
21. Alder Ave/Main St	AWSC	B	14	-	B	14	-	B	14	-
22. Ryan St/Main St	TWSC	B	12	NB	B	13	NB	B	13	NB
23. Wood Ave/Main St	Signal	B	13	-	B	11	-	B	13	-
24. Valley Ave/Main St	Signal	C	32	-	C	31	-	C	33	-
25. Parker Rd E/Main St E	TWSC	F	56	SB	F	57	SB	F	58	SB
26. 160th Ave E/Main St (60th St E)	AWSC	E	47	-	E	45	-	E	49	-
27. Sumner Tapps Hwy E/60th St E	Signal	C	28	-	C	28	-	C	29	-
28. Traffic Ave/Maple St	TWSC	D	25	EB	D	26	EB	D	26	EB
29. Traffic Ave/Thompson St	Signal	D	36	-	D	37	-	D	37	-
30. Station Ln/Thompson St	Signal	A	8	-	A	8	-	A	8	-
31. Alder Avenue/Thompson Street	TWSC	B	12	NB	B	12	NB	B	12	NB
32. E Main Ave/SR 410 EB Ramps	Signal	C	23	-	C	23	-	C	23	-
33. Valley Ave/Meade-McCumber Rd E	Signal	C	30	-	C	29	-	C	30	-
34. Parker Rd E/Meade-McCumber Rd E	TWSC	B	11	SB	B	11	SB	B	11	SB
35. 160th Ave E/64th St E	AWSC	C	18	-	C	19	-	C	19	-
36. Sumner-Tapps Hwy E/64th St E	Roundabout	A	6	0.398	A	6	0.404	A	6	0.407
37. Sumner-Tapps Hwy E/SR 410 WB Ramps	Roundabout	A	5	0.539	A	6	0.551	A	6	0.563

Intersection	Baseline Traffic Control	Baseline			Alternative 1			Alternative 2		
		LOS[1]	Delay[2]	WM[3] or v/c[4]	LOS	Delay	WM or v/c	LOS	Delay	WM or v/c
38. Sumner-Tapps Hwy E/SR 410 EB Ramps	Signal	B	18	-	B	19	-	B	19	-
39. Valley Ave/Gary St E	TWSC	C	18	EB	C	19	EB	C	19	EB
40. Valley Ave/SR 410 WB Ramps	Roundabout	A	9	0.597	A	9	0.599	A	9	0.606
41. Valley Ave/SR 410 EB Ramps	Roundabout	A	10	0.867	A	10	0.861	A	10	0.863
42. Valley Ave/74th St E	TWSC	F	>180	EB	F	>180	EB	F	>180	WB
43. Valley Ave/Rivergrove Dr E	Signal	B	15	-	B	16	-	B	16	-

1. Level of service (A-F) as defined by the Highway Capacity Manual (TRB, 7th Edition).
2. Average delay per vehicle in seconds.
3. Worst movement reported for two-way stop-controlled intersections.
4. Volume-to-capacity (v/c) ratio reported for roundabouts.

As shown in Table 3, all intersections under Alternative 1 and 2 are anticipated to operate at the same level of service as the Baseline from the 2024 Comprehensive Plan and Transportation Plan. Most changes in delay under both Alternatives 1 and 2 are less than a one second increase or decrease in delay with a few exceptions. Under Alternative 1 five intersections are anticipated to have more than a one second change in delay. Of those five intersections, two are forecast to continue to meet LOS standards, the other three are discussed below. Under Alternative 2 eight intersections are anticipated to have an increase in delay over one second. Of the eight intersections two are forecast to continue to meet LOS standards and the other six are discussed below.

Across all 3 scenarios, all intersections are forecast to operate at LOS D or better, except for the following eight intersections:

- E Valley Highway E/Forest Canyon Road E
- Puyallup Street/Tacoma Avenue
- E Valley Highway E/Elm Street E
- Valley Avenue/Elm Street E
- Traffic Avenue/Main Street/Fryar Avenue
- Parker Road E/Main Street E
- 160th Avenue E/Main Street (60th Street E)
- Valley Avenue/74th Street E

As part of the adopted Transportation Plan, improvements were identified at the intersections identified above to mitigate the impacts of the Baseline condition. A review of the improvements to determine if they continue to mitigate the impacts of the alternatives is provided in the Mitigation Measures section.

Pedestrian and Bike

The City has adopted multimodal LOS standards for pedestrian and bike facilities. The pedestrian LOS standard is to have sidewalk on at least one side of the street for the City's identified pedestrian network. The bike LOS is to have a bike facility along the identified bike network. The facility could include sharrows, dedicated bike lanes, or protected bike lanes. A review of the adopted Transportation Plan shows that the Town Center Plan Area and the area near 30th Street meets the pedestrian and bike LOS standards and the alternatives would not result in new impacts. For the southeast area along 166th Avenue within the UGA, the pedestrian LOS standard

is not currently met. Improvements would be required to meet the LOS standard in this area. The forecast pedestrian and bike LOS are shown in Figure 2 and Figure 3, respectively.

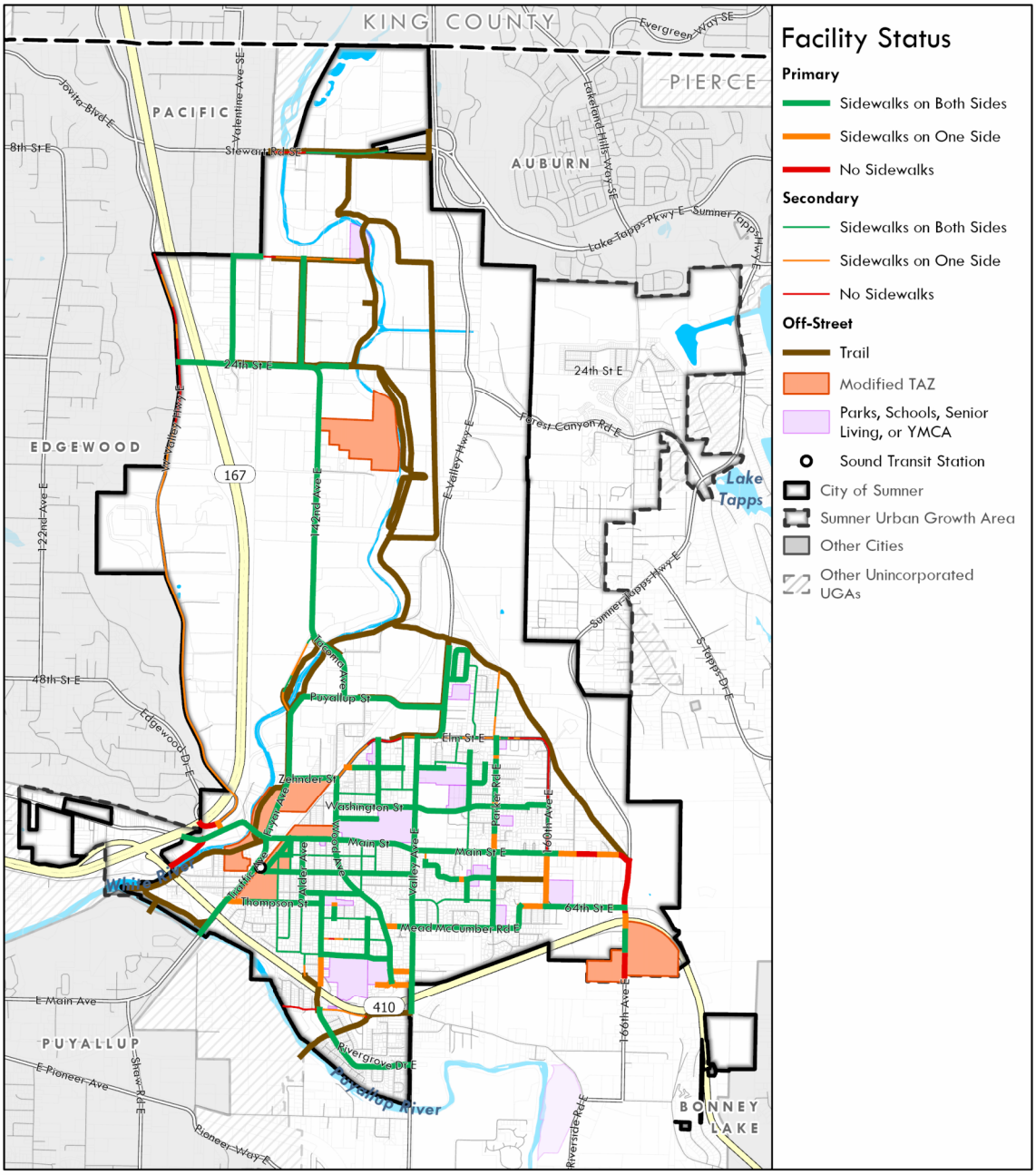

Figure 2 Future Pedestrian Level of Service

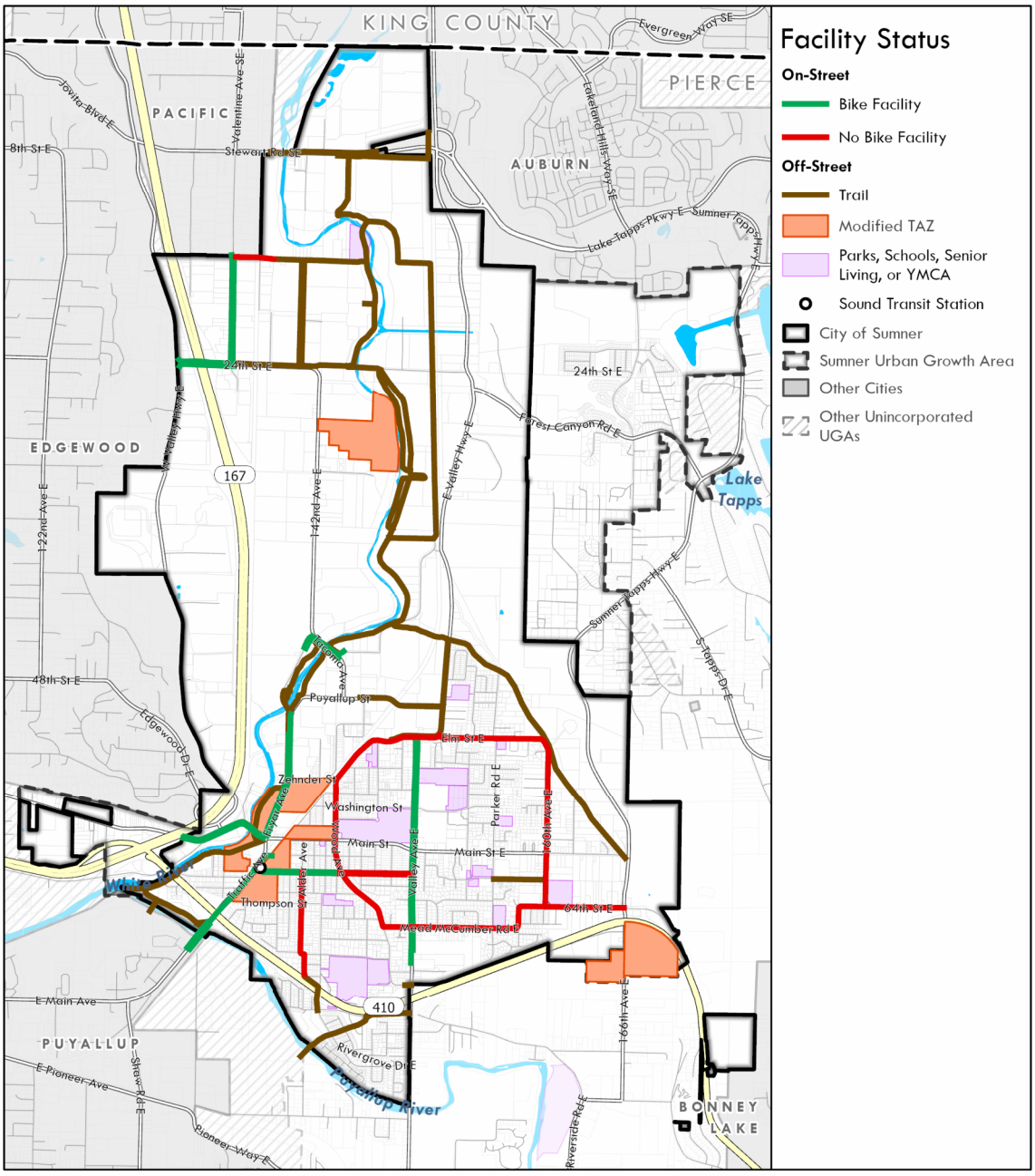

Figure 3 Future Bike Level of Service

Mitigation Measures

The adopted Transportation Plan identifies improvements at intersections, along roadways, and for active modes to accommodate the community needs related to growth and mitigate the impacts on the transportation system as identified through analysis of the Baseline conditions. Table 4 summarizes the 20-year improvement projects identified in the Sumner Transportation Plan.

Table 4. Summary of Adopted 20-Year Intersection Improvement Projects that Mitigate the Impacts of Alternatives

Map ID	Intersection/Roadway	Project Description
Intersection/Spot Improvements		
SP1	E Valley Highway E/Forest Canyon Road E	Construction of a new signal or roundabout
SP2	Puyallup Street/Tacoma Avenue	Plane, repair, and overlay, complete intersection channelization improvements, add an eastbound left-turn pocket on Puyallup Street at Tacoma Avenue. Add a signal at the Puyallup Street/Tacoma Avenue intersection
SP3	E Valley Highway E/Elm Street E	New signal when warranted
SP4	Valley Avenue/Elm Street E	New signal when warranted
SP5	Traffic Avenue/Main Street/Frayer Avenue	Add EB right-turn overlap. Convert W Main Street to one-way facility westbound.
SP6	Parker Road E/Main Street E	New signal when warranted
SP7	160th Avenue E/Main Street (60th Street E)	New signal or RAB when warranted
SP8	Valley Avenue/74th Street E	Add EB/WB left-turn restrictions. Shift WB left-turns to U-turning movement at Valley Avenue/SR 410 EB Ramp RAB
SP9	Sumner Tapps Highway/60th Street E	Signalization of the intersection. Construct EB right-turn lane
Roadway Improvements		
RW1	166th Avenue E Widening; SR 410 WB ramps to 64th St E (WSDOT SUM-24)[1]	Widen to 4-5 lanes, includes new roundabouts at WB ramp and 64th Street E
RW9	Zehnder Street; Pease Avenue to Wood Avenue	Railroad Crossing Improvements
Non-Motorized Improvements		
NM7	Fryar Avenue Trail (WSDOT SUM-17)[1]	West Main Street to Puyallup Street
NM8	Zehnder Street/Elm Street Sidewalks	Construct pedestrian and bike facilities. Bike lanes from Valley Avenue to Main Street Complete missing sidewalk facilities between Pease Avenue and Wright Avenue
NM18	Sumner-Tapps Highway Sidewalks	Construct missing sidewalk facilities between Main Street E and the southern City Limits
NM20	Traffic Avenue Pedestrian Signal (WSDOT SUM-25)[1]	Replace existing pedestrian rectangular rapid flashing beacon with pedestrian signal

1. Corresponding WSDOT project number.

These improvements would mitigate the impacts of Alternatives 1 and 2 described in the previous section. With the completion of the projects listed above, the adopted multimodal LOS standards including intersection, pedestrian and bike, would be met under Baseline, Alternative 1 and Alternative 2 conditions.

The City's future pedestrian and bicycle networks would support the changes to the land use. The future pedestrian and bicycle networks are shown on Figure 4 and Figure 5, respectively.

No changes to the 20-year improvement project list have been identified as part of the alternatives analysis. The adopted Transportation Plan and the 20-year transportation improvement project map shown on Figure 6 would support the 2025 Comprehensive Plan Amendments, both Alternatives 1 and 2.

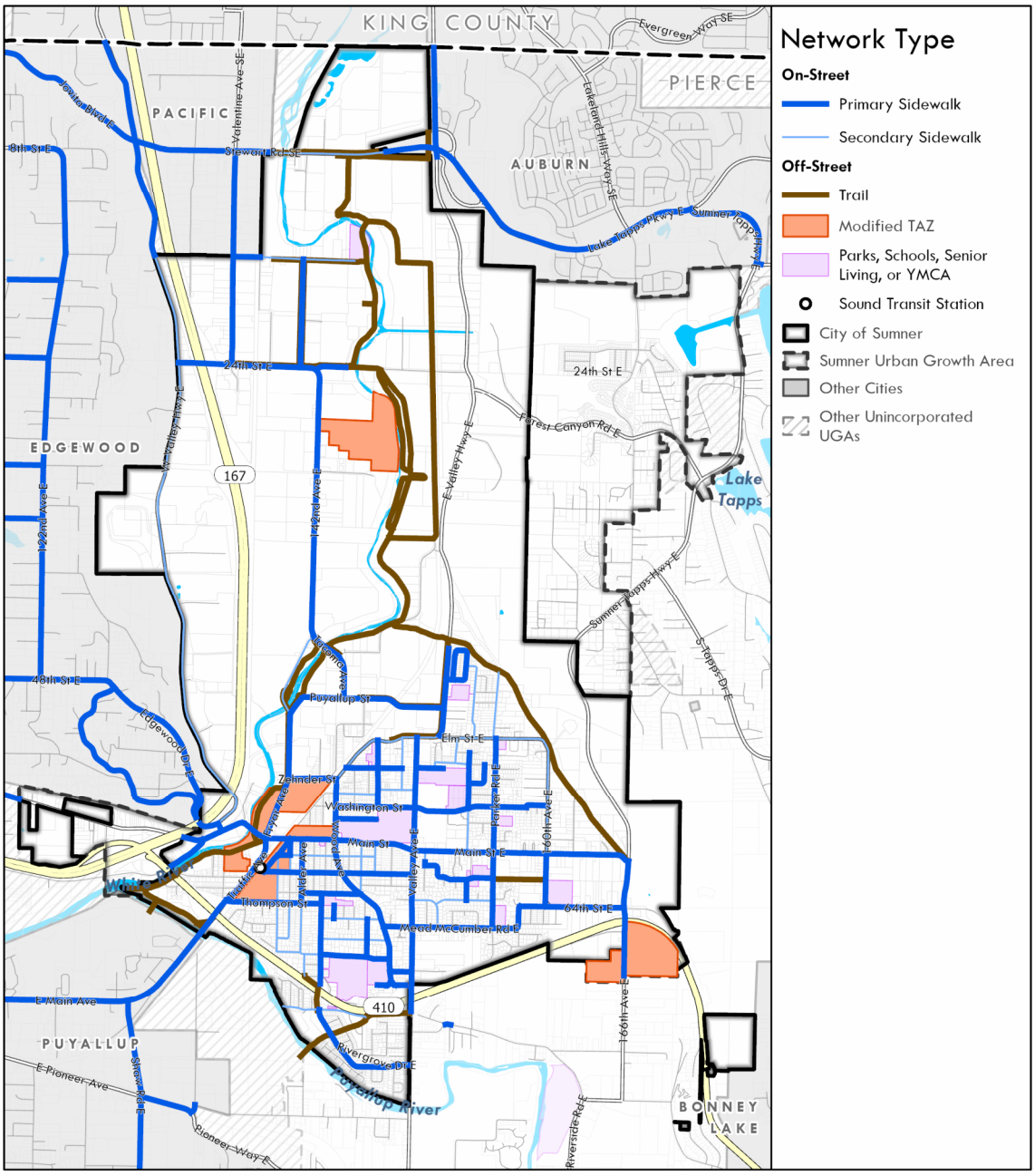

Figure 4 Future Pedestrian Network

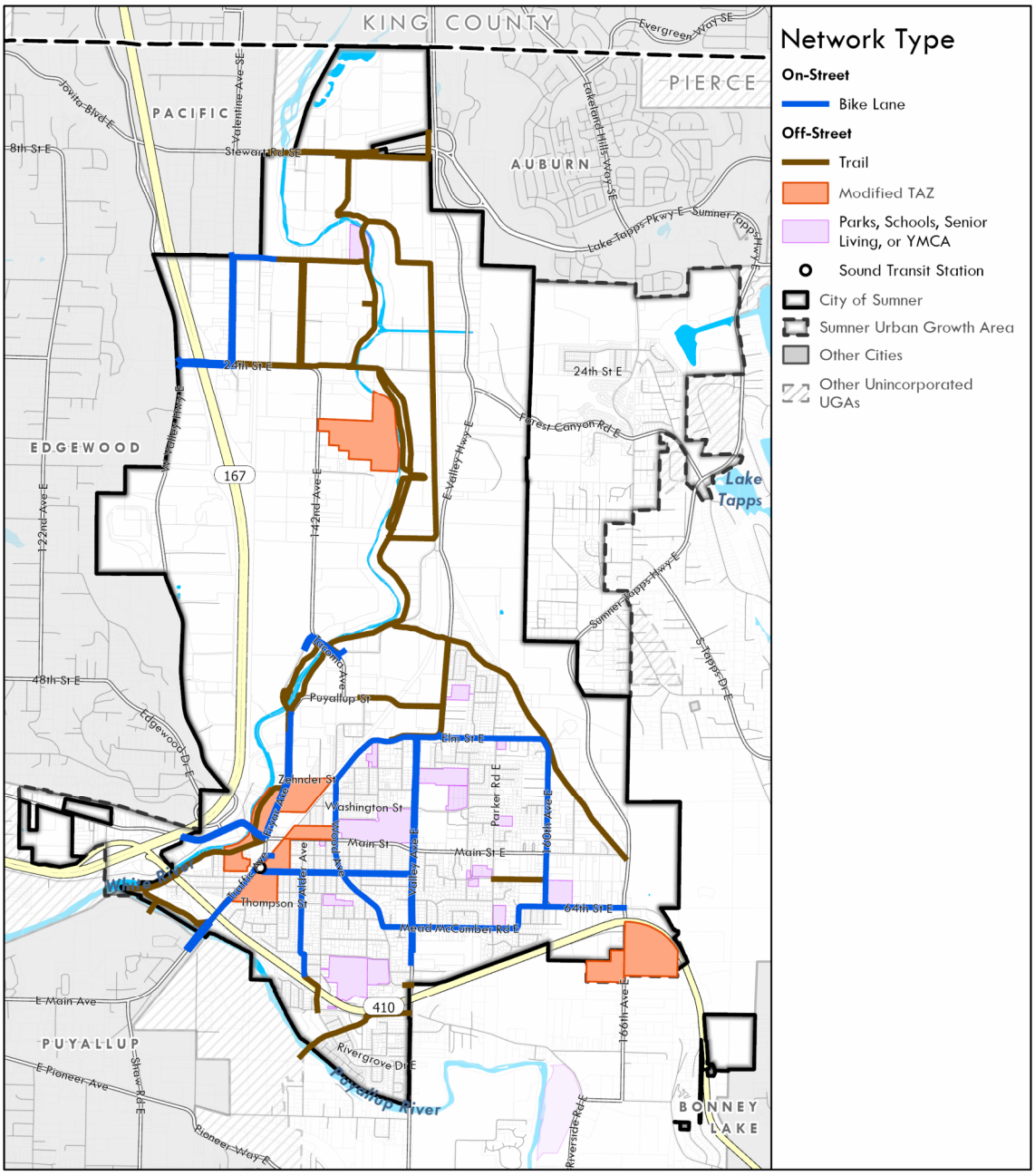

Figure 5 Future Bike Network

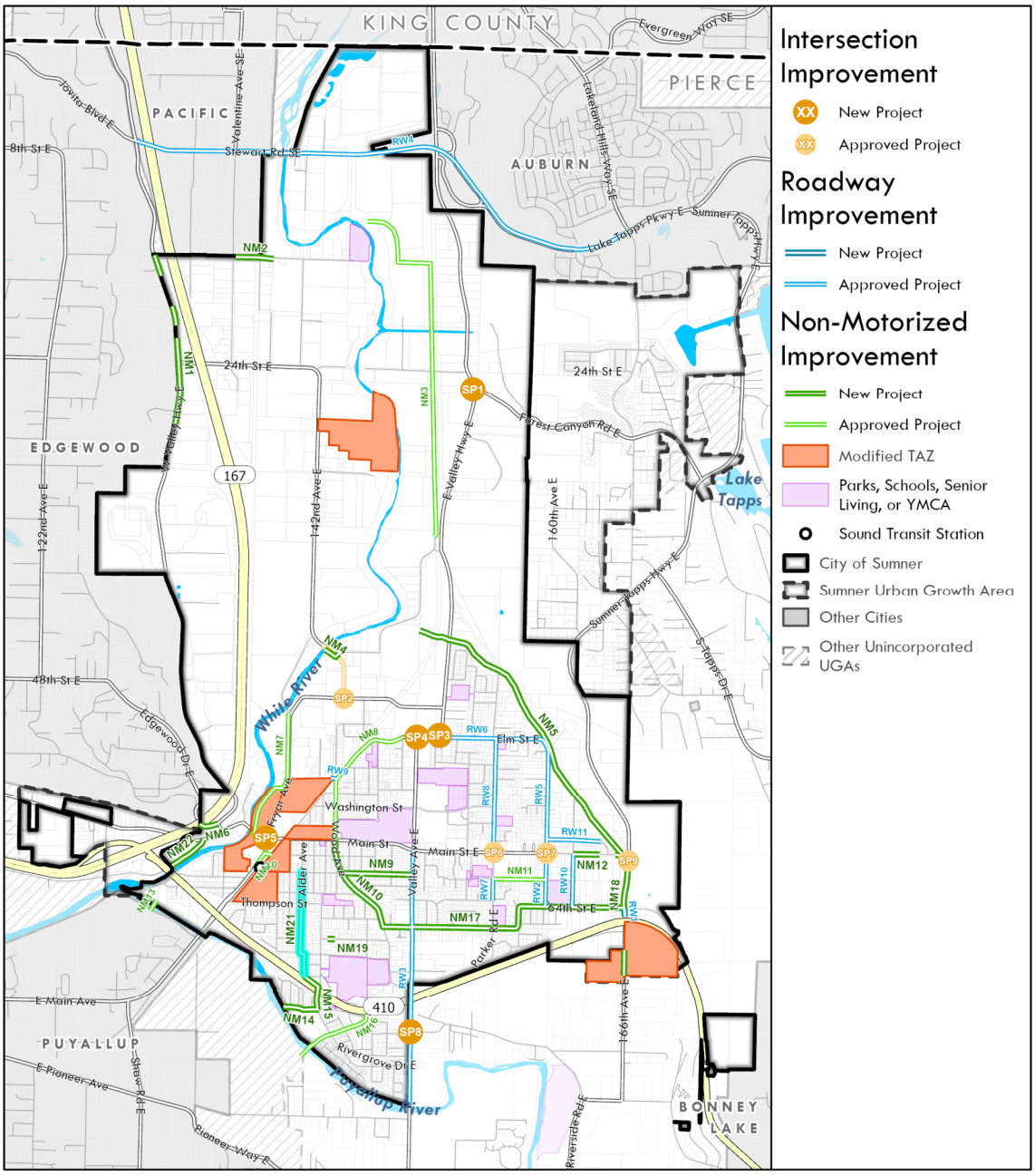

Figure 6 20-Year Improvement Project Map

Summary and Findings

This analysis reviewed potential impacts to the transportation system with the 2025 Comprehensive Plan Annual Amendments. Alternative 1 would result in an additional 146 households and 126 jobs in the City over the Baseline conditions in the adopted Transportation Plan. Alternative 2 would add 302 households and 136 jobs. The increase in housing and jobs under Alternatives 1 and 2 would generally result in small changes in intersection delay compared to the Baseline conditions that were used to develop the Transportation Plan. In addition, pedestrian and bicycle LOS are met in the areas where the amendments are proposed except pedestrian LOS at the areas along 166th Avenue in the southeast UGA. The adopted Transportation Plan and the 20-Year transportation improvement plan would address the LOS deficiencies identified for the alternatives. No additional improvements are needed as a result of the proposed changes to the land use under Alternative 1 or 2.

Attachment A: LOS Definitions

Highway Capacity Manual 7th Edition

Signalized intersection level of service (LOS) is defined in terms of a weighted average control delay for the entire intersection. Control delay quantifies the increase in travel time that a vehicle experiences due to the traffic signal control as well as provides a surrogate measure for driver discomfort and fuel consumption. Signalized intersection LOS is stated in terms of average control delay per vehicle (in seconds) during a specified time period (e.g., weekday PM peak hour). Control delay is a complex measure based on many variables, including signal phasing and coordination (i.e., progression of movements through the intersection and along the corridor), signal cycle length, and traffic volumes with respect to intersection capacity and resulting queues. Table 1 summarizes the LOS criteria for signalized intersections, as described in the *Highway Capacity Manual* 7th Edition (Transportation Research Board, 2022).

Table 1. Level of Service Criteria for Signalized Intersections

Level of Service	Average Control Delay (seconds/vehicle)	General Description
A	≤10	Free Flow
B	>10 – 20	Stable Flow (slight delays)
C	>20 – 35	Stable flow (acceptable delays)
D	>35 – 55	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)
E	>55 – 80	Unstable flow (intolerable delay)
F[1]	>80	Forced flow (congested and queues fail to clear)

Source: *Highway Capacity Manual 7th Edition*, Transportation Research Board, 2022, respectively.
1. If the volume-to-capacity (v/c) ratio for a lane group exceeds 1.0 LOS F is assigned to the individual lane group. LOS for overall approach or intersection is determined solely by the control delay.

Unsignalized intersection LOS criteria can be further reduced into two intersection types: all-way stop and two-way stop controlled. All-way stop controlled intersection LOS is expressed in terms of the weighted average control delay of the overall intersection or by approach. Two-way stop-controlled intersection LOS is defined in terms of the average control delay for each minor-street movement (or shared movement) as well as major-street left-turns. This approach is because major-street through vehicles are assumed to experience zero delay, a weighted average of all movements results in very low overall average delay, and this calculated low delay could mask deficiencies of minor movements. Table 2 shows LOS criteria for unsignalized intersections.

Table 2. Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (seconds/vehicle)
A	0 – 10
B	>10 – 15
C	>15 – 25
D	>25 – 35
E	>35 – 50
F[1]	>50

Source: *Highway Capacity Manual 7th Edition*, Transportation Research Board, 2022, respectively.
1. If the volume-to-capacity (v/c) ratio exceeds 1.0, LOS F is assigned an individual lane group for all unsignalized intersections, or minor street approach at two-way stop-controlled intersections. Overall intersection LOS is determined solely by control delay.