

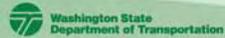
SR 520 Multi-Modal Corridor Study

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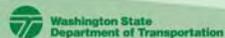
Stakeholder Committee Meeting

February 2, 2012

Methodologies and Assumptions

Land Use

- SR 520 Final Environment Impact Statement (FEIS) model was used to create travel demand forecasts
- The 520 FEIS model assumed a reduction of 3% employment and 1% reduction of households
- Overlake study area land use was modified in the model to reflect the jurisdictions' forecast



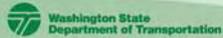
Methodologies and Assumptions

HOV Assumptions

- HOV lanes on SR 520 will be moved from outside to inside by 2015
- The occupancy requirements for the High Occupancy Vehicles using HOV lanes will be raised to HOV 3+ at the same time

Light Rail Assumptions

- East Link Light Rail would service Overlake Station in 2022
- In 2030 it would be extended to downtown Redmond



Methodologies and Assumptions

Analysis

- Analysis Years are 2010 and 2030
- Time Period : AM and PM peak hour



Methodologies and Assumptions

Freeway Analysis

- Freeway Segment – Ratio of operating to posted Speed
 - Travel time changes between selected points
 - Freeway Segment Utilization
 - Freeway Segment LOS
-
- Highway Capacity Manual

Methodologies and Assumptions

Ramp Termini Intersection Analysis

- Intersection LOS
 - Highway Capacity Manual
 - Synchro w/ HCM Methodology
 - SimTraffic simulation analyses at selected locations on 124th, 148th and SR 202 corridor near ramp termini

Ramp Termini Intersections

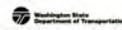
SR 520 Multimodal Corridor Study



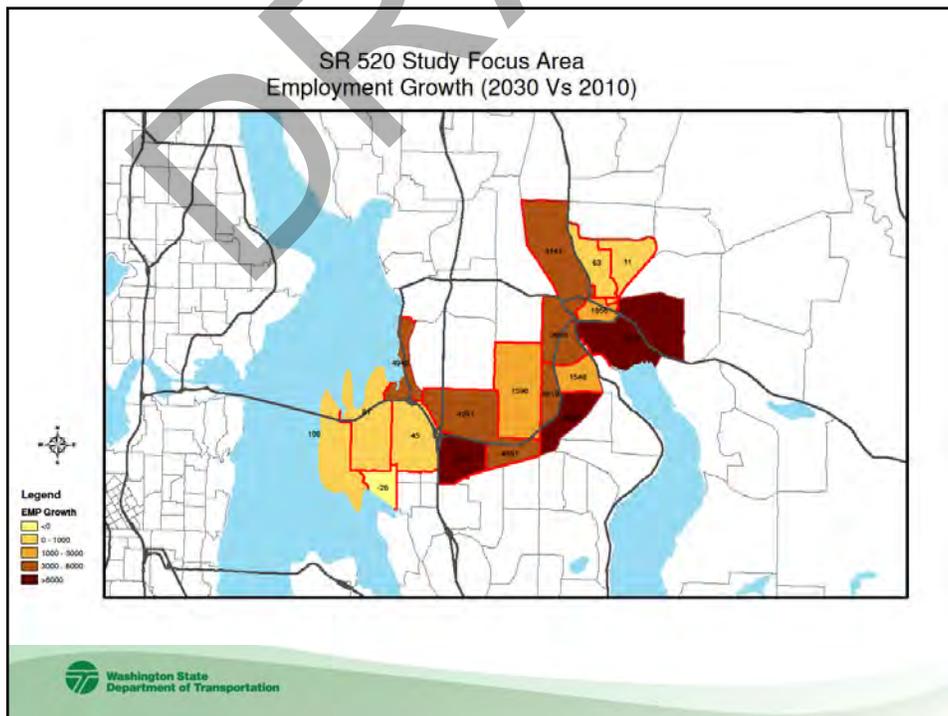
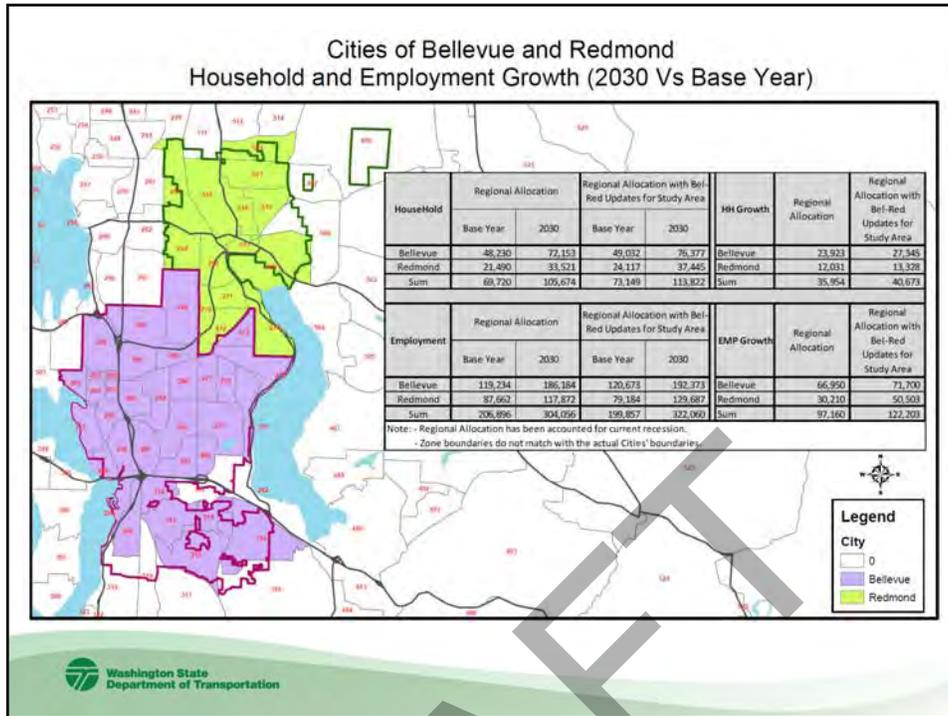
Washington State Department of Transportation

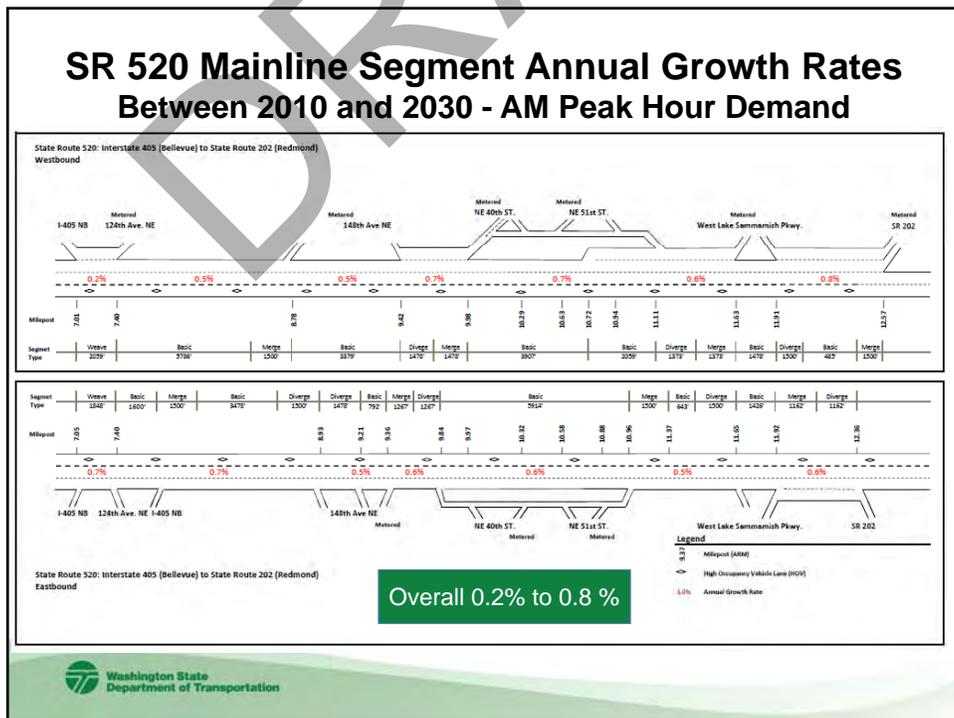
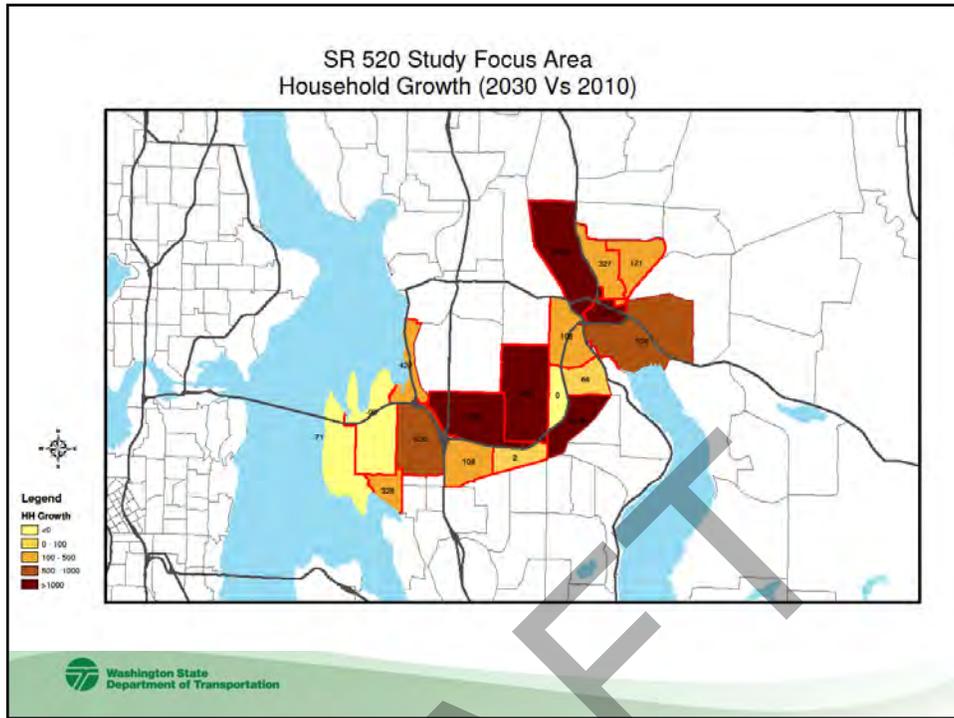
SimTraffic Analysis Intersections

SR 520 Multimodal Corridor Study - SimTraffic Analysis Intersections

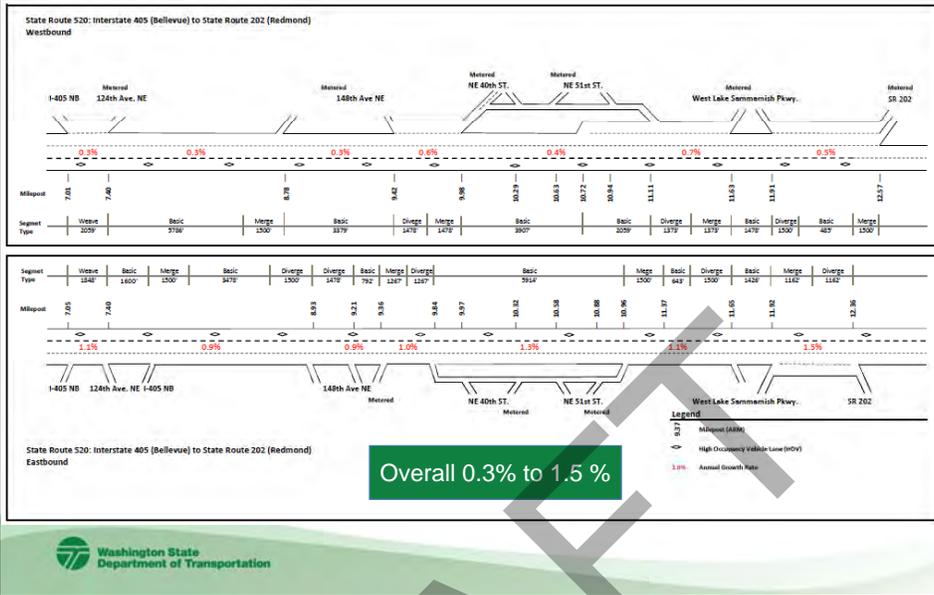


Washington State Department of Transportation

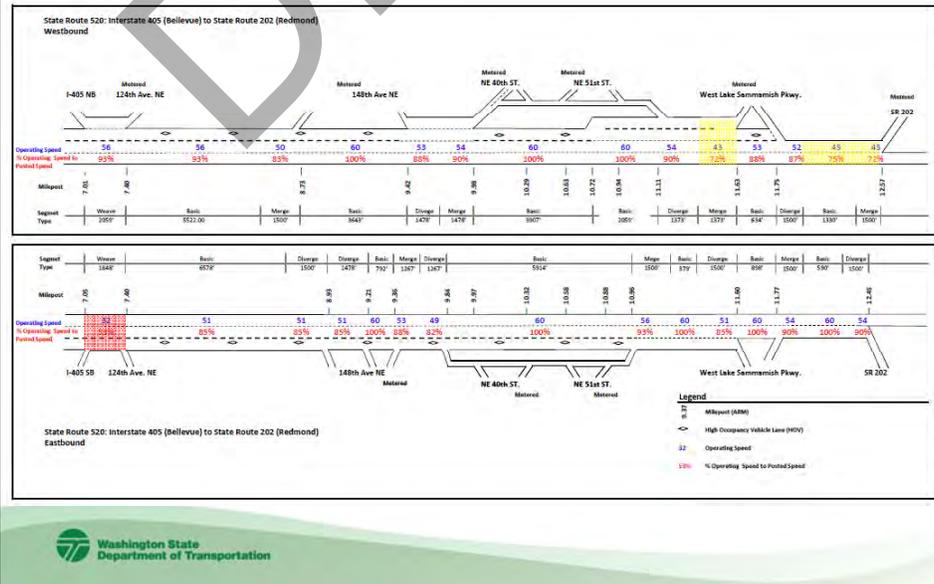




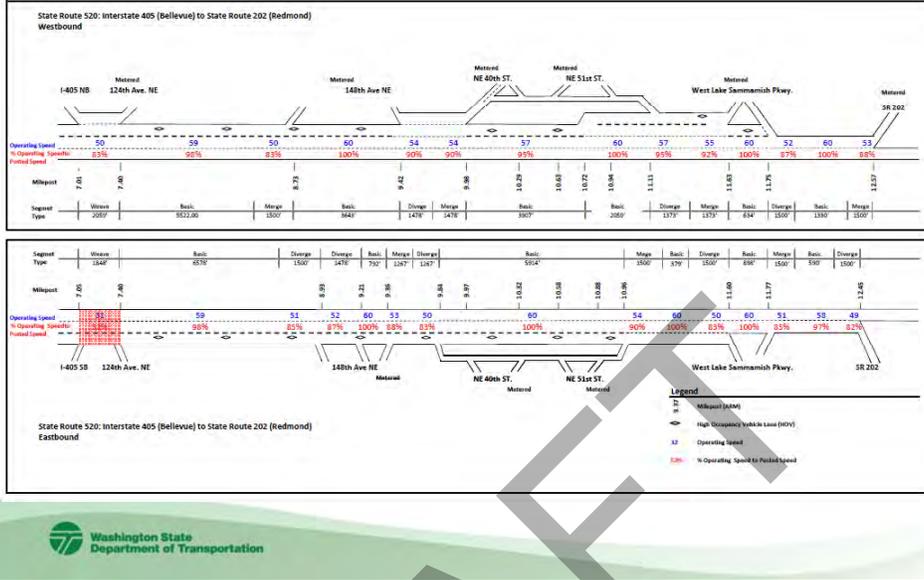
SR 520 Mainline Segment Annual Growth Rates Between 2010 and 2030 - PM Peak Hour Demand



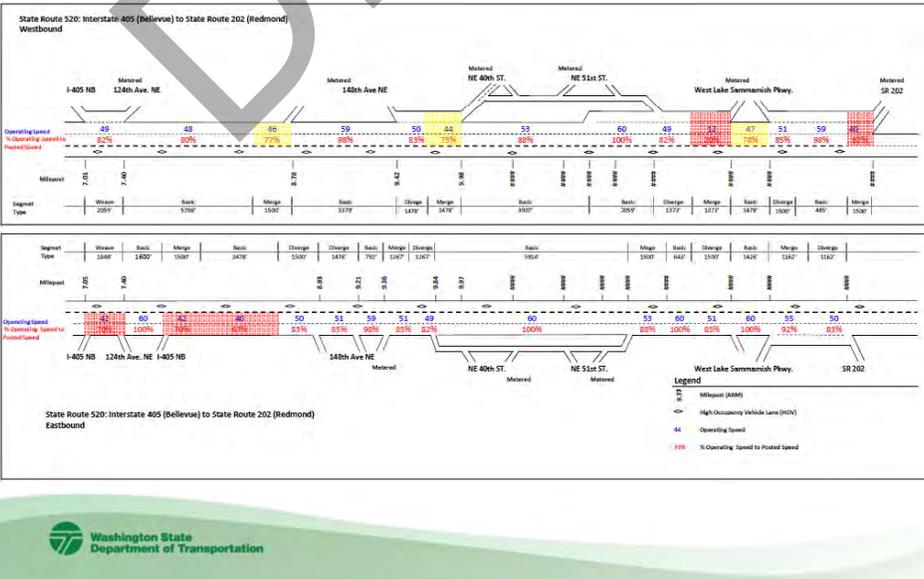
Year 2010 - AM Peak Hour Operating Speed as a Percent of Posted Speed

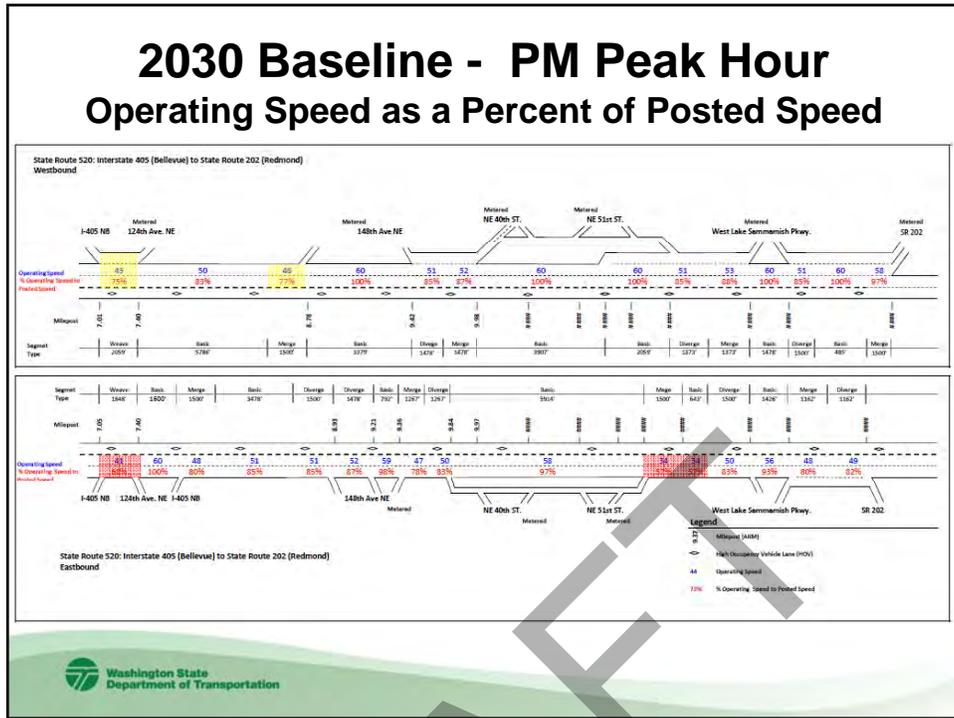


Year 2010 - PM Peak Hour Operating Speed as a Percent of Posted Speed



2030 Baseline - AM Peak Hour Operating Speed as a Percent of Posted Speed



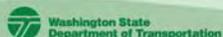


Traffic Condition AM Peak Hour Intersection Termini LOS

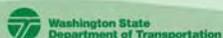
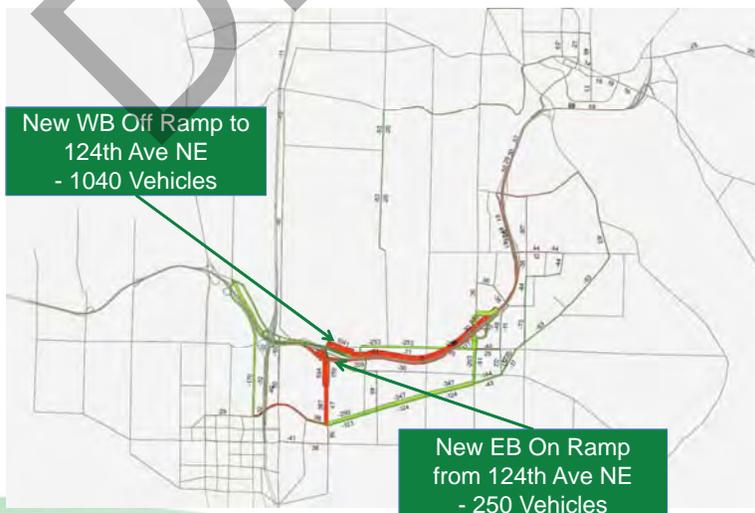
ID	Intersection Name	Existing		2030 Baseline	
		LOS	Delay (sec)	LOS	Delay (sec)
1	NE 20th St & SR 520 WB on Ramp	C	34	C	27
2	SR 520 EB Off Ramp & 148th Ave NE	D	39	D	39
3	SR 520 WB On Ramp & 148th Ave NE	D	43	E	74
4	NE 40th St & SR 520 EB Off Ramp	C	33	D	39
5	NE 40th St & SR 520 WB On Ramp	C	30	C	31
6	NE 51st St & SR 520 EB Off Ramp	B	20	B	20
7	NE 51st St & SR 520 WB On Ramp	C	24	C	34
8	SR 520 EB Off Ramp & WLS Pkwy	C	34	D	35
9	SR 520 WB On Ramp & WLS Pkwy	D	42	E	62
10	SR 202 & SR 520 EB Off Ramp	C	29	C	33
11	SR 202 & SR 520 WB On Ramp	B	19	C	24
12	Union Hill Rd & SR 520	F	87	F	102

Traffic Condition PM Peak Hour Intersection Termini LOS

ID	Intersection Name	Existing		2030 Baseline	
		LOS	Delay (sec)	LOS	Delay (sec)
1	NE 20th St & SR 520 WB on Ramp	D	49	D	47
2	SR 520 EB Off Ramp & 148th Ave NE	D	49	E	58
3	SR 520 WB On Ramp & 148th Ave NE	F	88	F	91
4	NE 40th St & SR 520 EB Off Ramp	D	42	D	43
5	NE 40th St & SR 520 WB On Ramp	C	30	C	33
6	NE 51st St & SR 520 EB Off Ramp	C	23	D	37
7	NE 51st St & SR 520 WB On Ramp	A	10	C	21
8	SR 520 EB Off Ramp & WLS Pkwy	D	51	E	77
9	SR 520 WB On Ramp & WLS Pkwy	F	118	F	152
10	SR 202 & SR 520 EB Off Ramp	C	31	C	33
11	SR 202 & SR 520 WB On Ramp	C	30	C	32
12	Union Hill Rd & SR 520	D	50	F	107



2030 AM Peak Hour 124th Ave NE Full Interchange - w/ and w/o Comparison



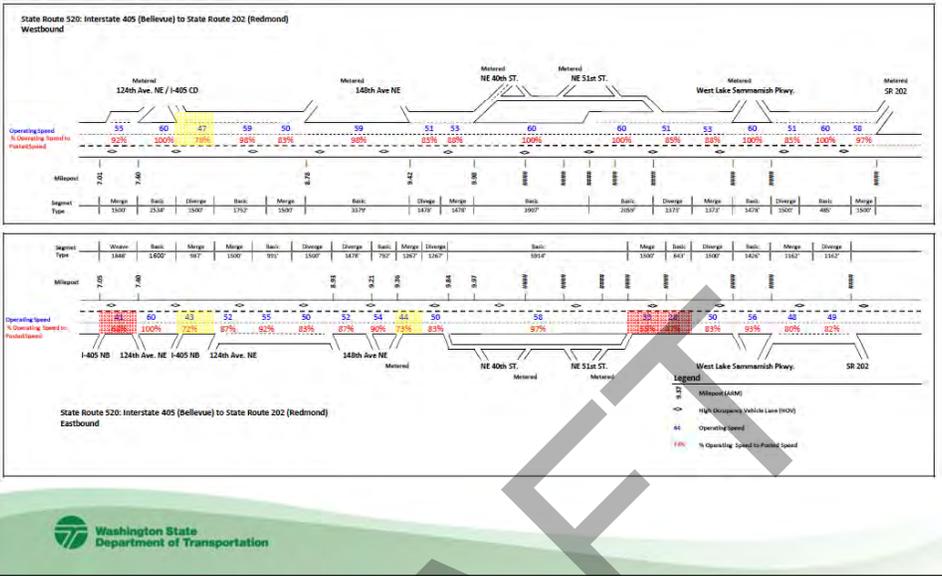
Traffic Condition AM Peak Hour Intersection Termini LOS

ID	Intersection Name	2030 Baseline		2030 124th Ave Full IC	
		LOS	Delay (sec)	LOS	Delay (sec)
1	NE 20th St & SR 520 WB on Ramp	C	27	D	55
2	SR 520 EB Off Ramp & 148th Ave NE	D	39	D	43
3	SR 520 WB On Ramp & 148th Ave NE	E	74	D	41
4	NE 40th St & SR 520 EB Off Ramp	D	39	D	37
5	NE 40th St & SR 520 WB On Ramp	C	31	C	30
6	NE 51st St & SR 520 EB Off Ramp	B	20	B	19
7	NE 51st St & SR 520 WB On Ramp	C	34	D	40
8	SR 520 EB Off Ramp & WLS PkWy	D	35	D	36
9	SR 520 WB On Ramp & WLS PkWy	E	62	E	63
10	SR 202 & SR 520 EB Off Ramp	C	33	C	34
11	SR 202 & SR 520 WB On Ramp	C	24	C	23
12	Union Hill Rd & SR 520	F	102	F	96
13	SR 520 EB Ramps and 124th Ave NE	-	-	F (EB)	219

Traffic Condition PM Peak Hour Intersection Termini LOS

ID	Intersection Name	2030 Baseline		2030 124th Ave Full IC	
		LOS	Delay (sec)	LOS	Delay (sec)
1	NE 20th St & SR 520 WB on Ramp	D	47	E	76
2	SR 520 EB Off Ramp & 148th Ave NE	E	58	C	32
3	SR 520 WB On Ramp & 148th Ave NE	F	91	E	57
4	NE 40th St & SR 520 EB Off Ramp	D	43	D	43
5	NE 40th St & SR 520 WB On Ramp	C	33	C	33
6	NE 51st St & SR 520 EB Off Ramp	D	37	D	36
7	NE 51st St & SR 520 WB On Ramp	C	21	C	20
8	SR 520 EB Off Ramp & WLS PkWy	E	77	E	78
9	SR 520 WB On Ramp & WLS PkWy	F	152	F	147
10	SR 202 & SR 520 EB Off Ramp	C	33	C	34
11	SR 202 & SR 520 WB On Ramp	C	32	C	32
12	Union Hill Rd & SR 520	F	107	F	107
13	SR 520 EB Ramps and 124th Ave NE	-	-	F (EB)	161

2030 w/ 124th Ave NE Full Interchange & 148th Ave NE Slip Ramp - PM Peak Hour Operating Speed as a Percent of Posted Speed

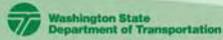


Traffic Condition AM Peak Hour Intersection Termini LOS

ID	Intersection Name	2030 Baseline		2030 124th Ave Full IC + 148th Ave Slip Ramp	
		LOS	Delay (sec)	LOS	Delay (sec)
1	NE 20th St & SR 520 WB on Ramp	C	27	E	67
2	SR 520 EB Off Ramp & 148th Ave NE	D	39	D	37
3	SR 520 WB On Ramp & 148th Ave NE	E	74	D	48
4	NE 40th St & SR 520 EB Off Ramp	D	39	C	32
5	NE 40th St & SR 520 WB On Ramp	C	31	C	32
6	NE 51st St & SR 520 EB Off Ramp	B	20	B	19
7	NE 51st St & SR 520 WB On Ramp	C	34	C	28
8	SR 520 EB Off Ramp & WLS PkWy	D	35	D	35
9	SR 520 WB On Ramp & WLS PkWy	E	62	E	63
10	SR 202 & SR 520 EB Off Ramp	C	33	C	33
11	SR 202 & SR 520 WB On Ramp	C	24	C	23
12	Union Hill Rd & SR 520	F	102	F	97
13	SR 520 WB Ramps and 124th Ave NE	-	-	F (WB)	-
14	SR 520 EB Ramps and 124th Ave NE	-	-	F (EB)	176

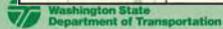
Traffic Condition PM Peak Hour Intersection Termini LOS

ID	Intersection Name	2030 Baseline		2030 124th Ave Full IC + 148th Ave Slip Ramp	
		LOS	Delay (sec)	LOS	Delay (sec)
1	NE 20th St & SR 520 WB On Ramp	D	47	F	83
2	SR 520 EB Off Ramp & 148th Ave NE	E	58	C	27
3	SR 520 WB On Ramp & 148th Ave NE	F	91	E	65
4	NE 40th St & SR 520 EB Off Ramp	D	43	D	40
5	NE 40th St & SR 520 WB On Ramp	C	33	C	32
6	NE 51st St & SR 520 EB Off Ramp	D	37	D	37
7	NE 51st St & SR 520 WB On Ramp	C	21	C	20
8	SR 520 EB Off Ramp & WLS PkWy	E	77	E	78
9	SR 520 WB On Ramp & WLS PkWy	F	152	F	147
10	SR 202 & SR 520 EB Off Ramp	C	33	C	33
11	SR 202 & SR 520 WB On Ramp	C	32	C	32
12	Union Hill Rd & SR 520	F	107	F	106
13	SR 520 WB Ramps and 124th Ave NE	-	-	F (WB)	-
14	SR 520 EB Ramps and 124th Ave NE	-	-	F (EB)	136



Summary Findings

SR 520 Multimodal Corridor Study - 2010-2030 Baseline Congested Intersections



Summary Findings

- **Mitigations:**
 - **124th Ave NE full interchange (Concept 2) with auxiliary lanes between 124th Ave NE and 148th Ave NE**
 - More traffic on the mainline than 2030 Baseline
 - Utilization lower than 100% (89% on WB and 95% on EB)
 - Operating speed is 78% or higher of the posted speed
 - Intersection LOS improvement at SR 520 WB On Ramp & 148th Ave NE
 - improved from LOS E to D in AM and E to C in PM
 - Intersection LOS at NE 20th St & SR 520 WB on Ramp
 - LOS would change from D to E in PM

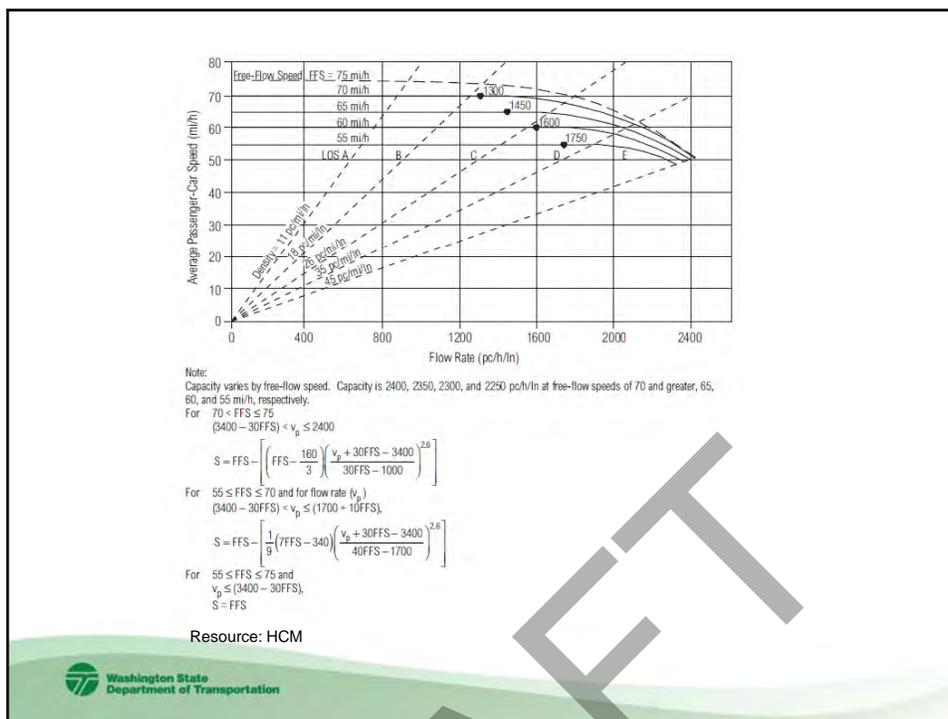
Summary Findings

- **Mitigations:**
 - **148th Ave NE slip ramp to 150th Ave NE with 124th Ave NE full interchange concept**
 - More traffic on the mainline than 2030 Baseline
 - Utilization lower than 100% (89% on WB and 95% on EB)
 - Operating speed is 78% or higher of the posted speed
 - Intersection termini operations similar to the ones in 124th Ave NE full interchange concept
 - Circulation south of SR 520 will improve in the Overlake area

What is next?

- **SR 520 mainline segments between 51st Street and W Lake Sammamish parkway will be further investigated for needs/options**
- **To capture queuing issues on the arterials and its effect on ramps and mainline SR 520, SimTraffic based simulation analysis will be done for the following segments:**
 - 124th Avenue NE – From north of SR 520 to Northup Way
 - 148th Avenue NE – From NE 40th St to Bellevue-Redmond Road
 - SR 202- from west of the SR 520 westbound on ramp to East Lake Sammamish Parkway NE
- **Performance measures**
- **Planning level cost estimates**
- **Project list**

Any Questions?



DRAFT