APPENDIX J

2035 SCREENLINE V/C RATIOS.

VEHICLE VOLUME-TO-CAPACITY SCREENLINES

The Seattle Department of Transportation provided existing traffic volumes collected between 2015 and 2017. Traffic volumes at each location were averaged over all available counts collected to reach representative average weekday conditions. Traffic counts from 2012 to 2014 were used if 2015 to 2017 data were not available for a location. The screenline capacities are the same used in the Seattle 2035 Comprehensive Plan EIS. Existing screenline results are summarized in Exhibit J–1.

Exhibit J–1 Existing PM Screenline Results

LOS Screen Line #	Location	Arterial Crossing Screenline	2015 Capacity		Existing PM Peak Volume	
			EB/NB	WB/SB	EB/NB	WB/SB
	North City Limit - 3rd Ave NW to Aurora Ave N	3rd Ave NW, s/o NW 145th St	770	770	480	380
		Greenwood Ave N, s/o N 145th St	1940	1940	1310	950
		Aurora Ave N, s/o N 145th St	2100	2000	1770	1270
1.11	Screenline V/C Ratio		4810	4710	0.74	0.55
	North City Limit - Meridian Ave N to 15th Ave NE	Meridian Ave N, s/o NE 145th ST	770	770	480	110
		1st Ave NE, s/o 145th St	770	770	420	250
		5th Ave NE, s/o I-5 145th St off-ramp	770	770	470	260
		15th Ave NE, s/o 145th St	2040	2040	890	690
1.12	Screenline V/C Ratio		4350	4350	0.76	0.45

LOS Screen Line #	Location	Arterial Crossing Screenline	2015 Capacity		Existing PM Peak Volume	
			EB/NB	WB/SB	EB/NB	WB/SB
	North City Limit - 30th Ave NE to Lake City Way NE	30th Ave NE, s/o 145th St	770	770	480	260
		Lake City Way NE, s/o NE 145th St	2150	2040	2220	1420
1.13	Screenline V/C Ratio		2920	2810	0.92	0.6
	Magnolia	Magnolia Br, w/o Garfield St off-ramp	770	1540	620	1100
		W Dravus St, e/o 20th Ave W	1540	1540	440	920
		W Emerson Pl, se/o 21st Ave W	1540	1540	780	850
2	Screenline V/C Ratio		3850	4620	0.48	0.62
	Duwamish River - W Seattle Fwy and Spokane St	SW Spokane Br, w/o SW Spokane E St	770	770	410	560
		EB West Seattle Bridge, w/o Alaskan Way Viaduct NB on ramp	6380	NA	3860	NA
		W. Seattle Br., w/o Alaskan Way Viaduct NB on ramp	NA	5380	NA	4680
3.11	Screenline V/C Ratio		7150	6150	0.6	0.85
	Duwamish River - 1st Ave S and 16th Ave S	1st Ave S Br, S/O Point A	8220	8220	2990	2890
		16th Ave S, N/O 16th Ave S BR	1540	1540	480	730
3.12	Screenline V/C Ratio		9760	9760	0.36	0.37
	South City Limit - M L King Jr Wy to Rainier Ave S	Martin Luther King Jr Way S, s/o Norfolk	2040	2040	1190	1260
		51st Ave S, s/o Bangor St	770	770	200	490
		Renton Ave S, se/o Bangor St	770	770	430	690
		Rainier Ave S, se/o 75th Ave SE	1460	1460	790	1130
4.11	Screenline V/C Ratio		5040	5040	0.52	0.71
	South City Limit - Marine Dr SW to Meyers Wy S	Marine View Drive SW, N/O 46th Ave SW	770	770	226	205
		35th Ave SW, N/O SW Roxbury St	1940	1940	697	727
		26th Ave SW, N/O SW Roxbury St	770	770	342	397
		Delridge Wy, NW/o SW Cambridge St	770	770	559	628
		16th Ave SW, n/o SW Cambridge St	770	770	224	216
		8th Ave SW, N/O SW Roxbury St	770	770	297	252
		Olson Pl SW, SW/o 1st Ave S	2040	2040	1070	1442
		Myers Way S, S/O Olson Pl SW	1540	1540	190	312
4.12	Screenline V/C Ratio		9370	9370	0.38	0.45
	South City Limit - SR 99 to Airport Wy S	SR 99 (W Marginal Way S, SE/O Cloverdale St on ramp for NW flow; W Marginal Way S, SE/O Kenyon on ramp for SE flow)	2000	2000	850	1470
		8th Ave S, s/o Director St	770	770	60	170
		East Marginal Way S, SE/O Boeing Dr, S 81st	2040	2040	660	630
		14th Ave S, n/o Director St	1540	1540	560	860
		Airport Way S, N/O S Norfolk St	2000	2000	280	800
4.13	Screenline V/C Ratio		8350	8350	0.29	0.47
	Ship Canal Ballard Bridge	Ballard Bridge	2870	3410	2840	1880
5.11	Screenline V/C Ratio		2870	3410	0.99	0.55
	Ship Canal Fremont Bridge	Fremont Bridge	2210	2210	1950	1390
5.12	Screenline V/C Ratio		2210	2210	0.88	0.63

LOS Screen Line #	Location	Arterial Crossing Screenline	2015 Capacity		Existing PM Peak Volume	
			EB/NB	WB/SB	EB/NB	WB/SB
	Ship Canal Aurora Ave N	Aurora Bridge	5380	5380	4360	3330
5.13	Screenline V/C Ratio		5380	5380	0.81	0.62
	Ship Canal University and Montlake Bridges	University Bridge, SW/O Point A	2210	2210	1400	1810
		Montlake Bridge, S/O Point A	2210	2210	2220	2130
5.16	Screenline V/C Ratio		4420	4420	0.82	0.89
	South of NW 80th St - Seaview Ave NW to 15th Ave NW	Seaview Ave NW, N/O NW 67th St	1010	1010	160	150
		32nd Ave NW, S/O NW 80th St	770	770	220	230
		24th Ave NW, S/O NW 80th St	1010	1010	540	450
		15th Ave NW, S/O NW 80th St	3070	2040	1490	1200
6.11	Screenline V/C Ratio		5860	4830	0.41	0.42
	South of NW 80th St - 8th Ave NW to Greenwood Ave N	8th Ave NW, S/O NW 80th St	1010	1010	1080	900
		3rd Ave NW, S/O NW 80th St	770	770	430	370
		Greenwood Ave N, S/O N 80th St	1010	1010	540	540
6.12	Screenline V/C Ratio		2790	2790	0.74	0.65
	South of NE 80th St - Linden Ave N to 1st Ave NE	Linden Ave N, S/O N 80th St	770	770	320	150
		Aurora Ave N, S/O N 80th St	2150	2150	1870	1580
		Green Lake Drive N, SE/O N 80th St	1010	1010	320	180
		Wallingford Ave N, S/O N 80th St	770	770	250	240
		Stroud Ave N, SW/O N 80th St	770	770	240	160
		1st Ave NE, S/O NE 80th St	770	770	90	270
6.13	Screenline V/C Ratio		6240	6240	0.49	0.41
	South of NE 80th St - 5th Ave NE to 15th Ave NE	5th Ave NE, S/O NE 78th St	770	770	380	290
		Roosevelt Way NE (one-way), N/O NE 73rd St	NA	1840	NA	990
		Lake City Way NE, SW/O NE 80th St	2040	2040	1460	950
		15th Ave NE, S/O NE 75th St	1540	770	530	460
6.14	Screenline V/C Ratio		4350	5420	0.55	0.5
	South of NE 80th St - 20th Ave NE to Sand Point Way NE	20th Ave NE, S/O NE 75th St	770	770	170	130
		25th Ave NE, S/O NE 75th St	1540	770	700	410
		35th Ave NE, S/O NE 75th St	1540	770	890	630
		40th Ave NE, S/O NE 75th St	770	770	420	240
		Sand Point Way NE, S/O NE 74th St	1540	1540	750	690
6.15	Screenline V/C Ratio		6160	4620	0.47	0.45

LOS Screen Line #	Location	Arterial Crossing Screenline	2015 Capacity		Existing PM Peak Volume	
			EB/NB	WB/SB	EB/NB	WB/SB
	West of Aurora Ave - Fremont Pl N to N 65th St	Fremont Pl N, NW/O Fremont Ave N	1940	1940	960	1000
		N 39th St, W/O Fremont Ave N	770	770	540	840
		N 46th St, W/O Phinney Ave N	1540	1540	850	890
		N 50th St, W/O Fremont Ave N	770	770	360	640
		N 65th St, W/O Linden Ave N	770	770	310	450
7.11	Screenline V/C Ratio		5790	5790	0.52	0.66
	West of Aurora Ave - N 80th St to N 145th St	N 80th St, W/O Linden Ave N	960	960	580	670
		N 85th St, W/O Linden Ave N	1540	1540	690	970
		N 105th St w/O Evanston	1540	1540	750	1050
		N 125th St, W/O Aurora Ave N	1010	1010	390	380
		N 130th St, W/O Linden Ave N	960	960	520	600
		N 145th St, W/O Linden Ave	1540	1540	520	690
7.12	Screenline V/C Ratio		7550	7550	0.46	0.58
	South of Lake Union	Valley St, W/O Fairview Ave N				
		Mercer St, W/O Fairview Ave N for E flow; E/O Boren Ave N for W flow	6150	6150	3040	2610
		Republican St, W/O Eastlake Ave				
		Denny Way, E/O Minor Ave				
8	Screenline V/C Ratio		6150	6150	0.49	0.42
	South of Spokane St - Beach Dr SW to W Marginal Way SW	Beach Dr SW, SE/O 61st Ave SW	770	770	200	230
		55th Ave SW, S/O SW Charlestown St	770	770	120	80
		California Ave SW, S/O SW Charlestown St	1010	1010	570	850
		Fauntleroy Wy SW (West Seattle Br, NE/O Fauntleroy Wy SW for NE flow; NE/O 35th Ave SW for SW flow)	3590	3590	1370	2510
		SW Avalon Wy, N/O 30th Ave SW	1010	1010	510	730
		Delridge Wy, S/O SW Andover St	1010	1010	640	350
		W Marginal Way SW	2000	2000	640	330
9.11	Screenline V/C Ratio		10160	10160	0.4	0.5
	South of Spokane St - E Marginal Way S to Airport Way S	E Marginal Way SW, N/O Alaskan Wy Vi SB	1150	1150	480	970
		Alaskan Wy, N/O East Marginal Way S	3590	3590	2530	2050
		1st Ave S, S/O S Spokane SR St	2040	2040	690	980
		4th Ave S, S/O S Spokane SR St	2040	2040	1440	1340
		6th Ave S, S/O S Forest St	1540	1940	480	630
		Airport Way S, N/O S Spokane St for SB flow; S/O S Spokane St for NB flow	2040	2040	600	740
9.12	Screenline V/C Ratio		12400	12800	0.5	0.52

LOS Screen Line #	Location	Arterial Crossing Screenline	2015 Capacity		Existing PM Peak Volume	
			EB/NB	WB/SB	EB/NB	WB/SB
	South of Spokane St - 15th Ave S to Rainier Ave S	15th Ave S, S/O S Bradford St	2920	1540	1160	790
		Beacon Ave S, S/O S Spokane St	1010	1010	520	650
		Martin Luther King Jr Way S, N/O S Andover St	2040	2040	790	1110
		Rainier Ave S, SE/O M LK	2040	2040	1000	1360
9.13	Screenline V/C Ratio		8010	6630	0.43	0.59
	South of S Jackson St - Alaskan Way S to 4th Ave S	Alaskan Wy S, N of S King St	1540	1540	380	620
		SR 99 Tunnel	6080	6080	5190	5440
		1st Ave S, N/O S King St	2040	2040	370	540
		2nd Ave S, N/O S King St	1540	1540	280	290
		4th Ave S, S/O 2nd Ave ET S	2920	1940	1390	1150
10.11	Screenline V/C Ratio		14120	13140	0.54	0.61
	South of S Jackson St - 12th Ave S to Lakeside Ave S	12th Ave S, S/O S Weller St	1540	1540	970	670
		Rainier Ave S, SE/O Boren Ave S	2040	2040	1500	1410
		23rd Ave S, S/O S Jackson St	1540	1540	420	820
		Martin Luther King Jr Way S, S/O S Jackson St	1010	1010	610	710
		31st Ave S, S/O S Jackson St	960	960	210	490
		Lakeside Ave S	770	770	350	570
10.12	Screenline V/C Ratio		7860	7860	0.52	0.59
	East of CBD	S Jackson St, E/O 5th Ave S	1010	1010	480	400
		Yesler Way, W/O 6th Ave	770	770	190	440
		James St, NE/O 6th Ave	2040	2040	590	1200
		Cherry St, NE/O 6th Ave	1150	NA	760	NA
		Madison St, SW/O 7th Ave	1540	1630	170	1540
		Spring St, SW/O 6th Ave	2760	NA	1120	NA
		Seneca St, NE/O 6th Ave	NA	2760	NA	560
		University, SW/O 6th Ave	2330	NA	710	NA
		Union St, NE/O 7th Ave	NA	3500	NA	710
		Pike St, SW/O Terry Ave	1540	1540	730	200
		Pine St, NE/O 9th Ave	770	960	130	470
		Olive Way, NE/O 9th Ave	3500	NA	1180	NA
		Howell St, NE/O 9th Ave	3940	NA	1190	NA
12.12	Screenline V/C Ratio		21350	14210	0.41	0.41
	East of I-5 NE Northgate Way to NE 145th St	NE Northgate Way, E/O 5th Ave NE	2040	2040	1350	1170
		NE 125th St (Roosevelt Way NE, SE/O NE 130th St N)	1010	1010	760	980
		NE 145th St, E/O 5th Ave NE	1540	1540	720	500
13.11	Screenline V/C Ratio		4590	4590	0.62	0.58

LOS Screen Line #	Location	Arterial Crossing Screenline	2015 Capacity		Existing PM Peak Volume	
			EB/NB	WB/SB	EB/NB	WB/SB
	East of I-5 NE 65th St to NE 80th St	NE 80th St, E/O 5th Ave NE	770	770	1100	490
		NE 75th St, W/O Roosevelt Way NE	2040	2040	720	1050
		NE 70th St, W/O Roosevelt Way NE	770	770	370	330
		NE 65th St, W/O Roosevelt Way NE	1540	1540	570	690
13.12	Screenline V/C Ratio		5120	5120	0.54	0.5
	East of I-5 NE Pacific St to NE Ravenna Blvd	NE Pacific St, NW/O NE Boat St	1010	1010	1020	750
		NE 40th St, E/O 7th Ave NE	770	770	510	290
		NE 42nd St, E/O 7th Ave NE	770	770	330	190
		NE 45th St W/O Roosevelt Way NE	2040	2040	1210	1210
		NE 50th St W/O Roosevelt Way NE	1540	1540	800	910
		NE Ravenna Blvd, W/O Roosevelt Way	1010	1010	390	400
13.13	Screenline V/C Ratio		7140	7140	0.6	0.53

Source: Toward a Sustainable Seattle, 2005 Comprehensive Plan; SDOT 2015-2017 Traffic Counts; Fehr & Peers, 2017.

2035 Screenline V/C Ratios

The arterial volumes for each of the future year alternatives were calculated using the difference method. Results are summarized in Table A.3.4-2 The capacities of some screenlines are different from the base year due to the completion of future roadway projects that add or remove capacity (e.g. new lanes, road diets, BRT lanes). Capacity changes were based on the roadway capacities set in the travel model. Based on the Bicycle Master Plan's planned cycle track and bicycle lane locations, road diets were assumed on the following roadways:

- 15th Ave NE (NE 117th St–NE 145th St, Pacific Place)
- Pinehurst Way (Roosevelt Way NE–15th Ave NE)
- Sand Point Way NE (NE 65th St–NE 75th St)
- N 130th St (Linden Ave N–5th Ave NE)
- Harvard Ave E (E Roanoke St–E Shelby St)
- Westlake Ave N (Valley St–south of Aurora Ave N)
- Fairview Ave N (Valley St–Eastlake Ave E)
- Eastlake Ave (Stewart St–Fairview Ave)
- 1st Ave (Roy St–Broad St)
- Broad St (Alaskan Way–2nd Ave)
- Dexter Ave (Mercer St–Denny Way)
- 5th Ave N (Roy St–Denny Way, Seneca St–S Jackson St)
- S Jackson St (20th Ave S–ML King Jr Way S)

- S Dearborn St (7th Ave S to Rainier Ave S)
- 12th Ave S (S Dearborn St–E Yesler Way)
- 15th Ave S (S Oregon St–S Spokane St)
- Rainier Ave S (12th Ave S–S Massachusetts St, S McClellan St–ML King Jr Way S)
- ML King Jr Way S (Rainier Ave S–S Norfolk St)
- Airport Way S (4th Ave–S Norfolk St)
- East Marginal Way (1st Ave–S 81st Pl)
- SW Admiral Way (Fairmount Ave SW–Harbor Ave SW)
- Fauntleroy Way SW (SW Alaska St–36th Ave SW)
- 16th Ave SW (SW Roxbury St–SW Avalon Way)
- Delridge Way SW (SW Andover St–Chelan Ave SW)
- Olson Pl SW (SW Roxbury St–S Cloverdale St)

Exhibit J–2 2035 PM Screenline V/C Ratio Results

LOS Screen Line #	Location	Arterial Crossing Screenline	2035 Capacity		2035 Alt 1 Model (No Action)		2035 Alt 2 Model		2035 Alt 3 Model	
			EB/NB	WB/SB	EB/NB	WB/SB	EB/NB	WB/SB	EB/NB	WB/SB
	North City Limit - 3rd Ave NW to Aurora Ave N	3rd Ave NW, s/o NW 145th St	770	770	820	680	810	720	820	710
		Greenwood Ave N, s/o N 145th St	1940	1940	1830	1300	1850	1310	1830	1330
		Aurora Ave N, s/o N 145th St	2100	2000	2500	1850	2520	1870	2510	1880
1.11	Screenline V/C Ratio		4810	4710	1.07	0.81	1.08	0.83	1.07	0.83
	North City Limit - Meridian Ave N to 15th Ave NE	Meridian Ave N, s/o NE 145th ST	770	770	780	350	790	350	790	350
		1st Ave NE, s/o 145th St	770	770	750	360	750	360	750	370
		5th Ave NE, s/o I-5 145th St off-ramp	770	770	690	390	690	380	660	390
		15th Ave NE, s/o 145th St	1010	1010	890	760	890	760	890	760
1.12	Screenline V/C Ratio		3320	3320	0.93	0.56	0.93	0.56	0.93	0.56
	North City Limit - 30th Ave NE to Lake City Way NE	30th Ave NE, s/o 145th St	770	770	660	400	660	400	660	410
		Lake City Way NE, s/o NE 145th St	2150	2040	2670	1800	2650	1770	2650	1780
1.13	Screenline V/C Ratio		2920	2810	1.14	0.78	1.14	0.78	1.14	0.78
	Magnolia	Magnolia Br, w/o Garfield St off-ramp	770	1540	620	1240	620	1250	620	1270
		W Dravus St, e/o 20th Ave W	1540	1540	640	920	640	920	640	920
		W Emerson Pl, se/o 21st Ave W	1540	1540	830	790	830	850	830	850
2	Screenline V/C Ratio		3850	4620	0.54	0.64	0.54	0.65	0.54	0.66
	Duwamish River - W Seattle Fwy and Spokane St	SW Spokane Br, w/o SW Spokane E st	770	770	660	890	670	890	670	920
		EB West Seattle Bridge, w/o Alaskan Way Viaduct NB on ramp	6380		4230	NA	4270	NA	4280	NA
		W. Seattle Br., w/o Alaskan Way Viaduct NB on ramp		5380	NA	6080	NA	6150	NA	6140
3.11	Screenline V/C Ratio		7150	6150	0.68	1.13	0.69	1.14	0.69	1.15
	Duwamish River - 1st Ave S and 16th Ave S	1st Ave S Br, S/O Point A	8220	8220	2990	2890	2990	2890	2990	2890
		16th Ave S, N/O 16th Ave S BR	1540	1540	880	1020	930	1030	920	1040
3.12	Screenline V/C Ratio		9760	9760	0.4	0.4	0.4	0.4	0.4	0.4
	South City Limit - M L King Jr Wy to Rainier Ave S	Martin Luther King Jr Way S, s/o Norfolk	2040	2040	1190	1710	1240	1860	1230	1830
		51st Ave S, s/o Bangor St	770	770	270	880	320	890	320	900
		Renton Ave S, se/o Bangor St	770	770	540	1110	560	1110	560	1110
		Rainier Ave S, se/o 75th Ave SE	1460	1460	1150	1600	1190	1600	1190	1600
4.11	Screenline V/C Ratio		5040	5040	0.63	1.05	0.66	1.08	0.66	1.08

LOS Screen Line #	Location	Arterial Crossing Screenline	2035 Capacity		2035 Alt 1 Model (No Action)		2035 Alt 2 Model		2035 Alt 3 Model	
			EB/NB	WB/SB	EB/NB	WB/SB	EB/NB	WB/SB	EB/NB	WB/SB
	South City Limit - Marine Dr SW to Meyers Wy S	Marine View Drive SW, N/O 46th Ave SW	770	770	380	240	390	230	400	230
		35th Ave SW, N/O SW Roxbury St	1010	1010	890	950	900	950	900	950
		26th Ave SW, N/O SW Roxbury St	770	770	410	550	420	550	410	540
		Delridge Wy, NW/o SW Cambridge St	770	770	750	750	780	780	790	790
		16th Ave SW, N/O SW Cambridge St	770	770	240	550	250	550	250	550
		8th Ave SW, N/O SW Roxbury St	770	770	350	440	370	440	370	440
		Olson Pl SW, SW/O 1st Ave S	1010	1010	1070	1440	1070	1440	1070	1440
		Myers Way S, S/O Olson Pl SW	1540	1540	210	730	200	720	200	710
4.12	Screenline V/C Ratio		7410	7410	0.58	0.76	0.59	0.76	0.59	0.76
	South City Limit - SR 99 to Airport Wy S	SR 99 (W Marginal Way S, SE/O Cloverdale St on ramp for NW flow; W Marginal Way S, SE/O Kenyon on ramp for SE flow)	2000	2000	910	2210	950	2230	940	2210
		8th Ave S, s/o Director St	770	770	70	350	70	340	70	350
		East Marginal Way S, SE/O Boeing Dr, S 81st	2040	2040	770	980	720	970	730	970
		14th Ave S, n/o Director St	1540	1540	830	1210	880	1200	890	1210
		Airport Way S, N/O S Norfolk St	1000	1000	820	1200	860	1190	870	1210
4.13	Screenline V/C Ratio		7350	7350	0.46	0.81	0.47	0.81	0.48	0.81
	Ship Canal Ballard Bridge	Ballard Bridge	2870	3410	3650	2540	3680	2560	3710	2570
5.11	Screenline V/C Ratio		2870	3410	1.27	0.74	1.28	0.75	1.29	0.75
	Ship Canal Fremont Bridge	Fremont Bridge	2210	2210	2150	1760	2160	1790	2170	1790
5.12	Screenline V/C Ratio		2210	2210	0.97	0.8	0.98	0.81	0.98	0.81
	Ship Canal Aurora Ave N	Aurora Bridge	5380	5380	5090	4510	5150	4560	5200	4580
5.13	Screenline V/C Ratio		5380	5380	0.95	0.84	0.96	0.85	0.97	0.85
	Ship Canal University and Montlake Bridges	University Bridge, SW/O Point A	2210	2210	1720	2200	1750	2230	1770	2240
		Montlake Bridge, S/O Point A	2210	2210	2580	2360	2620	2390	2630	2400
5.16	Screenline V/C Ratio		4420	4420	0.97	1.03	0.99	1.05	1	1.05
	South of NW 80th St - Seaview Ave NW to 15th Ave NW	Seaview Ave NW, N/O NW 67th St	1010	1010	160	150	160	150	160	150
		32nd Ave NW, S/O NW 80th St	770	770	280	290	270	280	270	290
		24th Ave NW, S/O NW 80th St	1010	1010	540	490	540	490	540	500
		15th Ave NW, S/O NW 80th St	3070	2040	1830	1340	1830	1340	1830	1350
6.11	Screenline V/C Ratio		5860	4830	0.48	0.47	0.48	0.47	0.48	0.47
	South of NW 80th St - 8th Ave NW to Greenwood Ave N	8th Ave NW, S/O NW 80th St	1010	1010	1510	1320	1510	1370	1530	1400
		3rd Ave NW, S/O NW 80th St	770	770	570	570	580	560	580	570
		Greenwood Ave N, S/O N 80th St	1010	1010	660	690	650	700	650	710
6.12	Screenline V/C Ratio		2790	2790	0.98	0.93	0.98	0.95	0.99	0.96
	South of NE 80th St - Linden Ave N to 1st Ave NE	Linden Ave N, S/O N 80th St	770	770	500	280	490	270	500	270
		Aurora Ave N, S/O N 80th St	2150	2150	2120	2030	2130	2080	2140	2090
		Green Lake Drive N, SE/O N 80th St	1010	1010	350	180	370	180	360	180
		Wallingford Ave N, S/O N 80th St	770	770	340	360	340	360	350	370
		Stroud Ave N, SW/O N 80th St	770	770	350	210	350	220	330	230
		1st Ave NE, S/O NE 80th St	770	770	200	370	200	390	200	390
6.13	Screenline V/C Ratio		6240	6240	0.62	0.55	0.62	0.56	0.62	0.57
	South of NE 80th St - 5th Ave NE to 15th Ave NE	5th Ave NE, S/O NE 78th St	770	770	540	490	550	530	550	540
		Roosevelt Way NE (one-way), N/O NE 73rd St		1840	NA	1150	NA	1190	NA	1200
		Lake City Way NE, SW/O NE 80th St	2040	2040	1710	1190	1720	1230	1720	1260
		15th Ave NE, S/O NE 75th St	1540	770	610	580	600	590	600	600
6.14	Screenline V/C Ratio		4350	5420	0.66	0.63	0.66	0.65	0.66	0.66
	South of NE 80th ST - 20th Ave NE to Sand Point Way NE	20th Ave NE, S/O NE 75th St	770	770	420	170	440	170	440	170
		25th Ave NE, S/O NE 75th St	1540	770	920	610	940	620	940	630
		35th Ave NE, S/O NE 75th St	1540	770	1020	720	1020	760	1030	760
		40th Ave NE, S/O NE 75th St	770	770	490	270	490	260	490	270
		Sand Point Way NE, S/O NE 74th St	1540	1540	960	780	960	780	960	790
6.15	Screenline V/C Ratio		6160	4620	0.62	0.55	0.62	0.56	0.62	0.57

LOS Screen Line #	Location	Arterial Crossing Screenline	2035 Capacity		2035 Alt 1 Model (No Action)		2035 Alt 2 Model		2035 Alt 3 Model	
			EB/NB	WB/SB	EB/NB	WB/SB	EB/NB	WB/SB	EB/NB	WB/SB
	West of Aurora Ave - Fremont Pl N to N 65th St	Fremont Pl N, NW/O Fremont Ave N	1010	1010	1030	1000	1030	1000	1040	1000
		N 39th St, W/O Fremont Ave N	770	770	540	880	540	880	540	890
		N 46th St, W/O Phinney Ave N.	1540	820	860	890	860	890	860	890
		N 50th St, W/O Fremont Ave N	770	770	710	790	710	800	710	810
		N 65th St, W/O Linden Ave N	770	770	350	510	350	530	350	530
7.11	Screenline V/C Ratio		4860	4140	0.72	0.98	0.72	0.99	0.72	1
	West of Aurora Ave - N 80th St to N 145th St	N 80th St, W/O Linden Ave N	960	960	770	840	760	860	770	860
		N 85th St, W/O Linden Ave N	1540	1540	990	1210	960	1240	970	1260
		N 105th St W/O Evanston	820	820	750	1050	750	1050	750	1050
		N 125th St, W/O Aurora Ave N	1010	1010	490	420	510	420	500	430
		N 130th St, W/O Linden Ave N	960	960	600	680	600	680	600	670
		N 145th St, W/O Linden Ave	1540	1540	720	920	770	970	740	950
7.12	Screenline V/C Ratio		6830	6830	0.63	0.75	0.64	0.76	0.63	0.77
	South of Lake Union	Valley St, W/O Fairview Ave N								
		Mercer St, W/O Fairview Ave N for E flow; E/O Boren Ave N for W flow	6150	6150	4320	5130	4340	5220	4330	5230
		Republican St, W/O Eastlake Ave								
		Denny Way, E/O Minor Ave								
8	Screenline V/C Ratio		6150	6150	0.64	0.49	0.65	0.5	0.64	0.49
	South of Spokane St - Beach Dr SW to W Marginal Way SW	Beach Dr SW, SE/O 61st Ave SW	770	770	200	260	200	250	200	260
		55th Ave SW, S/O SW Charlestown St	770	770	180	90	180	90	180	90
		California Ave SW, S/O SW Charlestown St	1010	1010	640	990	650	1000	660	1010
		Fauntleroy Wy SW (West Seattle Br, NE/O Fauntleroy Wy SW for NE flow; NE/O 35th Ave SW for SW flow)	3590	3590	1670	3080	1700	3140	1710	3150
		SW Avalon Wy, N/O 30th Ave SW	1010	1010	700	1000	730	1000	730	1010
		Delridge Wy, S/O SW Andover St	1010	1010	640	350	640	350	640	350
		W Marginal Way SW	2000	2000	840	1010	900	990	910	950
9.11	Screenline V/C Ratio		10160	10160	0.48	0.67	0.49	0.67	0.5	0.67
	South of Spokane St - E Marginal Way S to Airport Way S	E Marginal Way SW, N/O Alaskan Wy Vi SB	1150	1150	530	1120	510	1120	520	1130
		Alaskan Wy, N/O East Marginal Way S	3590	3590	2870	2780	2930	2790	2940	2820
		1st Ave S, S/O S Spokane SR St	2040	2040	1120	1470	1150	1470	1150	1480
		4th Ave S, S/O S Spokane SR St	2040	2040	1890	2050	1920	2060	1920	2060
		6th Ave S, S/O S Forest St	1540	1940	590	1030	600	1040	590	1010
		Airport Way S, N/O S Spokane St for SB flow; S/O S Spokane St for NB flow	2040	2040	880	740	900	740	890	740
9.12	Screenline V/C Ratio		12400	12800	0.64	0.72	0.65	0.72	0.65	0.72
	South of Spokane St - 15th Ave S to Rainier Ave S	15th Ave S, S/O S Bradford St	2920	1540	1160	960	1160	960	1160	950
		Beacon Ave S, S/O S Spokane St	1010	1010	940	1060	970	1050	980	1050
		Martin Luther King Jr Way S, N/O S Andover St	1010	1010	790	1110	790	1110	790	1110
		Rainier Ave S, SE/O M LK	2040	2040	1370	1960	1430	1970	1430	1960
9.13	Screenline V/C Ratio		6980	5600	0.61	0.91	0.62	0.91	0.62	0.91
	South of S Jackson St - Alaskan Way S to 4th Ave S	Alaskan Wy S, N of S King St	2140	2040	710	1770	720	1760	710	1760
		SR 99 Tunnel	3940	3940	3960	3960	3960	3960	3960	3960
		1st Ave S, N/O S King St	2040	2040	1210	1640	1220	1660	1220	1640
		2nd Ave S, N/O S King St	1540	1540	620	570	620	570	610	560
		4th Ave S, S/O 2nd Ave ET S	2920	1940	1390	1510	1390	1500	1390	1500
10.11	Screenline V/C Ratio		12580	11500	0.63	0.82	0.63	0.82	0.63	0.82
	South of S Jackson St - 12th Ave S to Lakeside Ave S	12th Ave S, S/O S Weller St	1010	1010	1200	990	1240	1000	1230	1000
		Rainier Ave S, SE/O Boren Ave S	1010	1010	1500	1410	1500	1410	1500	1410
		23rd Ave S, S/O S Jackson St	1060	1060	420	820	420	820	420	820
		Martin Luther King Jr Way S, S/O S Jackson St	1010	1010	1030	1080	1060	1080	1060	1080
		31st Ave S, S/O S Jackson St	960	960	330	830	330	830	330	830
		Lakeside Ave S	770	770	360	760	360	770	360	760
10.12	Screenline V/C Ratio		5820	5820	0.83	1.01	0.84	1.02	0.84	1.02

LOS Screen Line #	Location	Arterial Crossing Screenline	2035 Capacity		2035 Alt 1 Model (No Action)		2035 Alt 2 Model		2035 Alt 3 Model	
			EB/NB	WB/SB	EB/NB	WB/SB	EB/NB	WB/SB	EB/NB	WB/SB
	East of CBD	S Jackson St, E/O 5th Ave S	1010	1010	580	430	600	430	600	440
		Yesler Way, W/O 6th Ave	770	770	190	450	190	450	190	450
		James St, NE/O 6th Ave	2040	2040	590	1440	610	1470	610	1450
		Cherry St, NE/O 6th Ave	1150		800	NA	840	NA	860	NA
		Madison St, SW/O 7th Ave	1540	1630	170	1750	170	1750	170	1760
		Spring St, SW/O 6th Ave	2760		1220	NA	1230	NA	1200	NA
		Seneca St, NE/O 6th Ave		2760	NA	670	NA	690	NA	690
		University, SW/O 6th Ave	2330		820	NA	830	NA	830	NA
		Union St, NE of 7th Ave		3500	NA	710	NA	710	NA	710
		Pike St, SW/O Terry Ave	1540	1540	910	360	940	400	930	390
		Pine St, NE/O 9th Ave	770	960	260	590	290	640	260	620
		Olive Way, NE/0 9th Ave	3500		1470	NA	1480	NA	1460	NA
		Howell St, NE/O 9th Ave	3940		1210	NA	1210	NA	1220	NA
12.12	Screenline V/C Ratio		21350	14210	0.39	0.45	0.39	0.46	0.39	0.46
	East of I-5 NE Northgate Way to NE 145th St	NE Northgate Way, E/O 5th Ave NE	2040	2040	1590	1370	1590	1390	1580	1430
		NE 125th St (Roosevelt Way NE, SE/O NE 130th St N)	1010	1010	890	1280	870	1280	870	1320
		NE 145th St, E/O 5th Ave NE	1540	1540	940	740	940	720	940	730
13.11	Screenline V/C Ratio		4590	4590	0.74	0.74	0.74	0.74	0.74	0.76
	East of I-5 NE 65th St to NE 80th St	NE 80th St, E/O 5th Ave NE	770	770	1210	640	1210	670	1190	690
		NE 75th St, W/O Roosevelt Way NE	2040	2040	730	1340	740	1380	750	1400
		NE 70th St, W/O Roosevelt Way NE	770	770	520	420	580	450	550	440
		NE 65th St, W/O Roosevelt Way NE	1540	1540	650	810	610	800	610	800
13.12	Screenline V/C Ratio		5120	5120	0.61	0.63	0.61	0.64	0.61	0.65
	East of I-5 NE Pacific St to NE Ravenna Blvd	NE Pacific St, NW/O NE Boat St	1010	1010	1150	1080	1160	1100	1160	1110
		NE 40th St, E/O 7th Ave NE	770	770	630	440	630	460	640	460
		NE 42nd St, E/O 7th Ave NE	770	770	380	260	370	260	370	260
		NE 45th St W/O Roosevelt Way NE	1010	1010	1210	1210	1210	1210	1210	1210
		NE 50th St W/O Roosevelt Way NE	1540	1540	1030	1120	1050	1150	1060	1150
		NE Ravenna Blvd, W/O Roosevelt Way	1010	1010	490	490	490	510	500	510
13.13	Screenline V/C Ratio		6110	6110	0.8	0.75	0.8	0.77	0.81	0.77

Source: Fehr & Peers, 2017.

TRANSIT DAILY BOARDINGS AND CROWDING

The growth in daily boardings was estimated based on the growth in the AM period in the base year and horizon year models. Model results are in Exhibit J–3.

Exhibit J–3 AM 3-hour Model Transit Boardings Analysis

	Total 3 Hour Boardings	2015 - 2035 Growth	% Growth
2015	76,200		
2035 Alt 1	132,500	56,300	74%
2035 Alt 2	136,700	60,500	79%
2035 Alt 3	136,700	60,500	79%

Source: Fehr & Peers, 2017.

Fall 2016 transit passenger load data and crowd thresholds were provided by King County Metro. Equivalent route data was provided for future RapidRide lines. A summary of existing transit crowding is in Exhibit J–4.

Exhibit J–4 Existing AM Period Transit Crowding Ratio

BRT Route	Equivalent Route	Crowd Threshold (number of people)	Max Average Load	Ratio of Existing Max Passenger Load to Crowd Threshold
C – West Seattle/Downtown		75	50	0.67
D – Ballard/Downtown		75	38	0.51
E – Aurora/Downtown		75	57	0.76
RR 1 - Madison	Route 12	53	25	0.47
RR 2 – West Seattle/Downtown	Route 120	80	40	0.5
RR 3 – Mt Baker/Downtown	Route 7	80	22	0.28
RR 4 – Rainier/23rd Ave	Route 7/48	80	22	0.28
RR 5 – Ballard/45th/UW	Route 44	80	44	0.55
RR 6 – Northgate/Ballard/Westlake	Route 40	80	48	0.6
RR 7 – Northgate/Roosevelt/ Eastlake/Downtown	Route 70	80	35	0.44

Source: Fehr & Peers, 2017.

The forecasted passenger load ratio to crowding threshold is in Exhibit J–5 for each 2035 alternative. It is assumed that the crowding threshold for all routes is the same as the current C, D, and E RapidRide lines.

Exhibit J–5 2035 AM Period Transit Crowding Ratio

BRT Route	2035 Model Headway	# of Buses in 1 Hr	No Action Alt 1		Alt 2		Alt 3	
			Additional riders per peak hour trip	Passenger Load to Crowd Threshold Ratio	Additional riders per peak hour trip	Passenger Load to Crowd Threshold Ratio	Additional riders per peak hour trip	Passenger Load to Crowd Threshold Ratio
C – West Seattle/Downtown	6	10	6	0.75	6	0.75	8	0.77
D – Ballard/Downtown	6	10	0	0.51	0	0.51	0	0.51
E – Aurora/Downtown	6	10	10	0.89	10	0.89	10	0.89
RR 1 - Madison	6	10	12	0.49	13	0.51	13	0.5
RR 2 – West Seattle/Downtown	6	10	40	1.06	43	1.11	43	1.11
RR 3 – Mt Baker/Downtown	6	10	0	0.3	1	0.31	1	0.31
RR 4 – Rainier/23rd Ave	6	10	0	0.3	0	0.3	0	0.3
RR 5 – Ballard/45th/UW	6	10	24	0.91	27	0.94	29	0.97
RR 6 – Northgate/Ballard/Westlake	6	10	60	1.45	67	1.53	72	1.59
RR 7 – Northgate/Roosevelt/ Eastlake/Downtown	6	10	43	1.03	43	1.03	48	1.1

Source: Fehr & Peers, 2017.

STATE FACILITIES

Exhibit J–6 State Facilities AADT and V/C ratios

State Facility	Location	Capacity	Existing		2035 Forecast			2035 Forecasted V/C Ratios		
			AADT	V/C Ratio	Alt 1	Alt 2	Alt 3	Alt 1	Alt 2	Alt 3
I-5	Between NE Northgate Way and NE 130th St	204,225	213,000	1.04	249,000	249,000	248,000	1.22	1.22	1.22
I-5	Ship Canal Bridge	162,015	206,000	1.27	226,000	228,000	229,000	1.39	1.41	1.41
I-5	Between I-90 and W Seattle bridge (north of S Forest St ramp)	194,500	242,000	1.24	263,000	262,000	262,000	1.35	1.35	1.35
I-5	North of Boeing Access Rd ramp	194,500	206,000	1.06	240,000	239,000	239,000	1.23	1.23	1.23
I-90	East of Rainer Ave S	116,600	132,000	1.13	156,000	157,000	157,000	1.34	1.35	1.35
SR 509	Between S 112th St and Cloverdale St	93,100	57,000	0.61	78,000	77,000	77,000	0.84	0.84	0.84
SR 519	West of 4th Ave	32,400	28,000	0.86	32,000	32,000	32,000	0.99	0.99	0.99
SR 520	Bridge	77,900	68,000	0.87	86,000	88,000	88,000	1.1	1.13	1.13

Source: WSDOT Community Planning Portal; Fehr & Peers, 2017.

EXISTING CORRIDOR TRAVEL TIMES

Corridor travel times were estimated using Google Map search results for each study corridor during a weekday PM peak hour. Each travel time corridor was mapped and the “depart at” time was set to 5:00 PM, 5:15 PM, 5:30 PM, and 5:45 PM for a Wednesday in March. The lower and upper travel times reported by Google were recorded, and the travel time was calculated as the average of the minimum times plus 75 percent of the difference between the minimum and maximum times. This methodology accounts for the higher travel times experienced during the PM peak hour.

SPEED AND TRAVEL TIME THRESHOLDS

The 2010 Highway Capacity Manual (HCM) defines level of service (LOS) thresholds for speed along urban streets. LOS is a concept used to describe traffic operations by assigning a letter grade of A through F, where A represents free-flow conditions and F represents highly congested conditions.

Since speed is the inverse of travel time, these thresholds can be communicated in terms of travel time as shown in Exhibit J–7. In simple terms, if you are traveling at half the free-flow speed, your travel time will be twice that of the free-flow travel time.

Exhibit J–7 LOS Thresholds for Travel Speeds and Travel Time

LOS	Speed Thresholds – Percent of Free-Flow Speed	Travel Time Thresholds – Ratio between PM Peak Hour Travel Time and Travel Time at Free-Flow Speed
A-C	>50%	<2.0
D	>40-50%	2.0 to <2.5
E	>30-40%	2.5 to <3.33
F	≤30%	≥3.33

Source: Highway Capacity Manual 2010, Transportation Research Board.

FREE-FLOW TRAVEL TIME ADJUSTMENTS

The HCM criteria were developed for segments between intersections, rather than including intersections. In general, the corridors used in this study span multiple blocks and thus incorporate the delay experienced at intersections. Therefore, adjustments to the free-flow travel time were made based on the number of signalized intersections to account for the number of mid-segment intersections and to more accurately represent observed conditions.

THE DIFFERENCE METHOD

To reduce model error, a technique known as the difference method was applied for traffic volumes and travel times. Rather than take the direct output from the 2035 model, the difference method calculates the growth between the base year and 2035 models, and adds that growth to an existing count or travel time. For example, assume a road has an existing travel time of 1.5 minutes. If the base year model showed a travel time of 1.6 minutes and the future year model showed a travel time of 2.0 minutes, 0.4 minutes would be added to the existing travel time for a future expected travel time of 1.9 minutes.

The existing corridor travel times, ratio to free-flow speed, and LOS results are in Exhibit J–8. Forecasted 2035 corridor travel times are in Exhibit J–9.

Exhibit J–8 Existing Auto Corridor Travel Times

ID	Road	Segment	2015					
			Auto TT		Ratio to Free-Flow Speed		LOS	
			NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
1	N 105th St	Greenwood Ave N to SR 522	17:30	20:00	2.43	2.72	D	E
2	NW 85th	32nd Ave NW to Greenwood Ave N	12:30	11:00	2.66	2.29	E	D
3	NW 85th	Greenwood Ave N to SR 522	11:30	15:30	2.47	3.24	D	E
4	NW Market St	24th Ave NW to Stone Way N	18:00	20:00	2.78	3.07	E	E
5	N 45th St	Stone Way N to 25th Ave NE	18:00	18:30	3.03	3.15	E	E
6	E Madison St	I5 to 23rd Ave	15:00	15:00	2.56	2.56	E	E
7	West Seattle Bridge	35th Ave SW to I5	8:30	9:30	2.02	2.26	D	D
8	Swift Ave S	S Graham St to Seward Park Ave S	10:00	9:30	1.9	1.76	A-C	A-C
9	SW Roxbury St	35th Ave SW to E Marginal Way S	16:00	16:30	1.66	1.69	A-C	A-C
10	SR 99	SR 523 to N 80th St	21:30	17:30	3.01	2.44	E	D
11	SR 522	SR 523 to I5	26:00:00	17:30	3.06	2.06	E	D
12	SR 99	N 80th St to Denny Way	16:30	16:30	2.21	2.21	D	D
13	Roosevelt Way NE/Eastlake	NE 75th St to Denny Way	NA	34:30:00	NA	2.93	NA	E
13	12th Ave NE/Eastlake	NE 75th St to Denny Way	32:00:00	NA	2.68	NA	E	NA
14	25th Ave NE	NE 75th St to S Grand St	41:30:00	48:30:00	2.41	2.81	D	E
15	15th Ave/Elliott Ave	Market St to Denny Way	20:00	14:30	2.23	1.6	D	A-C
16	California Ave SW	SW Hanford St to SW Thistle St	15:00	16:30	1.99	2.19	A-C	D
17	1st Ave S	S Royal Brougham Way to E Marginal Way S	16:30	17:00	2.15	2.22	D	D
18	Rainier Ave S	E Yesler Way to Renton Ave S	34:30:00	41:30:00	2.01	2.42	D	D
19	MLK Jr Way S	Rainier Ave S to S Boeing Access Rd	22:00	24:00:00	1.67	1.82	A-C	A-C

Source: Google Maps, 2017; Fehr & Peers, 2017.

Exhibit J–9 2035 Auto Corridor Travel Times

ID	Road	Segment	2035 Alt 1 (No Action)					
			Auto TT		Ratio to Free-Flow Speed		LOS	
			NB /EB	SB/ WB	NB/ EB	SB/WB	NB/EB	SB/WB
1	N 105th St	Greenwood Ave N to SR 522	18:00	20:30	2.49	2.83	D	E
2	NW 85th	32nd Ave NW to Greenwood Ave N	13:00	11:30	2.77	2.39	E	D
3	NW 85th	Greenwood Ave N to SR 522	12:00	16:00	2.58	3.36	E	F
4	NW Market St	24th Ave NW to Stone Way N	19:30	22:30	2.95	3.4	E	F
5	N 45th St	Stone Way N to 25th Ave NE	19:00	19:30	3.25	3.3	E	E
6	E Madison St	I5 to 23rd Ave	15:30	15:30	2.64	2.64	E	E
7	West Seattle Bridge	35th Ave SW to I5	9:00	15:00	2.14	3.56	D	F
8	Swift Ave S	S Graham St to Seward Park Ave S	10:30	10:00	2	1.85	A-C	A-C
9	SW Roxbury St	35th Ave SW to E Marginal Way S	17:00	20:30	1.74	2.1	A-C	D
10	SR 99	SR 523 to N 80th St	26:00:00	19:00	3.7	2.67	F	E
11	SR 522	SR 523 to I5	31:00:00	19:30	3.63	2.26	F	D
12	SR 99	N 80th St to Denny Way	20:00	20:00	2.67	2.64	E	E
13a	Roosevelt Way NE/Eastlake	NE 75th St to Denny Way	NA	38:30:00	NA	3.28	NA	E
13b	12th Ave NE/Eastlake	NE 75th St to Denny Way	37:00:00	NA	3.06	NA	E	NA
14	25th Ave NE	NE 75th St to S Grand St	47:00:00	56:30:00	2.71	3.29	E	E
15	15th Ave/Elliott Ave	Market St to Denny Way	24:30:00	17:00	2.7	1.89	E	A-C
16	California Ave SW	SW Hanford St to SW Thistle St	15:30	17:00	2.06	2.26	D	D
17	1st Ave S	S Royal Brougham Way to E Marginal Way S	17:00	21:00	2.22	2.77	D	E
18	Rainier Ave S	E Yesler Way to Renton Ave S	36:00:00	53:00:00	2.1	3.09	D	E
19	MLK Jr Way S	Rainier Ave S to S Boeing Access Rd	23:30	33:30:00	1.77	2.53	A-C	E

ID	2035 Alt 2						2035 Alt 3					
	Auto TT		Ratio to Free-Flow Speed		LOS		Auto TT		Ratio to Free-Flow Speed		LOS	
	NB/EB	SB/ WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/ WB	NB/EB	SB/WB	NB/EB	SB/WB
1	18:00	21:00	2.5	2.86	D	E	18:00	20:30	2.49	2.85	D	E
2	13:00	11:30	2.77	2.42	E	D	13:00	11:30	2.77	2.44	E	D
3	12:00	16:00	2.58	3.39	E	F	12:00	16:00	2.58	3.4	E	F
4	19:30	22:30	2.95	3.42	E	F	19:30	22:30	2.95	3.44	E	F
5	19:30	19:00	3.27	3.34	E	F	19:30	20:00	3.28	3.35	E	F
6	15:30	15:30	2.64	2.66	E	E	15:30	15:30	2.64	2.65	E	E
7	9:00	15:30	2.14	3.69	D	F	9:00	15:30	2.14	3.71	D	F
8	10:30	10:00	2	1.85	A-C	A-C	10:30	10:00	2	1.85	A-C	A-C
9	17:00	20:30	1.75	2.14	A-C	D	17:00	20:30	1.74	2.14	A-C	D
10	26:00:00	19:00	3.7	2.7	F	E	26:00:00	19:00	3.7	2.69	F	E
11	31:00:00	19:30	3.63	2.29	F	D	31:00:00	19:30	3.63	2.3	F	D
12	20:30	20:00	2.73	2.66	E	E	21:00	20:00	2.76	2.67	E	E
13a	NA	39:00:00	NA	3.32	NA	E	NA	39:00:00	NA	3.32	NA	E
13b	37:00:00	NA	3.1	NA	E	NA	37:30:00	NA	3.11	NA	E	NA
14	47:30:00	57:00:00	2.75	3.31	E	E	47:30:00	57:30:00	2.75	3.32	E	E
15	24:30:00	17:00	2.75	1.9	E	A-C	25:00:00	17:00	2.78	1.9	E	A-C
16	15:30	17:00	2.06	2.26	D	D	15:30	17:00	2.06	2.26	D	D
17	17:00	21:30	2.22	2.82	D	E	17:00	21:00	2.22	2.77	D	E
18	36:30:00	53:30:00	2.13	3.11	D	E	36:30:00	53:30:00	2.12	3.11	D	E
19	23:30	33:30:00	1.78	2.54	A-C	E	23:30	33:30:00	1.78	2.55	A-C	E

Source: Google Maps, 2017; Fehr & Peers, 2017.

TRAVEL DEMAND MODEL

The City of Seattle updated its travel demand model in 2007 to be reflective of the Puget Sound Regional Council's (PSRC) Regional Travel Demand Model, Version 1.00b. The PSRC model has a relatively coarse TAZ structure since the model is regional in nature and is focused on generating travel forecasts across all of Snohomish, King, Pierce and Kitsap Counties. To provide more refined travel forecasts in Seattle, the PSRC zones were split as part of the citywide model development (Seattle went from 218 zones to 517 zones). The finer TAZ structure allows for traffic forecasts to be generated on a denser roadway network, improves the estimates of non-auto trips and provides the ability to extract turning movement forecasts at key intersections.

The City's model was initially used for the Seattle Surface and Transit Project and the Alaskan Way Viaduct Replacement Project. During the course of those projects, a team of consultants updated key aspects of the model to improve its performance, including:

- Arterial speeds
- Development of a parking cost model
- Modifications to the trip distribution and mode choice models to better reflect active transportation modes

Since that time, Fehr & Peers has used the model on subsequent City of Seattle projects including Elliott Bay Seawall Project, South Lake Union Height and Density Rezone EIS, University District Urban Design EIS,

Seattle Comprehensive Plan EIS, and now the Citywide MHA EIS. With each of these projects, the model roadway, transit and non-motorized networks were revised to correct errors carried over from the PSRC model and to reflect updated conditions (e.g., road diet projects, revised transit routing, etc.) as appropriate. Future year assumptions have also been reviewed with City staff throughout the course of each project to incorporate the latest knowledge of upcoming transportation projects, such as the SR 99 Tunnel, the City's modal master plans and major regional projects.

Trip generation rates and mode split output in 12 sample locations throughout the City were examined by evaluating TAZ-level trip generation by mode and by land use category. The results of the trip generation/mode split analysis followed expected trends based on research and travel behavior theory. For example, urban centers have lower vehicle trip generation and higher bike/pedestrian/transit trip generation when compared to less dense areas of the City. Based on the analysis, one change was made to apply the Central Business District mode choice factors to the Lower Queen Anne area. This adjustment increased non-auto mode share to a level that is closer to observed conditions. Trip generation rates and mode choice in areas that have had recent subarea plans such as South Lake Union and the U District were also reviewed and found to be appropriate for this citywide analysis.

Citywide MHA Modeling Assumptions

Exhibit J–10 summarizes major projects included in each model year.

Exhibit J–10 Travel Demand Model Network Assumptions

Project	2015	2035
SR 99 tunnel		x
SR 99 tunnel (tolling)		x
Mercer Corridor Project (east/west)	x	x
SR 520 HOV lanes to Montlake	x	x
SR 520 HOV lanes between Montlake and I-5		
Second Montlake Bascule Bridge		
SR 520 Tolling	x	x
I-90 HOV lanes	x	x
I-405 Widening (SR 167 to SR 527)		x
Buses in DT Seattle 3rd Avenue Tunnel	x	
Passenger-only Ferries (Kingston, Southworth, Juanita)		
South Lander Street Overpass		x
SB Montlake Blvd NE HOV Lane and ITS Improvements		x

Sound Transit 3 Assumptions for 2035 Model

- LINK—Lynnwood TC to Downtown Redmond, Tacoma to Ballard, West Seattle to Lynnwood TC. Infill stations at 130th St, S Graham St and S Boeing Access Rd were included. Headway is every 6 min in AM peak and 10 min in midday.
- I-405 BRT (Lynnwood to Burien)—Separated lines into Burien–Bellevue, and Bellevue–Lynnwood with each line operating at 12 min headways.
- SR 522 BRT from Woodinville/UW Bothell to 145th Link Station, operating at 12 minutes headways.

Other 2035 Assumptions

- First Hill streetcar extended to Volunteer Park/Roy Street
- Center City streetcar implemented from Westlake to King St Station on 1st Ave
- All-day transit-only restrictions on the 3rd Ave Transit Mall extended north to Denny

Seattle BRT Routes

The 10 BRT routes identified in the amended Seattle Transit Master Plan were incorporated into the model. The routes and assumed operating headways are below.

Exhibit J–11 Travel Demand Model Network Assumptions

	Rapid Ride Route	2035 Headway	
		Peak	Off-peak
1	Madison BRT	6	10
2	Burien TC - SLU via Delridge	6	10
3	Mt Baker - SLU via Rainier	6	10
4	Rainier Valley - U District via 23rd	6	10
5	Ballard- U District - Laurelhurst vie Market/45th	6	10
6	Northgate - Ballard - Fremont - SLU - Downtown via Westlake	6	10
7	Northgate - Roosevelt - U District - SLU - Downtown via Roosevelt/11th Ave & Eastlake	6	10
	RR C to West Seattle	6	10
	RR D to Ballard	6	10
	RR E to Aurora	6	10

Source: Fehr & Peers, 2017.

Network coding involved modifying lane capacity where BAT lanes or transit-only lanes are planned. Assumed network changes that affected street capacity are in Exhibit J–12.

Exhibit J–12 Assumed Model Network Capacity Changes

Road	Treatment	Extent	Existing	Model Network Edits
Delridge	BAT	West Seattle Br ramp - Genesee St	BAT lane in NB direction already	Change to 1 lane each direction
Jackson	Transit Only	3rd Ave - Rainier Ave	5 lanes	Reduce capacity 40%
Rainier Ave	Transit Only	Jackson - MLK Wy	5 lanes	Reduce capacity 40%
Pacific St	BAT EB only	15th - Pacific Pl	2 lanes EB	EB Only - reduce 40% (15th - Pacific Pl)
24th/23rd Ave	BAT	SR 520 - Madison	4 lanes	Reduce capacity 40% (Miller to Madison)
23rd Ave	BAT	Jackson - Rainier	4 lanes	Reduce capacity 40%
Market	BAT	30th Ave NW - 3rd Ave	4 lanes	Reduce capacity 40%
45th St	BAT - WB Only	3rd Ave - Phinney Ave	1 lane WB/2 lane EB	Reduce capacity 40%
45th ST	BAT	I-5 - 21st Ave	5 lanes	Reduce capacity 40%
45th ST	BAT - WB only	21st Ave - Montlake	existing 2 lanes WB	Reduce capacity 40%
45th St	BAT	Montlake - NE 50th St	5 lanes	Reduce capacity 40%
Holman Rd	BAT	Aurora - NW 85th ST	5 lanes	Reduce capacity 40%
Leary Ave	BAT	Market - 15th Ave	4 lanes + parking	Reduce capacity 40%
Leary Ave	Peak BAT	NW 46th St - Fremont Br	5/6 lanes	Reduce capacity 40%
Westlake	Peak BAT	Aurora - Valley	4 lanes	Reduce capacity 40%
Fairview	Peak BAT	Eastlake - Boren	5 lanes	Reduce capacity 40%

Source: Fehr & Peers, 2017.

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