City of Bellevue, Transportation
Modeling and Analysis Group

Final Report

October 6, 2006

CONCURRENCY UPDATE

LOS Snapshot as of June 30, 2006

Introduction

The Washington State Growth Management Act (GMA) of 1990 requires that local jurisdictions adopt ordinances to establish *concurrency* measurement mechanisms to determine the ability of the transportation system to support new development. The City of Bellevue's adopted Traffic Standards Code (TSC Chapter 14.10) establishes the city's transportation concurrency requirements, level of service (LOS) standards and methodologies, and compliance determination process. The Director's Guidelines of 2001 further define the specifications of this procedure.

This assessment of transportation concurrency is prepared annually by the Bellevue Transportation Department to update information on land use developments and transportation conditions within the city. The primary objective is to provide a snapshot of the latest transportation system LOS findings to inform land use and transportation decision-making. In addition, the concurrency report is used to identify problem areas so that traffic mitigation options may be explored to effectively accommodate changing conditions.

This report summarizes existing LOS analysis results as well as the future concurrency LOS forecast from the city's Concurrency Model platform (MP6-R8). This model takes into account development applications that had received either design review or building permit approvals from the City's Planning and Community Development Department (PCD) as of June 30, 2006. The transportation network assumed in the analysis is the 2005 existing roadway network, plus fully funded capacity improvement projects in the Amended 2005-2011 Capital Investment Program (CIP) as adopted by the Bellevue City Council.

The concurrency snapshot reflects short-range projections about average traffic conditions within the city during the PM peak 2 hour period. The conditions described represent computed volume-to-capacity (v/c) ratios for 104 "system" intersections within fourteen Mobility Management Areas (MMAs). System intersections are arterial street intersections controlled (and to be controlled) by traffic signals, and MMAs are geographic sub-areas of the city, designated for traffic analysis purposes.

Methodology

The analysis documented in this report is based on the Highway Capacity Manual (HCM) 209/2-Hour average method updated in 2000. This is the City's adopted LOS analysis procedure as outlined in the Traffic Standards Code (Chapter 14.10) and as implemented in UFOSNET 6.3 software. The city adopted this method in 1998.

Based on the 2000 HCM 209 document, the operational method provides a complex set of procedures to intersection-specific geometric, traffic and signal conditions for a performance rating, i.e. level of service, including:

- For intersection capacity analysis, peak hour traffic volumes are averaged over a two-hour period from 4 PM to 6 PM, which generally represents the most congested traffic conditions.
- Uniform traffic demand has been assumed over the two-hour period, as represented by a peak hour factor (PHF) of 1.
- Intersection utilization is estimated and reported in v/c ratios.
- The intersection v/c ratios are averaged for the system intersections in each MMA and then compared with the adopted standards for each MMA to estimate available reserved capacity.
- Each sub-area has a "congestion allowance", which is the maximum number of intersections allowed to exceed the standard v/c ratio for that sub-area.
- Lastly, a development is considered concurrent if its resulting traffic impacts do not cause the area-wide average to exceed the adopted v/c ratio and the number of congested intersections in the area does not exceed the congestion allowance.

Note: This LOS snapshot was prepared at a PROGRAM level as opposed to a PROJECT level (usually referred to as development review project modeling). This distinction is important because the two approaches produce slightly different results. At the PROGRAM level, all analysis is done using the city's 6-year EMME/2 travel demand model platform (MP6), including trip generation, where broad categorical trip rates are used. In contrast, a PROJECT level concurrency analysis involves a combined ITE (Institute of Transportation Engineers) and EMME/2 approach. Trip generation applies detailed ITE based trip generation and pass-by percentage rates for the specific building size or use. The mode split for drive-alone and share-ride, traffic distribution and assignment modeling steps are done within the MP6 EMME/2 model.

Assumptions

LAND USE: The cities of Redmond and Kirkland provided their 2005 land use for validation of the 2005 existing BKR (Bellevue-Kirkland-Redmond) model platform. The land use estimates for Bellevue include all existing year 2005 land use extracted from the land use permit tracking system (AMANDA) as of December 31, 2005 and permitted developments approved by the City of Bellevue by the current update (June 30, 2006). These permitted developments represent the new increment of land use change for concurrency testing. Table 1 provides an MMA-level summary of the estimate of the existing 2005 land use. Table 2 provides details of new and permitted land use. Tables 3 and 4 list the MMA level summary of estimated new and permitted land use, and concurrency land use in mid-year 2006, respectively.

For the area outside of the Bellevue-Kirkland-Redmond modeling area, trip productions and attractions (instead of actual land use) were imported from the year 2000 and 2010 Puget Sound Regional Council (PSRC) models, and prorated for 2005.

Vacancy rates are assumed citywide for modeling of existing and concurrency land use snapshots: Office = 10%, Retail = 5%, and Industrial = 7.5%. Actual vacancy rates may differ from the assumed pro forma rates but the assumed rates provide reasonable averages that are generally consistent over time.

Table 1: Base Year Land Use Summary as of 12/31/05

		COMMERCIAL DEVELOPMENT			DWELLING UNITS	
MMA	SUBAREA	OFFICE	RETAIL	OTHER	S_Family	M_Family
1	North Bellevue	1,659,293	106,234	443,283	2,048	2,201
2	Bridle Trails	557,716	498,039	306,227	1,622	3,176
3	Downtown	6,922,906	3,823,229	1,455,702	8	3,955
4	Bel-Red/Northup	4,159,853	1,954,564	5,498,108	127	1,018
5	Crossroads	124,172	861,300	161,537	122	3,317
6	Northeast Bellevue	391,830	8,600	526,778	3,230	160
7	South Bellevue	1,269,735	98,496	1,248,276	2,614	2,051
8	Richards Valley	538,525	21,411	380,889	2,378	3,130
9	East Bellevue	593,381	424,362	1,732,025	7,142	2,891
10	Eastgate	2,934,533	312,114	2,990,366	293	818
11	Newcastle	142,317	65,368	656,655	8,435	1,084
12	Overlake*	614,298	936,272	296,273	523	1,862
13	Factoria	1,427,820	930,868	389,410	327	1,120
14	Newport Hills	14,698	179,591	48,112	3,668	632
	TOTAL	21,351,075	10,220,446	16,133,641	32,537	27,415

* Bellevue portion only

This concurrency update indicates that more than 5.4 million additional gross square feet (GSF) of non-residential development and over 2,300 residential dwelling units are being built in the city since the last update in 2005. A comparison of the land use totals by category for the 14 MMAs results in the following observations for concurrency:

1. Between the end of 2005 and June 30, 2006, the new and permitted office development is more than 3.977 million GSF, growing from about 21.4 million GSF to 25.3 million GSF. Of additional office space citywide, 85% is sited within Downtown Bellevue (MMA 3). Retail development increased by over 543,000 GSF from about 10.2 million GSF to 10.8 million GSF. About 74% of the city's new retail land use is located on downtown sites.

2. The Other development category consists of hotels, churches, school buildings, social services, maintenance facilities and child care facilities, which total over 883,000 GSF citywide. Downtown Bellevue absorbed 29% of this growth primarily due to Bellevue City Hall. The largest portion of this category was development in the Bel-Red/Northup MMA with 38% of the total growth due to Overlake Medical Center expansion (as shown specifically in Table 2). Crossroads, Eastgate, Richards Valley, Factoria and Newport Hills MMAs each have some projects in the Other land use category.

3. Housing developments new since the end of 2005 or permitted by the end of June 2006 consist of 2,316 multi-family units and 19 additional single-family units. About 95% of new multi-family permitted development is in downtown Bellevue. The citywide residential pattern is 52% of single-family and 48% multifamily units.

TABLE 2: Projects Contributing to Change (As of June 30, 2006)

Development Name	MMA	Office	Retail	Other	SF Units	MF Units
Parkside Villa	1					5
Four @ Fourth	1					4
1200 Bellevue Way Townhomes	1					49
The Commons - Bldg B	1	31,620				
1020 Residential Tower	3					160
Belletini	3	3,618	19,658			150
BRE Belcarra	3					300
Gregg's Bellevue Cycle	3		11,918			
Tower 333	3	403,000	15,000			
Avalon Meydenbauer - So Tower	3					134
Avalon Meydenbauer – North Tower	3					234
Avalon Meydenbauer - Retail	3	3,161	89,961			
Bellevue Towers - Parking Garage	3			16,921		
Bellevue Towers	3					558
City Center II	3	799,300				
The Bravern	3	1,577,220	240,863			
Lincoln Square North Office Tower	3	573,367				
Bellevue Place Expansion - Phase 2	3			4,134		
Washington Square - East Tower	3					186
Washington Square - West Tower	3	7,455	4,018			187
Gateway	3					130
Bellevue City Hall	3			238,833		
Ashwood Commons	3	16,851	17,867			170
Lexus of Bellevue - Dealership	4	29,961	66,517			
Overlake Hospital Medical Ctr. – S. Tower	4			138,450		
Group Health Cooperative Medical Center	4			200,000		
Crossroads Community Center	5			4,895		
Bellevue City View	7					47
Batterson	7					2
Woodridge Elementary	8			76,209		
Odegard Gockel Bldg	8	26,983				
BCC Bldg D	10			18,844		
Starbucks	10	2,668	2,121			
Michael's Toyota	10		72,974	3,000		
Jack in the Box	10	0	2,670			
SNW Eastgate	10	500,000				
Newport High School	13			139,564		
Edgewood Club	14	1,861		42,778		
	TOTAL	3,977,065	543,567	883,628	19	2,316

Note: Shaded cells are Downtown Bellevue sites (MMA 3). SF Units are net increase.

TABLE 3: Summary of New & Permitted Land Use by MMA as of 6/30/06

		COMMERCIAL DEVELOPMENT			DWELLING UNITS	
MMA	SUBAREA	OFFICE	RETAIL	OTHERS	S_Family	M_Family
1	North Bellevue	31,620				58
2	Bridle Trails					
3	Downtown	3,383,972	399,285	259,888		2,209
4	Bel-Red/Northup	29,961	66,517	338,450	1	
5	Crossroads			4,895		
6	Northeast Bellevue					
7	South Bellevue				2	49
8	Richards Valley	26,983		76,209	1	
9	East Bellevue				3	
10	Eastgate	502,668	77,765	21,844		
11	Newcastle				8	
12	Overlake*					
13	Factoria			139,564		
14	Newport Hills	1,861		42,778	4	
	TOTAL	3,977,065	543,567	883,628	19	2,316

Note: The Single Family includes only the net new units completed in first half of 2006.

Table 4: Concurrency Land Use Summary as of 6/30/2006

(2005 Existing Land Use + Permitted Land Use)

		COMMERCIAL DEVELOPMENT			DWELLING UNITS	
MMA	SUBAREA	OFFICE	RETAIL	OTHERS	S_Family	M_Family
1	North Bellevue	1,690,913	106,234	443,283	2,048	2,259
2	Bridle Trails	557,716	498,039	306,227	1,622	3,176
3	Downtown	10,306,878	4,226,648	1,711,456	8	6,164
4	Bel-Red/Northup	4,189,814	2,021,081	5,836,558	128	1,018
5	Crossroads‘	124,172	861,300	166,432	122	3,317
6	Northeast Bellevue	391,830	8,600	526,778	3,230	160
7	South Bellevue	1,269,735	98,496	1,248,276	2,616	2,100
8	Richards Valley	565,508	21,411	457,098	2,379	3,130
9	East Bellevue	593,381	424,362	1,732,025	7,145	2,891
10	Eastgate	3,437,201	389,879	3,012,210	293	818
11	Newcastle	142,317	65,368	656,655	8,443	1,084
12	Overlake*	614,298	936,272	296,273	523	1,862
13	Factoria	1,427,820	930,868	528,974	327	1,120
14	Newport Hills	16,559	179,591	90,890	3,672	632
	TOTAL	25,328,140	10,768,147	17,013,135	32,556	29,731

Figure 1: New Development Approved as of 6/30/2006

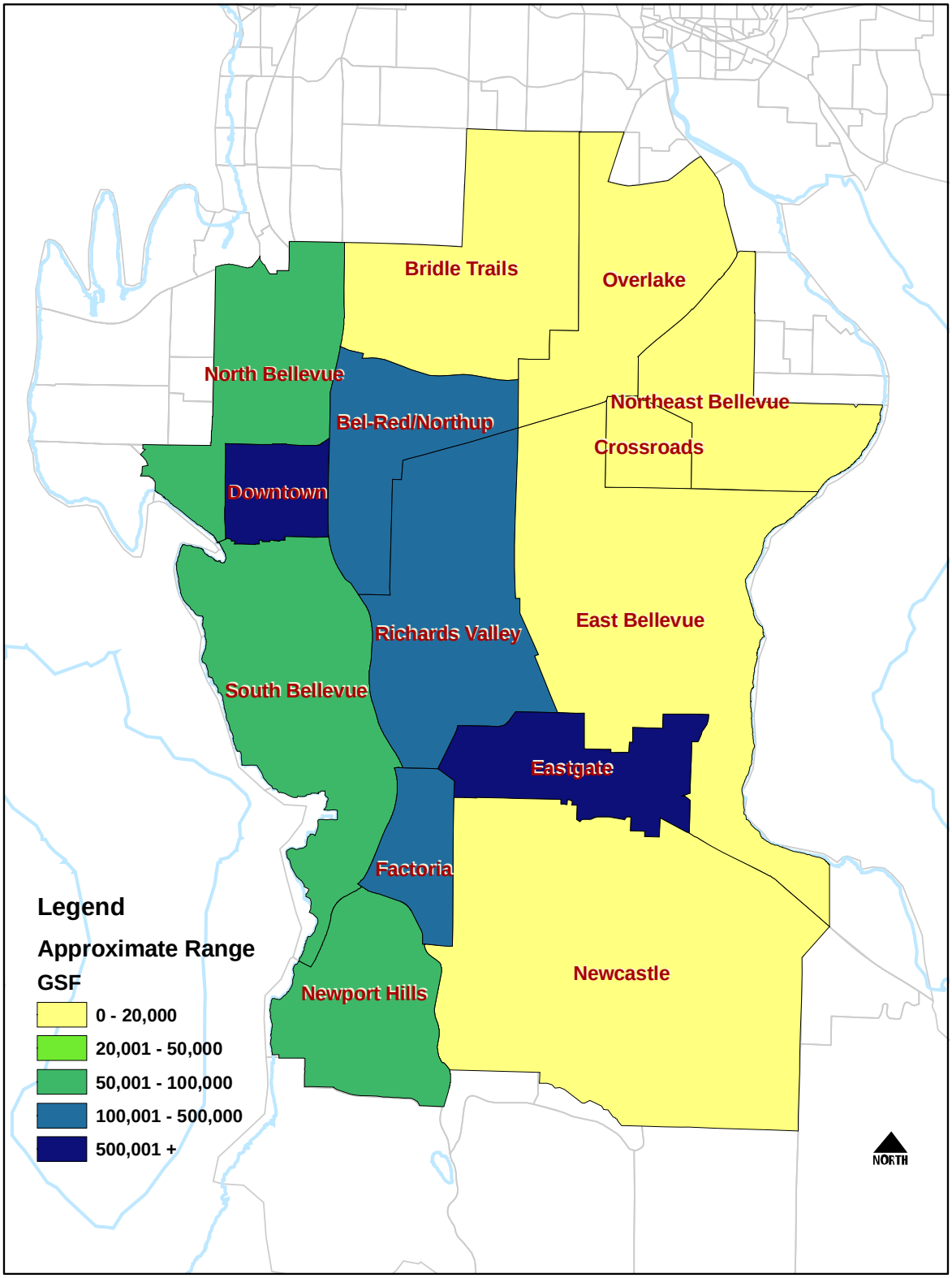


Figure 1 shows MMAs where these developments are located by the approximate range of square feet.

TRANSPORTATION: The adopted 2005-2011 CIP, as amended through June 30th, 2006, is used for this analysis and report. The concurrency model network includes all funded projects that would add capacity to roadways and intersections. These capacity projects include roadway widening, intersection signalization and channelization, and access improvements. The 2005-2011 CIP capacity project locations are shown in Figure 2.

The CIP roadway capacity projects are listed as follows (note: * indicates projects completed by 2005; work continued into 2006 for the others):

- Lakemont Boulevard Extension (R-57)*
- NE 29th Place Connection (R-60)*
- Kamber Road Roadway Improvement (R-102)*
- 150th Ave SE – Newport Way to SE 36th Street (R-105)
- Cougar Mountain Way Corridor Improvements (R-115)*
- 148th Ave SE Roadway Improvement (R-117)*
- SE 16th Street Improvements (R-118)
- Forest Drive Improvement (R-128)*
- Northup Way – 120th to 124th Ave NE (R-133)
- 110th Avenue NE – NE 4th Street to NE 8th Street (R-139)
- NE 10th Street Extension (R-149)

The current CIP intersection capacity projects are listed as follows:

- I-405/Bellevue Downtown Access (I-46)*
- 148th Avenue NE/Bel-Red Road (I-76)
- 148th Avenue NE/NE 20th Street (I-78)
- 112th Avenue SE/SE 6th Street Signal (I-88)
- Lakemont Boulevard/Village Park Drive Traffic Signal (I-89)
- 148th Avenue SE/Lake Hills Boulevard (I-90)

This concurrency update includes the 2005 base year LOS analysis as a benchmark to compare concurrency LOS with and without the 2005-2011 CIP projects.

TRAFFIC COUNTS: Figure 3 shows the change in observed Average Annual Weekday Traffic (AAWT) in Bellevue between 2003 and 2005. Comparing the data indicates that in many locations citywide, average daily traffic volumes have stayed flat or increased only slightly in the last two to three years. Table 5 shows the actual difference between 2004 and 2005 PM peak 2-hour average traffic volumes for all 104 system intersections in Bellevue, as well as 300 citywide intersections. As shown by Table 5, intersection PM peak hour volumes increased by an overall citywide average of 0.8% from 2004 to 2005, while system intersections show an average increase of 0.7%.

Figures 4A and 4B present AAWT trends on 18 Bellevue East-West and North-South arterials between 1999 and 2005, respectively. The traffic trend was generally higher during 1999-2000 than in 2005. In the traffic data since 2000, a mixed trend of slightly downward or flat patterns is shown while four arterials, NE 8th St (E of 116th Ave NE), NE 4th St (E of 112th Ave NE), Coal Creek Parkway (E of I405) and Factoria Blvd (S of I-90), have increased in AAWT.

Fig. 2: 2005-2011 CIP Capacity Projects

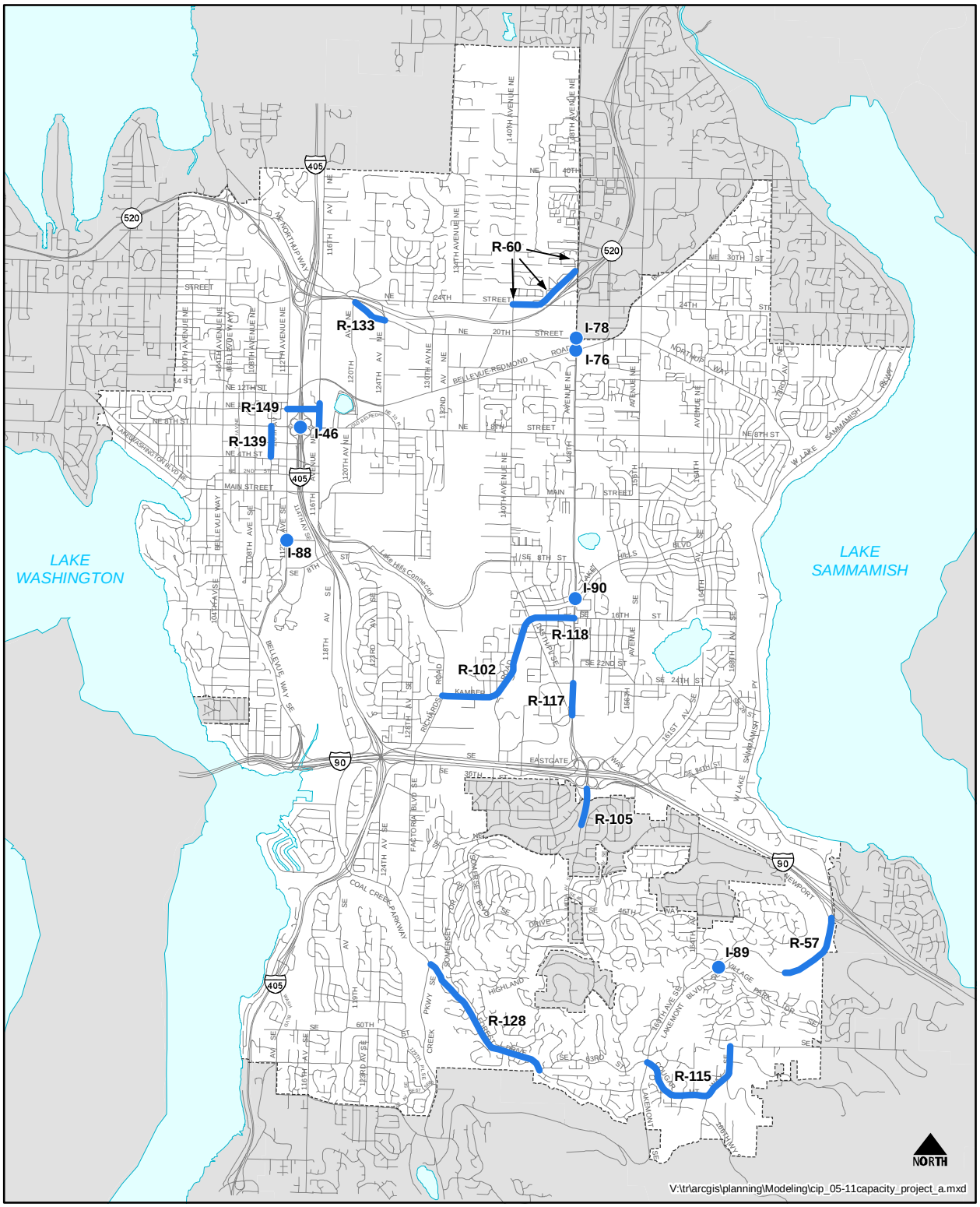
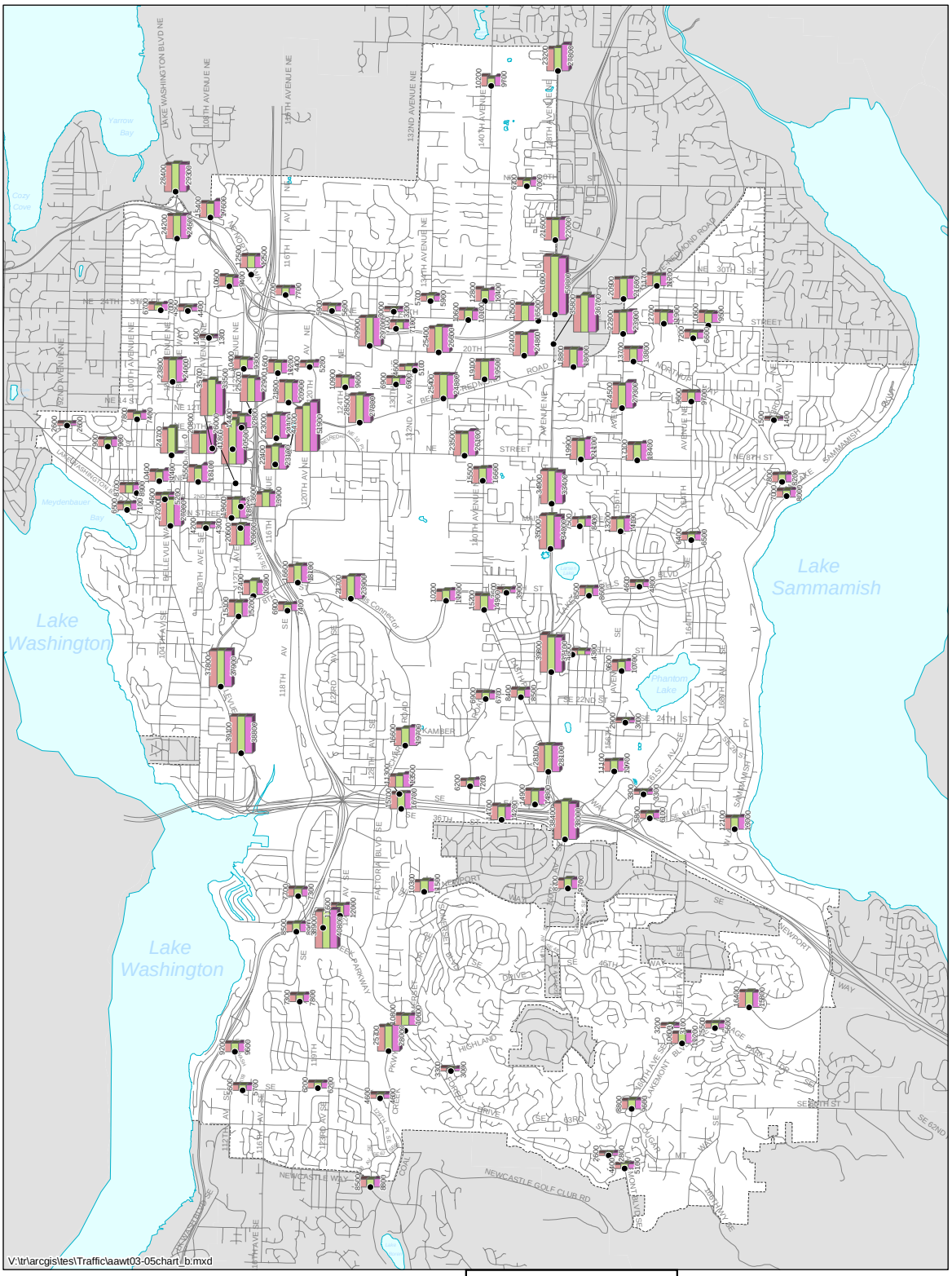


Figure 3: Change in AAWT: 2003 - 2005



NORTH

AAWT is Annual Average Weekday Traffic

= 3,500 feet

City of Bellevue
IT Department
GIS Services
Plot Date: 8/22/2006

- Traffic Count Location
- Traffic Volumes Chart
- 2003
- 2004
- 2005

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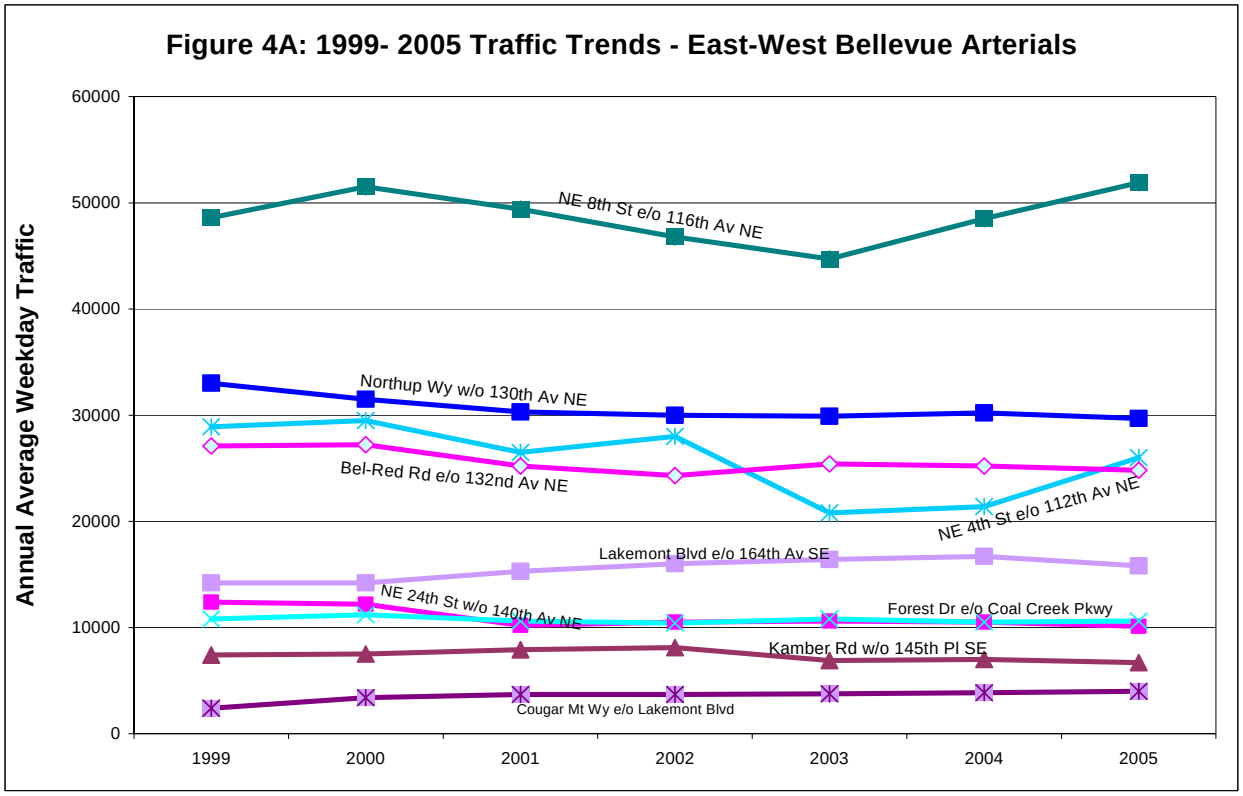
Figure 4A: 1999- 2005 Traffic Trends - East-West Bellevue Arterials
Annual Average Weekday Traffic
60000
50000
40000
30000
20000
10000
0
1999
2000
2001
2002
2003
2004
2005
NE 8th St e/o 116th Av NE
Northup Wy w/o 130th Av NE
Bel-Red Rd e/o 132nd Av NE
NE 4th St e/o 112th Av NE
Lakemont Blvd e/o 164th Av SE
NE 24th St w/o 140th Av NE
Forest Dr e/o Coal Creek Pkwy
Kamber Rd w/o 145th Pl SE
Cougar Mt Wy e/o Lakemont Blvd

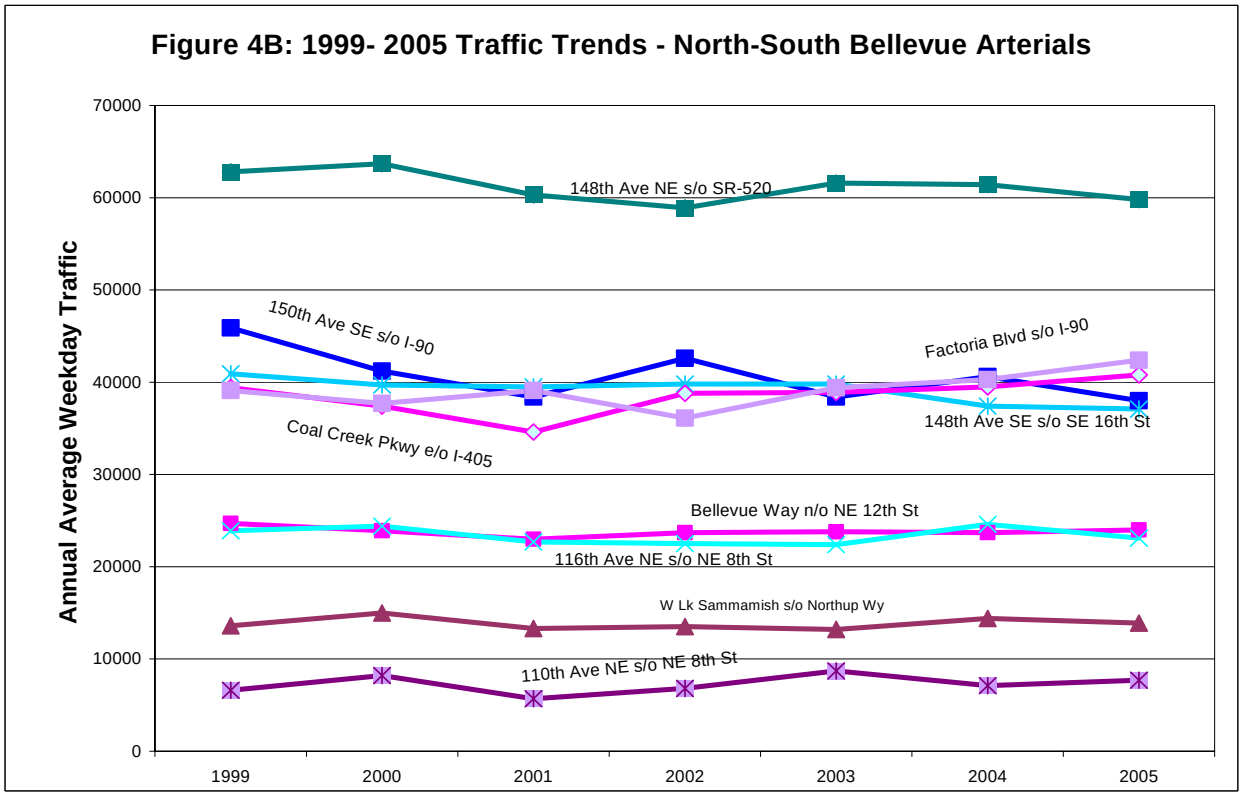
Figure 4B: 1999- 2005 Traffic Trends - North-South Bellevue Arterials
Annual Average Weekday Traffic
70000
60000
50000
40000
30000
20000
10000
0
1999
2000
2001
2002
2003
2004
2005
148th Ave NE s/o SR-520
150th Ave SE s/o I-90
Factoria Blvd s/o I-90
148th Ave SE s/o SE 16th St
Coal Creek Pkwy e/o I-405
Bellevue Way n/o NE 12th St
116th Ave NE s/o NE 8th St
W Lk Sammamish s/o Northup Wy
110th Ave NE s/o NE 8th St

Table 5: Changes from 2004 to 2005 in PM Peak 2-Hour Average Intersection Volumes

2005 2hr Avg - 2004 2hr Avg		Total Turning Movement Volumes for all MMA System Intersections												MMA	%
MMA	#	NB_L	NB_T	NB_R	SB_L	SB_T	SB_R	EB_L	EB_T	EB_R	WB_L	WB_T	WB_R	Delta	Change
North Bellevue	1	113	-427	169	-16	-200	-89	-87	-9	55	-184	-169	-103	-947	-9.6%
BridleTrails	2	1	158	-15	-39	7	-1	-2	-2	0	-43	-4	14	74	2.4%
Downtown	3	-26	-319	-171	26	-185	-50	-32	96	-41	-196	186	-19	-731	-1.9%
Bel-Red/Northup	4	-94	-47	153	58	9	-60	138	562	-211	-7	658	40	1199	2.9%
Crossroads	5	20	163	23	43	181	-5	13	17	-39	-5	42	57	516	5.7%
NE Bellevue	6	-38	-6	-16	6	-174	0	64	136	-79	-8	7	-1	-110	-2.0%
South Bellevue	7	-1	41	68	1	60	29	59	179	-309	-26	-107	-81	-87	-0.7%
Richards Valley	8	50	51	226	109	127	-99	8	-3	31	88	20	102	712	4.5%
East Bellevue	9	14	-49	-142	-30	107	218	152	32	79	-111	-35	-64	171	0.6%
Eastgate	10	60	115	-9	38	502	148	75	154	-239	8	2	218	821	4.2%
Newcastle	11	-15	-20	13	-109	-198	-12	49	212	21	-8	-17	-79	-163	-1.7%
Overlake	12	0	-404	186	54	253	95	201	-56	66	194	-34	48	422	0.8%
Factoria	13	-29	-159	107	69	168	218	-50	-495	17	61	-10	142	39	0.1%
Newport Hills	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Other Non-Syst	0	227	-315	45	149	403	96	68	1038	375	94	1000	222	2325	0.9%
Total All Intersections		282	-1218	637	359	1060	488	656	1861	-274	-143	1539	496	4241	0.8%
Total System Intersections		55	-903	592	210	657	392	588	823	-649	-237	539	274	1916	0.7%

Notes:

NB_L Northbound Left	SB_L Southbound Left	EB_L Eastbound Left	WB_L Westbound Left
NB_T Northbound Thru	SB_T Southbound Thru	EB_T Eastbound Thru	WB_T Westbound Thru
NB_R Northbound Right	SB_R Southbound Right	EB_R Eastbound Right	WB_R Westbound Right

The 2005 base year PM peak 2 hour average counts were used along with the 2005 existing intersection geometry and signal timing plan to calculate system intersection volume to capacity (v/c) ratios for LOS analysis based on the 2000 HCM/209 method. The results are summarized at the MMA level, compared with City's LOS standards (Table 6), and shown in Table 7.

The concurrency model outputs from MP6-R8 were adjusted using a post processor (a computer program) to account for model validation differences. The base year 2005 2-hour average counts were used by the post processor to adjust the model output for the predicted concurrency intersection traffic volumes. Based on the forecast volume, intersection v/c ratio or LOS were analyzed for future 6-year conditions with and without the 2005-2011 CIP capacity projects (as shown in Table 8).

TABLE 6

Average Intersection Levels Of Service (LOS) Definition

[Range of Volume-to-Capacity Ratios with User Impressions]

LOS Categories	Average Volume-to-Capacity Ratios		Description *(Subjective Impression of User)*
LOS A	Less than or equal to 0.600		Highest drive comfort. Little delay. Free flow.
LOS B	0.601 - 0.70		High degree of drive comfort. Little delay.
LOS C	0.701 - 0.80		Some delays. Acceptable level of driver comfort. Efficient traffic operation.
LOS D	LOS D+ *(High D)*	0.801 - 0.85	Some driver frustration. Efficient traffic operation.
	LOS D- *(Low D)*	0.851 – 0.90	Increased driver frustration. Long cycle length.
LOS E	LOS E+ *(High E)*	0.901 - 0.95	Near capacity. Notable delays. Low driver comfort. Difficulty of signal progression.
	LOS E- *(Low E)*	0.951 - 1.00	At capacity. High level of congestion. High level of driver frustration.
LOS F	Greater than or equal to 1.001		Breakdown flow. Excessive delays.

Note: The information reported in Table 6 represents the City's adopted Traffic Standard Code (Chapter 14.10) for satisfying concurrency requirements under the Washington Growth Management Act. It is also used in the City of Bellevue Vital Signs as a transportation performance indicator.

LOS Snapshots

Table 7 compares average intersection Level of Service for existing conditions to the MMA standard. The LOS snapshots portray traffic conditions on an average scale for a two-hour PM peak period on a typical weekday, ignoring specific spikes in the demand pattern. Overall the two-hour v/c ratios do not fully reflect delays and backups that might occur due to unpredictable conditions such as weather or accidents, or special events of a temporary nature such as construction.

Table 7: Comparison of 2-Hour Average LOS in Annual Concurrency as of 6/30/06

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LOS Standard by MMA				2004 Existing Based on 2004 Counts			2005 Existing Based on 2005 Counts			
MMA#	MMA Name	LOS Standard (Volume/ Capacity Ratios)	No of Intersections Allowed Over the Standard	Average V/C Ratio	% Capacity Available	No of Intersections Over the Standard	Average V/C Ratio	% Capacity Available	No of Intersections Over the Standard	Change in V/C Ratio* From 2004 to 2005
1	North Bellevue	0.85	3	0.634	25%	0	0.553	35%	0	-0.081
2	Bridle Trails	0.80	2	0.504	37%	0	0.559	30%	0	0.055
3	Downtown	0.95	9	0.644	32%	1	0.632	33%	1	-0.012
4	Bel-Red/Northup	0.90	10	0.617	31%	0	0.646	28%	0	0.029
5	Crossroads	0.90	2	0.629	30%	0	0.646	28%	0	0.017
6	North-East Bellevue	0.80	2	0.624	22%	0	0.622	22%	0	-0.002
7	South Bellevue	0.85	4	0.590	31%	0	0.604	29%	0	0.014
8	Richards Valley	0.85	5	0.554	35%	0	0.573	33%	1	0.019
9	East Bellevue	0.85	5	0.705	17%	0	0.720	15%	0	0.015
10	Eastgate	0.90	4	0.645	28%	1	0.644	28%	1	-0.001
11	Newcastle	0.80	3	0.795	1%	1	0.740	8%	0	-0.055
12	Overlake	0.95	9	0.656	31%	0	0.652	31%	1	-0.004
13	Factoria	0.95	5	0.772	19%	1	0.754	21%	1	-0.018
	TOTAL		63			4			5	-0.024

---2000 Highway Capacity Manual (HCM) 209/Two-Hour Method

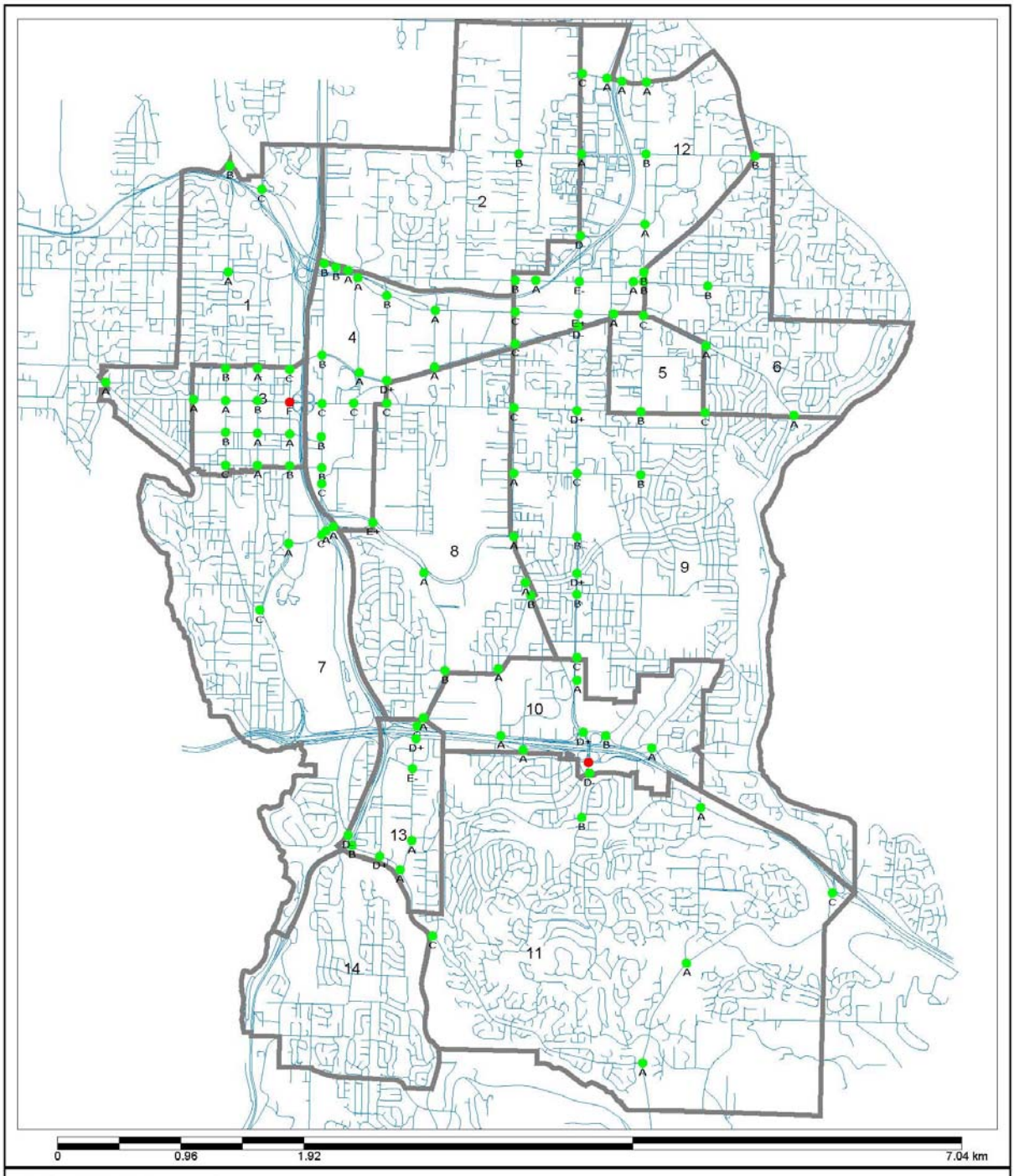
Notes:

- MMA 14 Newport Hills has no signalized intersections, and is therefore not considered here.
- Critical intersection movements, geometry and signal phasing/timing plans affect LOS results.
- Intersection volume reduction may contribute to v/c ratio decline, as may the 2005 completed CIP capacity projects.
- Positive v/c ratio changes indicate MMA degradation while negative shows MMA improvement.
- In 2004 four intersections and in 2005 five intersections failed the LOS standards.
- Seven MMAs show v/c ratio declines (improvements) in the range of -0.001 to -0.081.
- Six MMAs show v/c ratio increases (degradation) in the range of 0.014 to 0.055

This section presents four LOS snapshots for comparison over time. One was previously reported and three are new (Appendix A provides a complete list of system intersections with PM peak 2-hour average v/c ratios and LOS for last year's and this year's concurrency update, including 2004 and 2005 existing conditions, as well as 2012 with or without the CIP capacity projects). The four snapshots are:

1. 2004 Old Existing LOS Snapshot reporting observed year 2004 PM Peak 2-hour average traffic counts (See Table 7 for summary by MMA).

2. 2005 New Existing LOS Snapshot reporting observed year 2005 PM Peak 2-hour average traffic counts (See Table 7 for summary by MMA and Figure 5 for intersection specific details).



MP0_R7 (2005 base)

Figure 5: 2005 PM Pk 2Hr Average System Intersection LOS

Prepared by Bellevue Transportation Modeling Group

3 Future Concurrency LOS Forecast without CIP Projects (No Action) including land use permits as of June 30, 2006. However, the LOS calculation was based on existing intersection geometry and signal timing plans. For the purpose of comparison with the concurrency LOS, none of the uncompleted 2005-2011 CIP projects were included (See Table 8 for summary by MMA).

4 Future Concurrency LOS Forecast (CIP Scenario) including land use permits as of June 30, 2006 and the Council adopted 2005-2011 CIP capacity projects. (See Table 8 for summary by MMA and Figure 5 for intersection specific details).

Table 8: Comparison of Concurrency System Intersection LOS Snapshots

LOS Standard by MMA				2012 w/o 05-11 CIP 2005 Geometry			2012 w/ 05-11 CIP 05-11 CIP Geometry			
MMA#	MMA Name	LOS Standard (Volume/ Capacity Ratios)	No of Intersections Allowed Over the Standard	Average V/C Ratio	% Capacity Available	No of Intersections Over the Standard	Average V/C Ratio	% Capacity Available	No of Intersections Over the Standard	Change in V/C Ratio* From without to with the 05-11 CIP
1	North Bellevue	0.85	3	0.592	30%	0	0.579	32%	0	-0.013
2	Bridle Trails	0.80	2	0.565	29%	0	0.557	30%	0	-0.008
3	Downtown	0.95	9	0.730	23%	1	0.692	27%	1	-0.038
4	Bel-Red/Northup	0.90	10	0.686	24%	0	0.641	29%	0	-0.045
5	Crossroads	0.90	2	0.654	27%	0	0.651	28%	0	-0.003
6	North-East Bellevue	0.80	2	0.628	22%	0	0.631	21%	0	0.003
7	South Bellevue	0.85	4	0.628	26%	0	0.614	28%	0	-0.014
8	Richards Valley	0.85	5	0.612	28%	1	0.584	31%	1	-0.028
9	East Bellevue	0.85	5	0.736	13%	2	0.739	13%	1	0.003
10	Eastgate	0.90	4	0.682	24%	2	0.658	27%	0	-0.024
11	Newcastle	0.80	3	0.793	1%	1	0.628	22%	0	-0.165
12	Overlake	0.95	9	0.661	30%	1	0.644	32%	1	-0.017
13	Factoria	0.95	5	0.774	19%	1	0.739	22%	1	-0.035
	TOTAL		63			9			5	-0.384

---2000 Highway Capacity Manual (HCM) 209/Two-Hour Method

Notes:

- MMA 14 Newport Hills has no signalized intersections, and is therefore not considered here.
- Change in v/c ratio is due to the 2005-2011 CIP capacity projects or/and traffic redistribution..
- The number of system intersections that would fail the LOS standards drops from nine to five and the overall v/c ratio shows a decline (or improvement), with the CIP projects completed.
- With the CIP projects completed, eleven MMAs show a decline in v/c ratios in the range of -0.003 to -0.165,
- With the CIP projects completed, two MMAs show an increase in v/c ratio of 0.003 for both.

Findings

An overview of the above LOS Snapshots indicates the following:

Existing LOS Snapshot (traffic related to existing land use compared for 2004 and 2005 as shown in Table 7):

- The number of intersections failing the LOS MMA standards increased from four in 2004 to five in 2005. This quantity of failing intersections does not approach the maximum number of failing intersections allowed (congestion allowance) in any MMA.

- In seven of the 13 MMAs, the average v/c ratio declined (improvement), resulting in increased reserve capacity in the North Bellevue, Downtown, North East Bellevue, Eastgate, Overlake, Factoria and Newcastle MMAs. MMA v/c ratios declined in the range of -0.001 (Eastgate MMA) to -0.081 (North Bellevue MMA).

- In six of 13 MMAs, the average v/c ratio increased (degradation), resulting in less available capacity in the Bridle Trails, Bel-Red/Northup, Crossroads, South Bellevue, Richards Valley, and East Bellevue MMAs. MMA v/c ratios increased in the range of 0.014 (East Bellevue MMA) to 0.055 (Bridle Trails MMA).

- All 14 MMAs met their congestion allowance and were within the average v/c ratios allowed (or LOS standard). The Newcastle MMA has the least (8%) reserve capacity before reaching its LOS standard of 0.800 while the North Bellevue MMA has the most (35%) reserve capacity before reaching its LOS standard of 0.850.

2012 No Action LOS (permitted land use without the 2005-2011 CIP projects) as shown in Table 8 compared with Existing LOS Snapshot in Table 7:

- The 2012 LOS Snapshot without the CIP assumes that the City does not provide the programmed capacity improvement projects to offset the permitted land use.

- There would be nine system intersections failing the LOS standards in 2012 without the 2005-2011 CIP capacity projects built, one each in the Downtown, Richards Valley, Newcastle, Overlake and Factoria MMAs and two each in East Bellevue and Eastgate MMAs.

Concurrency 2012 LOS Snapshot (permitted land use with the 2005-2011 CIP projects) compared with 2012 LOS Snapshot without CIP as shown in Table 8:

- The 2012 LOS Snapshot with the 2005-2011 CIP assumes that the City completes the 2005-2011 programmed capacity improvement projects to offset the permitted land use. It is forecast that five system intersections would fail the LOS standards, one each in the Downtown, Richards Valley, East Bellevue, Overlake and Factoria MMAs.

- In comparison with the "No Action" scenario, the " With CIP" scenario forecasts that in 11 of the 13 MMAs, v/c ratios would decline, indicating a gain in reserve capacity in the range of 0.003 (Crossroads MMAs) to 0.165 (Newcastle MMA), including the North Bellevue, Bridle Trails, Downtown, Bel-Red/Northup, South Bellevue, Richards Valley, Eastgate, Factoria and Overlake MMAs.

- With the CIP completed by 2012, the Newcastle MMA would gain the most (21%) in reserve capacity, but all MMAs are within the LOS standard both in terms of their respective v/c ratios and the congestion allowance. Only five intersections citywide exceed their respective MMA standards (refer to Appendix A).

- Under the "With CIP" scenario, both the North East Bellevue and East Bellevue MMAs are projected to increase their v/c ratios by 0.003, resulting in a slight loss of reserve capacity when compared with the "No Action" scenario.

Discussion About Findings

The changes in the average LOS conditions are primarily attributable to the following reasons:

- Average 2 hour PM peak traffic volumes increased in Bellevue overall by 0.7% in 2005 compared to 2004. The loss in reserve capacity can be attributed to the volume increase in the system intersections.

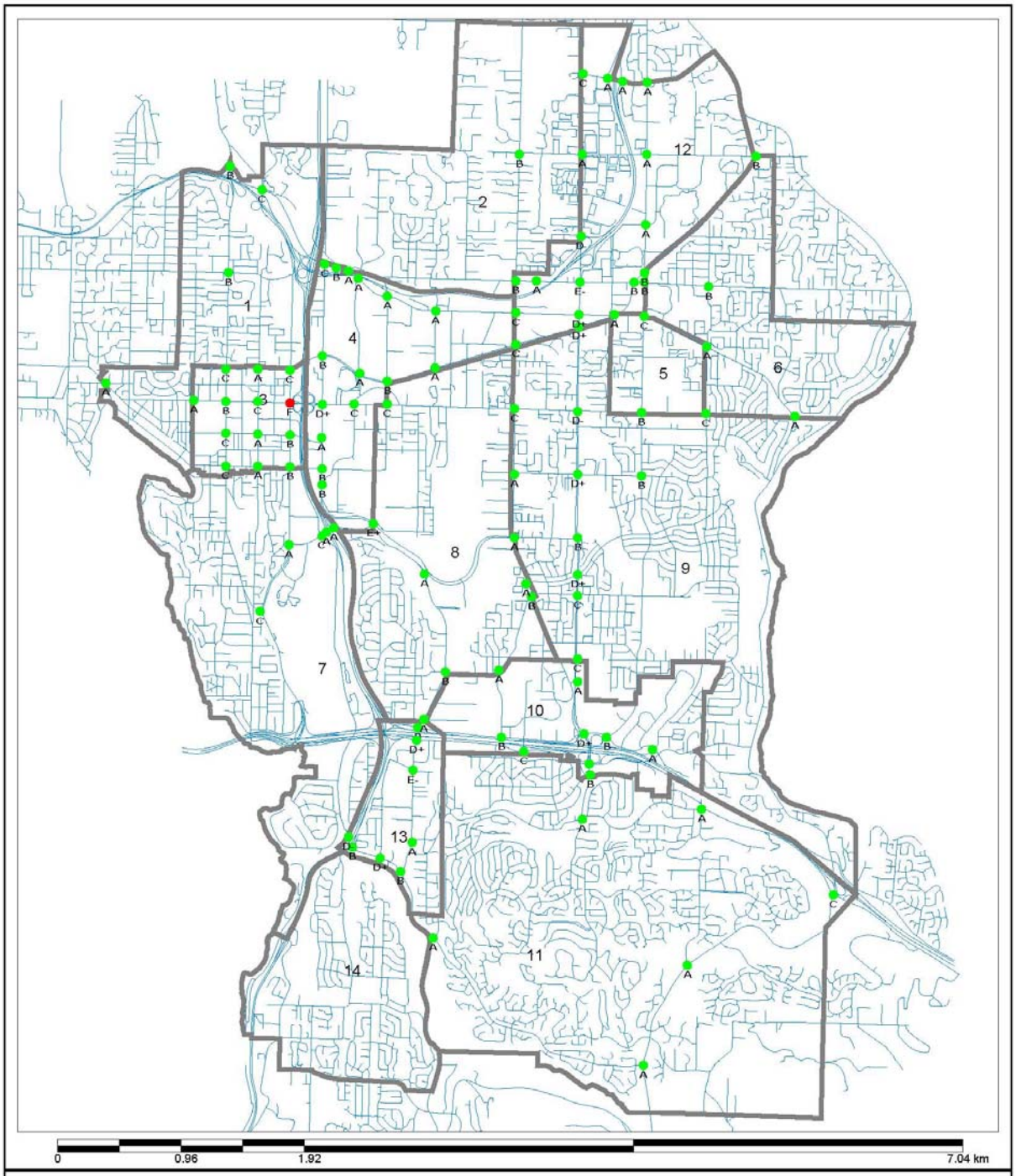
- In 2005, the completion of "Access Downtown" capacity projects (NE 6th Street HOV connection to I-405 and 110th Avenue widening between NE 4th Street and NE 6th Street) helped the downtown MMA gain 1% additional reserve capacity over 2004. Also, the completed CIP projects helped the North Bellevue MMA to gain 10% in reserve capacity.

- By 2012, completed CIP capacity projects will contribute significantly to the transportation system improvements, reducing overall failed intersections from nine to five and improving eleven MMAs when compared with the "No CIP" scenario.

Concurrency analysis works as an effective tool to help planners proactively and systematically prioritize capacity improvement projects to facilitate land developments while maintaining the transportation system at acceptable standards.

Implementation of the 2005-2011 CIP capacity projects is necessary to prevent more system intersections and/or MMAs from exceeding their respective LOS standards.

In addition, the concurrency model platform (MP6-R8) will be used as a background condition for project-level development review modeling for next year until a new concurrency update is completed in 2007 for the 2006 time period.



MP6_R8 (2005 base)

Figure 6: 2012 PM Pk 2Hr Average System Intersection LOS w/2005-2011 CIP

Prepared by Bellevue Transportation Modeling Group

Conclusion

In conclusion, this concurrency update indicates the following:

- Despite increasing traffic volumes from 2004 to 2005, the completed CIP capacity projects such as "Access Downtown", Factoria Blvd. and NE 29th Place Connection helped relieve congestion by providing additional reserve capacity.

- The 2005-2011 CIP will mitigate traffic volume growth in eleven MMAs while serving permitted land developments.

- Funded 2005-2011 CIP capacity projects, such as NE 10th Street Extension (R-149), 148th Avenue NE/Bel-Red Road (I-76), and 150th Ave SE (R-105) will significantly improve system intersections in the Downtown, Overlake and Eastgate MMAs, respectively.

- Improved signal design, intersection channelization and markings, and continuous efforts to improve signal system operations have added to arterial system operational efficiency.

- Bellevue improved the Bellevue-Kirkland-Redmond (BKR) region-wide model with increased transit focus and park and ride lot detail in the BKR area for the 2005 base year. The model will facilitate consideration of transit system improvements in future concurrency determinations.

APPENDIX A:

PM PEAK 2-HOUR AVERAGE LOS FOR 2004, 2005, AND 2011 AND 2012 WITH OR WITHOUT CIP
(BY Bellevue Modeling and Forecasting Group on 9/05/06)

Area 1: North Bellevue

INT	ADDRESS		2004 Existing			2005 Existing			2011 No-CIP			2011 w/ CIP			2012 No-CIP			2012 w/ CIP		
69	Bellevue Way NE	NE 24th Street	0.715	C	0	0.572	A	0	0.728	C	0	0.720	C	0	0.652	B	0	0.639	B	0
74	Bellevue Way NE	Northup Way NE	0.791	C	0	0.615	B	0	0.801	D+	0	0.798	C	0	0.634	B	0	0.627	B	0
78	108th Ave NE	Northup Way NE	0.755	C	0	0.756	C	0	0.762	C	0	0.754	C	0	0.792	C	0	0.765	C	0
93	Lk Washington B	NE 1st/NE 10 St.	0.276	A	0	0.269	A	0	0.283	A	0	0.277	A	0	0.290	A	0	0.285	A	0
		Area wide average ->	0.634	B	0	0.553	A	0	0.644	B	0	0.637	B	0	0.592	A	0	0.579	A	0
	LOS Threshold	0.850																		
	Allowance	3			0			0			0			0			0			0

Area 2: Bridle Trail

INT	ADDRESS		2004 Existing			2005 Existing			2011 No-CIP			2011 w/ CIP			2012 No-CIP			2012 w/ CIP		
118	Northup Way	NE 24th Street	0.504	A	0	0.559	A	0	0.490	A	0	0.492	A	0	0.565	A	0	0.557	A	0
123	140th Ave NE	NE 40th Street	-----	---	0	-----	---	0	-----	---	0	-----	---	0	-----	---	0	-----	---	0
		Area wide average ->	0.504	A	0	0.559	A	0	0.490	A	0	0.492	A	0	0.565	A	0	0.557	A	0
	LOS Threshold	0.800																		
	Allowance	2			0			0			0			0			0			0

Area 3: Downtown

INT	ADDRESS		2004 Existing			2005 Existing			2011 No-CIP			2011 w/ CIP			2012 No-CIP			2012 w/ CIP		
3	100th Ave NE	NE 8th Street	0.443	A	0	0.500	A	0	0.440	A	0	0.453	A	0	0.540	A	0	0.538	A	0
5	Bellevue Way NE	NE 12th Street	0.698	B	0	0.660	B	0	0.693	B	0	0.694	B	0	0.730	C	0	0.725	C	0
7	Bellevue Way NE	NE 8th Street	0.708	C	0	0.581	A	0	0.770	C	0	0.764	C	0	0.621	B	0	0.610	B	0
8	Bellevue Way NE	NE 4th Street	0.717	C	0	0.640	B	0	0.756	C	0	0.745	C	0	0.730	C	0	0.779	C	0
9	Bellevue Way	Main Street	0.722	C	0	0.768	C	0	0.709	C	0	0.693	B	0	0.824	D+	0	0.778	C	0
20	108th Ave NE	NE 12th Street	0.398	A	0	0.377	A	0	0.431	A	0	0.455	A	0	0.500	A	0	0.539	A	0
21	108th Ave NE	NE 8th Street	0.661	B	0	0.654	B	0	0.738	C	0	0.713	C	0	0.799	C	0	0.748	C	0
22	108th Ave NE	NE 4th Street	0.447	A	0	0.536	A	0	0.464	A	0	0.451	A	0	0.613	B	0	0.594	A	0
24	108th Ave	Main Street	0.450	A	0	0.458	A	0	0.479	A	0	0.463	A	0	0.586	A	0	0.457	A	0
25	112th Ave NE	NE 12th Street	0.762	C	0	0.732	C	0	0.782	C	0	0.711	C	0	0.760	C	0	0.723	C	0
26	112th Ave NE	NE 8th Street	1.068	F	1	1.074	F	1	1.126	F	1	1.086	F	1	1.212	F	1	1.127	F	1
36	112th Ave	Main Street	0.815	D+	0	0.669	B	0	0.851	D+	0	0.766	C	0	0.849	D+	0	0.692	B	0
72	112th Ave NE	NE 4th Street	0.477	A	0	0.574	A	0	0.513	A	0	0.508	A	0	0.722	C	0	0.685	B	0
		Area wide average ->	0.644	B	0	0.632	B	0	0.673	B	0	0.654	B	0	0.730	C	0	0.692	B	0
	LOS Threshold	0.950																		
	Allowance	9			1			1			1			1			1			1

Area 4: Bel-Red/Northup

INT	ADDRESS		2004 Existing			2005 Existing			2011 No-CIP			2011 w/ CIP			2012 No-CIP			2012 w/ CIP		
29	116th Ave NE	NE 12th Street	0.807	D+	0	0.674	B	0	0.844	D+	0	0.845	D+	0	0.741	C	0	0.684	B	0
30	116th Ave NE	NE 8th Street	0.607	B	0	0.710	C	0	0.600	A	0	0.757	C	0	0.801	D+	0	0.813	D+	0
32	120th Ave NE	NE 12th Street	0.529	A	0	0.539	A	0	0.545	A	0	0.549	A	0	0.572	A	0	0.557	A	0
34	124th Ave NE	Bellevue-Redmond	0.780	C	0	0.807	D+	0	0.786	C	0	0.779	C	0	0.843	D+	0	0.637	B	0
35	124th Ave NE	NE 8th Street	0.616	B	0	0.710	C	0	0.598	A	0	0.586	A	0	0.741	C	0	0.714	C	0
37	130th Ave NE	Bellevue-Redmond	0.446	A	0	0.568	A	0	0.451	A	0	0.465	A	0	0.578	A	0	0.586	A	0
68	130th Ave NE	NE 20th Street	0.552	A	0	0.577	A	0	0.562	A	0	0.569	A	0	0.593	A	0	0.592	A	0
73	116th Ave	Main Street	0.694	B	0	0.602	B	0	0.709	C	0	0.687	B	0	0.689	B	0	0.646	B	0
88	124th Ave NE	Northup Way NE	0.572	A	0	0.624	B	0	0.581	A	0	0.524	A	0	0.677	B	0	0.506	A	0
114	116th Ave NE	Northup Way NE	0.667	B	0	0.697	B	0	0.691	B	0	0.680	B	0	0.745	C	0	0.717	C	0
116	115th Place NE	Northup Way	0.585	A	0	0.617	B	0	0.612	B	0	0.608	B	0	0.665	B	0	0.658	B	0
117	120th Ave NE	NE 20th Street	0.484	A	0	0.524	A	0	0.476	A	0	0.476	A	0	0.525	A	0	0.532	A	0
131	116th Ave SE	SE 1st Street	0.705	C	0	0.718	C	0	0.661	B	0	0.651	B	0	0.730	C	0	0.691	B	0
139	116th Ave NE	NE 4th Street	0.539	A	0	0.607	B	0	0.537	A	0	0.462	A	0	0.661	B	0	0.541	A	0
233	120th Ave NE	NE 8th Street	0.674	B	0	0.723	C	0	0.668	B	0	0.685	B	0	0.736	C	0	0.743	C	0
		Area wide average ->	0.617	B	0	0.646	B	0	0.621	B	0	0.622	B	0	0.686	B	0	0.641	B	0
	LOS Threshold	0.900																		
	Allowance	10			0			0			0			0			0			0

Area 5: Crossroads

INT	ADDRESS		2004 Existing			2005 Existing			2011 No-CIP			2011 w/ CIP			2012 No-CIP			2012 w/ CIP		
58	Bellevue-Redmond	NE 20th Street	0.516	A	0	0.532	A	0	0.518	A	0	0.534	A	0	0.532	A	0	0.523	A	0
62	156th Ave NE	Northup Way	0.786	C	0	0.784	C	0	0.785	C	0	0.796	C	0	0.788	C	0	0.788	C	0
63	156th Ave NE	NE 8th Street	0.584	A	0	0.623	B	0	0.592	A	0	0.596	A	0	0.642	B	0	0.642	B	0
		Area wide average ->	0.629	B	0	0.646	B	0	0.632	B	0	0.642	B	0	0.654	B	0	0.651	B	0
	LOS Threshold	0.900																		
	Allowance	2			0			0			0			0			0			0

Area 6: North-East Bellevue

INT	ADDRESS		2004 Existing			2005 Existing			2011 No-CIP			2011 w/ CIP			2012 No-CIP			2012 w/ CIP		
75	164th Ave NE	NE 24th Street	0.604	B	0	0.618	B	0	0.605	B	0	0.595	A	0	0.621	B	0	0.616	B	0
76	164th Ave NE	Northup Way	0.582	A	0	0.540	A	0	0.583	A	0	0.577	A	0	0.540	A	0	0.539	A	0
87	164th Ave NE	NE 8th Street	0.686	B	0	0.706	C	0	0.686	B	0	0.684	B	0	0.722	C	0	0.739	C	0
111	Northup Way	NE 8th Street	-----	---	0	-----	---	0	-----	---	0	-----	---	0	-----	---	0	-----	---	0
		Area wide average ->	0.624	B	0	0.622	B	0	0.625	B	0	0.619	B	0	0.628	B	0	0.631	B	0
	LOS Threshold	0.800																		
	Allowance	2			0			0			0			0			0			0

Area 7: South Bellevue

INT	ADDRESS		2004 Existing			2005 Existing			2011 No-CIP			2011 w/ CIP			2012 No-CIP			2012 w/ CIP		
14	112th Ave SE	Bellevue Way SE	0.724	C	0	0.767	C	0	0.732	C	0	0.726	C	0	0.800	C	0	0.789	C	0
89	112th Ave SE	SE 8th Street	0.588	A	0	0.596	A	0	0.578	A	0	0.574	A	0	0.594	A	0	0.596	A	0
102	118th Ave SE	SE 8th Street	0.671	B	0	0.719	C	0	0.641	B	0	0.631	B	0	0.750	C	0	0.731	C	0
219	I-405 NB Ramps	SE 8th Street	0.538	A	0	0.569	A	0	0.541	A	0	0.534	A	0	0.597	A	0	0.560	A	0
226	I-405 SB Ramps	SE 8th Street	0.429	A	0	0.367	A	0	0.431	A	0	0.429	A	0	0.398	A	0	0.393	A	0
		Area wide average ->	0.590	A	0	0.604	B	0	0.584	A	0	0.579	A	0	0.628	B	0	0.614	B	0
	LOS Threshold	0.850																		
	Allowance	4			0			0			0			0			0			0

Area 8: Richards Valley

INT	ADDRESS		2004 Existing			2005 Existing			2011 No-CIP			2011 w/ CIP			2012 No-CIP			2012 w/ CIP		
43	140th Ave SE	SE 8th Street	0.689	B	0	0.551	A	0	0.687	B	0	0.687	B	0	0.576	A	0	0.564	A	0
44	145th Place SE	Lake Hills Blvd	0.504	A	0	0.560	A	0	0.497	A	0	0.513	A	0	0.589	A	0	0.592	A	0
45	145th Place SE	SE 16th Street	0.687	B	0	0.612	B	0	0.685	B	0	0.637	B	0	0.642	B	0	0.684	B	0
71	Lk Hills Connec	SE 8th St/7t	0.779	C	0	0.930	E+	1	0.775	C	0	0.781	C	0	0.966	E-	1	0.931	E+	1
82	Richards Rd	Kamber Rd	0.501	A	0	0.630	B	0	0.507	A	0	0.504	A	0	0.681	B	0	0.649	B	0
85	Richards Rd	SE 32nd Street	0.487	A	0	0.511	A	0	0.491	A	0	0.507	A	0	0.604	B	0	0.504	A	0
134	Richards Rd	Lk Hills Connec	0.444	A	0	0.452	A	0	0.445	A	0	0.368	A	0	0.473	A	0	0.448	A	0
280	139th Ave SE	Kamber Road	0.339	A	0	0.339	A	0	0.347	A	0	0.337	A	0	0.361	A	0	0.302	A	0
		Area wide average ->	0.554	A	0	0.573	A	0	0.554	A	0	0.542	A	0	0.612	B	0	0.584	A	0
	LOS Threshold	0.850																		
	Allowance	5			0			1			0			0			1			1

Area 9: East Bellevue

INT	ADDRESS		2004 Existing			2005 Existing			2011 No-CIP			2011 w/ CIP			2012 No-CIP			2012 w/ CIP		
41	140th Ave NE	NE 8th Street	0.737	C	0	0.728	C	0	0.739	C	0	0.746	C	0	0.761	C	0	0.757	C	0
42	140th Ave	Main Street	0.528	A	0	0.552	A	0	0.525	A	0	0.528	A	0	0.565	A	0	0.554	A	0
49	148th Ave NE	NE 8th Street	0.883	D-	1	0.844	D+	0	0.884	D-	1	0.896	D-	1	0.855	D-	1	0.864	D-	1
50	148th Ave	Main Street	0.762	C	0	0.784	C	0	0.756	C	0	0.754	C	0	0.792	C	0	0.806	D+	0
51	148th Ave SE	Lake Hills Blvd	0.739	C	0	0.847	D+	0	0.730	C	0	0.745	C	0	0.860	D-	1	0.847	D+	0
52	148th Ave SE	SE 16th Street	0.698	B	0	0.698	B	0	0.691	B	0	0.718	C	0	0.705	C	0	0.737	C	0
55	148th Ave SE	SE 24th Street	0.722	C	0	0.764	C	0	0.697	B	0	0.761	C	0	0.781	C	0	0.763	C	0
65	148th Ave SE	NE 8th Street	0.626	B	0	0.641	B	0	0.621	B	0	0.625	B	0	0.665	B	0	0.669	B	0
83	156th Ave	Main Street	0.648	B	0	0.626	B	0	0.642	B	0	0.651	B	0	0.643	B	0	0.652	B	0
		Area wide average ->	0.705	C	0	0.720	C	0	0.698	B	0	0.714	C	0	0.736	C	0	0.739	C	0
	LOS Threshold	0.850																		
	Allowance	5			1			0			1			1			2			1

Area 10: Eastgate

INT	ADDRESS		2004 Existing			2005 Existing			2011 No-CIP			2011 w/ CIP			2012 No-CIP			2012 w/ CIP		
56	148th Ave SE	SE 27th Street	0.836	D+	0	0.541	A	0	0.850	D+	0	0.601	B	0	0.562	A	0	0.537	A	0
86	156th Ave SE	SE Eastgate Way	0.666	B	0	0.655	B	0	0.659	B	0	0.620	B	0	0.702	C	0	0.629	B	0
92	161st Ave SE	SE Eastgate Way	0.376	A	0	0.334	A	0	0.378	A	0	0.408	A	0	0.437	A	0	0.432	A	0
101	150th Ave SE	SE Eastgate Way	0.672	B	0	0.822	D+	0	0.680	B	0	0.714	C	0	0.856	D-	0	0.840	D+	0
171	142nd Ave SE	SE 36th Street	0.503	A	0	0.503	A	0	0.500	A	0	0.451	A	0	0.535	A	0	0.729	C	0
174	150th Ave SE	SE 38th Street	0.844	D+	0	0.899	D-	0	0.829	D+	0	0.625	B	0	0.927	E+	1	0.662	B	0
227	150th Ave SE	I-90 EB Off-Ram	0.954	E-	1	1.015	F	1	0.941	E+	1	0.733	C	0	1.049	F	1	0.780	C	0
272	139th Ave SE	SE Eastgate Way	0.313	A	0	0.386	A	0	0.310	A	0	0.291	A	0	0.385	A	0	0.655	B	0
		Area wide average ->	0.645	B	0	0.644	B	0	0.643	B	0	0.555	A	0	0.682	B	0	0.658	B	0
	LOS Threshold	0.900																		
	Allowance	4			1			1			1			0			2			0

Area 11: Newcastle

INT	ADDRESS		2004 Existing			2005 Existing			2011 No-CIP			2011 w/ CIP			2012 No-CIP			2012 w/ CIP		
98	Coal Creek Park	Forest Drive	0.859	D-	1	0.775	C	0	0.895	D-	1	0.754	C	0	0.864	D-	1	0.597	A	0
133	150th Ave SE	SE Newport Way	0.794	C	0	0.684	B	0	0.783	C	0	0.762	C	0	0.738	C	0	0.520	A	0
228	Lakemont Blvd (	SE Newport Way	0.733	C	0	0.760	C	0	0.728	C		0.704	C	0	0.778	C	0	0.767	C	0
229	Lakemont Blvd	Forest Drive	-----	---	0	-----	---	0	-----	---	0	-----	---	0	-----	---	0	-----	---	0
242	164th Ave SE	Lakemont Blvd	-----	---	0	-----	---	0	-----	---	0	-----	---	0	-----	---	0	-----	---	0
257	164th Ave SE	SE Newport Way	-----	---	0	-----	---	0	-----	---	0	-----	---	0	-----	---	0	-----	---	0
		Area wide average ->	0.795	C	0	0.740	C	0	0.802	D+	1	0.740	C	0	0.793	C	0	0.628	B	0
	LOS Threshold	0.800																		
	Allowance	3			1			0			1			0			1			0

Area 12: Overlake

INT	ADDRESS		2004 Existing			2005 Existing			2011 No-CIP			2011 w/ CIP			2012 No-CIP			2012 w/ CIP		
39	140th Ave NE	NE 20th Street	0.695	B	0	0.750	C	0	0.709	C	0	0.722	C	0	0.783	C	0	0.756	C	0
40	140th Ave NE	Bellevue-Redmond	0.703	C	0	0.712	C	0	0.703	C	0	0.747	C	0	0.741	C	0	0.723	C	0
47	148th Ave NE	NE 20th Street	0.864	D-	0	0.933	E+	0	0.864	D-	0	0.746	C	0	0.944	E+	0	0.846	D+	0
48	148th Ave NE	Bellevue-Redmond	0.937	E+	0	0.884	D-	0	0.936	E+	0	0.803	D+	0	0.890	D-	0	0.806	D+	0
59	Bellevue-Redmond	NE 24th Street	0.643	B	0	0.600	B	0	0.637	B	0	0.639	B	0	0.597	A	0	0.603	B	0
60	156th Ave NE	Bellevue-Redmond	0.606	B	0	0.643	B	0	0.605	B	0	0.599	A	0	0.639	B	0	0.646	B	0
61	156th Ave NE	NE 24th Street	0.725	C	0	0.678	B	0	0.728	C	0	0.703	C	0	0.686	B	0	0.689	B	0
64	140th Ave NE	NE 24th Street	0.630	B	0	0.626	B	0	0.631	B	0	0.807	D+	0	0.665	B	0	0.622	B	0
79	148th Ave NE	NE 40th Street	0.527	A	0	0.592	A	0	0.540	A	0	0.551	A	0	0.610	B	0	0.579	A	0
81	148th Ave NE	NE 24th Street	0.881	D-	0	0.970	E-	1	0.903	E+	0	0.851	D+	0	0.984	E-	1	0.967	E-	1
138	Bellevue-Redmond	NE 40th Street	0.593	A	0	0.614	B	0	0.593	A	0	0.569	A	0	0.631	B	0	0.617	B	0
188	148th Ave NE	NE 29th Place	0.913	E+	0	0.867	D-	0	0.944	E+	0	1.167	F	1	0.879	D-	0	0.879	D-	0
189	NE 29th Place	NE 24th Street	-----	---	0	0.402	A	0	-----	---	0	0.858	D-	0	0.406	A	0	0.429	A	0
239	156th Ave NE	NE 40th Street	0.599	A	0	0.610	B	0	0.616	B	0	0.595	A	0	0.614	B	0	0.591	A	0
249	148th Ave NE	NE 51st Street	0.783	C	0	0.750	C	0	0.818	D+	0	0.816	D+	0	0.758	C	0	0.750	C	0
250	SR-520 SB Ramps	NE 51st Street	0.268	A	0	0.261	A	0	0.285	A	0	0.273	A	0	0.260	A	0	0.253	A	0
251	SR-520 NB Ramps	NE 51st Street	0.399	A	0	0.449	A	0	0.436	A	0	0.444	A	0	0.422	A	0	0.443	A	0
255	156th Ave NE	NE 51st Street	0.527	A	0	0.521	A	0	0.541	A	0	0.488	A	0	0.545	A	0	0.512	A	0
264	156th Ave NE	NE 31st Street	0.508	A	0	0.522	A	0	0.515	A	0	0.476	A	0	0.514	A	0	0.526	A	0
		Area wide average ->	0.656	B	0	0.652	B	0	0.667	B	0	0.677	B	0	0.661	B	0	0.644	B	0
	LOS Threshold	0.950																		
	Allowance	9			0			1			0			1			1			1

Area 13: Factoria

INT	ADDRESS		2004 Existing			2005 Existing			2011 No-CIP			2011 w/ CIP			2012 No-CIP			2012 w/ CIP		
105	Richards Rd	SE Eastgate Way	0.764	C	0	0.724	C	0	0.771	C	0	0.736	C	0	0.758	C	0	0.695	B	0
202	128th Ave SE/Ne	SE Newport Way	0.628	B	0	0.566	A	0	0.629	B	0	0.628	B	0	0.617	B	0	0.555	A	0
203	SE Newport Way	Coal Creek Pkwy	0.588	A	0	0.599	A	0	0.586	A	0	0.608	B	0	0.614	B	0	0.605	B	0
204	128th Ave SE	SE 36th Street	0.827	D+	0	0.821	D+	0	0.818	D+	0	0.810	D+	0	0.834	D+	0	0.806	D+	0
220	I-405 NB Ramps	Coal Creek Park	0.702	C	0	0.647	B	0	0.704	C	0	0.685	B	0	0.662	B	0	0.629	B	0
221	I-405 SB Ramps	Coal Creek Park	0.894	D-	0	0.870	D-	0	0.896	D-	0	0.886	D-	0	0.841	D+	0	0.859	D-	0
222	128th Ave SE	SE 38th Place	0.937	E+	0	0.961	E-	1	0.933	E+	0	0.934	E+	0	0.982	E-	1	0.952	E-	1
284	124th Ave SE	Coal Creek Park	0.836	D+	0	0.845	D+	0	0.848	D+	0	0.855	D-	0	0.885	D-	0	0.810	D+	0
		Area wide average ->	0.772	C	0	0.754	C	0	0.773	C	0	0.768	C	0	0.774	C	0	0.739	C	0
	LOS Threshold	0.950																		
	Allowance	5			0			1			0			0			1			1

Total Intersections Exceeding Threshold	4	5	4	3	9	5

APPENDIX B: List of Contributors

Concurrency Modeling

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