

TACOMA PUYALLUP AVENUE TRANSIT/COMPLETE STREET IMPROVEMENTS TRAFFIC ANALYSIS

JULY 6, 2023



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PREPARED FOR CITY OF TACOMA



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INTRODUCTION

This study evaluates the traffic operations for the proposed improvements to Puyallup Ave/S 24th St between Pacific Ave and E Portland Ave. The proposed improvements are analyzed for the year 2050, and generally consist of an eastbound Business Access Transit (BAT) lane for buses and right turns, one eastbound General Purpose (GP) lane, a center two-way left-turn lane (TWLTL), one westbound GP lane, and a two-way cycle track along the north side of Puyallup Ave. On-street parking will be provided where possible, typically along the north side of Puyallup Ave. This cross-section design was created by working with the City of Tacoma to create a preferred concept.

The purpose of this analysis is to test the corridor improvement's traffic operations to ensure there are no issues with delays or queuing in the future design year. This work follows a planning analysis previously performed in 2018.¹ This analysis is focused on the intersections listed below, which represent the extents of the improvement project:

- S 24th St & Pacific Ave
- Puyallup Ave & A Street
- Puyallup Ave & E D Street
- Puyallup Ave & E E Street
- Puyallup Ave & E F Street
- Puyallup Ave & E G Street
- Puyallup Ave & E L Street
- Puyallup Ave & Portland Ave E

The intersection of Puyallup Ave & Portland Ave E is outside the extent of the planned corridor improvements but is included to show future results for planned changes under the Portland Avenue Freight and Access Improvements project.

EXECUTIVE SUMMARY

Under the existing 2023 conditions, no intersection or lane group exceeds LOS D in any peak period. Only two queues in the existing scenario exceed storage lengths: the northeastbound left at F St & Puyallup Ave and the westbound left at E Portland Ave & Puyallup Ave.

For the future build 2050 scenario, overall intersection delay remains at or better than LOS D along the corridor. Some individual lane groups experience LOS E or F, mostly for low-volume (fewer than 50 vehicles per hour) movements and therefore these do not indicate significant delays on the corridor. Queues for the future build conditions exceed storage lengths for several movements, but further investigation using SimTraffic microsimulation queuing analysis shows that the queues that extend to upstream intersections are rare and therefore are not expected to cause disruptions.

¹ Puyallup Avenue Corridor Conceptual Design, Tech Memo #3: Alternatives Evaluation Report, February 2018, Nelson\Nygaard Consulting Associates Inc.

EXISTING CONDITIONS 2023

STUDY AREA ROADWAY NETWORK

This section documents existing conditions along the study corridor, pedestrian and bicycle facilities, and existing traffic volumes and operations. Table 1 below identifies the characteristics of Puyallup Ave and the signalized intersections of cross-streets within the study corridor.

TABLE 1: EXISTING STUDY AREA TRANSPORTATION NETWORK

ROADWAY	CLASSIFICATION ^a	NO. OF LANES	POSTED SPEED	SIDEWALKS	BIKE LANES	ON-STREET PARKING
PUYALLUP AVE/S 24TH ST	Principal Arterial	5	30	Yes	No	Yes
PACIFIC AVE	Principal Arterial	4	25	Yes	No	Partial
A STREET	Principal Arterial	2	30 ^b	Yes	No	No
E D STREET	Minor Arterial	3	30	Yes	Yes	No
E E STREET	Local Road	2	30 ^b	Yes	No	No
E F STREET	Local Road	2	30 ^b	Yes	No	No
E G STREET	Collector	2	30 ^b	Yes	No	No
E L STREET	Collector	2	25	Yes	Yes	Ne
PORTLAND AVE E	Principal Arterial	4	30	Yes	No	No

^a City of Tacoma Transportation Master Plan, December 2015, page 47

^b Assumed based on nearby roadways. No posted signs were found.

TRANSIT SERVICE

Several transit services are located on Puyallup Ave, particularly at the Tacoma Dome Station between E D Street and E G Street. Bus routes include Pierce Transit routes 13, 41, 42, 400, 500, 501, as well as Sound Transit routes 574, 586, 590, 594, and 595.

Rail services include Sound Transit's Link Light Rail T-Line (on E 25th Street), Sounder Train S Line, and Amtrak Cascades & Coast Starlight (south of E 25th Street). Amtrak Thruway Connection buses and Greyhound buses also provide service from the Tacoma Dome Station.

TRAFFIC CONTROL

S 24TH ST & PACIFIC AVE

This intersection is four-legged and signal controlled. Northbound and southbound phases are split, with no northbound left turn movement allowed. The Link Light Rail T Line runs along the center of Pacific Ave, which can be served during the northbound phase. The westbound approach has a right turn overlap that runs with the southbound phase.

PUYALLUP AVE & A STREET

This intersection is four-legged and signal controlled. The eastbound and westbound approaches have left turn pockets. The northbound approach has a right turn pocket. Crosswalks are only marked across Puyallup Ave at this location.

PUYALLUP AVE & E D STREET

This intersection is four-legged and signal controlled. Left turn pockets are provided for all but the southbound approach, which has a right turn drop lane. Bike lanes exist on E D Street, but this intersection does not have bicycle turn boxes. E D Street is included in the City of Tacoma Transportation Master Plan Auto Priority Network.

PUYALLUP AVE & E E STREET

This intersection is four-legged and signal controlled. Two-way left turn lane striping exists at this intersection on Puyallup Ave, instead of left turn pocket striping. The southern leg of this intersection was noted as being under construction at the time turning movement counts were collected.

PUYALLUP AVE & E F STREET

This intersection is five-legged and signal controlled. The fifth leg is located to the southwest, adjacent to the outbound lanes from the Tacoma Dome Station bus loop. Similar to E E Street, two-way left turn lane striping exists on Puyallup Ave, instead of left turn pocket striping. Crosswalks are only marked along the south side of Puyallup Ave at this location. The southern leg serves outbound-only vehicles from the bus loop that is entered from E G Street.

PUYALLUP AVE & E G STREET

This intersection is four-legged and signal controlled. There is no roadway north of this intersection since a parking area is immediately located to the north. However, the north "leg" is signal controlled. The eastbound approach utilizes two-way left turn lane striping, instead of left turn pocket striping. The only marked crosswalk at this location is across the south leg.

PUYALLUP AVE & E L STREET

This intersection is two-way stop controlled. Two-way left turn lane striping exists at this intersection on Puyallup Ave, instead of left turn pocket striping. Flashing beacons exist to warn motorists traveling northbound on E L Street to stop at the intersection, which lies at the bottom of a steep grade from the E L Street bridge. This intersection is assumed to be signalized for the future 2050 analysis.

PUYALLUP AVE & PORTLAND AVE E

This intersection is four-legged and signal controlled. Northbound left turns are not allowed at the intersection, instead vehicles may use an underpass and merge onto Puyallup Ave west of the intersection. This underpass is planned to be used for the future two-way cycle track, and northbound left turns will be allowed at the intersection. All four legs of this intersection are channelized, and the eastbound right turn has a dedicated receiving lane. Portland Ave E is included in the City of Tacoma Transportation Master Plan Auto Priority Network.

UNSIGNALIZED INTERSECTIONS

There are 4 unsignalized intersections in the study area that were not analyzed as part of this report: Puyallup Ave & E C St, Puyallup Ave & E McKinley Ave, Puyallup Ave & E K St, Puyallup Ave & E M St. These are minor intersections where the side streets have low speeds, single-lane stop-controlled approaches, and do not extend past the railroad to the north or beyond I-5 to the south.

DATA COLLECTION

Data was collected along the corridor to create an accurate representation of existing 2023 traffic levels and road users. Turning movement counts were collected at each study intersection from 7am-9am and 4pm-6pm on a typical weekday, Wednesday, February 1st, 2023. Turning movement counts include vehicle turning movements, bicycle movements, pedestrian movements, and heavy vehicles.

Additionally, tube counts were collected on two segments within the study area near E L St:

- On Puyallup Ave, west of E L St, east of E G St (including vehicle classifications)
- On E L St, south of Puyallup Ave (no classifications)

The tube counts were collected for 24-hours on Wednesday, February 1st, 2023. Turning movement counts and tube counts are included in the Appendix, Section 1 and Section 2, respectively.

Signal timing data was received for all study intersections from the City of Tacoma on January 17th, 2023.

VEHICLE CLASSIFICATIONS

24-hour tube counts collected on Puyallup Ave were also used to determine the types of vehicles that travel on Puyallup Ave during a typical weekday. The tube counts can be found in the Appendix, Section 2. The classifications are shown in Table 2 below.

TABLE 2: VEHICLE CLASSIFICATIONS ON PUYALLUP AVENUE

Classification	Class	Eastbound	Westbound
Motorcycles	Class 1	0.5%	0.5%
Cars	Class 2	65.6%	63.1%
Other 2-axle 4-tire	Class 3	19.8%	20.5%
Buses	Class 4	1.2%	1.0%
2-axle 6-tire	Class 5	10.5%	13.5%
3+ axles	Class 6+	2.4%	1.5%
Total		100.0%	100.0%

These results are similar to those found in the previous planning study.²

ANALYSIS METHODOLOGY

The traffic modeling program *Synchro 11* was used to determine the intersection's operations for the existing conditions and future conditions with the project built. Where possible, results were reported based on Highway Capacity Manual (HCM) 6 methodology. HCM 2000 methodology was used where HCM 6 methodology was not applicable. Synchro methodology was used for 50th percentile and 95th percentile queuing results at signalized intersections, and HCM 6 methodology was used for queuing results at unsignalized intersections.

LEVEL OF SERVICE

The level of service (LOS) is an intersection performance measure commonly used to provide an overview of how each movement and the overall intersection is operating. The LOS provides a "report card" rating of letters A through F based on average vehicle delay through the intersection. LOS A indicates free flow conditions with minimal delay traveling through an intersection while LOS F indicates excessive vehicle delay and demand is greater than capacity. The intersection average delay and LOS is based on the movement with the highest delay for a two-way stop-controlled intersection. The Highway Capacity Manual has LOS criteria for unsignalized and signalized intersections and can be found below in Table 3.

² Puyallup Avenue Corridor Conceptual Design, Tech Memo #1: Baseline Conditions, Figure 4-21

TABLE 3: LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

LEVEL OF SERVICE	SIGNALIZED AVERAGE CONTROL DELAY (SECONDS/VEHICLE)	UNSIGNALIZED AVERAGE CONTROL DELAY (SECONDS/VEHICLE)
A	0-10	0-10
B	10-20	10-15
C	20-35	15-25
D	35-55	25-35
E	55-80	35-50
F	>80	>50

REQUIRED OPERATING STANDARDS

The City of Tacoma is moving away from evaluating impacts solely based on LOS standards by promoting access through all modes of transportation through a set precedence called the Green Transportation Hierarchy.³ All intersections in the study area corridor are within Tacoma's jurisdiction. For the purposes of this analysis, LOS D was assumed as the operating standard along Puyallup Ave.

EXISTING CONDITIONS 2023 OPERATIONS

Existing AM and PM peak hour intersection operation results are shown below in Table 4. The table provides average delay and LOS at each study intersection by overall intersection average. Full analysis worksheets can be found in the Appendix, Section 3. For intersections where HCM 6 methodology cannot be applied, HCM 2000 was used and the intersection name is marked with an asterisk.

TABLE 4: 2023 EXISTING CONDITIONS INTERSECTION OPERATIONS

Intersection	Control type	Lane Group	2023 Existing AM Peak		2023 Existing PM Peak	
			Delay (sec)	LOS	Delay (sec)	LOS
1: Pacific Ave & S 24th St*	Signalized	Intersection Average	26.0	C	35.0	D
2: A St & S 24th St/Puyallup Ave	Signalized	Intersection Average	7.2	A	7.6	A
3: E D St & Puyallup Ave	Signalized	Intersection Average	13.0	B	13.0	B
4: E E St & Puyallup Ave*	Signalized	Intersection Average	2.3	A	3.9	A
5: F St & Puyallup Ave*	Signalized	Intersection Average	10.0	B	19.2	B
6: G St & Puyallup Ave	Signalized	Intersection Average	6.8	A	8.9	A
7: E L ST & Puyallup Ave	TWSC	Major/Minor Approach	0.5/19.4	A/C	0.9/29.2	A/D
8: E Portland Ave & Puyallup Ave	Signalized	Intersection Average	17.9	B	27.2	C

* HCM 2000 Methodology

³ City of Tacoma Transportation Master Plan, December 2015

As shown, no intersection or lane group exceeds LOS D in any peak period. Full operational results summary tables, including movement/lane group results, are shown in the Appendix, Section 6.

QUEUING ANALYSIS

The queuing results for the existing 2023 conditions that exceed 100 feet are shown in Table 5 below. Full queue result tables are shown in the Appendix, Section 6. Queues that exceed storage length are shown in bold red numbers.

TABLE 5: EXISTING 2023 QUEUING ANALYSIS RESULTS

Intersection	Control type	Lane	Storage Length (ft)	50th/95th Percentile Queues	
				2023 Existing AM Peak	2023 Existing PM Peak
1: Pacific Ave & S 24th St	Signalized	WBT	290	46/66	142/186
		NBT	260	104/132	118/154
		SBT	300	35/90	79/143
3: E D St & Puyallup Ave	Signalized	EBT	285	38/101	36/77
		WBT	285	35/91	88/177
		NBT	250	37/108	29/78
		SBT	340	23/73	55/130
4: E E St & Puyallup Ave	Signalized	WBT	215	0/67	0/141
		EBT	215	0/281	17/139
5: F St & Puyallup Ave	Signalized	WBT	290	0/216	44/303
		NEL	100	1/20	23/159
6: G St & Puyallup Ave	Signalized	EBT	290	37/149	34/91
		EBT	1400	84/171	37/74
		WBL	280	44/126	206/#624
8: E Portland Ave & Puyallup Ave	Signalized	WBT	2780	30/70	106/184
		NBT	950	105/226	50/110
		NBR	200	14/117	0/62
		SBT	560	42/104	114/227

* HCM 6 Methodology used for TWSC intersections only reports 95th percentile queues. Assumed 25 feet of queue length per vehicle.

- 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after 2 cycles.

m - Volume for 95th percentile queue is metered by upstream signal.

As shown, only two queues exceed existing storage lengths: the northeastbound left at F St & Puyallup Ave and the westbound left at E Portland Ave & Puyallup Ave.

FUTURE DESIGN YEAR 2050

BACKGROUND TRAFFIC VOLUME GROWTH

To estimate the future 2050 traffic volumes, a 0.5% linear annual growth rate was applied to all vehicle turning movements from the 2023 existing year data (13.5% total growth). This rate was

chosen based on information from City staff to match the Tacoma Dome Link Extension (TDLE) growth assumptions.⁴

PROPOSED IMPROVEMENT

The build improvements generally consist of a two-way cycle track along the north side of Puyallup Ave, one westbound general purpose (GP) lane, a center two-way left-turn lane (TWLTL), an eastbound GP lane, and an eastbound BAT lane for buses and right turns. Eastbound left turn movements were assumed to be protected-only to avoid conflicts with the cycle track. Westbound left turns between A St and L St were assumed to be protected-permissive with flashing yellow arrow operation. The exception is at F St, where the left-turn offset is significant (due to westbound left-turns entering the southwestern leg; the south leg is outbound-only from the bus loop) and could cause confusion with permitted left turn phasing (the eastbound and westbound were also assumed to be lead-lag at this intersection to avoid the left turns overlapping). The westbound right-turn pocket was preserved at Pacific Ave. On-street parking will be provided where possible, typically along the north side of Puyallup Ave.

The design is guided by several resources and standards that help determine the appropriate design elements which will serve all modes of transportation along the corridor. The City of Tacoma Right-of-Way Design Manual shows typical one-way bike lanes as 6 feet (or 5 feet with a 2-foot parking buffer). Travel lanes are typically 11 feet, left-turn lanes are 10 feet, and parking lanes are 8 feet.⁵ NACTO guidance states that the desirable two-way cycle track width is 12 feet and the minimum width in constrained locations is 8 feet.⁶ According to Seattle Streets Illustrated, two-way protected bike lanes are appropriate when one side of the street has fewer points of potential conflict such as driveways, intersections, or turning motor vehicles and when destinations on one side of the street generate significantly more demand than the opposite side of the street.⁷

FUTURE DESIGN YEAR 2050 OPERATIONS

The operations for the future build conditions are shown in Table 6. Full analysis worksheets can be found in the Appendix, Section 4.

TABLE 6: 2050 FUTURE INTERSECTION OPERATIONS

Intersection	Control type	Lane Group	2050 Future Build AM Peak		2050 Future Build PM Peak	
			Delay (sec)	LOS	Delay (sec)	LOS
1: Pacific Ave & S 24th St*	Signalized	Intersection Average	35.2	D	31.9	C

⁴ Email from Brennan Kidd, January 26, 2023, RE: Puyallup Ave Traffic Analysis Discussion

⁵ https://cms.cityoftacoma.org/PublicWorks/StandardsCommittee/DesignManual_version_Jan2016_revised_Jan2018.pdf

⁶ <https://nacto.org/publication/urban-bikeway-design-guide/cycle-tracks/two-way-cycle-tracks/>

⁷ <https://streetsillustrated.seattle.gov/design-standards/bicycle/protected-bike-lanes/>

Intersection	Control type	Lane Group	2050 Future Build AM Peak		2050 Future Build PM Peak	
			Delay (sec)	LOS	Delay (sec)	LOS
2: A St & S 24th St/Puyallup Ave	Signalized	Intersection Average	8.1	A	5.8	A
3: E D St & Puyallup Ave	Signalized	Intersection Average	35.0	C	30.7	C
4: E E St & Puyallup Ave*	Signalized	Intersection Average	3.2	A	3.3	A
5: F St & Puyallup Ave*	Signalized	Intersection Average	7.0	A	19.7	B
6: G St & Puyallup Ave	Signalized	Intersection Average	25.7	C	19.3	B
7: E L St & Puyallup Ave	Signalized	Intersection Average	10.7	B	4.8	A
8: E Portland Ave & Puyallup Ave*	Signalized	Intersection Average	23.7	C	35.6	D

* HCM 2000 Methodology

Overall intersection delay remains at or better than LOS D along the corridor. Full operational analysis summary tables are shown in the Appendix, Section 6, including individual movement/lane group LOS and delay. Some individual lane groups experience LOS E or F including:

- Eastbound left at Pacific Ave
- Eastbound left at A St
- Eastbound left, eastbound through, and northbound left at D St
- Eastbound left at E St
- Westbound left, northbound left, northbound right, northeastbound left, and northeastbound right at F St
- Eastbound left, eastbound through, and northbound left at G St
- Eastbound left and northbound left at L St

Most of the movements listed above serve low hourly volumes (fewer than 50 vehicles per hour) and would therefore not represent significant delays on the corridor.

QUEUING ANALYSIS

The queuing results for the future build 2050 conditions where queues exceed 100 feet are shown in Table 7. Full queue summary tables are shown in the Appendix, Section 6. Queues that exceed storage length are shown in bold red numbers.

TABLE 7: FUTURE BUILD 2050 QUEUING ANALYSIS RESULTS

Intersection	Control type	Lane	Storage Length (ft)	50th/95th Percentile Queues	
				2050 Future Build AM Peak	2050 Future Build PM Peak
1: Pacific Ave & S 24th St	Signalized	WBL	150	86/122	167/63*
		WBR	115	60/138	96/194
		NBT	260	164/207	137/174
		SBT	300	66/129	120/206
	Signalized	EBT	280	22/100	51/183

Intersection	Control type	Lane	Storage Length (ft)	50th/95th Percentile Queues	
				2050 Future Build AM Peak	2050 Future Build PM Peak
2: A St & S 24th St/Puyallup Ave		WBT	660	2/84	10/336
3: E D St & Puyallup Ave	Signalized	EBL	150	78/138	36/#87
		EBT	285	142/283	162/262
		WBT	265	126/167	372/0*
		NBT	250	173/245	91/151
		SBT	340	~105/#197	158/#276
		SBR	340	37/70	63/113
4: E E St & Puyallup Ave	Signalized	EBT	265	0/186	0/m78
		WBT	215	30/99	0/#767
5: F St & Puyallup Ave	Signalized	EBT	215	50/25*	1/360
		WBT	290	0/59	98/#671
		NEL	100	5/21	94/#213
6: G St & Puyallup Ave	Signalized	EBT	290	122/82*	48/71
		WBT	1750	28/143	61/96
		NBR	75	281/#451	81/121
7: E L ST & Puyallup Ave	Signalized	EBT	1750	326/475	152/420
		WBT	1400	71/199	152/266
		NBT	630	70/120	35/74
8: E Portland Ave & Puyallup Ave	Signalized	EBT	1400	103/234	74/113
		WBL	280	52/138	285/#583
		WBT	2780	48/112	285/#493
		NBL	100	60/168	85/#253
		NBT	950	126/274	74/131
		SBT	560	80/177	237/#397

~ - Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after 2 cycles.

- 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after 2 cycles.

m - Volume for 95th percentile queue is metered by upstream signal.

* - 50th percentile and 95th percentile queues are calculated differently by Synchro. 50th percentile queues are maximum back of queue on a typical cycle. 95th percentile queues are maximum back of queue with 95th percentile traffic volumes, accounting for upstream metering and unadjusted for peak hour factor. Under certain conditions, 95th percentile queues may be reported as shorter than 50th percentile.

As shown, queues exceed storage lengths for the following movements:

- Westbound left and westbound right at Pacific Ave
- Westbound through at D St
- Westbound through at E St
- Eastbound through, westbound through, and northeastbound left at F St
- Northbound right at G St
- Westbound left and northbound left at Portland Ave

Further queuing analysis using the microsimulation tool SimTraffic showed that through movement queues that extend to upstream intersections are not expected to cause disruptions. Results showed intersection blockage would be rare. Full results are shown in the Appendix, Section 4.

FUTURE GROWTH SENSITIVITY ANALYSIS

In order to determine how “resilient” the proposed improvements are against future traffic growth, this section analyzes the proposed improvement for additional growth beyond the future 2050 design year. Traffic volumes were projected out as far as 2080 (30 years beyond the design year) using the same 0.5% linear annual growth rate. From 2023 to 2080, this results in a 28.5% increase in volume for each movement on the corridor.

Results for 2080 showed that all intersections continue to operate at LOS D or better in both the AM and PM peak hours. One movement, the northbound left turn, at the intersection of Puyallup Ave & Portland Ave, exceeds a volume-to-capacity (v/c) ratio of 1.0. As stated in the Introduction section, this intersection is not within the corridor’s improvement area but is included in the analysis for informational purposes only. See Appendix Section 5 for detailed results.

SUMMARY

EXISTING INTERSECTION OPERATIONS

- Under the existing 2023 conditions, no intersection or lane group exceeds LOS D in any peak period.
- Only two queues in the existing scenario exceed storage lengths: the northeastbound left at F St & Puyallup Ave and the westbound left at E Portland Ave & Puyallup Ave.

FUTURE INTERSECTION OPERATIONS

- For the future build 2050 scenario, overall intersection delay remains at or better than LOS D along the corridor. Some individual lane groups experience LOS E or F, mostly for low-volume (fewer than 50 vehicles per hour) movements and therefore these do not indicate significant delays on the corridor.
- Queues for the future build conditions exceed storage lengths for several movements, but further investigation using SimTraffic microsimulation queuing analysis shows that the queues that extend to upstream intersections are rare and therefore are not expected to cause disruption.

APPENDIX

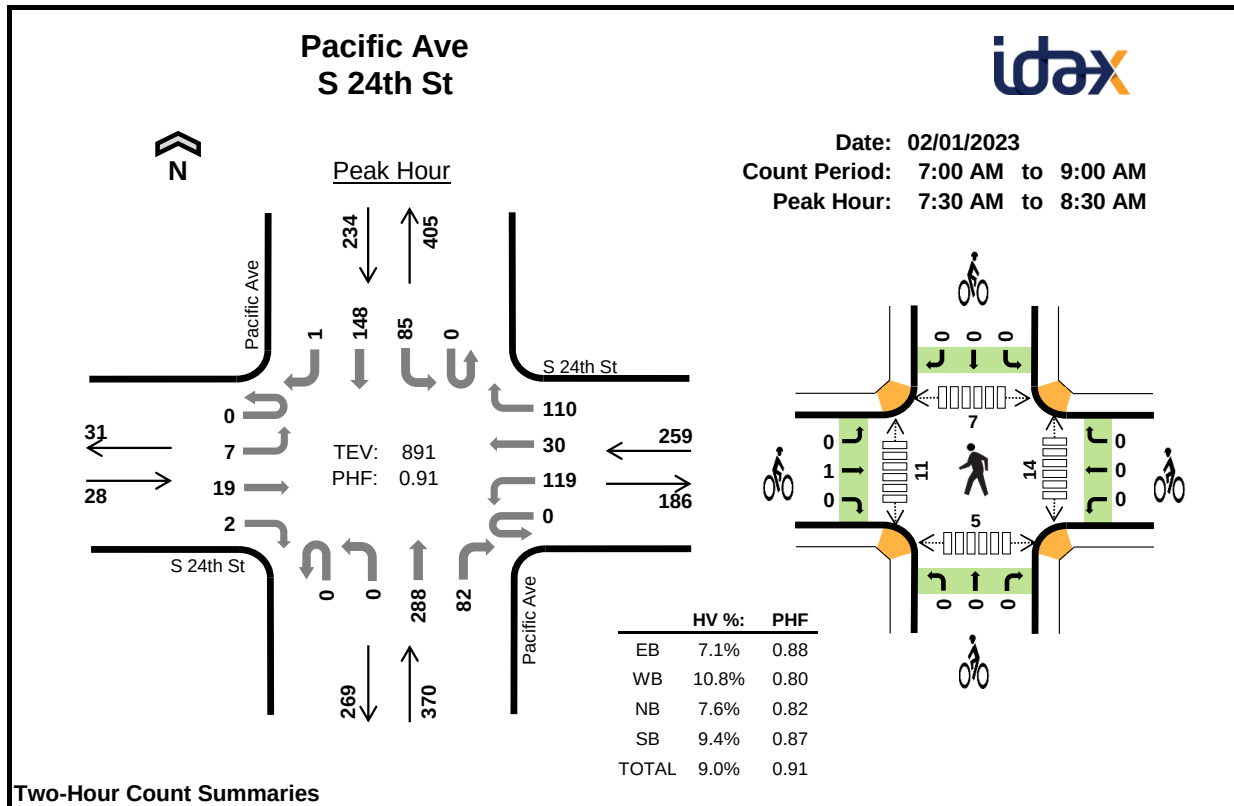


APPENDIX

- Section 1. Turning Movement Counts
- Section 2: Segment Volumes and Vehicle Classifications
- Section 3: Existing 2023 Synchro Analysis Results
- Section 4: Future Build 2050 Synchro and SimTraffic Analysis Results
- Section 5: Future Sensitivity Analysis Results
- Section 6: Full Delay and Queue Summary Tables

SECTION 1. TURNING MOVEMENT COUNTS



**Two-Hour Count Summaries**

Interval Start		S 24th St				S 24th St				Pacific Ave				Pacific Ave				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	1	4	0	0	14	12	19	0	0	55	20	0	19	22	2	168	0
7:15 AM		0	1	6	1	0	17	12	28	0	0	75	12	0	20	21	0	193	0
7:30 AM		0	1	6	0	0	25	5	26	0	0	75	18	0	20	36	0	212	0
7:45 AM		0	4	4	0	0	21	7	28	0	0	87	26	0	20	47	0	244	817
8:00 AM		0	0	6	1	0	30	11	25	0	0	66	20	0	22	29	0	210	859
8:15 AM		0	2	3	1	0	43	7	31	0	0	60	18	0	23	36	1	225	891
8:30 AM		0	3	5	2	0	15	3	24	0	0	43	14	0	17	36	0	162	841
8:45 AM		0	1	5	2	0	17	10	19	0	0	45	22	0	21	37	3	182	779
Count Total		0	13	39	7	0	182	67	200	0	0	506	150	0	162	264	6	1,596	0
Peak Hour	All	0	7	19	2	0	119	30	110	0	0	288	82	0	85	148	1	891	0
	HV	0	0	1	1	0	10	1	17	0	0	23	5	0	16	6	0	80	0
	HV%	-	0%	5%	50%	-	8%	3%	15%	-	-	8%	6%	-	19%	4%	0%	9%	0

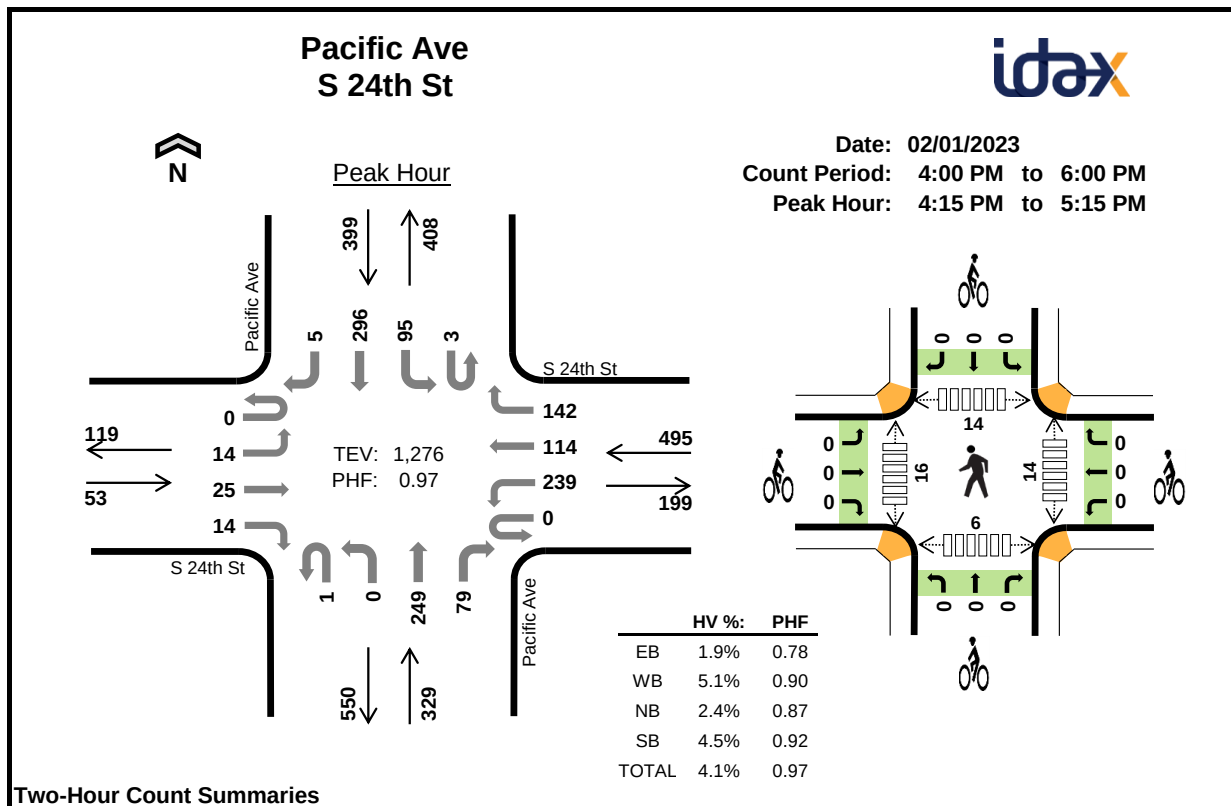
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	5	4	3	12	0	0	0	0	0	0	2	0	1	3
7:15 AM	1	10	10	7	28	0	0	0	0	0	1	1	1	1	4
7:30 AM	0	7	4	7	18	1	0	0	0	1	1	1	1	0	3
7:45 AM	0	8	11	5	24	0	0	0	0	0	2	2	4	0	8
8:00 AM	1	3	7	5	16	0	0	0	0	0	4	3	0	3	10
8:15 AM	1	10	6	5	22	0	0	0	0	0	7	5	2	2	16
8:30 AM	3	4	4	7	18	0	0	0	0	0	0	2	3	0	5
8:45 AM	1	10	1	5	17	0	0	0	0	0	0	0	0	0	0
Count Total	7	57	47	44	155	1	0	0	0	1	15	16	11	7	49
Peak Hour	2	28	28	22	80	1	0	0	0	1	14	11	7	5	37

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	S 24th St				S 24th St				Pacific Ave				Pacific Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	1	0	4	0	0	4	0	0	3	0	0	12	0
7:15 AM	0	0	1	0	0	2	0	8	0	0	8	2	0	5	2	0	28	0
7:30 AM	0	0	0	0	0	2	0	5	0	0	4	0	0	5	2	0	18	0
7:45 AM	0	0	0	0	0	2	0	6	0	0	8	3	0	3	2	0	24	82
8:00 AM	0	0	1	0	0	2	0	1	0	0	5	2	0	5	0	0	16	86
8:15 AM	0	0	0	1	0	4	1	5	0	0	6	0	0	3	2	0	22	80
8:30 AM	0	1	2	0	0	0	0	4	0	0	2	2	0	6	1	0	18	80
8:45 AM	0	0	1	0	0	2	1	7	0	0	1	0	0	4	1	0	17	73
Count Total	0	1	5	1	0	15	2	40	0	0	38	9	0	34	10	0	155	0
Peak Hour	0	0	1	1	0	10	1	17	0	0	23	5	0	16	6	0	80	0

Two-Hour Count Summaries - Bikes																	
Interval Start	S 24th St			S 24th St			Pacific Ave			Pacific Ave			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Count Total	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
Peak Hour	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

**Two-Hour Count Summaries**

Interval Start		S 24th St				S 24th St				Pacific Ave				Pacific Ave				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	1	4	3	0	60	30	29	0	0	58	15	0	27	75	0	302	0
4:15 PM		0	2	8	1	0	63	32	43	0	0	60	25	1	26	62	0	323	0
4:30 PM		0	4	7	6	0	45	27	31	0	0	59	20	0	19	78	2	298	0
4:45 PM		0	2	5	4	0	63	25	31	1	0	77	17	0	32	68	2	327	1,250
5:00 PM		0	6	5	3	0	68	30	37	0	0	53	17	2	18	88	1	328	1,276
5:15 PM		0	2	2	2	0	62	25	39	0	0	66	17	0	22	61	3	301	1,254
5:30 PM		0	1	7	0	0	48	28	46	0	0	58	22	0	26	74	7	317	1,273
5:45 PM		0	1	3	3	0	42	18	33	0	0	62	21	1	23	59	5	271	1,217
Count Total		0	19	41	22	0	451	215	289	1	0	493	154	4	193	565	20	2,467	0
Peak Hour	All	0	14	25	14	0	239	114	142	1	0	249	79	3	95	296	5	1,276	0
	HV	0	1	0	0	0	6	2	17	0	0	6	2	0	10	8	0	52	0
	HV%	-	7%	0%	0%	-	3%	2%	12%	0%	-	2%	3%	0%	11%	3%	0%	4%	0

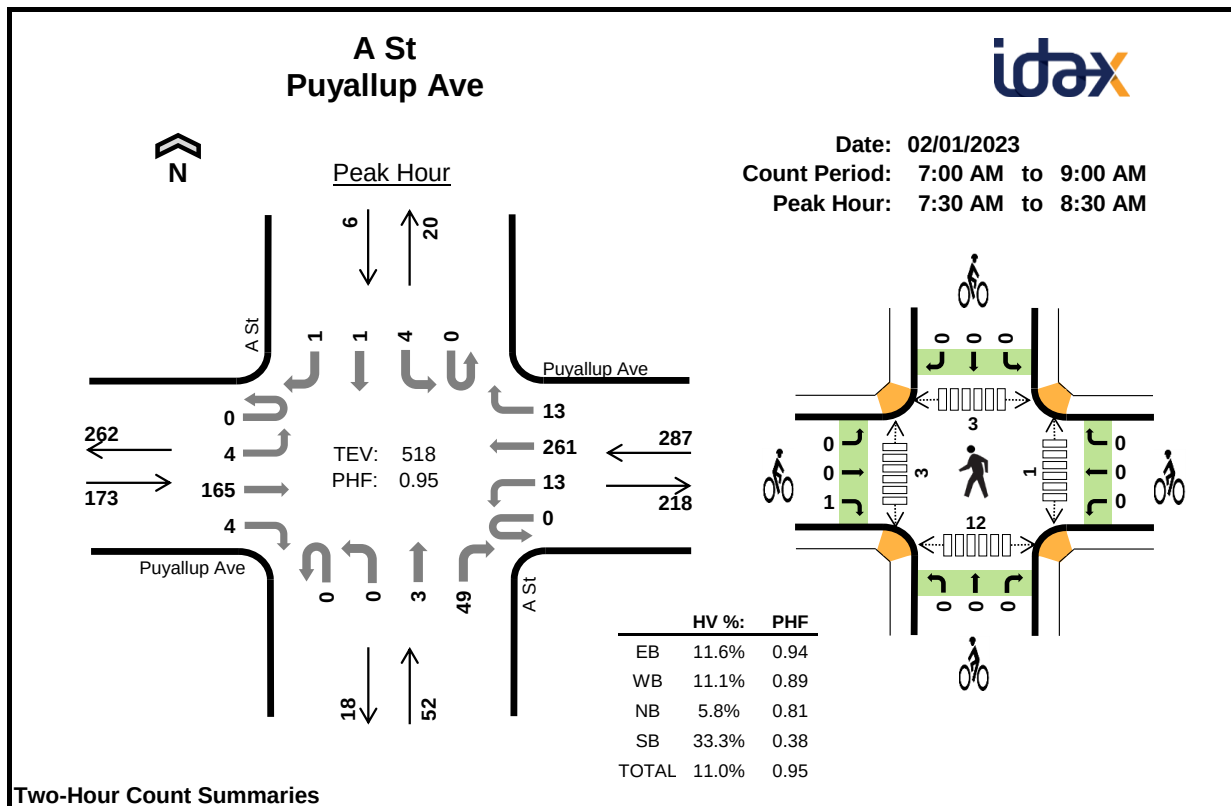
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	3	2	7	12	0	0	0	0	0	0	2	3	0	5
4:15 PM	0	14	5	4	23	0	0	0	0	0	3	4	6	0	13
4:30 PM	0	4	2	8	14	0	0	0	0	0	5	8	6	2	21
4:45 PM	0	4	1	5	10	0	0	0	0	0	5	2	0	1	8
5:00 PM	1	3	0	1	5	0	0	0	0	0	1	2	2	3	8
5:15 PM	0	3	2	6	11	0	0	0	0	0	3	5	1	0	9
5:30 PM	0	5	1	2	8	0	0	0	0	0	3	2	0	2	7
5:45 PM	0	5	2	4	11	0	0	0	0	0	3	6	2	1	12
Count Total	1	41	15	37	94	0	0	0	0	0	23	31	20	9	83
Peak Hour	1	25	8	18	52	0	0	0	0	0	14	16	14	6	50

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	S 24th St				S 24th St				Pacific Ave				Pacific Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	3	0	0	2	0	0	3	4	0	12	0
4:15 PM	0	0	0	0	0	4	2	8	0	0	4	1	0	1	3	0	23	0
4:30 PM	0	0	0	0	0	1	0	3	0	0	1	1	0	4	4	0	14	0
4:45 PM	0	0	0	0	0	1	0	3	0	0	1	0	0	4	1	0	10	59
5:00 PM	0	1	0	0	0	0	0	3	0	0	0	0	0	1	0	0	5	52
5:15 PM	0	0	0	0	0	0	0	3	0	0	2	0	0	3	3	0	11	40
5:30 PM	0	0	0	0	0	0	1	4	0	0	0	1	0	2	0	0	8	34
5:45 PM	0	0	0	0	0	2	0	3	0	0	2	0	0	3	1	0	11	35
Count Total	0	1	0	0	0	8	3	30	0	0	12	3	0	21	16	0	94	0
Peak Hour	0	1	0	0	0	6	2	17	0	0	6	2	0	10	8	0	52	0

Two-Hour Count Summaries - Bikes																		
Interval Start	S 24th St			S 24th St			Pacific Ave			Pacific Ave			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

**Two-Hour Count Summaries**

Interval Start		Puyallup Ave				Puyallup Ave				A St				A St				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
	7:00 AM	0	1	38	0	0	2	46	2	0	0	1	14	0	0	0	0	104	0
	7:15 AM	0	1	40	0	0	1	51	0	0	0	1	11	0	0	0	0	105	0
	7:30 AM	0	0	39	0	0	1	55	6	0	0	0	14	0	1	0	1	117	0
	7:45 AM	0	0	42	1	0	5	60	4	0	0	2	14	0	0	0	0	128	454
	8:00 AM	0	3	42	0	0	3	70	2	0	0	0	12	0	3	1	0	136	486
	8:15 AM	0	1	42	3	0	4	76	1	0	0	1	9	0	0	0	0	137	518
	8:30 AM	0	0	32	1	0	8	47	6	0	0	1	13	0	0	0	2	110	511
	8:45 AM	0	2	42	1	0	7	51	3	0	2	1	9	0	1	0	0	119	502
Count Total		0	8	317	6	0	31	456	24	0	2	7	96	0	5	1	3	956	0
Peak Hour	All	0	4	165	4	0	13	261	13	0	0	3	49	0	4	1	1	518	0
	HV	0	1	19	0	0	0	32	0	0	0	1	2	0	1	1	0	57	0
	HV%	-	25%	12%	0%	-	0%	12%	0%	-	-	33%	4%	-	25%	100%	0%	11%	0

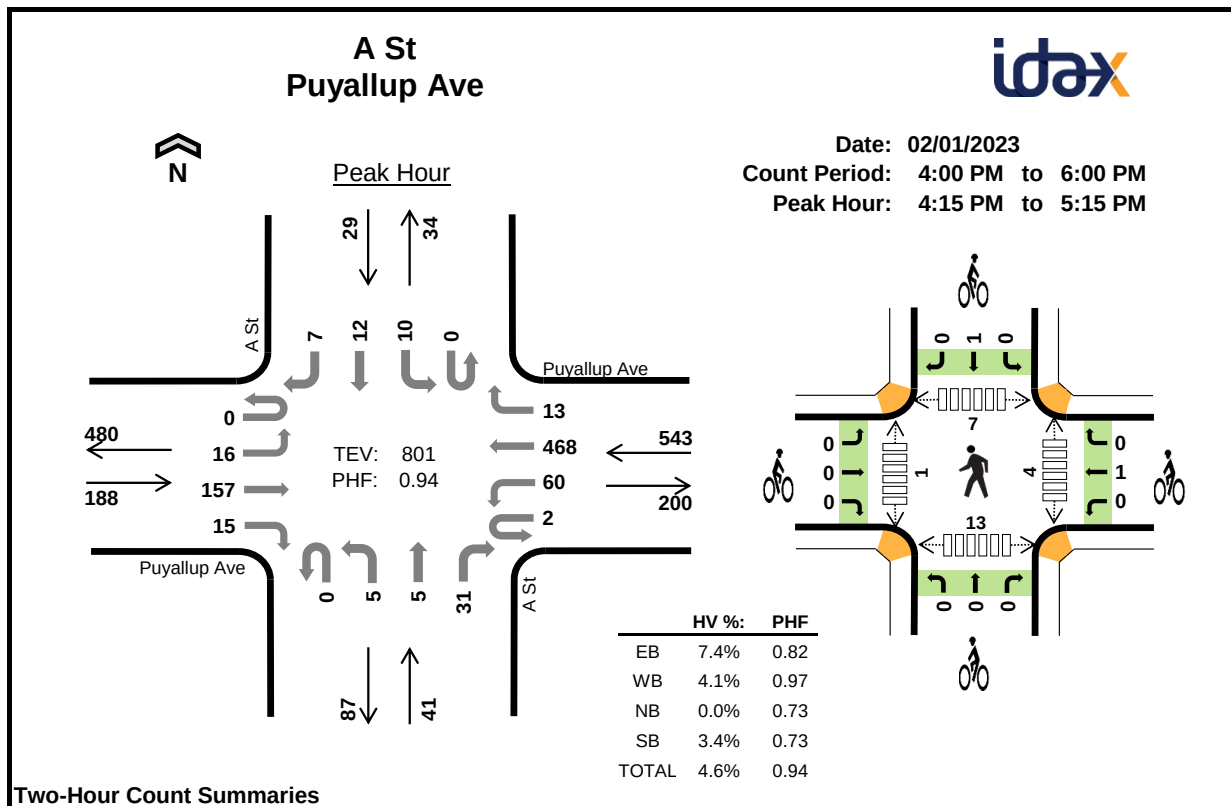
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	3	4	1	0	8	0	0	0	0	0	0	0	0	1	1
7:15 AM	8	9	1	0	18	0	0	0	0	0	0	0	0	1	1
7:30 AM	5	10	2	0	17	1	0	0	0	1	0	1	0	2	3
7:45 AM	6	9	0	0	15	0	0	0	0	0	1	0	1	4	6
8:00 AM	6	5	0	2	13	0	0	0	0	0	0	0	0	3	3
8:15 AM	3	8	1	0	12	0	0	0	0	0	0	2	2	3	7
8:30 AM	9	4	0	2	15	0	1	0	0	1	0	1	0	2	3
8:45 AM	3	11	0	1	15	0	0	0	0	0	0	2	0	6	8
Count Total	43	60	5	5	113	1	1	0	0	2	1	6	3	22	32
Peak Hour	20	32	3	2	57	1	0	0	0	1	1	3	3	12	19

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Puyallup Ave				Puyallup Ave				A St				A St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	3	0	0	0	4	0	0	0	0	1	0	0	0	0	8	0
7:15 AM	0	1	7	0	0	0	9	0	0	0	0	1	0	0	0	0	18	0
7:30 AM	0	0	5	0	0	0	10	0	0	0	0	2	0	0	0	0	17	0
7:45 AM	0	0	6	0	0	0	9	0	0	0	0	0	0	0	0	0	15	58
8:00 AM	0	0	6	0	0	0	5	0	0	0	0	0	0	1	1	0	13	63
8:15 AM	0	1	2	0	0	0	8	0	0	0	1	0	0	0	0	0	12	57
8:30 AM	0	0	9	0	0	1	3	0	0	0	0	0	0	0	0	2	15	55
8:45 AM	0	0	3	0	0	0	10	1	0	0	0	0	0	1	0	0	15	55
Count Total	0	2	41	0	0	1	58	1	0	0	1	4	0	2	1	2	113	0
Peak Hour	0	1	19	0	0	0	32	0	0	0	1	2	0	1	1	0	57	0

Two-Hour Count Summaries - Bikes																	
Interval Start	Puyallup Ave			Puyallup Ave			A St			A St			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	1	0			
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1			
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1			
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1			
8:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	1			
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1			
Count Total	0	0	1	0	1	0	0	0	0	0	0	0	2	0			
Peak Hour	0	0	1	0	0	0	0	0	0	0	0	0	1	0			

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

**Two-Hour Count Summaries**

Interval Start		Puyallup Ave				Puyallup Ave				A St				A St				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	1	42	0	0	17	112	0	0	0	0	12	0	2	2	0	188	0
4:15 PM		0	5	50	2	2	10	126	2	0	1	1	8	0	2	3	0	212	0
4:30 PM		0	5	39	7	0	18	104	2	0	0	0	6	0	3	5	2	191	0
4:45 PM		0	6	36	6	0	14	124	2	0	1	3	7	0	4	1	1	205	796
5:00 PM		0	0	32	0	0	18	114	7	0	3	1	10	0	1	3	4	193	801
5:15 PM		0	0	35	1	0	16	120	5	0	2	1	8	0	2	0	2	192	781
5:30 PM		0	4	45	5	0	7	120	3	0	1	4	12	0	0	2	4	207	797
5:45 PM		0	3	37	5	1	8	77	3	0	1	0	0	0	1	0	3	139	731
Count Total		0	24	316	26	3	108	897	24	0	9	10	63	0	15	16	16	1,527	0
Peak Hour	All	0	16	157	15	2	60	468	13	0	5	5	31	0	10	12	7	801	0
	HV	0	0	14	0	0	0	22	0	0	0	0	0	0	0	0	1	37	0
	HV%	-	0%	9%	0%	0%	0%	5%	0%	-	0%	0%	0%	-	0%	0%	14%	5%	0

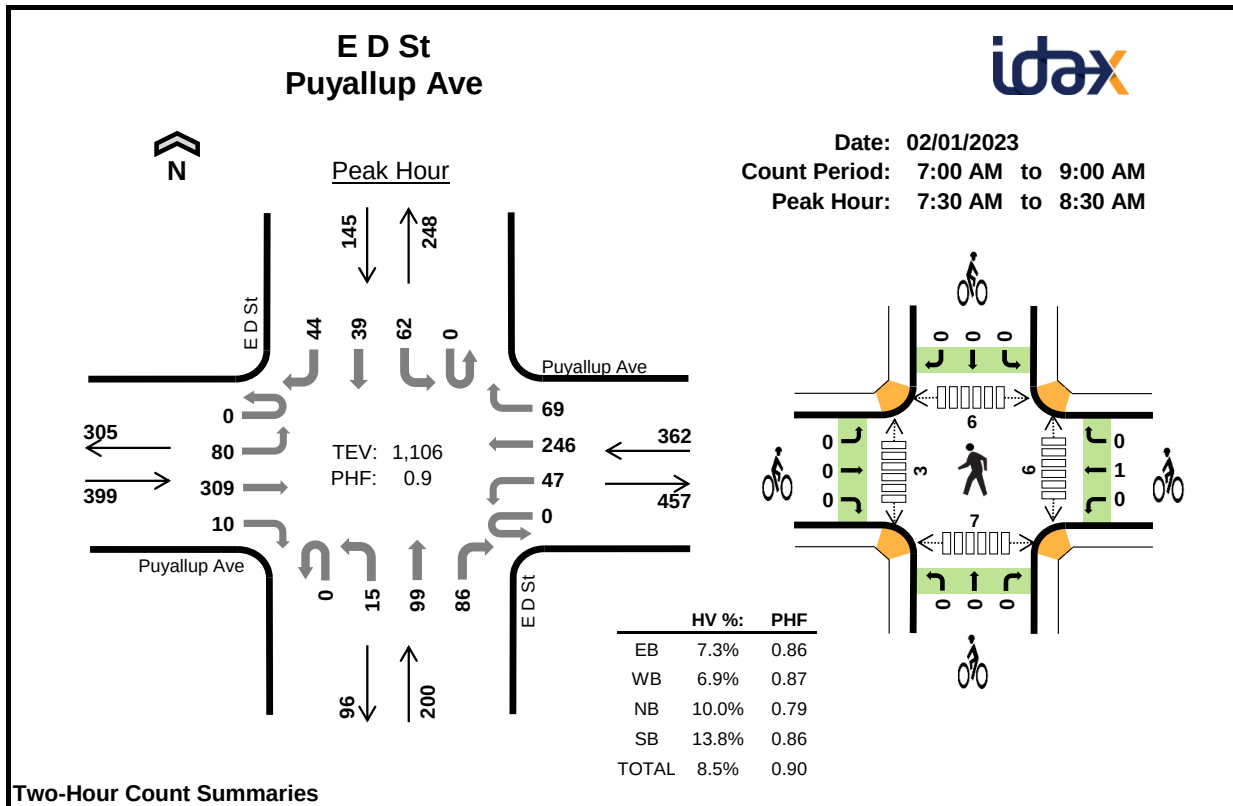
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	2	3	0	0	5	0	1	0	0	1	0	1	0	5	6
4:15 PM	4	11	0	0	15	0	0	0	0	0	3	1	4	3	11
4:30 PM	4	4	0	0	8	0	0	0	0	0	1	0	2	1	4
4:45 PM	5	5	0	0	10	0	0	0	1	1	0	0	0	2	2
5:00 PM	1	2	0	1	4	0	1	0	0	1	0	0	1	7	8
5:15 PM	3	5	0	0	8	0	1	0	0	1	2	0	1	1	4
5:30 PM	4	3	1	0	8	0	0	0	0	0	0	0	2	4	6
5:45 PM	4	5	0	0	9	0	0	0	1	1	0	1	1	4	6
Count Total	27	38	1	1	67	0	3	0	2	5	6	3	11	27	47
Peak Hour	14	22	0	1	37	0	1	0	1	2	4	1	7	13	25

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Puyallup Ave				Puyallup Ave				A St				A St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	5	0
4:15 PM	0	0	4	0	0	0	11	0	0	0	0	0	0	0	0	0	15	0
4:30 PM	0	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	8	0
4:45 PM	0	0	5	0	0	0	5	0	0	0	0	0	0	0	0	0	10	38
5:00 PM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	1	4	37
5:15 PM	0	0	3	0	0	1	4	0	0	0	0	0	0	0	0	0	8	30
5:30 PM	0	0	4	0	0	0	3	0	0	0	0	1	0	0	0	0	8	30
5:45 PM	0	0	4	0	0	0	5	0	0	0	0	0	0	0	0	0	9	29
Count Total	0	0	27	0	0	1	37	0	0	0	0	1	0	0	0	1	67	0
Peak Hour	0	0	14	0	0	0	22	0	0	0	0	0	0	0	0	1	37	0

Two-Hour Count Summaries - Bikes																	
Interval Start	Puyallup Ave			Puyallup Ave			A St			A St			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
4:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0			
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	2			
5:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	2			
5:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	3			
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3			
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	3			
Count Total	0	0	0	0	3	0	0	0	0	0	1	1	5	0			
Peak Hour	0	0	0	0	1	0	0	0	0	0	1	0	2	0			

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

**Two-Hour Count Summaries**

Interval Start		Puyallup Ave				Puyallup Ave				E D St				E D St				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	24	64	3	0	2	46	19	0	4	22	27	0	17	14	5	247	0
7:15 AM		0	24	69	2	0	3	49	26	0	3	18	22	0	20	5	6	247	0
7:30 AM		0	18	94	2	0	12	52	12	0	4	20	30	0	24	7	11	286	0
7:45 AM		0	29	83	4	0	10	59	22	0	4	32	27	0	17	9	11	307	1,087
8:00 AM		0	23	74	3	0	11	67	13	0	1	29	13	0	6	12	13	265	1,105
8:15 AM		0	10	58	1	0	14	68	22	0	6	18	16	0	15	11	9	248	1,106
8:30 AM		0	11	56	3	0	8	51	10	0	3	20	8	0	13	11	8	202	1,022
8:45 AM		0	22	42	4	0	3	51	20	0	6	14	15	0	9	12	8	206	921
Count Total		0	161	540	22	0	63	443	144	0	31	173	158	0	121	81	71	2,008	0
Peak Hour	All	0	80	309	10	0	47	246	69	0	15	99	86	0	62	39	44	1,106	0
	HV	0	3	24	2	0	0	20	5	0	3	9	8	0	12	4	4	94	0
	HV%	-	4%	8%	20%	-	0%	8%	7%	-	20%	9%	9%	-	19%	10%	9%	8%	0

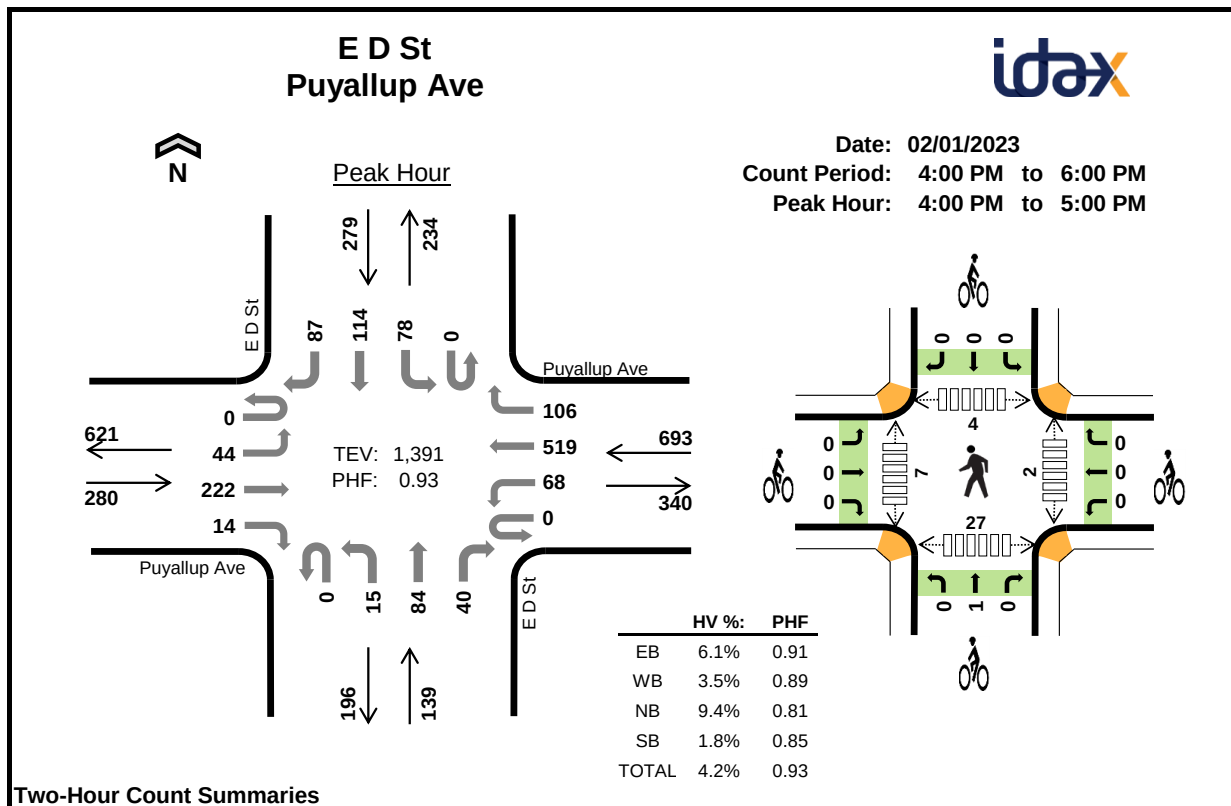
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	5	10	0	7	22	0	0	0	0	0	1	0	0	3	4
7:15 AM	9	14	4	3	30	0	0	0	0	0	1	1	1	4	7
7:30 AM	10	7	5	5	27	0	0	0	0	0	0	0	0	1	1
7:45 AM	7	5	7	7	26	0	0	0	0	0	3	1	3	3	10
8:00 AM	6	7	3	4	20	0	1	0	0	1	0	2	2	2	6
8:15 AM	6	6	5	4	21	0	0	0	0	0	3	0	1	1	5
8:30 AM	12	6	3	4	25	0	0	0	0	0	0	1	1	4	6
8:45 AM	6	10	2	5	23	0	0	0	0	0	0	2	0	3	5
Count Total	61	65	29	39	194	0	1	0	0	1	8	7	8	21	44
Peak Hour	29	25	20	20	94	0	1	0	0	1	6	3	6	7	22

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Puyallup Ave				Puyallup Ave				E D St				E D St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	3	1	0	0	6	4	0	0	0	0	0	3	2	2	22	0
7:15 AM	0	2	7	0	0	0	12	2	0	1	0	3	0	3	0	0	30	0
7:30 AM	0	0	9	1	0	0	6	1	0	0	1	4	0	4	0	1	27	0
7:45 AM	0	1	6	0	0	0	5	0	0	1	4	2	0	4	1	2	26	105
8:00 AM	0	0	5	1	0	0	5	2	0	0	3	0	0	2	2	0	20	103
8:15 AM	0	2	4	0	0	0	4	2	0	2	1	2	0	2	1	1	21	94
8:30 AM	0	2	8	2	0	1	4	1	0	1	2	0	0	3	0	1	25	92
8:45 AM	0	0	6	0	0	0	8	2	0	1	0	1	0	2	1	2	23	89
Count Total	0	8	48	5	0	1	50	14	0	6	11	12	0	23	7	9	194	0
Peak Hour	0	3	24	2	0	0	20	5	0	3	9	8	0	12	4	4	94	0

Two-Hour Count Summaries - Bikes																		
Interval Start	Puyallup Ave			Puyallup Ave			E D St			E D St			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
8:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	1				
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1				
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1				
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1				
Count Total	0	0	0	0	1	0	0	0	0	0	0	0	1	0				
Peak Hour	0	0	0	0	1	0	0	0	0	0	0	0	1	0				

Note: U-Turn volumes for bikes are included in Left-Turn, if any.



Two-Hour Count Summaries

Interval Start		Puyallup Ave				Puyallup Ave				E D St				E D St				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
	4:00 PM	0	7	58	0	0	14	129	26	0	4	20	6	0	22	31	29	346	0
	4:15 PM	0	14	56	7	0	17	116	19	0	5	24	14	0	15	29	19	335	0
	4:30 PM	0	13	53	2	0	22	139	33	0	3	21	14	0	18	34	23	375	0
	4:45 PM	0	10	55	5	0	15	135	28	0	3	19	6	0	23	20	16	335	1,391
	5:00 PM	0	9	36	6	0	20	132	24	0	3	16	11	0	21	39	27	344	1,389
	5:15 PM	0	11	39	2	0	13	131	26	0	3	16	11	0	11	21	12	296	1,350
	5:30 PM	0	9	44	9	0	11	117	29	0	2	14	4	0	21	20	18	298	1,273
	5:45 PM	0	6	46	6	0	16	82	19	0	3	20	10	0	16	16	4	244	1,182
Count Total		0	79	387	37	0	128	981	204	0	26	150	76	0	147	210	148	2,573	0
Peak Hour	All	0	44	222	14	0	68	519	106	0	15	84	40	0	78	114	87	1,391	0
	HV	0	5	10	2	0	0	19	5	0	2	5	6	0	2	1	2	59	0
	HV%	-	11%	5%	14%	-	0%	4%	5%	-	13%	6%	15%	-	3%	1%	2%	4%	0

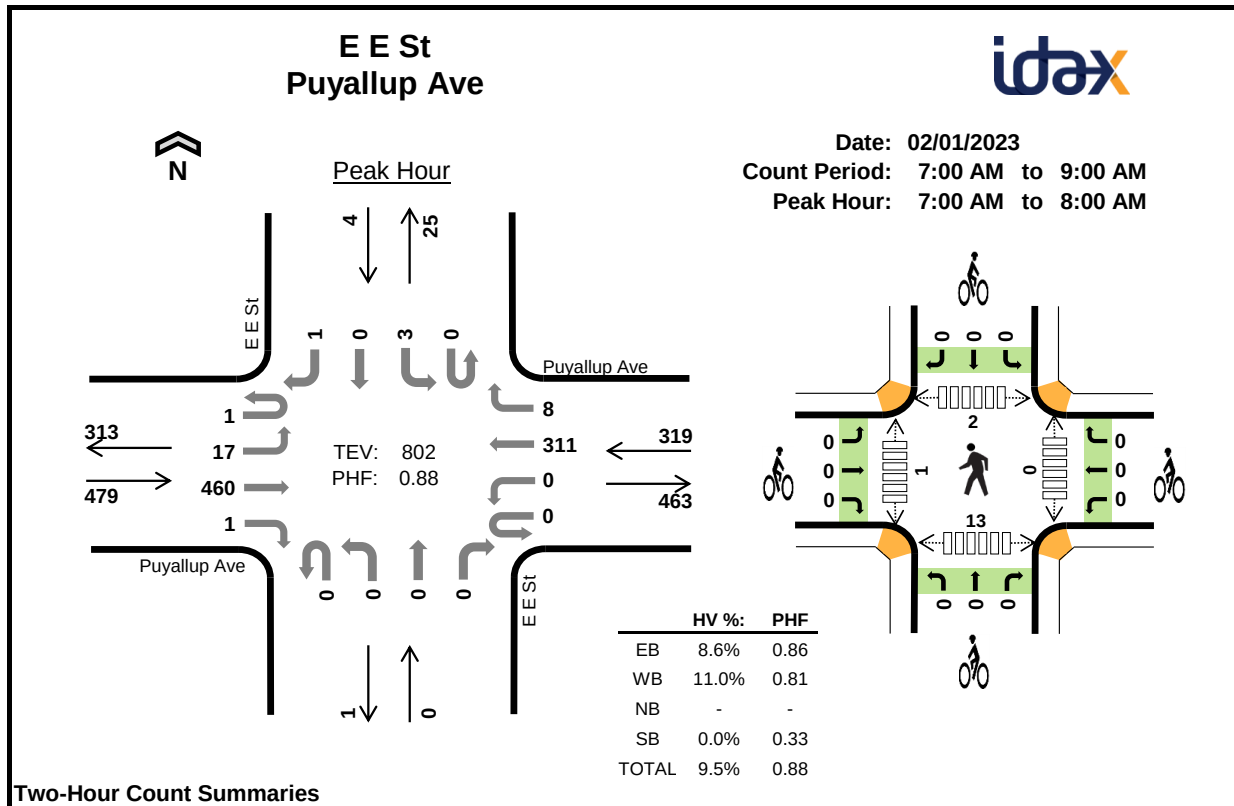
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	2	5	3	1	11	0	0	1	0	1	0	0	0	3	3
4:15 PM	4	8	3	3	18	0	0	0	0	0	0	0	3	9	12
4:30 PM	6	5	6	1	18	0	0	0	0	0	1	5	0	7	13
4:45 PM	5	6	1	0	12	0	0	0	0	0	1	2	1	8	12
5:00 PM	2	4	4	0	10	0	1	1	0	2	0	4	1	4	9
5:15 PM	4	6	1	0	11	0	0	0	0	0	1	0	3	5	9
5:30 PM	3	3	0	1	7	0	0	1	0	1	1	3	0	2	6
5:45 PM	4	4	3	2	13	0	0	0	1	1	1	2	1	6	10
Count Total	30	41	21	8	100	0	1	3	1	5	5	16	9	44	74
Peak Hour	17	24	13	5	59	0	0	1	0	1	2	7	4	27	40

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Puyallup Ave				Puyallup Ave				E D St				E D St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	2	0	0	0	3	2	0	1	1	1	0	0	1	0	11	0
4:15 PM	0	2	1	1	0	0	7	1	0	1	0	2	0	1	0	2	18	0
4:30 PM	0	3	3	0	0	0	4	1	0	0	3	3	0	1	0	0	18	0
4:45 PM	0	0	4	1	0	0	5	1	0	0	1	0	0	0	0	0	12	59
5:00 PM	0	1	0	1	0	0	1	3	0	1	2	1	0	0	0	0	10	58
5:15 PM	0	1	3	0	0	0	5	1	0	1	0	0	0	0	0	0	11	51
5:30 PM	0	0	2	1	0	0	3	0	0	0	0	0	0	1	0	0	7	40
5:45 PM	0	1	3	0	0	0	3	1	0	1	0	2	0	1	0	1	13	41
Count Total	0	8	18	4	0	0	31	10	0	5	7	9	0	4	1	3	100	0
Peak Hour	0	5	10	2	0	0	19	5	0	2	5	6	0	2	1	2	59	0

Two-Hour Count Summaries - Bikes																	
Interval Start	Puyallup Ave			Puyallup Ave			E D St			E D St			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
4:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	1	0			
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1			
5:00 PM	0	0	0	0	1	0	0	1	0	0	0	0	2	2			
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2			
5:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	1	3			
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	4			
Count Total	0	0	0	0	1	0	0	3	0	0	1	0	5	0			
Peak Hour	0	0	0	0	0	0	0	1	0	0	0	0	1	0			

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

**Two-Hour Count Summaries**

Interval Start		Puyallup Ave				Puyallup Ave				E E St				E E St				15-min Total	Rolling One Hour
		Eastbound		Westbound		Northbound		Southbound		Northbound		Southbound							
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	103	0	0	0	66	1	0	0	0	0	0	0	0	0	170	0
7:15 AM		0	2	107	0	0	0	80	0	0	0	0	0	0	2	0	1	192	0
7:30 AM		0	5	134	1	0	0	71	2	0	0	0	0	0	0	0	0	213	0
7:45 AM		1	10	116	0	0	0	94	5	0	0	0	0	0	1	0	0	227	802
8:00 AM		2	17	69	0	0	0	71	6	0	0	0	0	0	2	0	2	169	801
8:15 AM		5	19	74	0	0	0	70	4	0	0	0	0	0	0	0	2	174	783
8:30 AM		0	4	71	1	1	0	73	0	0	0	0	0	0	0	0	1	151	721
8:45 AM		2	2	55	0	0	0	68	2	0	0	0	1	0	1	0	0	131	625
Count Total		10	59	729	2	1	0	593	20	0	0	0	1	0	6	0	6	1,427	0
Peak Hour	All	1	17	460	1	0	0	311	8	0	0	0	0	0	3	0	1	802	0
	HV	0	0	41	0	0	0	34	1	0	0	0	0	0	0	0	0	76	0
	HV%	0%	0%	9%	0%	-	-	11%	13%	-	-	-	-	-	0%	-	0%	9%	0

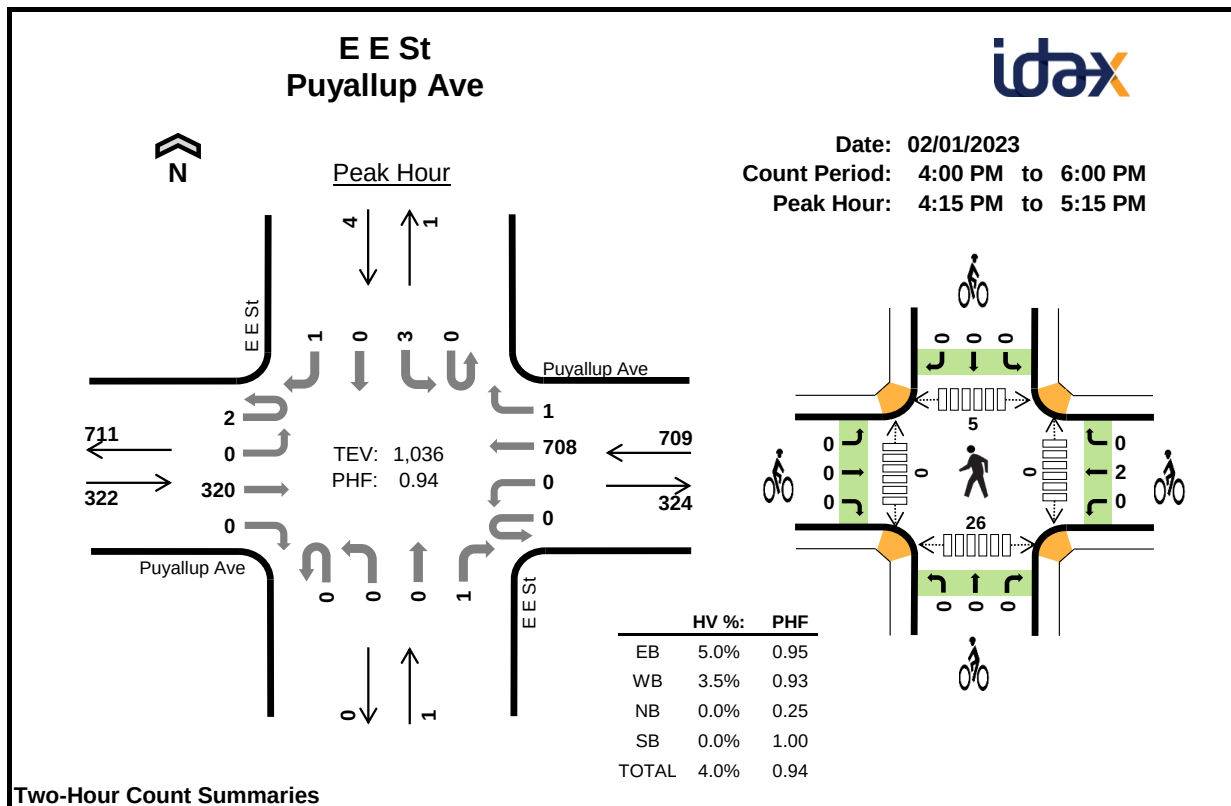
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	5	9	0	0	14	0	0	0	0	0	0	0	1	3	4
7:15 AM	11	13	0	0	24	0	0	0	0	0	0	1	0	3	4
7:30 AM	14	7	0	0	21	0	0	0	0	0	0	0	0	4	4
7:45 AM	11	6	0	0	17	0	0	0	0	0	0	0	1	3	4
8:00 AM	6	7	0	1	14	0	1	0	0	1	0	3	2	4	9
8:15 AM	8	6	0	0	14	0	1	0	0	1	0	7	1	4	12
8:30 AM	11	8	0	0	19	0	0	0	0	0	2	1	4	7	14
8:45 AM	6	12	1	1	20	0	0	0	0	0	0	6	0	5	11
Count Total	72	68	1	2	143	0	2	0	0	2	2	18	9	33	62
Peak Hour	41	35	0	0	76	0	0	0	0	0	0	1	2	13	16

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Puyallup Ave				Puyallup Ave				E E St				E E St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	5	0	0	0	9	0	0	0	0	0	0	0	0	0	14	0
7:15 AM	0	0	11	0	0	0	13	0	0	0	0	0	0	0	0	0	24	0
7:30 AM	0	0	14	0	0	0	7	0	0	0	0	0	0	0	0	0	21	0
7:45 AM	0	0	11	0	0	0	5	1	0	0	0	0	0	0	0	0	17	76
8:00 AM	0	0	6	0	0	0	7	0	0	0	0	0	0	0	1	0	14	76
8:15 AM	0	0	8	0	0	0	6	0	0	0	0	0	0	0	0	0	14	66
8:30 AM	0	1	9	1	0	0	8	0	0	0	0	0	0	0	0	0	19	64
8:45 AM	0	1	5	0	0	0	12	0	0	0	0	1	0	1	0	0	20	67
Count Total	0	2	69	1	0	0	67	1	0	0	0	1	0	2	0	0	143	0
Peak Hour	0	0	41	0	0	0	34	1	0	0	0	0	0	0	0	0	76	0

Two-Hour Count Summaries - Bikes																	
Interval Start	Puyallup Ave			Puyallup Ave			E E St			E E St			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
8:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	1			
8:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	2			
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2			
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2			
Count Total	0	0	0	0	2	0	0	0	0	0	0	0	2	0			
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0			

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

**Two-Hour Count Summaries**

Interval Start		Puyallup Ave				Puyallup Ave				E E St				E E St				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	0	80	0	0	0	145	1	0	0	0	0	0	7	0	4	237	0
4:15 PM		0	0	80	0	0	0	157	0	0	0	0	0	0	1	0	0	238	0
4:30 PM		0	0	84	0	0	0	189	1	0	0	0	0	0	0	0	1	275	0
4:45 PM		1	0	84	0	0	0	175	0	0	0	0	1	0	1	0	0	262	1,012
5:00 PM		1	0	72	0	0	0	187	0	0	0	0	0	0	1	0	0	261	1,036
5:15 PM		0	0	60	0	0	0	165	0	0	0	0	0	0	0	0	0	225	1,023
5:30 PM		0	0	71	0	0	0	160	0	0	0	0	0	0	0	0	0	231	979
5:45 PM		0	0	69	0	2	0	116	0	0	0	0	0	0	0	0	0	187	904
Count Total		2	0	600	0	2	0	1,294	2	0	0	0	1	0	10	0	5	1,916	0
Peak Hour	All	2	0	320	0	0	0	708	1	0	0	0	1	0	3	0	1	1,036	0
	HV	0	0	16	0	0	0	25	0	0	0	0	0	0	0	0	0	41	0
	HV%	0%	-	5%	-	-	-	4%	0%	-	-	-	0%	-	0%	-	0%	4%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	4	5	0	1	10	0	0	0	0	0	0	0	2	3	5
4:15 PM	4	10	0	0	14	0	0	0	0	0	0	0	1	8	9
4:30 PM	7	5	0	0	12	0	0	0	0	0	0	0	2	7	9
4:45 PM	4	5	0	0	9	0	0	0	0	0	0	0	2	6	8
5:00 PM	1	5	0	0	6	0	2	0	0	2	0	0	0	5	5
5:15 PM	3	7	0	0	10	0	0	0	0	0	0	0	3	3	6
5:30 PM	2	3	0	0	5	2	0	0	0	2	0	0	0	5	5
5:45 PM	6	4	0	0	10	0	0	0	0	0	1	0	3	4	8
Count Total	31	44	0	1	76	2	2	0	0	4	1	0	13	41	55
Peak Hour	16	25	0	0	41	0	2	0	0	2	0	0	5	26	31

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Puyallup Ave				Puyallup Ave				E E St				E E St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	4	0	0	0	5	0	0	0	0	0	0	1	0	0	10	0
4:15 PM	0	0	4	0	0	0	10	0	0	0	0	0	0	0	0	0	14	0
4:30 PM	0	0	7	0	0	0	5	0	0	0	0	0	0	0	0	0	12	0
4:45 PM	0	0	4	0	0	0	5	0	0	0	0	0	0	0	0	0	9	45
5:00 PM	0	0	1	0	0	0	5	0	0	0	0	0	0	0	0	0	6	41
5:15 PM	0	0	3	0	0	0	7	0	0	0	0	0	0	0	0	0	10	37
5:30 PM	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	5	30
5:45 PM	0	0	6	0	0	0	4	0	0	0	0	0	0	0	0	0	10	31
Count Total	0	0	31	0	0	0	44	0	0	0	0	0	0	1	0	0	76	0
Peak Hour	0	0	16	0	0	0	25	0	0	0	0	0	0	0	0	0	41	0

Two-Hour Count Summaries - Bikes																	
Interval Start	Puyallup Ave			Puyallup Ave			E E St			E E St			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
5:00 PM	0	0	0	0	2	0	0	0	0	0	0	0	2	2			
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2			
5:30 PM	0	2	0	0	0	0	0	0	0	0	0	0	2	4			
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4			
Count Total	0	2	0	0	2	0	0	0	0	0	0	0	4	0			
Peak Hour	0	0	0	0	2	0	0	0	0	0	0	0	2	0			

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Two-Hour Count Summaries

Interval Start		Puyallup Ave					Puyallup Ave					E F St					E F St					E F St					15-min Total	Rolling One Hour	
		Eastbound					Westbound					Northbound					Southbound					Northeastbound							
		UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR			
7:00 AM		0	0	84	0	20	0	0	10	61	0	0	0	3	0	1	0	0	0	0	0	0	0	1	0	2	0	182	0
7:15 AM		0	0	89	0	16	0	0	16	66	0	0	0	3	0	1	0	0	0	0	0	0	0	1	0	3	0	195	0
7:30 AM		0	0	108	0	28	0	0	6	73	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	3	0	221	0
7:45 AM		0	0	110	0	10	1	0	1	94	0	0	1	3	0	0	0	0	0	0	0	0	0	1	0	2	0	223	821
8:00 AM		0	0	63	0	9	0	0	4	75	0	0	0	2	0	3	0	0	0	0	0	0	0	1	0	1	0	158	797
8:15 AM		0	0	74	0	6	0	0	3	71	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	157	759
8:30 AM		0	0	69	0	8	0	0	3	66	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	3	0	151	689
8:45 AM		0	0	47	0	7	0	0	10	67	0	0	0	3	0	0	0	0	0	0	0	0	0	1	0	2	0	137	603
Count Total		0	0	644	0	104	1	0	53	573	0	0	1	19	0	5	0	0	0	0	0	0	0	8	0	16	0	1,424	0
Peak Hour	All	0	0	391	0	74	1	0	33	294	0	0	1	10	0	2	0	0	0	0	0	0	5	0	10	0	821	0	
	HV	0	0	48	0	0	0	0	0	21	0	0	0	8	0	1	0	0	0	0	0	0	0	0	1	0	79	0	
	HV%	-	-	12%	-	0%	0%	-	0%	7%	-	-	0%	80%	-	50%	-	-	-	-	-	-	0%	-	10%	-	10%	0	

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals						Bicycles						Pedestrians (Crossing Leg)					
	EB	WB	NB	SB	NEB	Total	EB	WB	NB	SB	NEB	Total	East	West	North	South	Southwest	Total
7:00 AM	7	6	3	0	0	16	0	0	0	0	0	0	0	0	0	5	1	6
7:15 AM	11	8	2	0	0	21	0	0	0	0	0	0	0	0	0	5	4	9
7:30 AM	17	5	1	0	0	23	0	0	0	0	0	0	0	0	0	7	3	10
7:45 AM	13	2	3	0	1	19	0	0	0	0	0	0	0	0	0	3	2	5
8:00 AM	9	5	4	0	0	18	0	1	0	0	0	1	0	0	2	5	4	11
8:15 AM	8	3	2	0	0	13	0	1	0	0	0	1	0	0	1	6	7	14
8:30 AM	10	4	2	0	0	16	0	1	0	0	0	1	0	1	0	7	7	15
8:45 AM	11	6	2	0	0	19	0	0	0	0	0	0	0	0	0	4	3	7
Count Total	86	39	19	0	1	145	0	3	0	0	0	3	0	1	3	42	31	77
Peak Hr	48	21	9	0	1	79	0	0	0	0	0	0	0	0	0	20	10	30

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Puyallup Ave Eastbound					Puyallup Ave Westbound					E F St Northbound					E F St Southbound					E F St Northeastbound					15-min Total	Rolling One Hour
	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR		
7:00 AM	0	0	7	0	0	0	0	0	6	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	16	0
7:15 AM	0	0	11	0	0	0	0	0	8	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	21	0
7:30 AM	0	0	17	0	0	0	0	0	5	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	23	0
7:45 AM	0	0	13	0	0	0	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	1	0	19	79
8:00 AM	0	0	9	0	0	0	0	0	5	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	18	81
8:15 AM	0	0	8	0	0	0	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	13	73
8:30 AM	0	0	10	0	0	0	0	0	4	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	16	66
8:45 AM	0	0	11	0	0	0	0	0	6	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	19	66
Count Total	0	0	86	0	0	0	0	0	39	0	0	0	16	0	3	0	0	0	0	0	0	0	0	1	0	145	0
Peak Hour	0	0	48	0	0	0	0	0	21	0	0	0	8	0	1	0	0	0	0	0	0	0	0	1	0	79	0

Two-Hour Count Summaries - Bikes

Interval Start	Puyallup Ave Eastbound					Puyallup Ave Westbound					E F St Northbound					E F St Southbound					E F St Northeastbound					15-min Total	Rolling One Hour
	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
8:15 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
8:30 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Count Total	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

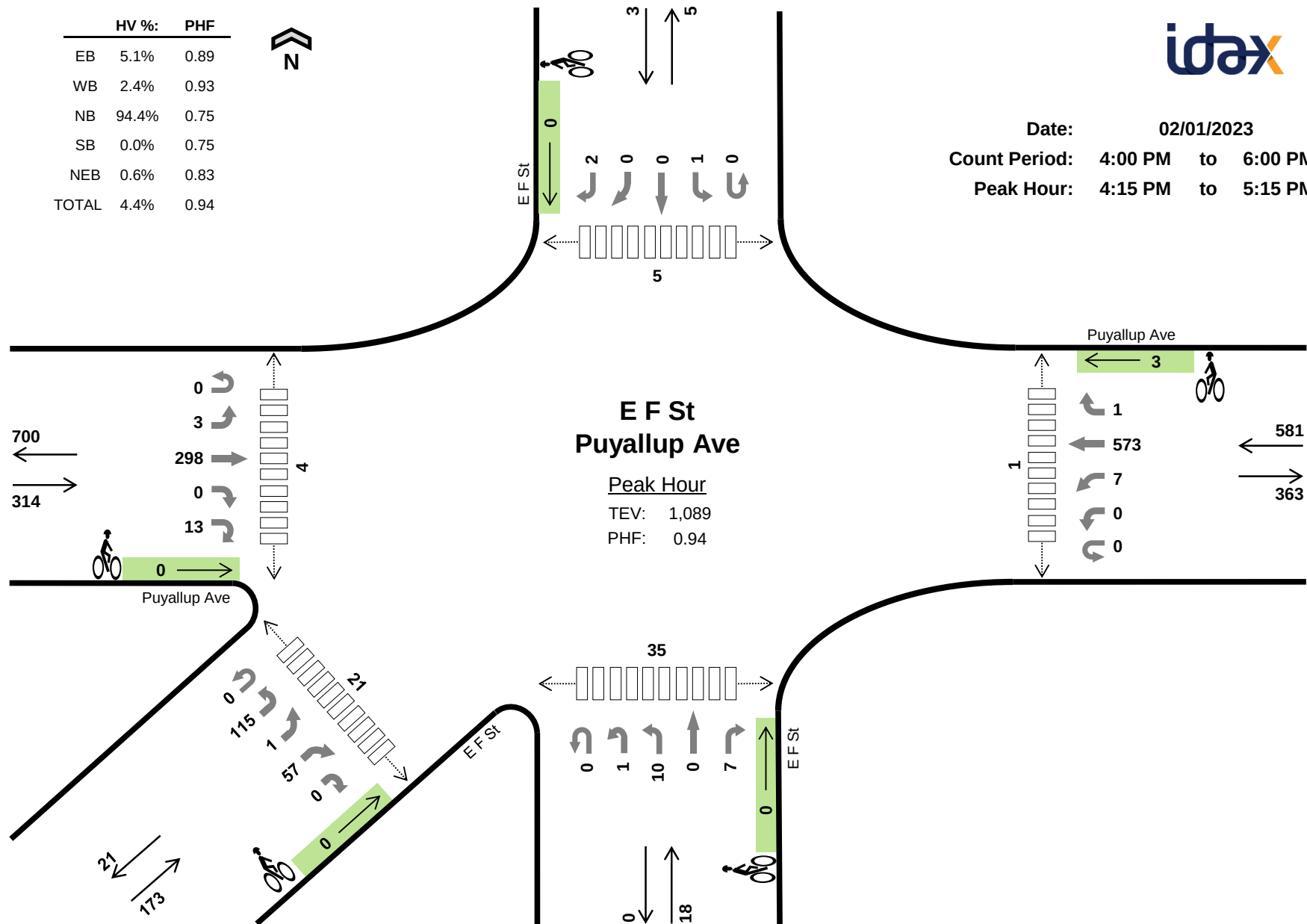


Date: 02/01/2023

Count Period: 4:00 PM to 6:00 PM

Peak Hour: 4:15 PM to 5:15 PM

	HV %:	PHF
EB	5.1%	0.89
WB	2.4%	0.93
NB	94.4%	0.75
SB	0.0%	0.75
NEB	0.6%	0.83
TOTAL	4.4%	0.94



Two-Hour Count Summaries

Interval Start		Puyallup Ave					Puyallup Ave					E F St					E F St					E F St					15-min Total	Rolling One Hour	
		Eastbound					Westbound					Northbound					Southbound					Northeastbound							
		UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR			
4:00 PM		0	0	97	0	0	0	0	4	131	0	0	0	2	0	1	0	0	0	0	0	0	0	13	0	2	0	250	0
4:15 PM		0	0	75	0	2	0	0	1	137	0	0	0	3	0	1	0	0	0	0	0	0	0	16	0	10	0	245	0
4:30 PM		0	1	83	0	4	0	0	1	139	0	0	1	3	0	2	0	0	0	0	0	1	0	40	0	12	0	287	0
4:45 PM		0	2	80	0	4	0	0	4	142	1	0	0	3	0	1	0	1	0	0	0	0	0	29	1	21	0	289	1,071
5:00 PM		0	0	60	0	3	0	0	1	155	0	0	0	1	0	3	0	0	0	0	0	1	0	30	0	14	0	268	1,089
5:15 PM		0	1	59	0	3	0	0	0	152	1	0	0	3	0	1	0	0	0	0	0	1	0	6	0	3	0	230	1,074
5:30 PM		0	0	70	0	3	1	0	0	121	0	0	0	3	0	0	0	0	0	0	0	0	33	0	9	0	240	1,027	
5:45 PM		0	0	67	0	1	0	0	0	102	0	0	0	2	0	1	0	0	0	0	0	1	0	18	0	9	0	201	939
Count Total		0	4	591	0	20	1	0	11	1,079	2	0	1	20	0	10	0	1	0	0	4	0	185	1	80	0	2,010	0	
Peak Hour	All	0	3	298	0	13	0	0	7	573	1	0	1	10	0	7	0	1	0	0	2	0	115	1	57	0	1,089	0	
	HV	0	0	16	0	0	0	0	0	14	0	0	0	10	0	7	0	0	0	0	0	0	0	0	1	0	48	0	
	HV%	-	0%	5%	-	0%	-	-	0%	2%	0%	-	0%	100%	-	100%	-	0%	-	-	0%	-	0%	0%	2%	-	4%	0	

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

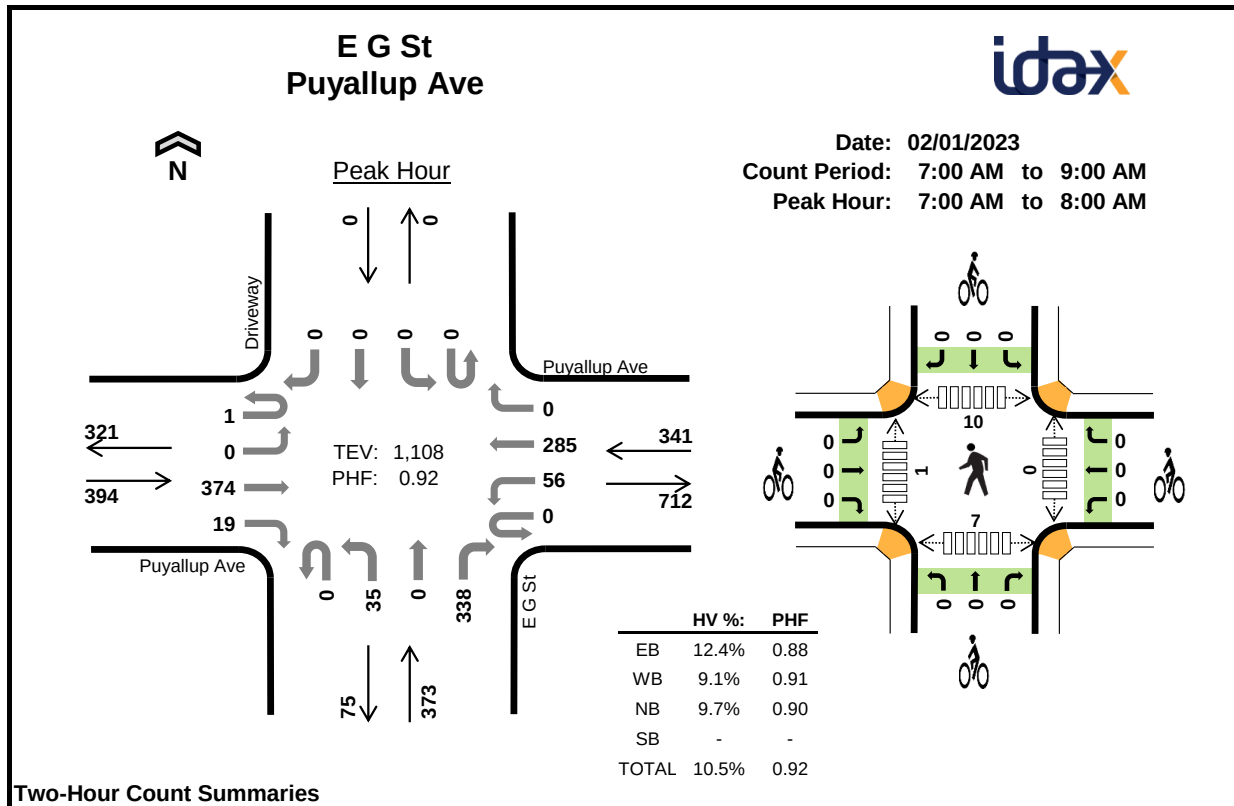
Interval Start	Heavy Vehicle Totals						Bicycles						Pedestrians (Crossing Leg)					
	EB	WB	NB	SB	NEB	Total	EB	WB	NB	SB	NEB	Total	East	West	North	South	Southwest	Total
4:00 PM	6	2	2	0	1	11	0	0	0	0	0	0	0	0	2	7	5	14
4:15 PM	4	6	4	0	0	14	0	0	0	0	0	0	0	2	4	8	6	20
4:30 PM	6	2	5	0	0	13	0	0	0	0	0	0	1	0	0	7	6	14
4:45 PM	5	2	4	0	1	12	0	1	0	0	0	1	0	2	0	10	7	19
5:00 PM	1	4	4	0	0	9	0	2	0	0	0	2	0	0	1	10	2	13
5:15 PM	3	2	4	0	0	9	0	0	0	0	0	0	1	0	1	5	5	12
5:30 PM	3	1	2	0	0	6	0	0	0	0	0	0	0	1	0	6	6	13
5:45 PM	5	2	3	0	1	11	0	0	0	0	0	0	0	0	2	6	5	13
Count Total	33	21	28	0	3	85	0	3	0	0	0	3	2	5	10	59	42	118
Peak Hr	16	14	17	0	1	48	0	3	0	0	0	3	1	4	5	35	21	66

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Puyallup Ave					Puyallup Ave					E F St					E F St					E F St					15-min Total	Rolling One Hour	
	Eastbound					Westbound					Northbound					Southbound					Northeastbound							
	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR			
4:00 PM	0	0	6	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	11	0
4:15 PM	0	0	4	0	0	0	0	0	6	0	0	0	3	0	1	0	0	0	0	0	0	0	0	0	0	0	14	0
4:30 PM	0	0	6	0	0	0	0	0	2	0	0	0	3	0	2	0	0	0	0	0	0	0	0	0	0	0	13	0
4:45 PM	0	0	5	0	0	0	0	0	2	0	0	0	3	0	1	0	0	0	0	0	0	0	0	0	1	0	12	50
5:00 PM	0	0	1	0	0	0	0	0	4	0	0	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	9	48
5:15 PM	0	0	3	0	0	0	0	0	2	0	0	0	3	0	1	0	0	0	0	0	0	0	0	0	0	0	9	43
5:30 PM	0	0	3	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	6	36
5:45 PM	0	0	5	0	0	0	0	0	2	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	1	0	11	35
Count Total	0	0	33	0	0	0	0	0	21	0	0	0	19	0	9	0	0	0	0	0	0	0	1	0	2	0	85	0
Peak Hour	0	0	16	0	0	0	0	0	14	0	0	0	10	0	7	0	0	0	0	0	0	0	0	0	1	0	48	0

Two-Hour Count Summaries - Bikes

Interval Start	Puyallup Ave					Puyallup Ave					E F St					E F St					E F St					15-min Total	Rolling One Hour
	Eastbound					Westbound					Northbound					Southbound					Northeastbound						
	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
5:00 PM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Count Total	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
Peak Hour	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0

**Two-Hour Count Summaries**

Interval Start		Puyallup Ave				Puyallup Ave				E G St				Driveway				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	77	6	0	17	66	0	0	8	0	75	0	0	0	0	249	0
7:15 AM		0	0	87	1	0	13	66	0	0	10	0	83	0	0	0	0	260	0
7:30 AM		1	0	108	2	0	14	71	0	0	7	0	97	0	0	0	0	300	0
7:45 AM		0	0	102	10	0	12	82	0	0	10	0	83	0	0	0	0	299	1,108
8:00 AM		0	0	63	4	0	19	77	0	1	6	0	69	0	0	0	0	239	1,098
8:15 AM		0	0	72	6	0	16	72	0	1	1	0	26	0	1	0	0	195	1,033
8:30 AM		0	0	66	4	0	14	62	0	0	7	0	28	0	0	0	0	181	914
8:45 AM		0	0	43	3	0	9	69	0	0	5	0	29	0	0	0	0	158	773
Count Total		1	0	618	36	0	114	565	0	2	54	0	490	0	1	0	0	1,881	0
Peak Hour	All	1	0	374	19	0	56	285	0	0	35	0	338	0	0	0	0	1,108	0
	HV	0	0	47	2	0	12	19	0	0	7	0	29	0	0	0	0	116	0
	HV%	0%	-	13%	11%	-	21%	7%	-	-	20%	-	9%	-	-	-	-	10%	0

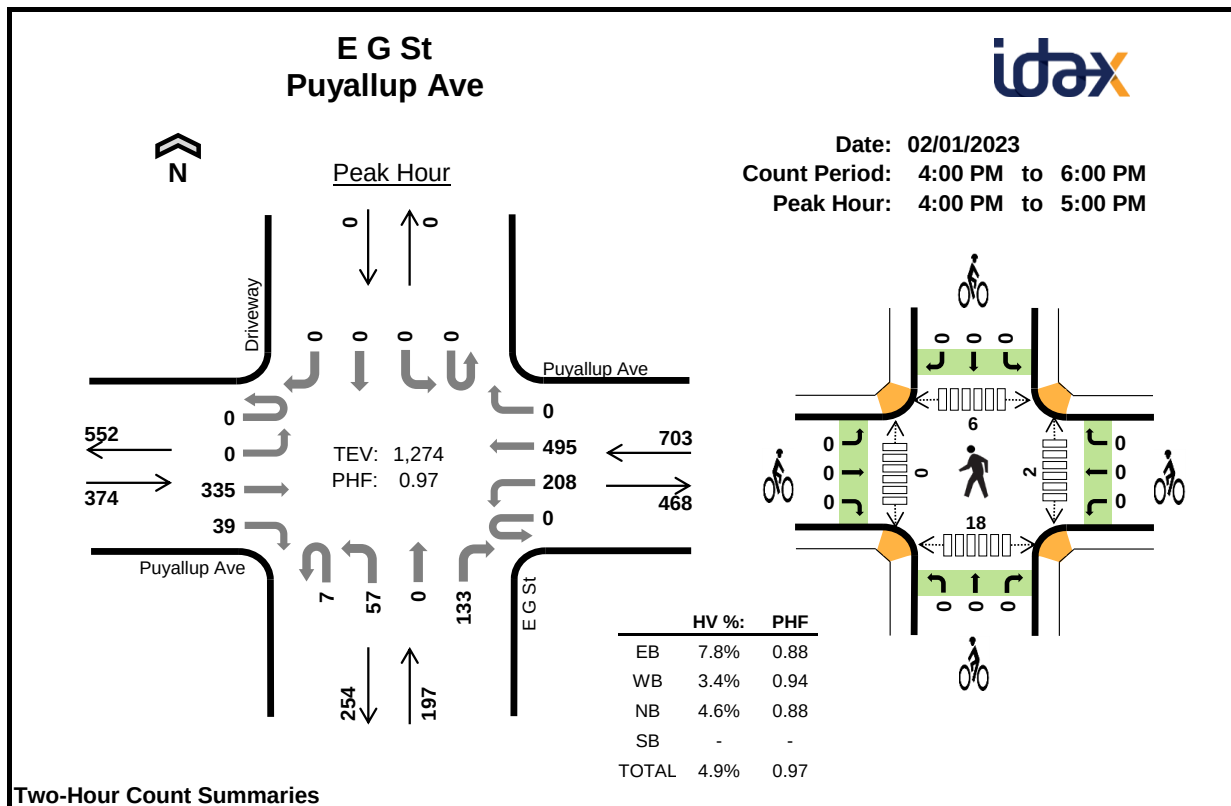
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	6	7	7	0	20	0	0	0	0	0	0	0	2	1	3
7:15 AM	11	11	7	0	29	0	0	0	0	0	0	0	3	3	6
7:30 AM	19	6	15	0	40	0	0	0	0	0	0	1	1	1	3
7:45 AM	13	7	7	0	27	0	0	0	0	0	0	0	4	2	6
8:00 AM	10	13	7	0	30	0	1	0	0	1	0	0	6	1	7
8:15 AM	10	8	1	0	19	0	1	0	0	1	0	0	6	6	12
8:30 AM	8	8	5	0	21	0	0	0	0	0	0	2	3	4	9
8:45 AM	10	9	11	0	30	0	0	0	0	0	0	0	0	5	5
Count Total	87	69	60	0	216	0	2	0	0	2	0	3	25	23	51
Peak Hour	49	31	36	0	116	0	0	0	0	0	0	1	10	7	18

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Puyallup Ave				Puyallup Ave				E G St				Driveway				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	6	0	0	3	4	0	0	4	0	3	0	0	0	0	20	0
7:15 AM	0	0	11	0	0	2	9	0	0	1	0	6	0	0	0	0	29	0
7:30 AM	0	0	19	0	0	3	3	0	0	2	0	13	0	0	0	0	40	0
7:45 AM	0	0	11	2	0	4	3	0	0	0	0	7	0	0	0	0	27	116
8:00 AM	0	0	8	2	0	8	5	0	0	0	0	7	0	0	0	0	30	126
8:15 AM	0	0	10	0	0	4	4	0	0	0	0	1	0	0	0	0	19	116
8:30 AM	0	0	8	0	0	4	4	0	0	1	0	4	0	0	0	0	21	97
8:45 AM	0	0	10	0	0	2	7	0	0	3	0	8	0	0	0	0	30	100
Count Total	0	0	83	4	0	30	39	0	0	11	0	49	0	0	0	0	216	0
Peak Hour	0	0	47	2	0	12	19	0	0	7	0	29	0	0	0	0	116	0

Two-Hour Count Summaries - Bikes																	
Interval Start	Puyallup Ave			Puyallup Ave			E G St			Driveway			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
8:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	1			
8:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	2			
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2			
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2			
Count Total	0	0	0	0	2	0	0	0	0	0	0	0	2	0			
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0			

Note: U-Turn volumes for bikes are included in Left-Turn, if any.



Interval Start		Puyallup Ave				Puyallup Ave				E G St				Driveway				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	0	93	9	0	54	118	0	6	10	0	37	0	0	0	0	327	0
4:15 PM		0	0	74	6	0	47	139	0	0	16	0	23	0	0	0	0	305	0
4:30 PM		0	0	78	8	0	63	110	0	0	16	0	40	0	0	0	0	315	0
4:45 PM		0	0	90	16	0	44	128	0	1	15	0	33	0	0	0	0	327	1,274
5:00 PM		0	0	65	10	0	45	135	0	0	14	0	28	0	0	0	0	297	1,244
5:15 PM		0	0	73	4	0	62	145	0	0	12	0	29	0	0	0	0	325	1,264
5:30 PM		0	0	72	6	1	44	103	0	0	16	0	29	0	0	0	0	271	1,220
5:45 PM		0	0	66	6	0	36	88	0	1	13	0	30	0	0	0	0	240	1,133
Count Total		0	0	611	65	1	395	966	0	8	112	0	249	0	0	0	0	2,407	0
Peak Hour	All	0	0	335	39	0	208	495	0	7	57	0	133	0	0	0	0	1,274	0
	HV	0	0	23	6	0	14	10	0	0	4	0	5	0	0	0	0	62	0
	HV%	-	-	7%	15%	-	7%	2%	-	0%	7%	-	4%	-	-	-	-	5%	0

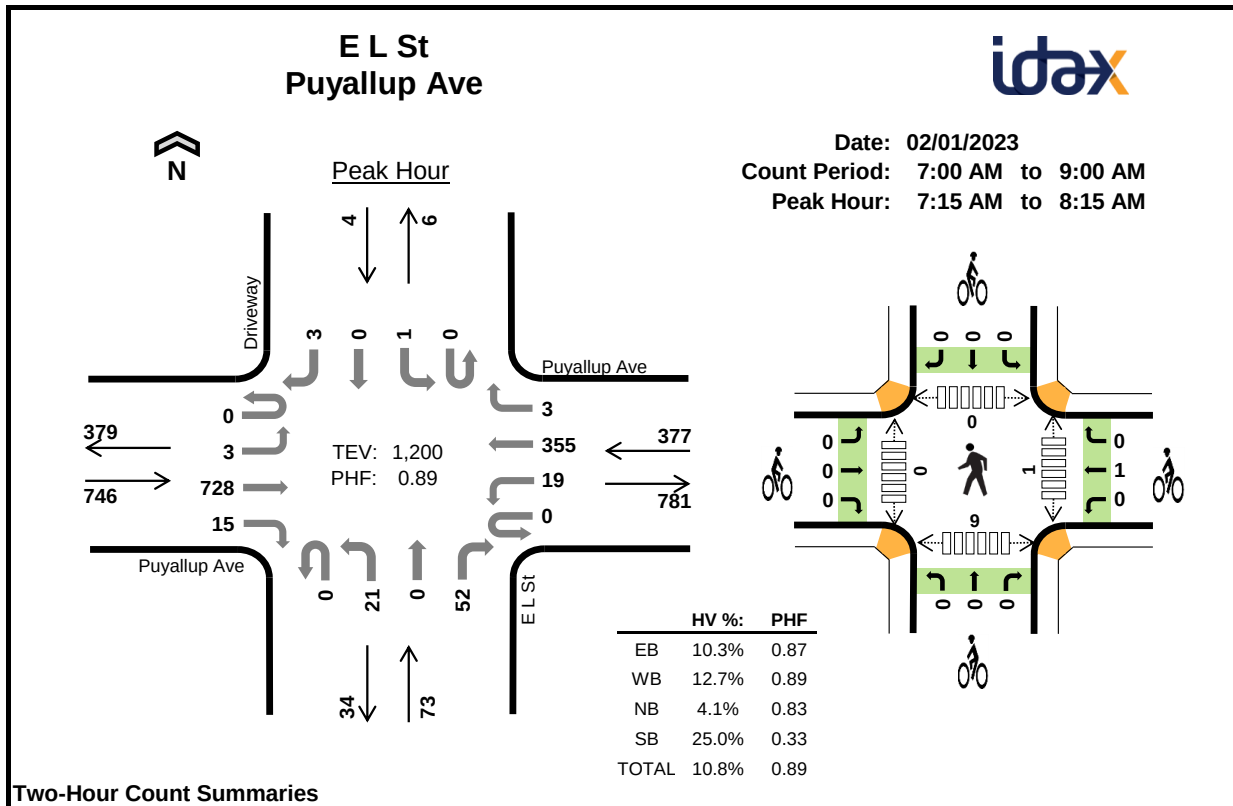
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	7	4	3	0	14	0	0	0	0	0	2	0	2	6	10
4:15 PM	5	9	3	0	17	0	0	0	0	0	0	0	3	3	6
4:30 PM	10	6	0	0	16	0	0	0	0	0	0	0	1	8	9
4:45 PM	7	5	3	0	15	0	0	0	0	0	0	0	0	1	1
5:00 PM	3	8	2	0	13	0	2	0	0	2	0	0	0	9	9
5:15 PM	5	6	4	0	15	0	0	0	0	0	0	0	3	2	5
5:30 PM	3	5	0	0	8	2	0	0	0	2	0	0	0	2	2
5:45 PM	5	6	0	0	11	0	0	0	0	0	0	0	2	5	7
Count Total	45	49	15	0	109	2	2	0	0	4	2	0	11	36	49
Peak Hour	29	24	9	0	62	0	0	0	0	0	2	0	6	18	26

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Puyallup Ave				Puyallup Ave				E G St				Driveway				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	5	2	0	2	2	0	0	0	0	3	0	0	0	0	14	0
4:15 PM	0	0	5	0	0	4	5	0	0	2	0	1	0	0	0	0	17	0
4:30 PM	0	0	9	1	0	4	2	0	0	0	0	0	0	0	0	0	16	0
4:45 PM	0	0	4	3	0	4	1	0	0	2	0	1	0	0	0	0	15	62
5:00 PM	0	0	1	2	0	4	4	0	0	0	0	2	0	0	0	0	13	61
5:15 PM	0	0	4	1	0	5	1	0	0	1	0	3	0	0	0	0	15	59
5:30 PM	0	0	3	0	0	4	1	0	0	0	0	0	0	0	0	0	8	51
5:45 PM	0	0	4	1	0	4	2	0	0	0	0	0	0	0	0	0	11	47
Count Total	0	0	35	10	0	31	18	0	0	5	0	10	0	0	0	0	109	0
Peak Hour	0	0	23	6	0	14	10	0	0	4	0	5	0	0	0	0	62	0

Two-Hour Count Summaries - Bikes															
Interval Start	Puyallup Ave			Puyallup Ave			E G St			Driveway			15-min Total	Rolling One Hour	
	Eastbound			Westbound			Northbound			Southbound					
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT			
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:00 PM	0	0	0	0	2	0	0	0	0	0	0	0	2	2	
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
5:30 PM	0	1	1	0	0	0	0	0	0	0	0	0	2	4	
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
Count Total	0	1	1	0	2	0	0	0	0	0	0	0	4	0	
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

**Two-Hour Count Summaries**

Interval Start		Puyallup Ave				Puyallup Ave				E L St				Driveway				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	155	2	0	4	81	0	0	5	0	5	0	0	0	0	252	0
7:15 AM		0	0	180	2	0	3	82	0	0	8	0	13	0	0	0	0	288	0
7:30 AM		0	1	207	6	0	6	83	0	0	4	0	13	0	0	0	1	321	0
7:45 AM		0	0	204	5	0	4	99	3	0	6	0	16	0	0	0	0	337	1,198
8:00 AM		0	2	137	2	0	6	91	0	0	3	0	10	0	1	0	2	254	
8:15 AM		0	2	94	2	0	5	80	0	0	6	0	9	0	0	0	1	199	1,111
8:30 AM		0	1	94	4	0	1	77	0	0	6	0	5	0	0	0	0	188	978
8:45 AM		0	0	75	0	0	3	79	1	0	8	0	3	0	1	0	0	170	811
Count Total		0	6	1,146	23	0	32	672	4	0	46	0	74	0	2	0	4	2,009	0
Peak Hour	All	0	3	728	15	0	19	355	3	0	21	0	52	0	1	0	3	1,200	0
	HV	0	1	76	0	0	2	46	0	0	1	0	2	0	0	0	1	129	0
	HV%	-	33%	10%	0%	-	11%	13%	0%	-	5%	-	4%	-	0%	-	33%	11%	0

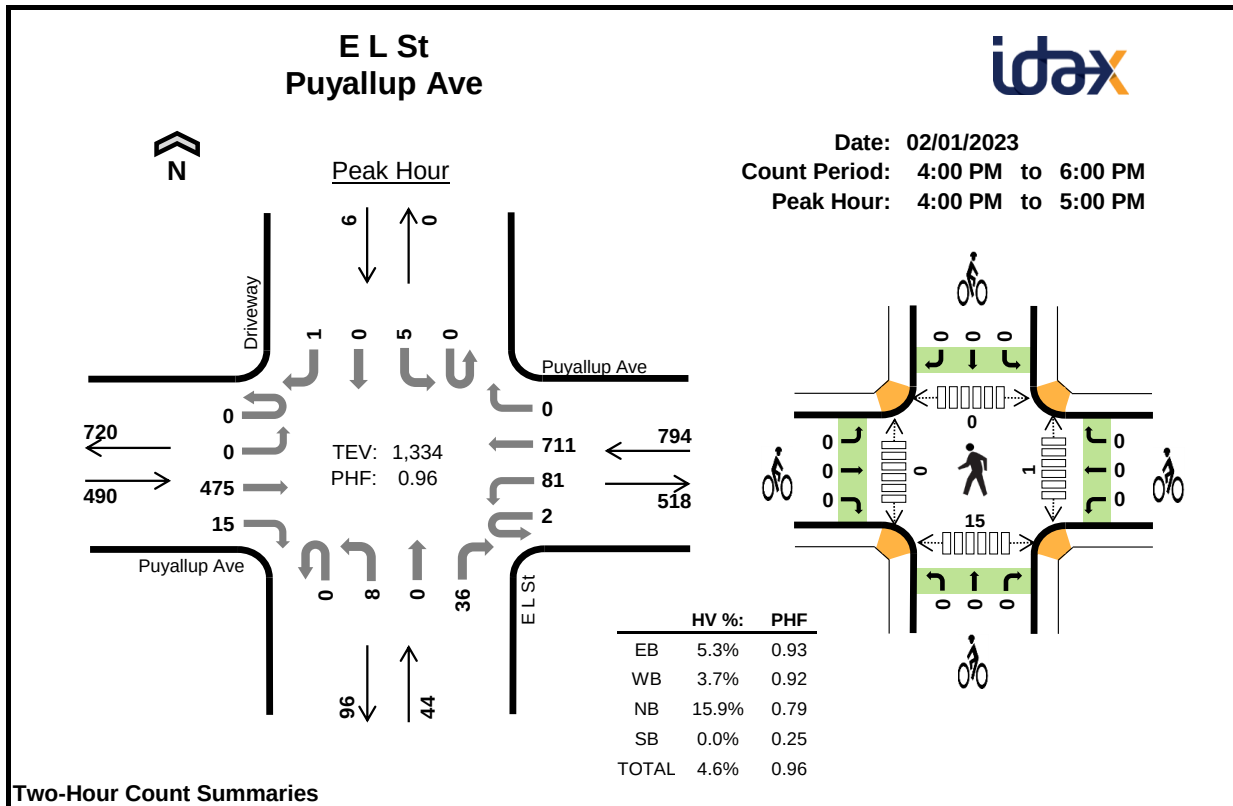
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	11	8	0	0	19	1	0	0	0	1	0	0	0	3	3
7:15 AM	16	17	1	0	34	0	0	0	0	0	0	0	0	3	3
7:30 AM	27	9	1	0	37	0	0	0	0	0	0	0	0	3	3
7:45 AM	22	8	0	0	30	0	0	0	0	0	1	0	0	1	2
8:00 AM	12	14	1	1	28	0	1	0	0	1	0	0	0	2	2
8:15 AM	11	10	0	1	22	0	0	0	0	0	0	0	1	6	7
8:30 AM	11	10	0	0	21	0	0	0	0	0	0	0	2	4	6
8:45 AM	15	10	4	0	29	1	0	0	0	1	1	0	1	2	4
Count Total	125	86	7	2	220	2	1	0	0	3	2	0	4	24	30
Peak Hour	77	48	3	1	129	0	1	0	0	1	1	0	0	9	10

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Puyallup Ave				Puyallup Ave				E L St				Driveway				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	11	0	0	0	8	0	0	0	0	0	0	0	0	0	19	0
7:15 AM	0	0	16	0	0	1	16	0	0	1	0	0	0	0	0	0	34	0
7:30 AM	0	0	27	0	0	0	9	0	0	0	0	1	0	0	0	0	37	0
7:45 AM	0	0	22	0	0	0	8	0	0	0	0	0	0	0	0	0	30	120
8:00 AM	0	1	11	0	0	1	13	0	0	0	0	1	0	0	0	1	28	129
8:15 AM	0	0	11	0	0	2	8	0	0	0	0	0	0	0	0	1	22	117
8:30 AM	0	0	10	1	0	0	10	0	0	0	0	0	0	0	0	0	21	101
8:45 AM	0	0	15	0	0	0	10	0	0	3	0	1	0	0	0	0	29	100
Count Total	0	1	123	1	0	4	82	0	0	4	0	3	0	0	0	2	220	0
Peak Hour	0	1	76	0	0	2	46	0	0	1	0	2	0	0	0	1	129	0

Two-Hour Count Summaries - Bikes																		
Interval Start	Puyallup Ave			Puyallup Ave			E L St			Driveway			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	0				
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1				
8:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	1				
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1				
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1				
8:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	2				
Count Total	0	2	0	0	1	0	0	0	0	0	0	0	3	0				
Peak Hour	0	0	0	0	1	0	0	0	0	0	0	0	1	0				

Note: U-Turn volumes for bikes are included in Left-Turn, if any.



Interval Start		Puyallup Ave				Puyallup Ave				E L St				Driveway				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	0	130	2	0	23	178	0	0	1	0	7	0	5	0	1	347	0
4:15 PM		0	0	108	8	0	25	190	0	0	4	0	7	0	0	0	0	342	0
4:30 PM		0	0	118	3	0	19	167	0	0	3	0	8	0	0	0	0	318	0
4:45 PM		0	0	119	2	2	14	176	0	0	0	0	14	0	0	0	0	327	1,334
5:00 PM		0	0	103	3	1	19	171	0	0	4	0	5	0	0	0	0	306	1,293
5:15 PM		0	0	102	1	0	24	202	0	0	3	0	3	0	0	0	0	335	1,286
5:30 PM		0	0	101	3	1	15	157	0	0	0	0	3	0	0	0	0	280	1,248
5:45 PM		1	0	98	1	1	14	122	0	0	4	0	9	0	0	0	0	250	1,171
Count Total		1	0	879	23	5	153	1,363	0	0	19	0	56	0	5	0	1	2,505	0
Peak Hour	All	0	0	475	15	2	81	711	0	0	8	0	36	0	5	0	1	1,334	0
	HV	0	0	26	0	0	1	28	0	0	0	0	7	0	0	0	0	62	0
	HV%	-	-	5%	0%	0%	1%	4%	-	-	0%	-	19%	-	0%	-	0%	5%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

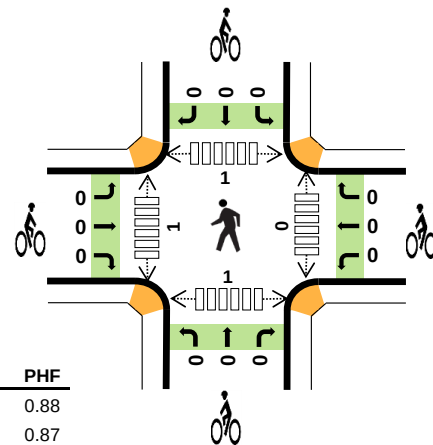
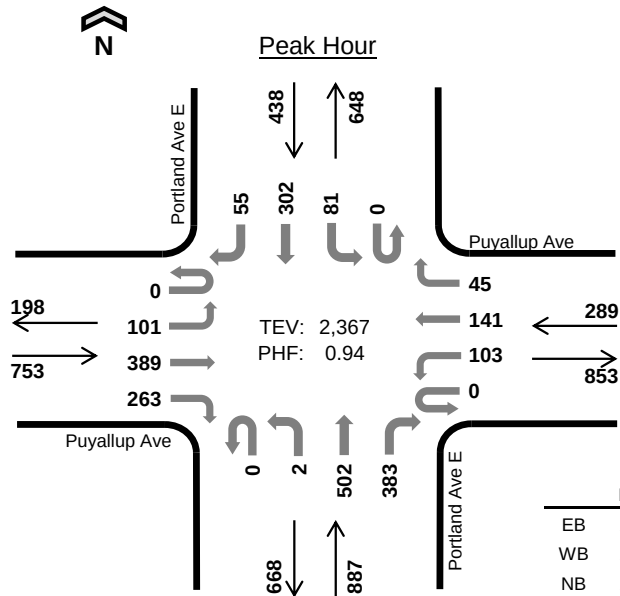
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	9	7	0	0	16	0	0	0	0	0	0	0	0	8	8
4:15 PM	6	8	0	0	14	0	0	0	0	0	0	0	0	0	0
4:30 PM	5	7	3	0	15	0	0	0	0	0	1	0	0	4	5
4:45 PM	6	7	4	0	17	0	0	0	0	0	0	0	0	3	3
5:00 PM	1	5	0	0	6	0	1	0	0	1	0	0	0	1	1
5:15 PM	10	9	0	0	19	0	0	0	0	0	0	0	0	1	1
5:30 PM	3	6	0	0	9	1	0	0	0	1	1	0	2	3	6
5:45 PM	4	6	0	0	10	0	0	0	0	0	0	0	0	1	1
Count Total	44	55	7	0	106	1	1	0	0	2	2	0	2	21	25
Peak Hour	26	29	7	0	62	0	0	0	0	0	1	0	0	15	16

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Puyallup Ave				Puyallup Ave				E L St				Driveway				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	9	0	0	0	7	0	0	0	0	0	0	0	0	0	16	0
4:15 PM	0	0	6	0	0	0	8	0	0	0	0	0	0	0	0	0	14	0
4:30 PM	0	0	5	0	0	0	7	0	0	0	0	3	0	0	0	0	15	0
4:45 PM	0	0	6	0	0	1	6	0	0	0	0	4	0	0	0	0	17	62
5:00 PM	0	0	1	0	0	0	5	0	0	0	0	0	0	0	0	0	6	52
5:15 PM	0	0	10	0	0	0	9	0	0	0	0	0	0	0	0	0	19	57
5:30 PM	0	0	3	0	0	0	6	0	0	0	0	0	0	0	0	0	9	51
5:45 PM	0	0	4	0	0	0	6	0	0	0	0	0	0	0	0	0	10	44
Count Total	0	0	44	0	0	1	54	0	0	0	0	7	0	0	0	0	106	0
Peak Hour	0	0	26	0	0	1	28	0	0	0	0	7	0	0	0	0	62	0

Two-Hour Count Summaries - Bikes																		
Interval Start	Puyallup Ave			Puyallup Ave			E L St			Driveway			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
5:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	1				
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1				
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	2				
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2				
Count Total	0	1	0	0	1	0	0	0	0	0	0	0	2	0				
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Portland Ave E Puyallup Ave



	HV %:	PHF
EB	12.6%	0.88
WB	11.1%	0.87
NB	13.4%	0.97
SB	36.3%	0.86
TOTAL	17.1%	0.94

Two-Hour Count Summaries

Interval Start		Puyallup Ave				Puyallup Ave				Portland Ave E				Portland Ave E				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	22	86	56	0	14	24	4	0	1	139	95	0	13	62	7	523	0
7:15 AM		0	19	88	78	0	28	30	6	0	0	130	95	0	26	60	16	576	0
7:30 AM		0	23	112	71	0	18	33	11	0	0	143	85	0	20	99	9	624	0
7:45 AM		0	32	123	59	0	31	39	10	0	1	122	95	0	23	83	12	630	2,353
8:00 AM		0	27	66	55	0	26	39	18	0	1	107	108	0	12	60	18	537	2,367
8:15 AM		0	15	54	35	0	18	34	12	0	0	87	74	0	19	40	13	401	2,192
8:30 AM		0	13	44	44	0	33	31	19	0	0	103	73	0	13	63	10	446	2,014
8:45 AM		0	11	28	39	0	42	31	8	0	0	78	58	0	12	53	16	376	1,760
Count Total		0	162	601	437	0	210	261	88	0	3	909	683	0	138	520	101	4,113	0
Peak Hour	All	0	101	389	263	0	103	141	45	0	2	502	383	0	81	302	55	2,367	0
	HV	0	19	25	51	0	14	13	5	0	0	97	22	0	19	117	23	405	0
	HV%	-	19%	6%	19%	-	14%	9%	11%	-	0%	19%	6%	-	23%	39%	42%	17%	0

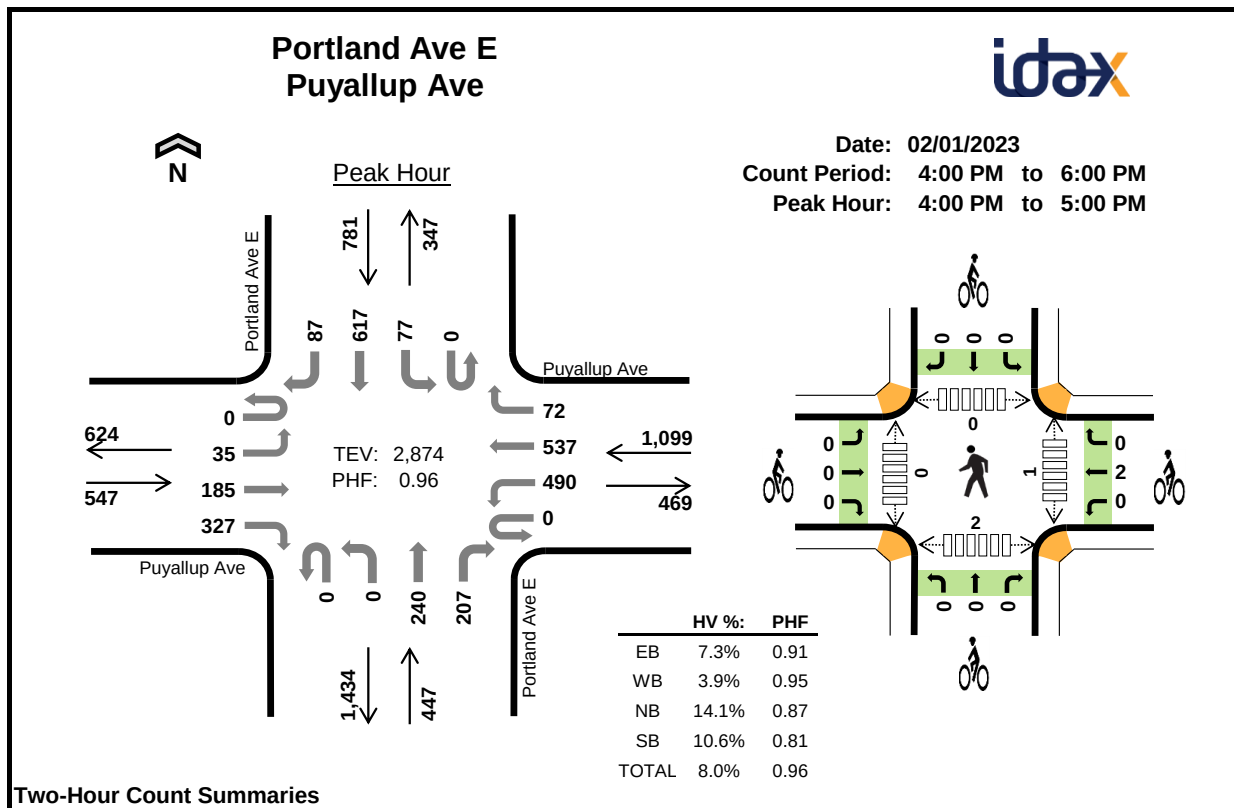
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	13	4	25	32	74	0	0	0	0	0	0	1	0	0	1
7:15 AM	20	7	21	43	91	0	0	0	0	0	0	0	0	0	0
7:30 AM	33	8	33	46	120	0	0	0	0	0	0	0	1	0	1
7:45 AM	21	8	21	33	83	0	0	0	0	0	0	1	0	0	1
8:00 AM	21	9	44	37	111	0	0	0	0	0	0	0	0	1	1
8:15 AM	16	9	37	22	84	0	0	0	0	0	0	0	1	2	3
8:30 AM	12	10	44	44	110	0	0	0	0	0	2	0	0	2	4
8:45 AM	20	6	34	48	108	0	0	0	0	0	0	0	0	1	1
Count Total	156	61	259	305	781	0	0	0	0	0	2	2	2	6	12
Peak Hour	95	32	119	159	405	0	0	0	0	0	0	1	1	1	3

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Puyallup Ave				Puyallup Ave				Portland Ave E				Portland Ave E				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	2	0	11	0	2	2	0	0	0	18	7	0	4	27	1	74	0
7:15 AM	0	2	5	13	0	3	4	0	0	0	18	3	0	10	24	9	91	0
7:30 AM	0	5	12	16	0	3	2	3	0	0	27	6	0	3	40	3	120	0
7:45 AM	0	4	3	14	0	4	3	1	0	0	16	5	0	2	28	3	83	368
8:00 AM	0	8	5	8	0	4	4	1	0	0	36	8	0	4	25	8	111	405
8:15 AM	0	3	3	10	0	2	2	5	0	0	29	8	0	3	14	5	84	398
8:30 AM	0	1	1	10	0	3	2	5	0	0	40	4	0	5	36	3	110	388
8:45 AM	0	7	2	11	0	3	2	1	0	0	29	5	0	3	38	7	108	413
Count Total	0	32	31	93	0	24	21	16	0	0	213	46	0	34	232	39	781	0
Peak Hour	0	19	25	51	0	14	13	5	0	0	97	22	0	19	117	23	405	0

Two-Hour Count Summaries - Bikes																	
Interval Start	Puyallup Ave			Puyallup Ave			Portland Ave E			Portland Ave E			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0			

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

**Two-Hour Count Summaries**

Interval Start		Puyallup Ave				Puyallup Ave				Portland Ave E				Portland Ave E				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	9	49	92	0	95	136	21	0	0	59	47	0	18	194	28	748	0
4:15 PM		0	6	45	82	0	139	138	11	0	0	55	54	0	18	129	19	696	0
4:30 PM		0	12	36	75	0	137	133	15	0	0	73	56	0	26	155	26	744	0
4:45 PM		0	8	55	78	0	119	130	25	0	0	53	50	0	15	139	14	686	2,874
5:00 PM		0	7	35	69	0	137	136	25	0	0	51	44	0	17	171	19	711	2,837
5:15 PM		0	6	41	40	0	124	135	15	0	0	61	51	0	23	129	23	648	2,789
5:30 PM		0	6	36	66	0	107	112	20	0	0	60	39	0	14	95	16	571	2,616
5:45 PM		0	5	48	59	0	115	92	14	0	1	43	36	0	14	62	8	497	2,427
Count Total		0	59	345	561	0	973	1,012	146	0	1	455	377	0	145	1,074	153	5,301	0
Peak Hour	All	0	35	185	327	0	490	537	72	0	0	240	207	0	77	617	87	2,874	0
	HV	0	9	8	23	0	23	8	12	0	0	54	9	0	13	66	4	229	0
	HV%	-	26%	4%	7%	-	5%	1%	17%	-	-	23%	4%	-	17%	11%	5%	8%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	13	11	16	15	55	0	0	0	0	0	1	0	0	2	3
4:15 PM	8	11	13	23	55	0	0	0	0	0	0	0	0	0	0
4:30 PM	8	10	22	30	70	0	1	0	0	1	0	0	0	0	0
4:45 PM	11	11	12	15	49	0	1	0	0	1	0	0	0	0	0
5:00 PM	0	8	5	16	29	0	0	0	0	0	0	0	0	1	1
5:15 PM	9	8	9	16	42	0	0	0	0	0	0	0	0	1	1
5:30 PM	4	13	9	12	38	2	0	0	0	2	0	1	1	1	3
5:45 PM	4	6	8	10	28	0	0	0	0	0	0	0	0	0	0
Count Total	57	78	94	137	366	2	2	0	0	4	1	1	1	5	8
Peak Hour	40	43	63	83	229	0	2	0	0	2	1	0	0	2	3

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Puyallup Ave				Puyallup Ave				Portland Ave E				Portland Ave E				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	4	2	7	0	5	3	3	0	0	12	4	0	2	12	1	55	0
4:15 PM	0	1	2	5	0	7	2	2	0	0	12	1	0	4	19	0	55	0
4:30 PM	0	2	0	6	0	7	0	3	0	0	19	3	0	5	23	2	70	0
4:45 PM	0	2	4	5	0	4	3	4	0	0	11	1	0	2	12	1	49	229
5:00 PM	0	0	0	0	0	1	1	6	0	0	5	0	0	4	12	0	29	203
5:15 PM	0	0	1	8	0	1	5	2	0	0	7	2	0	2	13	1	42	190
5:30 PM	0	2	0	2	0	6	3	4	0	0	9	0	0	0	12	0	38	158
5:45 PM	0	0	1	3	0	2	1	3	0	0	5	3	0	2	8	0	28	137
Count Total	0	11	10	36	0	33	18	27	0	0	80	14	0	21	111	5	366	0
Peak Hour	0	9	8	23	0	23	8	12	0	0	54	9	0	13	66	4	229	0

Two-Hour Count Summaries - Bikes																	
Interval Start	Puyallup Ave			Puyallup Ave			Portland Ave E			Portland Ave E			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
4:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0			
4:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	2			
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2			
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2			
5:30 PM	0	2	0	0	0	0	0	0	0	0	0	0	2	3			
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2			
Count Total	0	2	0	0	2	0	0	0	0	0	0	0	4	0			
Peak Hour	0	0	0	0	2	0	0	0	0	0	0	0	2	0			

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

SECTION 2: SEGMENT VOLUMES AND VEHICLE CLASSIFICATIONS



Location: E L St S-O Puyallup Ave
 Date Range: 2/1/2023 - 2/7/2023
 Site Code: 01

Time	Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Tuesday			Mid-Week Average		
	2/1/2023			2/2/2023			2/3/2023			2/4/2023			2/5/2023			2/6/2023			2/7/2023					
	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total
12:00 AM	10	4	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	4	14
1:00 AM	6	5	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	5	11
2:00 AM	8	7	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	7	15
3:00 AM	8	3	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	3	11
4:00 AM	16	4	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	4	20
5:00 AM	37	9	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37	9	46
6:00 AM	65	13	78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	65	13	78
7:00 AM	69	33	102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	69	33	102
8:00 AM	52	23	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	23	75
9:00 AM	25	33	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	33	58
10:00 AM	22	26	48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	26	48
11:00 AM	45	40	85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	45	40	85
12:00 PM	46	36	82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	46	36	82
1:00 PM	44	34	78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	44	34	78
2:00 PM	27	47	74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27	47	74
3:00 PM	50	78	128	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	78	128
4:00 PM	46	96	142	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	46	96	142
5:00 PM	33	79	112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33	79	112
6:00 PM	27	35	62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27	35	62
7:00 PM	14	19	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	19	33
8:00 PM	23	19	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	19	42
9:00 PM	13	10	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	10	23
10:00 PM	10	7	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	7	17
11:00 PM	9	10	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	10	19
Total	705	670	1,375	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	705	670	1,375
Percent	51%	49%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	51%	49%	-

1. Mid-week average includes data between Tuesday and Thursday.

Location: Puyallup Ave Btwn E L St & E G St
 Date Range: 2/1/2023 - 2/7/2023
 Site Code: 02

Time	Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Tuesday			Mid-Week Average		
	2/1/2023			2/2/2023			2/3/2023			2/4/2023			2/5/2023			2/6/2023			2/7/2023					
	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total
12:00 AM	53	59	112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	53	59	112
1:00 AM	31	58	89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31	58	89
2:00 AM	56	51	107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	56	51	107
3:00 AM	56	63	119	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	56	63	119
4:00 AM	117	86	203	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	117	86	203
5:00 AM	207	145	352	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	207	145	352
6:00 AM	339	224	563	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	339	224	563
7:00 AM	724	352	1,076	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	724	352	1,076
8:00 AM	415	341	756	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	415	341	756
9:00 AM	332	328	660	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	332	328	660
10:00 AM	332	313	645	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	332	313	645
11:00 AM	384	367	751	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	384	367	751
12:00 PM	399	357	756	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	399	357	756
1:00 PM	438	409	847	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	438	409	847
2:00 PM	462	539	1,001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	462	539	1,001
3:00 PM	467	570	1,037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	467	570	1,037
4:00 PM	473	706	1,179	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	473	706	1,179
5:00 PM	387	646	1,033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	387	646	1,033
6:00 PM	251	342	593	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	251	342	593
7:00 PM	190	180	370	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	190	180	370
8:00 PM	140	170	310	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	170	310
9:00 PM	116	106	222	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	116	106	222
10:00 PM	89	119	208	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	89	119	208
11:00 PM	72	97	169	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	97	169
Total	6,530	6,628	13,158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6,530	6,628	13,158
Percent	50%	50%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50%	50%	-

1. Mid-week average includes data between Tuesday and Thursday.

Vehicle Classification Report Summary

Location: Puyallup Ave Btwn E L St & E G St

Count Direction: Eastbound / Westbound

Date Range: 2/1/2023 to 2/1/2023

Site Code: 02

	FHWA Vehicle Classification													Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	Volume
Study Total														
Eastbound	32	4,284	1,292	78	686	57	0	16	48	16	1	1	19	6,530
Percent	0.5%	65.6%	19.8%	1.2%	10.5%	0.9%	0.0%	0.2%	0.7%	0.2%	0.0%	0.0%	0.3%	100%
Westbound	34	4,182	1,358	63	893	32	0	13	33	8	0	0	12	6,628
Percent	0.5%	63.1%	20.5%	1.0%	13.5%	0.5%	0.0%	0.2%	0.5%	0.1%	0.0%	0.0%	0.2%	100%
Total	66	8,466	2,650	141	1,579	89	0	29	81	24	1	1	31	13,158
Percent	0.5%	64.3%	20.1%	1.1%	12.0%	0.7%	0.0%	0.2%	0.6%	0.2%	0.0%	0.0%	0.2%	100%

FHWA Vehicle Classification	
Class 1 - Motorcycles	Class 8 - Four or Fewer Axle Single-Trailer Trucks
Class 2 - Passenger Cars	Class 9 - Five-Axle Single-Trailer Trucks
Class 3 - Other Two-Axle, Four-Tire Single Unit Vehicles	Class 10 - Six or More Axle Single-Trailer Trucks
Class 4 - Buses	Class 11 - Five or fewer Axle Multi-Trailer Trucks
Class 5 - Two-Axle, Six-Tire, Single-Unit Trucks	Class 12 - Six-Axle Multi-Trailer Trucks
Class 6 - Three-Axle Single-Unit Trucks	Class 13 - Seven or More Axle Multi-Trailer Trucks
Class 7 - Four or More Axle Single-Unit Trucks	

Location: Puyallup Ave Btwn E L St & E G St
Date Range: 2/1/2023 to 2/1/2023
Site Code: 02

Wednesday, February 1, 2023
Eastbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	41	9	0	2	0	0	0	1	0	0	0	0	53
1:00 AM	0	27	2	0	0	1	0	0	0	0	0	0	1	31
2:00 AM	0	34	14	2	5	0	0	0	1	0	0	0	0	56
3:00 AM	0	41	7	0	5	1	0	0	2	0	0	0	0	56
4:00 AM	0	80	22	3	10	2	0	0	0	0	0	0	0	117
5:00 AM	3	132	39	7	22	3	0	0	1	0	0	0	0	207
6:00 AM	1	205	77	7	39	3	0	0	4	2	0	0	1	339
7:00 AM	3	467	147	5	81	6	0	3	8	2	0	0	2	724
8:00 AM	1	233	100	5	62	7	0	1	5	0	0	0	1	415
9:00 AM	4	182	74	6	54	3	0	3	4	0	0	0	2	332
10:00 AM	2	181	77	6	55	4	0	0	0	3	1	0	3	332
11:00 AM	1	254	76	3	43	3	0	1	3	0	0	0	0	384
12:00 PM	3	249	78	7	49	3	0	1	8	0	0	0	1	399
1:00 PM	4	286	82	7	48	1	0	1	3	1	0	1	4	438
2:00 PM	0	286	108	7	47	4	0	3	4	2	0	0	1	462
3:00 PM	2	309	102	1	44	2	0	1	2	2	0	0	2	467
4:00 PM	2	341	83	2	38	4	0	1	1	0	0	0	1	473
5:00 PM	2	291	58	1	31	2	0	0	0	2	0	0	0	387
6:00 PM	1	194	26	5	22	3	0	0	0	0	0	0	0	251
7:00 PM	2	139	32	0	14	2	0	1	0	0	0	0	0	190
8:00 PM	0	108	25	1	6	0	0	0	0	0	0	0	0	140
9:00 PM	1	82	23	1	7	1	0	0	0	1	0	0	0	116
10:00 PM	0	61	20	2	2	2	0	0	1	1	0	0	0	89
11:00 PM	0	61	11	0	0	0	0	0	0	0	0	0	0	72
Total	32	4,284	1,292	78	686	57	0	16	48	16	1	1	19	6,530
Percent	0.5%	65.6%	19.8%	1.2%	10.5%	0.9%	0.0%	0.2%	0.7%	0.2%	0.0%	0.0%	0.3%	

Location: Puyallup Ave Btwn E L St & E G St
Date Range: 2/1/2023 to 2/1/2023
Site Code: 02

Wednesday, February 1, 2023
Westbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	39	15	1	3	0	0	0	1	0	0	0	0	59
1:00 AM	0	40	12	0	5	0	0	0	0	0	0	0	1	58
2:00 AM	1	30	12	0	8	0	0	0	0	0	0	0	0	51
3:00 AM	0	43	15	1	3	0	0	0	0	0	0	0	1	63
4:00 AM	0	56	26	0	4	0	0	0	0	0	0	0	0	86
5:00 AM	0	94	28	1	21	0	0	0	1	0	0	0	0	145
6:00 AM	1	128	51	1	40	1	0	0	2	0	0	0	0	224
7:00 AM	3	207	76	4	57	5	0	0	0	0	0	0	0	352
8:00 AM	4	194	77	4	51	2	0	3	6	0	0	0	0	341
9:00 AM	2	174	66	6	69	2	0	1	4	2	0	0	2	328
10:00 AM	0	177	73	3	58	1	0	1	0	0	0	0	0	313
11:00 AM	2	207	77	5	66	3	0	1	4	2	0	0	0	367
12:00 PM	1	195	79	6	67	2	0	2	2	0	0	0	3	357
1:00 PM	1	248	77	1	74	2	0	2	2	1	0	0	1	409
2:00 PM	5	364	100	4	57	4	0	2	2	0	0	0	1	539
3:00 PM	0	385	114	6	57	4	0	0	1	2	0	0	1	570
4:00 PM	5	451	149	5	90	4	0	1	1	0	0	0	0	706
5:00 PM	1	443	136	4	58	0	0	0	3	1	0	0	0	646
6:00 PM	3	224	64	3	44	1	0	0	3	0	0	0	0	342
7:00 PM	2	122	28	2	25	1	0	0	0	0	0	0	0	180
8:00 PM	1	131	23	3	12	0	0	0	0	0	0	0	0	170
9:00 PM	1	77	19	1	7	0	0	0	1	0	0	0	0	106
10:00 PM	1	80	29	1	7	0	0	0	0	0	0	0	1	119
11:00 PM	0	73	12	1	10	0	0	0	0	0	0	0	1	97
Total	34	4,182	1,358	63	893	32	0	13	33	8	0	0	12	6,628
Percent	0.5%	63.1%	20.5%	1.0%	13.5%	0.5%	0.0%	0.2%	0.5%	0.1%	0.0%	0.0%	0.2%	

Location: Puyallup Ave Btwn E L St & E G St
Date Range: 2/1/2023 to 2/1/2023
Site Code: 02

Total Study Average
Eastbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	41	9	0	2	0	0	0	1	0	0	0	0	53
1:00 AM	0	27	2	0	0	1	0	0	0	0	0	0	1	31
2:00 AM	0	34	14	2	5	0	0	0	1	0	0	0	0	56
3:00 AM	0	41	7	0	5	1	0	0	2	0	0	0	0	56
4:00 AM	0	80	22	3	10	2	0	0	0	0	0	0	0	117
5:00 AM	3	132	39	7	22	3	0	0	1	0	0	0	0	207
6:00 AM	1	205	77	7	39	3	0	0	4	2	0	0	1	339
7:00 AM	3	467	147	5	81	6	0	3	8	2	0	0	2	724
8:00 AM	1	233	100	5	62	7	0	1	5	0	0	0	1	415
9:00 AM	4	182	74	6	54	3	0	3	4	0	0	0	2	332
10:00 AM	2	181	77	6	55	4	0	0	0	3	1	0	3	332
11:00 AM	1	254	76	3	43	3	0	1	3	0	0	0	0	384
12:00 PM	3	249	78	7	49	3	0	1	8	0	0	0	1	399
1:00 PM	4	286	82	7	48	1	0	1	3	1	0	1	4	438
2:00 PM	0	286	108	7	47	4	0	3	4	2	0	0	1	462
3:00 PM	2	309	102	1	44	2	0	1	2	2	0	0	2	467
4:00 PM	2	341	83	2	38	4	0	1	1	0	0	0	1	473
5:00 PM	2	291	58	1	31	2	0	0	0	2	0	0	0	387
6:00 PM	1	194	26	5	22	3	0	0	0	0	0	0	0	251
7:00 PM	2	139	32	0	14	2	0	1	0	0	0	0	0	190
8:00 PM	0	108	25	1	6	0	0	0	0	0	0	0	0	140
9:00 PM	1	82	23	1	7	1	0	0	0	1	0	0	0	116
10:00 PM	0	61	20	2	2	2	0	0	1	1	0	0	0	89
11:00 PM	0	61	11	0	0	0	0	0	0	0	0	0	0	72
Total	32	4,284	1,292	78	686	57	0	16	48	16	1	1	19	6,530
Percent	0.5%	65.6%	19.8%	1.2%	10.5%	0.9%	0.0%	0.2%	0.7%	0.2%	0.0%	0.0%	0.3%	

Note: Average only considered on days with 24-hours of data.

Location: Puyallup Ave Btwn E L St & E G St
Date Range: 2/1/2023 to 2/1/2023
Site Code: 02

Total Study Average
Westbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	39	15	1	3	0	0	0	1	0	0	0	0	59
1:00 AM	0	40	12	0	5	0	0	0	0	0	0	0	1	58
2:00 AM	1	30	12	0	8	0	0	0	0	0	0	0	0	51
3:00 AM	0	43	15	1	3	0	0	0	0	0	0	0	1	63
4:00 AM	0	56	26	0	4	0	0	0	0	0	0	0	0	86
5:00 AM	0	94	28	1	21	0	0	0	1	0	0	0	0	145
6:00 AM	1	128	51	1	40	1	0	0	2	0	0	0	0	224
7:00 AM	3	207	76	4	57	5	0	0	0	0	0	0	0	352
8:00 AM	4	194	77	4	51	2	0	3	6	0	0	0	0	341
9:00 AM	2	174	66	6	69	2	0	1	4	2	0	0	2	328
10:00 AM	0	177	73	3	58	1	0	1	0	0	0	0	0	313
11:00 AM	2	207	77	5	66	3	0	1	4	2	0	0	0	367
12:00 PM	1	195	79	6	67	2	0	2	2	0	0	0	3	357
1:00 PM	1	248	77	1	74	2	0	2	2	1	0	0	1	409
2:00 PM	5	364	100	4	57	4	0	2	2	0	0	0	1	539
3:00 PM	0	385	114	6	57	4	0	0	1	2	0	0	1	570
4:00 PM	5	451	149	5	90	4	0	1	1	0	0	0	0	706
5:00 PM	1	443	136	4	58	0	0	0	3	1	0	0	0	646
6:00 PM	3	224	64	3	44	1	0	0	3	0	0	0	0	342
7:00 PM	2	122	28	2	25	1	0	0	0	0	0	0	0	180
8:00 PM	1	131	23	3	12	0	0	0	0	0	0	0	0	170
9:00 PM	1	77	19	1	7	0	0	0	1	0	0	0	0	106
10:00 PM	1	80	29	1	7	0	0	0	0	0	0	0	1	119
11:00 PM	0	73	12	1	10	0	0	0	0	0	0	0	1	97
Total	34	4,182	1,358	63	893	32	0	13	33	8	0	0	12	6,628
Percent	0.5%	63.1%	20.5%	1.0%	13.5%	0.5%	0.0%	0.2%	0.5%	0.1%	0.0%	0.0%	0.2%	

Note: Average only considered on days with 24-hours of data.

Location: Puyallup Ave Btwn E L St & E G St
Date Range: 2/1/2023 to 2/1/2023
Site Code: 02

**3-Day (Tuesday - Thursday) Average
 Eastbound**

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	41	9	0	2	0	0	0	1	0	0	0	0	53
1:00 AM	0	27	2	0	0	1	0	0	0	0	0	0	1	31
2:00 AM	0	34	14	2	5	0	0	0	1	0	0	0	0	56
3:00 AM	0	41	7	0	5	1	0	0	2	0	0	0	0	56
4:00 AM	0	80	22	3	10	2	0	0	0	0	0	0	0	117
5:00 AM	3	132	39	7	22	3	0	0	1	0	0	0	0	207
6:00 AM	1	205	77	7	39	3	0	0	4	2	0	0	1	339
7:00 AM	3	467	147	5	81	6	0	3	8	2	0	0	2	724
8:00 AM	1	233	100	5	62	7	0	1	5	0	0	0	1	415
9:00 AM	4	182	74	6	54	3	0	3	4	0	0	0	2	332
10:00 AM	2	181	77	6	55	4	0	0	0	3	1	0	3	332
11:00 AM	1	254	76	3	43	3	0	1	3	0	0	0	0	384
12:00 PM	3	249	78	7	49	3	0	1	8	0	0	0	1	399
1:00 PM	4	286	82	7	48	1	0	1	3	1	0	1	4	438
2:00 PM	0	286	108	7	47	4	0	3	4	2	0	0	1	462
3:00 PM	2	309	102	1	44	2	0	1	2	2	0	0	2	467
4:00 PM	2	341	83	2	38	4	0	1	1	0	0	0	1	473
5:00 PM	2	291	58	1	31	2	0	0	0	2	0	0	0	387
6:00 PM	1	194	26	5	22	3	0	0	0	0	0	0	0	251
7:00 PM	2	139	32	0	14	2	0	1	0	0	0	0	0	190
8:00 PM	0	108	25	1	6	0	0	0	0	0	0	0	0	140
9:00 PM	1	82	23	1	7	1	0	0	0	1	0	0	0	116
10:00 PM	0	61	20	2	2	2	0	0	1	1	0	0	0	89
11:00 PM	0	61	11	0	0	0	0	0	0	0	0	0	0	72
Total	32	4,284	1,292	78	686	57	0	16	48	16	1	1	19	6,530
Percent	0.5%	65.6%	19.8%	1.2%	10.5%	0.9%	0.0%	0.2%	0.7%	0.2%	0.0%	0.0%	0.3%	

Location: Puyallup Ave Btwn E L St & E G St
Date Range: 2/1/2023 to 2/1/2023
Site Code: 02

3-Day (Tuesday - Thursday) Average
Westbound

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	39	15	1	3	0	0	0	1	0	0	0	0	59
1:00 AM	0	40	12	0	5	0	0	0	0	0	0	0	1	58
2:00 AM	1	30	12	0	8	0	0	0	0	0	0	0	0	51
3:00 AM	0	43	15	1	3	0	0	0	0	0	0	0	1	63
4:00 AM	0	56	26	0	4	0	0	0	0	0	0	0	0	86
5:00 AM	0	94	28	1	21	0	0	0	1	0	0	0	0	145
6:00 AM	1	128	51	1	40	1	0	0	2	0	0	0	0	224
7:00 AM	3	207	76	4	57	5	0	0	0	0	0	0	0	352
8:00 AM	4	194	77	4	51	2	0	3	6	0	0	0	0	341
9:00 AM	2	174	66	6	69	2	0	1	4	2	0	0	2	328
10:00 AM	0	177	73	3	58	1	0	1	0	0	0	0	0	313
11:00 AM	2	207	77	5	66	3	0	1	4	2	0	0	0	367
12:00 PM	1	195	79	6	67	2	0	2	2	0	0	0	3	357
1:00 PM	1	248	77	1	74	2	0	2	2	1	0	0	1	409
2:00 PM	5	364	100	4	57	4	0	2	2	0	0	0	1	539
3:00 PM	0	385	114	6	57	4	0	0	1	2	0	0	1	570
4:00 PM	5	451	149	5	90	4	0	1	1	0	0	0	0	706
5:00 PM	1	443	136	4	58	0	0	0	3	1	0	0	0	646
6:00 PM	3	224	64	3	44	1	0	0	3	0	0	0	0	342
7:00 PM	2	122	28	2	25	1	0	0	0	0	0	0	0	180
8:00 PM	1	131	23	3	12	0	0	0	0	0	0	0	0	170
9:00 PM	1	77	19	1	7	0	0	0	1	0	0	0	0	106
10:00 PM	1	80	29	1	7	0	0	0	0	0	0	0	1	119
11:00 PM	0	73	12	1	10	0	0	0	0	0	0	0	1	97
Total	34	4,182	1,358	63	893	32	0	13	33	8	0	0	12	6,628
Percent	0.5%	63.1%	20.5%	1.0%	13.5%	0.5%	0.0%	0.2%	0.5%	0.1%	0.0%	0.0%	0.2%	

SECTION 3: EXISTING 2023 SYNCHRO ANALYSIS RESULTS



Queues

1: Pacific Ave & S 24th St

03/16/2023



Lane Group	EBT	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	31	164	121	406	257
v/c Ratio	0.07	0.45	0.12	0.66	0.16
Control Delay	29.2	38.0	1.6	35.5	14.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	29.2	38.0	1.6	35.5	14.8
Queue Length 50th (ft)	7	46	0	104	35
Queue Length 95th (ft)	17	66	20	132	90
Internal Link Dist (ft)	405	294		757	1056
Turn Bay Length (ft)			100		
Base Capacity (vph)	782	650	987	957	1640
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.25	0.12	0.42	0.16
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

1: Pacific Ave & S 24th St

03/16/2023

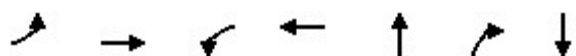
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	19	2	119	30	110	0	288	82	85	148	1
Future Volume (vph)	7	19	2	119	30	110	0	288	82	85	148	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0			5.0	
Lane Util. Factor		0.95			0.95	1.00		0.95			0.95	
Frpb, ped/bikes		1.00			1.00	1.00		0.99			1.00	
Flpb, ped/bikes		1.00			1.00	1.00		1.00			1.00	
Frt		0.99			1.00	0.85		0.97			1.00	
Flt Protected		0.99			0.96	1.00		1.00			0.98	
Satd. Flow (prot)		3289			3112	1448		3212			3251	
Flt Permitted		0.88			0.75	1.00		1.00			0.98	
Satd. Flow (perm)		2929			2441	1448		3212			3251	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	8	21	2	131	33	121	0	316	90	93	163	1
RTOR Reduction (vph)	0	2	0	0	0	42	0	34	0	0	0	0
Lane Group Flow (vph)	0	29	0	0	164	79	0	372	0	0	257	0
Confl. Peds. (#/hr)	7		5	5		7	11		14	14		11
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	7%	7%	7%	11%	11%	11%	8%	8%	8%	9%	9%	9%
Turn Type	Perm	NA		Perm	NA	pm+ov		NA		Split	NA	
Protected Phases		4			8	2		1		2	2	
Permitted Phases	4			8		8						
Actuated Green, G (s)		13.3			13.3	58.8		16.2			45.5	
Effective Green, g (s)		13.3			13.3	58.8		16.2			45.5	
Actuated g/C Ratio		0.15			0.15	0.65		0.18			0.51	
Clearance Time (s)		5.0			5.0	5.0		5.0			5.0	
Vehicle Extension (s)		2.5			2.5	2.5		2.5			2.5	
Lane Grp Cap (vph)		432			360	1026		578			1643	
v/s Ratio Prot						0.04		c0.12			c0.08	
v/s Ratio Perm		0.01			c0.07	0.02						
v/c Ratio		0.07			0.46	0.08		0.64			0.16	
Uniform Delay, d1		33.0			35.0	5.7		34.2			11.9	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.0			0.7	0.0		2.2			0.2	
Delay (s)		33.1			35.7	5.7		36.4			12.1	
Level of Service		C			D	A		D			B	
Approach Delay (s)		33.1			23.0			36.4			12.1	
Approach LOS		C			C			D			B	
Intersection Summary												
HCM 2000 Control Delay			26.0				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.31									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)		15.0			
Intersection Capacity Utilization			59.9%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology expects strict NEMA phasing.

Queues

2: A St & S 24th St/Puyallup Ave

03/16/2023



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	4	178	14	289	3	52	6
v/c Ratio	0.01	0.16	0.04	0.25	0.00	0.09	0.01
Control Delay	9.0	8.8	9.2	9.0	9.0	4.0	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.0	8.8	9.2	9.0	9.0	4.0	8.5
Queue Length 50th (ft)	1	9	1	15	0	0	1
Queue Length 95th (ft)	6	37	12	55	5	17	7
Internal Link Dist (ft)		294		1074	627		464
Turn Bay Length (ft)	90		55			135	
Base Capacity (vph)	966	3191	1078	3205	1105	948	773
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.06	0.01	0.09	0.00	0.05	0.01
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

2: A St & S 24th St/Puyallup Ave

03/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	165	4	13	261	13	0	3	49	4	1	1
Future Volume (vph)	4	165	4	13	261	13	0	3	49	4	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.99		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	0.99			1.00	0.85		0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		0.97	
Satd. Flow (prot)	1609	3211		1620	3225			1792	1505		1348	
Flt Permitted	0.57	1.00		0.64	1.00			1.00	1.00		0.90	
Satd. Flow (perm)	974	3211		1090	3225			1792	1505		1253	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	4	174	4	14	275	14	0	3	52	4	1	1
RTOR Reduction (vph)	0	3	0	0	8	0	0	0	33	0	1	0
Lane Group Flow (vph)	4	175	0	14	281	0	0	3	19	0	5	0
Confl. Peds. (#/hr)	3		12	12		3	3		1	1		3
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	12%	12%	12%	11%	11%	11%	6%	6%	6%	33%	33%	33%
Turn Type	Perm	NA		Perm	NA			NA	Perm	Perm	NA	
Protected Phases		4			8			6			2	
Permitted Phases	4			8			6		6	2		
Actuated Green, G (s)	12.8	12.8		12.8	12.8			12.8	12.8		12.8	
Effective Green, g (s)	12.8	12.8		12.8	12.8			12.8	12.8		12.8	
Actuated g/C Ratio	0.36	0.36		0.36	0.36			0.36	0.36		0.36	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5			2.5	2.5		2.5	
Lane Grp Cap (vph)	350	1154		391	1159			644	541		450	
v/s Ratio Prot		0.05			c0.09			0.00				
v/s Ratio Perm	0.00			0.01					c0.01		0.00	
v/c Ratio	0.01	0.15		0.04	0.24			0.00	0.03		0.01	
Uniform Delay, d1	7.3	7.7		7.4	8.0			7.3	7.4		7.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.0		0.0	0.1			0.0	0.0		0.0	
Delay (s)	7.3	7.8		7.4	8.1			7.3	7.4		7.3	
Level of Service	A	A		A	A			A	A		A	
Approach Delay (s)		7.8			8.0			7.4			7.3	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay		7.9			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.14										
Actuated Cycle Length (s)		35.6			Sum of lost time (s)			10.0				
Intersection Capacity Utilization		43.6%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: A St & S 24th St/Puyallup Ave

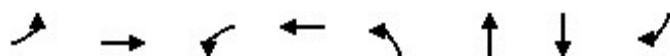
03/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	165	4	13	261	13	0	3	49	4	1	1
Future Volume (veh/h)	4	165	4	13	261	13	0	3	49	4	1	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1722	1722	1722	1737	1737	1737	1811	1811	1811	1411	1411	1411
Adj Flow Rate, veh/h	4	174	4	14	275	14	0	3	52	4	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	12	12	12	11	11	11	6	6	6	33	33	33
Cap, veh/h	528	1183	27	588	1157	59	0	585	494	401	89	60
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.00	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	998	3266	75	1107	3194	162	0	1811	1531	658	275	187
Grp Volume(v), veh/h	4	87	91	14	141	148	0	3	52	6	0	0
Grp Sat Flow(s),veh/h/ln	998	1636	1705	1107	1650	1706	0	1811	1531	1120	0	0
Q Serve(g_s), s	0.1	1.1	1.1	0.3	1.9	1.9	0.0	0.0	0.8	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.0	1.1	1.1	1.4	1.9	1.9	0.0	0.0	0.8	0.1	0.0	0.0
Prop In Lane	1.00		0.04	1.00		0.09	0.00		1.00	0.67		0.17
Lane Grp Cap(c), veh/h	528	593	618	588	598	618	0	585	494	551	0	0
V/C Ratio(X)	0.01	0.15	0.15	0.02	0.24	0.24	0.00	0.01	0.11	0.01	0.00	0.00
Avail Cap(c_a), veh/h	2050	3089	3219	2276	3115	3221	0	1140	963	885	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.8	6.8	6.8	7.3	7.1	7.1	0.0	7.3	7.5	7.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.3	0.3	0.0	0.4	0.5	0.0	0.0	0.2	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.8	6.9	6.9	7.3	7.2	7.2	0.0	7.3	7.6	7.3	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h	182			303			55			6		
Approach Delay, s/veh	6.9			7.2			7.6			7.3		
Approach LOS	A			A			A			A		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	15.3			16.5			15.3			16.5		
Change Period (Y+Rc), s	5.0			5.0			5.0			5.0		
Max Green Setting (Gmax), s	20.0			60.0			20.0			60.0		
Max Q Clear Time (g_c+I1), s	2.1			4.0			2.8			3.9		
Green Ext Time (p_c), s	0.0			0.9			0.1			1.5		
Intersection Summary												
HCM 6th Ctrl Delay	7.2											
HCM 6th LOS	A											

Queues

3: E D St & Puyallup Ave

03/16/2023



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	89	354	52	350	17	206	112	49
v/c Ratio	0.22	0.33	0.12	0.39	0.05	0.44	0.34	0.11
Control Delay	17.1	15.8	17.2	16.0	14.9	16.6	18.5	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.1	15.8	17.2	16.0	14.9	16.6	18.5	2.6
Queue Length 50th (ft)	18	38	10	35	3	37	23	0
Queue Length 95th (ft)	63	101	40	91	17	108	73	11
Internal Link Dist (ft)		1074		315		604	705	
Turn Bay Length (ft)	150		150		150			
Base Capacity (vph)	1172	3255	1232	3138	1143	1543	1149	1353
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.11	0.04	0.11	0.01	0.13	0.10	0.04
Intersection Summary								

HCM Signalized Intersection Capacity Analysis

3: E D St & Puyallup Ave

03/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	309	10	47	246	69	15	99	86	62	39	44
Future Volume (vph)	80	309	10	47	246	69	15	99	86	62	39	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99			1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.97		1.00	0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	1.00
Satd. Flow (prot)	1684	3355		1682	3242		1638	1595			1614	1397
Flt Permitted	0.46	1.00		0.54	1.00		0.68	1.00			0.71	1.00
Satd. Flow (perm)	815	3355		956	3242		1181	1595			1189	1397
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	89	343	11	52	273	77	17	110	96	69	43	49
RTOR Reduction (vph)	0	1	0	0	18	0	0	22	0	0	0	36
Lane Group Flow (vph)	89	353	0	52	332	0	17	184	0	0	112	13
Confl. Peds. (#/hr)	6		7	7		6	3		6	6		3
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	10%	10%	10%	14%	14%	14%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4		3	8			6			2	
Permitted Phases	4			8			6			2		2
Actuated Green, G (s)	14.9	14.9		13.7	13.7		13.1	13.1			13.1	13.1
Effective Green, g (s)	14.9	14.9		13.7	13.7		13.1	13.1			13.1	13.1
Actuated g/C Ratio	0.31	0.31		0.29	0.29		0.27	0.27			0.27	0.27
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	2.5	2.5		2.5	2.5		2.5	2.5			2.5	2.5
Lane Grp Cap (vph)	365	1041		348	925		322	435			324	381
v/s Ratio Prot	0.03	c0.11		0.02	c0.10			c0.12				
v/s Ratio Perm	0.04			0.03			0.01				0.09	0.01
v/c Ratio	0.24	0.34		0.15	0.36		0.05	0.42			0.35	0.04
Uniform Delay, d1	12.3	12.8		13.0	13.7		12.9	14.3			14.0	12.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	0.3	0.1		0.1	0.2		0.0	0.5			0.5	0.0
Delay (s)	12.5	12.9		13.1	13.8		12.9	14.8			14.5	12.8
Level of Service	B	B		B	B		B	B			B	B
Approach Delay (s)		12.8			13.7			14.7			14.0	
Approach LOS		B			B			B			B	
Intersection Summary												
HCM 2000 Control Delay			13.6			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			48.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			54.1%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

3: E D St & Puyallup Ave

03/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	309	10	47	246	69	15	99	86	62	39	44
Future Volume (veh/h)	80	309	10	47	246	69	15	99	86	62	39	44
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.58		0.97	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1796	1796	1796	1796	1796	1796	1752	1752	1752	1693	1693	1693
Adj Flow Rate, veh/h	89	343	11	52	273	77	17	110	96	69	43	49
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	7	7	7	7	7	7	10	10	10	14	14	14
Cap, veh/h	338	892	29	346	703	194	327	230	201	266	128	381
Arrive On Green	0.09	0.26	0.26	0.10	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	1711	3374	108	1711	2621	722	1216	860	751	456	478	1425
Grp Volume(v), veh/h	89	173	181	52	175	175	17	0	206	112	0	49
Grp Sat Flow(s),veh/h/ln	1711	1706	1775	1711	1706	1636	1216	0	1611	934	0	1425
Q Serve(g_s), s	1.8	3.4	3.4	0.0	3.4	3.5	0.5	0.0	4.3	1.5	0.0	1.1
Cycle Q Clear(g_c), s	1.8	3.4	3.4	0.0	3.4	3.5	6.4	0.0	4.3	5.9	0.0	1.1
Prop In Lane	1.00		0.06	1.00		0.44	1.00		0.47	0.62		1.00
Lane Grp Cap(c), veh/h	338	451	469	346	458	439	327	0	430	393	0	381
V/C Ratio(X)	0.26	0.38	0.39	0.15	0.38	0.40	0.05	0.00	0.48	0.28	0.00	0.13
Avail Cap(c_a), veh/h	1447	2531	2633	1448	2531	2427	1806	0	2389	1898	0	2113
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.2	12.2	12.2	16.5	12.1	12.1	15.8	0.0	12.5	12.8	0.0	11.2
Incr Delay (d2), s/veh	0.3	0.4	0.4	0.1	0.4	0.4	0.0	0.0	0.6	0.3	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.1	1.1	0.4	1.1	1.1	0.1	0.0	1.3	0.8	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.5	12.6	12.6	16.6	12.5	12.6	15.9	0.0	13.1	13.1	0.0	11.4
LnGrp LOS	B	B	B	B	B	B	B	A	B	B	A	B
Approach Vol, veh/h	443			402			223			161		
Approach Delay, s/veh	13.0			13.0			13.3			12.6		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	15.8		8.9	15.7		15.8		8.8	15.8			
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0		5.0	5.0			
Max Green Setting (Gmax), s	60.0		30.0	60.0		60.0		30.0	60.0			
Max Q Clear Time (g_c+I1), s	7.9		2.0	5.4		8.4		3.8	5.5			
Green Ext Time (p_c), s	0.4		0.1	1.8		1.2		0.2	1.9			
Intersection Summary												
HCM 6th Ctrl Delay	13.0											
HCM 6th LOS	B											

Queues

4: E E St & Puyallup Ave

03/16/2023



Lane Group	EBL	EBT	WBT	SBT
Lane Group Flow (vph)	20	524	362	4
v/c Ratio	0.02	0.18	0.12	0.01
Control Delay	4.7	3.4	3.3	0.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.7	3.4	3.3	0.0
Queue Length 50th (ft)	0	0	0	0
Queue Length 95th (ft)	14	98	67	0
Internal Link Dist (ft)		315	283	388
Turn Bay Length (ft)	100			
Base Capacity (vph)	890	3171	3237	1556
Starvation Cap Reductn	0	146	172	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.02	0.17	0.12	0.00
Intersection Summary				

HCM Signalized Intersection Capacity Analysis

4: E E St & Puyallup Ave

03/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	460	1	0	311	8	0	0	0	3	0	1
Future Volume (vph)	18	460	1	0	311	8	0	0	0	3	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0						5.0	
Lane Util. Factor	1.00	0.95			0.95						1.00	
Frpb, ped/bikes	1.00	1.00			1.00						1.00	
Flpb, ped/bikes	1.00	1.00			1.00						1.00	
Frt	1.00	1.00			1.00						0.97	
Flt Protected	0.95	1.00			1.00						0.96	
Satd. Flow (prot)	1654	3311			3238						1764	
Flt Permitted	0.54	1.00			1.00						0.96	
Satd. Flow (perm)	933	3311			3238						1764	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	20	523	1	0	353	9	0	0	0	3	0	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	20	524	0	0	362	0	0	0	0	0	0	0
Confl. Peds. (#/hr)	2		13	13		2	1					1
Heavy Vehicles (%)	9%	9%	9%	11%	11%	11%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Prot	NA		Split			Split	NA	
Protected Phases		4		3	8		1	1		2	2	
Permitted Phases	4											
Actuated Green, G (s)	30.2	30.2			30.2						2.8	
Effective Green, g (s)	30.2	30.2			30.2						2.8	
Actuated g/C Ratio	0.70	0.70			0.70						0.07	
Clearance Time (s)	5.0	5.0			5.0						5.0	
Vehicle Extension (s)	1.0	1.0			1.0						1.0	
Lane Grp Cap (vph)	655	2325			2274						114	
v/s Ratio Prot		c0.16			0.11						c0.00	
v/s Ratio Perm	0.02											
v/c Ratio	0.03	0.23			0.16						0.00	
Uniform Delay, d1	1.9	2.3			2.1						18.8	
Progression Factor	1.00	1.00			1.00						1.00	
Incremental Delay, d2	0.0	0.0			0.0						0.0	
Delay (s)	2.0	2.3			2.2						18.8	
Level of Service	A	A			A						B	
Approach Delay (s)		2.3			2.2			0.0			18.8	
Approach LOS		A			A			A			B	
Intersection Summary												
HCM 2000 Control Delay		2.3			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.30										
Actuated Cycle Length (s)		43.0			Sum of lost time (s)			20.0				
Intersection Capacity Utilization		33.6%			ICU Level of Service			A				
Analysis Period (min)		15										

c Critical Lane Group

HCM 6th Edition methodology expects strict NEMA phasing.

Queues

5: Puyallup Ave & F St

03/16/2023



Lane Group	EBT	WBT	NBL	NBT	NEL	NER
Lane Group Flow (vph)	505	357	12	2	5	11
v/c Ratio	0.23	0.17	0.01	0.00	0.01	0.04
Control Delay	25.5	27.9	9.6	0.0	56.6	55.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.5	27.9	9.6	0.0	56.6	55.5
Queue Length 50th (ft)	0	0	0	0	1	2
Queue Length 95th (ft)	281	216	14	0	20	32
Internal Link Dist (ft)	283	304		340	299	
Turn Bay Length (ft)						
Base Capacity (vph)	2404	2279	909	894	1031	922
Starvation Cap Reductn	47	27	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.16	0.01	0.00	0.00	0.01
Intersection Summary						

HCM Signalized Intersection Capacity Analysis

5: Puyallup Ave & F St

03/16/2023

												
Movement	EBL	EBT	EBR2	WBL	WBT	NBL2	NBL	NBT	NBR	SBT	NEL2	NEL
Lane Configurations		 			 					 		
Traffic Volume (vph)	0	391	74	34	294	1	10	0	2	0	5	0
Future Volume (vph)	0	391	74	34	294	1	10	0	2	0	5	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0				5.0
Lane Util. Factor		0.95			0.95		1.00	1.00				1.00
Frpb, ped/bikes		0.99			1.00		1.00	1.00				1.00
Flpb, ped/bikes		1.00			1.00		0.98	1.00				1.00
Frt		0.98			1.00		1.00	0.85				1.00
Flt Protected		1.00			0.99		0.95	1.00				0.95
Satd. Flow (prot)		3169			3384		1051	956				1687
Flt Permitted		1.00			0.87		0.95	1.00				0.95
Satd. Flow (perm)		3169			2966		1051	956				1687
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	425	80	37	320	1	11	0	2	0	5	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	483	0	0	357	0	12	0	0	0	0	5
Confl. Peds. (#/hr)			20	10		10						
Heavy Vehicles (%)	10%	10%	10%	6%	6%	69%	69%	69%	69%	0%	7%	7%
Turn Type	Perm	NA		Perm	NA	Perm	Split	NA			Prot	Prot
Protected Phases		4			8		5	5		2	6	6
Permitted Phases	4			8		5						
Actuated Green, G (s)		47.4			47.4		19.0	19.0				2.2
Effective Green, g (s)		47.4			47.4		19.0	19.0				2.2
Actuated g/C Ratio		0.57			0.57		0.23	0.23				0.03
Clearance Time (s)		5.0			5.0		5.0	5.0				5.0
Vehicle Extension (s)		2.5			2.5		5.0	5.0				2.5
Lane Grp Cap (vph)		1796			1681		238	217				44
v/s Ratio Prot		0.15						0.00				0.00
v/s Ratio Perm					0.12		0.01					
v/c Ratio		0.27			0.21		0.05	0.00				0.11
Uniform Delay, d1		9.2			8.9		25.2	25.0				39.7
Progression Factor		1.00			1.00		1.00	1.00				1.00
Incremental Delay, d2		0.1			0.0		0.2	0.0				0.8
Delay (s)		9.3			9.0		25.4	25.0				40.6
Level of Service		A			A		C	C				D
Approach Delay (s)		9.3			9.0			25.4		0.0		42.1
Approach LOS		A			A			C		A		D
Intersection Summary												
HCM 2000 Control Delay			10.0			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.23									
Actuated Cycle Length (s)			83.6			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			60.0%			ICU Level of Service				B		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Puyallup Ave & F St

03/16/2023



Movement	NER
Lane Configurations	RT
Traffic Volume (vph)	10
Future Volume (vph)	10
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1509
Flt Permitted	1.00
Satd. Flow (perm)	1509
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	11
Confl. Peds. (#/hr)	
Heavy Vehicles (%)	7%
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Actuated Green, G (s)	2.2
Effective Green, g (s)	2.2
Actuated g/C Ratio	0.03
Clearance Time (s)	5.0
Vehicle Extension (s)	2.5
Lane Grp Cap (vph)	39
v/s Ratio Prot	
v/s Ratio Perm	c0.01
v/c Ratio	0.28
Uniform Delay, d1	39.9
Progression Factor	1.00
Incremental Delay, d2	2.9
Delay (s)	42.8
Level of Service	D
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM 6th Edition methodology does not support more than 4 approaches.

Queues

6: G St & Puyallup Ave

03/16/2023



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR
Lane Group Flow (vph)	1	428	61	310	38	367
v/c Ratio	0.00	0.43	0.10	0.21	0.12	0.63
Control Delay	18.0	16.5	10.2	9.2	21.3	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	16.5	10.2	9.2	21.3	8.8
Queue Length 50th (ft)	0	37	4	12	7	0
Queue Length 95th (ft)	4	149	46	88	44	77
Internal Link Dist (ft)		304		1819	498	
Turn Bay Length (ft)	80		100			70
Base Capacity (vph)	874	3005	1428	3312	1545	1403
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.14	0.04	0.09	0.02	0.26
Intersection Summary						

HCM Signalized Intersection Capacity Analysis

6: G St & Puyallup Ave

03/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	374	19	56	285	0	35	0	338	0	0	0
Future Volume (vph)	1	374	19	56	285	0	35	0	338	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0	5.0			
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00			
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00			
Flpb, ped/bikes	0.99	1.00		1.00	1.00			1.00	1.00			
Frt	1.00	0.99		1.00	1.00			1.00	0.85			
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00			
Satd. Flow (prot)	1599	3195		1652	3312			1641	1468			
Flt Permitted	0.56	1.00		0.50	1.00			0.95	1.00			
Satd. Flow (perm)	948	3195		874	3312			1641	1468			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	407	21	61	310	0	38	0	367	0	0	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	301	0	0	0
Lane Group Flow (vph)	1	426	0	61	310	0	0	38	66	0	0	0
Confl. Peds. (#/hr)	10		7	7		10	1					1
Heavy Vehicles (%)	12%	12%	12%	9%	9%	9%	10%	10%	10%	0%	0%	0%
Turn Type	Perm	NA		pm+pt	NA		Split	NA	Perm			
Protected Phases		4		3	8		6	6			2	
Permitted Phases	4			8					6	2		
Actuated Green, G (s)	13.4	13.4		21.7	21.7			8.5	8.5			
Effective Green, g (s)	13.4	13.4		21.7	21.7			8.5	8.5			
Actuated g/C Ratio	0.28	0.28		0.46	0.46			0.18	0.18			
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0			
Vehicle Extension (s)	2.5	2.5		2.5	2.5			2.5	2.5			
Lane Grp Cap (vph)	268	903		454	1516			294	263			
v/s Ratio Prot		c0.13		0.01	c0.09			0.02				
v/s Ratio Perm	0.00			0.05					c0.04			
v/c Ratio	0.00	0.47		0.13	0.20			0.13	0.25			
Uniform Delay, d1	12.2	14.1		7.5	7.7			16.3	16.7			
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00			
Incremental Delay, d2	0.0	0.3		0.1	0.0			0.1	0.4			
Delay (s)	12.2	14.4		7.6	7.7			16.5	17.1			
Level of Service	B	B		A	A			B	B			
Approach Delay (s)		14.3			7.7			17.0			0.0	
Approach LOS		B			A			B			A	
Intersection Summary												
HCM 2000 Control Delay			13.2			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			47.4			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			41.4%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

6: G St & Puyallup Ave

03/16/2023

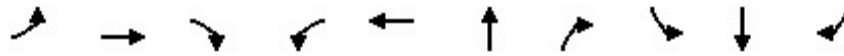
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	374	19	56	285	0	35	0	338	0	0	0
Future Volume (veh/h)	1	374	19	56	285	0	35	0	338	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1722	1722	1722	1767	1767	1767	1752	1752	1752	1900	1900	1900
Adj Flow Rate, veh/h	1	407	21	61	310	0	38	0	40	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	12	12	12	9	9	9	10	10	10	0	0	0
Cap, veh/h	526	1094	56	529	1961	0	162	0	144	0	6	0
Arrive On Green	0.35	0.35	0.35	0.08	0.58	0.00	0.10	0.00	0.10	0.00	0.00	0.00
Sat Flow, veh/h	976	3163	163	1682	3445	0	1666	0	1482	0	1900	0
Grp Volume(v), veh/h	1	210	218	61	310	0	38	0	40	0	0	0
Grp Sat Flow(s),veh/h/ln	976	1636	1690	1682	1678	0	1666	0	1482	0	1900	0
Q Serve(g_s), s	0.0	3.0	3.0	0.0	1.3	0.0	0.7	0.0	0.8	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.3	3.0	3.0	0.0	1.3	0.0	0.7	0.0	0.8	0.0	0.0	0.0
Prop In Lane	1.00		0.10	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	526	566	585	529	1961	0	162	0	144	0	6	0
V/C Ratio(X)	0.00	0.37	0.37	0.12	0.16	0.00	0.24	0.00	0.28	0.00	0.00	0.00
Avail Cap(c_a), veh/h	2055	3129	3233	2005	6420	0	3186	0	2835	0	1211	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	7.6	7.7	7.7	9.1	3.0	0.0	13.1	0.0	13.1	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.3	0.1	0.0	0.0	0.5	0.0	0.8	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.7	0.8	0.2	0.1	0.0	0.2	0.0	0.2	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.6	8.0	8.0	9.2	3.0	0.0	13.6	0.0	13.9	0.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	B	A	A	A
Approach Vol, veh/h	429			371			78			0		
Approach Delay, s/veh	8.0			4.0			13.8			0.0		
Approach LOS	A			A			B					
Timer - Assigned Phs	2		3	4		6		8				
Phs Duration (G+Y+Rc), s	0.0		7.5	15.9		8.0		23.3				
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0		5.0				
Max Green Setting (Gmax), s	20.0		30.0	60.0		60.0		60.0				
Max Q Clear Time (g_c+I1), s	0.0		2.0	5.0		2.7		3.3				
Green Ext Time (p_c), s	0.0		0.1	2.3		0.1		1.8				
Intersection Summary												
HCM 6th Ctrl Delay	6.8											
HCM 6th LOS	A											
Notes												

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	728	15	19	355	3	21	0	52	1	0	3
Future Vol, veh/h	3	728	15	19	355	3	21	0	52	1	0	3
Conflicting Peds, #/hr	0	0	9	9	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	80	-	-	80	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	10	10	10	13	13	13	4	4	4	25	25	25
Mvmt Flow	3	818	17	21	399	3	24	0	58	1	0	3
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	402	0	0	844	0	0	1084	1286	428	859	1293	201
Stage 1	-	-	-	-	-	-	842	842	-	443	443	-
Stage 2	-	-	-	-	-	-	242	444	-	416	850	-
Critical Hdwy	4.3	-	-	4.36	-	-	7.58	6.58	6.98	8	7	7.4
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	7	6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	7	6	-
Follow-up Hdwy	2.3	-	-	2.33	-	-	3.54	4.04	3.34	3.75	4.25	3.55
Pot Cap-1 Maneuver	1098	-	-	722	-	-	169	160	570	215	134	740
Stage 1	-	-	-	-	-	-	321	373	-	506	520	-
Stage 2	-	-	-	-	-	-	734	569	-	527	325	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1098	-	-	716	-	-	163	153	565	188	129	740
Mov Cap-2 Maneuver	-	-	-	-	-	-	163	153	-	188	129	-
Stage 1	-	-	-	-	-	-	317	369	-	504	505	-
Stage 2	-	-	-	-	-	-	709	552	-	471	321	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.5			19.4			13.5		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	331	1098	-	-	716	-	-	427				
HCM Lane V/C Ratio	0.248	0.003	-	-	0.03	-	-	0.011				
HCM Control Delay (s)	19.4	8.3	-	-	10.2	-	-	13.5				
HCM Lane LOS	C	A	-	-	B	-	-	B				
HCM 95th %tile Q(veh)	1	0	-	-	0.1	-	-	0				

Queues

8: E Portland Ave & Puyallup Ave

03/16/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	107	414	280	110	198	534	407	86	321	59
v/c Ratio	0.27	0.54	0.20	0.44	0.23	0.62	0.62	0.28	0.28	0.11
Control Delay	37.8	29.3	0.3	40.1	20.4	28.9	9.8	16.7	14.7	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.8	29.3	0.3	40.1	20.4	28.9	9.8	16.7	14.7	5.0
Queue Length 50th (ft)	21	84	0	44	30	105	14	20	42	0
Queue Length 95th (ft)	63	171	0	126	70	226	117	67	104	24
Internal Link Dist (ft)		741			476	261			552	
Turn Bay Length (ft)	150		560				150	190		150
Base Capacity (vph)	1071	2005	1412	562	1972	2005	1032	513	2327	1034
Starvation Cap Reductn	0	0	0	0	0	43	7	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.21	0.20	0.20	0.10	0.27	0.40	0.17	0.14	0.06
Intersection Summary										

HCM Signalized Intersection Capacity Analysis

8: E Portland Ave & Puyallup Ave

03/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	389	263	103	141	45	0	502	383	81	302	55
Future Volume (vph)	101	389	263	103	141	45	0	502	383	81	302	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.0	5.0	5.0			5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95			0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00			1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.96			1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3099	3195	1412	1626	3124			3195	1429	1327	2654	1173
Flt Permitted	0.95	1.00	1.00	0.95	1.00			1.00	1.00	0.27	1.00	1.00
Satd. Flow (perm)	3099	3195	1412	1626	3124			3195	1429	381	2654	1173
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	107	414	280	110	150	48	0	534	407	86	321	59
RTOR Reduction (vph)	0	0	0	0	23	0	0	0	267	0	0	33
Lane Group Flow (vph)	107	414	280	110	175	0	0	534	140	86	321	26
Confl. Peds. (#/hr)	1		1	1		1	1					1
Heavy Vehicles (%)	13%	13%	13%	11%	11%	11%	13%	13%	13%	36%	36%	36%
Turn Type	Prot	NA	Free	Prot	NA			NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8			6		5	2	
Permitted Phases			Free						6	2		2
Actuated Green, G (s)	5.6	16.6	69.5	7.3	18.3			18.6	18.6	30.6	30.6	30.6
Effective Green, g (s)	5.6	16.6	69.5	7.3	18.3			18.6	18.6	30.6	30.6	30.6
Actuated g/C Ratio	0.08	0.24	1.00	0.11	0.26			0.27	0.27	0.44	0.44	0.44
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0	1.0		1.0	1.0			1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	249	763	1412	170	822			855	382	263	1168	516
v/s Ratio Prot	0.03	c0.13		c0.07	0.06			c0.17		0.03	c0.12	
v/s Ratio Perm			c0.20						0.10	0.11		0.02
v/c Ratio	0.43	0.54	0.20	0.65	0.21			0.62	0.37	0.33	0.27	0.05
Uniform Delay, d1	30.4	23.1	0.0	29.9	20.0			22.4	20.7	12.4	12.4	11.1
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.4	0.3	6.2	0.0			1.0	0.2	0.3	0.0	0.0
Delay (s)	30.9	23.6	0.3	36.1	20.0			23.4	20.9	12.6	12.4	11.1
Level of Service	C	C	A	D	C			C	C	B	B	B
Approach Delay (s)		16.4			25.8			22.3			12.3	
Approach LOS		B			C			C			B	
Intersection Summary												
HCM 2000 Control Delay			19.0			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			69.5			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			53.4%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

8: E Portland Ave & Puyallup Ave

03/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	389	263	103	141	45	0	502	383	81	302	55
Future Volume (veh/h)	101	389	263	103	141	45	0	502	383	81	302	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1707	1707	1707	1737	1737	1737	0	1707	1707	1366	1366	1366
Adj Flow Rate, veh/h	107	414	0	110	150	0	0	534	0	86	321	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	13	13	13	11	11	11	0	13	13	36	36	36
Cap, veh/h	332	635		176	649		0	721		305	1071	
Arrive On Green	0.11	0.20	0.00	0.11	0.20	0.00	0.00	0.22	0.00	0.10	0.41	0.00
Sat Flow, veh/h	3155	3244	1447	1654	3387	0	0	3329	1447	1301	2596	1158
Grp Volume(v), veh/h	107	414	0	110	150	0	0	534	0	86	321	0
Grp Sat Flow(s),veh/h/ln	1577	1622	1447	1654	1650	0	0	1622	1447	1301	1298	1158
Q Serve(g_s), s	1.7	6.2	0.0	3.3	2.0	0.0	0.0	8.1	0.0	2.4	4.4	0.0
Cycle Q Clear(g_c), s	1.7	6.2	0.0	3.3	2.0	0.0	0.0	8.1	0.0	2.4	4.4	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	332	635		176	649		0	721		305	1071	
V/C Ratio(X)	0.32	0.65		0.62	0.23		0.00	0.74		0.28	0.30	
Avail Cap(c_a), veh/h	1200	2469		630	2512		0	2469		676	1976	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	21.8	19.5	0.0	22.5	17.8	0.0	0.0	19.0	0.0	12.8	10.3	0.0
Incr Delay (d2), s/veh	0.2	0.4	0.0	1.3	0.1	0.0	0.0	0.6	0.0	0.2	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	2.1	0.0	1.3	0.7	0.0	0.0	2.8	0.0	0.6	1.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.0	19.9	0.0	23.8	17.8	0.0	0.0	19.6	0.0	13.0	10.4	0.0
LnGrp LOS	C	B		C	B		A	B		B	B	
Approach Vol, veh/h	521			260			534			407		
Approach Delay, s/veh	20.3			20.4			19.6			11.0		
Approach LOS	C			C			B			B		
Timer - Assigned Phs	2			3			4			5		
Phs Duration (G+Y+Rc), s	26.7			10.6			15.3			10.0		
Change Period (Y+Rc), s	5.0			5.0			5.0			5.0		
Max Green Setting (Gmax), s	40.0			20.0			40.0			20.0		
Max Q Clear Time (g_c+I1), s	6.4			5.3			8.2			4.4		
Green Ext Time (p_c), s	0.9			0.0			1.1			0.0		

Intersection Summary

HCM 6th Ctrl Delay	17.9
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Queues

1: Pacific Ave & S 24th St

03/16/2023



Lane Group	EBT	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	54	364	146	338	411
v/c Ratio	0.10	1.05dl	0.13	0.67	0.22
Control Delay	30.7	58.5	1.0	49.5	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	30.7	58.5	1.0	49.5	15.4
Queue Length 50th (ft)	13	142	0	118	79
Queue Length 95th (ft)	30	186	18	154	143
Internal Link Dist (ft)	405	294		757	1056
Turn Bay Length (ft)			100		
Base Capacity (vph)	670	601	1161	1238	1881
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.08	0.61	0.13	0.27	0.22

Intersection Summary

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

HCM Signalized Intersection Capacity Analysis

1: Pacific Ave & S 24th St

03/16/2023

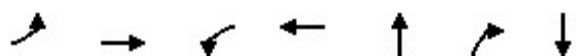
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	25	14	239	114	142	0	249	79	98	296	5
Future Volume (vph)	14	25	14	239	114	142	0	249	79	98	296	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0			5.0	
Lane Util. Factor		0.95			0.95	1.00		0.95			0.95	
Frpb, ped/bikes		0.99			1.00	0.99		0.99			1.00	
Flpb, ped/bikes		1.00			0.99	1.00		1.00			1.00	
Frt		0.96			1.00	0.85		0.96			1.00	
Flt Protected		0.99			0.97	1.00		1.00			0.99	
Satd. Flow (prot)		3329			3304	1525		3386			3389	
Flt Permitted		0.84			0.76	1.00		1.00			0.99	
Satd. Flow (perm)		2829			2579	1525		3386			3389	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	14	26	14	246	118	146	0	257	81	101	305	5
RTOR Reduction (vph)	0	11	0	0	0	38	0	34	0	0	0	0
Lane Group Flow (vph)	0	43	0	0	364	108	0	304	0	0	411	0
Confl. Peds. (#/hr)	14		6	6		14	16		14	14		16
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	2%	2%	2%	5%	5%	5%
Turn Type	Perm	NA		Perm	NA	pm+ov		NA		Split	NA	
Protected Phases		4			8	2		1		2	2	
Permitted Phases	4			8		8						
Actuated Green, G (s)		21.7			21.7	88.4		16.6			66.7	
Effective Green, g (s)		21.7			21.7	88.4		16.6			66.7	
Actuated g/C Ratio		0.18			0.18	0.74		0.14			0.56	
Clearance Time (s)		5.0			5.0	5.0		5.0			5.0	
Vehicle Extension (s)		2.5			2.5	2.5		2.5			2.5	
Lane Grp Cap (vph)		511			466	1186		468			1883	
v/s Ratio Prot						0.05		c0.09			c0.12	
v/s Ratio Perm		0.02			c0.14	0.02						
v/c Ratio		0.08			1.05dl	0.09		0.65			0.22	
Uniform Delay, d1		40.9			46.9	4.5		49.0			13.5	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.1			8.0	0.0		2.9			0.3	
Delay (s)		40.9			54.9	4.5		51.8			13.7	
Level of Service		D			D	A		D			B	
Approach Delay (s)		40.9			40.5			51.8			13.7	
Approach LOS		D			D			D			B	
Intersection Summary												
HCM 2000 Control Delay		35.0			HCM 2000 Level of Service			D				
HCM 2000 Volume to Capacity ratio		0.40										
Actuated Cycle Length (s)		120.0			Sum of lost time (s)			15.0				
Intersection Capacity Utilization		64.6%			ICU Level of Service			C				
Analysis Period (min)		15										
dl Defacto Left Lane. Recode with 1 though lane as a left lane.												
c Critical Lane Group												

HCM 6th Edition methodology expects strict NEMA phasing.

Queues

2: A St & S 24th St/Puyallup Ave

03/16/2023



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	17	183	66	512	10	33	31
v/c Ratio	0.06	0.15	0.16	0.42	0.02	0.06	0.05
Control Delay	9.4	8.2	10.0	10.3	9.0	4.5	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	8.2	10.0	10.3	9.0	4.5	8.0
Queue Length 50th (ft)	2	8	7	30	1	0	2
Queue Length 95th (ft)	14	36	36	97	10	13	19
Internal Link Dist (ft)		294		1074	627		464
Turn Bay Length (ft)	90		55			135	
Base Capacity (vph)	812	3302	1142	3432	1064	990	1020
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.06	0.06	0.15	0.01	0.03	0.03
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

2: A St & S 24th St/Puyallup Ave

03/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	157	15	62	468	13	5	5	31	10	12	7
Future Volume (vph)	16	157	15	62	468	13	5	5	31	10	12	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.99		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	1.00			1.00	0.85		0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.98	1.00		0.98	
Satd. Flow (prot)	1683	3325		1728	3454			1853	1593		1751	
Flt Permitted	0.46	1.00		0.64	1.00			0.91	1.00		0.93	
Satd. Flow (perm)	821	3325		1158	3454			1730	1593		1656	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	17	167	16	66	498	14	5	5	33	11	13	7
RTOR Reduction (vph)	0	10	0	0	4	0	0	0	21	0	4	0
Lane Group Flow (vph)	17	173	0	66	508	0	0	10	12	0	27	0
Confl. Peds. (#/hr)	7		13	13		7	1		4	4		1
Confl. Bikes (#/hr)						1						1
Heavy Vehicles (%)	7%	7%	7%	4%	4%	4%	0%	0%	0%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			6			2	
Permitted Phases	4			8			6		6	2		
Actuated Green, G (s)	12.9	12.9		12.9	12.9			12.8	12.8		12.8	
Effective Green, g (s)	12.9	12.9		12.9	12.9			12.8	12.8		12.8	
Actuated g/C Ratio	0.36	0.36		0.36	0.36			0.36	0.36		0.36	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5			2.5	2.5		2.5	
Lane Grp Cap (vph)	296	1201		418	1248			620	571		593	
v/s Ratio Prot		0.05			c0.15							
v/s Ratio Perm	0.02			0.06				0.01	0.01		c0.02	
v/c Ratio	0.06	0.14		0.16	0.41			0.02	0.02		0.04	
Uniform Delay, d1	7.4	7.7		7.7	8.5			7.4	7.4		7.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.1	0.0		0.1	0.2			0.0	0.0		0.0	
Delay (s)	7.5	7.7		7.9	8.7			7.4	7.4		7.5	
Level of Service	A	A		A	A			A	A		A	
Approach Delay (s)		7.7			8.6			7.4			7.5	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			8.3			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.23									
Actuated Cycle Length (s)			35.7			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			45.9%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: A St & S 24th St/Puyallup Ave

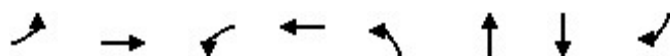
03/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	157	15	62	468	13	5	5	31	10	12	7
Future Volume (veh/h)	16	157	15	62	468	13	5	5	31	10	12	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	0.99		0.98	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1796	1796	1796	1841	1841	1841	1900	1900	1900	1856	1856	1856
Adj Flow Rate, veh/h	17	167	16	66	498	14	5	5	33	11	13	7
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	7	4	4	4	0	0	0	3	3	3
Cap, veh/h	445	1153	109	610	1272	36	380	327	517	275	286	119
Arrive On Green	0.37	0.37	0.37	0.37	0.37	0.37	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	849	3145	298	1166	3472	97	657	1014	1604	383	886	370
Grp Volume(v), veh/h	17	90	93	66	251	261	10	0	33	31	0	0
Grp Sat Flow(s),veh/h/ln	849	1706	1736	1166	1749	1820	1671	0	1604	1640	0	0
Q Serve(g_s), s	0.5	1.1	1.2	1.3	3.4	3.4	0.0	0.0	0.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.9	1.1	1.2	2.4	3.4	3.4	0.1	0.0	0.5	0.4	0.0	0.0
Prop In Lane	1.00		0.17	1.00		0.05	0.50		1.00	0.35		0.23
Lane Grp Cap(c), veh/h	445	625	636	610	641	667	707	0	517	680	0	0
V/C Ratio(X)	0.04	0.14	0.15	0.11	0.39	0.39	0.01	0.00	0.06	0.05	0.00	0.00
Avail Cap(c_a), veh/h	1719	3186	3242	2360	3265	3399	1192	0	998	1154	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.0	6.8	6.8	7.6	7.5	7.5	7.4	0.0	7.5	7.5	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.1	0.1	0.1	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.3	0.3	0.2	0.9	0.9	0.0	0.0	0.1	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.0	6.9	6.9	7.7	7.8	7.8	7.4	0.0	7.6	7.5	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h	200			578			43			31		
Approach Delay, s/veh	7.1			7.8			7.5			7.5		
Approach LOS	A			A			A			A		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	15.4			16.8			15.4			16.8		
Change Period (Y+Rc), s	5.0			5.0			5.0			5.0		
Max Green Setting (Gmax), s	20.0			60.0			20.0			60.0		
Max Q Clear Time (g_c+I1), s	2.4			5.9			2.5			5.4		
Green Ext Time (p_c), s	0.1			1.0			0.1			2.9		
Intersection Summary												
HCM 6th Ctrl Delay	7.6											
HCM 6th LOS	A											

Queues

3: E D St & Puyallup Ave

03/16/2023



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	47	254	73	672	16	133	207	94
v/c Ratio	0.14	0.27	0.12	0.56	0.05	0.26	0.45	0.18
Control Delay	20.6	19.0	15.4	16.7	16.9	16.3	20.7	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.6	19.0	15.4	16.7	16.9	16.3	20.7	5.5
Queue Length 50th (ft)	12	36	16	88	4	29	55	0
Queue Length 95th (ft)	41	77	50	177	18	78	130	29
Internal Link Dist (ft)	1074		315		604		705	
Turn Bay Length (ft)	150		150		150			
Base Capacity (vph)	1120	3222	1229	3238	1044	1589	1466	1486
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.08	0.06	0.21	0.02	0.08	0.14	0.06
Intersection Summary								

HCM Signalized Intersection Capacity Analysis

3: E D St & Puyallup Ave

03/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	222	14	68	519	106	15	84	40	78	114	87
Future Volume (vph)	44	222	14	68	519	106	15	84	40	78	114	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.97		1.00	0.95			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	1.00
Satd. Flow (prot)	1702	3364		1710	3369		1650	1651			1825	1557
Flt Permitted	0.40	1.00		0.59	1.00		0.63	1.00			0.82	1.00
Satd. Flow (perm)	709	3364		1070	3369		1091	1651			1524	1557
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	47	239	15	73	558	114	16	90	43	84	123	94
RTOR Reduction (vph)	0	3	0	0	11	0	0	11	0	0	0	66
Lane Group Flow (vph)	47	251	0	73	661	0	16	122	0	0	207	28
Confl. Peds. (#/hr)	4		27	27		4	7		2	2		7
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	9%	9%	9%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4		3	8			6			2	
Permitted Phases	4			8			6			2		2
Actuated Green, G (s)	14.0	14.0		17.8	17.8		15.4	15.4			15.4	15.4
Effective Green, g (s)	14.0	14.0		17.8	17.8		15.4	15.4			15.4	15.4
Actuated g/C Ratio	0.27	0.27		0.34	0.34		0.30	0.30			0.30	0.30
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	2.5	2.5		2.5	2.5		2.5	2.5			2.5	2.5
Lane Grp Cap (vph)	264	903		460	1151		322	488			450	460
v/s Ratio Prot	0.01	c0.07		0.02	c0.20			0.07				
v/s Ratio Perm	0.03			0.03			0.01				c0.14	0.02
v/c Ratio	0.18	0.28		0.16	0.57		0.05	0.25			0.46	0.06
Uniform Delay, d1	14.7	15.1		12.1	14.0		13.1	14.0			15.0	13.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	0.2	0.1		0.1	0.6		0.0	0.2			0.5	0.0
Delay (s)	14.9	15.2		12.2	14.6		13.2	14.2			15.5	13.2
Level of Service	B	B		B	B		B	B			B	B
Approach Delay (s)		15.1			14.4			14.0			14.8	
Approach LOS		B			B			B			B	
Intersection Summary												
HCM 2000 Control Delay			14.6			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			52.1			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			60.7%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

3: E D St & Puyallup Ave

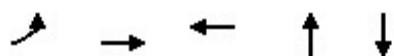
03/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	222	14	68	519	106	15	84	40	78	114	87
Future Volume (veh/h)	44	222	14	68	519	106	15	84	40	78	114	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	0.86		0.96	1.00		0.98	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1811	1811	1841	1841	1841	1767	1767	1767	1870	1870	1870
Adj Flow Rate, veh/h	47	239	15	73	558	114	16	90	43	84	123	94
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	6	6	6	4	4	4	9	9	9	2	2	2
Cap, veh/h	267	938	58	437	993	202	321	284	136	234	282	398
Arrive On Green	0.06	0.29	0.29	0.12	0.35	0.35	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1725	3279	204	1753	2872	584	1094	1121	536	469	1113	1572
Grp Volume(v), veh/h	47	125	129	73	339	333	16	0	133	207	0	94
Grp Sat Flow(s),veh/h/ln	1725	1721	1762	1753	1749	1708	1094	0	1657	1582	0	1572
Q Serve(g_s), s	1.0	2.4	2.5	0.0	6.9	7.0	0.6	0.0	2.9	2.0	0.0	2.1
Cycle Q Clear(g_c), s	1.0	2.4	2.5	0.0	6.9	7.0	5.4	0.0	2.9	4.8	0.0	2.1
Prop In Lane	1.00		0.12	1.00		0.34	1.00		0.32	0.41		1.00
Lane Grp Cap(c), veh/h	267	492	504	437	605	590	321	0	420	516	0	398
V/C Ratio(X)	0.18	0.25	0.26	0.17	0.56	0.56	0.05	0.00	0.32	0.40	0.00	0.24
Avail Cap(c_a), veh/h	1342	2349	2407	1425	2388	2332	1538	0	2262	2247	0	2146
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.4	12.1	12.1	15.8	11.7	11.7	16.4	0.0	13.3	13.9	0.0	13.0
Incr Delay (d2), s/veh	0.2	0.2	0.2	0.1	0.6	0.6	0.0	0.0	0.3	0.4	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.8	0.8	0.6	2.2	2.2	0.1	0.0	0.9	1.5	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.6	12.3	12.3	15.9	12.3	12.3	16.4	0.0	13.6	14.3	0.0	13.3
LnGrp LOS	B	B	B	B	B	B	B	A	B	B	A	B
Approach Vol, veh/h	301			745			149			301		
Approach Delay, s/veh	12.6			12.6			13.9			14.0		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	2		3	4		6	7	8				
Phs Duration (G+Y+Rc), s	16.1		10.2	17.6		16.1	7.6	20.2				
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s	60.0		30.0	60.0		60.0	30.0	60.0				
Max Q Clear Time (g_c+I1), s	6.8		2.0	4.5		7.4	3.0	9.0				
Green Ext Time (p_c), s	0.7		0.1	1.3		0.7	0.1	3.9				
Intersection Summary												
HCM 6th Ctrl Delay	13.0											
HCM 6th LOS	B											

Queues

4: E E St & Puyallup Ave

03/16/2023



Lane Group	EBL	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	2	340	754	1	4
v/c Ratio	0.00	0.11	0.24	0.00	0.01
Control Delay	5.0	3.1	3.3	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	5.0	3.1	3.3	0.0	0.0
Queue Length 50th (ft)	0	0	0	0	0
Queue Length 95th (ft)	3	61	141	0	0
Internal Link Dist (ft)		315	283	364	388
Turn Bay Length (ft)	100				
Base Capacity (vph)	632	3308	3471	1615	1565
Starvation Cap Reductn	0	183	180	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.00	0.11	0.23	0.00	0.00
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

4: E E St & Puyallup Ave

03/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	320	0	0	708	1	0	0	1	3	0	1
Future Volume (vph)	2	320	0	0	708	1	0	0	1	3	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0			5.0			5.0	
Lane Util. Factor	1.00	0.95			0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	
Frt	1.00	1.00			1.00			0.85			0.97	
Flt Protected	0.95	1.00			1.00			1.00			0.96	
Satd. Flow (prot)	1716	3438			3470			1615			1770	
Flt Permitted	0.37	1.00			1.00			1.00			0.96	
Satd. Flow (perm)	660	3438			3470			1615			1770	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	2	340	0	0	753	1	0	0	1	3	0	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	4	0
Lane Group Flow (vph)	2	340	0	0	754	0	0	0	0	0	0	0
Confl. Peds. (#/hr)	5		26	26		5						
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	5%	5%	5%	4%	4%	4%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Prot	NA		Split	NA		Split	NA	
Protected Phases		4		3	8		1	1		2	2	
Permitted Phases	4											
Actuated Green, G (s)	30.0	30.0			30.0			1.0			1.0	
Effective Green, g (s)	30.0	30.0			30.0			1.0			1.0	
Actuated g/C Ratio	0.64	0.64			0.64			0.02			0.02	
Clearance Time (s)	5.0	5.0			5.0			5.0			5.0	
Vehicle Extension (s)	1.0	1.0			1.0			1.5			1.0	
Lane Grp Cap (vph)	421	2194			2214			34			37	
v/s Ratio Prot		0.10			c0.22			c0.00			c0.00	
v/s Ratio Perm	0.00											
v/c Ratio	0.00	0.15			0.34			0.00			0.00	
Uniform Delay, d1	3.1	3.4			3.9			22.5			22.5	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.0			0.0			0.0			0.0	
Delay (s)	3.1	3.4			4.0			22.5			22.5	
Level of Service	A	A			A			C			C	
Approach Delay (s)		3.4			4.0			22.5			22.5	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			3.9			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			47.0			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			36.3%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology expects strict NEMA phasing.

Queues

5: Puyallup Ave & F St

03/16/2023



Lane Group	EBL	EBT	WBT	NBL	NBT	SBT	NEL	NER
Lane Group Flow (vph)	3	331	618	12	7	3	123	61
v/c Ratio	0.01	0.25	0.47	0.06	0.01	0.01	0.30	0.17
Control Delay	29.0	19.4	24.5	37.2	0.0	0.0	36.5	36.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.0	19.4	24.5	37.2	0.0	0.0	36.5	36.4
Queue Length 50th (ft)	0	17	44	2	0	0	23	11
Queue Length 95th (ft)	10	139	303	27	0	0	159	89
Internal Link Dist (ft)		283	304		340	410	299	
Turn Bay Length (ft)	100							
Base Capacity (vph)	489	2746	2713	727	784	1360	1022	901
Starvation Cap Reductn	0	100	72	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.13	0.23	0.02	0.01	0.00	0.12	0.07
Intersection Summary								

HCM Signalized Intersection Capacity Analysis

5: Puyallup Ave & F St

03/16/2023

												
Movement	EBL	EBT	EBR2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	3	298	13	7	573	1	1	10	0	7	1	0
Future Volume (vph)	3	298	13	7	573	1	1	10	0	7	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0			5.0	5.0			5.0
Lane Util. Factor	1.00	0.95			0.95			1.00	1.00			1.00
Frpb, ped/bikes	1.00	1.00			1.00			1.00	0.99			0.99
Flpb, ped/bikes	1.00	1.00			1.00			0.98	1.00			1.00
Frt	1.00	0.99			1.00			1.00	0.85			0.91
Flt Protected	0.95	1.00			1.00			0.95	1.00			0.98
Satd. Flow (prot)	1711	3407			3535			912	822			1683
Flt Permitted	0.34	1.00			0.95			0.82	1.00			0.98
Satd. Flow (perm)	604	3407			3363			784	822			1683
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	3	317	14	7	610	1	1	11	0	7	1	0
RTOR Reduction (vph)	0	32	0	0	0	0	0	0	7	0	0	3
Lane Group Flow (vph)	3	299	0	0	618	0	0	12	0	0	0	0
Confl. Peds. (#/hr)	5		21	21		5	21	4		1	1	
Confl. Bikes (#/hr)						3						
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	94%	94%	94%	94%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	Split	NA		Split	NA
Protected Phases		4			8			5	5		2	2
Permitted Phases	4			8			5					
Actuated Green, G (s)	27.3	27.3			27.3			4.9	4.9			6.3
Effective Green, g (s)	27.3	27.3			27.3			4.9	4.9			6.3
Actuated g/C Ratio	0.37	0.37			0.37			0.07	0.07			0.08
Clearance Time (s)	5.0	5.0			5.0			5.0	5.0			5.0
Vehicle Extension (s)	2.5	2.5			2.5			5.0	5.0			2.5
Lane Grp Cap (vph)	221	1250			1234			51	54			142
v/s Ratio Prot		0.09							0.00			c0.00
v/s Ratio Perm	0.00				c0.18			c0.02				
v/c Ratio	0.01	0.24			0.50			0.24	0.01			0.00
Uniform Delay, d1	15.0	16.3			18.3			33.0	32.5			31.2
Progression Factor	1.00	1.00			1.00			1.00	1.00			1.00
Incremental Delay, d2	0.0	0.1			0.2			4.9	0.1			0.0
Delay (s)	15.0	16.4			18.5			37.9	32.6			31.2
Level of Service	B	B			B			D	C			C
Approach Delay (s)		16.4			18.5				35.9			31.2
Approach LOS		B			B				D			C
Intersection Summary												
HCM 2000 Control Delay			19.2			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			74.4			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			56.7%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: Puyallup Ave & F St

03/16/2023



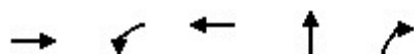
Movement	SBR2	NEL2	NEL	NER
Lane Configurations				
Traffic Volume (vph)	2	115	1	57
Future Volume (vph)	2	115	1	57
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)			5.0	5.0
Lane Util. Factor			1.00	1.00
Frpb, ped/bikes			1.00	0.99
Flpb, ped/bikes			1.00	1.00
Frt			1.00	0.85
Flt Protected			0.95	1.00
Satd. Flow (prot)			1787	1578
Flt Permitted			0.95	1.00
Satd. Flow (perm)			1787	1578
Peak-hour factor, PHF	0.94	0.94	0.94	0.94
Adj. Flow (vph)	2	122	1	61
RTOR Reduction (vph)	0	0	0	0
Lane Group Flow (vph)	0	0	123	61
Confl. Peds. (#/hr)	4	4	5	1
Confl. Bikes (#/hr)				
Heavy Vehicles (%)	0%	1%	1%	1%
Turn Type		Prot	Prot	Perm
Protected Phases		6	6	
Permitted Phases				6
Actuated Green, G (s)			15.9	15.9
Effective Green, g (s)			15.9	15.9
Actuated g/C Ratio			0.21	0.21
Clearance Time (s)			5.0	5.0
Vehicle Extension (s)			2.5	2.5
Lane Grp Cap (vph)			381	337
v/s Ratio Prot			c0.07	
v/s Ratio Perm				0.04
v/c Ratio			0.32	0.18
Uniform Delay, d1			24.7	23.9
Progression Factor			1.00	1.00
Incremental Delay, d2			0.4	0.2
Delay (s)			25.1	24.1
Level of Service			C	C
Approach Delay (s)			24.7	
Approach LOS			C	
Intersection Summary				

HCM 6th Edition methodology does not support more than 4 approaches.

Queues

6: G St & Puyallup Ave

03/16/2023



Lane Group	EBT	WBL	WBT	NBT	NBR
Lane Group Flow (vph)	385	214	510	66	137
v/c Ratio	0.42	0.34	0.27	0.18	0.32
Control Delay	14.6	9.3	6.4	15.0	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	14.6	9.3	6.4	15.0	5.6
Queue Length 50th (ft)	34	19	24	12	0
Queue Length 95th (ft)	91	81	84	40	31
Internal Link Dist (ft)	304		1819	498	
Turn Bay Length (ft)		100			70
Base Capacity (vph)	3223	1503	3505	1703	1499
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.12	0.14	0.15	0.04	0.09
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

6: G St & Puyallup Ave

03/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	335	39	208	495	0	64	0	133	0	0	0
Future Volume (vph)	0	335	39	208	495	0	64	0	133	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		5.0	5.0			5.0	5.0			
Lane Util. Factor		0.95		1.00	0.95			1.00	1.00			
Frpb, ped/bikes		1.00		1.00	1.00			1.00	0.99			
Flpb, ped/bikes		1.00		0.99	1.00			1.00	1.00			
Frt		0.98		1.00	1.00			1.00	0.85			
Flt Protected		1.00		0.95	1.00			0.95	1.00			
Satd. Flow (prot)		3277		1743	3505			1719	1518			
Flt Permitted		1.00		0.52	1.00			0.95	1.00			
Satd. Flow (perm)		3277		961	3505			1719	1518			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	345	40	214	510	0	66	0	137	0	0	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	108	0	0	0
Lane Group Flow (vph)	0	380	0	214	510	0	0	66	29	0	0	0
Confl. Peds. (#/hr)	6		18	18		6			2	2		
Heavy Vehicles (%)	8%	8%	8%	3%	3%	3%	5%	5%	5%	0%	0%	0%
Turn Type	Perm	NA		pm+pt	NA		Split	NA	Perm			
Protected Phases		4		3	8		6	6			2	
Permitted Phases	4			8					6	2		
Actuated Green, G (s)		12.1		23.6	23.6			9.1	9.1			
Effective Green, g (s)		12.1		23.6	23.6			9.1	9.1			
Actuated g/C Ratio		0.28		0.55	0.55			0.21	0.21			
Clearance Time (s)		5.0		5.0	5.0			5.0	5.0			
Vehicle Extension (s)		2.5		2.5	2.5			2.5	2.5			
Lane Grp Cap (vph)		928		650	1937			366	323			
v/s Ratio Prot		c0.12		c0.05	0.15			c0.04				
v/s Ratio Perm				0.13					0.02			
v/c Ratio		0.41		0.33	0.26			0.18	0.09			
Uniform Delay, d1		12.4		5.5	5.0			13.7	13.5			
Progression Factor		1.00		1.00	1.00			1.00	1.00			
Incremental Delay, d2		0.2		0.2	0.1			0.2	0.1			
Delay (s)		12.6		5.7	5.1			13.9	13.6			
Level of Service		B		A	A			B	B			
Approach Delay (s)		12.6			5.2			13.7			0.0	
Approach LOS		B			A			B			A	
Intersection Summary												
HCM 2000 Control Delay			8.7			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.40									
Actuated Cycle Length (s)			42.7			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			43.3%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

6: G St & Puyallup Ave

03/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	335	39	208	495	0	64	0	133	0	0	0
Future Volume (veh/h)	0	335	39	208	495	0	64	0	133	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	0.98		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1781	1781	1781	1856	1856	1856	1826	1826	1826	1900	1900	1900
Adj Flow Rate, veh/h	0	345	40	214	510	0	66	0	137	0	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	8	8	3	3	3	5	5	5	0	0	0
Cap, veh/h	192	953	110	610	2075	0	252	0	224	0	5	0
Arrive On Green	0.00	0.31	0.31	0.14	0.59	0.00	0.15	0.00	0.15	0.00	0.00	0.00
Sat Flow, veh/h	848	3048	350	1767	3618	0	1732	0	1542	0	1900	0
Grp Volume(v), veh/h	0	190	195	214	510	0	66	0	137	0	0	0
Grp Sat Flow(s),veh/h/ln	848	1692	1706	1767	1763	0	1732	0	1542	0	1900	0
Q Serve(g_s), s	0.0	3.3	3.3	0.0	2.6	0.0	1.3	0.0	3.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	3.3	3.3	0.0	2.6	0.0	1.3	0.0	3.1	0.0	0.0	0.0
Prop In Lane	1.00		0.21	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	192	529	533	610	2075	0	252	0	224	0	5	0
V/C Ratio(X)	0.00	0.36	0.37	0.35	0.25	0.00	0.26	0.00	0.61	0.00	0.00	0.00
Avail Cap(c_a), veh/h	1281	2704	2726	1770	5633	0	2768	0	2463	0	1012	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	10.0	10.0	11.3	3.7	0.0	14.3	0.0	15.1	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.3	0.3	0.0	0.0	0.4	0.0	2.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.0	1.0	1.2	0.4	0.0	0.4	0.0	1.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	10.3	10.3	11.6	3.8	0.0	14.7	0.0	17.1	0.0	0.0	0.0
LnGrp LOS	A	B	B	B	A	A	B	A	B	A	A	A
Approach Vol, veh/h	385			724			203			0		
Approach Delay, s/veh	10.3			6.1			16.3			0.0		
Approach LOS	B			A			B					
Timer - Assigned Phs	2		3	4	6		8					
Phs Duration (G+Y+Rc), s	0.0		10.4	16.7	10.5		27.1					
Change Period (Y+Rc), s	5.0		5.0	5.0	5.0		5.0					
Max Green Setting (Gmax), s	20.0		30.0	60.0	60.0		60.0					
Max Q Clear Time (g_c+I1), s	0.0		2.0	5.3	3.3		4.6					
Green Ext Time (p_c), s	0.0		0.4	2.0	0.1		3.2					
Intersection Summary												
HCM 6th Ctrl Delay	8.9											
HCM 6th LOS	A											

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	475	15	83	711	0	8	0	36	5	0	1
Future Vol, veh/h	0	475	15	83	711	0	8	0	36	5	0	1
Conflicting Peds, #/hr	0	0	15	15	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	80	-	-	80	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	5	5	5	4	4	4	16	16	16	0	0	0
Mvmt Flow	0	495	16	86	741	0	8	0	38	5	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	741	0	0	526	0	0	1061	1431	272	1162	1439	371
Stage 1	-	-	-	-	-	-	518	518	-	913	913	-
Stage 2	-	-	-	-	-	-	543	913	-	249	526	-
Critical Hdwy	4.2	-	-	4.18	-	-	7.82	6.82	7.22	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.82	5.82	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.82	5.82	-	6.5	5.5	-
Follow-up Hdwy	2.25	-	-	2.24	-	-	3.66	4.16	3.46	3.5	4	3.3
Pot Cap-1 Maneuver	842	-	-	1023	-	-	160	118	685	153	134	632
Stage 1	-	-	-	-	-	-	474	498	-	298	355	-
Stage 2	-	-	-	-	-	-	458	320	-	739	532	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	842	-	-	1008	-	-	147	106	675	135	121	632
Mov Cap-2 Maneuver	-	-	-	-	-	-	147	106	-	135	121	-
Stage 1	-	-	-	-	-	-	467	491	-	298	325	-
Stage 2	-	-	-	-	-	-	418	293	-	697	525	-

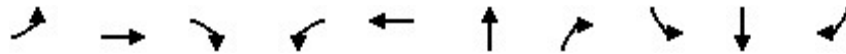
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.9			14.9			29.2		
HCM LOS							B			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	408	842	-	-	1008	-	-	155
HCM Lane V/C Ratio	0.112	-	-	-	0.086	-	-	0.04
HCM Control Delay (s)	14.9	0	-	-	8.9	-	-	29.2
HCM Lane LOS	B	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0.4	0	-	-	0.3	-	-	0.1

Queues

8: E Portland Ave & Puyallup Ave

03/16/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	36	193	341	510	634	250	216	80	643	91
v/c Ratio	0.11	0.31	0.23	1.01	0.41	0.47	0.52	0.25	0.64	0.18
Control Delay	34.9	27.0	0.4	73.7	16.3	31.9	9.9	20.5	24.7	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.9	27.0	0.4	73.7	16.3	31.9	9.9	20.5	24.7	6.0
Queue Length 50th (ft)	7	37	0	206	106	50	0	23	114	0
Queue Length 95th (ft)	26	74	0	#624	184	110	62	68	227	33
Internal Link Dist (ft)		741			476	261			552	
Turn Bay Length (ft)	150		560				150	190		150
Base Capacity (vph)	949	1956	1490	503	1991	1836	901	505	2968	1335
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.10	0.23	1.01	0.32	0.14	0.24	0.16	0.22	0.07

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

8: E Portland Ave & Puyallup Ave

03/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	185	327	490	537	72	0	240	207	77	617	87
Future Volume (vph)	35	185	327	490	537	72	0	240	207	77	617	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.0	5.0	5.0			5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95			0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00			1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98			1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3273	3374	1490	1736	3404			3167	1399	1626	3252	1455
Flt Permitted	0.95	1.00	1.00	0.95	1.00			1.00	1.00	0.42	1.00	1.00
Satd. Flow (perm)	3273	3374	1490	1736	3404			3167	1399	721	3252	1455
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	36	193	341	510	559	75	0	250	216	80	643	91
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	181	0	0	62
Lane Group Flow (vph)	36	193	341	510	628	0	0	250	35	80	643	29
Confl. Peds. (#/hr)			2	2					1	1		
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	7%	7%	7%	4%	4%	4%	14%	14%	14%	11%	11%	11%
Turn Type	Prot	NA	Free	Prot	NA			NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8			6		5	2	
Permitted Phases			Free						6	2		2
Actuated Green, G (s)	4.0	15.5	74.2	20.6	32.1			12.0	12.0	23.1	23.1	23.1
Effective Green, g (s)	4.0	15.5	74.2	20.6	32.1			12.0	12.0	23.1	23.1	23.1
Actuated g/C Ratio	0.05	0.21	1.00	0.28	0.43			0.16	0.16	0.31	0.31	0.31
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0	1.0		1.0	1.0			1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	176	704	1490	481	1472			512	226	298	1012	452
v/s Ratio Prot	0.01	0.06		c0.29	c0.18			0.08		0.02	c0.20	
v/s Ratio Perm			0.23						0.02	0.06		0.02
v/c Ratio	0.20	0.27	0.23	1.06	0.43			0.49	0.15	0.27	0.64	0.06
Uniform Delay, d1	33.6	24.6	0.0	26.8	14.6			28.3	26.7	18.7	21.9	18.0
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.1	0.4	57.9	0.1			0.3	0.1	0.2	1.0	0.0
Delay (s)	33.8	24.7	0.4	84.7	14.7			28.6	26.9	18.9	22.9	18.0
Level of Service	C	C	A	F	B			C	C	B	C	B
Approach Delay (s)		10.7			45.9			27.8			22.0	
Approach LOS		B			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			29.9			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			74.2			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			67.9%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

8: E Portland Ave & Puyallup Ave

03/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	185	327	490	537	72	0	240	207	77	617	87
Future Volume (veh/h)	35	185	327	490	537	72	0	240	207	77	617	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1841	1841	1841	0	1693	1693	1737	1737	1737
Adj Flow Rate, veh/h	36	193	0	510	559	0	0	250	0	80	643	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	7	7	4	4	4	0	14	14	11	11	11
Cap, veh/h	170	549		527	1436		0	503		332	1032	
Arrive On Green	0.05	0.16	0.00	0.30	0.41	0.00	0.00	0.16	0.00	0.08	0.31	0.00
Sat Flow, veh/h	3319	3413	1522	1753	3589	0	0	3300	1434	1654	3300	1472
Grp Volume(v), veh/h	36	193	0	510	559	0	0	250	0	80	643	0
Grp Sat Flow(s),veh/h/ln	1659	1706	1522	1753	1749	0	0	1608	1434	1654	1650	1472
Q Serve(g_s), s	0.7	3.3	0.0	19.1	7.5	0.0	0.0	4.7	0.0	2.5	11.1	0.0
Cycle Q Clear(g_c), s	0.7	3.3	0.0	19.1	7.5	0.0	0.0	4.7	0.0	2.5	11.1	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	170	549		527	1436		0	503		332	1032	
V/C Ratio(X)	0.21	0.35		0.97	0.39		0.00	0.50		0.24	0.62	
Avail Cap(c_a), veh/h	998	2053		527	2104		0	1934		695	1985	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	30.3	24.8	0.0	22.9	13.7	0.0	0.0	25.7	0.0	19.1	19.5	0.0
Incr Delay (d2), s/veh	0.2	0.1	0.0	30.7	0.1	0.0	0.0	0.3	0.0	0.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.3	0.0	11.7	2.7	0.0	0.0	1.7	0.0	0.9	4.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.5	25.0	0.0	53.6	13.8	0.0	0.0	25.9	0.0	19.2	19.7	0.0
LnGrp LOS	C	C		D	B		A	C		B	B	
Approach Vol, veh/h		229			1069			250			723	
Approach Delay, s/veh		25.8			32.8			25.9			19.7	
Approach LOS		C			C			C			B	
Timer - Assigned Phs		2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s		25.8	25.0	15.7	10.4	15.4	8.4	32.3				
Change Period (Y+Rc), s		5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s		40.0	20.0	40.0	20.0	40.0	20.0	40.0				
Max Q Clear Time (g_c+I1), s		13.1	21.1	5.3	4.5	6.7	2.7	9.5				
Green Ext Time (p_c), s		1.8	0.0	0.5	0.0	0.6	0.0	1.5				
Intersection Summary												
HCM 6th Ctrl Delay			27.2									
HCM 6th LOS			C									
Notes												
Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

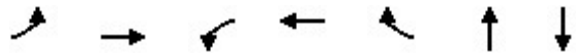
SECTION 4: FUTURE BUILD 2050 SYNCHRO AND SIMTRAFFIC ANALYSIS RESULTS



Queues

1: Pacific Ave & S 24th St

04/21/2023



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	9	26	148	37	137	461	291
v/c Ratio	0.09	0.13	0.54	0.11	0.21	0.76	0.20
Control Delay	51.4	43.7	41.7	33.1	24.6	50.3	22.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.4	43.7	41.7	33.1	24.6	50.3	22.4
Queue Length 50th (ft)	6	17	86	20	60	164	66
Queue Length 95th (ft)	23	40	122	47	138	207	129
Internal Link Dist (ft)		405		294		757	1056
Turn Bay Length (ft)			150		150		
Base Capacity (vph)	107	334	294	443	664	784	1482
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.08	0.50	0.08	0.21	0.59	0.20
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

1: Pacific Ave & S 24th St

04/21/2023

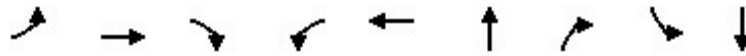
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	22	2	135	34	125	0	327	93	96	168	1
Future Volume (vph)	8	22	2	135	34	125	0	327	93	96	168	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		0.95			0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.97			1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.98	
Satd. Flow (prot)	1687	1752		1621	1712	1455		3196			3251	
Flt Permitted	0.95	1.00		0.50	1.00	1.00		1.00			0.98	
Satd. Flow (perm)	1687	1752		848	1712	1455		3196			3251	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	9	24	2	148	37	137	0	359	102	105	185	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	9	26	0	148	37	137	0	461	0	0	291	0
Confl. Peds. (#/hr)	7		5	5		7	11		14	14		11
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	7%	7%	7%	11%	11%	11%	8%	8%	8%	9%	9%	9%
Turn Type	Prot	NA		pm+pt	NA	Over		NA		Split	NA	
Protected Phases	7	4		3	8	2		1		2	2	
Permitted Phases				8								
Actuated Green, G (s)	1.4	10.2		27.9	21.5	46.2		20.9			46.2	
Effective Green, g (s)	1.4	10.2		27.9	21.5	46.2		20.9			46.2	
Actuated g/C Ratio	0.01	0.09		0.25	0.20	0.42		0.19			0.42	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0		5.0			5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5		2.5			2.5	
Lane Grp Cap (vph)	21	162		304	334	611		607			1365	
v/s Ratio Prot	0.01	0.01		c0.06	0.02	c0.09		c0.14			0.09	
v/s Ratio Perm				c0.07								
v/c Ratio	0.43	0.16		0.49	0.11	0.22		0.76			0.21	
Uniform Delay, d1	53.9	46.0		33.8	36.4	20.4		42.2			20.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	
Incremental Delay, d2	9.9	0.3		0.9	0.1	0.8		5.2			0.4	
Delay (s)	63.8	46.3		34.7	36.5	21.3		47.4			20.7	
Level of Service	E	D		C	D	C		D			C	
Approach Delay (s)		50.8			29.2			47.4			20.7	
Approach LOS		D			C			D			C	
Intersection Summary												
HCM 2000 Control Delay			35.2				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)			20.0		
Intersection Capacity Utilization			61.5%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology expects strict NEMA phasing.

Queues

2: A St & S 24th St/Puyallup Ave

04/21/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	5	197	5	16	328	3	59	5	2
v/c Ratio	0.06	0.15	0.00	0.02	0.24	0.01	0.35	0.04	0.01
Control Delay	55.8	5.5	6.8	0.5	1.4	42.7	53.1	43.6	42.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.8	5.5	6.8	0.5	1.4	42.7	53.1	43.6	42.5
Queue Length 50th (ft)	4	22	1	0	2	2	44	4	1
Queue Length 95th (ft)	17	100	7	m1	84	11	76	14	9
Internal Link Dist (ft)		294			1074	627			464
Turn Bay Length (ft)	60		80	70			135		
Base Capacity (vph)	134	1358	1122	931	1390	477	397	287	347
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.15	0.00	0.02	0.24	0.01	0.15	0.02	0.01

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: A St & S 24th St/Puyallup Ave

04/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	187	5	15	296	15	0	3	56	5	1	1
Future Volume (vph)	5	187	5	15	296	15	0	3	56	5	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00			1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1612	1696	1401	1613	1697			1792	1490	1354	1304	
Flt Permitted	0.95	1.00	1.00	0.63	1.00			1.00	1.00	0.76	1.00	
Satd. Flow (perm)	1612	1696	1401	1077	1697			1792	1490	1077	1304	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	197	5	16	312	16	0	3	59	5	1	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	5	197	5	16	328	0	0	3	59	5	2	0
Confl. Peds. (#/hr)	3		12	12		3	3		1	1		3
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	12%	12%	12%	11%	11%	11%	6%	6%	6%	33%	33%	33%
Turn Type	Prot	NA	Perm	D.P+P	NA			NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			6			2	
Permitted Phases			4	4			6		6	2		
Actuated Green, G (s)	1.3	91.1	91.1	93.5	92.2			11.5	11.5	11.5	11.5	
Effective Green, g (s)	1.3	91.1	91.1	93.5	92.2			11.5	11.5	11.5	11.5	
Actuated g/C Ratio	0.01	0.76	0.76	0.78	0.77			0.10	0.10	0.10	0.10	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5			2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	17	1287	1063	849	1303			171	142	103	124	
v/s Ratio Prot	c0.00	0.12		0.00	c0.19			0.00			0.00	
v/s Ratio Perm			0.00	0.01					c0.04	0.00		
v/c Ratio	0.29	0.15	0.00	0.02	0.25			0.02	0.42	0.05	0.02	
Uniform Delay, d1	58.9	3.9	3.5	3.0	4.0			49.1	51.1	49.3	49.1	
Progression Factor	1.00	1.00	1.00	0.14	0.21			1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.9	0.3	0.0	0.0	0.4			0.0	1.4	0.1	0.0	
Delay (s)	65.8	4.2	3.5	0.4	1.3			49.2	52.5	49.4	49.2	
Level of Service	E	A	A	A	A			D	D	D	D	
Approach Delay (s)		5.7			1.2			52.4			49.3	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM 2000 Control Delay			8.4			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.27									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			52.5%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: A St & S 24th St/Puyallup Ave

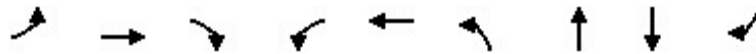
04/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	187	5	15	296	15	0	3	56	5	1	1
Future Volume (veh/h)	5	187	5	15	296	15	0	3	56	5	1	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	0.98		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1722	1722	1722	1737	1737	1737	1811	1811	1811	1411	1411	1411
Adj Flow Rate, veh/h	5	197	5	16	312	16	0	3	59	5	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	12	12	12	11	11	11	6	6	6	33	33	33
Cap, veh/h	13	1319	1086	896	1275	65	0	161	134	147	57	57
Arrive On Green	0.01	0.77	0.77	0.04	1.00	1.00	0.00	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	1640	1722	1418	1654	1637	84	0	1811	1509	996	641	641
Grp Volume(v), veh/h	5	197	5	16	0	328	0	3	59	5	0	2
Grp Sat Flow(s),veh/h/ln	1640	1722	1418	1654	0	1721	0	1811	1509	996	0	1283
Q Serve(g_s), s	0.4	3.6	0.1	0.2	0.0	0.0	0.0	0.2	4.4	0.6	0.0	0.2
Cycle Q Clear(g_c), s	0.4	3.6	0.1	0.2	0.0	0.0	0.0	0.2	4.4	0.7	0.0	0.2
Prop In Lane	1.00		1.00	1.00		0.05	0.00		1.00	1.00		0.50
Lane Grp Cap(c), veh/h	13	1319	1086	896	0	1340	0	161	134	147	0	114
V/C Ratio(X)	0.40	0.15	0.00	0.02	0.00	0.24	0.00	0.02	0.44	0.03	0.00	0.02
Avail Cap(c_a), veh/h	137	1319	1086	1000	0	1340	0	483	402	324	0	342
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.94	0.00	0.94	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	59.3	3.7	3.3	2.8	0.0	0.0	0.0	49.9	51.9	50.2	0.0	49.9
Incr Delay (d2), s/veh	14.3	0.2	0.0	0.0	0.0	0.4	0.0	0.0	1.7	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.2	0.0	0.1	0.0	0.2	0.0	0.1	1.7	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.6	4.0	3.3	2.8	0.0	0.4	0.0	49.9	53.5	50.3	0.0	50.0
LnGrp LOS	E	A	A	A	A	A	A	D	D	D	A	D
Approach Vol, veh/h	207		344				62		7			
Approach Delay, s/veh	5.6		0.5				53.4		50.2			
Approach LOS	A		A				D		D			
Timer - Assigned Phs	2		3		4		6		7		8	
Phs Duration (G+Y+Rc), s	15.6		7.5		96.9		15.6		5.9		98.4	
Change Period (Y+Rc), s	5.0		5.0		5.0		5.0		5.0		5.0	
Max Green Setting (Gmax), s	32.0		10.0		63.0		32.0		10.0		63.0	
Max Q Clear Time (g_c+I1), s	2.7		2.2		5.6		6.4		2.4		2.0	
Green Ext Time (p_c), s	0.0		0.0		1.0		0.1		0.0		1.8	
Intersection Summary												
HCM 6th Ctrl Delay	8.1											
HCM 6th LOS	A											
Notes												

Queues

3: E D St & Puyallup Ave

04/21/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	101	390	12	59	397	19	233	127	56
v/c Ratio	0.60	0.37	0.01	0.09	0.40	0.10	0.78	1.03	0.22
Control Delay	66.7	17.6	15.5	3.3	11.0	38.2	63.9	136.1	40.8
Queue Delay	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
Total Delay	66.7	17.6	15.5	3.3	11.5	38.2	63.9	136.1	40.8
Queue Length 50th (ft)	78	142	4	10	126	12	173	~105	37
Queue Length 95th (ft)	132	283	16	7	167	32	245	#197	70
Internal Link Dist (ft)		1074			315		604	705	
Turn Bay Length (ft)	150		80	80		150			
Base Capacity (vph)	253	1064	866	668	998	302	460	191	401
Starvation Cap Reductn	0	0	0	0	251	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.37	0.01	0.09	0.53	0.06	0.51	0.66	0.14

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

3: E D St & Puyallup Ave

04/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	91	351	11	53	279	78	17	112	98	70	44	50
Future Volume (vph)	91	351	11	53	279	78	17	112	98	70	44	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0			5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	0.99		1.00	0.98			1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00			0.99	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.93			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.97	1.00
Satd. Flow (prot)	1687	1776	1446	1680	1703		1631	1580			1608	1377
Flt Permitted	0.95	1.00	1.00	0.46	1.00		0.60	1.00			0.40	1.00
Satd. Flow (perm)	1687	1776	1446	818	1703		1037	1580			657	1377
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	101	390	12	59	310	87	19	124	109	78	49	56
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	101	390	12	59	397	0	19	233	0	0	127	56
Confl. Peds. (#/hr)	6		7	7		6	3		6	6		3
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	10%	10%	10%	14%	14%	14%
Turn Type	Prot	NA	Perm	D.P+P	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4		3	8			6			2	
Permitted Phases			4	4			6		2			2
Actuated Green, G (s)	12.0	69.5	69.5	82.4	70.4		22.6	22.6			22.6	22.6
Effective Green, g (s)	12.0	69.5	69.5	82.4	70.4		22.6	22.6			22.6	22.6
Actuated g/C Ratio	0.10	0.58	0.58	0.69	0.59		0.19	0.19			0.19	0.19
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5		2.5	2.5			2.5	2.5
Lane Grp Cap (vph)	168	1028	837	654	999		195	297			123	259
v/s Ratio Prot	c0.06	0.22		0.01	c0.23			0.15				
v/s Ratio Perm			0.01	0.05			0.02				c0.19	0.04
v/c Ratio	0.60	0.38	0.01	0.09	0.40		0.10	0.78			1.03	0.22
Uniform Delay, d1	51.7	13.6	10.7	9.6	13.4		40.3	46.4			48.7	41.2
Progression Factor	1.02	1.03	1.05	0.49	0.63		1.00	1.00			1.00	1.00
Incremental Delay, d2	5.0	1.1	0.0	0.0	1.2		0.2	12.3			90.1	0.3
Delay (s)	57.7	15.1	11.3	4.7	9.6		40.4	58.7			138.8	41.5
Level of Service	E	B	B	A	A		D	E			F	D
Approach Delay (s)		23.6			9.0			57.3			109.0	
Approach LOS		C			A			E			F	
Intersection Summary												
HCM 2000 Control Delay			36.1			HCM 2000 Level of Service		D				
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)		15.0				
Intersection Capacity Utilization			64.2%			ICU Level of Service		C				
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

3: E D St & Puyallup Ave

04/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	351	11	53	279	78	17	112	98	70	44	50
Future Volume (veh/h)	91	351	11	53	279	78	17	112	98	70	44	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1796	1796	1796	1796	1796	1796	1752	1752	1752	1693	1693	1693
Adj Flow Rate, veh/h	101	390	12	59	310	87	19	124	109	78	49	56
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	7	7	7	7	7	7	10	10	10	14	14	14
Cap, veh/h	124	424	354	758	742	208	103	213	187	139	75	353
Arrive On Green	0.14	0.47	0.47	0.78	1.00	1.00	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1711	1796	1500	1711	1340	376	1207	855	751	365	300	1417
Grp Volume(v), veh/h	101	390	12	59	0	397	19	0	233	127	0	56
Grp Sat Flow(s),veh/h/ln	1711	1796	1500	1711	0	1716	1207	0	1606	665	0	1417
Q Serve(g_s), s	6.9	24.3	0.5	0.0	0.0	0.0	1.8	0.0	15.3	10.3	0.0	3.7
Cycle Q Clear(g_c), s	6.9	24.3	0.5	0.0	0.0	0.0	27.5	0.0	15.3	25.6	0.0	3.7
Prop In Lane	1.00		1.00	1.00		0.22	1.00		0.47	0.61		1.00
Lane Grp Cap(c), veh/h	124	424	354	758	0	950	103	0	400	214	0	353
V/C Ratio(X)	0.82	0.92	0.03	0.08	0.00	0.42	0.18	0.00	0.58	0.59	0.00	0.16
Avail Cap(c_a), veh/h	257	958	800	758	0	950	155	0	468	266	0	413
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.99	0.97	0.00	0.97	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.6	30.6	24.3	7.4	0.0	0.0	56.7	0.0	39.6	48.1	0.0	35.2
Incr Delay (d2), s/veh	9.3	27.3	0.2	0.0	0.0	1.3	0.6	0.0	1.0	1.9	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	11.4	0.2	0.4	0.0	0.3	0.6	0.0	6.1	3.8	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.9	57.9	24.5	7.4	0.0	1.3	57.3	0.0	40.6	50.0	0.0	35.4
LnGrp LOS	E	E	C	A	A	A	E	A	D	D	A	D
Approach Vol, veh/h	503				456				252			
Approach Delay, s/veh	57.5				2.1				41.8			
Approach LOS	E				A				D			
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	35.0		51.7	33.3		35.0		13.7	71.4			
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0		5.0	5.0			
Max Green Setting (Gmax), s	35.0		6.0	64.0		35.0		18.0	52.0			
Max Q Clear Time (g_c+I1), s	27.6		2.0	26.3		29.5		8.9	2.0			
Green Ext Time (p_c), s	0.4		0.0	2.0		0.5		0.1	2.3			
Intersection Summary												
HCM 6th Ctrl Delay	35.0											
HCM 6th LOS	C											

Queues

4: E E St & Puyallup Ave

04/21/2023



Lane Group	EBL	EBT	EBR	WBT	SBT
Lane Group Flow (vph)	23	593	1	411	4
v/c Ratio	0.26	0.36	0.00	0.28	0.02
Control Delay	69.4	1.8	2.0	2.3	42.8
Queue Delay	0.0	0.0	0.0	0.3	0.0
Total Delay	69.4	1.8	2.0	2.6	42.8
Queue Length 50th (ft)	19	0	0	30	3
Queue Length 95th (ft)	m39	186	m0	99	12
Internal Link Dist (ft)		315		283	388
Turn Bay Length (ft)	80		80		
Base Capacity (vph)	87	1635	1316	1472	396
Starvation Cap Reductn	0	66	0	512	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.26	0.38	0.00	0.43	0.01

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

4: E E St & Puyallup Ave

04/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	522	1	0	353	9	0	0	0	3	0	1
Future Volume (vph)	20	522	1	0	353	9	0	0	0	3	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		5.0						5.0	
Lane Util. Factor	1.00	1.00	1.00		1.00						1.00	
Frpb, ped/bikes	1.00	1.00	0.95		1.00						0.99	
Flpb, ped/bikes	1.00	1.00	1.00		1.00						1.00	
Frt	1.00	1.00	0.85		1.00						0.97	
Flt Protected	0.95	1.00	1.00		1.00						0.96	
Satd. Flow (prot)	1656	1743	1403		1704						1760	
Flt Permitted	0.95	1.00	1.00		1.00						0.96	
Satd. Flow (perm)	1656	1743	1403		1704						1760	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	23	593	1	0	401	10	0	0	0	3	0	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	23	593	1	0	411	0	0	0	0	0	4	0
Confl. Peds. (#/hr)	2		13	13		2	1					1
Heavy Vehicles (%)	9%	9%	9%	11%	11%	11%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	pm+pt	NA		Split			Split	NA	
Protected Phases	7	4		3	8		1	1		2	2	
Permitted Phases			4	8								
Actuated Green, G (s)	3.9	104.6	104.6		95.7						5.4	
Effective Green, g (s)	3.9	104.6	104.6		95.7						5.4	
Actuated g/C Ratio	0.03	0.87	0.87		0.80						0.05	
Clearance Time (s)	5.0	5.0	5.0		5.0						5.0	
Vehicle Extension (s)	1.0	1.0	1.0		1.0						1.0	
Lane Grp Cap (vph)	53	1519	1222		1358						79	
v/s Ratio Prot	0.01	c0.34			0.24						c0.00	
v/s Ratio Perm			0.00									
v/c Ratio	0.43	0.39	0.00		0.30						0.05	
Uniform Delay, d1	57.0	1.5	1.0		3.2						54.8	
Progression Factor	1.14	0.45	0.49		0.40						1.00	
Incremental Delay, d2	1.9	0.7	0.0		0.6						0.1	
Delay (s)	66.9	1.4	0.5		1.9						54.9	
Level of Service	E	A	A		A						D	
Approach Delay (s)		3.8			1.9			0.0			54.9	
Approach LOS		A			A			A			D	
Intersection Summary												
HCM 2000 Control Delay			3.2		HCM 2000 Level of Service				A			
HCM 2000 Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				20.0			
Intersection Capacity Utilization			44.6%		ICU Level of Service				A			
Analysis Period (min)			15									

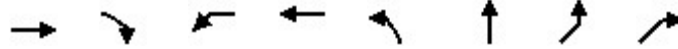
c Critical Lane Group

HCM 6th Edition methodology expects strict NEMA phasing.

Queues

5: Puyallup Ave & F St

04/21/2023



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NEL	NER
Lane Group Flow (vph)	483	91	42	363	13	2	7	12
v/c Ratio	0.36	0.09	0.37	0.23	0.14	0.02	0.05	0.10
Control Delay	3.2	2.4	67.3	2.8	53.6	50.0	51.7	52.8
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.5	2.4	67.3	2.8	53.6	50.0	51.7	52.8
Queue Length 50th (ft)	50	9	32	0	10	1	5	9
Queue Length 95th (ft)	25	7	75	59	30	10	21	29
Internal Link Dist (ft)	283			304		340	299	
Turn Bay Length (ft)		80	80					
Base Capacity (vph)	1330	990	115	1573	225	207	140	125
Starvation Cap Reductn	372	0	0	145	0	0	0	0
Spillback Cap Reductn	5	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.09	0.37	0.25	0.06	0.01	0.05	0.10
Intersection Summary								

HCM Signalized Intersection Capacity Analysis

5: Puyallup Ave & F St

04/21/2023

												
Movement	EBL	EBT	EBR	EBR2	WBL	WBT	NBL2	NBL	NBT	NBR	SBT	NEL2
Lane Configurations												
Traffic Volume (vph)	0	444	0	84	39	334	1	11	0	2	0	6
Future Volume (vph)	0	444	0	84	39	334	1	11	0	2	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0		5.0	5.0			
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	1.00			
Frpb, ped/bikes		1.00	0.88		1.00	1.00		1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00		0.98	1.00			
Frt		1.00	0.85		1.00	1.00		1.00	0.85			
Flt Protected		1.00	1.00		0.95	1.00		0.95	1.00			
Satd. Flow (prot)		1727	1286		1703	1792		1043	956			
Flt Permitted		1.00	1.00		0.95	1.00		0.95	1.00			
Satd. Flow (perm)		1727	1286		1703	1792		1043	956			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	483	0	91	42	363	1	12	0	2	0	7
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	483	91	0	42	363	0	13	2	0	0	0
Confl. Peds. (#/hr)			10	20	10		10					
Heavy Vehicles (%)	10%	10%	10%	10%	6%	6%	69%	69%	69%	69%	0%	7%
Turn Type	Prot	NA	Perm		Prot	NA	Perm	Split	NA			Prot
Protected Phases	7	4			3	8		2	2		1	10
Permitted Phases			4				2					
Actuated Green, G (s)		84.4	84.4		6.9	96.3		4.7	4.7			
Effective Green, g (s)		84.4	84.4		6.9	96.3		4.7	4.7			
Actuated g/C Ratio		0.70	0.70		0.06	0.80		0.04	0.04			
Clearance Time (s)		5.0	5.0		5.0	5.0		5.0	5.0			
Vehicle Extension (s)		2.5	2.5		2.5	2.5		5.0	5.0			
Lane Grp Cap (vph)		1214	904		97	1438		40	37			
v/s Ratio Prot		c0.28			c0.02	0.20			0.00			
v/s Ratio Perm			0.07					0.01				
v/c Ratio		0.40	0.10		0.43	0.25		0.33	0.05			
Uniform Delay, d1		7.3	5.7		54.7	2.9		56.1	55.5			
Progression Factor		0.27	0.27		1.11	0.65		1.00	1.00			
Incremental Delay, d2		0.9	0.2		2.2	0.4		9.7	1.3			
Delay (s)		2.9	1.8		62.9	2.3		65.8	56.8			
Level of Service		A	A		E	A		E	E			
Approach Delay (s)		2.7				8.6			64.6		0.0	
Approach LOS		A				A			E		A	
Intersection Summary												
HCM 2000 Control Delay			7.0				HCM 2000 Level of Service		A			
HCM 2000 Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		25.0			
Intersection Capacity Utilization			61.6%				ICU Level of Service		B			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Puyallup Ave & F St

04/21/2023

		
Movement	NEL	NER
Lane Configurations		
Traffic Volume (vph)	0	11
Future Volume (vph)	0	11
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.0	5.0
Lane Util. Factor	1.00	1.00
Frpb, ped/bikes	1.00	1.00
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	0.95	1.00
Satd. Flow (prot)	1687	1509
Flt Permitted	0.95	1.00
Satd. Flow (perm)	1687	1509
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	0	12
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	7	12
Confl. Peds. (#/hr)		
Heavy Vehicles (%)	7%	7%
Turn Type	Prot	Perm
Protected Phases	10	
Permitted Phases		10
Actuated Green, G (s)	4.0	4.0
Effective Green, g (s)	4.0	4.0
Actuated g/C Ratio	0.03	0.03
Clearance Time (s)	5.0	5.0
Vehicle Extension (s)	2.5	2.5
Lane Grp Cap (vph)	56	50
v/s Ratio Prot	0.00	
v/s Ratio Perm		c0.01
v/c Ratio	0.12	0.24
Uniform Delay, d1	56.3	56.5
Progression Factor	1.00	1.00
Incremental Delay, d2	0.7	1.8
Delay (s)	57.0	58.3
Level of Service	E	E
Approach Delay (s)	57.9	
Approach LOS	E	
Intersection Summary		

HCM 6th Edition methodology does not support more than 4 approaches.

Queues

6: G St & Puyallup Ave

04/21/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR
Lane Group Flow (vph)	1	461	24	70	351	43	417
v/c Ratio	0.01	0.51	0.03	0.10	0.25	0.38	0.86
Control Delay	85.0	11.4	8.5	5.2	5.4	62.3	53.2
Queue Delay	0.0	0.5	0.0	0.0	0.0	0.0	0.0
Total Delay	85.0	11.9	8.5	5.2	5.4	62.3	53.2
Queue Length 50th (ft)	1	122	5	6	28	33	281
Queue Length 95th (ft)	m2	82	8	34	143	69	#451
Internal Link Dist (ft)		304			1819	498	
Turn Bay Length (ft)	80		80	80			70
Base Capacity (vph)	80	905	738	723	1413	300	483
Starvation Cap Reductn	0	146	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.61	0.03	0.10	0.25	0.14	0.86

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

6: G St & Puyallup Ave

04/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	424	22	64	323	0	40	0	384	0	0	0
Future Volume (vph)	1	424	22	64	323	0	40	0	384	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00			
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00			1.00	1.00			
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00			
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85			
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00			
Satd. Flow (prot)	1612	1696	1383	1653	1743			1641	1468			
Flt Permitted	0.95	1.00	1.00	0.34	1.00			0.95	1.00			
Satd. Flow (perm)	1612	1696	1383	593	1743			1641	1468			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	461	24	70	351	0	43	0	417	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	1	461	24	70	351	0	0	43	417	0	0	0
Confl. Peds. (#/hr)	10		7	7		10	1					1
Heavy Vehicles (%)	12%	12%	12%	9%	9%	9%	10%	10%	10%	0%	0%	0%
Turn Type	Prot	NA	Perm	D.P+P	NA		Split	NA	pm+ov			
Protected Phases	7	4		3	8		6	6	3		2	
Permitted Phases			4	4					6	2		
Actuated Green, G (s)	1.2	55.1	55.1	88.5	87.3			7.1	40.5			
Effective Green, g (s)	1.2	55.1	55.1	88.5	87.3			7.1	40.5			
Actuated g/C Ratio	0.01	0.46	0.46	0.74	0.73			0.06	0.34			
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0			
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5			2.5	2.5			
Lane Grp Cap (vph)	16	778	635	732	1268			97	495			
v/s Ratio Prot	0.00	c0.27		0.03	0.20			0.03	c0.23			
v/s Ratio Perm			0.02	0.04					0.05			
v/c Ratio	0.06	0.59	0.04	0.10	0.28			0.44	0.84			
Uniform Delay, d1	58.8	24.1	17.9	10.8	5.6			54.5	36.8			
Progression Factor	1.56	0.46	0.49	0.87	0.76			1.00	1.00			
Incremental Delay, d2	1.1	3.1	0.1	0.0	0.5			2.3	12.1			
Delay (s)	93.0	14.2	8.9	9.4	4.8			56.9	48.9			
Level of Service	F	B	A	A	A			E	D			
Approach Delay (s)		14.1			5.5			49.7			0.0	
Approach LOS		B			A			D			A	
Intersection Summary												
HCM 2000 Control Delay			23.4			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			54.4%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

6: G St & Puyallup Ave

04/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	424	22	64	323	0	40	0	384	0	0	0
Future Volume (veh/h)	1	424	22	64	323	0	40	0	384	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	0.99		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1722	1722	1722	1767	1767	1767	1752	1752	1752	1900	1900	1900
Adj Flow Rate, veh/h	1	461	24	70	351	0	43	0	417	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	12	12	12	9	9	9	10	10	10	0	0	0
Cap, veh/h	3	481	400	992	1446	0	90	0	884	0	2	0
Arrive On Green	0.00	0.56	0.56	1.00	1.00	0.00	0.05	0.00	0.05	0.00	0.00	0.00
Sat Flow, veh/h	1640	1722	1433	1682	1767	0	1653	0	1471	0	1900	0
Grp Volume(v), veh/h	1	461	24	70	351	0	43	0	417	0	0	0
Grp Sat Flow(s),veh/h/ln	1640	1722	1433	1682	1767	0	1653	0	1471	0	1900	0
Q Serve(g_s), s	0.1	30.5	0.9	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	30.5	0.9	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	3	481	400	992	1446	0	90	0	884	0	2	0
V/C Ratio(X)	0.37	0.96	0.06	0.07	0.24	0.00	0.48	0.00	0.47	0.00	0.00	0.00
Avail Cap(c_a), veh/h	82	531	442	992	1446	0	303	0	1073	0	348	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.94	0.95	0.95	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	59.7	25.8	19.3	0.0	0.0	0.0	55.0	0.0	13.6	0.0	0.0	0.0
Incr Delay (d2), s/veh	50.7	30.7	0.3	0.0	0.4	0.0	2.9	0.0	0.3	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	13.0	0.3	0.0	0.2	0.0	1.3	0.0	6.2	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	110.4	56.6	19.6	0.0	0.4	0.0	57.9	0.0	13.9	0.0	0.0	0.0
LnGrp LOS	F	E	B	A	A	A	E	A	B	A	A	A
Approach Vol, veh/h	486				421				460			
Approach Delay, s/veh	54.8				0.3				18.0			
Approach LOS	D				A				B			
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	0.0		69.9	38.5		11.6		5.2	103.2			
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0		5.0	5.0			
Max Green Setting (Gmax), s	22.0		19.0	37.0		22.0		6.0	50.0			
Max Q Clear Time (g_c+I1), s	0.0		2.0	32.5		5.0		2.1	2.0			
Green Ext Time (p_c), s	0.0		0.1	1.0		1.3		0.0	1.9			
Intersection Summary												
HCM 6th Ctrl Delay	25.7											
HCM 6th LOS	C											

Queues

7: E L ST & Puyallup Ave

04/21/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	928	19	25	456	93	4
v/c Ratio	0.04	0.71	0.02	0.07	0.34	0.59	0.03
Control Delay	59.7	13.0	6.2	3.2	5.3	65.8	46.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.7	13.0	6.2	3.2	5.3	65.8	46.0
Queue Length 50th (ft)	2	326	3	3	71	70	3
Queue Length 95th (ft)	m4	475	m8	10	199	120	14
Internal Link Dist (ft)		1819			839	1082	346
Turn Bay Length (ft)	80		80	80			
Base Capacity (vph)	82	1302	1055	349	1328	269	236
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.71	0.02	0.07	0.34	0.35	0.02

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

7: E L ST & Puyallup Ave

04/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	826	17	22	403	3	24	0	59	1	0	3
Future Volume (vph)	3	826	17	22	403	3	24	0	59	1	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00			0.98			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.90			0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1641	1727	1400	1597	1680			1602			1349	
Flt Permitted	0.95	1.00	1.00	0.22	1.00			0.91			0.94	
Satd. Flow (perm)	1641	1727	1400	367	1680			1473			1290	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	3	928	19	25	453	3	27	0	66	1	0	3
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	3	928	19	25	456	0	0	93	0	0	4	0
Confl. Peds. (#/hr)			9	9					1	1		
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	10%	10%	10%	13%	13%	13%	4%	4%	4%	25%	25%	25%
Turn Type	Prot	NA	Perm	D.P+P	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4	4			2			6		
Actuated Green, G (s)	1.2	88.5	88.5	92.1	90.9			12.9			12.9	
Effective Green, g (s)	1.2	88.5	88.5	92.1	90.9			12.9			12.9	
Actuated g/C Ratio	0.01	0.74	0.74	0.77	0.76			0.11			0.11	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0			5.0			5.0	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5			2.5			2.5	
Lane Grp Cap (vph)	16	1273	1032	318	1272			158			138	
v/s Ratio Prot	0.00	c0.54		c0.00	0.27							
v/s Ratio Perm			0.01	0.06				c0.06			0.00	
v/c Ratio	0.19	0.73	0.02	0.08	0.36			0.59			0.03	
Uniform Delay, d1	58.9	8.9	4.2	6.8	4.8			51.0			47.9	
Progression Factor	1.08	1.00	1.12	1.00	1.00			1.00			1.00	
Incremental Delay, d2	3.2	2.9	0.0	0.1	0.8			4.6			0.1	
Delay (s)	66.9	11.9	4.7	6.9	5.6			55.6			48.0	
Level of Service	E	B	A	A	A			E			D	
Approach Delay (s)		11.9			5.7			55.6			48.0	
Approach LOS		B			A			E			D	
Intersection Summary												
HCM 2000 Control Delay			12.7			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			60.5%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

7: E L ST & Puyallup Ave

04/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	826	17	22	403	3	24	0	59	1	0	3
Future Volume (veh/h)	3	826	17	22	403	3	24	0	59	1	0	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1752	1752	1752	1707	1707	1707	1841	1841	1841	1530	1530	1530
Adj Flow Rate, veh/h	3	928	19	25	453	3	27	0	66	1	0	3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	10	10	10	13	13	13	4	4	4	25	25	25
Cap, veh/h	8	1337	1126	374	1333	9	66	10	91	53	13	85
Arrive On Green	0.00	0.76	0.76	0.03	0.79	0.79	0.08	0.00	0.08	0.08	0.00	0.08
Sat Flow, veh/h	1668	1752	1476	1626	1694	11	327	117	1085	184	153	1013
Grp Volume(v), veh/h	3	928	19	25	0	456	93	0	0	4	0	0
Grp Sat Flow(s),veh/h/ln	1668	1752	1476	1626	0	1705	1529	0	0	1350	0	0
Q Serve(g_s), s	0.2	32.0	0.4	0.4	0.0	9.3	4.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	32.0	0.4	0.4	0.0	9.3	7.1	0.0	0.0	0.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.01	0.29		0.71	0.25		0.75
Lane Grp Cap(c), veh/h	8	1337	1126	374	0	1341	166	0	0	150	0	0
V/C Ratio(X)	0.38	0.69	0.02	0.07	0.00	0.34	0.56	0.00	0.00	0.03	0.00	0.00
Avail Cap(c_a), veh/h	83	1337	1126	410	0	1341	316	0	0	273	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.68	0.68	0.68	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	59.5	7.2	3.4	7.1	0.0	3.7	53.6	0.0	0.0	50.6	0.0	0.0
Incr Delay (d2), s/veh	14.3	2.0	0.0	0.1	0.0	0.7	2.2	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	10.7	0.1	0.2	0.0	2.9	2.8	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.8	9.2	3.4	7.2	0.0	4.4	55.7	0.0	0.0	50.6	0.0	0.0
LnGrp LOS	E	A	A	A	A	A	E	A	A	D	A	A
Approach Vol, veh/h	950				481				93			
Approach Delay, s/veh	9.3				4.6				55.7			
Approach LOS	A				A				E			
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	15.0		8.4	96.6		15.0		5.6	99.4			
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0		5.0				
Max Green Setting (Gmax), s	22.0		6.0	77.0		22.0		6.0	77.0			
Max Q Clear Time (g_c+l1), s	9.1		2.4	34.0		2.3		2.2	11.3			
Green Ext Time (p_c), s	0.3		0.0	7.6		0.0		0.0	2.7			
Intersection Summary												
HCM 6th Ctrl Delay	10.7											
HCM 6th LOS	B											

Queues

8: E Portland Ave & Puyallup Ave

04/21/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	122	470	318	112	236	219	606	463	98	365	66
v/c Ratio	0.20	0.73	0.23	0.45	0.45	0.53	0.63	0.61	0.39	0.66	0.20
Control Delay	30.4	39.2	0.4	39.5	31.1	21.8	29.8	6.8	20.6	36.6	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	39.2	0.4	39.5	31.1	21.8	29.8	6.8	20.6	36.6	2.9
Queue Length 50th (ft)	23	103	0	52	48	60	126	0	25	80	0
Queue Length 95th (ft)	66	234	0	138	112	168	274	86	82	177	10
Internal Link Dist (ft)		523			476		261			552	
Turn Bay Length (ft)	200		500			100		150	190		150
Base Capacity (vph)	1033	1065	1412	533	1095	493	1577	939	303	1133	562
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.44	0.23	0.21	0.22	0.44	0.38	0.49	0.32	0.32	0.12

Intersection Summary

HCM Signalized Intersection Capacity Analysis

8: E Portland Ave & Puyallup Ave

04/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	442	299	117	160	51	206	570	435	92	343	62
Future Volume (vph)	115	442	299	117	160	51	206	570	435	92	343	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.91	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3099	3195	1412	1480	2992		1597	3195	1429	1327	2654	1172
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.46	1.00	1.00	0.30	1.00	1.00
Satd. Flow (perm)	3099	3195	1412	1480	2992		779	3195	1429	417	2654	1172
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	122	470	318	124	170	54	219	606	463	98	365	66
RTOR Reduction (vph)	0	0	0	0	23	0	0	0	324	0	0	51
Lane Group Flow (vph)	122	470	318	112	213	0	219	606	139	98	365	15
Confl. Peds. (#/hr)	1		1	1		1	1					1
Heavy Vehicles (%)	13%	13%	13%	11%	11%	11%	13%	13%	13%	36%	36%	36%
Turn Type	Split	NA	Free	Split	NA		D.P+P	NA	Perm	D.P+P	NA	Perm
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases			Free				2		6	6		2
Actuated Green, G (s)	16.0	16.0	79.8	13.4	13.4		30.4	23.9	23.9	30.4	18.0	18.0
Effective Green, g (s)	16.0	16.0	79.8	13.4	13.4		30.4	23.9	23.9	30.4	18.0	18.0
Actuated g/C Ratio	0.20	0.20	1.00	0.17	0.17		0.38	0.30	0.30	0.38	0.23	0.23
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0	1.0		1.0	1.0		2.5	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	621	640	1412	248	502		423	956	427	232	598	264
v/s Ratio Prot	0.04	c0.15		c0.08	0.07		c0.08	c0.19		0.03	0.14	
v/s Ratio Perm			0.23				0.12		0.10	0.13		0.01
v/c Ratio	0.20	0.73	0.23	0.45	0.42		0.52	0.63	0.32	0.42	0.61	0.06
Uniform Delay, d1	26.5	29.9	0.0	29.9	29.7		17.8	24.2	21.7	16.9	27.8	24.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	3.8	0.4	0.5	0.2		0.8	1.0	0.2	0.5	1.3	0.0
Delay (s)	26.6	33.7	0.4	30.4	30.0		18.6	25.2	21.9	17.3	29.1	24.3
Level of Service	C	C	A	C	C		B	C	C	B	C	C
Approach Delay (s)		21.1			30.1			22.9			26.3	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			23.7			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			79.8			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			59.6%			ICU Level of Service			B			
Analysis Period (min)			15									

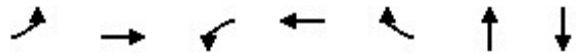
c Critical Lane Group

HCM 6th Edition methodology does not support turning movements with shared & exclusive lanes.

Queues

1: Pacific Ave & S 24th St

04/21/2023



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	16	45	279	133	166	385	466
v/c Ratio	0.16	0.23	0.68	0.29	0.27	0.70	0.34
Control Delay	52.7	46.0	30.0	23.1	32.5	50.1	26.9
Queue Delay	0.0	0.0	0.5	0.0	0.0	0.0	0.0
Total Delay	52.7	46.0	30.5	23.1	32.5	50.1	26.9
Queue Length 50th (ft)	11	30	167	74	96	137	120
Queue Length 95th (ft)	34	59	63	81	194	174	206
Internal Link Dist (ft)		405		294		757	1056
Turn Bay Length (ft)			150		150		
Base Capacity (vph)	112	334	417	532	619	765	1363
Starvation Cap Reductn	0	0	18	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.13	0.70	0.25	0.27	0.50	0.34
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

1: Pacific Ave & S 24th St

04/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	28	16	271	129	161	0	283	90	111	336	6
Future Volume (vph)	16	28	16	271	129	161	0	283	90	111	336	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		0.95			0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00		0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	
Frt	1.00	0.95		1.00	1.00	0.85		0.96			1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.99	
Satd. Flow (prot)	1770	1750		1712	1810	1538		3370			3387	
Flt Permitted	0.95	1.00		0.52	1.00	1.00		1.00			0.99	
Satd. Flow (perm)	1770	1750		930	1810	1538		3370			3387	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	16	29	16	279	133	166	0	292	93	114	346	6
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	16	45	0	279	133	166	0	385	0	0	466	0
Confl. Peds. (#/hr)	14		6	6		14	16		14	14		16
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	2%	2%	2%	5%	5%	5%
Turn Type	Prot	NA		pm+pt	NA	Over		NA		Split	NA	
Protected Phases	7	4		3	8	2		1		2	2	
Permitted Phases				8								
Actuated Green, G (s)	2.7	12.2		35.7	28.0	41.3		18.0			41.3	
Effective Green, g (s)	2.7	12.2		35.7	28.0	41.3		18.0			41.3	
Actuated g/C Ratio	0.02	0.11		0.32	0.25	0.38		0.16			0.38	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0		5.0			5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5		2.5			2.5	
Lane Grp Cap (vph)	43	194		433	460	577		551			1271	
v/s Ratio Prot	0.01	0.03		c0.11	0.07	0.11		c0.11			c0.14	
v/s Ratio Perm				c0.10								
v/c Ratio	0.37	0.23		0.64	0.29	0.29		0.70			0.37	
Uniform Delay, d1	52.8	44.6		30.1	33.0	24.1		43.4			24.9	
Progression Factor	1.00	1.00		0.70	0.67	1.17		1.00			1.00	
Incremental Delay, d2	3.9	0.4		2.7	0.2	1.2		3.6			0.8	
Delay (s)	56.7	45.1		23.8	22.4	29.3		47.0			25.7	
Level of Service	E	D		C	C	C		D			C	
Approach Delay (s)		48.1			25.0			47.0			25.7	
Approach LOS		D			C			D			C	
Intersection Summary												
HCM 2000 Control Delay			31.9				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)		20.0			
Intersection Capacity Utilization			67.2%				ICU Level of Service		C			
Analysis Period (min)			15									

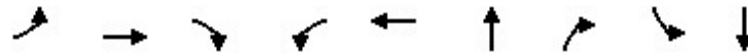
c Critical Lane Group

HCM 6th Edition methodology expects strict NEMA phasing.

Queues

2: A St & S 24th St/Puyallup Ave

04/21/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	19	189	18	74	581	12	37	12	24
v/c Ratio	0.19	0.14	0.02	0.08	0.39	0.06	0.20	0.07	0.12
Control Delay	55.2	9.3	9.9	1.1	4.1	39.9	43.6	40.3	41.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.2	9.3	9.9	1.1	4.1	39.9	43.6	40.3	41.5
Queue Length 50th (ft)	13	51	3	1	10	8	25	8	16
Queue Length 95th (ft)	m35	183	m19	m5	336	23	49	23	35
Internal Link Dist (ft)		294			1074	627			464
Turn Bay Length (ft)	60		80	70			135		
Base Capacity (vph)	123	1371	1133	964	1484	387	370	324	407
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.14	0.02	0.08	0.39	0.03	0.10	0.04	0.06

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: A St & S 24th St/Puyallup Ave

04/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	178	17	70	531	15	6	6	35	11	14	8
Future Volume (vph)	18	178	17	70	531	15	6	6	35	11	14	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00			1.00	0.97	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00			1.00	1.00	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1687	1776	1467	1722	1818			1852	1569	1738	1724	
Flt Permitted	0.95	1.00	1.00	0.64	1.00			0.86	1.00	0.75	1.00	
Satd. Flow (perm)	1687	1776	1467	1157	1818			1639	1569	1371	1724	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	19	189	18	74	565	16	6	6	37	12	15	9
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	19	189	18	74	581	0	0	12	37	12	24	0
Confl. Peds. (#/hr)	7		13	13		7	1		4	4		1
Confl. Bikes (#/hr)						1						1
Heavy Vehicles (%)	7%	7%	7%	4%	4%	4%	0%	0%	0%	3%	3%	3%
Turn Type	Prot	NA	Perm	D.P+P	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			6			2	
Permitted Phases			4	4		6			6	2		
Actuated Green, G (s)	3.0	80.6	80.6	85.8	82.8			9.2	9.2	9.2	9.2	
Effective Green, g (s)	3.0	80.6	80.6	85.8	82.8			9.2	9.2	9.2	9.2	
Actuated g/C Ratio	0.03	0.73	0.73	0.78	0.75			0.08	0.08	0.08	0.08	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5			2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	46	1301	1074	929	1368			137	131	114	144	
v/s Ratio Prot	c0.01	0.11		0.00	c0.32						0.01	
v/s Ratio Perm			0.01	0.06				0.01	c0.02	0.01		
v/c Ratio	0.41	0.15	0.02	0.08	0.42			0.09	0.28	0.11	0.17	
Uniform Delay, d1	52.6	4.4	4.0	2.8	4.9			46.5	47.3	46.6	46.8	
Progression Factor	1.05	1.41	1.31	0.28	0.49			1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.1	0.2	0.0	0.0	0.8			0.2	0.9	0.3	0.4	
Delay (s)	59.4	6.4	5.2	0.8	3.2			46.7	48.2	46.9	47.2	
Level of Service	E	A	A	A	A			D	D	D	D	
Approach Delay (s)		10.8			2.9			47.8			47.1	
Approach LOS		B			A			D			D	
Intersection Summary												
HCM 2000 Control Delay			8.7			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			56.4%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: A St & S 24th St/Puyallup Ave

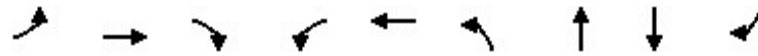
04/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	178	17	70	531	15	6	6	35	11	14	8
Future Volume (veh/h)	18	178	17	70	531	15	6	6	35	11	14	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.98	0.98		0.98	0.98		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1796	1796	1796	1841	1841	1841	1900	1900	1900	1856	1856	1856
Adj Flow Rate, veh/h	19	189	18	74	565	16	6	6	37	12	15	9
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	7	4	4	4	0	0	0	3	3	3
Cap, veh/h	41	1280	1075	970	1313	37	116	101	161	193	109	65
Arrive On Green	0.05	1.00	1.00	0.10	1.00	1.00	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	1711	1796	1508	1753	1780	50	661	993	1579	1328	1067	640
Grp Volume(v), veh/h	19	189	18	74	0	581	12	0	37	12	0	24
Grp Sat Flow(s),veh/h/ln	1711	1796	1508	1753	0	1831	1654	0	1579	1328	0	1707
Q Serve(g_s), s	1.2	0.0	0.0	1.1	0.0	0.0	0.0	0.0	2.4	0.9	0.0	1.4
Cycle Q Clear(g_c), s	1.2	0.0	0.0	1.1	0.0	0.0	0.6	0.0	2.4	1.5	0.0	1.4
Prop In Lane	1.00		1.00	1.00		0.03	0.50		1.00	1.00		0.38
Lane Grp Cap(c), veh/h	41	1280	1075	970	0	1350	218	0	161	193	0	174
V/C Ratio(X)	0.46	0.15	0.02	0.08	0.00	0.43	0.06	0.00	0.23	0.06	0.00	0.14
Avail Cap(c_a), veh/h	124	1280	1075	980	0	1350	433	0	373	372	0	403
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.98	0.71	0.00	0.71	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.7	0.0	0.0	3.1	0.0	0.0	44.6	0.0	45.4	45.3	0.0	45.0
Incr Delay (d2), s/veh	5.8	0.2	0.0	0.0	0.0	0.7	0.1	0.0	0.5	0.1	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.1	0.0	0.3	0.0	0.3	0.3	0.0	1.0	0.3	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.4	0.2	0.0	3.1	0.0	0.7	44.7	0.0	46.0	45.4	0.0	45.3
LnGrp LOS	E	A	A	A	A	A	D	A	D	D	A	D
Approach Vol, veh/h	226			655			49			36		
Approach Delay, s/veh	5.0			1.0			45.6			45.3		
Approach LOS	A			A			D			D		
Timer - Assigned Phs	2		3	4		6	7	8				
Phs Duration (G+Y+Rc), s	16.2		10.4	83.4		16.2	7.6	86.1				
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s	26.0		6.0	63.0		26.0	8.0	61.0				
Max Q Clear Time (g_c+I1), s	3.5		3.1	2.0		4.4	3.2	2.0				
Green Ext Time (p_c), s	0.1		0.0	0.9		0.1	0.0	3.6				
Intersection Summary												
HCM 6th Ctrl Delay			5.8									
HCM 6th LOS			A									

Queues

3: E D St & Puyallup Ave

04/21/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	54	271	17	83	762	18	150	235	106
v/c Ratio	0.47	0.36	0.03	0.10	0.71	0.13	0.44	0.86	0.33
Control Delay	57.8	32.5	30.9	3.2	13.4	35.5	41.1	70.7	38.8
Queue Delay	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0
Total Delay	57.8	32.5	30.9	3.2	13.8	35.5	41.1	70.7	38.8
Queue Length 50th (ft)	36	162	8	17	372	10	91	158	63
Queue Length 95th (ft)	#87	262	32	0	0	30	151	#276	113
Internal Link Dist (ft)	1074				315	604		705	
Turn Bay Length (ft)	150	80		80	150				
Base Capacity (vph)	118	1096	841	804	1087	164	395	312	366
Starvation Cap Reductn	0	0	0	0	71	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.25	0.02	0.10	0.75	0.11	0.38	0.75	0.29

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

3: E D St & Puyallup Ave

04/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	252	16	77	589	120	17	95	45	89	129	99
Future Volume (vph)	50	252	16	77	589	120	17	95	45	89	129	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0			5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.90	1.00	0.99		1.00	0.99			1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	0.98	1.00		0.99	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.95			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.98	1.00
Satd. Flow (prot)	1703	1792	1376	1699	1771		1639	1646			1823	1526
Flt Permitted	0.95	1.00	1.00	0.51	1.00		0.40	1.00			0.70	1.00
Satd. Flow (perm)	1703	1792	1376	904	1771		686	1646			1300	1526
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	54	271	17	83	633	129	18	102	48	96	139	106
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	54	271	17	83	762	0	18	150	0	0	235	106
Confl. Peds. (#/hr)	4		27	27		4	7		2	2		7
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	9%	9%	9%	2%	2%	2%
Turn Type	Prot	NA	Perm	D.P+P	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4		3	8			6			2	
Permitted Phases			4	4			6		2			2
Actuated Green, G (s)	6.2	44.7	44.7	72.0	65.8		23.0	23.0			23.0	23.0
Effective Green, g (s)	6.2	44.7	44.7	72.0	65.8		23.0	23.0			23.0	23.0
Actuated g/C Ratio	0.06	0.41	0.41	0.65	0.60		0.21	0.21			0.21	0.21
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5		2.5	2.5			2.5	2.5
Lane Grp Cap (vph)	95	728	559	789	1059		143	344			271	319
v/s Ratio Prot	c0.03	0.15		0.03	c0.43			0.09				
v/s Ratio Perm			0.01	0.04			0.03				c0.18	0.07
v/c Ratio	0.57	0.37	0.03	0.11	0.72		0.13	0.44			0.87	0.33
Uniform Delay, d1	50.6	22.8	19.6	9.8	15.6		35.3	37.9			42.0	37.0
Progression Factor	0.90	1.08	1.07	0.46	0.56		1.00	1.00			1.00	1.00
Incremental Delay, d2	6.2	1.5	0.1	0.0	3.7		0.3	0.6			23.8	0.4
Delay (s)	51.5	26.2	21.2	4.5	12.4		35.6	38.5			65.8	37.4
Level of Service	D	C	C	A	B		D	D			E	D
Approach Delay (s)		29.9			11.6			38.2			57.0	
Approach LOS		C			B			D			E	
Intersection Summary												
HCM 2000 Control Delay			27.1			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			82.4%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

3: E D St & Puyallup Ave

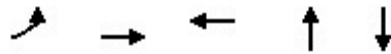
04/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	252	16	77	589	120	17	95	45	89	129	99
Future Volume (veh/h)	50	252	16	77	589	120	17	95	45	89	129	99
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	0.97		0.98	1.00		0.96	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1811	1811	1841	1841	1841	1767	1767	1767	1870	1870	1870
Adj Flow Rate, veh/h	54	271	17	83	633	129	18	102	48	96	139	106
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	6	6	6	4	4	4	9	9	9	2	2	2
Cap, veh/h	76	311	243	897	861	176	101	265	125	147	177	369
Arrive On Green	0.09	0.34	0.34	0.61	0.78	0.78	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1725	1811	1414	1753	1477	301	1071	1121	527	426	750	1562
Grp Volume(v), veh/h	54	271	17	83	0	762	18	0	150	235	0	106
Grp Sat Flow(s),veh/h/ln	1725	1811	1414	1753	0	1778	1071	0	1648	1175	0	1562
Q Serve(g_s), s	3.4	15.4	0.9	0.0	0.0	24.6	1.8	0.0	8.4	14.0	0.0	6.1
Cycle Q Clear(g_c), s	3.4	15.4	0.9	0.0	0.0	24.6	24.2	0.0	8.4	22.4	0.0	6.1
Prop In Lane	1.00		1.00	1.00		0.17	1.00		0.32	0.41		1.00
Lane Grp Cap(c), veh/h	76	311	243	897	0	1037	101	0	390	324	0	369
V/C Ratio(X)	0.71	0.87	0.07	0.09	0.00	0.73	0.18	0.00	0.38	0.73	0.00	0.29
Avail Cap(c_a), veh/h	110	1037	810	897	0	1037	101	0	390	324	0	369
HCM Platoon Ratio	2.00	2.00	2.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.99	0.85	0.00	0.85	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	49.5	35.0	30.2	11.1	0.0	7.9	52.3	0.0	35.3	42.7	0.0	34.4
Incr Delay (d2), s/veh	8.6	26.6	0.6	0.0	0.0	4.0	0.6	0.0	0.5	7.5	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	7.8	0.3	0.8	0.0	6.5	0.5	0.0	3.4	6.8	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.1	61.6	30.8	11.1	0.0	11.9	53.0	0.0	35.7	50.2	0.0	34.7
LnGrp LOS	E	E	C	B	A	B	D	A	D	D	A	C
Approach Vol, veh/h	342				845				168			
Approach Delay, s/veh	59.5				11.8				37.6			
Approach LOS	E				B				D			
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	31.0		55.1	23.9		31.0		9.8	69.2			
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0		5.0	5.0			
Max Green Setting (Gmax), s	26.0		6.0	63.0		26.0		7.0	62.0			
Max Q Clear Time (g_c+I1), s	24.4		2.0	17.4		26.2		5.4	26.6			
Green Ext Time (p_c), s	0.2		0.0	1.3		0.0		0.0	5.4			
Intersection Summary												
HCM 6th Ctrl Delay	30.7											
HCM 6th LOS	C											

Queues

4: E E St & Puyallup Ave

04/21/2023



Lane Group	EBL	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	2	386	856	1	4
v/c Ratio	0.01	0.23	0.52	0.01	0.03
Control Delay	62.0	0.9	4.3	46.0	46.0
Queue Delay	0.0	0.0	0.2	0.0	0.0
Total Delay	62.0	0.9	4.5	46.0	46.0
Queue Length 50th (ft)	1	0	0	1	3
Queue Length 95th (ft)	m4	m78	#767	6	14
Internal Link Dist (ft)		315	283	364	388
Turn Bay Length (ft)	80				
Base Capacity (vph)	156	1695	1661	381	434
Starvation Cap Reductn	0	154	9	0	0
Spillback Cap Reductn	0	65	211	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.01	0.25	0.59	0.00	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

4: E E St & Puyallup Ave

04/21/2023

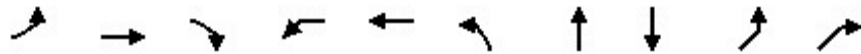
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	363	0	0	804	1	0	0	1	3	0	1
Future Volume (vph)	2	363	0	0	804	1	0	0	1	3	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	
Frt	1.00	1.00			1.00			0.85			0.97	
Flt Protected	0.95	1.00			1.00			1.00			0.96	
Satd. Flow (prot)	1719	1810			1827			1615			1770	
Flt Permitted	0.95	1.00			1.00			1.00			0.96	
Satd. Flow (perm)	1719	1810			1827			1615			1770	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	2	386	0	0	855	1	0	0	1	3	0	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	2	386	0	0	856	0	0	1	0	0	4	0
Confl. Peds. (#/hr)	5		26	26		5						
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	5%	5%	5%	4%	4%	4%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	pm+pt	NA		Split	NA		Split	NA	
Protected Phases	7	4		3	8		1	1		2	2	
Permitted Phases			4	8								
Actuated Green, G (s)	2.0	91.0			84.0			2.0			2.0	
Effective Green, g (s)	2.0	91.0			84.0			2.0			2.0	
Actuated g/C Ratio	0.02	0.83			0.76			0.02			0.02	
Clearance Time (s)	5.0	5.0			5.0			5.0			5.0	
Vehicle Extension (s)	1.0	1.0			1.0			1.5			1.0	
Lane Grp Cap (vph)	31	1497			1395			29			32	
v/s Ratio Prot	0.00	c0.21			c0.47			c0.00			c0.00	
v/s Ratio Perm												
v/c Ratio	0.06	0.26			0.61			0.03			0.12	
Uniform Delay, d1	53.1	2.1			5.8			53.1			53.1	
Progression Factor	1.36	0.28			0.39			1.00			1.00	
Incremental Delay, d2	0.3	0.4			1.7			0.2			0.6	
Delay (s)	72.3	1.0			3.9			53.2			53.8	
Level of Service	E	A			A			D			D	
Approach Delay (s)		1.3			3.9			53.2			53.8	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM 2000 Control Delay			3.3			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			59.0%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology expects strict NEMA phasing.

Queues

5: Puyallup Ave & F St

04/21/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	NEL	NER
Lane Group Flow (vph)	3	360	16	9	692	13	9	3	140	69
v/c Ratio	0.03	0.29	0.02	0.09	0.55	0.18	0.11	0.02	0.67	0.38
Control Delay	48.0	6.0	3.5	62.2	13.3	50.5	47.6	46.0	62.8	51.2
Queue Delay	0.0	0.5	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Total Delay	48.0	6.5	3.5	62.2	13.7	50.5	47.6	46.0	62.8	51.2
Queue Length 50th (ft)	2	1	0	6	98	9	6	2	94	45
Queue Length 95th (ft)	m10	360	13	m19	#671	28	22	11	#213	94
Internal Link Dist (ft)		283			304		340	410	299	
Turn Bay Length (ft)	100		80	80						
Base Capacity (vph)	93	1230	838	99	1269	178	192	150	210	183
Starvation Cap Reductn	0	470	0	0	174	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.47	0.02	0.09	0.63	0.07	0.05	0.02	0.67	0.38

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

5: Puyallup Ave & F St

04/21/2023

												
Movement	EBL	EBT	EBR	EBR2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	3	338	0	15	8	650	1	1	11	0	8	1
Future Volume (vph)	3	338	0	15	8	650	1	1	11	0	8	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		5.0	5.0			5.0	5.0		
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00			1.00	1.00		
Frpb, ped/bikes	1.00	1.00	0.80		1.00	1.00			1.00	0.98		
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00			0.95	1.00		
Frt	1.00	1.00	0.85		1.00	1.00			1.00	0.85		
Flt Protected	0.95	1.00	1.00		0.95	1.00			0.95	1.00		
Satd. Flow (prot)	1719	1810	1234		1770	1862			881	814		
Flt Permitted	0.95	1.00	1.00		0.95	1.00			0.82	1.00		
Satd. Flow (perm)	1719	1810	1234		1770	1862			757	814		
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	3	360	0	16	9	691	1	1	12	0	9	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	3	360	16	0	9	692	0	0	13	9	0	0
Confl. Peds. (#/hr)	5		35	21	21		5	21	4		1	1
Confl. Bikes (#/hr)							3					
Heavy Vehicles (%)	5%	5%	5%	5%	2%	2%	2%	94%	94%	94%	94%	0%
Turn Type	Prot	NA	Perm		Prot	NA		Perm	Split	NA		Split
Protected Phases	7	4			3	8			2	2		1
Permitted Phases			4					2				
Actuated Green, G (s)	1.2	63.7	63.7		1.4	63.9			4.9	4.9		
Effective Green, g (s)	1.2	63.7	63.7		1.4	63.9			4.9	4.9		
Actuated g/C Ratio	0.01	0.58	0.58		0.01	0.58			0.04	0.04		
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0			5.0	5.0		
Vehicle Extension (s)	2.5	2.5	2.5		2.5	2.5			5.0	5.0		
Lane Grp Cap (vph)	18	1048	714		22	1081			33	36		
v/s Ratio Prot	0.00	c0.20			0.01	c0.37				0.01		
v/s Ratio Perm			0.01						c0.02			
v/c Ratio	0.17	0.34	0.02		0.41	0.64			0.39	0.25		
Uniform Delay, d1	53.9	12.2	9.9		53.9	15.4			51.1	50.8		
Progression Factor	0.95	0.48	0.27		1.23	0.80			1.00	1.00		
Incremental Delay, d2	3.1	0.9	0.1		8.4	2.8			15.4	7.5		
Delay (s)	54.5	6.7	2.7		74.5	15.1			66.5	58.3		
Level of Service	D	A	A		E	B			E	E		
Approach Delay (s)		6.9				15.8				63.2		
Approach LOS		A				B				E		
Intersection Summary												
HCM 2000 Control Delay			19.7				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)			25.0		
Intersection Capacity Utilization			63.9%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: Puyallup Ave & F St

04/21/2023



Movement	SBT	SBR2	NEL2	NEL	NER
Lane Configurations					
Traffic Volume (vph)	0	2	131	1	65
Future Volume (vph)	0	2	131	1	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0
Lane Util. Factor	1.00			1.00	1.00
Frpb, ped/bikes	0.91			1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00
Frt	0.91			1.00	0.85
Flt Protected	0.98			0.95	1.00
Satd. Flow (prot)	1556			1787	1560
Flt Permitted	0.98			0.95	1.00
Satd. Flow (perm)	1556			1787	1560
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	2	139	1	69
RTOR Reduction (vph)	0	0	0	0	0
Lane Group Flow (vph)	3	0	0	140	69
Confl. Peds. (#/hr)		4	4	5	1
Confl. Bikes (#/hr)					
Heavy Vehicles (%)	0%	0%	1%	1%	1%
Turn Type	NA		Prot	Prot	Perm
Protected Phases	1		10	10	
Permitted Phases					10
Actuated Green, G (s)	2.0			13.0	13.0
Effective Green, g (s)	2.0			13.0	13.0
Actuated g/C Ratio	0.02			0.12	0.12
Clearance Time (s)	5.0			5.0	5.0
Vehicle Extension (s)	2.5			2.5	2.5
Lane Grp Cap (vph)	28			211	184
v/s Ratio Prot	c0.00			c0.08	
v/s Ratio Perm					0.04
v/c Ratio	0.11			0.66	0.38
Uniform Delay, d1	53.1			46.4	44.8
Progression Factor	1.00			1.00	1.00
Incremental Delay, d2	1.2			6.9	0.9
Delay (s)	54.4			53.3	45.7
Level of Service	D			D	D
Approach Delay (s)	54.4			50.8	
Approach LOS	D			D	
Intersection Summary					

HCM 6th Edition methodology does not support more than 4 approaches.

Queues

6: G St & Puyallup Ave

04/21/2023



Lane Group	EBT	EBR	WBL	WBT	NBT	NBR
Lane Group Flow (vph)	392	45	243	579	75	156
v/c Ratio	0.34	0.05	0.30	0.38	0.42	0.46
Control Delay	4.6	4.1	3.5	3.0	51.4	35.3
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0
Total Delay	4.8	4.1	3.5	3.0	51.4	35.3
Queue Length 50th (ft)	48	6	26	61	51	91
Queue Length 95th (ft)	71	12	46	96	87	121
Internal Link Dist (ft)	304			1819	498	
Turn Bay Length (ft)		80	80			70
Base Capacity (vph)	1143	905	803	1539	343	342
Starvation Cap Reductn	281	0	0	0	0	0
Spillback Cap Reductn	0	0	0	98	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.05	0.30	0.40	0.22	0.46
Intersection Summary						

HCM Signalized Intersection Capacity Analysis

6: G St & Puyallup Ave

04/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	380	44	236	562	0	73	0	151	0	0	0
Future Volume (vph)	0	380	44	236	562	0	73	0	151	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0			5.0	5.0			
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00	1.00			
Frpb, ped/bikes		1.00	0.93	1.00	1.00			1.00	0.99			
Flpb, ped/bikes		1.00	1.00	0.99	1.00			1.00	1.00			
Frt		1.00	0.85	1.00	1.00			1.00	0.85			
Flt Protected		1.00	1.00	0.95	1.00			0.95	1.00			
Satd. Flow (prot)		1759	1393	1733	1845			1719	1522			
Flt Permitted		1.00	1.00	0.49	1.00			0.95	1.00			
Satd. Flow (perm)		1759	1393	885	1845			1719	1522			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	392	45	243	579	0	75	0	156	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	392	45	243	579	0	0	75	156	0	0	0
Confl. Peds. (#/hr)	6		18	18		6			2	2		
Heavy Vehicles (%)	8%	8%	8%	3%	3%	3%	5%	5%	5%	0%	0%	0%
Turn Type	Prot	NA	Perm	D.P+P	NA		Split	NA	pm+ov			
Protected Phases	7	4		3	8		6	6	3		2	
Permitted Phases			4	4					6	2		
Actuated Green, G (s)		70.5	70.5	84.8	89.8			10.2	24.5			
Effective Green, g (s)		70.5	70.5	84.8	89.8			10.2	24.5			
Actuated g/C Ratio		0.64	0.64	0.77	0.82			0.09	0.22			
Clearance Time (s)		5.0	5.0	5.0	5.0			5.0	5.0			
Vehicle Extension (s)		2.5	2.5	2.5	2.5			2.5	2.5			
Lane Grp Cap (vph)		1127	892	792	1506			159	408			
v/s Ratio Prot		0.22		0.04	c0.31			0.04	c0.05			
v/s Ratio Perm			0.03	0.20					0.05			
v/c Ratio		0.35	0.05	0.31	0.38			0.47	0.38			
Uniform Delay, d1		9.1	7.3	5.9	2.7			47.3	36.3			
Progression Factor		0.33	0.37	0.67	0.66			1.00	1.00			
Incremental Delay, d2		0.8	0.1	0.1	0.6			1.6	0.4			
Delay (s)		3.9	2.8	4.1	2.4			49.0	36.8			
Level of Service		A	A	A	A			D	D			
Approach Delay (s)		3.8			2.9			40.7			0.0	
Approach LOS		A			A			D			A	
Intersection Summary												
HCM 2000 Control Delay			9.0			HCM 2000 Level of Service				A		
HCM 2000 Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)				20.0		
Intersection Capacity Utilization			52.9%			ICU Level of Service				A		
Analysis Period (min)			15									

c Critical Lane Group

HCM 6th Signalized Intersection Summary

6: G St & Puyallup Ave

04/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	380	44	236	562	0	73	0	151	0	0	0
Future Volume (veh/h)	0	380	44	236	562	0	73	0	151	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00	0.99		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1781	1781	1781	1856	1856	1856	1826	1826	1826	1900	1900	1900
Adj Flow Rate, veh/h	0	392	45	243	579	0	75	0	156	0	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	8	8	3	3	3	5	5	5	0	0	0
Cap, veh/h	2	422	344	1077	1556	0	121	0	968	0	2	0
Arrive On Green	0.00	0.47	0.47	1.00	1.00	0.00	0.07	0.00	0.07	0.00	0.00	0.00
Sat Flow, veh/h	1697	1781	1452	1767	1856	0	1714	0	1525	0	1900	0
Grp Volume(v), veh/h	0	392	45	243	579	0	75	0	156	0	0	0
Grp Sat Flow(s),veh/h/ln	1697	1781	1452	1767	1856	0	1714	0	1525	0	1900	0
Q Serve(g_s), s	0.0	22.7	1.9	0.0	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	22.7	1.9	0.0	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	2	422	344	1077	1556	0	121	0	968	0	2	0
V/C Ratio(X)	0.00	0.93	0.13	0.23	0.37	0.00	0.62	0.00	0.16	0.00	0.00	0.00
Avail Cap(c_a), veh/h	93	567	462	1077	1556	0	343	0	1166	0	380	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.96	0.96	0.82	0.82	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	28.1	22.6	0.0	0.0	0.0	49.7	0.0	8.5	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	28.3	0.8	0.1	0.6	0.0	3.8	0.0	0.1	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	10.5	0.7	0.0	0.2	0.0	2.1	0.0	1.5	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	56.3	23.3	0.1	0.6	0.0	53.6	0.0	8.6	0.0	0.0	0.0
LnGrp LOS	A	E	C	A	A	A	D	A	A	A	A	A
Approach Vol, veh/h	437			822			231			0		
Approach Delay, s/veh	52.9			0.4			23.2			0.0		
Approach LOS	D			A			C					
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	0.0		66.2	31.1		12.7		0.0	97.3			
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0		5.0	5.0			
Max Green Setting (Gmax), s	22.0		11.0	35.0		22.0		6.0	40.0			
Max Q Clear Time (g_c+I1), s	0.0		2.0	24.7		6.7		0.0	2.0			
Green Ext Time (p_c), s	0.0		0.3	1.3		0.6		0.0	3.5			
Intersection Summary												
HCM 6th Ctrl Delay	19.3											
HCM 6th LOS	B											

Queues

7: E L ST & Puyallup Ave

04/21/2023



Lane Group	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	561	18	98	841	52	7
v/c Ratio	0.42	0.02	0.15	0.54	0.39	0.05
Control Delay	8.5	4.5	2.8	4.9	55.4	44.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.5	4.5	2.8	4.9	55.4	44.9
Queue Length 50th (ft)	152	4	10	152	35	5
Queue Length 95th (ft)	420	m12	23	266	74	19
Internal Link Dist (ft)	1819			839	1082	346
Turn Bay Length (ft)		80	80			
Base Capacity (vph)	1328	1060	638	1547	269	286
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.02	0.15	0.54	0.19	0.02

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

7: E L ST & Puyallup Ave

04/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	539	17	94	807	0	9	0	41	6	0	1
Future Volume (vph)	0	539	17	94	807	0	9	0	41	6	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0			5.0			5.0	
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00			1.00	
Frpb, ped/bikes		1.00	0.94	1.00	1.00			0.98			1.00	
Flpb, ped/bikes		1.00	1.00	0.99	1.00			1.00			1.00	
Frt		1.00	0.85	1.00	1.00			0.89			0.98	
Flt Protected		1.00	1.00	0.95	1.00			0.99			0.96	
Satd. Flow (prot)		1810	1445	1726	1827			1416			1783	
Flt Permitted		1.00	1.00	0.40	1.00			0.94			0.77	
Satd. Flow (perm)		1810	1445	735	1827			1349			1430	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	561	18	98	841	0	9	0	43	6	0	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	561	18	98	841	0	0	52	0	0	7	0
Confl. Peds. (#/hr)			15	15					1	1		
Heavy Vehicles (%)	5%	5%	5%	4%	4%	4%	16%	16%	16%	0%	0%	0%
Turn Type	Prot	NA	Perm	D.P+P	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4	4			2			6		
Actuated Green, G (s)		79.8	79.8	86.2	91.2			8.8			8.8	
Effective Green, g (s)		79.8	79.8	86.2	91.2			8.8			8.8	
Actuated g/C Ratio		0.73	0.73	0.78	0.83			0.08			0.08	
Clearance Time (s)		5.0	5.0	5.0	5.0			5.0			5.0	
Vehicle Extension (s)		2.5	2.5	2.5	2.5			2.5			2.5	
Lane Grp Cap (vph)		1313	1048	633	1514			107			114	
v/s Ratio Prot		0.31		0.01	c0.46							
v/s Ratio Perm			0.01	0.11				c0.04			0.00	
v/c Ratio		0.43	0.02	0.15	0.56			0.49			0.06	
Uniform Delay, d1		6.0	4.2	3.1	3.0			48.4			46.8	
Progression Factor		1.13	0.84	1.00	1.00			1.00			1.00	
Incremental Delay, d2		1.0	0.0	0.1	1.5			2.5			0.2	
Delay (s)		7.8	3.5	3.2	4.5			51.0			46.9	
Level of Service		A	A	A	A			D			D	
Approach Delay (s)		7.6			4.3			51.0			46.9	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM 2000 Control Delay			7.3			HCM 2000 Level of Service					A	
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)					15.0	
Intersection Capacity Utilization			68.6%			ICU Level of Service					C	
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

7: E L ST & Puyallup Ave

04/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	539	17	94	807	0	9	0	41	6	0	1
Future Volume (veh/h)	0	539	17	94	807	0	9	0	41	6	0	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1826	1826	1826	1841	1841	1841	1663	1663	1663	1900	1900	1900
Adj Flow Rate, veh/h	0	561	18	98	841	0	9	0	43	6	0	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	5	5	5	4	4	4	16	16	16	0	0	0
Cap, veh/h	2	1337	1121	744	1527	0	49	9	93	164	5	18
Arrive On Green	0.00	0.97	0.97	0.05	0.83	0.00	0.08	0.00	0.08	0.08	0.00	0.08
Sat Flow, veh/h	1739	1826	1532	1753	1841	0	130	113	1161	1298	60	226
Grp Volume(v), veh/h	0	561	18	98	841	0	52	0	0	7	0	0
Grp Sat Flow(s),veh/h/ln	1739	1826	1532	1753	1841	0	1404	0	0	1584	0	0
Q Serve(g_s), s	0.0	1.5	0.0	1.4	15.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	1.5	0.0	1.4	15.8	0.0	3.8	0.0	0.0	0.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.17		0.83	0.86		0.14
Lane Grp Cap(c), veh/h	2	1337	1121	744	1527	0	150	0	0	187	0	0
V/C Ratio(X)	0.00	0.42	0.02	0.13	0.55	0.00	0.35	0.00	0.00	0.04	0.00	0.00
Avail Cap(c_a), veh/h	95	1337	1121	749	1527	0	315	0	0	356	0	0
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.93	0.93	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.4	0.4	2.7	2.9	0.0	48.3	0.0	0.0	46.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.9	0.0	0.1	1.4	0.0	1.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.6	0.0	0.4	4.2	0.0	1.4	0.0	0.0	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	1.3	0.4	2.8	4.4	0.0	49.3	0.0	0.0	46.8	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	A
Approach Vol, veh/h	579				939				52			
Approach Delay, s/veh	1.3				4.2				49.3			
Approach LOS	A				A				D			
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	13.8		10.7	85.5		13.8		0.0	96.2			
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0		5.0	5.0			
Max Green Setting (Gmax), s	22.0		6.0	67.0		22.0		6.0	67.0			
Max Q Clear Time (g_c+I1), s	5.8		3.4	3.5		2.4		0.0	17.8			
Green Ext Time (p_c), s	0.1		0.0	3.5		0.0		0.0	6.3			
Intersection Summary												
HCM 6th Ctrl Delay	4.8											
HCM 6th LOS	A											

Queues

8: E Portland Ave & Puyallup Ave

04/21/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	42	219	386	428	870	201	283	245	91	729	103
v/c Ratio	0.10	0.51	0.26	0.86	0.85	0.84	0.28	0.40	0.23	0.88	0.23
Control Delay	41.4	47.2	0.4	53.2	43.0	54.3	29.1	6.1	22.3	50.4	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.4	47.2	0.4	53.2	43.0	54.3	29.1	6.1	22.3	50.4	7.2
Queue Length 50th (ft)	13	74	0	285	285	85	74	0	36	237	0
Queue Length 95th (ft)	29	113	0	#583	#493	#253	131	62	83	#397	40
Internal Link Dist (ft)		523			476		261			552	
Turn Bay Length (ft)	200		500			100		150	190		150
Base Capacity (vph)	801	826	1490	526	1085	239	1066	633	401	955	504
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.27	0.26	0.81	0.80	0.84	0.27	0.39	0.23	0.76	0.20

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

8: E Portland Ave & Puyallup Ave

04/21/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	210	371	556	609	82	193	272	235	87	700	99
Future Volume (vph)	40	210	371	556	609	82	193	272	235	87	700	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.91	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.99		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3273	3374	1490	1579	3244		1583	3167	1398	1626	3252	1455
Flt Permitted	0.95	1.00	1.00	0.95	0.99		0.16	1.00	1.00	0.55	1.00	1.00
Satd. Flow (perm)	3273	3374	1490	1579	3244		268	3167	1398	948	3252	1455
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	42	219	386	579	634	85	201	283	245	91	729	103
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	167	0	0	76
Lane Group Flow (vph)	42	219	386	428	864	0	201	283	78	91	729	27
Confl. Peds. (#/hr)			2	2					1	1		
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	7%	7%	7%	4%	4%	4%	14%	14%	14%	11%	11%	11%
Turn Type	Split	NA	Free	Split	NA		D.P+P	NA	Perm	D.P+P	NA	Perm
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases			Free				2		6	6		2
Actuated Green, G (s)	13.1	13.1	104.2	32.4	32.4		38.7	33.3	33.3	38.7	27.6	27.6
Effective Green, g (s)	13.1	13.1	104.2	32.4	32.4		38.7	33.3	33.3	38.7	27.6	27.6
Actuated g/C Ratio	0.13	0.13	1.00	0.31	0.31		0.37	0.32	0.32	0.37	0.26	0.26
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0	1.0		1.0	1.0		2.5	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	411	424	1490	490	1008		239	1012	446	387	861	385
v/s Ratio Prot	0.01	c0.06		c0.27	0.27		c0.09	0.09		0.01	c0.22	
v/s Ratio Perm			0.26				0.22		0.06	0.08		0.02
v/c Ratio	0.10	0.52	0.26	0.87	0.86		0.84	0.28	0.18	0.24	0.85	0.07
Uniform Delay, d1	40.3	42.6	0.0	34.0	33.7		25.3	26.5	25.6	21.8	36.3	28.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	0.4	0.4	15.3	7.0		22.2	0.1	0.1	0.1	7.4	0.0
Delay (s)	40.4	43.0	0.4	49.3	40.8		47.6	26.5	25.6	21.9	43.7	28.7
Level of Service	D	D	A	D	D		D	C	C	C	D	C
Approach Delay (s)		17.4			43.6			32.0			39.9	
Approach LOS		B			D			C			D	
Intersection Summary												
HCM 2000 Control Delay			35.6			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			104.2			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			79.6%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology does not support turning movements with shared & exclusive lanes.

Intersection: 1: Pacific Ave & S 24th St

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	T	TR	LT	TR
Maximum Queue (ft)	54	97	178	301	173	217	202	239	212
Average Queue (ft)	16	37	144	144	97	135	116	145	91
95th Queue (ft)	44	78	203	298	170	203	184	220	188
Link Distance (ft)	435	435		279		801	801	1090	1090
Upstream Blk Time (%)				2					
Queuing Penalty (veh)				11					
Storage Bay Dist (ft)			150		150				
Storage Blk Time (%)			12	1	2				
Queuing Penalty (veh)			34	6	9				

Intersection: 2: A St & S 24th St/Puyallup Ave

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	TR	LT	R	L	TR
Maximum Queue (ft)	53	94	45	134	313	36	56	45	59
Average Queue (ft)	13	26	4	27	99	8	18	8	15
95th Queue (ft)	39	73	23	86	234	28	44	30	41
Link Distance (ft)		279			1062	662		502	502
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	60		80	70		135			
Storage Blk Time (%)	1	2	0	0	8				
Queuing Penalty (veh)	2	1	0	1	6				

Intersection: 3: E D St & Puyallup Ave

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	LT	R
Maximum Queue (ft)	133	266	71	105	338	62	210	298	148
Average Queue (ft)	41	79	7	40	230	14	86	149	64
95th Queue (ft)	96	181	35	100	378	42	166	254	125
Link Distance (ft)		1062			327		637	750	750
Upstream Blk Time (%)					3				
Queuing Penalty (veh)					23				
Storage Bay Dist (ft)	150		80	80		150			
Storage Blk Time (%)	0	8	0	0	26	0	3		
Queuing Penalty (veh)	0	5	0	3	20	0	0		

Intersection: 4: E E St & Puyallup Ave

Movement	EB	EB	WB	NB	SB
Directions Served	L	T	TR	TR	LTR
Maximum Queue (ft)	27	75	255	15	30
Average Queue (ft)	2	8	54	1	5
95th Queue (ft)	14	45	179	8	21
Link Distance (ft)		327	254	397	434
Upstream Blk Time (%)			0		
Queuing Penalty (veh)			3		
Storage Bay Dist (ft)	80				
Storage Blk Time (%)		0	4		
Queuing Penalty (veh)		0	0		

Intersection: 5: Puyallup Ave & F St

Movement	EB	EB	EB	WB	WB	NB	NB	SB	NE	NE
Directions Served	L	T	R>	<L	TR	<L	TR	LTR>	<L	R
Maximum Queue (ft)	10	223	82	83	325	99	83	32	168	125
Average Queue (ft)	1	67	6	10	155	20	10	3	91	45
95th Queue (ft)	6	162	37	43	300	66	44	18	152	94
Link Distance (ft)		254			319	347	347	456	302	302
Upstream Blk Time (%)		0			0					
Queuing Penalty (veh)		0			3					
Storage Bay Dist (ft)	100		80	80						
Storage Blk Time (%)		5	0	0	15					
Queuing Penalty (veh)		1	0	0	1					

Intersection: 6: G St & Puyallup Ave

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	L	TR	LT	R
Maximum Queue (ft)	261	98	104	338	232	120
Average Queue (ft)	88	17	57	70	84	79
95th Queue (ft)	196	60	107	221	182	129
Link Distance (ft)	319			1829	531	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		80	80			70
Storage Blk Time (%)	7	0	3	3	10	17
Queuing Penalty (veh)	3	0	19	6	14	13

Intersection: 7: E L ST & Puyallup Ave

Movement	EB	EB	WB	WB	B273	NB	SB
Directions Served	T	R	L	TR	T	LTR	LTR
Maximum Queue (ft)	277	65	102	335	98	108	46
Average Queue (ft)	95	3	37	95	4	35	10
95th Queue (ft)	214	28	83	260	72	81	35
Link Distance (ft)	1829			862	530	1114	392
Upstream Blk Time (%)					0		
Queuing Penalty (veh)					0		
Storage Bay Dist (ft)		80	80				
Storage Blk Time (%)	7		0	5			
Queuing Penalty (veh)	1		4	4			

Intersection: 8: E Portland Ave & Puyallup Ave

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	L	T	T	L	LT	TR	L	T	T	R	L
Maximum Queue (ft)	36	83	135	140	541	550	150	125	301	259	75	272
Average Queue (ft)	6	27	74	72	464	501	148	112	179	117	8	69
95th Queue (ft)	25	65	121	124	645	617	173	148	313	253	44	179
Link Distance (ft)			530	530	502	502			259	259	259	
Upstream Blk Time (%)					20	54			6	0		
Queuing Penalty (veh)					0	0			15	1		
Storage Bay Dist (ft)	200	200					100	100				190
Storage Blk Time (%)						62	21	35	8			0
Queuing Penalty (veh)						240	124	48	16			0

Intersection: 8: E Portland Ave & Puyallup Ave

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	414	386	175
Average Queue (ft)	249	208	40
95th Queue (ft)	363	327	157
Link Distance (ft)	573	573	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			150
Storage Blk Time (%)	20	14	0
Queuing Penalty (veh)	17	14	0

Intersection: 269: E Portland Ave

Movement	NB	NB	SB
Directions Served	T	T	T
Maximum Queue (ft)	101	20	3
Average Queue (ft)	15	2	0
95th Queue (ft)	81	28	3
Link Distance (ft)	655	655	259
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)	0		
Queuing Penalty (veh)	0		

Network Summary

Network wide Queuing Penalty: 672

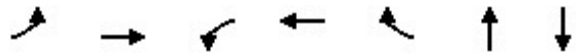
SECTION 5: FUTURE SENSITIVITY ANALYSIS RESULTS



Queues

1: Pacific Ave & S 24th St

05/26/2023



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	9	26	152	38	141	471	299
v/c Ratio	0.09	0.13	0.55	0.11	0.21	0.76	0.20
Control Delay	51.4	43.7	42.1	33.2	24.9	50.2	22.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.4	43.7	42.1	33.2	24.9	50.2	22.7
Queue Length 50th (ft)	6	17	89	21	63	167	69
Queue Length 95th (ft)	23	40	126	48	143	211	132
Internal Link Dist (ft)		405		294		757	1056
Turn Bay Length (ft)			150		150		
Base Capacity (vph)	107	334	294	442	658	784	1471
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.08	0.52	0.09	0.21	0.60	0.20
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

1: Pacific Ave & S 24th St

05/26/2023

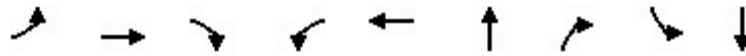
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	22	2	138	35	128	0	334	95	99	172	1
Future Volume (vph)	8	22	2	138	35	128	0	334	95	99	172	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		0.95			0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.97			1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.98	
Satd. Flow (prot)	1687	1752		1621	1712	1455		3196			3250	
Flt Permitted	0.95	1.00		0.50	1.00	1.00		1.00			0.98	
Satd. Flow (perm)	1687	1752		850	1712	1455		3196			3250	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	9	24	2	152	38	141	0	367	104	109	189	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	9	26	0	152	38	141	0	471	0	0	299	0
Confl. Peds. (#/hr)	7		5	5		7	11		14	14		11
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	7%	7%	7%	11%	11%	11%	8%	8%	8%	9%	9%	9%
Turn Type	Prot	NA		pm+pt	NA	Over		NA		Split	NA	
Protected Phases	7	4		3	8	2		1		2	2	
Permitted Phases				8								
Actuated Green, G (s)	1.4	10.3		28.0	21.6	45.7		21.3			45.7	
Effective Green, g (s)	1.4	10.3		28.0	21.6	45.7		21.3			45.7	
Actuated g/C Ratio	0.01	0.09		0.25	0.20	0.42		0.19			0.42	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0		5.0			5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5		2.5			2.5	
Lane Grp Cap (vph)	21	164		305	336	604		618			1350	
v/s Ratio Prot	0.01	0.01		c0.06	0.02	c0.10		c0.15			0.09	
v/s Ratio Perm				c0.07								
v/c Ratio	0.43	0.16		0.50	0.11	0.23		0.76			0.22	
Uniform Delay, d1	53.9	45.9		33.9	36.3	20.8		42.0			20.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	
Incremental Delay, d2	9.9	0.3		0.9	0.1	0.9		5.3			0.4	
Delay (s)	63.8	46.2		34.8	36.4	21.7		47.3			21.1	
Level of Service	E	D		C	D	C		D			C	
Approach Delay (s)		50.7			29.4			47.3			21.1	
Approach LOS		D			C			D			C	
Intersection Summary												
HCM 2000 Control Delay			35.3				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.45									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)			20.0		
Intersection Capacity Utilization			61.8%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology expects strict NEMA phasing.

Queues

2: A St & S 24th St/Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	5	201	5	16	335	3	60	5	2
v/c Ratio	0.06	0.15	0.00	0.02	0.24	0.01	0.36	0.04	0.01
Control Delay	55.8	5.5	6.8	0.6	1.2	42.3	53.3	43.6	42.5
Queue Delay	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.8	6.0	6.8	0.6	1.2	42.3	53.3	43.6	42.5
Queue Length 50th (ft)	4	22	1	0	2	2	45	4	1
Queue Length 95th (ft)	17	102	7	m1	43	11	78	14	9
Internal Link Dist (ft)		294			1074	627			464
Turn Bay Length (ft)	60		80	70			135		
Base Capacity (vph)	134	1358	1122	929	1389	477	397	287	347
Starvation Cap Reductn	0	830	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.38	0.00	0.02	0.24	0.01	0.15	0.02	0.01

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: A St & S 24th St/Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	191	5	15	303	15	0	3	57	5	1	1
Future Volume (vph)	5	191	5	15	303	15	0	3	57	5	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00			1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1612	1696	1401	1614	1697			1792	1490	1354	1304	
Flt Permitted	0.95	1.00	1.00	0.63	1.00			1.00	1.00	0.76	1.00	
Satd. Flow (perm)	1612	1696	1401	1073	1697			1792	1490	1077	1304	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	201	5	16	319	16	0	3	60	5	1	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	5	201	5	16	335	0	0	3	60	5	2	0
Confl. Peds. (#/hr)	3		12	12		3	3		1	1		3
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	12%	12%	12%	11%	11%	11%	6%	6%	6%	33%	33%	33%
Turn Type	Prot	NA	Perm	D.P+P	NA			NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			6			2	
Permitted Phases			4	4			6		6	2		
Actuated Green, G (s)	1.3	91.1	91.1	93.5	92.2			11.5	11.5	11.5	11.5	
Effective Green, g (s)	1.3	91.1	91.1	93.5	92.2			11.5	11.5	11.5	11.5	
Actuated g/C Ratio	0.01	0.76	0.76	0.78	0.77			0.10	0.10	0.10	0.10	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5			2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	17	1287	1063	846	1303			171	142	103	124	
v/s Ratio Prot	c0.00	0.12		0.00	c0.20			0.00			0.00	
v/s Ratio Perm			0.00	0.01					c0.04	0.00		
v/c Ratio	0.29	0.16	0.00	0.02	0.26			0.02	0.42	0.05	0.02	
Uniform Delay, d1	58.9	3.9	3.5	3.0	4.0			49.1	51.1	49.3	49.1	
Progression Factor	1.00	1.00	1.00	0.15	0.17			1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.9	0.3	0.0	0.0	0.5			0.0	1.5	0.1	0.0	
Delay (s)	65.8	4.2	3.5	0.4	1.2			49.2	52.6	49.4	49.2	
Level of Service	E	A	A	A	A			D	D	D	D	
Approach Delay (s)		5.6			1.1			52.4			49.3	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM 2000 Control Delay			8.3			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.28									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			52.5%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: A St & S 24th St/Puyallup Ave

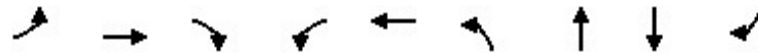
05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	191	5	15	303	15	0	3	57	5	1	1
Future Volume (veh/h)	5	191	5	15	303	15	0	3	57	5	1	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	0.98		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1722	1722	1722	1737	1737	1737	1811	1811	1811	1411	1411	1411
Adj Flow Rate, veh/h	5	201	5	16	319	16	0	3	60	5	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	12	12	12	11	11	11	6	6	6	33	33	33
Cap, veh/h	13	1318	1086	892	1276	64	0	161	134	147	57	57
Arrive On Green	0.01	0.77	0.77	0.04	1.00	1.00	0.00	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	1640	1722	1418	1654	1639	82	0	1811	1509	995	641	641
Grp Volume(v), veh/h	5	201	5	16	0	335	0	3	60	5	0	2
Grp Sat Flow(s),veh/h/ln	1640	1722	1418	1654	0	1722	0	1811	1509	995	0	1283
Q Serve(g_s), s	0.4	3.7	0.1	0.2	0.0	0.0	0.0	0.2	4.5	0.6	0.0	0.2
Cycle Q Clear(g_c), s	0.4	3.7	0.1	0.2	0.0	0.0	0.0	0.2	4.5	0.7	0.0	0.2
Prop In Lane	1.00		1.00	1.00		0.05	0.00		1.00	1.00		0.50
Lane Grp Cap(c), veh/h	13	1318	1086	892	0	1340	0	161	134	147	0	114
V/C Ratio(X)	0.40	0.15	0.00	0.02	0.00	0.25	0.00	0.02	0.45	0.03	0.00	0.02
Avail Cap(c_a), veh/h	137	1318	1086	996	0	1340	0	483	402	324	0	342
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.93	0.00	0.93	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	59.3	3.7	3.3	2.8	0.0	0.0	0.0	49.9	51.9	50.2	0.0	49.9
Incr Delay (d2), s/veh	14.3	0.2	0.0	0.0	0.0	0.4	0.0	0.0	1.7	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.2	0.0	0.1	0.0	0.2	0.0	0.1	1.8	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.6	4.0	3.3	2.8	0.0	0.4	0.0	49.9	53.6	50.3	0.0	49.9
LnGrp LOS	E	A	A	A	A	A	A	D	D	D	A	D
Approach Vol, veh/h	211		351				63		7			
Approach Delay, s/veh	5.6		0.5				53.4		50.2			
Approach LOS	A		A				D		D			
Timer - Assigned Phs	2		3		4		6		7		8	
Phs Duration (G+Y+Rc), s	15.7		7.5		96.8		15.7		5.9		98.4	
Change Period (Y+Rc), s	5.0		5.0		5.0		5.0		5.0		5.0	
Max Green Setting (Gmax), s	32.0		10.0		63.0		32.0		10.0		63.0	
Max Q Clear Time (g_c+I1), s	2.7		2.2		5.7		6.5		2.4		2.0	
Green Ext Time (p_c), s	0.0		0.0		1.0		0.1		0.0		1.8	
Intersection Summary												
HCM 6th Ctrl Delay	8.0											
HCM 6th LOS	A											
Notes												

Queues

3: E D St & Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	103	398	13	61	406	19	239	130	57
v/c Ratio	0.61	0.38	0.02	0.09	0.41	0.10	0.79	1.05	0.22
Control Delay	66.7	18.0	16.2	3.4	11.4	37.8	63.8	141.6	40.5
Queue Delay	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
Total Delay	66.7	18.0	16.2	3.4	11.9	37.8	63.8	141.6	40.5
Queue Length 50th (ft)	79	147	4	10	129	12	178	~109	38
Queue Length 95th (ft)	133	294	18	7	166	32	249	#203	71
Internal Link Dist (ft)		1074			315		604	705	
Turn Bay Length (ft)	150		80	80		150			
Base Capacity (vph)	253	1061	864	657	990	300	460	188	401
Starvation Cap Reductn	0	0	0	0	240	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.38	0.02	0.09	0.54	0.06	0.52	0.69	0.14

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

3: E D St & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	358	12	55	285	80	17	115	100	72	45	51
Future Volume (vph)	93	358	12	55	285	80	17	115	100	72	45	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0			5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	0.99		1.00	0.98			1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00			0.99	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.93			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.97	1.00
Satd. Flow (prot)	1687	1776	1446	1680	1703		1631	1581			1608	1377
Flt Permitted	0.95	1.00	1.00	0.46	1.00		0.60	1.00			0.39	1.00
Satd. Flow (perm)	1687	1776	1446	805	1703		1029	1581			646	1377
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	103	398	13	61	317	89	19	128	111	80	50	57
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	103	398	13	61	406	0	19	239	0	0	130	57
Confl. Peds. (#/hr)	6		7	7		6	3		6	6		3
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	10%	10%	10%	14%	14%	14%
Turn Type	Prot	NA	Perm	D.P+P	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4		3	8			6			2	
Permitted Phases			4	4			6			2		2
Actuated Green, G (s)	12.2	69.0	69.0	81.9	69.7		23.1	23.1			23.1	23.1
Effective Green, g (s)	12.2	69.0	69.0	81.9	69.7		23.1	23.1			23.1	23.1
Actuated g/C Ratio	0.10	0.58	0.58	0.68	0.58		0.19	0.19			0.19	0.19
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5		2.5	2.5			2.5	2.5
Lane Grp Cap (vph)	171	1021	831	643	989		198	304			124	265
v/s Ratio Prot	c0.06	0.22		0.01	c0.24			0.15				
v/s Ratio Perm			0.01	0.05			0.02				c0.20	0.04
v/c Ratio	0.60	0.39	0.02	0.09	0.41		0.10	0.79			1.05	0.22
Uniform Delay, d1	51.6	14.0	10.9	10.1	13.8		39.9	46.1			48.5	40.8
Progression Factor	1.02	1.03	1.07	0.48	0.63		1.00	1.00			1.00	1.00
Incremental Delay, d2	5.0	1.1	0.0	0.0	1.2		0.2	12.1			94.4	0.3
Delay (s)	57.6	15.6	11.8	4.9	10.0		40.0	58.2			142.8	41.1
Level of Service	E	B	B	A	A		D	E			F	D
Approach Delay (s)		23.9			9.3			56.9			111.8	
Approach LOS		C			A			E			F	
Intersection Summary												
HCM 2000 Control Delay			36.6			HCM 2000 Level of Service		D				
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)		15.0				
Intersection Capacity Utilization			65.0%			ICU Level of Service		C				
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

3: E D St & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	93	358	12	55	285	80	17	115	100	72	45	51
Future Volume (veh/h)	93	358	12	55	285	80	17	115	100	72	45	51
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1796	1796	1796	1796	1796	1796	1752	1752	1752	1693	1693	1693
Adj Flow Rate, veh/h	103	398	13	61	317	89	19	128	111	80	50	57
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	7	7	7	7	7	7	10	10	10	14	14	14
Cap, veh/h	126	432	361	741	733	206	103	219	190	141	76	361
Arrive On Green	0.15	0.48	0.48	0.76	1.00	1.00	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1711	1796	1500	1711	1340	376	1205	861	746	364	297	1417
Grp Volume(v), veh/h	103	398	13	61	0	406	19	0	239	130	0	57
Grp Sat Flow(s),veh/h/ln	1711	1796	1500	1711	0	1716	1205	0	1607	660	0	1417
Q Serve(g_s), s	7.0	24.8	0.5	0.0	0.0	0.0	1.9	0.0	15.6	10.7	0.0	3.7
Cycle Q Clear(g_c), s	7.0	24.8	0.5	0.0	0.0	0.0	28.1	0.0	15.6	26.3	0.0	3.7
Prop In Lane	1.00		1.00	1.00		0.22	1.00		0.46	0.62		1.00
Lane Grp Cap(c), veh/h	126	432	361	741	0	938	103	0	409	217	0	361
V/C Ratio(X)	0.82	0.92	0.04	0.08	0.00	0.43	0.18	0.00	0.58	0.60	0.00	0.16
Avail Cap(c_a), veh/h	257	958	800	741	0	938	147	0	469	261	0	413
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.99	0.97	0.00	0.97	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.4	30.1	23.8	8.2	0.0	0.0	56.7	0.0	39.1	47.9	0.0	34.7
Incr Delay (d2), s/veh	9.3	27.2	0.2	0.0	0.0	1.4	0.6	0.0	1.1	2.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	11.5	0.2	0.4	0.0	0.4	0.6	0.0	6.3	3.9	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.7	57.3	24.0	8.2	0.0	1.4	57.3	0.0	40.2	49.9	0.0	34.9
LnGrp LOS	E	E	C	A	A	A	E	A	D	D	A	C
Approach Vol, veh/h	514				467				258			
Approach Delay, s/veh	56.9				2.3				41.5			
Approach LOS	E				A				D			
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	35.6		50.5	33.9		35.6		13.8	70.6			
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0		5.0	5.0			
Max Green Setting (Gmax), s	35.0		6.0	64.0		35.0		18.0	52.0			
Max Q Clear Time (g_c+I1), s	28.3		2.0	26.8		30.1		9.0	2.0			
Green Ext Time (p_c), s	0.4		0.0	2.1		0.5		0.1	2.4			
Intersection Summary												
HCM 6th Ctrl Delay	34.7											
HCM 6th LOS	C											

Queues

4: E E St & Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBT	SBT
Lane Group Flow (vph)	24	607	1	420	4
v/c Ratio	0.28	0.37	0.00	0.29	0.02
Control Delay	69.3	1.8	2.0	2.3	42.8
Queue Delay	0.0	0.0	0.0	0.3	0.0
Total Delay	69.3	1.8	2.0	2.6	42.8
Queue Length 50th (ft)	20	0	0	31	3
Queue Length 95th (ft)	m40	188	m0	111	12
Internal Link Dist (ft)		315		283	388
Turn Bay Length (ft)	80		80		
Base Capacity (vph)	87	1635	1316	1471	396
Starvation Cap Reductn	0	59	0	501	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.28	0.39	0.00	0.43	0.01

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

4: E E St & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	534	1	0	361	9	0	0	0	3	0	1
Future Volume (vph)	21	534	1	0	361	9	0	0	0	3	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		5.0						5.0	
Lane Util. Factor	1.00	1.00	1.00		1.00						1.00	
Frpb, ped/bikes	1.00	1.00	0.95		1.00						0.99	
Flpb, ped/bikes	1.00	1.00	1.00		1.00						1.00	
Frt	1.00	1.00	0.85		1.00						0.97	
Flt Protected	0.95	1.00	1.00		1.00						0.96	
Satd. Flow (prot)	1656	1743	1403		1705						1760	
Flt Permitted	0.95	1.00	1.00		1.00						0.96	
Satd. Flow (perm)	1656	1743	1403		1705						1760	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	24	607	1	0	410	10	0	0	0	3	0	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	24	607	1	0	420	0	0	0	0	0	4	0
Confl. Peds. (#/hr)	2		13	13		2	1					1
Heavy Vehicles (%)	9%	9%	9%	11%	11%	11%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	pm+pt	NA		Split			Split	NA	
Protected Phases	7	4		3	8		1	1		2	2	
Permitted Phases			4	8								
Actuated Green, G (s)	4.0	104.6	104.6		95.6						5.4	
Effective Green, g (s)	4.0	104.6	104.6		95.6						5.4	
Actuated g/C Ratio	0.03	0.87	0.87		0.80						0.05	
Clearance Time (s)	5.0	5.0	5.0		5.0						5.0	
Vehicle Extension (s)	1.0	1.0	1.0		1.0						1.0	
Lane Grp Cap (vph)	55	1519	1222		1358						79	
v/s Ratio Prot	0.01	c0.35			0.25						c0.00	
v/s Ratio Perm			0.00									
v/c Ratio	0.44	0.40	0.00		0.31						0.05	
Uniform Delay, d1	56.9	1.5	1.0		3.3						54.8	
Progression Factor	1.14	0.44	0.45		0.39						1.00	
Incremental Delay, d2	1.9	0.7	0.0		0.6						0.1	
Delay (s)	66.4	1.4	0.4		1.9						54.9	
Level of Service	E	A	A		A						D	
Approach Delay (s)		3.9			1.9			0.0			54.9	
Approach LOS		A			A			A			D	
Intersection Summary												
HCM 2000 Control Delay			3.3		HCM 2000 Level of Service				A			
HCM 2000 Volume to Capacity ratio			0.42									
Actuated Cycle Length (s)			120.0		Sum of lost time (s)			20.0				
Intersection Capacity Utilization			45.2%		ICU Level of Service			A				
Analysis Period (min)			15									

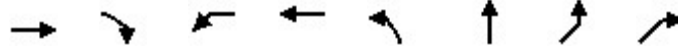
c Critical Lane Group

HCM 6th Edition methodology expects strict NEMA phasing.

Queues

5: Puyallup Ave & F St

05/26/2023



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NEL	NER
Lane Group Flow (vph)	493	93	42	371	14	2	7	13
v/c Ratio	0.37	0.09	0.37	0.24	0.15	0.02	0.05	0.10
Control Delay	3.2	2.4	68.1	2.8	53.6	49.5	51.7	53.0
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.5	2.4	68.1	2.8	53.6	49.5	51.7	53.0
Queue Length 50th (ft)	52	9	33	0	10	1	5	10
Queue Length 95th (ft)	23	6	75	56	32	10	21	30
Internal Link Dist (ft)	283			304		340	299	
Turn Bay Length (ft)		80	80					
Base Capacity (vph)	1328	989	115	1571	225	207	140	125
Starvation Cap Reductn	361	0	0	138	0	0	0	0
Spillback Cap Reductn	11	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.09	0.37	0.26	0.06	0.01	0.05	0.10
Intersection Summary								

HCM Signalized Intersection Capacity Analysis

5: Puyallup Ave & F St

05/26/2023

												
Movement	EBL	EBT	EBR	EBR2	WBL	WBT	NBL2	NBL	NBT	NBR	SBT	NEL2
Lane Configurations												
Traffic Volume (vph)	0	454	0	86	39	341	1	12	0	2	0	6
Future Volume (vph)	0	454	0	86	39	341	1	12	0	2	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0		5.0	5.0			
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	1.00			
Frpb, ped/bikes		1.00	0.88		1.00	1.00		1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00		0.98	1.00			
Frt		1.00	0.85		1.00	1.00		1.00	0.85			
Flt Protected		1.00	1.00		0.95	1.00		0.95	1.00			
Satd. Flow (prot)		1727	1286		1703	1792		1043	956			
Flt Permitted		1.00	1.00		0.95	1.00		0.95	1.00			
Satd. Flow (perm)		1727	1286		1703	1792		1043	956			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	493	0	93	42	371	1	13	0	2	0	7
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	493	93	0	42	371	0	14	2	0	0	0
Confl. Peds. (#/hr)			10	20	10		10					
Heavy Vehicles (%)	10%	10%	10%	10%	6%	6%	69%	69%	69%	69%	0%	7%
Turn Type	Prot	NA	Perm		Prot	NA	Perm	Split	NA			Prot
Protected Phases	7	4			3	8		2	2		1	10
Permitted Phases			4				2					
Actuated Green, G (s)		84.3	84.3		6.9	96.2		4.8	4.8			
Effective Green, g (s)		84.3	84.3		6.9	96.2		4.8	4.8			
Actuated g/C Ratio		0.70	0.70		0.06	0.80		0.04	0.04			
Clearance Time (s)		5.0	5.0		5.0	5.0		5.0	5.0			
Vehicle Extension (s)		2.5	2.5		2.5	2.5		5.0	5.0			
Lane Grp Cap (vph)		1213	903		97	1436		41	38			
v/s Ratio Prot		c0.29			c0.02	0.21			0.00			
v/s Ratio Perm			0.07					0.01				
v/c Ratio		0.41	0.10		0.43	0.26		0.34	0.05			
Uniform Delay, d1		7.4	5.7		54.7	3.0		56.1	55.4			
Progression Factor		0.26	0.27		1.12	0.63		1.00	1.00			
Incremental Delay, d2		1.0	0.2		2.2	0.4		10.1	1.2			
Delay (s)		2.9	1.7		63.7	2.3		66.2	56.6			
Level of Service		A	A		E	A		E	E			
Approach Delay (s)		2.7				8.5			65.0		0.0	
Approach LOS		A				A			E		A	
Intersection Summary												
HCM 2000 Control Delay			7.1				HCM 2000 Level of Service		A			
HCM 2000 Volume to Capacity ratio			0.42									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		25.0			
Intersection Capacity Utilization			61.6%				ICU Level of Service		B			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Puyallup Ave & F St

05/26/2023

		
Movement	NEL	NER
Lane Configurations		
Traffic Volume (vph)	0	12
Future Volume (vph)	0	12
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.0	5.0
Lane Util. Factor	1.00	1.00
Frpb, ped/bikes	1.00	1.00
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	0.95	1.00
Satd. Flow (prot)	1687	1509
Flt Permitted	0.95	1.00
Satd. Flow (perm)	1687	1509
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	0	13
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	7	13
Confl. Peds. (#/hr)		
Heavy Vehicles (%)	7%	7%
Turn Type	Prot	Perm
Protected Phases	10	
Permitted Phases		10
Actuated Green, G (s)	4.0	4.0
Effective Green, g (s)	4.0	4.0
Actuated g/C Ratio	0.03	0.03
Clearance Time (s)	5.0	5.0
Vehicle Extension (s)	2.5	2.5
Lane Grp Cap (vph)	56	50
v/s Ratio Prot	0.00	
v/s Ratio Perm		c0.01
v/c Ratio	0.12	0.26
Uniform Delay, d1	56.3	56.6
Progression Factor	1.00	1.00
Incremental Delay, d2	0.7	2.0
Delay (s)	57.0	58.6
Level of Service	E	E
Approach Delay (s)	58.0	
Approach LOS	E	
Intersection Summary		

HCM 6th Edition methodology does not support more than 4 approaches.

Queues

6: G St & Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR
Lane Group Flow (vph)	1	472	24	71	360	45	426
v/c Ratio	0.01	0.51	0.03	0.10	0.26	0.39	0.91
Control Delay	86.0	11.9	9.5	5.2	5.5	62.4	61.1
Queue Delay	0.0	0.5	0.0	0.0	0.0	0.0	0.0
Total Delay	86.0	12.4	9.5	5.2	5.5	62.4	61.1
Queue Length 50th (ft)	1	120	5	6	36	34	295
Queue Length 95th (ft)	m2	104	10	35	146	72	#463
Internal Link Dist (ft)		304			1819	498	
Turn Bay Length (ft)	80		80	80			70
Base Capacity (vph)	80	923	753	708	1411	300	467
Starvation Cap Reductn	0	145	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.61	0.03	0.10	0.26	0.15	0.91

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

6: G St & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	434	22	65	331	0	41	0	392	0	0	0
Future Volume (vph)	1	434	22	65	331	0	41	0	392	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00			
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00			1.00	1.00			
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00			
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85			
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00			
Satd. Flow (prot)	1612	1696	1383	1653	1743			1641	1468			
Flt Permitted	0.95	1.00	1.00	0.34	1.00			0.95	1.00			
Satd. Flow (perm)	1612	1696	1383	590	1743			1641	1468			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	472	24	71	360	0	45	0	426	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	1	472	24	71	360	0	0	45	426	0	0	0
Confl. Peds. (#/hr)	10		7	7		10	1					1
Heavy Vehicles (%)	12%	12%	12%	9%	9%	9%	10%	10%	10%	0%	0%	0%
Turn Type	Prot	NA	Perm	D.P+P	NA		Split	NA	pm+ov			
Protected Phases	7	4		3	8		6	6	3		2	
Permitted Phases			4	4					6	2		
Actuated Green, G (s)	1.2	56.4	56.4	88.4	87.2			7.2	39.2			
Effective Green, g (s)	1.2	56.4	56.4	88.4	87.2			7.2	39.2			
Actuated g/C Ratio	0.01	0.47	0.47	0.74	0.73			0.06	0.33			
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0			
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5			2.5	2.5			
Lane Grp Cap (vph)	16	797	650	718	1266			98	479			
v/s Ratio Prot	0.00	c0.28		0.03	0.21			0.03	c0.24			
v/s Ratio Perm			0.02	0.05					0.05			
v/c Ratio	0.06	0.59	0.04	0.10	0.28			0.46	0.89			
Uniform Delay, d1	58.8	23.4	17.2	11.0	5.7			54.5	38.3			
Progression Factor	1.58	0.50	0.57	0.87	0.75			1.00	1.00			
Incremental Delay, d2	1.1	3.1	0.1	0.0	0.5			2.5	17.9			
Delay (s)	94.3	14.7	9.9	9.6	4.8			57.0	56.2			
Level of Service	F	B	A	A	A			E	E			
Approach Delay (s)		14.6			5.6			56.3			0.0	
Approach LOS		B			A			E			A	
Intersection Summary												
HCM 2000 Control Delay			25.9			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			55.4%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

6: G St & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	434	22	65	331	0	41	0	392	0	0	0
Future Volume (veh/h)	1	434	22	65	331	0	41	0	392	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	0.99		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1722	1722	1722	1767	1767	1767	1752	1752	1752	1900	1900	1900
Adj Flow Rate, veh/h	1	472	24	71	360	0	45	0	426	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	12	12	12	9	9	9	10	10	10	0	0	0
Cap, veh/h	3	491	409	979	1444	0	93	0	875	0	2	0
Arrive On Green	0.00	0.57	0.57	1.00	1.00	0.00	0.06	0.00	0.06	0.00	0.00	0.00
Sat Flow, veh/h	1640	1722	1434	1682	1767	0	1654	0	1471	0	1900	0
Grp Volume(v), veh/h	1	472	24	71	360	0	45	0	426	0	0	0
Grp Sat Flow(s),veh/h/ln	1640	1722	1434	1682	1767	0	1654	0	1471	0	1900	0
Q Serve(g_s), s	0.1	31.3	0.9	0.0	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	31.3	0.9	0.0	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	3	491	409	979	1444	0	93	0	875	0	2	0
V/C Ratio(X)	0.37	0.96	0.06	0.07	0.25	0.00	0.48	0.00	0.49	0.00	0.00	0.00
Avail Cap(c_a), veh/h	82	531	442	979	1444	0	303	0	1062	0	348	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.94	0.94	0.94	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	59.7	25.2	18.7	0.0	0.0	0.0	54.9	0.0	14.1	0.0	0.0	0.0
Incr Delay (d2), s/veh	50.7	31.0	0.3	0.0	0.4	0.0	2.9	0.0	0.3	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	13.2	0.3	0.0	0.2	0.0	1.4	0.0	6.5	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	110.4	56.2	18.9	0.0	0.4	0.0	57.8	0.0	14.5	0.0	0.0	0.0
LnGrp LOS	F	E	B	A	A	A	E	A	B	A	A	A
Approach Vol, veh/h	497				431				471			
Approach Delay, s/veh	54.5				0.3				18.6			
Approach LOS	D				A				B			
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	0.0		69.1	39.2		11.7		5.2	103.1			
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0		5.0	5.0			
Max Green Setting (Gmax), s	22.0		19.0	37.0		22.0		6.0	50.0			
Max Q Clear Time (g_c+I1), s	0.0		2.0	33.3		5.2		2.1	2.0			
Green Ext Time (p_c), s	0.0		0.1	0.9		1.3		0.0	2.0			
Intersection Summary												
HCM 6th Ctrl Delay	25.7											
HCM 6th LOS	C											

Queues

7: E L ST & Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	948	19	25	466	94	4
v/c Ratio	0.04	0.73	0.02	0.07	0.35	0.59	0.03
Control Delay	61.0	13.1	6.2	3.3	5.4	65.7	46.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.0	13.1	6.2	3.3	5.4	65.7	46.0
Queue Length 50th (ft)	2	425	3	3	74	71	3
Queue Length 95th (ft)	m4	m480	m8	10	205	121	14
Internal Link Dist (ft)		1819			839	1082	346
Turn Bay Length (ft)	80		80	80			
Base Capacity (vph)	82	1301	1055	336	1327	270	236
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.73	0.02	0.07	0.35	0.35	0.02

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

7: E L ST & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	844	17	22	412	3	24	0	60	1	0	3
Future Volume (vph)	3	844	17	22	412	3	24	0	60	1	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00			0.98			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.90			0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1641	1727	1400	1597	1680			1601			1349	
Flt Permitted	0.95	1.00	1.00	0.21	1.00			0.91			0.94	
Satd. Flow (perm)	1641	1727	1400	350	1680			1474			1290	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	3	948	19	25	463	3	27	0	67	1	0	3
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	3	948	19	25	466	0	0	94	0	0	4	0
Confl. Peds. (#/hr)			9	9					1	1		
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	10%	10%	10%	13%	13%	13%	4%	4%	4%	25%	25%	25%
Turn Type	Prot	NA	Perm	D.P+P	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4	4			2			6		
Actuated Green, G (s)	1.2	88.4	88.4	92.0	90.8			13.0			13.0	
Effective Green, g (s)	1.2	88.4	88.4	92.0	90.8			13.0			13.0	
Actuated g/C Ratio	0.01	0.74	0.74	0.77	0.76			0.11			0.11	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0			5.0			5.0	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5			2.5			2.5	
Lane Grp Cap (vph)	16	1272	1031	305	1271			159			139	
v/s Ratio Prot	0.00	c0.55		c0.00	0.28							
v/s Ratio Perm			0.01	0.06				c0.06			0.00	
v/c Ratio	0.19	0.75	0.02	0.08	0.37			0.59			0.03	
Uniform Delay, d1	58.9	9.2	4.2	7.3	4.9			51.0			47.9	
Progression Factor	1.11	0.97	1.12	1.00	1.00			1.00			1.00	
Incremental Delay, d2	3.1	3.1	0.0	0.1	0.8			4.8			0.1	
Delay (s)	68.2	12.0	4.8	7.4	5.7			55.8			47.9	
Level of Service	E	B	A	A	A			E			D	
Approach Delay (s)		12.0			5.8			55.8			47.9	
Approach LOS		B			A			E			D	
Intersection Summary												
HCM 2000 Control Delay			12.8			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			61.4%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

7: E L ST & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	844	17	22	412	3	24	0	60	1	0	3
Future Volume (veh/h)	3	844	17	22	412	3	24	0	60	1	0	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1752	1752	1707	1707	1707	1841	1841	1841	1530	1530	1530
Adj Flow Rate, veh/h	3	948	19	25	463	3	27	0	67	1	0	3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	10	10	10	13	13	13	4	4	4	25	25	25
Cap, veh/h	8	1337	1126	363	1333	9	66	10	91	53	13	85
Arrive On Green	0.00	0.76	0.76	0.03	0.79	0.79	0.08	0.00	0.08	0.08	0.00	0.08
Sat Flow, veh/h	1668	1752	1476	1626	1694	11	324	116	1090	185	153	1014
Grp Volume(v), veh/h	3	948	19	25	0	466	94	0	0	4	0	0
Grp Sat Flow(s),veh/h/ln	1668	1752	1476	1626	0	1705	1530	0	0	1352	0	0
Q Serve(g_s), s	0.2	33.5	0.4	0.4	0.0	9.6	4.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	33.5	0.4	0.4	0.0	9.6	7.1	0.0	0.0	0.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.01	0.29		0.71	0.25		0.75
Lane Grp Cap(c), veh/h	8	1337	1126	363	0	1341	167	0	0	151	0	0
V/C Ratio(X)	0.38	0.71	0.02	0.07	0.00	0.35	0.56	0.00	0.00	0.03	0.00	0.00
Avail Cap(c_a), veh/h	83	1337	1126	398	0	1341	316	0	0	273	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.65	0.65	0.65	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	59.5	7.3	3.4	7.6	0.0	3.8	53.6	0.0	0.0	50.5	0.0	0.0
Incr Delay (d2), s/veh	13.7	2.1	0.0	0.1	0.0	0.7	2.2	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	11.2	0.1	0.2	0.0	3.0	2.9	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.2	9.4	3.4	7.6	0.0	4.5	55.8	0.0	0.0	50.6	0.0	0.0
LnGrp LOS	E	A	A	A	A	A	E	A	A	D	A	A
Approach Vol, veh/h		970			491			94			4	
Approach Delay, s/veh		9.5			4.6			55.8			50.6	
Approach LOS		A			A			E			D	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		15.0	8.4	96.6		15.0	5.6	99.4				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		22.0	6.0	77.0		22.0	6.0	77.0				
Max Q Clear Time (g_c+I1), s		9.1	2.4	35.5		2.3	2.2	11.6				
Green Ext Time (p_c), s		0.3	0.0	7.9		0.0	0.0	2.7				
Intersection Summary												
HCM 6th Ctrl Delay				10.9								
HCM 6th LOS				B								

Queues

8: E Portland Ave & Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	124	480	324	114	242	222	619	472	100	372	68
v/c Ratio	0.20	0.74	0.23	0.46	0.46	0.54	0.64	0.62	0.40	0.67	0.20
Control Delay	30.6	39.8	0.4	40.2	31.8	22.1	30.2	6.9	21.0	37.0	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.6	39.8	0.4	40.2	31.8	22.1	30.2	6.9	21.0	37.0	3.1
Queue Length 50th (ft)	24	107	0	53	51	62	131	0	26	82	0
Queue Length 95th (ft)	67	240	0	141	115	170	281	86	84	181	12
Internal Link Dist (ft)		523			476		261			552	
Turn Bay Length (ft)	200		500			100		150	190		150
Base Capacity (vph)	1023	1055	1412	527	1084	489	1562	940	300	1121	558
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.45	0.23	0.22	0.22	0.45	0.40	0.50	0.33	0.33	0.12

Intersection Summary

HCM Signalized Intersection Capacity Analysis

8: E Portland Ave & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	451	305	119	164	52	209	582	444	94	350	64
Future Volume (vph)	117	451	305	119	164	52	209	582	444	94	350	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.91	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3099	3195	1412	1480	2992		1597	3195	1429	1327	2654	1172
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.46	1.00	1.00	0.29	1.00	1.00
Satd. Flow (perm)	3099	3195	1412	1480	2992		765	3195	1429	406	2654	1172
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	124	480	324	127	174	55	222	619	472	100	372	68
RTOR Reduction (vph)	0	0	0	0	23	0	0	0	329	0	0	53
Lane Group Flow (vph)	124	480	324	114	220	0	222	619	143	100	372	15
Confl. Peds. (#/hr)	1		1	1		1	1					1
Heavy Vehicles (%)	13%	13%	13%	11%	11%	11%	13%	13%	13%	36%	36%	36%
Turn Type	Split	NA	Free	Split	NA		D.P+P	NA	Perm	D.P+P	NA	Perm
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases			Free				2		6	6		2
Actuated Green, G (s)	16.2	16.2	80.4	13.4	13.4		30.8	24.3	24.3	30.8	18.2	18.2
Effective Green, g (s)	16.2	16.2	80.4	13.4	13.4		30.8	24.3	24.3	30.8	18.2	18.2
Actuated g/C Ratio	0.20	0.20	1.00	0.17	0.17		0.38	0.30	0.30	0.38	0.23	0.23
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0	1.0		1.0	1.0		2.5	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	624	643	1412	246	498		423	965	431	229	600	265
v/s Ratio Prot	0.04	c0.15		c0.08	0.07		c0.08	c0.19		0.04	0.14	
v/s Ratio Perm			0.23				0.12		0.10	0.13		0.01
v/c Ratio	0.20	0.75	0.23	0.46	0.44		0.52	0.64	0.33	0.44	0.62	0.06
Uniform Delay, d1	26.7	30.2	0.0	30.3	30.1		17.8	24.3	21.7	17.0	28.0	24.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	4.1	0.4	0.5	0.2		0.9	1.1	0.2	0.5	1.4	0.0
Delay (s)	26.8	34.3	0.4	30.8	30.4		18.7	25.4	21.9	17.4	29.3	24.4
Level of Service	C	C	A	C	C		B	C	C	B	C	C
Approach Delay (s)		21.5			30.5			23.0			26.5	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			24.0				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			80.4				Sum of lost time (s)			20.0		
Intersection Capacity Utilization			60.1%				ICU Level of Service			B		
Analysis Period (min)			15									

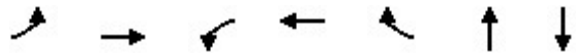
c Critical Lane Group

HCM 6th Edition methodology does not support turning movements with shared & exclusive lanes.

Queues

1: Pacific Ave & S 24th St

05/26/2023



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	16	46	286	136	170	393	478
v/c Ratio	0.16	0.24	0.69	0.29	0.28	0.71	0.35
Control Delay	52.7	46.1	29.3	21.9	32.8	50.3	27.2
Queue Delay	0.0	0.0	0.5	0.0	0.0	0.0	0.0
Total Delay	52.7	46.1	29.9	21.9	32.8	50.3	27.2
Queue Length 50th (ft)	11	31	172	72	103	140	125
Queue Length 95th (ft)	34	61	46	75	197	178	212
Internal Link Dist (ft)		405		294		757	1056
Turn Bay Length (ft)			150		150		
Base Capacity (vph)	112	334	419	534	614	765	1352
Starvation Cap Reductn	0	0	18	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.14	0.71	0.25	0.28	0.51	0.35
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

1: Pacific Ave & S 24th St

05/26/2023

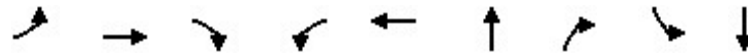
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	29	16	277	132	165	0	289	92	114	343	6
Future Volume (vph)	16	29	16	277	132	165	0	289	92	114	343	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		0.95			0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00		0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	
Frt	1.00	0.95		1.00	1.00	0.85		0.96			1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.99	
Satd. Flow (prot)	1770	1753		1712	1810	1538		3370			3387	
Flt Permitted	0.95	1.00		0.52	1.00	1.00		1.00			0.99	
Satd. Flow (perm)	1770	1753		930	1810	1538		3370			3387	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	16	30	16	286	136	170	0	298	95	118	354	6
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	16	46	0	286	136	170	0	393	0	0	478	0
Confl. Peds. (#/hr)	14		6	6		14	16		14	14		16
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	2%	2%	2%	5%	5%	5%
Turn Type	Prot	NA		pm+pt	NA	Over		NA		Split	NA	
Protected Phases	7	4		3	8	2		1		2	2	
Permitted Phases				8								
Actuated Green, G (s)	2.7	12.2		35.9	28.2	41.0		18.1			41.0	
Effective Green, g (s)	2.7	12.2		35.9	28.2	41.0		18.1			41.0	
Actuated g/C Ratio	0.02	0.11		0.33	0.26	0.37		0.16			0.37	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0		5.0			5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5		2.5			2.5	
Lane Grp Cap (vph)	43	194		436	464	573		554			1262	
v/s Ratio Prot	0.01	0.03		c0.11	0.08	0.11		c0.12			c0.14	
v/s Ratio Perm				c0.10								
v/c Ratio	0.37	0.24		0.66	0.29	0.30		0.71			0.38	
Uniform Delay, d1	52.8	44.7		30.1	32.9	24.3		43.5			25.2	
Progression Factor	1.00	1.00		0.66	0.63	1.17		1.00			1.00	
Incremental Delay, d2	3.9	0.5		3.0	0.2	1.2		3.9			0.9	
Delay (s)	56.7	45.1		22.9	21.1	29.6		47.3			26.1	
Level of Service	E	D		C	C	C		D			C	
Approach Delay (s)		48.1			24.4			47.3			26.1	
Approach LOS		D			C			D			C	
Intersection Summary												
HCM 2000 Control Delay			31.8									
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			110.0									
Intersection Capacity Utilization			67.7%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology expects strict NEMA phasing.

Queues

2: A St & S 24th St/Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	20	194	18	77	594	12	38	13	24
v/c Ratio	0.19	0.14	0.02	0.08	0.40	0.06	0.20	0.08	0.12
Control Delay	54.2	9.7	10.4	1.5	5.0	39.9	43.7	40.5	41.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.2	9.7	10.4	1.5	5.0	39.9	43.7	40.5	41.5
Queue Length 50th (ft)	14	50	3	2	17	8	25	9	16
Queue Length 95th (ft)	m34	192	m20	m8	385	23	49	24	35
Internal Link Dist (ft)		294			1074	627			464
Turn Bay Length (ft)	60		80	70			135		
Base Capacity (vph)	123	1371	1133	960	1484	387	370	324	407
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.14	0.02	0.08	0.40	0.03	0.10	0.04	0.06

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: A St & S 24th St/Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	182	17	72	543	15	6	6	36	12	14	8
Future Volume (vph)	19	182	17	72	543	15	6	6	36	12	14	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00			1.00	0.97	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00			1.00	1.00	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1687	1776	1467	1722	1818			1852	1569	1738	1724	
Flt Permitted	0.95	1.00	1.00	0.64	1.00			0.86	1.00	0.75	1.00	
Satd. Flow (perm)	1687	1776	1467	1152	1818			1639	1569	1371	1724	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	20	194	18	77	578	16	6	6	38	13	15	9
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	20	194	18	77	594	0	0	12	38	13	24	0
Confl. Peds. (#/hr)	7		13	13		7	1		4	4		1
Confl. Bikes (#/hr)						1						1
Heavy Vehicles (%)	7%	7%	7%	4%	4%	4%	0%	0%	0%	3%	3%	3%
Turn Type	Prot	NA	Perm	D.P+P	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			6			2	
Permitted Phases			4	4		6			6	2		
Actuated Green, G (s)	3.1	80.5	80.5	85.8	82.7			9.2	9.2	9.2	9.2	
Effective Green, g (s)	3.1	80.5	80.5	85.8	82.7			9.2	9.2	9.2	9.2	
Actuated g/C Ratio	0.03	0.73	0.73	0.78	0.75			0.08	0.08	0.08	0.08	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5			2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	47	1299	1073	926	1366			137	131	114	144	
v/s Ratio Prot	c0.01	0.11		0.00	c0.33						0.01	
v/s Ratio Perm			0.01	0.06				0.01	c0.02	0.01		
v/c Ratio	0.43	0.15	0.02	0.08	0.43			0.09	0.29	0.11	0.17	
Uniform Delay, d1	52.6	4.4	4.0	2.8	5.0			46.5	47.3	46.6	46.8	
Progression Factor	1.03	1.48	1.36	0.40	0.61			1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.2	0.2	0.0	0.0	0.8			0.2	0.9	0.3	0.4	
Delay (s)	58.2	6.8	5.5	1.1	3.8			46.7	48.2	47.0	47.2	
Level of Service	E	A	A	A	A			D	D	D	D	
Approach Delay (s)		11.1			3.5			47.9			47.1	
Approach LOS		B			A			D			D	
Intersection Summary												
HCM 2000 Control Delay			9.2			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.42									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			57.0%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: A St & S 24th St/Puyallup Ave

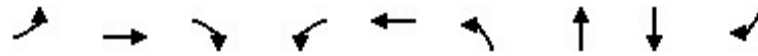
05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	182	17	72	543	15	6	6	36	12	14	8
Future Volume (veh/h)	19	182	17	72	543	15	6	6	36	12	14	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.98	0.98		0.98	0.98		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1796	1796	1796	1841	1841	1841	1900	1900	1900	1856	1856	1856
Adj Flow Rate, veh/h	20	194	18	77	578	16	6	6	38	13	15	9
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	7	4	4	4	0	0	0	3	3	3
Cap, veh/h	43	1279	1074	966	1312	36	117	102	162	194	109	65
Arrive On Green	0.05	1.00	1.00	0.10	1.00	1.00	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	1711	1796	1508	1753	1781	49	661	992	1579	1327	1067	640
Grp Volume(v), veh/h	20	194	18	77	0	594	12	0	38	13	0	24
Grp Sat Flow(s),veh/h/ln	1711	1796	1508	1753	0	1831	1654	0	1579	1327	0	1707
Q Serve(g_s), s	1.3	0.0	0.0	1.2	0.0	0.0	0.0	0.0	2.4	1.0	0.0	1.4
Cycle Q Clear(g_c), s	1.3	0.0	0.0	1.2	0.0	0.0	0.6	0.0	2.4	1.6	0.0	1.4
Prop In Lane	1.00		1.00	1.00		0.03	0.50		1.00	1.00		0.38
Lane Grp Cap(c), veh/h	43	1279	1074	966	0	1348	218	0	162	194	0	175
V/C Ratio(X)	0.47	0.15	0.02	0.08	0.00	0.44	0.05	0.00	0.24	0.07	0.00	0.14
Avail Cap(c_a), veh/h	124	1279	1074	975	0	1348	433	0	373	372	0	403
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.98	0.70	0.00	0.70	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.5	0.0	0.0	3.1	0.0	0.0	44.6	0.0	45.4	45.3	0.0	45.0
Incr Delay (d2), s/veh	5.7	0.2	0.0	0.0	0.0	0.7	0.1	0.0	0.5	0.1	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.1	0.0	0.3	0.0	0.3	0.3	0.0	1.0	0.3	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.3	0.2	0.0	3.1	0.0	0.7	44.7	0.0	46.0	45.4	0.0	45.2
LnGrp LOS	E	A	A	A	A	A	D	A	D	D	A	D
Approach Vol, veh/h	232		671				50		37			
Approach Delay, s/veh	5.1		1.0				45.7		45.3			
Approach LOS	A		A				D		D			
Timer - Assigned Phs	2		3		4		6		7		8	
Phs Duration (G+Y+Rc), s	16.3		10.4		83.3		16.3		7.7		86.0	
Change Period (Y+Rc), s	5.0		5.0		5.0		5.0		5.0		5.0	
Max Green Setting (Gmax), s	26.0		6.0		63.0		26.0		8.0		61.0	
Max Q Clear Time (g_c+I1), s	3.6		3.2		2.0		4.4		3.3		2.0	
Green Ext Time (p_c), s	0.1		0.0		0.9		0.1		0.0		3.7	
Intersection Summary												
HCM 6th Ctrl Delay	5.9											
HCM 6th LOS	A											
Notes												

Queues

3: E D St & Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	55	277	17	85	779	18	153	239	109
v/c Ratio	0.50	0.38	0.03	0.11	0.72	0.13	0.44	0.89	0.34
Control Delay	60.6	33.3	30.9	3.2	14.0	36.0	41.4	74.3	39.2
Queue Delay	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0
Total Delay	60.6	33.3	30.9	3.2	14.4	36.0	41.4	74.3	39.2
Queue Length 50th (ft)	39	167	9	16	394	10	92	161	64
Queue Length 95th (ft)	#90	269	32	0	0	31	154	#285	115
Internal Link Dist (ft)		1074			315		604	705	
Turn Bay Length (ft)	150		80	80		150			
Base Capacity (vph)	112	1094	840	804	1083	158	390	305	361
Starvation Cap Reductn	0	0	0	0	63	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.25	0.02	0.11	0.76	0.11	0.39	0.78	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

3: E D St & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	258	16	79	602	123	17	97	46	90	132	101
Future Volume (vph)	51	258	16	79	602	123	17	97	46	90	132	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0			5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.90	1.00	0.99		1.00	0.99			1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	0.98	1.00		0.99	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.95			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.98	1.00
Satd. Flow (prot)	1703	1792	1376	1700	1771		1640	1645			1823	1526
Flt Permitted	0.95	1.00	1.00	0.49	1.00		0.39	1.00			0.69	1.00
Satd. Flow (perm)	1703	1792	1376	885	1771		672	1645			1288	1526
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	55	277	17	85	647	132	18	104	49	97	142	109
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	55	277	17	85	779	0	18	153	0	0	239	109
Confl. Peds. (#/hr)	4		27	27		4	7		2	2		7
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	9%	9%	9%	2%	2%	2%
Turn Type	Prot	NA	Perm	D.P+P	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4		3	8			6			2	
Permitted Phases			4	4			6		2			2
Actuated Green, G (s)	5.9	43.8	43.8	72.0	66.1		23.0	23.0			23.0	23.0
Effective Green, g (s)	5.9	43.8	43.8	72.0	66.1		23.0	23.0			23.0	23.0
Actuated g/C Ratio	0.05	0.40	0.40	0.65	0.60		0.21	0.21			0.21	0.21
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5		2.5	2.5			2.5	2.5
Lane Grp Cap (vph)	91	713	547	788	1064		140	343			269	319
v/s Ratio Prot	c0.03	0.15		0.03	c0.44			0.09				
v/s Ratio Perm			0.01	0.04			0.03				c0.19	0.07
v/c Ratio	0.60	0.39	0.03	0.11	0.73		0.13	0.45			0.89	0.34
Uniform Delay, d1	50.9	23.6	20.2	10.0	15.6		35.4	37.9			42.3	37.1
Progression Factor	0.89	1.08	1.07	0.46	0.59		1.00	1.00			1.00	1.00
Incremental Delay, d2	9.2	1.6	0.1	0.0	3.9		0.3	0.7			27.6	0.5
Delay (s)	54.7	27.1	21.7	4.7	13.1		35.7	38.6			69.9	37.5
Level of Service	D	C	C	A	B		D	D			E	D
Approach Delay (s)		31.2			12.2			38.3			59.8	
Approach LOS		C			B			D			E	
Intersection Summary												
HCM 2000 Control Delay			28.2			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			83.4%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

3: E D St & Puyallup Ave

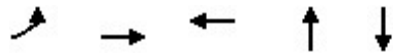
05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	258	16	79	602	123	17	97	46	90	132	101
Future Volume (veh/h)	51	258	16	79	602	123	17	97	46	90	132	101
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	0.97		0.98	1.00		0.96	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1811	1811	1841	1841	1841	1767	1767	1767	1870	1870	1870
Adj Flow Rate, veh/h	55	277	17	85	647	132	18	104	49	97	142	109
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	6	6	6	4	4	4	9	9	9	2	2	2
Cap, veh/h	77	315	246	892	861	176	94	265	125	145	175	369
Arrive On Green	0.09	0.35	0.35	0.60	0.78	0.78	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1725	1811	1416	1753	1477	301	1066	1120	528	418	742	1562
Grp Volume(v), veh/h	55	277	17	85	0	779	18	0	153	239	0	109
Grp Sat Flow(s),veh/h/ln	1725	1811	1416	1753	0	1778	1066	0	1648	1160	0	1562
Q Serve(g_s), s	3.4	15.8	0.9	0.0	0.0	26.0	1.8	0.0	8.6	14.4	0.0	6.3
Cycle Q Clear(g_c), s	3.4	15.8	0.9	0.0	0.0	26.0	24.9	0.0	8.6	23.0	0.0	6.3
Prop In Lane	1.00		1.00	1.00		0.17	1.00		0.32	0.41		1.00
Lane Grp Cap(c), veh/h	77	315	246	892	0	1036	94	0	390	320	0	369
V/C Ratio(X)	0.72	0.88	0.07	0.10	0.00	0.75	0.19	0.00	0.39	0.75	0.00	0.30
Avail Cap(c_a), veh/h	110	1037	811	892	0	1036	94	0	390	320	0	369
HCM Platoon Ratio	2.00	2.00	2.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.99	0.84	0.00	0.84	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	49.4	34.8	29.9	11.3	0.0	8.1	53.0	0.0	35.4	43.1	0.0	34.5
Incr Delay (d2), s/veh	9.0	27.3	0.5	0.0	0.0	4.3	0.7	0.0	0.5	8.8	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	8.0	0.3	0.9	0.0	6.9	0.5	0.0	3.5	7.1	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.4	62.1	30.4	11.4	0.0	12.3	53.7	0.0	35.8	51.9	0.0	34.8
LnGrp LOS	E	E	C	B	A	B	D	A	D	D	A	C
Approach Vol, veh/h	349				864		171		348			
Approach Delay, s/veh	60.0				12.2		37.7		46.6			
Approach LOS	E				B		D		D			
Timer - Assigned Phs	2		3	4	6		7	8				
Phs Duration (G+Y+Rc), s	31.0		54.9	24.1	31.0		9.9	69.1				
Change Period (Y+Rc), s	5.0		5.0	5.0	5.0		5.0	5.0				
Max Green Setting (Gmax), s	26.0		6.0	63.0	26.0		7.0	62.0				
Max Q Clear Time (g_c+I1), s	25.0		2.0	17.8	26.9		5.4	28.0				
Green Ext Time (p_c), s	0.2		0.0	1.3	0.0		0.0	5.5				
Intersection Summary												
HCM 6th Ctrl Delay			31.3									
HCM 6th LOS			C									

Queues

4: E E St & Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	2	395	874	1	4
v/c Ratio	0.01	0.23	0.53	0.01	0.03
Control Delay	64.0	0.9	4.7	46.0	46.0
Queue Delay	0.0	0.0	0.2	0.0	0.0
Total Delay	64.0	0.9	4.9	46.0	46.0
Queue Length 50th (ft)	1	0	0	1	3
Queue Length 95th (ft)	m4	m77	#792	6	14
Internal Link Dist (ft)		315	283	364	388
Turn Bay Length (ft)	80				
Base Capacity (vph)	156	1695	1661	381	434
Starvation Cap Reductn	0	151	9	0	0
Spillback Cap Reductn	0	68	236	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.01	0.26	0.61	0.00	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

4: E E St & Puyallup Ave

05/26/2023

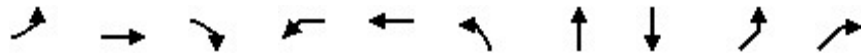
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	371	0	0	821	1	0	0	1	3	0	1
Future Volume (vph)	2	371	0	0	821	1	0	0	1	3	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	
Frt	1.00	1.00			1.00			0.85			0.97	
Flt Protected	0.95	1.00			1.00			1.00			0.96	
Satd. Flow (prot)	1719	1810			1827			1615			1770	
Flt Permitted	0.95	1.00			1.00			1.00			0.96	
Satd. Flow (perm)	1719	1810			1827			1615			1770	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	2	395	0	0	873	1	0	0	1	3	0	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	2	395	0	0	874	0	0	1	0	0	4	0
Confl. Peds. (#/hr)	5		26	26		5						
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	5%	5%	5%	4%	4%	4%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	pm+pt	NA		Split	NA		Split	NA	
Protected Phases	7	4		3	8		1	1		2	2	
Permitted Phases			4	8								
Actuated Green, G (s)	2.0	91.0			84.0			2.0			2.0	
Effective Green, g (s)	2.0	91.0			84.0			2.0			2.0	
Actuated g/C Ratio	0.02	0.83			0.76			0.02			0.02	
Clearance Time (s)	5.0	5.0			5.0			5.0			5.0	
Vehicle Extension (s)	1.0	1.0			1.0			1.5			1.0	
Lane Grp Cap (vph)	31	1497			1395			29			32	
v/s Ratio Prot	0.00	c0.22			c0.48			c0.00			c0.00	
v/s Ratio Perm												
v/c Ratio	0.06	0.26			0.63			0.03			0.12	
Uniform Delay, d1	53.1	2.1			5.9			53.1			53.1	
Progression Factor	1.40	0.27			0.41			1.00			1.00	
Incremental Delay, d2	0.3	0.4			1.8			0.2			0.6	
Delay (s)	74.4	1.0			4.2			53.2			53.8	
Level of Service	E	A			A			D			D	
Approach Delay (s)		1.3			4.2			53.2			53.8	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM 2000 Control Delay			3.5			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			59.9%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology expects strict NEMA phasing.

Queues

5: Puyallup Ave & F St

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	NEL	NER
Lane Group Flow (vph)	3	368	16	9	708	14	9	3	142	70
v/c Ratio	0.03	0.30	0.02	0.09	0.56	0.19	0.11	0.02	0.67	0.38
Control Delay	45.0	6.1	3.5	61.4	14.1	51.1	47.5	46.0	62.6	51.0
Queue Delay	0.0	0.5	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Total Delay	45.0	6.5	3.5	61.4	14.4	51.1	47.5	46.0	62.6	51.0
Queue Length 50th (ft)	2	1	0	6	105	9	6	2	95	45
Queue Length 95th (ft)	m10	370	13	m18	#697	29	22	11	#218	96
Internal Link Dist (ft)		283			304		340	410	299	
Turn Bay Length (ft)	100		80	80						
Base Capacity (vph)	93	1226	836	99	1265	175	192	150	213	186
Starvation Cap Reductn	0	460	0	0	158	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.48	0.02	0.09	0.64	0.08	0.05	0.02	0.67	0.38

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

5: Puyallup Ave & F St

05/26/2023

												
Movement	EBL	EBT	EBR	EBR2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	3	346	0	15	8	665	1	1	12	0	8	1
Future Volume (vph)	3	346	0	15	8	665	1	1	12	0	8	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		5.0	5.0			5.0	5.0		
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00			1.00	1.00		
Frpb, ped/bikes	1.00	1.00	0.80		1.00	1.00			1.00	0.98		
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00			0.95	1.00		
Frt	1.00	1.00	0.85		1.00	1.00			1.00	0.85		
Flt Protected	0.95	1.00	1.00		0.95	1.00			0.95	1.00		
Satd. Flow (prot)	1719	1810	1234		1770	1862			881	814		
Flt Permitted	0.95	1.00	1.00		0.95	1.00			0.80	1.00		
Satd. Flow (perm)	1719	1810	1234		1770	1862			742	814		
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	3	368	0	16	9	707	1	1	13	0	9	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	3	368	16	0	9	708	0	0	14	9	0	0
Confl. Peds. (#/hr)	5		35	21	21		5	21	4		1	1
Confl. Bikes (#/hr)							3					
Heavy Vehicles (%)	5%	5%	5%	5%	2%	2%	2%	94%	94%	94%	94%	0%
Turn Type	Prot	NA	Perm		Prot	NA		Perm	Split	NA		Split
Protected Phases	7	4			3	8			2	2		1
Permitted Phases			4					2				
Actuated Green, G (s)	1.2	63.5	63.5		1.4	63.7			5.0	5.0		
Effective Green, g (s)	1.2	63.5	63.5		1.4	63.7			5.0	5.0		
Actuated g/C Ratio	0.01	0.58	0.58		0.01	0.58			0.05	0.05		
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0			5.0	5.0		
Vehicle Extension (s)	2.5	2.5	2.5		2.5	2.5			5.0	5.0		
Lane Grp Cap (vph)	18	1044	712		22	1078			33	37		
v/s Ratio Prot	0.00	c0.20			0.01	c0.38				0.01		
v/s Ratio Perm			0.01						c0.02			
v/c Ratio	0.17	0.35	0.02		0.41	0.66			0.42	0.24		
Uniform Delay, d1	53.9	12.3	10.0		53.9	15.7			51.1	50.7		
Progression Factor	0.89	0.47	0.26		1.21	0.82			1.00	1.00		
Incremental Delay, d2	3.1	0.9	0.1		8.4	3.0			17.3	7.0		
Delay (s)	51.4	6.7	2.7		73.4	15.9			68.4	57.7		
Level of Service	D	A	A		E	B			E	E		
Approach Delay (s)		6.9				16.6				64.2		
Approach LOS		A				B				E		
Intersection Summary												
HCM 2000 Control Delay			20.1				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)			25.0		
Intersection Capacity Utilization			64.7%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: Puyallup Ave & F St

05/26/2023



Movement	SBT	SBR2	NEL2	NEL	NER
Lane Configurations					
Traffic Volume (vph)	0	2	133	1	66
Future Volume (vph)	0	2	133	1	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0
Lane Util. Factor	1.00			1.00	1.00
Frpb, ped/bikes	0.91			1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00
Frt	0.91			1.00	0.85
Flt Protected	0.98			0.95	1.00
Satd. Flow (prot)	1556			1787	1560
Flt Permitted	0.98			0.95	1.00
Satd. Flow (perm)	1556			1787	1560
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	2	141	1	70
RTOR Reduction (vph)	0	0	0	0	0
Lane Group Flow (vph)	3	0	0	142	70
Confl. Peds. (#/hr)		4	4	5	1
Confl. Bikes (#/hr)					
Heavy Vehicles (%)	0%	0%	1%	1%	1%
Turn Type	NA		Prot	Prot	Perm
Protected Phases	1		10	10	
Permitted Phases					10
Actuated Green, G (s)	2.0			13.1	13.1
Effective Green, g (s)	2.0			13.1	13.1
Actuated g/C Ratio	0.02			0.12	0.12
Clearance Time (s)	5.0			5.0	5.0
Vehicle Extension (s)	2.5			2.5	2.5
Lane Grp Cap (vph)	28			212	185
v/s Ratio Prot	c0.00			c0.08	
v/s Ratio Perm					0.04
v/c Ratio	0.11			0.67	0.38
Uniform Delay, d1	53.1			46.4	44.7
Progression Factor	1.00			1.00	1.00
Incremental Delay, d2	1.2			7.0	0.9
Delay (s)	54.4			53.4	45.6
Level of Service	D			D	D
Approach Delay (s)	54.4			50.8	
Approach LOS	D			D	
Intersection Summary					

HCM 6th Edition methodology does not support more than 4 approaches.

Queues

6: G St & Puyallup Ave

05/26/2023



Lane Group	EBT	EBR	WBL	WBT	NBT	NBR
Lane Group Flow (vph)	401	46	248	592	76	159
v/c Ratio	0.35	0.05	0.31	0.38	0.43	0.46
Control Delay	4.8	4.3	3.6	3.1	51.6	35.1
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0
Total Delay	5.0	4.3	3.6	3.1	51.6	35.1
Queue Length 50th (ft)	49	6	26	61	52	92
Queue Length 95th (ft)	74	13	50	107	88	124
Internal Link Dist (ft)	304			1819	498	
Turn Bay Length (ft)		80	80			70
Base Capacity (vph)	1136	900	796	1539	343	346
Starvation Cap Reductn	267	0	0	0	0	0
Spillback Cap Reductn	0	0	0	106	2	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.05	0.31	0.41	0.22	0.46
Intersection Summary						

HCM Signalized Intersection Capacity Analysis

6: G St & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	389	45	241	574	0	74	0	154	0	0	0
Future Volume (vph)	0	389	45	241	574	0	74	0	154	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0			5.0	5.0			
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00	1.00			
Frpb, ped/bikes		1.00	0.93	1.00	1.00			1.00	0.99			
Flpb, ped/bikes		1.00	1.00	0.99	1.00			1.00	1.00			
Frt		1.00	0.85	1.00	1.00			1.00	0.85			
Flt Protected		1.00	1.00	0.95	1.00			0.95	1.00			
Satd. Flow (prot)		1759	1393	1734	1845			1719	1522			
Flt Permitted		1.00	1.00	0.48	1.00			0.95	1.00			
Satd. Flow (perm)		1759	1393	872	1845			1719	1522			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	401	46	248	592	0	76	0	159	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	401	46	248	592	0	0	76	159	0	0	0
Confl. Peds. (#/hr)	6		18	18		6			2	2		
Heavy Vehicles (%)	8%	8%	8%	3%	3%	3%	5%	5%	5%	0%	0%	0%
Turn Type	Prot	NA	Perm	D.P+P	NA		Split	NA	pm+ov			
Protected Phases	7	4		3	8		6	6	3		2	
Permitted Phases			4	4					6	2		
Actuated Green, G (s)		70.1	70.1	84.8	89.8			10.2	24.9			
Effective Green, g (s)		70.1	70.1	84.8	89.8			10.2	24.9			
Actuated g/C Ratio		0.64	0.64	0.77	0.82			0.09	0.23			
Clearance Time (s)		5.0	5.0	5.0	5.0			5.0	5.0			
Vehicle Extension (s)		2.5	2.5	2.5	2.5			2.5	2.5			
Lane Grp Cap (vph)		1120	887	787	1506			159	413			
v/s Ratio Prot		0.23		0.04	c0.32			0.04	c0.05			
v/s Ratio Perm			0.03	0.20					0.05			
v/c Ratio		0.36	0.05	0.32	0.39			0.48	0.38			
Uniform Delay, d1		9.4	7.5	6.1	2.7			47.4	36.1			
Progression Factor		0.34	0.39	0.68	0.67			1.00	1.00			
Incremental Delay, d2		0.9	0.1	0.1	0.7			1.6	0.4			
Delay (s)		4.1	3.1	4.3	2.5			49.0	36.5			
Level of Service		A	A	A	A			D	D			
Approach Delay (s)		4.0			3.0			40.5			0.0	
Approach LOS		A			A			D			A	
Intersection Summary												
HCM 2000 Control Delay			9.1			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.45									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			53.6%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

6: G St & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	389	45	241	574	0	74	0	154	0	0	0
Future Volume (veh/h)	0	389	45	241	574	0	74	0	154	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00	0.99		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1781	1781	1781	1856	1856	1856	1826	1826	1826	1900	1900	1900
Adj Flow Rate, veh/h	0	401	46	248	592	0	76	0	159	0	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	8	8	3	3	3	5	5	5	0	0	0
Cap, veh/h	2	431	351	1067	1555	0	122	0	961	0	2	0
Arrive On Green	0.00	0.48	0.48	1.00	1.00	0.00	0.07	0.00	0.07	0.00	0.00	0.00
Sat Flow, veh/h	1697	1781	1453	1767	1856	0	1714	0	1526	0	1900	0
Grp Volume(v), veh/h	0	401	46	248	592	0	76	0	159	0	0	0
Grp Sat Flow(s),veh/h/ln	1697	1781	1453	1767	1856	0	1714	0	1526	0	1900	0
Q Serve(g_s), s	0.0	23.3	1.9	0.0	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	23.3	1.9	0.0	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	2	431	351	1067	1555	0	122	0	961	0	2	0
V/C Ratio(X)	0.00	0.93	0.13	0.23	0.38	0.00	0.62	0.00	0.17	0.00	0.00	0.00
Avail Cap(c_a), veh/h	93	567	462	1067	1555	0	343	0	1158	0	380	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.96	0.96	0.81	0.81	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	27.5	22.0	0.0	0.0	0.0	49.7	0.0	8.8	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	28.3	0.7	0.1	0.6	0.0	3.9	0.0	0.1	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	10.7	0.7	0.0	0.2	0.0	2.2	0.0	1.5	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	55.9	22.8	0.1	0.6	0.0	53.5	0.0	8.8	0.0	0.0	0.0
LnGrp LOS	A	E	C	A	A	A	D	A	A	A	A	A
Approach Vol, veh/h	447				840				235			
Approach Delay, s/veh	52.5				0.4				23.3			
Approach LOS	D				A				C			
Timer - Assigned Phs	2			3		4		6		7		8
Phs Duration (G+Y+Rc), s	0.0			65.6		31.6		12.8		0.0		97.2
Change Period (Y+Rc), s	5.0			5.0		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s	22.0			11.0		35.0		22.0		6.0		40.0
Max Q Clear Time (g_c+I1), s	0.0			2.0		25.3		6.7		0.0		2.0
Green Ext Time (p_c), s	0.0			0.4		1.3		0.6		0.0		3.6
Intersection Summary												
HCM 6th Ctrl Delay	19.2											
HCM 6th LOS	B											

Queues

7: E L ST & Puyallup Ave

05/26/2023



Lane Group	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	574	18	100	859	53	7
v/c Ratio	0.43	0.02	0.16	0.56	0.40	0.05
Control Delay	9.2	4.8	2.8	5.1	55.5	44.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.2	4.8	2.8	5.1	55.5	44.9
Queue Length 50th (ft)	160	4	10	158	36	5
Queue Length 95th (ft)	429	m12	23	279	76	19
Internal Link Dist (ft)	1819			839	1082	346
Turn Bay Length (ft)		80	80			
Base Capacity (vph)	1327	1060	628	1547	270	286
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.02	0.16	0.56	0.20	0.02

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

7: E L ST & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	551	17	96	825	0	9	0	42	6	0	1
Future Volume (vph)	0	551	17	96	825	0	9	0	42	6	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0			5.0			5.0	
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00			1.00	
Frpb, ped/bikes		1.00	0.94	1.00	1.00			0.98			1.00	
Flpb, ped/bikes		1.00	1.00	0.99	1.00			1.00			1.00	
Frt		1.00	0.85	1.00	1.00			0.89			0.98	
Flt Protected		1.00	1.00	0.95	1.00			0.99			0.96	
Satd. Flow (prot)		1810	1445	1727	1827			1415			1783	
Flt Permitted		1.00	1.00	0.40	1.00			0.95			0.77	
Satd. Flow (perm)		1810	1445	721	1827			1350			1429	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	574	18	100	859	0	9	0	44	6	0	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	574	18	100	859	0	0	53	0	0	7	0
Confl. Peds. (#/hr)			15	15					1	1		
Heavy Vehicles (%)	5%	5%	5%	4%	4%	4%	16%	16%	16%	0%	0%	0%
Turn Type	Prot	NA	Perm	D.P+P	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4	4			2			6		
Actuated Green, G (s)		79.7	79.7	86.2	91.2			8.8			8.8	
Effective Green, g (s)		79.7	79.7	86.2	91.2			8.8			8.8	
Actuated g/C Ratio		0.72	0.72	0.78	0.83			0.08			0.08	
Clearance Time (s)		5.0	5.0	5.0	5.0			5.0			5.0	
Vehicle Extension (s)		2.5	2.5	2.5	2.5			2.5			2.5	
Lane Grp Cap (vph)		1311	1046	624	1514			108			114	
v/s Ratio Prot		0.32		0.01	c0.47							
v/s Ratio Perm			0.01	0.12				c0.04			0.00	
v/c Ratio		0.44	0.02	0.16	0.57			0.49			0.06	
Uniform Delay, d1		6.1	4.2	3.2	3.0			48.5			46.8	
Progression Factor		1.21	0.89	1.00	1.00			1.00			1.00	
Incremental Delay, d2		1.0	0.0	0.1	1.5			2.5			0.2	
Delay (s)		8.4	3.8	3.3	4.6			51.0			46.9	
Level of Service		A	A	A	A			D			D	
Approach Delay (s)		8.3			4.4			51.0			46.9	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM 2000 Control Delay			7.6			HCM 2000 Level of Service				A		
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			69.6%			ICU Level of Service				C		
Analysis Period (min)			15									

c Critical Lane Group

HCM 6th Signalized Intersection Summary

7: E L ST & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	551	17	96	825	0	9	0	42	6	0	1
Future Volume (veh/h)	0	551	17	96	825	0	9	0	42	6	0	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1826	1826	1826	1841	1841	1841	1663	1663	1663	1900	1900	1900
Adj Flow Rate, veh/h	0	574	18	100	859	0	9	0	44	6	0	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	5	5	5	4	4	4	16	16	16	0	0	0
Cap, veh/h	2	1336	1120	736	1526	0	48	9	93	165	5	18
Arrive On Green	0.00	0.97	0.97	0.05	0.83	0.00	0.08	0.00	0.08	0.08	0.00	0.08
Sat Flow, veh/h	1739	1826	1532	1753	1841	0	127	111	1165	1300	60	227
Grp Volume(v), veh/h	0	574	18	100	859	0	53	0	0	7	0	0
Grp Sat Flow(s),veh/h/ln	1739	1826	1532	1753	1841	0	1404	0	0	1586	0	0
Q Serve(g_s), s	0.0	1.6	0.0	1.4	16.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	1.6	0.0	1.4	16.5	0.0	3.9	0.0	0.0	0.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.17		0.83	0.86		0.14
Lane Grp Cap(c), veh/h	2	1336	1120	736	1526	0	151	0	0	188	0	0
V/C Ratio(X)	0.00	0.43	0.02	0.14	0.56	0.00	0.35	0.00	0.00	0.04	0.00	0.00
Avail Cap(c_a), veh/h	95	1336	1120	741	1526	0	315	0	0	356	0	0
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.93	0.93	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.4	0.4	2.7	3.0	0.0	48.3	0.0	0.0	46.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.9	0.0	0.1	1.5	0.0	1.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.7	0.0	0.4	4.4	0.0	1.4	0.0	0.0	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	1.4	0.4	2.8	4.5	0.0	49.3	0.0	0.0	46.8	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	A
Approach Vol, veh/h	592			959			53			7		
Approach Delay, s/veh	1.3			4.3			49.3			46.8		
Approach LOS	A			A			D			D		
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	13.8		10.7	85.5		13.8		0.0	96.2			
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0		5.0	5.0			
Max Green Setting (Gmax), s	22.0		6.0	67.0		22.0		6.0	67.0			
Max Q Clear Time (g_c+I1), s	5.9		3.4	3.6		2.4		0.0	18.5			
Green Ext Time (p_c), s	0.1		0.0	3.6		0.0		0.0	6.6			
Intersection Summary												
HCM 6th Ctrl Delay	4.9											
HCM 6th LOS	A											

Queues

8: E Portland Ave & Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	43	224	395	438	891	205	290	250	93	746	105
v/c Ratio	0.11	0.53	0.27	0.87	0.86	0.88	0.28	0.40	0.23	0.88	0.23
Control Delay	41.6	48.1	0.4	54.7	44.0	61.3	29.2	6.0	22.4	51.1	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.6	48.1	0.4	54.7	44.0	61.3	29.2	6.0	22.4	51.1	7.3
Queue Length 50th (ft)	13	77	0	302	302	87	76	0	37	245	0
Queue Length 95th (ft)	30	116	0	#603	#513	#266	133	63	85	#412	42
Internal Link Dist (ft)		523			476		261			552	
Turn Bay Length (ft)	200		500			100		150	190		150
Base Capacity (vph)	784	808	1490	514	1062	232	1055	632	397	935	496
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.28	0.27	0.85	0.84	0.88	0.27	0.40	0.23	0.80	0.21

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

8: E Portland Ave & Puyallup Ave

05/26/2023

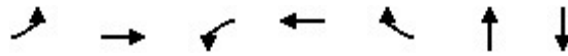
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	215	379	568	623	84	197	278	240	89	716	101
Future Volume (vph)	41	215	379	568	623	84	197	278	240	89	716	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.91	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.99		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3273	3374	1490	1579	3243		1583	3167	1398	1626	3252	1455
Flt Permitted	0.95	1.00	1.00	0.95	0.99		0.15	1.00	1.00	0.55	1.00	1.00
Satd. Flow (perm)	3273	3374	1490	1579	3243		255	3167	1398	934	3252	1455
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	43	224	395	592	649	88	205	290	250	93	746	105
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	170	0	0	77
Lane Group Flow (vph)	43	224	395	438	885	0	205	290	80	93	746	28
Confl. Peds. (#/hr)			2	2					1	1		
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	7%	7%	7%	4%	4%	4%	14%	14%	14%	11%	11%	11%
Turn Type	Split	NA	Free	Split	NA		D.P+P	NA	Perm	D.P+P	NA	Perm
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases			Free				2		6	6		2
Actuated Green, G (s)	13.1	13.1	106.1	33.4	33.4		39.6	34.1	34.1	39.6	28.5	28.5
Effective Green, g (s)	13.1	13.1	106.1	33.4	33.4		39.6	34.1	34.1	39.6	28.5	28.5
Actuated g/C Ratio	0.12	0.12	1.00	0.31	0.31		0.37	0.32	0.32	0.37	0.27	0.27
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0	1.0		1.0	1.0		2.5	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	404	416	1490	497	1020		234	1017	449	384	873	390
v/s Ratio Prot	0.01	c0.07		c0.28	0.27		c0.09	0.09		0.01	0.23	
v/s Ratio Perm			0.27				c0.23		0.06	0.08		0.02
v/c Ratio	0.11	0.54	0.27	0.88	0.87		0.88	0.29	0.18	0.24	0.85	0.07
Uniform Delay, d1	41.3	43.7	0.0	34.5	34.3		25.9	26.9	25.9	22.1	36.8	28.9
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	0.7	0.4	16.2	7.7		28.3	0.1	0.1	0.1	7.9	0.0
Delay (s)	41.3	44.3	0.4	50.6	41.9		54.2	27.0	26.0	22.2	44.7	29.0
Level of Service	D	D	A	D	D		D	C	C	C	D	C
Approach Delay (s)		17.9			44.8			34.1			40.8	
Approach LOS		B			D			C			D	
Intersection Summary												
HCM 2000 Control Delay			36.8			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			106.1			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			80.8%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology does not support turning movements with shared & exclusive lanes.

Queues

1: Pacific Ave & S 24th St

05/26/2023



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	9	27	155	40	143	482	304
v/c Ratio	0.09	0.14	0.56	0.12	0.22	0.77	0.21
Control Delay	51.4	43.8	42.3	33.2	25.1	50.4	22.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.4	43.8	42.3	33.2	25.1	50.4	22.9
Queue Length 50th (ft)	6	18	91	22	64	171	71
Queue Length 95th (ft)	23	41	128	50	144	216	134
Internal Link Dist (ft)		405		294		757	1056
Turn Bay Length (ft)			150		150		
Base Capacity (vph)	107	334	295	443	653	784	1460
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.08	0.53	0.09	0.22	0.61	0.21
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

1: Pacific Ave & S 24th St

05/26/2023

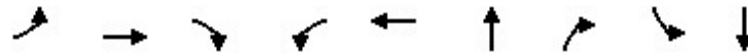
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	23	2	141	36	130	0	341	97	101	175	1
Future Volume (vph)	8	23	2	141	36	130	0	341	97	101	175	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		0.95			0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	
Frt	1.00	0.99		1.00	1.00	0.85		0.97			1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.98	
Satd. Flow (prot)	1687	1753		1621	1712	1455		3195			3250	
Flt Permitted	0.95	1.00		0.50	1.00	1.00		1.00			0.98	
Satd. Flow (perm)	1687	1753		847	1712	1455		3195			3250	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	9	25	2	155	40	143	0	375	107	111	192	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	9	27	0	155	40	143	0	482	0	0	304	0
Confl. Peds. (#/hr)	7		5	5		7	11		14	14		11
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	7%	7%	7%	11%	11%	11%	8%	8%	8%	9%	9%	9%
Turn Type	Prot	NA		pm+pt	NA	Over		NA		Split	NA	
Protected Phases	7	4		3	8	2		1		2	2	
Permitted Phases				8								
Actuated Green, G (s)	1.4	10.2		28.1	21.7	45.4		21.5			45.4	
Effective Green, g (s)	1.4	10.2		28.1	21.7	45.4		21.5			45.4	
Actuated g/C Ratio	0.01	0.09		0.26	0.20	0.41		0.20			0.41	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0		5.0			5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5		2.5			2.5	
Lane Grp Cap (vph)	21	162		307	337	600		624			1341	
v/s Ratio Prot	0.01	0.02		c0.06	0.02	c0.10		c0.15			0.09	
v/s Ratio Perm				c0.07								
v/c Ratio	0.43	0.17		0.50	0.12	0.24		0.77			0.23	
Uniform Delay, d1	53.9	46.0		33.8	36.3	21.0		41.9			20.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	
Incremental Delay, d2	9.9	0.4		1.0	0.1	0.9		5.7			0.4	
Delay (s)	63.8	46.3		34.8	36.4	22.0		47.6			21.3	
Level of Service	E	D		C	D	C		D			C	
Approach Delay (s)		50.7			29.6			47.6			21.3	
Approach LOS		D			C			D			C	
Intersection Summary												
HCM 2000 Control Delay			35.6				HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)			20.0		
Intersection Capacity Utilization			62.1%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology expects strict NEMA phasing.

Queues

2: A St & S 24th St/Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	5	206	5	16	341	4	61	5	2
v/c Ratio	0.06	0.15	0.00	0.02	0.25	0.02	0.36	0.04	0.01
Control Delay	55.8	5.5	6.8	0.6	1.1	42.8	53.4	43.4	42.5
Queue Delay	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.8	6.1	6.8	0.6	1.1	42.8	53.4	43.4	42.5
Queue Length 50th (ft)	4	23	1	0	3	3	46	4	1
Queue Length 95th (ft)	17	105	7	m1	10	12	78	14	9
Internal Link Dist (ft)		294			1074	627			464
Turn Bay Length (ft)	60		80	70			135		
Base Capacity (vph)	134	1358	1121	925	1389	477	397	286	347
Starvation Cap Reductn	0	827	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.39	0.00	0.02	0.25	0.01	0.15	0.02	0.01

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: A St & S 24th St/Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	196	5	15	309	15	0	4	58	5	1	1
Future Volume (vph)	5	196	5	15	309	15	0	4	58	5	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00			1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1612	1696	1401	1614	1698			1792	1490	1354	1304	
Flt Permitted	0.95	1.00	1.00	0.63	1.00			1.00	1.00	0.76	1.00	
Satd. Flow (perm)	1612	1696	1401	1068	1698			1792	1490	1076	1304	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	206	5	16	325	16	0	4	61	5	1	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	5	206	5	16	341	0	0	4	61	5	2	0
Confl. Peds. (#/hr)	3		12	12		3	3		1	1		3
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	12%	12%	12%	11%	11%	11%	6%	6%	6%	33%	33%	33%
Turn Type	Prot	NA	Perm	D.P+P	NA			NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			6			2	
Permitted Phases			4	4			6		6	2		
Actuated Green, G (s)	1.3	91.1	91.1	93.5	92.2			11.5	11.5	11.5	11.5	
Effective Green, g (s)	1.3	91.1	91.1	93.5	92.2			11.5	11.5	11.5	11.5	
Actuated g/C Ratio	0.01	0.76	0.76	0.78	0.77			0.10	0.10	0.10	0.10	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5			2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	17	1287	1063	843	1304			171	142	103	124	
v/s Ratio Prot	c0.00	0.12		0.00	c0.20			0.00			0.00	
v/s Ratio Perm			0.00	0.01					c0.04	0.00		
v/c Ratio	0.29	0.16	0.00	0.02	0.26			0.02	0.43	0.05	0.02	
Uniform Delay, d1	58.9	4.0	3.5	3.0	4.0			49.2	51.2	49.3	49.1	
Progression Factor	1.00	1.00	1.00	0.15	0.14			1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.9	0.3	0.0	0.0	0.5			0.0	1.5	0.1	0.0	
Delay (s)	65.8	4.2	3.5	0.4	1.0			49.2	52.7	49.4	49.2	
Level of Service	E	A	A	A	A			D	D	D	D	
Approach Delay (s)		5.6			1.0			52.5			49.3	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM 2000 Control Delay			8.3			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.28									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			52.5%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: A St & S 24th St/Puyallup Ave

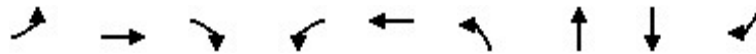
05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	196	5	15	309	15	0	4	58	5	1	1
Future Volume (veh/h)	5	196	5	15	309	15	0	4	58	5	1	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	0.98		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1722	1722	1722	1737	1737	1737	1811	1811	1811	1411	1411	1411
Adj Flow Rate, veh/h	5	206	5	16	325	16	0	4	61	5	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	12	12	12	11	11	11	6	6	6	33	33	33
Cap, veh/h	13	1317	1085	887	1277	63	0	162	135	147	57	57
Arrive On Green	0.01	0.76	0.76	0.04	1.00	1.00	0.00	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	1640	1722	1418	1654	1641	81	0	1811	1509	993	641	641
Grp Volume(v), veh/h	5	206	5	16	0	341	0	4	61	5	0	2
Grp Sat Flow(s),veh/h/ln	1640	1722	1418	1654	0	1722	0	1811	1509	993	0	1283
Q Serve(g_s), s	0.4	3.8	0.1	0.2	0.0	0.0	0.0	0.2	4.6	0.6	0.0	0.2
Cycle Q Clear(g_c), s	0.4	3.8	0.1	0.2	0.0	0.0	0.0	0.2	4.6	0.8	0.0	0.2
Prop In Lane	1.00		1.00	1.00		0.05	0.00		1.00	1.00		0.50
Lane Grp Cap(c), veh/h	13	1317	1085	887	0	1340	0	162	135	147	0	115
V/C Ratio(X)	0.40	0.16	0.00	0.02	0.00	0.25	0.00	0.02	0.45	0.03	0.00	0.02
Avail Cap(c_a), veh/h	137	1317	1085	991	0	1340	0	483	402	323	0	342
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.93	0.00	0.93	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	59.3	3.8	3.3	2.8	0.0	0.0	0.0	49.9	51.8	50.2	0.0	49.8
Incr Delay (d2), s/veh	14.3	0.3	0.0	0.0	0.0	0.4	0.0	0.0	1.8	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.3	0.0	0.1	0.0	0.2	0.0	0.1	1.8	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.6	4.0	3.3	2.8	0.0	0.4	0.0	49.9	53.6	50.3	0.0	49.9
LnGrp LOS	E	A	A	A	A	A	A	D	D	D	A	D
Approach Vol, veh/h	216			357			65			7		
Approach Delay, s/veh	5.6			0.5			53.4			50.2		
Approach LOS	A			A			D			D		
Timer - Assigned Phs	2		3	4		6	7	8				
Phs Duration (G+Y+Rc), s	15.7		7.5	96.8		15.7	5.9	98.3				
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s	32.0		10.0	63.0		32.0	10.0	63.0				
Max Q Clear Time (g_c+I1), s	2.8		2.2	5.8		6.6	2.4	2.0				
Green Ext Time (p_c), s	0.0		0.0	1.0		0.1	0.0	1.9				
Intersection Summary												
HCM 6th Ctrl Delay	8.1											
HCM 6th LOS	A											

Queues

3: E D St & Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	106	407	13	62	415	20	243	132	58
v/c Ratio	0.61	0.39	0.02	0.10	0.42	0.10	0.79	1.06	0.22
Control Delay	66.9	18.3	16.4	3.6	11.9	37.7	63.7	144.7	40.2
Queue Delay	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
Total Delay	66.9	18.3	16.4	3.6	12.4	37.7	63.7	144.7	40.2
Queue Length 50th (ft)	81	152	4	10	148	13	181	~112	38
Queue Length 95th (ft)	137	306	18	7	169	33	253	#206	71
Internal Link Dist (ft)		1074			315		604	705	
Turn Bay Length (ft)	150		80	80		150			
Base Capacity (vph)	253	1059	862	647	983	298	460	186	401
Starvation Cap Reductn	0	0	0	0	230	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.38	0.02	0.10	0.55	0.07	0.53	0.71	0.14

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

3: E D St & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	366	12	56	292	82	18	117	102	73	46	52
Future Volume (vph)	95	366	12	56	292	82	18	117	102	73	46	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0			5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	0.99		1.00	0.98			1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00			0.99	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.93			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.97	1.00
Satd. Flow (prot)	1687	1776	1446	1680	1703		1631	1581			1609	1377
Flt Permitted	0.95	1.00	1.00	0.45	1.00		0.60	1.00			0.39	1.00
Satd. Flow (perm)	1687	1776	1446	791	1703		1024	1581			640	1377
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	106	407	13	62	324	91	20	130	113	81	51	58
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	106	407	13	62	415	0	20	243	0	0	132	58
Confl. Peds. (#/hr)	6		7	7		6	3		6	6		3
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	10%	10%	10%	14%	14%	14%
Turn Type	Prot	NA	Perm	D.P+P	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4		3	8			6			2	
Permitted Phases			4	4			6		2			2
Actuated Green, G (s)	12.4	68.7	68.7	81.6	69.2		23.4	23.4			23.4	23.4
Effective Green, g (s)	12.4	68.7	68.7	81.6	69.2		23.4	23.4			23.4	23.4
Actuated g/C Ratio	0.10	0.57	0.57	0.68	0.58		0.19	0.19			0.19	0.19
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5		2.5	2.5			2.5	2.5
Lane Grp Cap (vph)	174	1016	827	633	982		199	308			124	268
v/s Ratio Prot	c0.06	0.23		0.01	c0.24			0.15				
v/s Ratio Perm			0.01	0.06			0.02				c0.21	0.04
v/c Ratio	0.61	0.40	0.02	0.10	0.42		0.10	0.79			1.06	0.22
Uniform Delay, d1	51.5	14.2	11.1	10.5	14.2		39.7	46.0			48.3	40.6
Progression Factor	1.02	1.03	1.08	0.50	0.64		1.00	1.00			1.00	1.00
Incremental Delay, d2	5.0	1.2	0.0	0.0	1.3		0.2	12.2			99.2	0.3
Delay (s)	57.7	15.9	12.0	5.2	10.4		39.8	58.1			147.5	40.9
Level of Service	E	B	B	A	B		D	E			F	D
Approach Delay (s)		24.2			9.8			56.7			114.9	
Approach LOS		C			A			E			F	
Intersection Summary												
HCM 2000 Control Delay			37.2			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			65.8%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

3: E D St & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	366	12	56	292	82	18	117	102	73	46	52
Future Volume (veh/h)	95	366	12	56	292	82	18	117	102	73	46	52
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1796	1796	1796	1752	1752	1752	1693	1693	1693
Adj Flow Rate, veh/h	106	407	13	62	324	91	20	130	113	81	51	58
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	7	7	7	7	7	7	10	10	10	14	14	14
Cap, veh/h	129	441	368	726	725	204	104	222	193	142	77	367
Arrive On Green	0.15	0.49	0.49	0.74	1.00	1.00	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1711	1796	1501	1711	1340	376	1203	860	747	363	297	1418
Grp Volume(v), veh/h	106	407	13	62	0	415	20	0	243	132	0	58
Grp Sat Flow(s),veh/h/ln	1711	1796	1501	1711	0	1716	1203	0	1607	660	0	1418
Q Serve(g_s), s	7.2	25.3	0.5	0.0	0.0	0.0	2.0	0.0	15.8	10.9	0.0	3.8
Cycle Q Clear(g_c), s	7.2	25.3	0.5	0.0	0.0	0.0	28.7	0.0	15.8	26.7	0.0	3.8
Prop In Lane	1.00		1.00	1.00		0.22	1.00		0.47	0.61		1.00
Lane Grp Cap(c), veh/h	129	441	368	726	0	928	104	0	416	219	0	367
V/C Ratio(X)	0.82	0.92	0.04	0.09	0.00	0.45	0.19	0.00	0.58	0.60	0.00	0.16
Avail Cap(c_a), veh/h	257	958	800	726	0	928	143	0	469	259	0	413
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.99	0.97	0.00	0.97	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.2	29.5	23.2	9.0	0.0	0.0	56.7	0.0	38.8	47.7	0.0	34.4
Incr Delay (d2), s/veh	9.2	27.1	0.2	0.0	0.0	1.5	0.7	0.0	1.2	2.2	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	11.7	0.2	0.5	0.0	0.4	0.6	0.0	6.4	3.9	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.4	56.6	23.4	9.0	0.0	1.5	57.3	0.0	40.0	49.9	0.0	34.5
LnGrp LOS	E	E	C	A	A	A	E	A	D	D	A	C
Approach Vol, veh/h		526			477			263			190	
Approach Delay, s/veh		56.4			2.5			41.3			45.2	
Approach LOS		E			A			D			D	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		36.1	49.4	34.5		36.1	14.0	69.9				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		35.0	6.0	64.0		35.0	18.0	52.0				
Max Q Clear Time (g_c+I1), s		28.7	2.0	27.3		30.7	9.2	2.0				
Green Ext Time (p_c), s		0.4	0.0	2.2		0.5	0.1	2.4				
Intersection Summary												
HCM 6th Ctrl Delay			34.5									
HCM 6th LOS			C									

Queues

4: E E St & Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBT	SBT
Lane Group Flow (vph)	24	619	1	429	6
v/c Ratio	0.28	0.38	0.00	0.29	0.03
Control Delay	69.4	1.7	2.0	2.4	43.2
Queue Delay	0.0	0.0	0.0	0.3	0.0
Total Delay	69.4	1.8	2.0	2.6	43.2
Queue Length 50th (ft)	20	0	0	32	4
Queue Length 95th (ft)	m40	189	m0	128	15
Internal Link Dist (ft)		315		283	388
Turn Bay Length (ft)	80		80		
Base Capacity (vph)	87	1635	1316	1473	399
Starvation Cap Reductn	0	52	0	493	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.28	0.39	0.00	0.44	0.02

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

4: E E St & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	545	1	0	369	9	0	0	0	4	0	1
Future Volume (vph)	21	545	1	0	369	9	0	0	0	4	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		5.0						5.0	
Lane Util. Factor	1.00	1.00	1.00		1.00						1.00	
Frpb, ped/bikes	1.00	1.00	0.95		1.00						1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00						1.00	
Frt	1.00	1.00	0.85		1.00						0.98	
Flt Protected	0.95	1.00	1.00		1.00						0.96	
Satd. Flow (prot)	1656	1743	1403		1705						1776	
Flt Permitted	0.95	1.00	1.00		1.00						0.96	
Satd. Flow (perm)	1656	1743	1403		1705						1776	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	24	619	1	0	419	10	0	0	0	5	0	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	24	619	1	0	429	0	0	0	0	0	6	0
Confl. Peds. (#/hr)	2		13	13		2	1					1
Heavy Vehicles (%)	9%	9%	9%	11%	11%	11%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	pm+pt	NA		Split			Split	NA	
Protected Phases	7	4		3	8		1	1		2	2	
Permitted Phases			4	8								
Actuated Green, G (s)	4.0	104.6	104.6		95.6						5.4	
Effective Green, g (s)	4.0	104.6	104.6		95.6						5.4	
Actuated g/C Ratio	0.03	0.87	0.87		0.80						0.05	
Clearance Time (s)	5.0	5.0	5.0		5.0						5.0	
Vehicle Extension (s)	1.0	1.0	1.0		1.0						1.0	
Lane Grp Cap (vph)	55	1519	1222		1358						79	
v/s Ratio Prot	0.01	c0.36			0.25						c0.00	
v/s Ratio Perm			0.00									
v/c Ratio	0.44	0.41	0.00		0.32						0.08	
Uniform Delay, d1	56.9	1.5	1.0		3.3						54.9	
Progression Factor	1.14	0.42	0.45		0.39						1.00	
Incremental Delay, d2	1.9	0.7	0.0		0.6						0.1	
Delay (s)	66.6	1.4	0.4		1.9						55.1	
Level of Service	E	A	A		A						E	
Approach Delay (s)		3.8			1.9			0.0			55.1	
Approach LOS		A			A			A			E	
Intersection Summary												
HCM 2000 Control Delay			3.3		HCM 2000 Level of Service				A			
HCM 2000 Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			120.0		Sum of lost time (s)			20.0				
Intersection Capacity Utilization			45.8%		ICU Level of Service			A				
Analysis Period (min)			15									

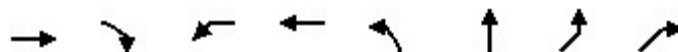
c Critical Lane Group

HCM 6th Edition methodology expects strict NEMA phasing.

Queues

5: Puyallup Ave & F St

05/26/2023



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NEL	NER
Lane Group Flow (vph)	503	96	43	378	14	2	7	13
v/c Ratio	0.38	0.10	0.37	0.24	0.15	0.02	0.05	0.10
Control Delay	3.3	2.4	68.5	2.8	53.6	49.5	51.7	53.0
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.6	2.4	68.5	2.8	53.6	49.5	51.7	53.0
Queue Length 50th (ft)	53	9	33	0	10	1	5	10
Queue Length 95th (ft)	25	6	77	55	32	10	21	30
Internal Link Dist (ft)	283			304		340	299	
Turn Bay Length (ft)		80	80					
Base Capacity (vph)	1326	988	116	1571	225	207	140	125
Starvation Cap Reductn	352	0	0	132	0	0	0	0
Spillback Cap Reductn	18	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.10	0.37	0.26	0.06	0.01	0.05	0.10
Intersection Summary								

HCM Signalized Intersection Capacity Analysis

5: Puyallup Ave & F St

05/26/2023

												
Movement	EBL	EBT	EBR	EBR2	WBL	WBT	NBL2	NBL	NBT	NBR	SBT	NEL2
Lane Configurations												
Traffic Volume (vph)	0	463	0	88	40	348	1	12	0	2	0	6
Future Volume (vph)	0	463	0	88	40	348	1	12	0	2	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0		5.0	5.0			
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	1.00			
Frpb, ped/bikes		1.00	0.88		1.00	1.00		1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00		0.98	1.00			
Frt		1.00	0.85		1.00	1.00		1.00	0.85			
Flt Protected		1.00	1.00		0.95	1.00		0.95	1.00			
Satd. Flow (prot)		1727	1286		1703	1792		1043	956			
Flt Permitted		1.00	1.00		0.95	1.00		0.95	1.00			
Satd. Flow (perm)		1727	1286		1703	1792		1043	956			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	503	0	96	43	378	1	13	0	2	0	7
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	503	96	0	43	378	0	14	2	0	0	0
Confl. Peds. (#/hr)			10	20	10		10					
Heavy Vehicles (%)	10%	10%	10%	10%	6%	6%	69%	69%	69%	69%	0%	7%
Turn Type	Prot	NA	Perm		Prot	NA	Perm	Split	NA			Prot
Protected Phases	7	4			3	8		2	2		1	10
Permitted Phases			4				2					
Actuated Green, G (s)		84.2	84.2		7.0	96.2		4.8	4.8			
Effective Green, g (s)		84.2	84.2		7.0	96.2		4.8	4.8			
Actuated g/C Ratio		0.70	0.70		0.06	0.80		0.04	0.04			
Clearance Time (s)		5.0	5.0		5.0	5.0		5.0	5.0			
Vehicle Extension (s)		2.5	2.5		2.5	2.5		5.0	5.0			
Lane Grp Cap (vph)		1211	902		99	1436		41	38			
v/s Ratio Prot		c0.29			c0.03	0.21			0.00			
v/s Ratio Perm			0.07					0.01				
v/c Ratio		0.42	0.11		0.43	0.26		0.34	0.05			
Uniform Delay, d1		7.5	5.8		54.6	3.0		56.1	55.4			
Progression Factor		0.27	0.27		1.13	0.62		1.00	1.00			
Incremental Delay, d2		1.0	0.2		2.2	0.4		10.1	1.2			
Delay (s)		3.0	1.8		63.9	2.3		66.2	56.6			
Level of Service		A	A		E	A		E	E			
Approach Delay (s)		2.8				8.6			65.0		0.0	
Approach LOS		A				A			E		A	
Intersection Summary												
HCM 2000 Control Delay			7.1				HCM 2000 Level of Service		A			
HCM 2000 Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		25.0			
Intersection Capacity Utilization			62.4%				ICU Level of Service		B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: Puyallup Ave & F St

05/26/2023

		
Movement	NEL	NER
Lane Configurations		
Traffic Volume (vph)	0	12
Future Volume (vph)	0	12
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.0	5.0
Lane Util. Factor	1.00	1.00
Frpb, ped/bikes	1.00	1.00
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	0.95	1.00
Satd. Flow (prot)	1687	1509
Flt Permitted	0.95	1.00
Satd. Flow (perm)	1687	1509
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	0	13
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	7	13
Confl. Peds. (#/hr)		
Heavy Vehicles (%)	7%	7%
Turn Type	Prot	Perm
Protected Phases	10	
Permitted Phases		10
Actuated Green, G (s)	4.0	4.0
Effective Green, g (s)	4.0	4.0
Actuated g/C Ratio	0.03	0.03
Clearance Time (s)	5.0	5.0
Vehicle Extension (s)	2.5	2.5
Lane Grp Cap (vph)	56	50
v/s Ratio Prot	0.00	
v/s Ratio Perm		c0.01
v/c Ratio	0.12	0.26
Uniform Delay, d1	56.3	56.6
Progression Factor	1.00	1.00
Incremental Delay, d2	0.7	2.0
Delay (s)	57.0	58.6
Level of Service	E	E
Approach Delay (s)	58.0	
Approach LOS	E	
Intersection Summary		

HCM 6th Edition methodology does not support more than 4 approaches.

Queues

6: G St & Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR
Lane Group Flow (vph)	1	482	25	72	367	45	436
v/c Ratio	0.01	0.52	0.03	0.10	0.26	0.39	0.94
Control Delay	86.0	12.8	10.5	5.3	5.5	62.4	65.7
Queue Delay	0.0	0.5	0.0	0.0	0.0	0.0	0.0
Total Delay	86.0	13.2	10.5	5.3	5.5	62.4	65.7
Queue Length 50th (ft)	1	112	5	6	37	34	310
Queue Length 95th (ft)	m2	123	13	35	148	72	#480
Internal Link Dist (ft)		304			1819	498	
Turn Bay Length (ft)	80		80	80			70
Base Capacity (vph)	80	926	755	699	1411	300	465
Starvation Cap Reductn	0	144	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.62	0.03	0.10	0.26	0.15	0.94

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

6: G St & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	443	23	66	338	0	41	0	401	0	0	0
Future Volume (vph)	1	443	23	66	338	0	41	0	401	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00			
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00			1.00	1.00			
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00			
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85			
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00			
Satd. Flow (prot)	1612	1696	1383	1653	1743			1641	1468			
Flt Permitted	0.95	1.00	1.00	0.33	1.00			0.95	1.00			
Satd. Flow (perm)	1612	1696	1383	576	1743			1641	1468			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	482	25	72	367	0	45	0	436	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	1	482	25	72	367	0	0	45	436	0	0	0
Confl. Peds. (#/hr)	10		7	7		10	1					1
Heavy Vehicles (%)	12%	12%	12%	9%	9%	9%	10%	10%	10%	0%	0%	0%
Turn Type	Prot	NA	Perm	D.P+P	NA		Split	NA	pm+ov			
Protected Phases	7	4		3	8		6	6	3		2	
Permitted Phases			4	4					6	2		
Actuated Green, G (s)	1.2	56.5	56.5	88.4	87.2			7.2	39.1			
Effective Green, g (s)	1.2	56.5	56.5	88.4	87.2			7.2	39.1			
Actuated g/C Ratio	0.01	0.47	0.47	0.74	0.73			0.06	0.33			
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0			
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5			2.5	2.5			
Lane Grp Cap (vph)	16	798	651	710	1266			98	478			
v/s Ratio Prot	0.00	c0.28		0.03	0.21			0.03	c0.24			
v/s Ratio Perm			0.02	0.05					0.05			
v/c Ratio	0.06	0.60	0.04	0.10	0.29			0.46	0.91			
Uniform Delay, d1	58.8	23.5	17.1	11.3	5.7			54.5	38.8			
Progression Factor	1.58	0.54	0.63	0.86	0.75			1.00	1.00			
Incremental Delay, d2	1.1	3.2	0.1	0.0	0.6			2.5	21.6			
Delay (s)	94.0	15.8	10.9	9.8	4.8			57.0	60.4			
Level of Service	F	B	B	A	A			E	E			
Approach Delay (s)		15.7			5.6			60.1			0.0	
Approach LOS		B			A			E			A	
Intersection Summary												
HCM 2000 Control Delay			27.6			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			56.5%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

6: G St & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	443	23	66	338	0	41	0	401	0	0	0
Future Volume (veh/h)	1	443	23	66	338	0	41	0	401	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	0.99		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1722	1722	1722	1767	1767	1767	1752	1752	1752	1900	1900	1900
Adj Flow Rate, veh/h	1	482	25	72	367	0	45	0	436	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	12	12	12	9	9	9	10	10	10	0	0	0
Cap, veh/h	3	499	416	969	1443	0	93	0	868	0	2	0
Arrive On Green	0.00	0.58	0.58	1.00	1.00	0.00	0.06	0.00	0.06	0.00	0.00	0.00
Sat Flow, veh/h	1640	1722	1434	1682	1767	0	1654	0	1471	0	1900	0
Grp Volume(v), veh/h	1	482	25	72	367	0	45	0	436	0	0	0
Grp Sat Flow(s),veh/h/ln	1640	1722	1434	1682	1767	0	1654	0	1471	0	1900	0
Q Serve(g_s), s	0.1	32.0	0.9	0.0	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	32.0	0.9	0.0	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	3	499	416	969	1443	0	93	0	868	0	2	0
V/C Ratio(X)	0.37	0.97	0.06	0.07	0.25	0.00	0.48	0.00	0.50	0.00	0.00	0.00
Avail Cap(c_a), veh/h	82	531	442	969	1443	0	303	0	1055	0	348	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.94	0.94	0.94	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	59.7	24.6	18.1	0.0	0.0	0.0	54.9	0.0	14.6	0.0	0.0	0.0
Incr Delay (d2), s/veh	50.7	31.3	0.3	0.0	0.4	0.0	2.8	0.0	0.3	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	13.4	0.3	0.0	0.2	0.0	1.4	0.0	6.8	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	110.4	56.0	18.3	0.0	0.4	0.0	57.8	0.0	15.0	0.0	0.0	0.0
LnGrp LOS	F	E	B	A	A	A	E	A	B	A	A	A
Approach Vol, veh/h	508				439				481			
Approach Delay, s/veh	54.2				0.3				19.0			
Approach LOS	D				A				B			
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	0.0		68.4	39.8		11.8		5.2	103.0			
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0		5.0	5.0			
Max Green Setting (Gmax), s	22.0		19.0	37.0		22.0		6.0	50.0			
Max Q Clear Time (g_c+l1), s	0.0		2.0	34.0		5.2		2.1	2.0			
Green Ext Time (p_c), s	0.0		0.1	0.7		1.3		0.0	2.0			
Intersection Summary												
HCM 6th Ctrl Delay	25.8											
HCM 6th LOS	C											

Queues

7: E L ST & Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	4	970	20	26	477	98	5
v/c Ratio	0.05	0.75	0.02	0.08	0.36	0.60	0.04
Control Delay	57.2	13.8	6.2	3.4	5.6	65.8	45.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.2	13.8	6.2	3.4	5.6	65.8	45.8
Queue Length 50th (ft)	3	505	3	3	77	74	4
Queue Length 95th (ft)	m6	m491	m9	10	217	124	15
Internal Link Dist (ft)		1819			839	1082	346
Turn Bay Length (ft)	80		80	80			
Base Capacity (vph)	82	1297	1051	321	1322	270	237
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.75	0.02	0.08	0.36	0.36	0.02

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

7: E L ST & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	863	18	23	421	4	25	0	62	1	0	4
Future Volume (vph)	4	863	18	23	421	4	25	0	62	1	0	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00			0.98			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.90			0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1641	1727	1400	1597	1679			1601			1342	
Flt Permitted	0.95	1.00	1.00	0.20	1.00			0.91			0.96	
Satd. Flow (perm)	1641	1727	1400	330	1679			1474			1294	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	4	970	20	26	473	4	28	0	70	1	0	4
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	4	970	20	26	477	0	0	98	0	0	5	0
Confl. Peds. (#/hr)			9	9					1	1		
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	10%	10%	10%	13%	13%	13%	4%	4%	4%	25%	25%	25%
Turn Type	Prot	NA	Perm	D.P+P	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4	4			2			6		
Actuated Green, G (s)	1.2	88.1	88.1	91.7	90.5			13.3			13.3	
Effective Green, g (s)	1.2	88.1	88.1	91.7	90.5			13.3			13.3	
Actuated g/C Ratio	0.01	0.73	0.73	0.76	0.75			0.11			0.11	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0			5.0			5.0	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5			2.5			2.5	
Lane Grp Cap (vph)	16	1267	1027	290	1266			163			143	
v/s Ratio Prot	0.00	c0.56		c0.00	0.28							
v/s Ratio Perm			0.01	0.07				c0.07			0.00	
v/c Ratio	0.25	0.77	0.02	0.09	0.38			0.60			0.03	
Uniform Delay, d1	59.0	9.7	4.3	8.0	5.1			50.8			47.6	
Progression Factor	1.04	0.96	1.08	1.00	1.00			1.00			1.00	
Incremental Delay, d2	4.4	3.3	0.0	0.1	0.9			5.2			0.1	
Delay (s)	65.5	12.6	4.7	8.1	5.9			56.0			47.7	
Level of Service	E	B	A	A	A			E			D	
Approach Delay (s)		12.6			6.0			56.0			47.7	
Approach LOS		B			A			E			D	
Intersection Summary												
HCM 2000 Control Delay			13.3			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			62.4%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

7: E L ST & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	863	18	23	421	4	25	0	62	1	0	4
Future Volume (veh/h)	4	863	18	23	421	4	25	0	62	1	0	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1752	1752	1752	1707	1707	1707	1841	1841	1841	1530	1530	1530
Adj Flow Rate, veh/h	4	970	20	26	473	4	28	0	70	1	0	4
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	10	10	10	13	13	13	4	4	4	25	25	25
Cap, veh/h	10	1335	1124	349	1326	11	66	9	92	47	12	90
Arrive On Green	0.01	0.76	0.76	0.03	0.78	0.78	0.08	0.00	0.08	0.08	0.00	0.08
Sat Flow, veh/h	1668	1752	1476	1626	1690	14	325	112	1092	126	143	1076
Grp Volume(v), veh/h	4	970	20	26	0	477	98	0	0	5	0	0
Grp Sat Flow(s),veh/h/ln	1668	1752	1476	1626	0	1704	1529	0	0	1345	0	0
Q Serve(g_s), s	0.3	35.4	0.4	0.4	0.0	10.0	5.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	35.4	0.4	0.4	0.0	10.0	7.5	0.0	0.0	0.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.01	0.29		0.71	0.20		0.80
Lane Grp Cap(c), veh/h	10	1335	1124	349	0	1337	167	0	0	149	0	0
V/C Ratio(X)	0.38	0.73	0.02	0.07	0.00	0.36	0.59	0.00	0.00	0.03	0.00	0.00
Avail Cap(c_a), veh/h	83	1335	1124	384	0	1337	316	0	0	272	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.62	0.62	0.62	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	59.4	7.6	3.4	8.2	0.0	3.9	53.7	0.0	0.0	50.5	0.0	0.0
Incr Delay (d2), s/veh	10.3	2.2	0.0	0.1	0.0	0.7	2.4	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	11.8	0.1	0.2	0.0	3.1	3.0	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.7	9.8	3.5	8.2	0.0	4.6	56.1	0.0	0.0	50.6	0.0	0.0
LnGrp LOS	E	A	A	A	A	A	E	A	A	D	A	A
Approach Vol, veh/h	994				503				98			
Approach Delay, s/veh	9.9				4.8				56.1			
Approach LOS	A				A				E			
Timer - Assigned Phs	2		3	4	6		7	8				
Phs Duration (G+Y+Rc), s	15.1		8.5	96.4		15.1	5.7	99.2				
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s	22.0		6.0	77.0		22.0	6.0	77.0				
Max Q Clear Time (g_c+I1), s	9.5		2.4	37.4		2.4	2.3	12.0				
Green Ext Time (p_c), s	0.3		0.0	8.2		0.0	0.0	2.8				
Intersection Summary												
HCM 6th Ctrl Delay	11.3											
HCM 6th LOS	B											

Queues

8: E Portland Ave & Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	128	490	332	117	247	230	633	483	102	381	69
v/c Ratio	0.20	0.75	0.24	0.48	0.47	0.56	0.65	0.63	0.41	0.68	0.21
Control Delay	30.9	40.3	0.4	41.0	32.5	22.8	30.5	6.9	21.4	37.9	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.9	40.3	0.4	41.0	32.5	22.8	30.5	6.9	21.4	37.9	3.3
Queue Length 50th (ft)	25	112	0	57	53	66	137	0	27	86	0
Queue Length 95th (ft)	70	247	0	146	118	177	287	88	85	185	12
Internal Link Dist (ft)		523			476		261			552	
Turn Bay Length (ft)	200		500			100		150	190		150
Base Capacity (vph)	1010	1041	1412	520	1070	482	1541	939	295	1107	552
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.47	0.24	0.23	0.23	0.48	0.41	0.51	0.35	0.34	0.13

Intersection Summary

HCM Signalized Intersection Capacity Analysis

8: E Portland Ave & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	461	312	122	167	53	216	595	454	96	358	65
Future Volume (vph)	120	461	312	122	167	53	216	595	454	96	358	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.91	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3099	3195	1412	1480	2993		1597	3195	1429	1327	2654	1172
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.44	1.00	1.00	0.28	1.00	1.00
Satd. Flow (perm)	3099	3195	1412	1480	2993		744	3195	1429	392	2654	1172
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	128	490	332	130	178	56	230	633	483	102	381	69
RTOR Reduction (vph)	0	0	0	0	22	0	0	0	336	0	0	53
Lane Group Flow (vph)	128	490	332	117	225	0	230	633	147	102	381	16
Confl. Peds. (#/hr)	1		1	1		1	1					1
Heavy Vehicles (%)	13%	13%	13%	11%	11%	11%	13%	13%	13%	36%	36%	36%
Turn Type	Split	NA	Free	Split	NA		D.P+P	NA	Perm	D.P+P	NA	Perm
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases			Free				2		6	6		2
Actuated Green, G (s)	16.6	16.6	81.5	13.6	13.6		31.3	24.8	24.8	31.3	18.4	18.4
Effective Green, g (s)	16.6	16.6	81.5	13.6	13.6		31.3	24.8	24.8	31.3	18.4	18.4
Actuated g/C Ratio	0.20	0.20	1.00	0.17	0.17		0.38	0.30	0.30	0.38	0.23	0.23
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0	1.0		1.0	1.0		2.5	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	631	650	1412	246	499		420	972	434	225	599	264
v/s Ratio Prot	0.04	c0.15		c0.08	0.08		c0.09	c0.20		0.04	0.14	
v/s Ratio Perm			0.24				0.12		0.10	0.14		0.01
v/c Ratio	0.20	0.75	0.24	0.48	0.45		0.55	0.65	0.34	0.45	0.64	0.06
Uniform Delay, d1	27.0	30.5	0.0	30.7	30.6		18.1	24.6	22.0	17.2	28.5	24.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	4.4	0.4	0.5	0.2		1.2	1.2	0.2	0.5	1.6	0.0
Delay (s)	27.0	34.9	0.4	31.3	30.8		19.3	25.8	22.2	17.7	30.2	24.8
Level of Service	C	C	A	C	C		B	C	C	B	C	C
Approach Delay (s)		21.8			31.0			23.4			27.2	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			24.4			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			81.5			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			60.8%			ICU Level of Service			B			
Analysis Period (min)			15									

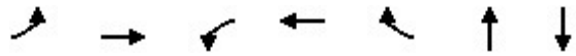
c Critical Lane Group

HCM 6th Edition methodology does not support turning movements with shared & exclusive lanes.

Queues

1: Pacific Ave & S 24th St

05/26/2023



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	18	49	292	139	173	401	488
v/c Ratio	0.18	0.25	0.72	0.30	0.28	0.71	0.36
Control Delay	53.2	46.5	29.6	21.3	33.7	50.3	27.3
Queue Delay	0.0	0.0	0.7	0.0	0.0	0.0	0.0
Total Delay	53.2	46.5	30.3	21.3	33.7	50.3	27.3
Queue Length 50th (ft)	12	33	183	70	108	143	129
Queue Length 95th (ft)	36	64	31	69	201	181	216
Internal Link Dist (ft)		405		294		757	1056
Turn Bay Length (ft)			150		150		
Base Capacity (vph)	112	333	413	529	615	765	1356
Starvation Cap Reductn	0	0	19	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.15	0.74	0.26	0.28	0.52	0.36
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

1: Pacific Ave & S 24th St

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	30	17	283	135	168	0	295	94	116	351	6
Future Volume (vph)	17	30	17	283	135	168	0	295	94	116	351	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		0.95			0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00		0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	
Frt	1.00	0.94		1.00	1.00	0.85		0.96			1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.99	
Satd. Flow (prot)	1770	1746		1713	1810	1538		3369			3388	
Flt Permitted	0.95	1.00		0.52	1.00	1.00		1.00			0.99	
Satd. Flow (perm)	1770	1746		929	1810	1538		3369			3388	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	18	31	18	292	139	173	0	304	97	120	362	6
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	18	49	0	292	139	173	0	401	0	0	488	0
Confl. Peds. (#/hr)	14		6	6		14	16		14	14		16
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	2%	2%	2%	5%	5%	5%
Turn Type	Prot	NA		pm+pt	NA	Over		NA		Split	NA	
Protected Phases	7	4		3	8	2		1		2	2	
Permitted Phases				8								
Actuated Green, G (s)	2.8	12.3		35.7	27.9	41.0		18.3			41.0	
Effective Green, g (s)	2.8	12.3		35.7	27.9	41.0		18.3			41.0	
Actuated g/C Ratio	0.03	0.11		0.32	0.25	0.37		0.17			0.37	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0		5.0			5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5		2.5			2.5	
Lane Grp Cap (vph)	45	195		432	459	573		560			1262	
v/s Ratio Prot	0.01	0.03		c0.11	0.08	0.11		c0.12			c0.14	
v/s Ratio Perm				c0.11								
v/c Ratio	0.40	0.25		0.68	0.30	0.30		0.72			0.39	
Uniform Delay, d1	52.8	44.6		30.4	33.2	24.4		43.4			25.3	
Progression Factor	1.00	1.00		0.63	0.61	1.20		1.00			1.00	
Incremental Delay, d2	4.2	0.5		3.5	0.3	1.3		4.1			0.9	
Delay (s)	57.0	45.1		22.7	20.3	30.6		47.4			26.2	
Level of Service	E	D		C	C	C		D			C	
Approach Delay (s)		48.3			24.4			47.4			26.2	
Approach LOS		D			C			D			C	
Intersection Summary												
HCM 2000 Control Delay			31.9				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)		20.0			
Intersection Capacity Utilization			68.2%				ICU Level of Service		C			
Analysis Period (min)			15									

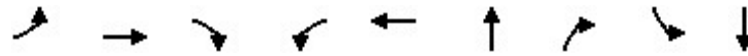
c Critical Lane Group

HCM 6th Edition methodology expects strict NEMA phasing.

Queues

2: A St & S 24th St/Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	20	198	19	78	606	12	39	13	24
v/c Ratio	0.19	0.15	0.02	0.08	0.41	0.06	0.21	0.08	0.12
Control Delay	52.4	10.1	10.8	1.7	5.5	39.9	43.9	40.5	41.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.4	10.1	10.8	1.7	5.5	39.9	43.9	40.5	41.5
Queue Length 50th (ft)	14	50	3	5	37	8	26	9	16
Queue Length 95th (ft)	m34	195	m22	m10	429	23	51	24	35
Internal Link Dist (ft)		294			1074	627			464
Turn Bay Length (ft)	60		80	70			135		
Base Capacity (vph)	123	1371	1133	956	1484	387	370	324	407
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.14	0.02	0.08	0.41	0.03	0.11	0.04	0.06

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: A St & S 24th St/Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	186	18	73	555	15	6	6	37	12	14	8
Future Volume (vph)	19	186	18	73	555	15	6	6	37	12	14	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00			1.00	0.97	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00			1.00	1.00	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1687	1776	1467	1722	1818			1852	1569	1738	1724	
Flt Permitted	0.95	1.00	1.00	0.63	1.00			0.86	1.00	0.75	1.00	
Satd. Flow (perm)	1687	1776	1467	1148	1818			1639	1569	1371	1724	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	20	198	19	78	590	16	6	6	39	13	15	9
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	20	198	19	78	606	0	0	12	39	13	24	0
Confl. Peds. (#/hr)	7		13	13		7	1		4	4		1
Confl. Bikes (#/hr)						1						1
Heavy Vehicles (%)	7%	7%	7%	4%	4%	4%	0%	0%	0%	3%	3%	3%
Turn Type	Prot	NA	Perm	D.P+P	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			6			2	
Permitted Phases			4	4		6			6	2		
Actuated Green, G (s)	3.1	80.5	80.5	85.8	82.7			9.2	9.2	9.2	9.2	
Effective Green, g (s)	3.1	80.5	80.5	85.8	82.7			9.2	9.2	9.2	9.2	
Actuated g/C Ratio	0.03	0.73	0.73	0.78	0.75			0.08	0.08	0.08	0.08	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5			2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	47	1299	1073	923	1366			137	131	114	144	
v/s Ratio Prot	c0.01	0.11		0.00	c0.33						0.01	
v/s Ratio Perm			0.01	0.06				0.01	c0.02	0.01		
v/c Ratio	0.43	0.15	0.02	0.08	0.44			0.09	0.30	0.11	0.17	
Uniform Delay, d1	52.6	4.5	4.0	2.8	5.1			46.5	47.4	46.6	46.8	
Progression Factor	0.99	1.53	1.43	0.47	0.67			1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.2	0.2	0.0	0.0	0.8			0.2	0.9	0.3	0.4	
Delay (s)	56.4	7.0	5.8	1.3	4.2			46.7	48.3	47.0	47.2	
Level of Service	E	A	A	A	A			D	D	D	D	
Approach Delay (s)		11.1			3.9			47.9			47.1	
Approach LOS		B			A			D			D	
Intersection Summary												
HCM 2000 Control Delay			9.4			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			57.6%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: A St & S 24th St/Puyallup Ave

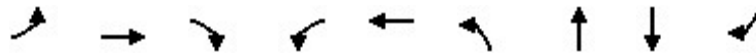
05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	186	18	73	555	15	6	6	37	12	14	8
Future Volume (veh/h)	19	186	18	73	555	15	6	6	37	12	14	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.98	0.98		0.98	0.98		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1796	1796	1796	1841	1841	1841	1900	1900	1900	1856	1856	1856
Adj Flow Rate, veh/h	20	198	19	78	590	16	6	6	39	13	15	9
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	7	4	4	4	0	0	0	3	3	3
Cap, veh/h	43	1278	1073	962	1312	36	117	102	162	194	109	66
Arrive On Green	0.05	1.00	1.00	0.10	1.00	1.00	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	1711	1796	1508	1753	1783	48	662	992	1579	1326	1067	640
Grp Volume(v), veh/h	20	198	19	78	0	606	12	0	39	13	0	24
Grp Sat Flow(s),veh/h/ln	1711	1796	1508	1753	0	1831	1653	0	1579	1326	0	1707
Q Serve(g_s), s	1.3	0.0	0.0	1.2	0.0	0.0	0.0	0.0	2.5	1.0	0.0	1.4
Cycle Q Clear(g_c), s	1.3	0.0	0.0	1.2	0.0	0.0	0.6	0.0	2.5	1.6	0.0	1.4
Prop In Lane	1.00		1.00	1.00		0.03	0.50		1.00	1.00		0.38
Lane Grp Cap(c), veh/h	43	1278	1073	962	0	1348	219	0	162	194	0	175
V/C Ratio(X)	0.47	0.15	0.02	0.08	0.00	0.45	0.05	0.00	0.24	0.07	0.00	0.14
Avail Cap(c_a), veh/h	124	1278	1073	971	0	1348	433	0	373	371	0	403
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.98	0.67	0.00	0.67	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.5	0.0	0.0	3.1	0.0	0.0	44.6	0.0	45.4	45.3	0.0	44.9
Incr Delay (d2), s/veh	5.7	0.3	0.0	0.0	0.0	0.7	0.1	0.0	0.6	0.1	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.1	0.0	0.3	0.0	0.3	0.3	0.0	1.0	0.3	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.3	0.3	0.0	3.1	0.0	0.7	44.7	0.0	46.0	45.4	0.0	45.2
LnGrp LOS	E	A	A	A	A	A	D	A	D	D	A	D
Approach Vol, veh/h	237		684				51		37			
Approach Delay, s/veh	5.0		1.0				45.7		45.3			
Approach LOS	A		A				D		D			
Timer - Assigned Phs	2		3		4		6		7		8	
Phs Duration (G+Y+Rc), s	16.3		10.4		83.3		16.3		7.7		86.0	
Change Period (Y+Rc), s	5.0		5.0		5.0		5.0		5.0		5.0	
Max Green Setting (Gmax), s	26.0		6.0		63.0		26.0		8.0		61.0	
Max Q Clear Time (g_c+I1), s	3.6		3.2		2.0		4.5		3.3		2.0	
Green Ext Time (p_c), s	0.1		0.0		0.9		0.1		0.0		3.8	
Intersection Summary												
HCM 6th Ctrl Delay	5.8											
HCM 6th LOS	A											
Notes												

Queues

3: E D St & Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	56	283	18	87	796	19	159	244	111
v/c Ratio	0.51	0.40	0.03	0.11	0.74	0.13	0.45	0.90	0.34
Control Delay	60.5	33.9	31.1	3.4	15.2	36.1	41.4	77.1	38.9
Queue Delay	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0
Total Delay	60.5	33.9	31.1	3.4	15.6	36.1	41.4	77.1	38.9
Queue Length 50th (ft)	41	172	10	16	447	11	95	163	65
Queue Length 95th (ft)	#89	271	34	0	0	32	160	#298	117
Internal Link Dist (ft)		1074			315		604	705	
Turn Bay Length (ft)	150		80	80		150			
Base Capacity (vph)	113	1092	838	797	1078	157	389	299	360
Starvation Cap Reductn	0	0	0	0	53	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.26	0.02	0.11	0.78	0.12	0.41	0.82	0.31

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

3: E D St & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	263	17	81	615	126	18	100	47	92	135	103
Future Volume (vph)	52	263	17	81	615	126	18	100	47	92	135	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0			5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.90	1.00	0.99		1.00	0.99			1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	0.98	1.00		0.99	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.95			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.98	1.00
Satd. Flow (prot)	1703	1792	1376	1702	1771		1640	1645			1823	1526
Flt Permitted	0.95	1.00	1.00	0.48	1.00		0.39	1.00			0.68	1.00
Satd. Flow (perm)	1703	1792	1376	865	1771		666	1645			1269	1526
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	56	283	18	87	661	135	19	108	51	99	145	111
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	56	283	18	87	796	0	19	159	0	0	244	111
Confl. Peds. (#/hr)	4		27	27		4	7		2	2		7
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	9%	9%	9%	2%	2%	2%
Turn Type	Prot	NA	Perm	D.P+P	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4		3	8			6			2	
Permitted Phases			4	4			6		2			2
Actuated Green, G (s)	5.9	42.8	42.8	71.5	65.6		23.5	23.5			23.5	23.5
Effective Green, g (s)	5.9	42.8	42.8	71.5	65.6		23.5	23.5			23.5	23.5
Actuated g/C Ratio	0.05	0.39	0.39	0.65	0.60		0.21	0.21			0.21	0.21
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5		2.5	2.5			2.5	2.5
Lane Grp Cap (vph)	91	697	535	780	1056		142	351			271	326
v/s Ratio Prot	c0.03	0.16		0.03	c0.45			0.10				
v/s Ratio Perm			0.01	0.04			0.03				c0.19	0.07
v/c Ratio	0.62	0.41	0.03	0.11	0.75		0.13	0.45			0.90	0.34
Uniform Delay, d1	50.9	24.4	20.8	10.5	16.3		35.0	37.7			42.1	36.7
Progression Factor	0.88	1.08	1.07	0.47	0.62		1.00	1.00			1.00	1.00
Incremental Delay, d2	10.1	1.8	0.1	0.0	4.3		0.3	0.7			30.1	0.5
Delay (s)	55.1	28.1	22.4	5.0	14.3		35.3	38.3			72.3	37.1
Level of Service	E	C	C	A	B		D	D			E	D
Approach Delay (s)		32.0			13.4			38.0			61.3	
Approach LOS		C			B			D			E	
Intersection Summary												
HCM 2000 Control Delay			29.2			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			84.5%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

3: E D St & Puyallup Ave

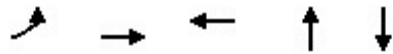
05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	263	17	81	615	126	18	100	47	92	135	103
Future Volume (veh/h)	52	263	17	81	615	126	18	100	47	92	135	103
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	0.97		0.98	1.00		0.96	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1811	1811	1841	1841	1841	1767	1767	1767	1870	1870	1870
Adj Flow Rate, veh/h	56	283	18	87	661	135	19	108	51	99	145	111
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	6	6	6	4	4	4	9	9	9	2	2	2
Cap, veh/h	77	321	251	886	860	176	84	265	125	142	170	369
Arrive On Green	0.09	0.35	0.35	0.60	0.77	0.77	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1725	1811	1418	1753	1476	302	1061	1119	529	408	720	1562
Grp Volume(v), veh/h	56	283	18	87	0	796	19	0	159	244	0	111
Grp Sat Flow(s),veh/h/ln	1725	1811	1418	1753	0	1778	1061	0	1648	1128	0	1562
Q Serve(g_s), s	3.5	16.1	0.9	0.0	0.0	27.4	1.9	0.0	9.0	15.1	0.0	6.4
Cycle Q Clear(g_c), s	3.5	16.1	0.9	0.0	0.0	27.4	26.0	0.0	9.0	24.1	0.0	6.4
Prop In Lane	1.00		1.00	1.00		0.17	1.00		0.32	0.41		1.00
Lane Grp Cap(c), veh/h	77	321	251	886	0	1036	84	0	390	313	0	369
V/C Ratio(X)	0.73	0.88	0.07	0.10	0.00	0.77	0.23	0.00	0.41	0.78	0.00	0.30
Avail Cap(c_a), veh/h	110	1037	812	886	0	1036	84	0	390	313	0	369
HCM Platoon Ratio	2.00	2.00	2.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.99	0.83	0.00	0.83	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	49.4	34.4	29.5	11.5	0.0	8.3	54.1	0.0	35.5	43.8	0.0	34.5
Incr Delay (d2), s/veh	10.1	27.3	0.5	0.0	0.0	4.6	1.0	0.0	0.5	11.6	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	8.2	0.4	0.9	0.0	7.3	0.5	0.0	3.7	7.5	0.0	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.5	61.7	30.0	11.6	0.0	12.8	55.1	0.0	36.0	55.4	0.0	34.9
LnGrp LOS	E	E	C	B	A	B	E	A	D	E	A	C
Approach Vol, veh/h	357				883				178			
Approach Delay, s/veh	59.7				12.7				38.0			
Approach LOS	E				B				D			
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	31.0		54.5	24.5		31.0		9.9	69.1			
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0		5.0				
Max Green Setting (Gmax), s	26.0		6.0	63.0		26.0		7.0	62.0			
Max Q Clear Time (g_c+l1), s	26.1		2.0	18.1		28.0		5.5	29.4			
Green Ext Time (p_c), s	0.0		0.0	1.4		0.0		0.0	5.7			
Intersection Summary												
HCM 6th Ctrl Delay	32.0											
HCM 6th LOS	C											

Queues

4: E E St & Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	2	403	894	1	5
v/c Ratio	0.01	0.24	0.54	0.01	0.03
Control Delay	61.5	0.9	4.9	46.0	46.2
Queue Delay	0.0	0.0	0.3	0.0	0.0
Total Delay	61.5	0.9	5.2	46.0	46.2
Queue Length 50th (ft)	1	0	0	1	3
Queue Length 95th (ft)	m4	m78	#826	6	15
Internal Link Dist (ft)		315	283	364	388
Turn Bay Length (ft)	80				
Base Capacity (vph)	156	1695	1661	381	436
Starvation Cap Reductn	0	149	9	0	0
Spillback Cap Reductn	0	69	273	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.01	0.26	0.64	0.00	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

4: E E St & Puyallup Ave

05/26/2023

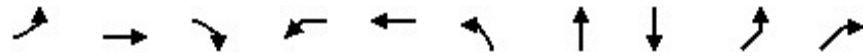
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	379	0	0	839	1	0	0	1	4	0	1
Future Volume (vph)	2	379	0	0	839	1	0	0	1	4	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	
Frt	1.00	1.00			1.00			0.85			0.97	
Flt Protected	0.95	1.00			1.00			1.00			0.96	
Satd. Flow (prot)	1719	1810			1827			1615			1778	
Flt Permitted	0.95	1.00			1.00			1.00			0.96	
Satd. Flow (perm)	1719	1810			1827			1615			1778	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	2	403	0	0	893	1	0	0	1	4	0	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	2	403	0	0	894	0	0	1	0	0	5	0
Confl. Peds. (#/hr)	5		26	26		5						
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	5%	5%	5%	4%	4%	4%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	pm+pt	NA		Split	NA		Split	NA	
Protected Phases	7	4		3	8		1	1		2	2	
Permitted Phases			4	8								
Actuated Green, G (s)	2.0	91.0			84.0			2.0			2.0	
Effective Green, g (s)	2.0	91.0			84.0			2.0			2.0	
Actuated g/C Ratio	0.02	0.83			0.76			0.02			0.02	
Clearance Time (s)	5.0	5.0			5.0			5.0			5.0	
Vehicle Extension (s)	1.0	1.0			1.0			1.5			1.0	
Lane Grp Cap (vph)	31	1497			1395			29			32	
v/s Ratio Prot	0.00	c0.22			c0.49			c0.00			c0.00	
v/s Ratio Perm												
v/c Ratio	0.06	0.27			0.64			0.03			0.16	
Uniform Delay, d1	53.1	2.1			6.0			53.1			53.2	
Progression Factor	1.34	0.28			0.41			1.00			1.00	
Incremental Delay, d2	0.3	0.4			1.9			0.2			0.8	
Delay (s)	71.5	1.0			4.3			53.2			54.0	
Level of Service	E	A			A			D			D	
Approach Delay (s)		1.3			4.3			53.2			54.0	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM 2000 Control Delay			3.6			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			60.9%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology expects strict NEMA phasing.

Queues

5: Puyallup Ave & F St

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	NEL	NER
Lane Group Flow (vph)	4	376	16	9	723	14	9	3	146	72
v/c Ratio	0.04	0.31	0.02	0.09	0.57	0.19	0.11	0.02	0.67	0.38
Control Delay	47.2	6.1	3.6	61.0	14.8	51.1	47.5	46.0	61.9	50.6
Queue Delay	0.0	0.5	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Total Delay	47.2	6.6	3.6	61.0	15.1	51.1	47.5	46.0	61.9	50.6
Queue Length 50th (ft)	3	1	0	6	112	9	6	2	98	46
Queue Length 95th (ft)	m13	377	13	m18	#722	29	22	11	#225	98
Internal Link Dist (ft)		283			304		340	410	299	
Turn Bay Length (ft)	100		80	80						
Base Capacity (vph)	93	1219	831	99	1258	175	192	150	219	191
Starvation Cap Reductn	0	450	0	0	141	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.49	0.02	0.09	0.65	0.08	0.05	0.02	0.67	0.38

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

5: Puyallup Ave & F St

05/26/2023

												
Movement	EBL	EBT	EBR	EBR2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	4	353	0	15	8	679	1	1	12	0	8	1
Future Volume (vph)	4	353	0	15	8	679	1	1	12	0	8	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		5.0	5.0			5.0	5.0		
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00			1.00	1.00		
Frpb, ped/bikes	1.00	1.00	0.80		1.00	1.00			1.00	0.98		
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00			0.95	1.00		
Frt	1.00	1.00	0.85		1.00	1.00			1.00	0.85		
Flt Protected	0.95	1.00	1.00		0.95	1.00			0.95	1.00		
Satd. Flow (prot)	1719	1810	1234		1770	1862			881	814		
Flt Permitted	0.95	1.00	1.00		0.95	1.00			0.80	1.00		
Satd. Flow (perm)	1719	1810	1234		1770	1862			742	814		
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	4	376	0	16	9	722	1	1	13	0	9	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	4	376	16	0	9	723	0	0	14	9	0	0
Confl. Peds. (#/hr)	5		35	21	21		5	21	4		1	1
Confl. Bikes (#/hr)							3					
Heavy Vehicles (%)	5%	5%	5%	5%	2%	2%	2%	94%	94%	94%	94%	0%
Turn Type	Prot	NA	Perm		Prot	NA		Perm	Split	NA		Split
Protected Phases	7	4			3	8			2	2		1
Permitted Phases			4					2				
Actuated Green, G (s)	1.2	63.1	63.1		1.4	63.3			5.0	5.0		
Effective Green, g (s)	1.2	63.1	63.1		1.4	63.3			5.0	5.0		
Actuated g/C Ratio	0.01	0.57	0.57		0.01	0.58			0.05	0.05		
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0			5.0	5.0		
Vehicle Extension (s)	2.5	2.5	2.5		2.5	2.5			5.0	5.0		
Lane Grp Cap (vph)	18	1038	707		22	1071			33	37		
v/s Ratio Prot	0.00	c0.21			0.01	c0.39				0.01		
v/s Ratio Perm			0.01						c0.02			
v/c Ratio	0.22	0.36	0.02		0.41	0.68			0.42	0.24		
Uniform Delay, d1	53.9	12.6	10.1		53.9	16.2			51.1	50.7		
Progression Factor	0.94	0.47	0.27		1.20	0.84			1.00	1.00		
Incremental Delay, d2	4.4	1.0	0.1		8.4	3.3			17.3	7.0		
Delay (s)	54.9	6.9	2.8		73.1	16.9			68.4	57.7		
Level of Service	D	A	A		E	B			E	E		
Approach Delay (s)		7.2				17.6				64.2		
Approach LOS		A				B				E		
Intersection Summary												
HCM 2000 Control Delay			20.7				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)			25.0		
Intersection Capacity Utilization			65.4%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: Puyallup Ave & F St

05/26/2023



Movement	SBT	SBR2	NEL2	NEL	NER
Lane Configurations	↕			↕	↗
Traffic Volume (vph)	0	2	136	1	68
Future Volume (vph)	0	2	136	1	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0
Lane Util. Factor	1.00			1.00	1.00
Frpb, ped/bikes	0.91			1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00
Frt	0.91			1.00	0.85
Flt Protected	0.98			0.95	1.00
Satd. Flow (prot)	1556			1787	1561
Flt Permitted	0.98			0.95	1.00
Satd. Flow (perm)	1556			1787	1561
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	2	145	1	72
RTOR Reduction (vph)	0	0	0	0	0
Lane Group Flow (vph)	3	0	0	146	72
Confl. Peds. (#/hr)		4	4	5	1
Confl. Bikes (#/hr)					
Heavy Vehicles (%)	0%	0%	1%	1%	1%
Turn Type	NA		Prot	Prot	Perm
Protected Phases	1		10	10	
Permitted Phases					10
Actuated Green, G (s)	2.0			13.5	13.5
Effective Green, g (s)	2.0			13.5	13.5
Actuated g/C Ratio	0.02			0.12	0.12
Clearance Time (s)	5.0			5.0	5.0
Vehicle Extension (s)	2.5			2.5	2.5
Lane Grp Cap (vph)	28			219	191
v/s Ratio Prot	c0.00			c0.08	
v/s Ratio Perm					0.05
v/c Ratio	0.11			0.67	0.38
Uniform Delay, d1	53.1			46.1	44.4
Progression Factor	1.00			1.00	1.00
Incremental Delay, d2	1.2			6.7	0.9
Delay (s)	54.4			52.8	45.3
Level of Service	D			D	D
Approach Delay (s)	54.4			50.3	
Approach LOS	D			D	
Intersection Summary					

HCM 6th Edition methodology does not support more than 4 approaches.

Queues

6: G St & Puyallup Ave

05/26/2023



Lane Group	EBT	EBR	WBL	WBT	NBT	NBR
Lane Group Flow (vph)	409	47	254	605	78	163
v/c Ratio	0.36	0.05	0.32	0.39	0.43	0.46
Control Delay	4.9	4.5	3.8	3.2	51.7	34.7
Queue Delay	0.3	0.0	0.0	0.0	0.4	0.0
Total Delay	5.2	4.5	3.8	3.3	52.0	34.7
Queue Length 50th (ft)	50	6	28	66	53	93
Queue Length 95th (ft)	75	13	56	118	90	128
Internal Link Dist (ft)	304			1819	498	
Turn Bay Length (ft)		80	80			70
Base Capacity (vph)	1127	893	788	1537	343	353
Starvation Cap Reductn	256	0	0	0	0	0
Spillback Cap Reductn	0	0	0	106	75	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.05	0.32	0.42	0.29	0.46
Intersection Summary						

HCM Signalized Intersection Capacity Analysis

6: G St & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	397	46	246	587	0	76	0	158	0	0	0
Future Volume (vph)	0	397	46	246	587	0	76	0	158	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0			5.0	5.0			
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00	1.00			
Frpb, ped/bikes		1.00	0.93	1.00	1.00			1.00	0.99			
Flpb, ped/bikes		1.00	1.00	0.99	1.00			1.00	1.00			
Frt		1.00	0.85	1.00	1.00			1.00	0.85			
Flt Protected		1.00	1.00	0.95	1.00			0.95	1.00			
Satd. Flow (prot)		1759	1393	1734	1845			1719	1523			
Flt Permitted		1.00	1.00	0.47	1.00			0.95	1.00			
Satd. Flow (perm)		1759	1393	859	1845			1719	1523			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	409	47	254	605	0	78	0	163	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	409	47	254	605	0	0	78	163	0	0	0
Confl. Peds. (#/hr)	6		18	18		6			2	2		
Heavy Vehicles (%)	8%	8%	8%	3%	3%	3%	5%	5%	5%	0%	0%	0%
Turn Type	Prot	NA	Perm	D.P+P	NA		Split	NA	pm+ov			
Protected Phases	7	4		3	8		6	6	3		2	
Permitted Phases			4	4					6	2		
Actuated Green, G (s)		69.5	69.5	84.7	89.7			10.3	25.5			
Effective Green, g (s)		69.5	69.5	84.7	89.7			10.3	25.5			
Actuated g/C Ratio		0.63	0.63	0.77	0.82			0.09	0.23			
Clearance Time (s)		5.0	5.0	5.0	5.0			5.0	5.0			
Vehicle Extension (s)		2.5	2.5	2.5	2.5			2.5	2.5			
Lane Grp Cap (vph)		1111	880	782	1504			160	422			
v/s Ratio Prot		0.23		0.04	c0.33			c0.05	0.05			
v/s Ratio Perm			0.03	0.21					0.05			
v/c Ratio		0.37	0.05	0.32	0.40			0.49	0.39			
Uniform Delay, d1		9.7	7.7	6.4	2.8			47.3	35.6			
Progression Factor		0.34	0.40	0.69	0.69			1.00	1.00			
Incremental Delay, d2		0.9	0.1	0.1	0.7			1.7	0.4			
Delay (s)		4.3	3.2	4.6	2.6			49.0	36.1			
Level of Service		A	A	A	A			D	D			
Approach Delay (s)		4.2			3.2			40.3			0.0	
Approach LOS		A			A			D			A	
Intersection Summary												
HCM 2000 Control Delay			9.2			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			54.3%			ICU Level of Service			A			
Analysis Period (min)			15									

c Critical Lane Group

HCM 6th Signalized Intersection Summary

6: G St & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	397	46	246	587	0	76	0	158	0	0	0
Future Volume (veh/h)	0	397	46	246	587	0	76	0	158	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00	0.99		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1781	1781	1781	1856	1856	1856	1826	1826	1826	1900	1900	1900
Adj Flow Rate, veh/h	0	409	47	254	605	0	78	0	163	0	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	8	8	3	3	3	5	5	5	0	0	0
Cap, veh/h	2	438	358	1057	1553	0	124	0	954	0	2	0
Arrive On Green	0.00	0.49	0.49	1.00	1.00	0.00	0.07	0.00	0.07	0.00	0.00	0.00
Sat Flow, veh/h	1697	1781	1454	1767	1856	0	1715	0	1526	0	1900	0
Grp Volume(v), veh/h	0	409	47	254	605	0	78	0	163	0	0	0
Grp Sat Flow(s),veh/h/ln	1697	1781	1454	1767	1856	0	1715	0	1526	0	1900	0
Q Serve(g_s), s	0.0	23.7	1.9	0.0	0.0	0.0	4.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	23.7	1.9	0.0	0.0	0.0	4.9	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	2	438	358	1057	1553	0	124	0	954	0	2	0
V/C Ratio(X)	0.00	0.93	0.13	0.24	0.39	0.00	0.63	0.00	0.17	0.00	0.00	0.00
Avail Cap(c_a), veh/h	93	567	463	1057	1553	0	343	0	1149	0	380	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.96	0.96	0.80	0.80	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	27.1	21.6	0.0	0.0	0.0	49.6	0.0	9.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	28.4	0.7	0.1	0.6	0.0	3.9	0.0	0.1	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	10.8	0.7	0.0	0.3	0.0	2.2	0.0	1.6	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	55.5	22.3	0.1	0.6	0.0	53.5	0.0	9.0	0.0	0.0	0.0
LnGrp LOS	A	E	C	A	A	A	D	A	A	A	A	A
Approach Vol, veh/h	456			859			241			0		
Approach Delay, s/veh	52.1			0.4			23.4			0.0		
Approach LOS	D			A			C					
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	0.0		65.0	32.1		12.9		0.0	97.1			
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0		5.0	5.0			
Max Green Setting (Gmax), s	22.0		11.0	35.0		22.0		6.0	40.0			
Max Q Clear Time (g_c+I1), s	0.0		2.0	25.7		6.9		0.0	2.0			
Green Ext Time (p_c), s	0.0		0.4	1.3		0.6		0.0	3.7			
Intersection Summary												
HCM 6th Ctrl Delay	19.1											
HCM 6th LOS	B											

Queues

7: E L ST & Puyallup Ave

05/26/2023



Lane Group	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	586	19	102	878	54	7
v/c Ratio	0.44	0.02	0.16	0.57	0.41	0.05
Control Delay	9.7	5.2	2.9	5.3	55.8	44.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.7	5.2	2.9	5.3	55.8	44.7
Queue Length 50th (ft)	171	4	11	165	37	5
Queue Length 95th (ft)	443	m14	24	292	76	19
Internal Link Dist (ft)	1819			839	1082	346
Turn Bay Length (ft)		80	80			
Base Capacity (vph)	1326	1059	619	1546	270	286
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.02	0.16	0.57	0.20	0.02

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

7: E L ST & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	563	18	98	843	0	9	0	43	6	0	1
Future Volume (vph)	0	563	18	98	843	0	9	0	43	6	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0			5.0			5.0	
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00			1.00	
Frpb, ped/bikes		1.00	0.94	1.00	1.00			0.98			1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00			1.00	
Frt		1.00	0.85	1.00	1.00			0.89			0.98	
Flt Protected		1.00	1.00	0.95	1.00			0.99			0.96	
Satd. Flow (prot)		1810	1445	1727	1827			1415			1783	
Flt Permitted		1.00	1.00	0.39	1.00			0.95			0.77	
Satd. Flow (perm)		1810	1445	708	1827			1351			1432	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	586	19	102	878	0	9	0	45	6	0	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	586	19	102	878	0	0	54	0	0	7	0
Confl. Peds. (#/hr)			15	15					1	1		
Heavy Vehicles (%)	5%	5%	5%	4%	4%	4%	16%	16%	16%	0%	0%	0%
Turn Type	Prot	NA	Perm	D.P+P	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4	4			2			6		
Actuated Green, G (s)		79.6	79.6	86.1	91.1			8.9			8.9	
Effective Green, g (s)		79.6	79.6	86.1	91.1			8.9			8.9	
Actuated g/C Ratio		0.72	0.72	0.78	0.83			0.08			0.08	
Clearance Time (s)		5.0	5.0	5.0	5.0			5.0			5.0	
Vehicle Extension (s)		2.5	2.5	2.5	2.5			2.5			2.5	
Lane Grp Cap (vph)		1309	1045	614	1513			109			115	
v/s Ratio Prot		0.32		0.01	c0.48							
v/s Ratio Perm			0.01	0.12				c0.04			0.00	
v/c Ratio		0.45	0.02	0.17	0.58			0.50			0.06	
Uniform Delay, d1		6.2	4.3	3.2	3.1			48.4			46.7	
Progression Factor		1.26	0.96	1.00	1.00			1.00			1.00	
Incremental Delay, d2		1.1	0.0	0.1	1.6			2.6			0.2	
Delay (s)		8.8	4.1	3.3	4.8			51.0			46.9	
Level of Service		A	A	A	A			D			D	
Approach Delay (s)		8.7			4.6			51.0			46.9	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM 2000 Control Delay			7.8			HCM 2000 Level of Service					A	
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)					15.0	
Intersection Capacity Utilization			70.5%			ICU Level of Service					C	
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

7: E L ST & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	563	18	98	843	0	9	0	43	6	0	1
Future Volume (veh/h)	0	563	18	98	843	0	9	0	43	6	0	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1826	1826	1826	1841	1841	1841	1663	1663	1663	1900	1900	1900
Adj Flow Rate, veh/h	0	586	19	102	878	0	9	0	45	6	0	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	5	5	5	4	4	4	16	16	16	0	0	0
Cap, veh/h	2	1335	1119	728	1525	0	48	9	94	166	5	18
Arrive On Green	0.00	0.97	0.97	0.05	0.83	0.00	0.08	0.00	0.08	0.08	0.00	0.08
Sat Flow, veh/h	1739	1826	1531	1753	1841	0	124	110	1170	1302	60	227
Grp Volume(v), veh/h	0	586	19	102	878	0	54	0	0	7	0	0
Grp Sat Flow(s),veh/h/ln	1739	1826	1531	1753	1841	0	1404	0	0	1588	0	0
Q Serve(g_s), s	0.0	1.7	0.0	1.5	17.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	1.7	0.0	1.5	17.2	0.0	3.9	0.0	0.0	0.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.17		0.83	0.86		0.14
Lane Grp Cap(c), veh/h	2	1335	1119	728	1525	0	151	0	0	189	0	0
V/C Ratio(X)	0.00	0.44	0.02	0.14	0.58	0.00	0.36	0.00	0.00	0.04	0.00	0.00
Avail Cap(c_a), veh/h	95	1335	1119	733	1525	0	315	0	0	357	0	0
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.93	0.93	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.4	0.4	2.8	3.1	0.0	48.3	0.0	0.0	46.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.0	0.0	0.1	1.6	0.0	1.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.7	0.0	0.4	4.6	0.0	1.5	0.0	0.0	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	1.4	0.4	2.8	4.7	0.0	49.4	0.0	0.0	46.7	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	A
Approach Vol, veh/h	605			980			54			7		
Approach Delay, s/veh	1.4			4.5			49.4			46.7		
Approach LOS	A			A			D			D		
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	13.9		10.7	85.4		13.9		0.0	96.1			
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0		5.0	5.0			
Max Green Setting (Gmax), s	22.0		6.0	67.0		22.0		6.0	67.0			
Max Q Clear Time (g_c+I1), s	5.9		3.5	3.7		2.4		0.0	19.2			
Green Ext Time (p_c), s	0.1		0.0	3.7		0.0		0.0	6.8			
Intersection Summary												
HCM 6th Ctrl Delay	5.0											
HCM 6th LOS	A											

Queues

8: E Portland Ave & Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	43	228	403	448	909	210	296	255	95	761	107
v/c Ratio	0.11	0.55	0.27	0.89	0.87	0.93	0.31	0.43	0.25	0.89	0.23
Control Delay	41.7	48.9	0.4	56.3	45.0	71.2	30.4	6.3	22.6	52.0	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.7	48.9	0.4	56.3	45.0	71.2	30.4	6.3	22.6	52.0	7.5
Queue Length 50th (ft)	13	79	0	313	312	92	78	0	37	252	0
Queue Length 95th (ft)	30	118	0	#621	#531	#283	136	64	87	#426	44
Internal Link Dist (ft)		523			476		261			552	
Turn Bay Length (ft)	200		500			100		150	190		150
Base Capacity (vph)	771	795	1490	506	1045	226	1015	621	382	920	489
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.29	0.27	0.89	0.87	0.93	0.29	0.41	0.25	0.83	0.22

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

8: E Portland Ave & Puyallup Ave

05/26/2023

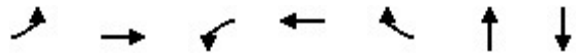
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	219	387	581	636	85	202	284	245	91	731	103
Future Volume (vph)	41	219	387	581	636	85	202	284	245	91	731	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.91	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.99		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3273	3374	1490	1579	3244		1583	3167	1398	1626	3252	1455
Flt Permitted	0.95	1.00	1.00	0.95	0.99		0.14	1.00	1.00	0.53	1.00	1.00
Satd. Flow (perm)	3273	3374	1490	1579	3244		238	3167	1398	915	3252	1455
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	43	228	403	605	662	89	210	296	255	95	761	107
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	178	0	0	79
Lane Group Flow (vph)	43	228	403	448	903	0	210	296	77	95	761	28
Confl. Peds. (#/hr)			2	2					1	1		
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	7%	7%	7%	4%	4%	4%	14%	14%	14%	11%	11%	11%
Turn Type	Split	NA	Free	Split	NA		D.P+P	NA	Perm	D.P+P	NA	Perm
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases			Free				2		6	6		2
Actuated Green, G (s)	13.2	13.2	106.5	34.2	34.2		39.1	32.1	32.1	39.1	28.0	28.0
Effective Green, g (s)	13.2	13.2	106.5	34.2	34.2		39.1	32.1	32.1	39.1	28.0	28.0
Actuated g/C Ratio	0.12	0.12	1.00	0.32	0.32		0.37	0.30	0.30	0.37	0.26	0.26
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0	1.0		1.0	1.0		2.5	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	405	418	1490	507	1041		227	954	421	382	854	382
v/s Ratio Prot	0.01	c0.07		c0.28	0.28		c0.10	0.09		0.02	0.23	
v/s Ratio Perm			c0.27				c0.24		0.05	0.07		0.02
v/c Ratio	0.11	0.55	0.27	0.88	0.87		0.93	0.31	0.18	0.25	0.89	0.07
Uniform Delay, d1	41.4	43.8	0.0	34.3	34.0		26.7	28.7	27.5	22.7	37.8	29.5
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	0.8	0.4	16.2	7.5		39.4	0.1	0.1	0.1	11.2	0.0
Delay (s)	41.5	44.6	0.4	50.4	41.5		66.1	28.7	27.6	22.8	49.0	29.5
Level of Service	D	D	A	D	D		E	C	C	C	D	C
Approach Delay (s)		18.0			44.5			38.7			44.3	
Approach LOS		B			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			38.5			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			106.5			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			82.0%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology does not support turning movements with shared & exclusive lanes.

Queues

1: Pacific Ave & S 24th St

05/26/2023



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	10	29	168	43	155	522	330
v/c Ratio	0.10	0.15	0.60	0.13	0.24	0.79	0.23
Control Delay	51.4	44.1	43.6	33.2	26.2	50.4	24.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.4	44.1	43.6	33.2	26.2	50.4	24.0
Queue Length 50th (ft)	7	19	98	23	74	183	82
Queue Length 95th (ft)	25	43	138	53	156	235	145
Internal Link Dist (ft)		405		294		757	1056
Turn Bay Length (ft)			150		150		
Base Capacity (vph)	107	332	295	445	633	784	1415
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.09	0.57	0.10	0.24	0.67	0.23
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

1: Pacific Ave & S 24th St

05/26/2023

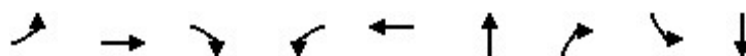
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	24	3	153	39	141	0	370	105	109	190	1
Future Volume (vph)	9	24	3	153	39	141	0	370	105	109	190	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		0.95			0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	
Frt	1.00	0.98		1.00	1.00	0.85		0.97			1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.98	
Satd. Flow (prot)	1687	1744		1621	1712	1455		3196			3251	
Flt Permitted	0.95	1.00		0.50	1.00	1.00		1.00			0.98	
Satd. Flow (perm)	1687	1744		845	1712	1455		3196			3251	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	10	26	3	168	43	155	0	407	115	120	209	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	10	29	0	168	43	155	0	522	0	0	330	0
Confl. Peds. (#/hr)	7		5	5		7	11		14	14		11
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	7%	7%	7%	11%	11%	11%	8%	8%	8%	9%	9%	9%
Turn Type	Prot	NA		pm+pt	NA	Over		NA		Split	NA	
Protected Phases	7	4		3	8	2		1		2	2	
Permitted Phases				8								
Actuated Green, G (s)	1.4	10.2		28.4	22.0	43.9		22.7			43.9	
Effective Green, g (s)	1.4	10.2		28.4	22.0	43.9		22.7			43.9	
Actuated g/C Ratio	0.01	0.09		0.26	0.20	0.40		0.21			0.40	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0		5.0			5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5		2.5			2.5	
Lane Grp Cap (vph)	21	161		311	342	580		659			1297	
v/s Ratio Prot	0.01	0.02		c0.06	0.03	c0.11		c0.16			0.10	
v/s Ratio Perm				c0.07								
v/c Ratio	0.48	0.18		0.54	0.13	0.27		0.79			0.25	
Uniform Delay, d1	53.9	46.0		33.9	36.1	22.2		41.4			22.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	
Incremental Delay, d2	11.9	0.4		1.5	0.1	1.1		6.3			0.5	
Delay (s)	65.8	46.4		35.4	36.2	23.4		47.7			22.6	
Level of Service	E	D		D	D	C		D			C	
Approach Delay (s)		51.4			30.4			47.7			22.6	
Approach LOS		D			C			D			C	
Intersection Summary												
HCM 2000 Control Delay			36.2				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)		20.0			
Intersection Capacity Utilization			63.3%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology expects strict NEMA phasing.

Queues

2: A St & S 24th St/Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	5	223	5	18	371	4	66	5	2
v/c Ratio	0.06	0.16	0.00	0.02	0.27	0.02	0.39	0.04	0.01
Control Delay	55.8	5.6	7.0	0.6	1.1	42.5	54.1	43.4	42.0
Queue Delay	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.8	6.2	7.0	0.6	1.1	42.5	54.1	43.4	42.0
Queue Length 50th (ft)	4	25	1	0	5	3	50	4	1
Queue Length 95th (ft)	17	113	7	m2	18	12	84	14	9
Internal Link Dist (ft)		294			1074	627			464
Turn Bay Length (ft)	60		80	70			135		
Base Capacity (vph)	134	1356	1120	911	1387	477	397	286	347
Starvation Cap Reductn	0	815	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.41	0.00	0.02	0.27	0.01	0.17	0.02	0.01

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: A St & S 24th St/Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	212	5	17	335	17	0	4	63	5	1	1
Future Volume (vph)	5	212	5	17	335	17	0	4	63	5	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00			1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1612	1696	1401	1614	1697			1792	1490	1354	1304	
Flt Permitted	0.95	1.00	1.00	0.62	1.00			1.00	1.00	0.76	1.00	
Satd. Flow (perm)	1612	1696	1401	1052	1697			1792	1490	1076	1304	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	223	5	18	353	18	0	4	66	5	1	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	5	223	5	18	371	0	0	4	66	5	2	0
Confl. Peds. (#/hr)	3		12	12		3	3		1	1		3
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	12%	12%	12%	11%	11%	11%	6%	6%	6%	33%	33%	33%
Turn Type	Prot	NA	Perm	D.P+P	NA			NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			6			2	
Permitted Phases			4	4			6		6	2		
Actuated Green, G (s)	1.3	90.9	90.9	93.3	92.0			11.7	11.7	11.7	11.7	
Effective Green, g (s)	1.3	90.9	90.9	93.3	92.0			11.7	11.7	11.7	11.7	
Actuated g/C Ratio	0.01	0.76	0.76	0.78	0.77			0.10	0.10	0.10	0.10	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5			2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	17	1284	1061	829	1301			174	145	104	127	
v/s Ratio Prot	c0.00	0.13		0.00	c0.22			0.00			0.00	
v/s Ratio Perm			0.00	0.02					c0.04	0.00		
v/c Ratio	0.29	0.17	0.00	0.02	0.29			0.02	0.46	0.05	0.02	
Uniform Delay, d1	58.9	4.1	3.5	3.0	4.2			49.0	51.1	49.1	48.9	
Progression Factor	1.00	1.00	1.00	0.17	0.12			1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.9	0.3	0.0	0.0	0.5			0.0	1.6	0.1	0.0	
Delay (s)	65.8	4.4	3.5	0.5	1.0			49.0	52.8	49.2	49.0	
Level of Service	E	A	A	A	A			D	D	D	D	
Approach Delay (s)		5.7			1.0			52.6			49.2	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM 2000 Control Delay			8.2			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.30									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			52.5%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: A St & S 24th St/Puyallup Ave

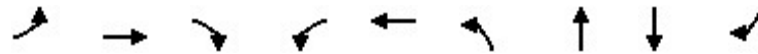
05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	212	5	17	335	17	0	4	63	5	1	1
Future Volume (veh/h)	5	212	5	17	335	17	0	4	63	5	1	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1722	1722	1722	1737	1737	1737	1811	1811	1811	1411	1411	1411
Adj Flow Rate, veh/h	5	223	5	18	353	18	0	4	66	5	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	12	12	12	11	11	11	6	6	6	33	33	33
Cap, veh/h	13	1312	1081	871	1272	65	0	164	137	147	58	58
Arrive On Green	0.01	0.76	0.76	0.05	1.00	1.00	0.00	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	1640	1722	1418	1654	1638	84	0	1811	1509	989	641	641
Grp Volume(v), veh/h	5	223	5	18	0	371	0	4	66	5	0	2
Grp Sat Flow(s),veh/h/ln	1640	1722	1418	1654	0	1721	0	1811	1509	989	0	1283
Q Serve(g_s), s	0.4	4.2	0.1	0.3	0.0	0.0	0.0	0.2	5.0	0.6	0.0	0.2
Cycle Q Clear(g_c), s	0.4	4.2	0.1	0.3	0.0	0.0	0.0	0.2	5.0	0.8	0.0	0.2
Prop In Lane	1.00		1.00	1.00		0.05	0.00		1.00	1.00		0.50
Lane Grp Cap(c), veh/h	13	1312	1081	871	0	1337	0	164	137	147	0	116
V/C Ratio(X)	0.40	0.17	0.00	0.02	0.00	0.28	0.00	0.02	0.48	0.03	0.00	0.02
Avail Cap(c_a), veh/h	137	1312	1081	972	0	1337	0	483	402	322	0	342
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.99	0.90	0.00	0.90	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	59.3	3.9	3.4	2.8	0.0	0.0	0.0	49.7	51.9	50.1	0.0	49.7
Incr Delay (d2), s/veh	14.2	0.3	0.0	0.0	0.0	0.5	0.0	0.0	2.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.4	0.0	0.1	0.0	0.2	0.0	0.1	2.0	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.5	4.2	3.4	2.8	0.0	0.5	0.0	49.8	53.9	50.2	0.0	49.8
LnGrp LOS	E	A	A	A	A	A	A	D	D	D	A	D
Approach Vol, veh/h	233			389			70			7		
Approach Delay, s/veh	5.7			0.6			53.6			50.1		
Approach LOS	A			A			D			D		
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	15.9		7.7	96.4		15.9		5.9	98.2			
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0		5.0	5.0			
Max Green Setting (Gmax), s	32.0		10.0	63.0		32.0		10.0	63.0			
Max Q Clear Time (g_c+I1), s	2.8		2.3	6.2		7.0		2.4	2.0			
Green Ext Time (p_c), s	0.0		0.0	1.1		0.1		0.0	2.1			
Intersection Summary												
HCM 6th Ctrl Delay	8.1											
HCM 6th LOS	A											

Queues

3: E D St & Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	114	441	14	67	450	21	264	145	63
v/c Ratio	0.63	0.44	0.02	0.11	0.48	0.10	0.78	1.09	0.21
Control Delay	67.8	21.3	19.5	3.7	15.0	35.2	59.7	148.3	37.9
Queue Delay	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
Total Delay	67.8	21.3	19.5	3.7	15.5	35.2	59.7	148.3	37.9
Queue Length 50th (ft)	87	173	5	12	200	13	196	~129	41
Queue Length 95th (ft)	144	362	21	4	304	32	261	#217	73
Internal Link Dist (ft)		1074			315		604	705	
Turn Bay Length (ft)	150		80	80		150			
Base Capacity (vph)	253	1047	853	598	945	292	463	182	403
Starvation Cap Reductn	0	0	0	0	189	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.42	0.02	0.11	0.60	0.07	0.57	0.80	0.16

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

3: E D St & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	397	13	60	316	89	19	127	111	80	50	57
Future Volume (vph)	103	397	13	60	316	89	19	127	111	80	50	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0			5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	0.99		1.00	0.98			1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.93			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.97	1.00
Satd. Flow (prot)	1687	1776	1446	1682	1703		1631	1581			1609	1377
Flt Permitted	0.95	1.00	1.00	0.41	1.00		0.58	1.00			0.38	1.00
Satd. Flow (perm)	1687	1776	1446	731	1703		996	1581			624	1377
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	114	441	14	67	351	99	21	141	123	89	56	63
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	114	441	14	67	450	0	21	264	0	0	145	63
Confl. Peds. (#/hr)	6		7	7		6	3		6	6		3
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	10%	10%	10%	14%	14%	14%
Turn Type	Prot	NA	Perm	D.P+P	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4		3	8			6			2	
Permitted Phases			4	4			6			2		2
Actuated Green, G (s)	12.9	66.5	66.5	79.3	66.4		25.7	25.7			25.7	25.7
Effective Green, g (s)	12.9	66.5	66.5	79.3	66.4		25.7	25.7			25.7	25.7
Actuated g/C Ratio	0.11	0.55	0.55	0.66	0.55		0.21	0.21			0.21	0.21
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5		2.5	2.5			2.5	2.5
Lane Grp Cap (vph)	181	984	801	584	942		213	338			133	294
v/s Ratio Prot	c0.07	0.25		0.01	c0.26			0.17				
v/s Ratio Perm			0.01	0.06			0.02				c0.23	0.05
v/c Ratio	0.63	0.45	0.02	0.11	0.48		0.10	0.78			1.09	0.21
Uniform Delay, d1	51.3	15.9	12.0	12.7	16.3		37.9	44.5			47.1	38.8
Progression Factor	1.04	1.06	1.15	0.43	0.69		1.00	1.00			1.00	1.00
Incremental Delay, d2	5.8	1.5	0.0	0.1	1.7		0.1	10.8			104.3	0.3
Delay (s)	59.1	18.2	13.9	5.5	12.9		38.0	55.3			151.4	39.1
Level of Service	E	B	B	A	B		D	E			F	D
Approach Delay (s)		26.3			12.0			54.0			117.4	
Approach LOS		C			B			D			F	
Intersection Summary												
HCM 2000 Control Delay			38.6			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			68.8%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

3: E D St & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	103	397	13	60	316	89	19	127	111	80	50	57
Future Volume (veh/h)	103	397	13	60	316	89	19	127	111	80	50	57
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1796	1796	1796	1752	1752	1752	1693	1693	1693
Adj Flow Rate, veh/h	114	441	14	67	351	99	21	141	123	89	56	63
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	7	7	7	7	7	7	10	10	10	14	14	14
Cap, veh/h	137	474	397	660	690	194	102	240	209	149	81	396
Arrive On Green	0.16	0.53	0.53	0.66	1.00	1.00	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1711	1796	1502	1711	1338	377	1192	859	749	361	290	1419
Grp Volume(v), veh/h	114	441	14	67	0	450	21	0	264	145	0	63
Grp Sat Flow(s),veh/h/ln	1711	1796	1502	1711	0	1716	1192	0	1607	651	0	1419
Q Serve(g_s), s	7.7	27.3	0.5	0.0	0.0	0.0	2.1	0.0	17.0	12.3	0.0	4.0
Cycle Q Clear(g_c), s	7.7	27.3	0.5	0.0	0.0	0.0	31.4	0.0	17.0	29.3	0.0	4.0
Prop In Lane	1.00		1.00	1.00		0.22	1.00		0.47	0.61		1.00
Lane Grp Cap(c), veh/h	137	474	397	660	0	884	102	0	449	230	0	396
V/C Ratio(X)	0.83	0.93	0.04	0.10	0.00	0.51	0.21	0.00	0.59	0.63	0.00	0.16
Avail Cap(c_a), veh/h	257	958	801	660	0	884	117	0	469	245	0	414
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.99	0.96	0.00	0.96	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	49.6	27.3	21.0	12.6	0.0	0.0	56.8	0.0	37.3	47.2	0.0	32.6
Incr Delay (d2), s/veh	9.1	26.9	0.2	0.0	0.0	2.0	0.7	0.0	1.5	4.1	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	12.2	0.2	0.6	0.0	0.5	0.6	0.0	6.9	4.4	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.6	54.2	21.1	12.6	0.0	2.0	57.6	0.0	38.8	51.2	0.0	32.7
LnGrp LOS	E	D	C	B	A	A	E	A	D	D	A	C
Approach Vol, veh/h		569			517			285			208	
Approach Delay, s/veh		54.3			3.4			40.2			45.6	
Approach LOS		D			A			D			D	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		38.6	44.8	36.7		38.6	14.6	66.8				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		35.0	6.0	64.0		35.0	18.0	52.0				
Max Q Clear Time (g_c+I1), s		31.3	2.0	29.3		33.4	9.7	2.0				
Green Ext Time (p_c), s		0.3	0.0	2.4		0.2	0.1	2.7				
Intersection Summary												
HCM 6th Ctrl Delay			33.9									
HCM 6th LOS			C									

Queues

4: E E St & Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBT	SBT
Lane Group Flow (vph)	26	672	1	466	6
v/c Ratio	0.29	0.41	0.00	0.32	0.03
Control Delay	68.8	1.5	1.0	2.8	43.2
Queue Delay	0.0	0.0	0.0	0.3	0.0
Total Delay	68.8	1.5	1.0	3.1	43.2
Queue Length 50th (ft)	22	1	0	35	4
Queue Length 95th (ft)	m41	143	m0	151	15
Internal Link Dist (ft)		315		283	388
Turn Bay Length (ft)	80		80		
Base Capacity (vph)	89	1635	1316	1470	399
Starvation Cap Reductn	0	37	0	454	0
Spillback Cap Reductn	0	0	0	39	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.29	0.42	0.00	0.46	0.02

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

4: E E St & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	591	1	0	400	10	0	0	0	4	0	1
Future Volume (vph)	23	591	1	0	400	10	0	0	0	4	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		5.0						5.0	
Lane Util. Factor	1.00	1.00	1.00		1.00						1.00	
Frpb, ped/bikes	1.00	1.00	0.95		1.00						1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00						1.00	
Frt	1.00	1.00	0.85		1.00						0.98	
Flt Protected	0.95	1.00	1.00		1.00						0.96	
Satd. Flow (prot)	1656	1743	1403		1705						1776	
Flt Permitted	0.95	1.00	1.00		1.00						0.96	
Satd. Flow (perm)	1656	1743	1403		1705						1776	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	26	672	1	0	455	11	0	0	0	5	0	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	26	672	1	0	466	0	0	0	0	0	6	0
Confl. Peds. (#/hr)	2		13	13		2	1					1
Heavy Vehicles (%)	9%	9%	9%	11%	11%	11%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	pm+pt	NA		Split			Split	NA	
Protected Phases	7	4		3	8		1	1		2	2	
Permitted Phases			4	8								
Actuated Green, G (s)	4.1	104.6	104.6		95.5						5.4	
Effective Green, g (s)	4.1	104.6	104.6		95.5						5.4	
Actuated g/C Ratio	0.03	0.87	0.87		0.80						0.05	
Clearance Time (s)	5.0	5.0	5.0		5.0						5.0	
Vehicle Extension (s)	1.0	1.0	1.0		1.0						1.0	
Lane Grp Cap (vph)	56	1519	1222		1356						79	
v/s Ratio Prot	0.02	c0.39			0.27						c0.00	
v/s Ratio Perm			0.00									
v/c Ratio	0.46	0.44	0.00		0.34						0.08	
Uniform Delay, d1	56.9	1.6	1.0		3.4						54.9	
Progression Factor	1.12	0.27	0.31		0.45						1.00	
Incremental Delay, d2	2.0	0.8	0.0		0.7						0.1	
Delay (s)	65.8	1.3	0.3		2.2						55.1	
Level of Service	E	A	A		A						E	
Approach Delay (s)		3.7			2.2			0.0			55.1	
Approach LOS		A			A			A			E	
Intersection Summary												
HCM 2000 Control Delay			3.4		HCM 2000 Level of Service				A			
HCM 2000 Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			120.0		Sum of lost time (s)			20.0				
Intersection Capacity Utilization			48.2%		ICU Level of Service			A				
Analysis Period (min)			15									

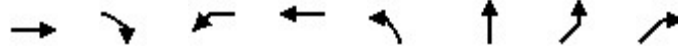
c Critical Lane Group

HCM 6th Edition methodology expects strict NEMA phasing.

Queues

5: Puyallup Ave & F St

05/26/2023



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NEL	NER
Lane Group Flow (vph)	546	103	48	411	15	3	7	14
v/c Ratio	0.41	0.10	0.39	0.26	0.16	0.03	0.05	0.11
Control Delay	4.0	3.1	65.0	3.2	53.7	49.7	51.7	53.2
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.4	3.1	65.0	3.2	53.7	49.7	51.7	53.2
Queue Length 50th (ft)	78	9	37	0	11	2	5	10
Queue Length 95th (ft)	45	11	82	68	33	12	21	32
Internal Link Dist (ft)	283			304		340	299	
Turn Bay Length (ft)		80	80					
Base Capacity (vph)	1319	982	122	1570	225	207	140	125
Starvation Cap Reductn	312	0	0	113	0	0	0	0
Spillback Cap Reductn	60	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.10	0.39	0.28	0.07	0.01	0.05	0.11
Intersection Summary								

HCM Signalized Intersection Capacity Analysis

5: Puyallup Ave & F St

05/26/2023

												
Movement	EBL	EBT	EBR	EBR2	WBL	WBT	NBL2	NBL	NBT	NBR	SBT	NEL2
Lane Configurations												
Traffic Volume (vph)	0	502	0	95	44	378	1	13	0	3	0	6
Future Volume (vph)	0	502	0	95	44	378	1	13	0	3	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0		5.0	5.0			
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	1.00			
Frpb, ped/bikes		1.00	0.88		1.00	1.00		1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00		0.98	1.00			
Frt		1.00	0.85		1.00	1.00		1.00	0.85			
Flt Protected		1.00	1.00		0.95	1.00		0.95	1.00			
Satd. Flow (prot)		1727	1286		1703	1792		1043	956			
Flt Permitted		1.00	1.00		0.95	1.00		0.95	1.00			
Satd. Flow (perm)		1727	1286		1703	1792		1043	956			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	546	0	103	48	411	1	14	0	3	0	7
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	546	103	0	48	411	0	15	3	0	0	0
Confl. Peds. (#/hr)			10	20	10		10					
Heavy Vehicles (%)	10%	10%	10%	10%	6%	6%	69%	69%	69%	69%	0%	7%
Turn Type	Prot	NA	Perm		Prot	NA	Perm	Split	NA			Prot
Protected Phases	7	4			3	8		2	2		1	10
Permitted Phases			4				2					
Actuated Green, G (s)		83.7	83.7		7.4	96.1		4.9	4.9			
Effective Green, g (s)		83.7	83.7		7.4	96.1		4.9	4.9			
Actuated g/C Ratio		0.70	0.70		0.06	0.80		0.04	0.04			
Clearance Time (s)		5.0	5.0		5.0	5.0		5.0	5.0			
Vehicle Extension (s)		2.5	2.5		2.5	2.5		5.0	5.0			
Lane Grp Cap (vph)		1204	896		105	1435		42	39			
v/s Ratio Prot		c0.32			c0.03	0.23			0.00			
v/s Ratio Perm			0.08					0.01				
v/c Ratio		0.45	0.11		0.46	0.29		0.36	0.08			
Uniform Delay, d1		8.0	6.0		54.4	3.1		56.0	55.4			
Progression Factor		0.31	0.34		1.06	0.69		1.00	1.00			
Incremental Delay, d2		1.1	0.2		2.2	0.5		10.6	1.8			
Delay (s)		3.7	2.3		59.9	2.6		66.6	57.1			
Level of Service		A	A		E	A		E	E			
Approach Delay (s)		3.4				8.6			65.0		0.0	
Approach LOS		A				A			E		A	
Intersection Summary												
HCM 2000 Control Delay			7.5				HCM 2000 Level of Service		A			
HCM 2000 Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		25.0			
Intersection Capacity Utilization			64.8%				ICU Level of Service		C			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Puyallup Ave & F St

05/26/2023

		
Movement	NEL	NER
Lane Configurations		
Traffic Volume (vph)	0	13
Future Volume (vph)	0	13
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.0	5.0
Lane Util. Factor	1.00	1.00
Frpb, ped/bikes	1.00	1.00
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	0.95	1.00
Satd. Flow (prot)	1687	1509
Flt Permitted	0.95	1.00
Satd. Flow (perm)	1687	1509
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	0	14
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	7	14
Confl. Peds. (#/hr)		
Heavy Vehicles (%)	7%	7%
Turn Type	Prot	Perm
Protected Phases	10	
Permitted Phases		10
Actuated Green, G (s)	4.0	4.0
Effective Green, g (s)	4.0	4.0
Actuated g/C Ratio	0.03	0.03
Clearance Time (s)	5.0	5.0
Vehicle Extension (s)	2.5	2.5
Lane Grp Cap (vph)	56	50
v/s Ratio Prot	0.00	
v/s Ratio Perm		c0.01
v/c Ratio	0.12	0.28
Uniform Delay, d1	56.3	56.6
Progression Factor	1.00	1.00
Incremental Delay, d2	0.7	2.2
Delay (s)	57.0	58.8
Level of Service	E	E
Approach Delay (s)	58.2	
Approach LOS	E	
Intersection Summary		

HCM 6th Edition methodology does not support more than 4 approaches.

Queues

6: G St & Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR
Lane Group Flow (vph)	1	523	26	78	398	49	472
v/c Ratio	0.01	0.53	0.03	0.12	0.28	0.42	1.16
Control Delay	90.0	16.1	14.6	5.4	5.7	62.9	132.2
Queue Delay	0.0	0.4	0.0	0.0	0.0	0.0	0.0
Total Delay	90.0	16.5	14.6	5.4	5.7	62.9	132.2
Queue Length 50th (ft)	1	105	5	7	42	37	~407
Queue Length 95th (ft)	m2	450	m22	38	159	76	#534
Internal Link Dist (ft)		304			1819	498	
Turn Bay Length (ft)	80		80	80			70
Base Capacity (vph)	80	993	810	646	1407	300	407
Starvation Cap Reductn	0	137	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.61	0.03	0.12	0.28	0.16	1.16

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

6: G St & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	481	24	72	366	0	45	0	434	0	0	0
Future Volume (vph)	1	481	24	72	366	0	45	0	434	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00			
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00			1.00	1.00			
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00			
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85			
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00			
Satd. Flow (prot)	1612	1696	1383	1653	1743			1641	1468			
Flt Permitted	0.95	1.00	1.00	0.32	1.00			0.95	1.00			
Satd. Flow (perm)	1612	1696	1383	564	1743			1641	1468			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	523	26	78	398	0	49	0	472	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	1	523	26	78	398	0	0	49	472	0	0	0
Confl. Peds. (#/hr)	10		7	7		10	1					1
Heavy Vehicles (%)	12%	12%	12%	9%	9%	9%	10%	10%	10%	0%	0%	0%
Turn Type	Prot	NA	Perm	D.P+P	NA		Split	NA	pm+ov			
Protected Phases	7	4		3	8		6	6			2	
Permitted Phases			4	4					6	2		
Actuated Green, G (s)	1.2	61.3	61.3	88.1	86.9			7.5	34.3			
Effective Green, g (s)	1.2	61.3	61.3	88.1	86.9			7.5	34.3			
Actuated g/C Ratio	0.01	0.51	0.51	0.73	0.72			0.06	0.29			
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0			
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5			2.5	2.5			
Lane Grp Cap (vph)	16	866	706	657	1262			102	419			
v/s Ratio Prot	0.00	c0.31		0.03	0.23			0.03	c0.25			
v/s Ratio Perm			0.02	0.06					0.07			
v/c Ratio	0.06	0.60	0.04	0.12	0.32			0.48	1.13			
Uniform Delay, d1	58.8	20.8	14.6	12.0	5.9			54.4	42.9			
Progression Factor	1.64	0.76	0.95	0.85	0.74			1.00	1.00			
Incremental Delay, d2	1.1	2.9	0.1	0.1	0.6			2.6	83.1			
Delay (s)	97.8	18.8	14.0	10.3	5.0			56.9	126.0			
Level of Service	F	B	B	B	A			E	F			
Approach Delay (s)		18.7			5.9			119.5			0.0	
Approach LOS		B			A			F			A	
Intersection Summary												
HCM 2000 Control Delay			48.7			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			60.5%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

6: G St & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	481	24	72	366	0	45	0	434	0	0	0
Future Volume (veh/h)	1	481	24	72	366	0	45	0	434	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	0.99		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1722	1722	1722	1767	1767	1767	1752	1752	1752	1900	1900	1900
Adj Flow Rate, veh/h	1	523	26	78	398	0	49	0	472	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	12	12	12	9	9	9	10	10	10	0	0	0
Cap, veh/h	3	531	443	922	1437	0	99	0	841	0	2	0
Arrive On Green	0.00	0.62	0.62	1.00	1.00	0.00	0.06	0.00	0.06	0.00	0.00	0.00
Sat Flow, veh/h	1640	1722	1436	1682	1767	0	1654	0	1472	0	1900	0
Grp Volume(v), veh/h	1	523	26	78	398	0	49	0	472	0	0	0
Grp Sat Flow(s),veh/h/ln	1640	1722	1436	1682	1767	0	1654	0	1472	0	1900	0
Q Serve(g_s), s	0.1	35.6	0.9	0.0	0.0	0.0	3.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	35.6	0.9	0.0	0.0	0.0	3.4	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	3	531	443	922	1437	0	99	0	841	0	2	0
V/C Ratio(X)	0.37	0.98	0.06	0.08	0.28	0.00	0.50	0.00	0.56	0.00	0.00	0.00
Avail Cap(c_a), veh/h	82	531	443	922	1437	0	303	0	1022	0	348	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	0.93	0.93	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	59.7	22.7	16.1	0.0	0.0	0.0	54.7	0.0	16.5	0.0	0.0	0.0
Incr Delay (d2), s/veh	49.7	33.9	0.2	0.0	0.4	0.0	2.8	0.0	0.4	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	14.3	0.3	0.0	0.2	0.0	1.5	0.0	8.1	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	109.5	56.7	16.3	0.0	0.4	0.0	57.5	0.0	17.0	0.0	0.0	0.0
LnGrp LOS	F	E	B	A	A	A	E	A	B	A	A	A
Approach Vol, veh/h	550				476				521			
Approach Delay, s/veh	54.9				0.4				20.8			
Approach LOS	D				A				C			
Timer - Assigned Phs	2			3		4		6		7		8
Phs Duration (G+Y+Rc), s	0.0			65.8		42.0		12.2		5.2		102.6
Change Period (Y+Rc), s	5.0			5.0		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s	22.0			19.0		37.0		22.0		6.0		50.0
Max Q Clear Time (g_c+I1), s	0.0			2.0		37.6		5.4		2.1		2.0
Green Ext Time (p_c), s	0.0			0.1		0.0		1.5		0.0		2.2
Intersection Summary												
HCM 6th Ctrl Delay	26.6											
HCM 6th LOS	C											

Queues

7: E L ST & Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	4	1051	21	27	516	105	5
v/c Ratio	0.05	0.81	0.02	0.10	0.39	0.62	0.03
Control Delay	57.5	17.0	6.3	3.8	6.1	66.2	45.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.5	17.0	6.3	3.8	6.1	66.2	45.0
Queue Length 50th (ft)	3	605	2	3	90	79	4
Queue Length 95th (ft)	m6	m496	m9	11	246	131	15
Internal Link Dist (ft)		1819			839	1082	346
Turn Bay Length (ft)	80		80	80			
Base Capacity (vph)	82	1290	1045	270	1315	270	237
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.81	0.02	0.10	0.39	0.39	0.02

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

7: E L ST & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	935	19	24	456	4	27	0	67	1	0	4
Future Volume (vph)	4	935	19	24	456	4	27	0	67	1	0	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00			0.98			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.90			0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1641	1727	1400	1597	1679			1601			1342	
Flt Permitted	0.95	1.00	1.00	0.16	1.00			0.91			0.96	
Satd. Flow (perm)	1641	1727	1400	261	1679			1473			1295	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	4	1051	21	27	512	4	30	0	75	1	0	4
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	4	1051	21	27	516	0	0	105	0	0	5	0
Confl. Peds. (#/hr)			9	9					1	1		
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	10%	10%	10%	13%	13%	13%	4%	4%	4%	25%	25%	25%
Turn Type	Prot	NA	Perm	D.P+P	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4	4			2			6		
Actuated Green, G (s)	1.2	87.7	87.7	91.3	90.1			13.7			13.7	
Effective Green, g (s)	1.2	87.7	87.7	91.3	90.1			13.7			13.7	
Actuated g/C Ratio	0.01	0.73	0.73	0.76	0.75			0.11			0.11	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0			5.0			5.0	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5			2.5			2.5	
Lane Grp Cap (vph)	16	1262	1023	238	1260			168			147	
v/s Ratio Prot	0.00	c0.61		c0.00	0.31							
v/s Ratio Perm			0.02	0.08				c0.07			0.00	
v/c Ratio	0.25	0.83	0.02	0.11	0.41			0.62			0.03	
Uniform Delay, d1	59.0	11.1	4.4	10.7	5.4			50.7			47.3	
Progression Factor	1.04	1.01	1.07	1.00	1.00			1.00			1.00	
Incremental Delay, d2	3.7	4.2	0.0	0.2	1.0			6.1			0.1	
Delay (s)	65.3	15.5	4.7	10.8	6.4			56.8			47.3	
Level of Service	E	B	A	B	A			E			D	
Approach Delay (s)		15.4			6.6			56.8			47.3	
Approach LOS		B			A			E			D	
Intersection Summary												
HCM 2000 Control Delay			15.3			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			66.6%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

7: E L ST & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	935	19	24	456	4	27	0	67	1	0	4
Future Volume (veh/h)	4	935	19	24	456	4	27	0	67	1	0	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1752	1752	1752	1707	1707	1707	1841	1841	1841	1530	1530	1530
Adj Flow Rate, veh/h	4	1051	21	27	512	4	30	0	75	1	0	4
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	10	10	10	13	13	13	4	4	4	25	25	25
Cap, veh/h	10	1328	1119	298	1322	10	67	9	95	47	12	94
Arrive On Green	0.01	0.76	0.76	0.03	0.78	0.78	0.09	0.00	0.09	0.09	0.00	0.09
Sat Flow, veh/h	1668	1752	1476	1626	1691	13	329	108	1091	131	140	1083
Grp Volume(v), veh/h	4	1051	21	27	0	516	105	0	0	5	0	0
Grp Sat Flow(s),veh/h/ln	1668	1752	1476	1626	0	1705	1528	0	0	1354	0	0
Q Serve(g_s), s	0.3	43.5	0.4	0.4	0.0	11.4	5.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	43.5	0.4	0.4	0.0	11.4	8.0	0.0	0.0	0.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.01	0.29		0.71	0.20		0.80
Lane Grp Cap(c), veh/h	10	1328	1119	298	0	1332	172	0	0	154	0	0
V/C Ratio(X)	0.38	0.79	0.02	0.09	0.00	0.39	0.61	0.00	0.00	0.03	0.00	0.00
Avail Cap(c_a), veh/h	83	1328	1119	331	0	1332	316	0	0	273	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.45	0.45	0.45	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	59.4	8.8	3.6	11.1	0.0	4.1	53.6	0.0	0.0	50.2	0.0	0.0
Incr Delay (d2), s/veh	7.6	2.3	0.0	0.1	0.0	0.9	2.6	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	14.5	0.1	0.3	0.0	3.6	3.2	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.0	11.0	3.6	11.2	0.0	5.0	56.2	0.0	0.0	50.2	0.0	0.0
LnGrp LOS	E	B	A	B	A	A	E	A	A	D	A	A
Approach Vol, veh/h	1076				543				105			
Approach Delay, s/veh	11.1				5.3				56.2			
Approach LOS	B				A				E			
Timer - Assigned Phs	2		3	4	6		7	8				
Phs Duration (G+Y+Rc), s	15.5		8.6	96.0		15.5	5.7	98.8				
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s	22.0		6.0	77.0		22.0	6.0	77.0				
Max Q Clear Time (g_c+I1), s	10.0		2.4	45.5		2.4	2.3	13.4				
Green Ext Time (p_c), s	0.3		0.0	9.2		0.0	0.0	3.1				
Intersection Summary												
HCM 6th Ctrl Delay	12.1											
HCM 6th LOS	B											

Queues

8: E Portland Ave & Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	138	532	360	126	269	247	686	523	111	413	76
v/c Ratio	0.21	0.78	0.25	0.53	0.53	0.61	0.76	0.67	0.50	0.68	0.22
Control Delay	31.9	42.9	0.4	45.1	35.7	25.2	35.6	7.5	24.9	38.3	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.9	42.9	0.4	45.1	35.7	25.2	35.6	7.5	24.9	38.3	4.0
Queue Length 50th (ft)	29	133	0	68	64	78	165	0	33	103	0
Queue Length 95th (ft)	75	#274	0	157	130	190	315	91	91	201	18
Internal Link Dist (ft)		523			476		261			552	
Turn Bay Length (ft)	200		500			100		150	190		150
Base Capacity (vph)	937	966	1412	483	994	460	1430	928	266	1027	520
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.55	0.25	0.26	0.27	0.54	0.48	0.56	0.42	0.40	0.15

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

8: E Portland Ave & Puyallup Ave

05/26/2023

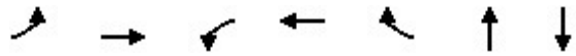
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	500	338	132	181	58	232	645	492	104	388	71
Future Volume (vph)	130	500	338	132	181	58	232	645	492	104	388	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.91	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3099	3195	1412	1480	2991		1597	3195	1429	1327	2654	1172
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.41	1.00	1.00	0.23	1.00	1.00
Satd. Flow (perm)	3099	3195	1412	1480	2991		682	3195	1429	316	2654	1172
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	138	532	360	140	193	62	247	686	523	111	413	76
RTOR Reduction (vph)	0	0	0	0	23	0	0	0	373	0	0	58
Lane Group Flow (vph)	138	532	360	126	246	0	247	686	150	111	413	18
Confl. Peds. (#/hr)	1		1	1		1	1					1
Heavy Vehicles (%)	13%	13%	13%	11%	11%	11%	13%	13%	13%	36%	36%	36%
Turn Type	Split	NA	Free	Split	NA		D.P+P	NA	Perm	D.P+P	NA	Perm
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases			Free				2		6	6		2
Actuated Green, G (s)	18.6	18.6	85.9	14.0	14.0		33.3	24.6	24.6	33.3	19.9	19.9
Effective Green, g (s)	18.6	18.6	85.9	14.0	14.0		33.3	24.6	24.6	33.3	19.9	19.9
Actuated g/C Ratio	0.22	0.22	1.00	0.16	0.16		0.39	0.29	0.29	0.39	0.23	0.23
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0	1.0		1.0	1.0		2.5	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	671	691	1412	241	487		407	914	409	224	614	271
v/s Ratio Prot	0.04	c0.17		c0.09	0.08		c0.09	c0.21		0.05	0.16	
v/s Ratio Perm			0.26				0.14		0.10	0.14		0.02
v/c Ratio	0.21	0.77	0.25	0.52	0.50		0.61	0.75	0.37	0.50	0.67	0.06
Uniform Delay, d1	27.6	31.6	0.0	32.9	32.8		19.2	27.9	24.4	18.4	30.0	25.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	4.7	0.4	0.9	0.3		2.2	3.1	0.2	0.6	2.3	0.0
Delay (s)	27.6	36.3	0.4	33.8	33.1		21.3	31.0	24.6	19.0	32.3	25.8
Level of Service	C	D	A	C	C		C	C	C	B	C	C
Approach Delay (s)		22.6			33.3			27.1			29.0	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay	26.8			HCM 2000 Level of Service					C			
HCM 2000 Volume to Capacity ratio	0.71											
Actuated Cycle Length (s)	85.9			Sum of lost time (s)					20.0			
Intersection Capacity Utilization	63.6%			ICU Level of Service					B			
Analysis Period (min)	15											
c Critical Lane Group												

HCM 6th Edition methodology does not support turning movements with shared & exclusive lanes.

Queues

1: Pacific Ave & S 24th St

05/26/2023



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	19	52	316	151	188	435	528
v/c Ratio	0.18	0.27	0.76	0.32	0.32	0.74	0.40
Control Delay	53.4	46.9	33.1	23.2	34.1	50.7	28.5
Queue Delay	0.0	0.0	1.1	0.0	0.0	0.0	0.0
Total Delay	53.4	46.9	34.2	23.2	34.1	50.7	28.5
Queue Length 50th (ft)	13	35	163	62	120	155	147
Queue Length 95th (ft)	38	66	72	74	215	197	234
Internal Link Dist (ft)		405		294		757	1056
Turn Bay Length (ft)			150		150		
Base Capacity (vph)	112	333	416	537	596	765	1315
Starvation Cap Reductn	0	0	20	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.16	0.80	0.28	0.32	0.57	0.40
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

1: Pacific Ave & S 24th St

05/26/2023

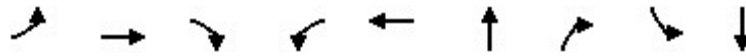
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	32	18	307	146	182	0	320	102	126	380	6
Future Volume (vph)	18	32	18	307	146	182	0	320	102	126	380	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0		5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		0.95			0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00		0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00			1.00	
Frt	1.00	0.95		1.00	1.00	0.85		0.96			1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.99	
Satd. Flow (prot)	1770	1747		1713	1810	1538		3370			3388	
Flt Permitted	0.95	1.00		0.51	1.00	1.00		1.00			0.99	
Satd. Flow (perm)	1770	1747		925	1810	1538		3370			3388	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	19	33	19	316	151	188	0	330	105	130	392	6
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	19	52	0	316	151	188	0	435	0	0	528	0
Confl. Peds. (#/hr)	14		6	6		14	16		14	14		16
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	2%	2%	2%	5%	5%	5%
Turn Type	Prot	NA		pm+pt	NA	Over		NA		Split	NA	
Protected Phases	7	4		3	8	2		1		2	2	
Permitted Phases				8								
Actuated Green, G (s)	2.8	12.2		36.1	28.3	39.7		19.2			39.7	
Effective Green, g (s)	2.8	12.2		36.1	28.3	39.7		19.2			39.7	
Actuated g/C Ratio	0.03	0.11		0.33	0.26	0.36		0.17			0.36	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0		5.0			5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5		2.5			2.5	
Lane Grp Cap (vph)	45	193		438	465	555		588			1222	
v/s Ratio Prot	0.01	0.03		c0.12	0.08	0.12		c0.13			c0.16	
v/s Ratio Perm				c0.11								
v/c Ratio	0.42	0.27		0.72	0.32	0.34		0.74			0.43	
Uniform Delay, d1	52.8	44.8		30.6	33.1	25.6		43.0			26.6	
Progression Factor	1.00	1.00		0.68	0.66	1.17		1.00			1.00	
Incremental Delay, d2	4.6	0.5		4.9	0.3	1.5		4.6			1.1	
Delay (s)	57.4	45.4		25.7	22.1	31.5		47.6			27.7	
Level of Service	E	D		C	C	C		D			C	
Approach Delay (s)		48.6			26.5			47.6			27.7	
Approach LOS		D			C			D			C	
Intersection Summary												
HCM 2000 Control Delay			33.3				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)			20.0		
Intersection Capacity Utilization			70.1%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology expects strict NEMA phasing.

Queues

2: A St & S 24th St/Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	22	215	20	85	657	12	43	14	26
v/c Ratio	0.21	0.16	0.02	0.09	0.46	0.06	0.23	0.09	0.13
Control Delay	49.0	11.7	12.7	2.1	7.2	39.8	44.4	40.7	41.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.0	11.7	12.7	2.1	7.2	39.8	44.4	40.7	41.7
Queue Length 50th (ft)	16	45	3	9	75	8	29	9	17
Queue Length 95th (ft)	m30	213	m25	m17	m516	23	55	25	38
Internal Link Dist (ft)		294			1074	627			464
Turn Bay Length (ft)	60		80	70			135		
Base Capacity (vph)	124	1323	1092	914	1417	394	370	324	407
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.16	0.02	0.09	0.46	0.03	0.12	0.04	0.06

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: A St & S 24th St/Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	202	19	80	601	17	6	6	40	13	15	9
Future Volume (vph)	21	202	19	80	601	17	6	6	40	13	15	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00			1.00	0.97	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00			1.00	1.00	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1687	1776	1467	1723	1818			1852	1569	1738	1721	
Flt Permitted	0.95	1.00	1.00	0.62	1.00			0.88	1.00	0.75	1.00	
Satd. Flow (perm)	1687	1776	1467	1131	1818			1669	1569	1371	1721	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	22	215	20	85	639	18	6	6	43	14	16	10
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	22	215	20	85	657	0	0	12	43	14	26	0
Confl. Peds. (#/hr)	7		13	13		7	1		4	4		1
Confl. Bikes (#/hr)						1						1
Heavy Vehicles (%)	7%	7%	7%	4%	4%	4%	0%	0%	0%	3%	3%	3%
Turn Type	Prot	NA	Perm	D.P+P	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			6			2	
Permitted Phases			4	4			6		6	2		
Actuated Green, G (s)	3.1	78.5	78.5	83.8	80.7			11.2	11.2	11.2	11.2	
Effective Green, g (s)	3.1	78.5	78.5	83.8	80.7			11.2	11.2	11.2	11.2	
Actuated g/C Ratio	0.03	0.71	0.71	0.76	0.73			0.10	0.10	0.10	0.10	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5			2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	47	1267	1046	890	1333			169	159	139	175	
v/s Ratio Prot	c0.01	0.12		0.00	c0.36						0.02	
v/s Ratio Perm			0.01	0.07				0.01	c0.03	0.01		
v/c Ratio	0.47	0.17	0.02	0.10	0.49			0.07	0.27	0.10	0.15	
Uniform Delay, d1	52.6	5.1	4.6	3.3	6.1			44.7	45.6	44.8	45.1	
Progression Factor	0.92	1.62	1.63	0.56	0.80			1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.8	0.3	0.0	0.0	0.9			0.1	0.7	0.2	0.3	
Delay (s)	53.2	8.6	7.5	1.9	5.7			44.8	46.3	45.1	45.3	
Level of Service	D	A	A	A	A			D	D	D	D	
Approach Delay (s)		12.3			5.3			46.0			45.2	
Approach LOS		B			A			D			D	
Intersection Summary												
HCM 2000 Control Delay			10.5			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			60.2%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: A St & S 24th St/Puyallup Ave

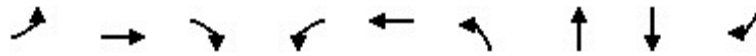
05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	202	19	80	601	17	6	6	40	13	15	9
Future Volume (veh/h)	21	202	19	80	601	17	6	6	40	13	15	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.98	0.98		0.98	0.98		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1796	1796	1796	1841	1841	1841	1900	1900	1900	1856	1856	1856
Adj Flow Rate, veh/h	22	215	20	85	639	18	6	6	43	14	16	10
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	7	4	4	4	0	0	0	3	3	3
Cap, veh/h	46	1275	1070	948	1306	37	118	102	164	195	109	68
Arrive On Green	0.05	1.00	1.00	0.10	1.00	1.00	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	1711	1796	1508	1753	1780	50	662	990	1579	1322	1048	655
Grp Volume(v), veh/h	22	215	20	85	0	657	12	0	43	14	0	26
Grp Sat Flow(s),veh/h/ln	1711	1796	1508	1753	0	1831	1652	0	1579	1322	0	1703
Q Serve(g_s), s	1.4	0.0	0.0	1.3	0.0	0.0	0.0	0.0	2.8	1.1	0.0	1.5
Cycle Q Clear(g_c), s	1.4	0.0	0.0	1.3	0.0	0.0	0.6	0.0	2.8	1.7	0.0	1.5
Prop In Lane	1.00		1.00	1.00		0.03	0.50		1.00	1.00		0.38
Lane Grp Cap(c), veh/h	46	1275	1070	948	0	1343	220	0	164	195	0	176
V/C Ratio(X)	0.48	0.17	0.02	0.09	0.00	0.49	0.05	0.00	0.26	0.07	0.00	0.15
Avail Cap(c_a), veh/h	124	1275	1070	956	0	1343	433	0	373	370	0	403
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	0.58	0.00	0.58	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.3	0.0	0.0	3.1	0.0	0.0	44.5	0.0	45.4	45.2	0.0	44.9
Incr Delay (d2), s/veh	5.6	0.3	0.0	0.0	0.0	0.7	0.1	0.0	0.6	0.1	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.1	0.0	0.4	0.0	0.3	0.3	0.0	1.1	0.4	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.9	0.3	0.0	3.2	0.0	0.7	44.6	0.0	46.1	45.4	0.0	45.2
LnGrp LOS	E	A	A	A	A	A	D	A	D	D	A	D
Approach Vol, veh/h	257		742				55		40			
Approach Delay, s/veh	5.1		1.0				45.7		45.2			
Approach LOS	A		A				D		D			
Timer - Assigned Phs	2		3		4		6		7		8	
Phs Duration (G+Y+Rc), s	16.4		10.6		83.1		16.4		7.9		85.7	
Change Period (Y+Rc), s	5.0		5.0		5.0		5.0		5.0		5.0	
Max Green Setting (Gmax), s	26.0		6.0		63.0		26.0		8.0		61.0	
Max Q Clear Time (g_c+I1), s	3.7		3.3		2.0		4.8		3.4		2.0	
Green Ext Time (p_c), s	0.1		0.0		1.0		0.1		0.0		4.3	
Intersection Summary												
HCM 6th Ctrl Delay	5.8											
HCM 6th LOS	A											
Notes												

Queues

3: E D St & Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	61	306	19	94	863	20	171	265	120
v/c Ratio	0.58	0.47	0.04	0.12	0.82	0.14	0.45	0.93	0.34
Control Delay	66.2	36.2	29.8	3.6	18.9	36.1	40.6	81.4	38.3
Queue Delay	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0
Total Delay	66.2	36.2	29.8	3.6	19.8	36.1	40.6	81.4	38.3
Queue Length 50th (ft)	46	191	11	13	573	11	103	182	70
Queue Length 95th (ft)	#97	289	26	m0	#61	33	171	#338	125
Internal Link Dist (ft)		1074			315		604	705	
Turn Bay Length (ft)	150		80	80		150			
Base Capacity (vph)	110	1079	828	774	1053	150	392	295	363
Starvation Cap Reductn	0	0	0	0	47	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.28	0.02	0.12	0.86	0.13	0.44	0.90	0.33

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

3: E D St & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	285	18	87	667	136	19	108	51	100	146	112
Future Volume (vph)	57	285	18	87	667	136	19	108	51	100	146	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0			5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.90	1.00	0.99		1.00	0.99			1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	0.98	1.00		0.99	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.95			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.98	1.00
Satd. Flow (prot)	1703	1792	1376	1709	1771		1641	1645			1823	1526
Flt Permitted	0.95	1.00	1.00	0.43	1.00		0.37	1.00			0.67	1.00
Satd. Flow (perm)	1703	1792	1376	776	1771		633	1645			1242	1526
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	61	306	19	94	717	146	20	116	55	108	157	120
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	61	306	19	94	863	0	20	171	0	0	265	120
Confl. Peds. (#/hr)	4		27	27		4	7		2	2		7
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	9%	9%	9%	2%	2%	2%
Turn Type	Prot	NA	Perm	D.P+P	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4		3	8			6			2	
Permitted Phases			4	4			6		2			2
Actuated Green, G (s)	5.7	38.7	38.7	69.9	64.2		25.1	25.1			25.1	25.1
Effective Green, g (s)	5.7	38.7	38.7	69.9	64.2		25.1	25.1			25.1	25.1
Actuated g/C Ratio	0.05	0.35	0.35	0.64	0.58		0.23	0.23			0.23	0.23
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5		2.5	2.5			2.5	2.5
Lane Grp Cap (vph)	88	630	484	757	1033		144	375			283	348
v/s Ratio Prot	0.04	c0.17		0.04	c0.49			0.10				
v/s Ratio Perm			0.01	0.04			0.03				c0.21	0.08
v/c Ratio	0.69	0.49	0.04	0.12	0.84		0.14	0.46			0.94	0.34
Uniform Delay, d1	51.3	27.9	23.4	12.4	18.6		33.8	36.6			41.7	35.6
Progression Factor	0.89	1.04	1.01	0.47	0.61		1.00	1.00			1.00	1.00
Incremental Delay, d2	19.5	2.7	0.2	0.0	6.6		0.3	0.6			36.5	0.4
Delay (s)	65.3	31.6	23.9	5.8	18.1		34.2	37.2			78.2	36.0
Level of Service	E	C	C	A	B		C	D			E	D
Approach Delay (s)		36.6			16.9			36.9			65.0	
Approach LOS		D			B			D			E	
Intersection Summary												
HCM 2000 Control Delay			32.5			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			89.1%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

3: E D St & Puyallup Ave

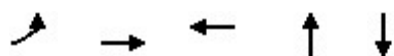
05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	285	18	87	667	136	19	108	51	100	146	112
Future Volume (veh/h)	57	285	18	87	667	136	19	108	51	100	146	112
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	0.99		0.98	1.00		0.96	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1811	1811	1841	1841	1841	1767	1767	1767	1870	1870	1870
Adj Flow Rate, veh/h	61	306	19	94	717	146	20	116	55	108	157	120
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	6	6	6	4	4	4	9	9	9	2	2	2
Cap, veh/h	79	344	271	865	859	175	65	264	125	138	155	369
Arrive On Green	0.09	0.38	0.38	0.44	0.58	0.58	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1725	1811	1426	1753	1477	301	1041	1118	530	389	656	1562
Grp Volume(v), veh/h	61	306	19	94	0	863	20	0	171	265	0	120
Grp Sat Flow(s),veh/h/ln	1725	1811	1426	1753	0	1778	1041	0	1648	1046	0	1562
Q Serve(g_s), s	3.8	17.4	0.9	0.0	0.0	43.4	0.0	0.0	9.7	16.3	0.0	7.0
Cycle Q Clear(g_c), s	3.8	17.4	0.9	0.0	0.0	43.4	26.0	0.0	9.7	26.0	0.0	7.0
Prop In Lane	1.00		1.00	1.00		0.17	1.00		0.32	0.41		1.00
Lane Grp Cap(c), veh/h	79	344	271	865	0	1033	65	0	389	293	0	369
V/C Ratio(X)	0.77	0.89	0.07	0.11	0.00	0.84	0.31	0.00	0.44	0.90	0.00	0.33
Avail Cap(c_a), veh/h	110	1037	817	865	0	1033	65	0	389	293	0	369
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.99	0.79	0.00	0.79	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	49.4	33.0	27.9	16.8	0.0	18.7	55.0	0.0	35.8	46.0	0.0	34.7
Incr Delay (d2), s/veh	16.3	27.0	0.5	0.0	0.0	6.4	1.9	0.0	0.6	29.0	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	8.7	0.4	1.4	0.0	18.5	0.6	0.0	4.0	9.6	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.6	60.0	28.4	16.8	0.0	25.2	56.9	0.0	36.4	75.0	0.0	35.1
LnGrp LOS	E	E	C	B	A	C	E	A	D	E	A	D
Approach Vol, veh/h	386				957				191			
Approach Delay, s/veh	59.3				24.3				38.5			
Approach LOS	E				C				D			
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	31.0		53.1	25.9		31.0		10.1	68.9			
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0		5.0	5.0			
Max Green Setting (Gmax), s	26.0		6.0	63.0		26.0		7.0	62.0			
Max Q Clear Time (g_c+I1), s	28.0		2.0	19.4		28.0		5.8	45.4			
Green Ext Time (p_c), s	0.0		0.0	1.5		0.0		0.0	5.2			
Intersection Summary												
HCM 6th Ctrl Delay	40.5											
HCM 6th LOS	D											

Queues

4: E E St & Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	3	437	969	1	5
v/c Ratio	0.02	0.26	0.58	0.01	0.03
Control Delay	60.0	1.0	5.9	46.0	46.2
Queue Delay	0.0	0.0	0.2	0.0	0.0
Total Delay	60.0	1.0	6.1	46.0	46.2
Queue Length 50th (ft)	2	0	6	1	3
Queue Length 95th (ft)	m5	m82	#943	6	15
Internal Link Dist (ft)		315	283	364	388
Turn Bay Length (ft)	80				
Base Capacity (vph)	156	1695	1661	381	436
Starvation Cap Reductn	0	138	9	0	0
Spillback Cap Reductn	0	77	176	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.28	0.65	0.00	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

4: E E St & Puyallup Ave

05/26/2023

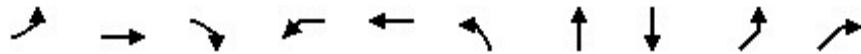
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	411	0	0	910	1	0	0	1	4	0	1
Future Volume (vph)	3	411	0	0	910	1	0	0	1	4	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	
Frt	1.00	1.00			1.00			0.85			0.97	
Flt Protected	0.95	1.00			1.00			1.00			0.96	
Satd. Flow (prot)	1719	1810			1827			1615			1778	
Flt Permitted	0.95	1.00			1.00			1.00			0.96	
Satd. Flow (perm)	1719	1810			1827			1615			1778	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	3	437	0	0	968	1	0	0	1	4	0	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	3	437	0	0	969	0	0	1	0	0	5	0
Confl. Peds. (#/hr)	5		26	26		5						
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	5%	5%	5%	4%	4%	4%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	pm+pt	NA		Split	NA		Split	NA	
Protected Phases	7	4		3	8		1	1		2	2	
Permitted Phases			4	8								
Actuated Green, G (s)	2.0	91.0			84.0			2.0			2.0	
Effective Green, g (s)	2.0	91.0			84.0			2.0			2.0	
Actuated g/C Ratio	0.02	0.83			0.76			0.02			0.02	
Clearance Time (s)	5.0	5.0			5.0			5.0			5.0	
Vehicle Extension (s)	1.0	1.0			1.0			1.5			1.0	
Lane Grp Cap (vph)	31	1497			1395			29			32	
v/s Ratio Prot	0.00	c0.24			c0.53			c0.00			c0.00	
v/s Ratio Perm												
v/c Ratio	0.10	0.29			0.69			0.03			0.16	
Uniform Delay, d1	53.1	2.2			6.5			53.1			53.2	
Progression Factor	1.31	0.28			0.43			1.00			1.00	
Incremental Delay, d2	0.5	0.5			2.2			0.2			0.8	
Delay (s)	69.9	1.0			5.0			53.2			54.0	
Level of Service	E	A			A			D			D	
Approach Delay (s)		1.5			5.0			53.2			54.0	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM 2000 Control Delay			4.1			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			64.6%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology expects strict NEMA phasing.

Queues

5: Puyallup Ave & F St

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT	NEL	NER
Lane Group Flow (vph)	4	407	18	10	784	15	10	4	158	78
v/c Ratio	0.04	0.36	0.02	0.10	0.67	0.21	0.12	0.03	0.64	0.36
Control Delay	45.2	6.3	3.6	58.9	19.4	52.3	47.6	46.2	58.5	49.1
Queue Delay	0.0	0.4	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Total Delay	45.2	6.7	3.6	58.9	19.6	52.3	47.6	46.2	58.5	49.1
Queue Length 50th (ft)	3	1	0	7	298	10	7	3	105	50
Queue Length 95th (ft)	m11	406	14	m18	#823	31	24	14	#246	#109
Internal Link Dist (ft)		283			304		340	410	299	
Turn Bay Length (ft)	100		80	80						
Base Capacity (vph)	93	1141	778	100	1178	165	192	148	245	214
Starvation Cap Reductn	0	320	0	0	60	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	12	1	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.50	0.02	0.10	0.70	0.09	0.05	0.03	0.64	0.36

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

5: Puyallup Ave & F St

05/26/2023

												
Movement	EBL	EBT	EBR	EBR2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	4	383	0	17	9	736	1	1	13	0	9	1
Future Volume (vph)	4	383	0	17	9	736	1	1	13	0	9	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		5.0	5.0			5.0	5.0		
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00			1.00	1.00		
Frpb, ped/bikes	1.00	1.00	0.80		1.00	1.00			1.00	0.98		
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00			0.95	1.00		
Frt	1.00	1.00	0.85		1.00	1.00			1.00	0.85		
Flt Protected	0.95	1.00	1.00		0.95	1.00			0.95	1.00		
Satd. Flow (prot)	1719	1810	1234		1770	1862			881	814		
Flt Permitted	0.95	1.00	1.00		0.95	1.00			0.76	1.00		
Satd. Flow (perm)	1719	1810	1234		1770	1862			701	814		
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	4	407	0	18	10	783	1	1	14	0	10	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	4	407	18	0	10	784	0	0	15	10	0	0
Confl. Peds. (#/hr)	5		35	21	21		5	21	4		1	1
Confl. Bikes (#/hr)							3					
Heavy Vehicles (%)	5%	5%	5%	5%	2%	2%	2%	94%	94%	94%	94%	0%
Turn Type	Prot	NA	Perm		Prot	NA		Perm	Split	NA		Split
Protected Phases	7	4			3	8			2	2		1
Permitted Phases			4					2				
Actuated Green, G (s)	1.2	59.4	59.4		1.4	59.6			7.1	7.1		
Effective Green, g (s)	1.2	59.4	59.4		1.4	59.6			7.1	7.1		
Actuated g/C Ratio	0.01	0.54	0.54		0.01	0.54			0.06	0.06		
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0			5.0	5.0		
Vehicle Extension (s)	2.5	2.5	2.5		2.5	2.5			5.0	5.0		
Lane Grp Cap (vph)	18	977	666		22	1008			45	52		
v/s Ratio Prot	0.00	c0.22			0.01	c0.42				0.01		
v/s Ratio Perm			0.01						c0.02			
v/c Ratio	0.22	0.42	0.03		0.45	0.78			0.33	0.19		
Uniform Delay, d1	53.9	15.0	11.8		53.9	20.0			49.2	48.7		
Progression Factor	0.90	0.40	0.25		1.16	0.91			1.00	1.00		
Incremental Delay, d2	4.4	1.3	0.1		9.9	5.6			8.9	3.8		
Delay (s)	52.8	7.2	3.0		72.2	23.7			58.1	52.5		
Level of Service	D	A	A		E	C			E	D		
Approach Delay (s)		7.5				24.3				55.9		
Approach LOS		A				C				E		
Intersection Summary												
HCM 2000 Control Delay			23.8				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)			25.0		
Intersection Capacity Utilization			68.4%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: Puyallup Ave & F St

05/26/2023



Movement	SBT	SBR2	NEL2	NEL	NER
Lane Configurations	↕			↕	↗
Traffic Volume (vph)	0	3	148	1	73
Future Volume (vph)	0	3	148	1	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0
Lane Util. Factor	1.00			1.00	1.00
Frpb, ped/bikes	0.90			1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00
Frt	0.90			1.00	0.85
Flt Protected	0.99			0.95	1.00
Satd. Flow (prot)	1525			1787	1561
Flt Permitted	0.99			0.95	1.00
Satd. Flow (perm)	1525			1787	1561
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	3	157	1	78
RTOR Reduction (vph)	0	0	0	0	0
Lane Group Flow (vph)	4	0	0	158	78
Confl. Peds. (#/hr)		4	4	5	1
Confl. Bikes (#/hr)					
Heavy Vehicles (%)	0%	0%	1%	1%	1%
Turn Type	NA		Prot	Prot	Perm
Protected Phases	1		10	10	
Permitted Phases					10
Actuated Green, G (s)	2.0			15.1	15.1
Effective Green, g (s)	2.0			15.1	15.1
Actuated g/C Ratio	0.02			0.14	0.14
Clearance Time (s)	5.0			5.0	5.0
Vehicle Extension (s)	2.5			2.5	2.5
Lane Grp Cap (vph)	27			245	214
v/s Ratio Prot	c0.00			c0.09	
v/s Ratio Perm					0.05
v/c Ratio	0.15			0.64	0.36
Uniform Delay, d1	53.2			44.9	43.1
Progression Factor	1.00			1.00	1.00
Incremental Delay, d2	1.8			5.1	0.8
Delay (s)	55.0			50.0	43.9
Level of Service	E			D	D
Approach Delay (s)	55.0			48.0	
Approach LOS	E			D	
Intersection Summary					

HCM 6th Edition methodology does not support more than 4 approaches.

Queues

6: G St & Puyallup Ave

05/26/2023



Lane Group	EBT	EBR	WBL	WBT	NBT	NBR
Lane Group Flow (vph)	443	52	275	656	85	176
v/c Ratio	0.41	0.06	0.36	0.43	0.46	0.45
Control Delay	5.9	5.2	4.6	3.8	52.5	33.0
Queue Delay	0.2	0.0	0.0	0.1	0.9	0.0
Total Delay	6.1	5.2	4.6	3.8	53.3	33.0
Queue Length 50th (ft)	62	7	29	70	58	94
Queue Length 95th (ft)	83	14	84	178	97	144
Internal Link Dist (ft)	304			1819	498	
Turn Bay Length (ft)		80	80			70
Base Capacity (vph)	1086	860	769	1533	343	388
Starvation Cap Reductn	159	0	0	0	0	0
Spillback Cap Reductn	0	0	0	111	114	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.06	0.36	0.46	0.37	0.45
Intersection Summary						

HCM Signalized Intersection Capacity Analysis

6: G St & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	430	50	267	636	0	82	0	171	0	0	0
Future Volume (vph)	0	430	50	267	636	0	82	0	171	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0			5.0	5.0			
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00	1.00			
Frpb, ped/bikes		1.00	0.93	1.00	1.00			1.00	0.99			
Flpb, ped/bikes		1.00	1.00	0.99	1.00			1.00	1.00			
Frt		1.00	0.85	1.00	1.00			1.00	0.85			
Flt Protected		1.00	1.00	0.95	1.00			0.95	1.00			
Satd. Flow (prot)		1759	1393	1738	1845			1719	1524			
Flt Permitted		1.00	1.00	0.44	1.00			0.95	1.00			
Satd. Flow (perm)		1759	1393	800	1845			1719	1524			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	443	52	275	656	0	85	0	176	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	443	52	275	656	0	0	85	176	0	0	0
Confl. Peds. (#/hr)	6		18	18		6			2	2		
Heavy Vehicles (%)	8%	8%	8%	3%	3%	3%	5%	5%	5%	0%	0%	0%
Turn Type	Prot	NA	Perm	D.P+P	NA		Split	NA	pm+ov			
Protected Phases	7	4		3	8		6	6	3		2	
Permitted Phases			4	4					6	2		
Actuated Green, G (s)		66.9	66.9	84.4	89.4			10.6	28.1			
Effective Green, g (s)		66.9	66.9	84.4	89.4			10.6	28.1			
Actuated g/C Ratio		0.61	0.61	0.77	0.81			0.10	0.26			
Clearance Time (s)		5.0	5.0	5.0	5.0			5.0	5.0			
Vehicle Extension (s)		2.5	2.5	2.5	2.5			2.5	2.5			
Lane Grp Cap (vph)		1069	847	763	1499			165	458			
v/s Ratio Prot		0.25		0.06	c0.36			c0.05	0.06			
v/s Ratio Perm			0.04	0.22					0.05			
v/c Ratio		0.41	0.06	0.36	0.44			0.52	0.38			
Uniform Delay, d1		11.3	8.8	7.8	3.0			47.3	33.8			
Progression Factor		0.37	0.44	0.76	0.77			1.00	1.00			
Incremental Delay, d2		1.1	0.1	0.2	0.7			2.0	0.4			
Delay (s)		5.3	4.0	6.1	3.0			49.3	34.2			
Level of Service		A	A	A	A			D	C			
Approach Delay (s)		5.1			3.9			39.1			0.0	
Approach LOS		A			A			D			A	
Intersection Summary												
HCM 2000 Control Delay			9.7			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.50									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			56.8%			ICU Level of Service			B			
Analysis Period (min)			15									

c Critical Lane Group

HCM 6th Signalized Intersection Summary

6: G St & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	430	50	267	636	0	82	0	171	0	0	0
Future Volume (veh/h)	0	430	50	267	636	0	82	0	171	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	0.99		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1781	1781	1781	1856	1856	1856	1826	1826	1826	1900	1900	1900
Adj Flow Rate, veh/h	0	443	52	275	656	0	85	0	176	0	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	8	8	3	3	3	5	5	5	0	0	0
Cap, veh/h	2	470	384	1017	1545	0	131	0	927	0	2	0
Arrive On Green	0.00	0.53	0.53	1.00	1.00	0.00	0.08	0.00	0.08	0.00	0.00	0.00
Sat Flow, veh/h	1697	1781	1458	1767	1856	0	1716	0	1527	0	1900	0
Grp Volume(v), veh/h	0	443	52	275	656	0	85	0	176	0	0	0
Grp Sat Flow(s),veh/h/ln	1697	1781	1458	1767	1856	0	1716	0	1527	0	1900	0
Q Serve(g_s), s	0.0	25.7	2.0	0.0	0.0	0.0	5.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	25.7	2.0	0.0	0.0	0.0	5.3	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	2	470	384	1017	1545	0	131	0	927	0	2	0
V/C Ratio(X)	0.00	0.94	0.14	0.27	0.42	0.00	0.65	0.00	0.19	0.00	0.00	0.00
Avail Cap(c_a), veh/h	93	567	464	1017	1545	0	343	0	1115	0	380	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.94	0.94	0.75	0.75	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	25.2	19.6	0.0	0.0	0.0	49.3	0.0	9.9	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	28.4	0.7	0.1	0.6	0.0	3.9	0.0	0.1	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	11.3	0.7	0.0	0.3	0.0	2.4	0.0	1.9	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	53.6	20.3	0.1	0.6	0.0	53.3	0.0	10.0	0.0	0.0	0.0
LnGrp LOS	A	D	C	A	A	A	D	A	B	A	A	A
Approach Vol, veh/h	495				931				261			
Approach Delay, s/veh	50.1				0.5				24.1			
Approach LOS	D				A				C			
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	0.0		62.6	34.0		13.4		0.0	96.6			
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0		5.0	5.0			
Max Green Setting (Gmax), s	22.0		11.0	35.0		22.0		6.0	40.0			
Max Q Clear Time (g_c+l1), s	0.0		2.0	27.7		7.3		0.0	2.0			
Green Ext Time (p_c), s	0.0		0.4	1.3		0.7		0.0	4.2			
Intersection Summary												
HCM 6th Ctrl Delay	18.7											
HCM 6th LOS	B											

Queues

7: E L ST & Puyallup Ave

05/26/2023



Lane Group	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	635	20	111	952	58	7
v/c Ratio	0.48	0.02	0.19	0.62	0.43	0.04
Control Delay	12.2	7.6	3.1	6.1	56.3	44.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	7.6	3.1	6.1	56.3	44.1
Queue Length 50th (ft)	217	3	12	193	40	5
Queue Length 95th (ft)	495	m19	26	359	80	19
Internal Link Dist (ft)	1819			839	1082	346
Turn Bay Length (ft)		80	80			
Base Capacity (vph)	1321	1055	581	1544	269	320
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.02	0.19	0.62	0.22	0.02

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

7: E L ST & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	610	19	107	914	0	10	0	46	6	0	1
Future Volume (vph)	0	610	19	107	914	0	10	0	46	6	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0			5.0			5.0	
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00			1.00	
Frpb, ped/bikes		1.00	0.94	1.00	1.00			0.98			1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00			1.00	
Frt		1.00	0.85	1.00	1.00			0.89			0.98	
Flt Protected		1.00	1.00	0.95	1.00			0.99			0.96	
Satd. Flow (prot)		1810	1445	1729	1827			1416			1783	
Flt Permitted		1.00	1.00	0.36	1.00			0.94			0.86	
Satd. Flow (perm)		1810	1445	658	1827			1349			1603	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	635	20	111	952	0	10	0	48	6	0	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	635	20	111	952	0	0	58	0	0	7	0
Confl. Peds. (#/hr)			15	15					1	1		
Heavy Vehicles (%)	5%	5%	5%	4%	4%	4%	16%	16%	16%	0%	0%	0%
Turn Type	Prot	NA	Perm	D.P+P	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4	4			2			6		
Actuated Green, G (s)		79.4	79.4	86.0	91.0			9.0			9.0	
Effective Green, g (s)		79.4	79.4	86.0	91.0			9.0			9.0	
Actuated g/C Ratio		0.72	0.72	0.78	0.83			0.08			0.08	
Clearance Time (s)		5.0	5.0	5.0	5.0			5.0			5.0	
Vehicle Extension (s)		2.5	2.5	2.5	2.5			2.5			2.5	
Lane Grp Cap (vph)		1306	1043	578	1511			110			131	
v/s Ratio Prot		0.35		0.01	c0.52							
v/s Ratio Perm			0.01	0.14				c0.04			0.00	
v/c Ratio		0.49	0.02	0.19	0.63			0.53			0.05	
Uniform Delay, d1		6.6	4.3	3.5	3.4			48.5			46.6	
Progression Factor		1.48	1.35	1.00	1.00			1.00			1.00	
Incremental Delay, d2		1.2	0.0	0.1	2.0			3.4			0.1	
Delay (s)		10.9	5.9	3.6	5.4			51.9			46.7	
Level of Service		B	A	A	A			D			D	
Approach Delay (s)		10.8			5.2			51.9			46.7	
Approach LOS		B			A			D			D	
Intersection Summary												
HCM 2000 Control Delay			9.0			HCM 2000 Level of Service				A		
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			74.3%			ICU Level of Service				D		
Analysis Period (min)			15									

c Critical Lane Group

HCM 6th Signalized Intersection Summary

7: E L ST & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	610	19	107	914	0	10	0	46	6	0	1
Future Volume (veh/h)	0	610	19	107	914	0	10	0	46	6	0	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1826	1826	1826	1841	1841	1841	1663	1663	1663	1900	1900	1900
Adj Flow Rate, veh/h	0	635	20	111	952	0	10	0	48	6	0	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	5	5	5	4	4	4	16	16	16	0	0	0
Cap, veh/h	2	1331	1116	605	1522	0	49	9	95	167	5	19
Arrive On Green	0.00	0.73	0.73	0.05	0.83	0.00	0.08	0.00	0.08	0.08	0.00	0.08
Sat Flow, veh/h	1739	1826	1531	1753	1841	0	132	110	1161	1295	59	226
Grp Volume(v), veh/h	0	635	20	111	952	0	58	0	0	7	0	0
Grp Sat Flow(s),veh/h/ln	1739	1826	1531	1753	1841	0	1403	0	0	1579	0	0
Q Serve(g_s), s	0.0	15.9	0.4	1.6	20.4	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	15.9	0.4	1.6	20.4	0.0	4.2	0.0	0.0	0.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.17		0.83	0.86		0.14
Lane Grp Cap(c), veh/h	2	1331	1116	605	1522	0	154	0	0	191	0	0
V/C Ratio(X)	0.00	0.48	0.02	0.18	0.63	0.00	0.38	0.00	0.00	0.04	0.00	0.00
Avail Cap(c_a), veh/h	95	1331	1116	608	1522	0	315	0	0	356	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.91	0.91	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	6.2	4.1	4.1	3.4	0.0	48.3	0.0	0.0	46.5	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.1	0.0	0.1	2.0	0.0	1.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.7	0.1	0.5	5.6	0.0	1.6	0.0	0.0	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	7.3	4.1	4.3	5.4	0.0	49.4	0.0	0.0	46.6	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	A
Approach Vol, veh/h	655			1063			58			7		
Approach Delay, s/veh	7.2			5.2			49.4			46.6		
Approach LOS	A			A			D			D		
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	14.0		10.8	85.2		14.0		0.0	96.0			
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0		5.0	5.0			
Max Green Setting (Gmax), s	22.0		6.0	67.0		22.0		6.0	67.0			
Max Q Clear Time (g_c+I1), s	6.2		3.6	17.9		2.4		0.0	22.4			
Green Ext Time (p_c), s	0.2		0.0	4.1		0.0		0.0	7.9			
Intersection Summary												
HCM 6th Ctrl Delay	7.6											
HCM 6th LOS	A											

Queues

8: E Portland Ave & Puyallup Ave

05/26/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	47	248	438	485	987	228	321	277	103	826	117
v/c Ratio	0.12	0.59	0.29	0.98	0.97	1.03	0.32	0.44	0.27	0.92	0.24
Control Delay	41.8	50.6	0.5	74.5	58.5	97.5	30.5	6.2	23.0	55.0	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.8	50.6	0.5	74.5	58.5	97.5	30.5	6.2	23.0	55.0	8.8
Queue Length 50th (ft)	14	86	0	353	354	~112	86	0	41	284	4
Queue Length 95th (ft)	31	127	0	#693	#603	#324	147	66	93	#484	52
Internal Link Dist (ft)		523			476		261			552	
Turn Bay Length (ft)	200		500			100		150	190		150
Base Capacity (vph)	754	777	1490	494	1021	221	992	627	379	899	481
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.32	0.29	0.98	0.97	1.03	0.32	0.44	0.27	0.92	0.24

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

8: E Portland Ave & Puyallup Ave

05/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	238	420	630	690	93	219	308	266	99	793	112
Future Volume (vph)	45	238	420	630	690	93	219	308	266	99	793	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.91	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.99		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3273	3374	1490	1579	3244		1583	3167	1398	1626	3252	1455
Flt Permitted	0.95	1.00	1.00	0.95	0.99		0.13	1.00	1.00	0.51	1.00	1.00
Satd. Flow (perm)	3273	3374	1490	1579	3244		221	3167	1398	877	3252	1455
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	47	248	438	656	719	97	228	321	277	103	826	117
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	190	0	0	79
Lane Group Flow (vph)	47	248	438	485	981	0	228	321	87	103	826	38
Confl. Peds. (#/hr)			2	2					1	1		
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	7%	7%	7%	4%	4%	4%	14%	14%	14%	11%	11%	11%
Turn Type	Split	NA	Free	Split	NA		D.P+P	NA	Perm	D.P+P	NA	Perm
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases			Free				2		6	6		2
Actuated Green, G (s)	13.5	13.5	108.7	34.1	34.1		41.1	34.1	34.1	41.1	30.1	30.1
Effective Green, g (s)	13.5	13.5	108.7	34.1	34.1		41.1	34.1	34.1	41.1	30.1	30.1
Actuated g/C Ratio	0.12	0.12	1.00	0.31	0.31		0.38	0.31	0.31	0.38	0.28	0.28
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0	1.0		1.0	1.0		2.5	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	406	419	1490	495	1017		221	993	438	379	900	402
v/s Ratio Prot	0.01	c0.07		c0.31	0.30		c0.10	0.10		0.02	0.25	
v/s Ratio Perm			c0.29				c0.28		0.06	0.09		0.03
v/c Ratio	0.12	0.59	0.29	0.98	0.96		1.03	0.32	0.20	0.27	0.92	0.09
Uniform Delay, d1	42.3	45.0	0.0	37.0	36.7		27.2	28.5	27.3	22.5	38.1	29.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	1.5	0.5	34.7	19.9		69.0	0.1	0.1	0.1	13.7	0.0
Delay (s)	42.3	46.5	0.5	71.6	56.6		96.2	28.6	27.4	22.6	51.8	29.2
Level of Service	D	D	A	E	E		F	C	C	C	D	C
Approach Delay (s)		18.7			61.5			46.8			46.4	
Approach LOS		B			E			D			D	
Intersection Summary												
HCM 2000 Control Delay			47.0			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			108.7			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			86.8%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Edition methodology does not support turning movements with shared & exclusive lanes.

SECTION 6: FULL DELAY AND QUEUE SUMMARY TABLES

Intersection	Control type	Lane Group	2023 Existing AM Peak		2023 Existing PM Peak	
			Delay (sec)	LOS	Delay (sec)	LOS
1: Pacific Ave & S 24th St*	Signalized	Intersection Average	26.0	C	35.0	D
		EBL/T/R	33.1	C	40.9	D
		WBL/T	35.7	D	54.9	D
		WBR	5.7	A	4.5	A
		NBT/R	36.4	D	51.8	D
		SBL/T/R	12.1	B	13.7	B
2: A St & S 24th St/Puyallup Ave	Signalized	Intersection Average	7.2	A	7.6	A
		EBL	7.8	A	9.0	A
		EBT/R	6.9	A	6.9	A
		WBL	7.3	A	7.7	A
		WBT/R	7.2	A	7.8	A
		NBL/T	7.3	A	7.4	A
		NBR	7.6	A	7.6	A
		SBL/T/R	7.3	A	7.5	A
3: E D St & Puyallup Ave	Signalized	Intersection Average	13.0	B	13.0	B
		EBL	14.5	B	14.6	B
		EBT/R	12.6	B	12.3	B
		WBL	16.6	B	15.9	B
		WBT/R	12.5	B	12.3	B
		NBL	15.9	B	16.4	B
		NBT/R	13.1	B	13.6	B
		SBL/T	13.1	B	14.3	B
4: E E St & Puyallup Ave*	Signalized	SBR	11.4	B	13.3	B
		Intersection Average	2.3	A	3.9	A
		EBL	2.0	A	3.1	A
		EBT/R	2.3	A	3.4	A
		WBL	0.0	A	0.0	A
		WBT/R	2.2	A	4.0	A
		NBL	0.0	A	0.0	A
		NBT/R	0.0	A	22.5	C
5: F St & Puyallup Ave*	Signalized	SBL/T/R	18.8	B	22.5	C
		Intersection Average	10.0	B	19.2	B
		EBL	0.0	A	15.0	B
		EBT/R	9.3	A	16.4	B
		WBL/T/R	9.0	A	18.5	B
		NBL	25.4	C	37.9	D
		NBT/R	25.0	C	32.6	C
		SBL/T/R	0.0	A	31.2	C
6: G St & Puyallup Ave	Signalized	NEL	40.6	D	25.1	C
		NER	42.8	D	24.1	C
		Intersection Average	6.8	A	8.9	A
		EBL	7.6	A	0.0	A
		EBT/R	8.0	A	10.3	B
		WBL	9.2	A	11.6	B

Intersection	Control type	Lane Group	2023 Existing AM Peak		2023 Existing PM Peak	
			Delay (sec)	LOS	Delay (sec)	LOS
7: E L ST & Puyallup Ave	TWSC	WBT/R	3.0	A	3.8	A
		NBL/T	13.6	B	14.7	B
		NBR	13.9	B	17.1	B
		SBL/T/R	0.0	A	0.0	A
		Major/Minor Approach	0.5/19.4	A/C	0.9/29.2	A/D
		EBL	8.3	A	0	A
		EBT/R	-	-	-	-
		WBL	10.2	B	8.9	A
		WBT/R	-	-	-	-
		NBL/T/R	19.4	C	14.9	B
		SBL/T/R	13.5	B	29.2	D
8: E Portland Ave & Puyallup Ave	Signalized	Intersection Average	17.9	B	27.2	C
		EBL	22.0	C	30.5	C
		EBT	19.9	B	25.0	C
		EBR	0.0	-	0.0	-
		WBL	23.9	C	53.6	D
		WBT	17.8	B	13.8	B
		WBR	0.0	-	0.0	-
		NBT	19.6	B	25.9	C
		NBR	0.0	-	0.0	-
		SBL	13.0	B	19.2	B
		SBT	10.4	B	19.7	B
		SBR	0.0	-	0.0	-

* HCM 2000 Methodology

Intersection	Control type	Lane	Storage Length (ft)	50th/95th Percentile Queues	
				2023 Existing AM Peak	2023 Existing PM Peak
1: Pacific Ave & S 24th St	Signalized	EBT	110	7/17	13/30
		WBT	290	46/66	142/186
		WBR	100	0/20	0/18
		NBT	260	104/132	118/154
		SBT	300	35/90	79/143
2: A St & S 24th St/Puyallup Ave	Signalized	EBL	90	1/6	2/14
		EBT	280	9/37	8/36
		WBL	55	1/12	7/36
		WBT	680	15/55	30/97
		NBT	265	0/5	1/10
		NBR	135	0/17	0/13
		SBT	80	1/7	2/19
3: E D St & Puyallup Ave	Signalized	EBL	150	18/63	12/41
		EBT	285	38/101	36/77
		WBL	150	10/40	16/50
		WBT	285	35/91	88/177
		NBL	80	3/17	4/18
		NBT	250	37/108	29/78
		SBT	340	23/73	55/130
4: E E St & Puyallup Ave	Signalized	SBR	340	0/11	0/29
		EBL	80	0/14	0/3
		EBT	285	0/98	0/61
		WBT	215	0/67	0/141
		NBT	125	0/0	0/0
5: F St & Puyallup Ave	Signalized	SBT	50	0/0	0/0
		EBL	100	0/0	0/10
		EBT	215	0/281	17/139
		WBT	290	0/216	44/303
		NBL	100	0/14	2/27
		NBT	100	0/0	0/0
		SBT	50	0/0	0/0
		NEL	100	1/20	23/159
6: G St & Puyallup Ave	Signalized	NER	100	2/32	11/89
		EBL	80	0/4	0/0
		EBT	290	37/149	34/91
		WBL	100	4/46	19/81
		WBT	1750	12/88	24/84
		NBT	265	7/44	12/40
		NBR	75	0/77	0/31
7: E L ST & Puyallup Ave	TWSC*	NBT	630	25	10
		EBL	80	0	0
		WBL	80	3	8
		SBT	50	0	3

Intersection	Control type	Lane	Storage Length (ft)	50th/95th Percentile Queues	
				2023 Existing AM Peak	2023 Existing PM Peak
8: E Portland Ave & Puyallup Ave	Signalized	EBL	190	21/63	7/26
		EBT	1400	84/171	37/74
		EBR	190	0/0	0/0
		WBL	280	44/126	206/#624
		WBT	2780	30/70	106/184
		WBR	30	-	-
		NBT	950	105/226	50/110
		NBR	200	14/117	0/62
		SBL	190	20/67	23/68
		SBT	560	42/104	114/227
		SBR	100	0/24	0/33

* HCM 6 Methodology used for TWSC intersections only reports 95th percentile queues.

Assumed 25 feet of queue length per vehicle.

- 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after 2 cycles.

m - Volume for 95th percentile queue is metered by upstream signal.

2050 VOLUMES: 0.5% LINEAR GROWTH APPLIED TO ALL MOVEMENTS

Intersection	Control type	Lane Group	2050 Future Build AM Peak		2050 Future Build PM Peak	
			Delay (sec)	LOS	Delay (sec)	LOS
1: Pacific Ave & S 24th St*	Signalized	Intersection Average	35.2	D	31.9	C
		EBL	63.8	E	56.7	E
		EBT/R	46.3	D	45.1	D
		WBL	34.7	C	23.8	C
		WBT	36.5	D	22.4	C
		WBR	21.3	C	29.3	C
		NBT/R	47.4	D	47.0	D
		SBL/T/R	20.7	C	25.7	C
2: A St & S 24th St/Puyallup Ave	Signalized	Intersection Average	8.1	A	5.8	A
		EBL	73.6	E	57.4	E
		EBT	4.0	A	0.2	A
		EBR	3.3	A	0.0	A
		WBL	2.8	A	3.1	A
		WBT/R	0.4	A	0.7	B
		NBL/T	49.9	D	44.7	D
		NBR	53.5	D	46.0	D
		SBL	50.3	D	45.4	D
		SBT/R	50.0	D	45.3	D
3: E D St & Puyallup Ave	Signalized	Intersection Average	35.0	C	30.7	C
		EBL	59.9	E	58.1	E
		EBT	57.9	E	61.6	E
		EBR	24.5	C	30.8	C
		WBL	7.4	A	11.1	B
		WBT/R	1.3	A	11.9	B
		NBL	57.3	E	53.0	D
		NBT/R	40.6	D	35.7	D
		SBL/T	50.0	D	50.2	D
		SBR	35.4	D	34.7	C
4: E E St & Puyallup Ave*	Signalized	Intersection Average	3.2	A	3.3	A
		EBL	66.9	E	72.3	E
		EBT	1.4	A	1.0	A
		EBR	0.5	A	0.0	A
		WBL	0.0	A	0.0	A
		WBT/R	1.9	A	3.9	A
		NBL	0.0	A	0.0	A
		NBT/R	0.0	A	53.2	D
		SBL/T/R	54.9	D	53.8	D
5: F St & Puyallup Ave*	Signalized	Intersection Average	7.0	A	19.7	B
		EBL	0.0	A	54.5	D
		EBT	2.9	A	6.7	A
		EBR	1.8	A	2.7	A
		WBL	62.9	E	74.5	E
		WBT/R	2.3	A	15.1	B
		NBL	65.8	E	66.5	E

Intersection	Control type	Lane Group	2050 Future Build AM Peak		2050 Future Build PM Peak	
			Delay (sec)	LOS	Delay (sec)	LOS
6: G St & Puyallup Ave	Signalized	NBT/R	56.8	E	58.3	E
		SBL/T/R	0.0	A	54.4	D
		NEL	57.0	E	53.3	D
		NER	58.3	E	45.7	D
		Intersection Average	25.7	C	19.3	B
		EBL	110.4	F	0.0	A
		EBT	56.6	E	56.3	E
		EBR	19.6	B	23.3	C
		WBL	0.0	A	0.1	A
		WBT/R	0.4	A	0.6	A
		NBL/T	57.9	E	53.6	D
		NBR	13.9	B	8.6	A
		SBL/T/R	0.0	A	0.0	A
		Intersection Average	10.7	B	4.8	A
7: E L ST & Puyallup Ave	Signalized	EBL	73.8	E	0.0	A
		EBT	9.2	A	1.3	A
		EBR	3.4	A	0.4	A
		WBL	7.2	A	2.8	A
		WBT/R	4.4	A	4.4	A
		NBL/T/R	55.7	E	49.3	D
		SBL/T/R	50.6	D	46.8	D
		Intersection Average	23.7	C	35.6	D
8: E Portland Ave & Puyallup Ave*	Signalized	EBL	26.6	C	40.4	D
		EBT	33.7	C	43.0	D
		EBR	0.4	A	0.4	A
		WBL	30.4	C	49.3	D
		WBL/T/R	30.0	C	40.8	D
		NBL	18.6	B	47.6	D
		NBT	25.2	C	26.5	C
		NBR	21.9	C	25.6	C
		SBL	17.3	B	21.9	C
		SBT	29.1	C	43.7	D
		SBR	24.3	C	28.7	C
		Intersection Average	23.7	C	35.6	D

* HCM 2000 Methodology

2050 VOLUMES: 0.5% LINEAR GROWTH APPLIED TO ALL MOVEMENTS

Intersection	Control type	Lane	Storage Length (ft)	50th/95th Percentile Queues	
				2050 Future Build AM Peak	2050 Future Build PM Peak
1: Pacific Ave & S 24th St	Signalized	EBL	100	6/23	11/34
		EBT	100	17/40	30/59
		WBL	150	86/122	167/63*
		WBT	290	20/47	74/81
		WBR	115	60/138	96/194
		NBT	260	164/207	137/174
		SBT	300	66/129	120/206
2: A St & S 24th St/Puyallup Ave	Signalized	EBL	60	4/17	13/m35
		EBT	280	22/100	51/183
		EBR		1/7	3/m19
		WBL	70	0/m1	1/m5
		WBT	660	2/84	10/336
		NBT	265	2/11	8/23
		NBR	135	44/76	25/49
		SBL	80	4/14	8/23
		SBT	80	1/9	16/35
3: E D St & Puyallup Ave	Signalized	EBL	150	78/138	36/#87
		EBT	285	142/283	162/262
		EBR		4/16	8/32
		WBL	80	10/7*	17/0*
		WBT	265	126/167	372/0*
		NBL	80	12/32	10/30
		NBT	250	173/245	91/151
		SBT	340	~105/#197	158/#276
		SBR	340	37/70	63/113
4: E E St & Puyallup Ave	Signalized	EBL	80	19/m39	1/m4
		EBT	265	0/186	0/m78
		EBR		0/m0	0/0
		WBT	215	30/99	0/#767
		NBT	125	0/0	1/6
		SBT	50	3/12	3/14

Intersection	Control type	Lane	Storage Length (ft)	50th/95th Percentile Queues	
				2050 Future Build AM Peak	2050 Future Build PM Peak
5: F St & Puyallup Ave	Signalized	EBL	80	0/0	2/m10
		EBT	215	50/25*	1/360
		EBR		9/7*	0/13
		WBL	80	32/75	6/m19
		WBT	290	0/59	98/#671
		NBL	100	10/30	9/28
		NBT	100	1/10	6/22
		SBT	50	0/0	2/11
		NEL	100	5/21	94/#213
		NER	100	9/29	45/94
6: G St & Puyallup Ave	Signalized	EBL	80	1/m2	0/0
		EBT	290	122/82*	48/71
		EBR		5/8	6/12
		WBL	80	6/34	26/46
		WBT	1750	28/143	61/96
		NBT	265	33/69	51/87
		NBR	75	281/#451	81/121
7: E L ST & Puyallup Ave	Signalized	EBL	80	2/m4	0/0
		EBT	1750	326/475	152/420
		EBR		3/m8	4/m12
		WBL	80	3/10	10/23
		WBT	1400	71/199	152/266
		NBT	630	70/120	35/74
		SBT	50	3/14	5/19

Intersection	Control type	Lane	Storage Length (ft)	50th/95th Percentile Queues	
				2050 Future Build AM Peak	2050 Future Build PM Peak
8: E Portland Ave & Puyallup Ave	Signalized	EBL	195	23/66	13/29
		EBT	1400	103/234	74/113
		EBR	335	0/0	0/0
		WBL	280	52/138	285/#583
		WBT	2780	48/112	285/#493
		NBL	100	60/168	85/#253
		NBT	950	126/274	74/131
		NBR	200	0/86	0/62
		SBL	190	25/82	36/83
		SBT	560	80/177	237/#397
		SBR	100	0/10	0/40

~ - Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after 2 cycles.

- 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after 2 cycles.

m - Volume for 95th percentile queue is metered by upstream signal.

* - 50th percentile and 95th percentile queues are calculated differently by Synchro. 50th percentile queues are maximum back of queue on a typical cycle. 95th percentile queues are maximum back of queue with 95th percentile traffic volumes, accounting for upstream metering and unadjusted for peak hour factor. Under certain conditions, 95th percentile queues may be reported as shorter than 50th percentile.

Tech Memo

Traffic Forecast (2040):

Puyallup Ave. Multimodal Corridor Study

Prepared for the

City of Tacoma

September 6, 2017

By ***Mazedur Hossain & Rachel Lindahl***

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Introduction:

The objective of this tech memo is to summarize the traffic and land use forecast methodologies and the steps needed for the Puyallup Ave. Multimodal Corridor Planning Study..

A Tacoma citywide traffic forecasting model (TFM) was developed, calibrated and validated by a consultant in 2014. This model was used to conduct and validate traffic operation assumptions for the City of Tacoma Transportation Master Plan in 2014. The same model was used for the Tacoma Mall Neighborhood Subarea Plan in 2015/16. The model performed well in these larger study areas however, the model performance at a corridor level for the Puyallup Ave study was determined to be unacceptable by City staff and therefore a more intensive land use and traffic data exercise was recommended.

Key Traffic Generator on Puyallup Avenue:

2016 Traffic Demand on Puyallup Ave.

Several 24-HR traffic counts were collected along Puyallup between Pacific and Portland in 2016 to assess the existing traffic demand. The traffic data helped in identifying the key traffic generators on Puyallup and the traffic relationship with the overall Puyallup Avenue's traffic demand and operation.

The 24 HR traffic data is presented in *Figure 1: 2016 Average Daily Traffic on Puyallup Ave.* The average daily traffic (ADT) on Puyallup between Pacific and Portland Avenue is approximately 15,000. The ADT in the vicinity of the Tacoma Dome Station (TDS) on Puyallup is about 17,700 which is nearly 3,000 more than the average daily traffic demand on Puyallup. The highest traffic demand is at the TDS which demonstrates its significant influence on the Puyallup Avenue corridor.

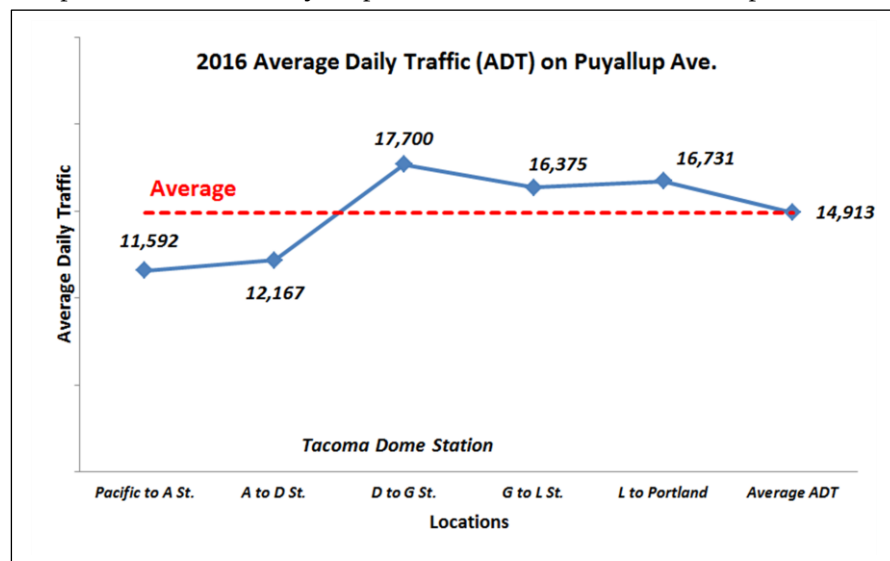


Figure 1: 2016 Average Daily Traffic on Puyallup Ave

A Regional Intermodal Facility:

The TDS is a major intermodal facility in the Puget Sound region serviced by three transit agencies operating three different transit modes and two nationwide transportation providers.

- Pierce Transit operates seven local bus routes.
- Sound Transit operates Tacoma Link light rail, Sounder Commuter rail, and four Regional Express bus routes.
- Intercity Transit operates three bus routes from the Olympia area (south).
- Greyhound and Amtrak services also have hubs located in the TDS area

The 24 HR traffic data alone did not convey the needed travel behavior/mode choices of TDS Park and Ride users. Therefore, the City of Tacoma requested the following information from the regional transit agencies to better understand how the travelers are using the TDS to complete their multimodal trip chains.

- Average parking utilization
- % of High Occupancy Vehicle (HOV) trips
- % of Single Occupancy Vehicle (SOV) trips
- % of Vanpool trips
- % of Bicycle trips
- % of Transit trips
- License plate study

Average Parking Utilization:

The average parking utilization at the TDS was 97% in 2016 and it was also very consistent in all four (4) quarters. See the *Table 1: 2016 Average Parking Utilization- Tacoma Dome Station*. The 97% average utilization (PSRC, Park-and-Ride Database, 2017) demonstrates that the parking demand is higher than practical capacity (90%) which creates “cruising” for the few empty spaces. This regional intermodal facility has been serving the travelers to complete their multimodal trip chains, especially the commuter trips.

Tacoma Dome Station ^{1,2}	<i># of Stalls</i>	<i>1st Qr. 2016</i>		<i>2nd Qr. 2016</i>		<i>3rd Qr. 2016</i>		<i>4th Qr. 2016</i>		<i>2016 Total</i>	
		Avg. Use	% Use	Avg. Use	% Use	Avg. Use	% Use	Avg. Use	% Use	Avg. Use	% Use
	2337	2227	95%	2308	99%	2259	97%	2332	100%	2277	97%

Table 1: 2016 Average Parking Utilization- Tacoma Dome Station (PSRC, Park-and-Ride Database, 2017)

Estimated Average Daily Traffic (ADT):

The ADT on Puyallup Ave at the TDS is about 17,700 which is nearly 3,000 more than the average daily traffic demand on the remaining segments of Puyallup Ave (see the *Figure 1: 2016 Average Daily Traffic on Puyallup Ave*). Data collected by several regional agencies were used to estimate the average SOV trips generated by TDS. Washington State Department of Transportation funded a research study (Vikash V. Gayah, 2014) to analyze the travel behavior of Park and Ride users in the Puget Sound Region. The users of the TDS were asked several questions about how they currently utilize the TDS to complete their multimodal trip chains. A total of 262 TDS users completed this survey and the key findings from the travel survey provided the following information:

% of SOV trips: **84.11%**
 % of HOV trips: $0.39+5.81+2.71 = \mathbf{8.91\%}$
 % of Bicycle trips: **1.16%**
 % of Transit trips: $0.78+4.26 = \mathbf{5.04\%}$
 % of Vanpooled trips: **0.39%**

Question 9: “How did you get to this park and ride this morning?” (Vikash V. Gayah, 2014)

By Location	Drive Alone	Walked	Train	Vanpooled	Bicycled	Dropped off	Carpooled	Bus	Other
Tacoma Dome	84.11	0	0.78	0.39	1.16	5.81	2.71	4.26	0.78

Table 2 Survey Question 9

Question 10: “How will you leave this park and ride this morning?” (Vikash V. Gayah, 2014)

By Location	Drive Alone	Walked	Train	Vanpooled	Bicycled	Dropped off	Carpooled	Bus	Other
Tacoma Dome	1.16	5.04	15.12	0.78	0	0	0	75.19	2.71

Table 3 Survey Question 10

In addition, the Puget Sound Regional Council (PSRC) reported an average of 3,300 weekday boardings (PSRC, Transit Access Assessment, 2016) at the TDS in the “Transit Access Assessment” study. The information reported in the WSDOT’s research study and PSRC’s transit access assessment studies were used to estimate the average SOV trips generated by TDS. The estimation is calculated below:

Formula:

Estimated Average SOV Trips

$$= \text{Average weekday boardings} * \% \text{ reduction for transfer trips} \\ * (\% \text{ of Single occupancy vehicle trips} + \% \text{ of dropped of trips} \\ + \% \text{ of carpooled trips}) * 2 \text{ (Two – way)}$$

$$\text{Estimated Average SOV Trips} = 3,300 * 0.95\% * (84.11\% + 2.71\% + 5.81\%) * 2 \approx 6,000$$

The average daily traffic on Puyallup is approximately 15,000 and the estimated average daily traffic generated from TDS is approximately 6,000. The numbers reveal that the TDS generates more than 1/3 of the total traffic demand on Puyallup Ave.

Land Use Forecast:

The Puyallup Ave. study area encompasses approximately 600 acres of historic industrial, commercial and residential property within the City's designated Brewery District, Dome District, and South Downtown and Lower Portland Avenue Mixed Use Centers. For the purpose of this study, this area was further divided into four subzones as shown on Figure 2. Subzones 1-3 are generally bordered by S. 21st Street/SR 509 to the north and the I-5 corridor to the south. Subzone 4 lies south of the I-5 corridor, extending to approximately E. 34th Street. A multi modal transit hub located in the southern portion of the study area provides some of the most comprehensive transit service in the State, including light rail and commuter rail service, and national, local and express bus service. Overall, the area has a diverse built environment, but is also characterized by a relatively high concentration of underutilized land and buildings.

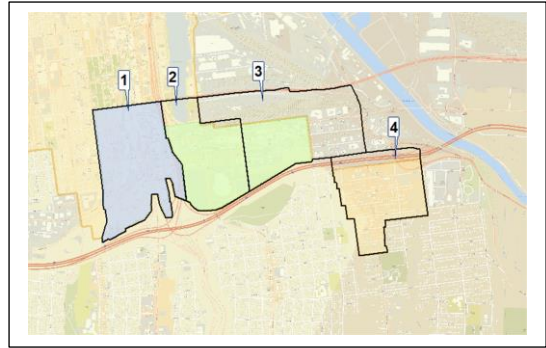


Figure 2 Subzones/Traffic Analysis Zones

To provide a reasonable forecast of future growth within the context of the Growth Management Act and at the county level, two different methodologies were used to calculate land use forecasts for the project. The first methodology involved utilizing projected population and employment rates from Traffic Analysis Zones (TAZ) as defined by the U.S. Census Bureau. The TAZ dataset represents growth allocation forecasts for population, households and employment for the region as a whole. The second methodology, Build-out involved conducting a land use analysis based on identifying the potential residential and non-residential square footage that could be constructed under existing zoning regulations. The forecast from the Build-Out scenario represents the amount of growth that can be supported without changes to the existing land use code.

TAZ 2040

TAZs are constructed using census block information to provide socioeconomic data for transportation planning projects. Variables utilized include characteristics of population, housing, household, group quarters and employment. The population and employment forecasts are generated at the county level using standard demographic techniques and employment patterns. This data is measured for the current year and is projected forward to understand the impact of the project in the future (year 2040 was chosen for the project). The projection assumes that population, employment rates and zoning are consistent with the goals of the Growth Management Act.

Methodology Overview:

Step 1 – Identify all TAZs that intersect with study area.

Step 2 – Categorize TAZs by subzone boundary.

Step 3 – Summarize projected 2040 data for population and employment rate by subzone.

Output:

Subzones/Traffic Analysis Zones	TAZ 2040	
	Population	Employment
1	12,328	9,511
2	2,596	4,640
3	1,074	5,518
4	3,282	1,940

Table 4 Subzones/ Population and Employment Rate per Build-Out Scenario

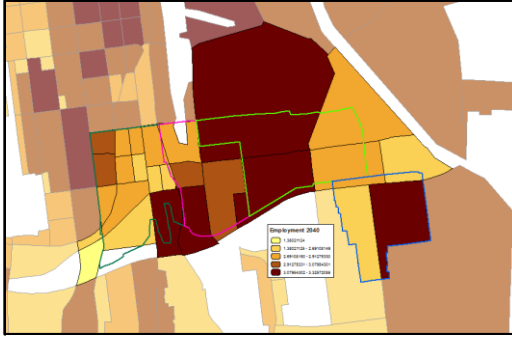


Figure 4 TAZs/ Employment 2040

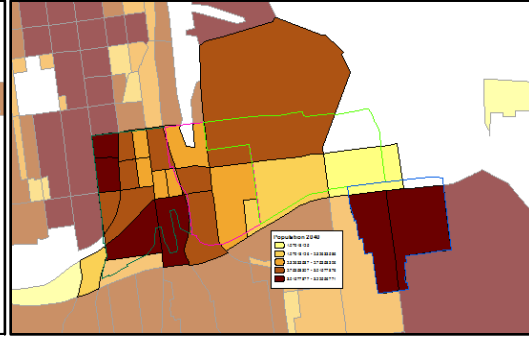


Figure 3 TAZs/ Population 2040

Build-out Scenario

Methodology Overview:

The land use Build-out analysis projects the maximum residential and commercial development allowed under current code in a given area. From these projections, population and employment rate can be estimated in the study area. Geographic Information System (GIS) methods were used to conduct the analysis. The GIS component of the study was undertaken in three phases.

Phase 1 –Determined developable parcels and categorize by zoning district

Phase 2 - Determined the maximum residential and non-residential square footage that could be built under existing 2016 zoning regulations

Phase 3 – Determined population and employment rate based on maximum land use capacity

Phases:

Phase 1- Determine developable parcels and categorize by zoning district.

Steps:

Step 1 - Isolated all parcels that intersected with study boundary.

Step 2 - Categorized by study subzone boundary and land use zoning districts.

Step 3 - Delineate land that could not be developed due to constraints such as public ownership, deed restrictions and utility easements.

Parcels Removed:

- Parks
- Utilities
- Schools
- Right of Way
- Tax Exempt
- Parcels with an improvement to land value ratio greater than 2

Output

Baseline buildable parcel dataset for analysis

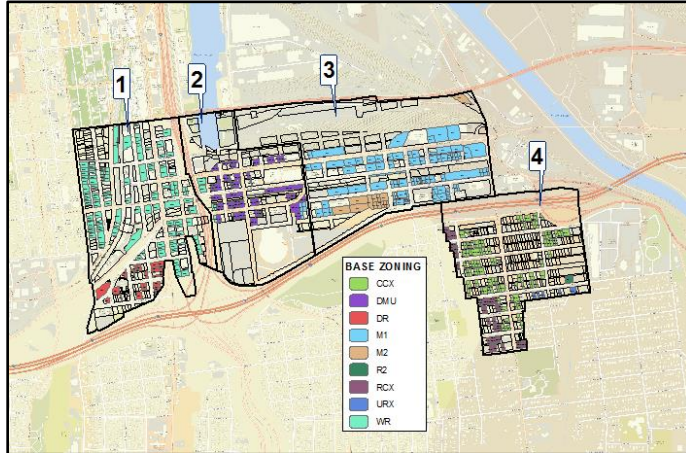


Figure 5 Subzones/Baseline Buildable parcels

Phase 2 - Determine maximum residential/non-residential square footage permitted under 2016 zoning regulations.

Steps:

Step 1-Reduce parcel area by setback requirements (per zoning district)

Formula

(Total Parcel Area) * (1- % Building Efficiency)

Output

Total buildable square footage by parcel

Step 2-Populate fields with residential and non-residential split ratio/mixed use, and maximum floors allowed

Stats

Zoning District	Building Efficiency	Max Floors	Unit Size	Residential %	Non-residential %
CCX	90%	6	1,100 sq ft	65%	35%
DMU	90%	6	1,000 sq ft	75%	25%
DR	90%	6	1,000 sq ft	75%	25%
M1	90%	4	1,250 sq ft	5%	95%
M2	70%	1	NA	NA	100%
R2	80%	2	12 DU/acre	97%	3%
RCX	80%	4	1,280 sq ft	95%	5%
URX	80%	3	1,280 sq ft	100%	NA
WR	80%	6	1,000 sq ft	65%	35%

Table 5 Baseline Zoning Requirements for Development

Output

Parcels auto populated with development requirements.

Step 3 – Calculate maximum buildable square footage with maximum height limits and residential/non-residential split ratio (mixed use buildings).

Formula

Total buildable square footage * Maximum height limit = Maximum buildable square footage

Maximum buildable square footage * (1- % Residential) = Total Maximum Residential

Maximum buildable square footage * (1- % Nonresidential) = Total Maximum Nonresidential

Output

Maximum residential and nonresidential buildable square footage

Phase 3 - Determine population and employment rate based on max capacity.

Step 1- Calculated Employment Rate

Formula

(Total non-residential buildable square footage / 375) * (1-.25)

Under staff direction, M2 zoning assumed as 50 employees per acre with 1 floor limit

Output

Employment rate per zoning district

Step 2- Determine Number of Residential Units

Formula

Total buildable square feet * % Residential ratio = Total buildable residential square footage

Total buildable residential square footage / Square footage unit size requirement

Output

Number of residential units

Step 3 – Determine Population rate

Formula

(Total number of units * 2.32) * (1-.25)

Output

Population rate per zoning district

Outlined below is a breakdown of the maximum possible population and employment rates that the Puyallup Ave can experience if the existing land use ordinances remain unchanged.

<i>Subzones/Traffic Analysis Zones</i>	<i>Build-Out Scenario</i>	
	<i>Population</i>	<i>Employment</i>
1	8,815	5,512
2	3,771	1,823
3	375	10,482
4	4,583	2,329

Table 6 Subzones/ Population and Employment per Build-Out Scenario

Conclusion:

With few exceptions the TAZ method for forecasting land use provided higher population and employment rates than the Build-Out Scenario method. See the **Error! Reference source not found.**

Traffic Analysis Zones	TAZ 2040		Build-Out Scenario	
	Population	Employment	Population	Employment
1	12,328	9,511	8,815	5,512
2	2,596	4,640	3,771	1,823
3	1,074	5,518	375	10,482
4	3,282	1,940	4,583	2,329

Table 7 TAZ 2040 and Build-Out Scenario Land Uses

One possible reason for this is that the TAZ method took into account demographic data such as characteristics of population, housing, household, group quarters, employment, special traffic generator sites and school enrollment rates. The Build-Out Scenario, however, only included assumptions from land use and building codes. Additionally, TAZs are typically defined by census blocks or block groups and these boundaries did not always correspond well with the study's subzone boundaries. This misalignment could potentially account for the higher numbers projected for the population and employment rates.

Scenario Development:

Three (3) scenarios were developed based on the land uses and mode splits to forecast the Puyallup Avenue traffic.

Traffic Analysis Zones/Subzone:

The 1st step to forecast the traffic was to identify the traffic analysis zones (TAZ) that would contribute trips to Puyallup Avenue from Pacific to Portland avenues. Next, the study area was divided into four (4) zones to estimate the future lands uses (see the *Figure 6 Subzones/Traffic Analysis Analysis*). Existing and future land uses, roadway connectivity, access to Puyallup, etc. were reviewed to define the boundary of the four (4) traffic analysis zones. The details of these TAZs/subzones are presented in section above: Land uses.

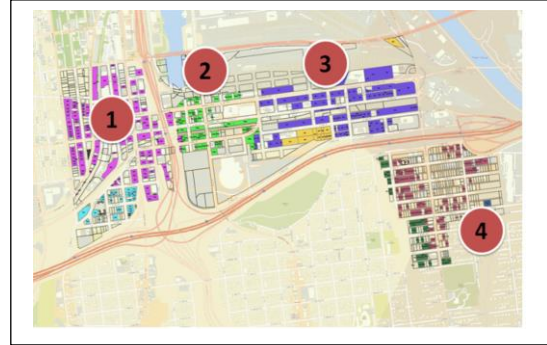


Figure 6 Subzones/Traffic Analysis Zones

Land use Forecast:

Two different land use forecasts were estimated based on two different methodologies and assumptions. See the **Error! Reference source not found.**

TAZ 2040: The TAZ dataset represents growth allocation forecasts for population, households and employment for the region as a whole.

Build-Out Scenario: Build-out involved conducting a land use analysis based on identifying the potential residential and non-residential square footage that could be constructed under existing zoning regulations.

Refined Land use Forecast:

The TAZ 2040 and Build-Out Scenario represent different methodologies and assumptions. The land use forecasting exercise is both an art and a technical exercise. Several influencing factors such as economic uncertainty, political instability, technology evaluation, etc. impact the timing and size of future developments. Assessing and integrating impacts into land use forecasting is important. Therefore, City staff generated two possible growth scenarios by evaluating policies and other influencing factors to help increase the confidence of the land use forecasts used for this study.

Ultimate Growth: This scenario is for the maximum possible growth that the Puyallup Avenue can experience in the anticipated future. The highest population and employment information were chosen from “TAZ 2040” and “Build-Out Scenario” for each TAZ to develop the Ultimate Growth land use scenario as shown on *Table 8 Ultimate Growth Land Use Scenario*

Traffic Analysis Zones	Ultimate Growth	
	Population	Employment
1	12328	9511
2	3771	4640
3	1074	10482
4	4583	2329

Table 8 Ultimate Growth Land Use Scenario

Practical Growth: This scenario is for a reasonable growth that Puyallup Avenue will experience in the anticipated future. The above-mentioned forecasted population and employment were reviewed and identified the appropriate population and employment growth that each of these TAZs will reasonably experience. For example, for TAZ 3 the “Build-Out Scenario” forecasted 10,482 employees’ vs. 5,518 employees in “TAZ 2040”. The TAZ 3 mainly represents an industrial zone and the employee per square footage will be very minimal since the existing uses are mostly one-story buildings. Therefore, the TAZ 2040 forecast of 5,518 employees is more practical than is 10,482 employees. A similar exercise was completed to identify the appropriate growth for each TAZ to develop the Practical Growth land use scenario shown on *Table 9 Practical Growth Land Use Scenario*.

Traffic Analysis Zones	Practical Growth	
	Population	Employment
1	8815	5512
2	3771	1823
3	375	5518
4	4583	2329

Table 9 Practical Growth Land Use Scenario

Mode Splits/Choices:

Mode choices refer to the relative proportion of traffic using each mode of transportation, mainly auto, transit, bicycle, walking, etc.

TMP Mode Share: The City of Tacoma (COT) Transportation Master Plan (Peers, 2015) recommended that the SOV trips be reduced to 55%, which is more than 20% reduction as compared to today. See *Table 10 Mode Shares City of Tacoma Transportation Master Plan*. The project team recognized that the recommended, or targeted mode splits are achievable but more time and infrastructure is likely needed to shift from the heavy automobile oriented environment to multi-modal environment. Also, there was acknowledgement that the City does not manage and operate transit facilities and therefore the capital plans (including park and ride facilities) of the local/regional transit agencies may not be able to meet the City mode choice goals. Given these factors, the project team proposed an alternate mode split that is believed to be more consistent with Puyallup Avenue corridor and study area.

City of Tacoma Transportation Master Plan (Peers, 2015)		
Modes	TMP Proposed Mode Splits (%)	Existing 2012 Mode Splits (%)
SOV (Single Occupancy Vehicle)	55	76
HOV (High Occupancy Vehicle)	23	10
Walk	8	5
Bicycle	4	
Transit	10	5

Table 10 Mode Shares City of Tacoma Transportation Master Plan (Peers, 2015)

Refined Mode Share: The COT Transportation Master Plan recommended an increase of 13% HOV trips and a decrease of 21% SOV trips in future. The COT does not have designated HOV lanes. Transit and a few vanpooled services are the only facilities representing HOV trips. Therefore, the project team recognized that the TMP recommended HOV trip share is achievable but more time and infrastructure are required to meet the recommendation. A reasonable shift of both SOV and HOV trip shares have therefore been recommended for future. See the *Table 11 Mode Shares - Refined Mode Share Puyallup Avenue Corridor Study*.

Refined Mode Share (Puyallup Ave. Corridor Study)		
Modes	Proposed Mode Splits (%)	Existing 2012 Mode Splits (%)
SOV (Single Occupancy Vehicle)	70	76
HOV (High Occupancy Vehicle)	12	10
Walk	3	5
Bicycle	5	
Transit	10	5

Table 11 Mode Shares - Refined Mode Share Puyallup Avenue Corridor Study

Traffic Forecasting Scenarios:

Scenario planning defines a range of possible future conditions and includes an assessment of risk. Land uses and Mode splits were the two important and most uncertain factors. The project team carefully reviewed the land use and mode splits to develop a process that would lead to evaluation tools needed for the future design/operations of Puyallup Avenue corridor between Pacific and Portland avenues. The land use scenarios and the different mode splits presented above enabled the team to develop three (3) possible scenarios to forecast the future traffic. See the *Table 12 Traffic Forecasting Scenarios*

Land Use Scenarios	Traffic Forecasting Scenarios
Ultimate Growth	1. Ultimate growth with TMP Mode Share 2. Practical growth with TMP Model Share 3. Practical growth with Refined TMP Mode Share
Practical Growth	
Mode Share Scenarios	
TMP Mode Share	
Refined Mode Share	

Table 12 Traffic Forecasting Scenarios

Traffic Forecast:

Methodology Overview:

The City's existing traffic forecasting model was not used for the Puyallup Ave study due to its inability to replicate existing conditions at the corridor level. A higher quality and restructured traffic forecasting methodology was therefore developed with the following guidelines:

1. Meet the Puyallup Avenue project's goals and objectives
2. Comply with City's policies, goals, and objectives
3. Comply with City's Transportation Master Plan
4. Technically sound, defensible and transparent
5. Flexible enough to make quick refinements

The methodology defined below was used to forecast the 2040 total PM peak hour traffic for the three (3) different scenarios developed using a combination of different land uses and mode splits targets.

Steps:

Step 1-Estimate 24 –hour Person Trips:

This step was involved in estimating the 24-hour person trips in each TAZ using the trip rates available in the "PSRC Travel Model Documentation" Table 6.21: Trip Rates by Purposes (Systematics, 2007). The total person trips were estimated for each TAZ:

1. Brewery District,
2. Freight House Square
3. M2&M1 Zoning
4. Manufacturing and Portland Mixed Use Center.

Formula:

*24 – hour Population Trips = No. of Population * Trips per person*

*24 – hour Employee Trips = No. of Employees * Trips per employee*

Output:

Total person trips

Step 2-Estimate 24-hour Person Trips by Mode:

This step was involved in estimating the 24-hour person trips by mode using the estimated 24-hour person trips in Step 1. The mode splits recommended in the Transportation Master Plan and the refined mode splits were used to estimate the person trips by mode. See the *Table 13 Mode Splits*.

City of Tacoma Transportation Master Plan (Peers, 2015)		Refined Mode Split	
Modes	Mode Splits (%)	Modes	Mode Splits (%)
SOV (Single Occupancy Vehicle)	55	SOV (Single Occupancy Vehicle)	70
HOV (High Occupancy Vehicle)	23	HOV (High Occupancy Vehicle)	12
Walk	8	Walk	3
Bicycle	4	Bicycle	5
Transit	10	Transit	10

Table 13 Mode Splits

Formula:

*24 hour Trips By Mode = 24 hour Person Trips * Mode Splits*

Output:

Trips by mode

Step 3-Convert 24-hour HOV Person Trips to Vehicular Trips:

This step was needed to convert 24-hour high occupancy person trips estimated in Step 2 to the equivalent 24-hour single occupancy vehicular trips using vehicle occupancy rate (VOR). VOR depends on several factors such as geographical location, travel behavior, and the types of roadway facilities and services. Therefore, a more localized VOR was estimated using the information available in the research study funded by the Washington State Department of Transportation (Vikash V. Gayah, 2014). The estimated VOR was then compared with the VOR available in the National Household Travel Survey to identify an appropriate VOR for Puyallup Avenue corridor.

Vehicle Occupancy Rate:

The Puget Sound Regional Council (PSRC) reported an average of 3,300 weekday boardings (PSRC, Transit Access Assessment, 2016) at the TDS in the “Transit Access Assessment” study. Washington State Department of Transportation funded research study to analyze the travel behavior of Park and Ride users in the Puget Sound Region revealed the following key findings from the survey completed by 262 users. This information was compiled and used to estimate the VOR.

Question 9: “How did you get to this park and ride this morning?” (Vikash V. Gayah, 2014)

By Location	Drive Alone	Walked	Train	Vanpooled	Bicycled	Dropped off	Carpooled	Bus	Other
Tacoma Dome	84.11	0	0.78	0.39	1.16	5.81	2.71	4.26	0.78

Table 14 Survey Question 9

Estimated SOV:

$$3,300 * 0.95 (5\% \text{ transfer}) * \frac{(84.11\% + 2.71\% + 5.81\%)}{100}$$

$$=2,903 \approx 3,000.$$

Question 20: “Would you consider carpooling to this park and ride if carpools were guaranteed a space at no charge?” (Vikash V. Gayah, 2014)

By Location	Yes	No	I already carpool	I don't know
Tacoma Dome	28.84%	46.05%	3.72%	21.4%

Table 15 Survey Questions 20

The estimated SOV trips are approximately 3,000. According to the survey output from the question 20, it is evident that 28.84% of the existing travelers driving alone will consider carpooling ride if carpoolers were guaranteed a space at no charge. 3.72% of users already carpool. Therefore, a total of 32.56% (28.84%+3.72%) of the 3,000 SOV trips may consider carpooling in the future and the potential vehicle occupancy would be 2. Also, the Puget Sound Regional Council (PSRC) reported that 39 Vanpools are used at TDS with an average occupancy of 8.36 (PSRC, Transit Access Assessment, 2016). Weighted average vehicle occupancy rate was estimated below considering the data mentioned above:

Formula:

Weighted Average Vehicle Occupancy

$$= \text{SOV} * (\% \text{ of future carpool users} + \text{existing carpool users}) * \text{Occupancy rate} \\ + \text{nb of Vanpools} * \text{average vanpool occupancy} / \text{SOV} \\ * (\% \text{ of future carpool users} + \text{existing carpool users}) + \text{nb of Vanpools}$$

$$\text{Weighted Average Vehicle Occupancy} = \frac{3000 * (28.84\% + 3.72\%) * 2 + 39 * 8.36}{3000 * (28.84\% + 3.72\%) + 39}$$

≈ 2.24 (VOR)

2009 National Household Travel Survey (NHTS) reported that the average vehicle occupancy for all purpose trips is 1.67. The estimated 2.24 VOR is higher than the national average VOR. The existence of the largest regional intermodal facility on Puyallup and the potential multi-modal growth supports the estimated 2.24 VOR. The 2.24 VOR was used to convert high occupancy person trips estimated in Step 2 to equivalent single occupancy vehicular (SOV) trips.

Formula:

$$\text{Equivalent 24 hour SOV Trips} = \frac{\text{Total High Occupancy Person Trips}}{2.24 \text{ (VOR)}}$$

Output:

Equivalent SOV and VOR

Step 4-Estimate the total 24-hour SOV Trips

This step was needed to estimate the total 24-hour SOV trips by adding the SOV trips estimated in STEP 2 with the equivalent SOV trips estimated in Step 3.

Formula:

$$24 \text{ hour Total SOV Trips} = \text{SOV trips (Step 1)} + \text{Equivalent SOV trips (Step 3)}$$

Output:

24 hour SOV trips

Step 5-Estimate 24-hour SOV Trips use Puyallup Ave.

This step was needed to estimate the 24-hour SOV trips that can reasonably access Puyallup for travel. TAZ characteristics such as existing and future land uses, available access to Puyallup Ave, number of other alternative access to and from each TAZ, existing and possible future traffic patterns, etc. were considered to determine the % of the total trips that will access Puyallup from each TAZ.

Formula:

$$24 \text{ hour SOV Trips use Puyallup} = 24 \text{ hour Total SOV Trips} * \% \text{ trips access Puyallup Ave.}$$

Output:

24 hour SOV trips use Puyallup Ave.

Step 6-Estimate Total PM Peak Hour SOV Trips

This step was needed to estimate the PM peak hour SOV trips using the 24-hour SOV trips that can reasonably access Puyallup to travel. 24-hour traffic counts were conducted at several locations on

Puyallup. The 24-hour traffic counts were used to estimate the percentages of the 24-hour traffic travel during PM peak hour. 8% of the 24-hour traffic travel on Puyallup compared to 10% for the national standard. The national standard was used to model the more conservative scenario.

Formula:

$$\begin{aligned} \text{Total PM Peak Hour SOV Trips} \\ &= 24 \text{ hour SOV Trips use Puyallup} \\ &\quad * \% \text{ of 24 hour traffic travel during PM peak hour.} \end{aligned}$$

Output:

Total PM Peak hour SOV trips use Puyallup Ave.

Step 7-Estimate Directional Distribution

This step was needed to estimate the number of PM peak hour SOV trips generated from and attracted to each TAZ using the total PM peak hour SOV trips estimated in Step 6. The total trips generated from each TAZ consist of two trip legs, trip production, and attraction. The trips production and attraction percentages depend on the land use types (i.e. single vs. multi-family dwelling units, commercial, retail), the peak hours (PM vs. AM peak hours), and the trip purposes (i.e. Non-home-based trips, Home-based work trips, etc.). Each TAZ consists of different land use types and the trips production and attraction percentages differ for each land use type. Therefore, an average trip production and attraction rate/percentage were estimated and used to determine the number of PM peak hour SOV trips generated from and attracted to each TAZ.

Formula:

$$\begin{aligned} \text{PM Peak Hour SOV Trip Production} \\ &= \text{Total PM Peak Hour SOV Trips} * \text{Average Trip Production Rate} \\ \text{PM Peak Hour SOV Trip Attraction} \\ &= \text{Total PM Peak Hour SOV Trips} * \text{Average Trip Attraction Rate} \end{aligned}$$

Output:

Trip production and attraction rates, production and attraction trips

Step 7-Trips Distribution and Assignment

The process of trip distribution determines where the trips end once they leave each TAZ, and the trip assignment determines what route or path trips will take in traveling from and to each TAZ. A MS Excel based trip distribution and assignment methodology was developed, and the estimated SOV PM Peak hour's trips were distributed and assigned considering the following factors:

1. Distances between the TAZs
2. Existing traffic demand and travel pattern
3. Key traffic generators and destinations
4. Land use types
5. Roadway access, major vs. minor

Truck Traffic Forecast:

The existing truck traffic, 2010 Tideflats Area Transportation Study (**TATS**) and ongoing and potential large development studies were reviewed to estimate future truck traffic on Puyallup Ave.

Existing Truck Traffic:

24 HR truck traffic counts were collected at several locations on Puyallup Ave in 2016 to assess the existing truck traffic demand. The truck traffic data helped in identifying the key truck traffic generators on Puyallup and their relationship with the overall Puyallup Avenue's truck traffic demand and operation.

The 24 HR truck traffic data is presented in *Figure 7 2016 Truck Percentages on Puyallup Ave.* The average daily truck traffic (ADTT) on Puyallup between Pacific and Portland Ave. is approximately 9.5%. The high truck traffic demand demonstrates the presence of industrial zone in Puyallup and the proximity of the Tideflats area. The ADTT between G and Portland on Puyallup is greater than ADTT on Puyallup and validates the presence of industrial zone.

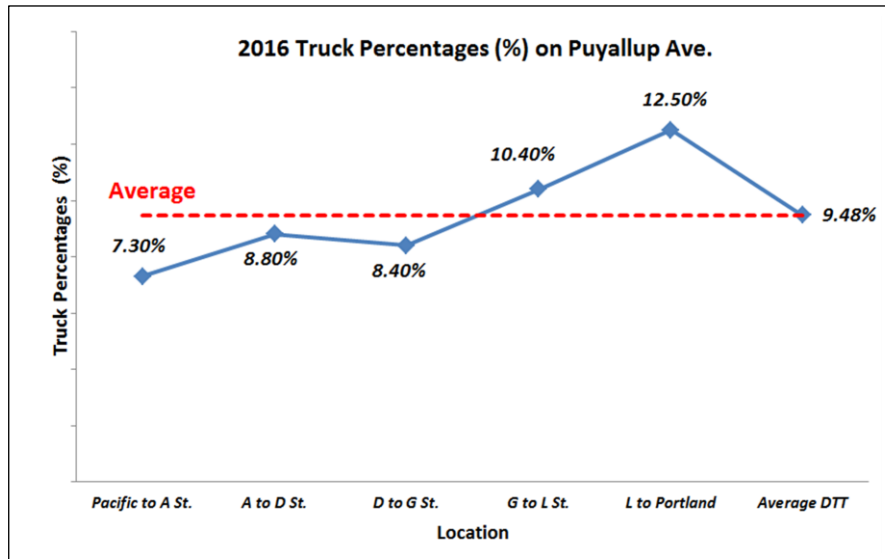


Figure 7 2016 Truck Percentages on Puyallup Ave

Tideflats Area Transportation Study (TATS):

The Truck Volume Forecasting section of the Tideflats Area Transportation Study (Marni C. Heffron, 2010) was reviewed. Comprehensive truck traffic forecasting efforts were undertaken in the TATS. The TATS (Marni C. Heffron, 2010) identified four (4) major industrial employment growth areas in Tacoma Tideflats and Fife. The truck traffic generated from three (3) areas has other alternative routes to access to and from the Tideflats area. The truck traffic generated from “Tacoma Tideflats- Southwest of Puyallup River” area will potentially access Puyallup to travel to and from the Tideflats area via Puyallup Ave/Portland Ave. intersection. TATS recommended a 0.7% (*CAGR-Compound Annual Growth Rate*) employment growth in the “Tacoma Tideflats-Southwest of Puyallup River” area. The following step by step procedure used the existing traffic counts, the total PM Peak Hour SOV Trips (*Ref: Traffic Forecast Section*), and TATS recommended 0.7% employment growth to estimate the 2040 truck traffic percentages.

Steps:

Step 1-Estimate 2040 Truck Traffic

This step was needed to estimate/validate the 2040 truck traffic using the TATS recommended 0.7% employment growth. *Based on PM peak hour intersection turning movement counts*, 25 truck traffic from the Tideflats area (**13% of the total traffic**) accesses Puyallup via Puyallup/Portland Ave. intersection

during the PM peak hour in 2016 compared to 30 vehicles?? in 2040. See the *Figure 8 2016 PM Peak Hour Truck Traffic*, and find the detail calculation below:

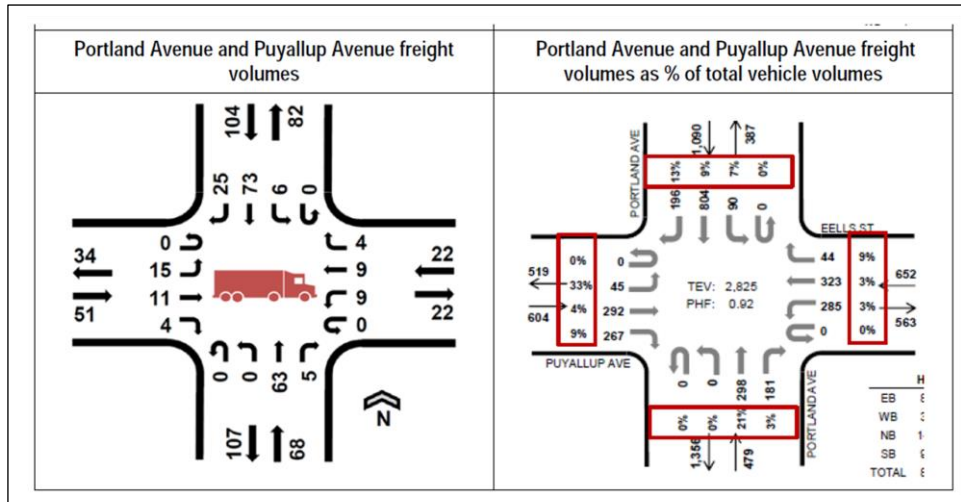


Figure 8 2016 PM Peak Hour Truck Traffic

Assumption:

The growth of truck traffic is proportional to the employment growth.

Formula:

$$2040 \text{ Truck Traffic} = \text{Existing Truck Traffic} * (1 + CAGR)^{\text{Future Year} - \text{Existing Year}}$$

$$2040 \text{ Truck Traffic} = 25 * (1 + 0.7\%)^{2040 - 2015} = 30$$

Output:

2040 truck traffic

Step 2-Estimate 2040 Truck Traffic Percentages

This step was needed to estimate the 2040 truck traffic percentages using the 2040 truck traffic estimated in Step 1 and the total 2040 PM Peak Hour SOV Trips (Ref: *Traffic Forecast Section*).

Formula:

$$2040 \text{ Truck Traffic Percentages} = \frac{2040 \text{ Truck Traffic}}{2040 \text{ Total Traffic}} = \frac{30}{291} = 10\%$$

Output:

2040 truck traffic percentages

The estimated 2040 truck traffic percentage is 10% compared to 13% in 2015. The estimated (following the TATS recommended growth rate) truck percentages are lower than the existing truck percentages.

Proposed Major Developments in the Tideflats Area:

Several large scale developments have been proposed in the Tideflats area. The proposed Interfor Port of Tacoma development (TENW, 2016) is located on 11th Street will mainly access Portland Avenue to travel to and from the Tideflats area and may have significant impacts at Puyallup/Portland Ave. intersection. Therefore, the traffic impacts study for the proposed Interfor Port of Tacoma development

was reviewed to understand the possible effects on Puyallup. The proposed project would consist of the development of up to 1,300,000 square feet of warehousing and/or high-cube warehouse/distribution center use(s), generating 62 PM Peak hour freight vehicles (TENW, 2016). The expected trip distribution showed that 5% (12 trips) of this PM Peak hour truck traffic would access Puyallup from the proposed development, with the majority of them using Portland, Lincoln, SR-509 and I-5 to access the proposed project site. Therefore, potential PM peak hour trips generated from the proposed developments in the tideflats area are insignificant compared to the 2040 forecasted traffic.

2040 Truck Traffic: (TENW, 2016)

The average truck traffic percentage on Puyallup is 9.5% based on 2016 24 HR truck traffic counts, see *Figure 7 2016 Truck Percentages on Puyallup Ave.* 12.5% is the highest truck traffic percentage observed in the industrial zone on Puyallup. 13% PM peak hour truck traffic was observed accessing Puyallup from the Tideflats area, see *Figure 8 2016 PM Peak Hour Truck Traffic*. However, the estimated PM peak hour (per the TATS recommended growth rate) truck percentages are lower than the current PM peak hour truck percentages. Also, the proposed Interfor Port of Tacoma development will have very minimal impact on Puyallup during PM peak hour. Traffic operational analysis uses the truck traffic percentages in estimating the intersection delay. Therefore, it is recommended to use existing truck traffic percentages in determining the PM peak hour intersection delay.

Preferred Scenario – Traffic Operational Analysis:

The step by step methodologies outlined in the “**Traffic Forecasting**” section were used to forecast the 2040 total PM peak hour traffic for the following three (3) scenarios. The estimated 2040 average daily traffic for the following three (3) scenarios is displayed in *Figure 9 2040 Average Daily Traffic*.

1. **Ultimate growth with TMP Mode Share:** The estimated 2040 ADT is 20,000
2. **Practical growth with TMP Model Share:** The estimated 2040 ADT is 16,750
3. **Practical growth with Refined Mode Share:** The estimated 2040 ADT is 17,500

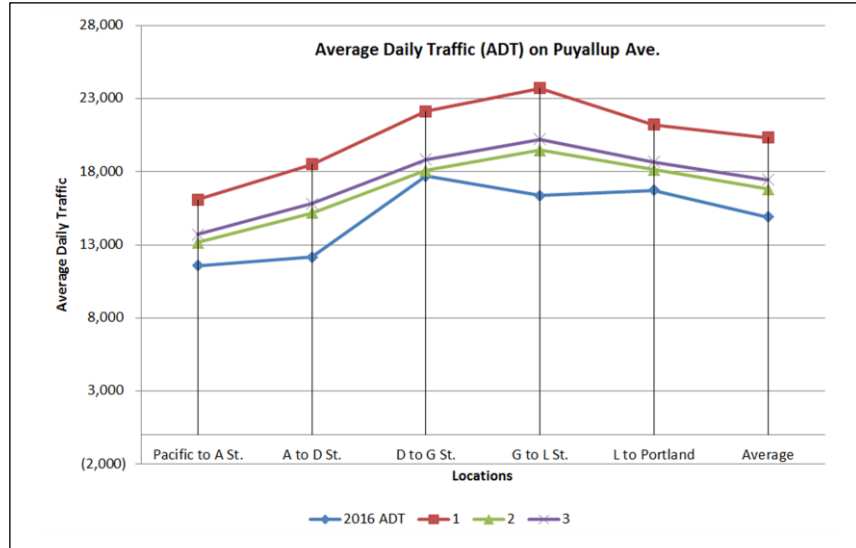


Figure 9 2040 Average Daily Traffic

1st, Ultimate growth with TMP mode shares scenario represents the maximum possible growth with the City adopted mode share. The estimated 2040 ADT will be approximately 20,000, which is 5,000 higher ADT than the current ADT.

2nd, The Practical growth with TMP and refined mode share scenarios represent the same land use growth, but different mode shares will experience almost same ADT in 2040. The practical growth with refined mode share scenario will experience higher ADT than practical growth with TMP mode share scenario.

Recommended Scenarios

Based on land uses, mode share, 2040 ADT, and other data/assumptions, City staff recommends the following two scenarios be used by the consultant to conduct the traffic operations analysis for the Puyallup Avenue Corridor Study.

1. **Ultimate growth with TMP Mode Share:** The estimated 2040 ADT is 20,000
2. **Practical growth with Refined Mode Share:** The estimated 2040 ADT is 17,500

Bibliography

- Marni C. Heffron, T. S. (2010). *Tideflast Area Transportation Study (TATS) -Truck Volume Forecasts*.
- Peers, F. \$. (2015). *City of Tacoma Transportation Master Plan*. City of Tacoma.
- PSRC. (2016). *Transit Access Assessment*. Puget Sound Regional Council.
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- TENW. (2016). *Interfor Port of Tacoma*. Transportation Engineering Northwest.
- Vikash V. Gayah, K. S. (2014). *How Can We Maximize Efficiency and Increase Person Occupancy at*. WSDOT.

Estimated Vehicle Miles Travel (VMT)					
<i>Trip Rate Daily</i>					
Trips Per Person	3.34				
Trips Per Employee	6.25				
Ref: Table 6.21: PSRC Travel Model Documentation (for Version 1.0)					
Scenarios	Population	Employees	Population-Trips	Employee Trips	
2018 - Existing	1,201	3,906	4,011	24,413	
2024 - Future	17,544	15,182	58,597	94,888	
Trips By Mode¹	Existing - City of Tacoma	Future - City of Tacoma	Existing Population Trips	Future Population Trips W/	Future Population Trips W/O
SOV (Single Occupancy Vehicle)	76%	55%	3,049	32,228	44,534
HOV (High Occupancy Vehicle)	10%	23%	401	13,477	5,860
Walk	5%	8%	201	4,688	2,930
Bicycle	4%	4%	160	2,344	2,344
Transit	5%	10%	201	5,860	2,930
		Total	4,011	58,597	58,597
	Future - City of Tacoma	Existing - City of Tacoma	Existing Employee Trips	Future Employee Trips W/ Improvements	Future Employee Trips W/O Improvements
SOV (Single Occupancy Vehicle)	55%	76%	18,554	52,188	72,115
HOV (High Occupancy Vehicle)	23%	10%	2,441	21,824	9,489
Walk	8%	5%	1,221	7,591	4,744
Bicycle	6%	4%	977	5,693	3,796
Transit	10%	5%	1,221	9,489	4,744
		Total	24,412.50	96,785	94,888
Estimated VMT - Population Trips	Trip Length (miles)²	Occupancy Rate	VMT Existing	VMT Future W/ Improvements	VMT Future W/O Improvements
SOV (Single Occupancy Vehicle)	7.8	1	23,779.22	251,381	347,363
HOV (High Occupancy Vehicle)	6	2.24	1,074.47	36,100	15,696
Walk	1.3	1	260.74	6,094	3,809
Bicycle	1.3	1	208.59	3,047	3,047
Transit	11.1	12	185.52	5,420	2,710
		Sub-Total	25,508.54	302,042	372,624
Estimated VMT - Employee Trips					
SOV (Single Occupancy Vehicle)	7.8	1	144,717.30	407,067	562,493
HOV (High Occupancy Vehicle)	6	2.24	6,539.06	58,457	25,416
Walk	1.3	1	1,586.81	9,868	6,168
Bicycle	1.3	1	1,269.45	7,401	4,934
Transit	11.1	12	1,129.08	8,777	4,389
		Sub-Total	155,241.70	491,571	603,400
		Total	180,750.24	793,613.69	976,024.13
		Reduction In VMT W/ Improvements (Miles)			182,410

1. https://www.cityoftacoma.org/government/city_departments/public_works/engineering/transportation_master_plan

2. Comparison of Household Travel Surveys for 1985-1988, 1999, and 2006 in the Puget Sound Region: Figure 4-15. Average Trip Length by Trip Type and Mode: