City of Bellevue

MEMORANDUM

TO: Traffic Standards Code File

FROM: David Berg, Director of Transportation

DATE: August 30, 2013

SUBJECT: Authorization of Concurrency Model Platform Update: MP6-R11

COPY TO: Bellevue City Councilmembers

The Growth Management Act requires that the City enforce an ordinance precluding approval of a proposed development if that development would cause the level of service of a transportation facility to fall below the City's adopted standard, unless a financial commitment is in place to complete mitigating transportation improvements or strategies within six years.

Bellevue's Traffic Standards Code (BCC 14.10) implements this requirement by assessing the impacts of traffic volumes from proposed development upon a concurrency model platform. The last update of the concurrency model platform occurred in 2007. Subsequent updates have been deferred due to work on changes to the Bel-Red subarea plan, revenue impacts to the Capital Investment Program, and reduced traffic volumes resulting from the economic slowdown.

The attached report regarding concurrency model platform MP6-R11 summarizes existing level of service analysis results at the City's system intersections and the concurrency forecast for 2019. MP6-R11 refers to Model Platform 6 for a six year span of application, and Release 11 for the 11th version of this model. This memo identifies and authorizes the application of this updated concurrency model platform for analysis of the impacts of development applications as of this date.

City of Bellevue, Transportation Modeling and Analysis Group

Final Report

August 30, 2013

CONCURRENCY UPDATE REPORT

LOS Snapshot as of December 31st, 2012

Executive Summary

All Mobility Management Areas (MMAs) met their congestion allowance (counts of intersections over the standard) in the Build (With CIP) scenario. All MMAs were within the average v/c ratios allowed (LOS standard) as well. Overall, the impact of the CIP build over the 2012 actual produces an loss in capacity of one percent; in the current evaluation the weighted average v/c system wide would be 0.65 and with the CIP it is 0.66.

This indicates that citywide the percent of capacity available is 23%. The Newcastle MMA (#11) has just 1% of capacity available.

Concurrency Summary by MMA

		Standards		2012 per actual count data			MP6R11 w/ CIP			
MMA #	MMA Name	LOS Standard (Volume/Capacity Ratios)	No of Intersections Allowed Over the Standard	Average V/C Ratio	Intersection LOS	No of Intersections Over the Standard	Average V/C Ratio	Intersection LOS	No of Intersections Over the Standard	% Capacity Available
1	North Bellevue	0.85	3	0.49	A	0	0.47	A	0	39%
2	Bridle Trails	0.80	4	0.63	B	1	0.60	A	1	20%
3	Downtown	0.95	9	0.64	B	1	0.70	C	1	25%
4	Wilburton	0.90	3	0.74	C	0	0.78	C	1	12%
5	Crossroads	0.90	2	0.60	B	0	0.63	B	0	28%
6	North-East Bellevue	0.80	2	0.60	A	0	0.63	B	0	17%
7	South Bellevue	0.85	4	0.60	A	0	0.55	A	0	30%
8	Richards Valley	0.85	5	0.60	A	0	0.61	B	0	24%
9	East Bellevue	0.85	5	0.70	B	0	0.72	C	1	13%
10	Eastgate	0.90	4	0.62	B	0	0.64	B	1	27%
11	Newcastle	0.80	3	0.77	C	1	0.79	C	1	1%
12	Bel-Red/Northup	0.95	7	0.64	B	0	0.65	B	0	30%
13	Factoria	0.95	5	0.79	C	1	0.78	C	1	17%
		0.89	56	0.65		4	0.66		7	23%

Following the release of this Concurrency Update Report, the concurrency model platform (MP6-R11) will be used as a background condition for project-level development review modeling until a new concurrency update is completed.

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 Rule of 2011 further defines the specifications of this procedure.

Typically, an 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.

The last update of the Concurrency model platform occurred in 2007 for which 2013 was the horizon year. Conditions since then led the Transportation Department Director to write a supplementary memo each year that indicated the annual update would not be a good use of time and resources. This reflected conditions in both the slowing of new developments due to the Great Recession and modest scale of the CIP. During the intervening years, some sensitivity tests were made to insure that a less aggressive CIP combined with larger than usual growth scenarios did not exceed concurrency standards.

This report summarizes existing LOS analysis results as well as the future concurrency LOS (2019 is the horizon year) from the City's Concurrency Model platform (MP6-R11). This model takes into account data on land use from the City's Planning and Community Development Department (PCD) as of December 31, 2012. In addition to that were added the volume of development from applications that had received either design review or building permit approvals as recorded by Development Services Department (DSD).

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

The 2019 transportation network assumed in the analysis is the 2012 existing roadway network, plus fully funded capacity improvement projects in the 2013 – 2019 Capital Investment Program (CIP) as adopted by the Bellevue City Council. The 2019 landuse is not a forecast of what is likely to develop by 2019. Because this model is meant to support development review

of proposed development projects, it adds just the land use growth from projects which were approved as of December 31, 2012 to the amount that existed in 2012.

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 (BCC Chapter 14.10). 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 reserve 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.
- Development is considered concurrent if 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.

The concurrency methodology for the City of Bellevue consists of two parts: program level analysis and project level analysis. 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 performed using the City's 6-year EMME 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 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 model.

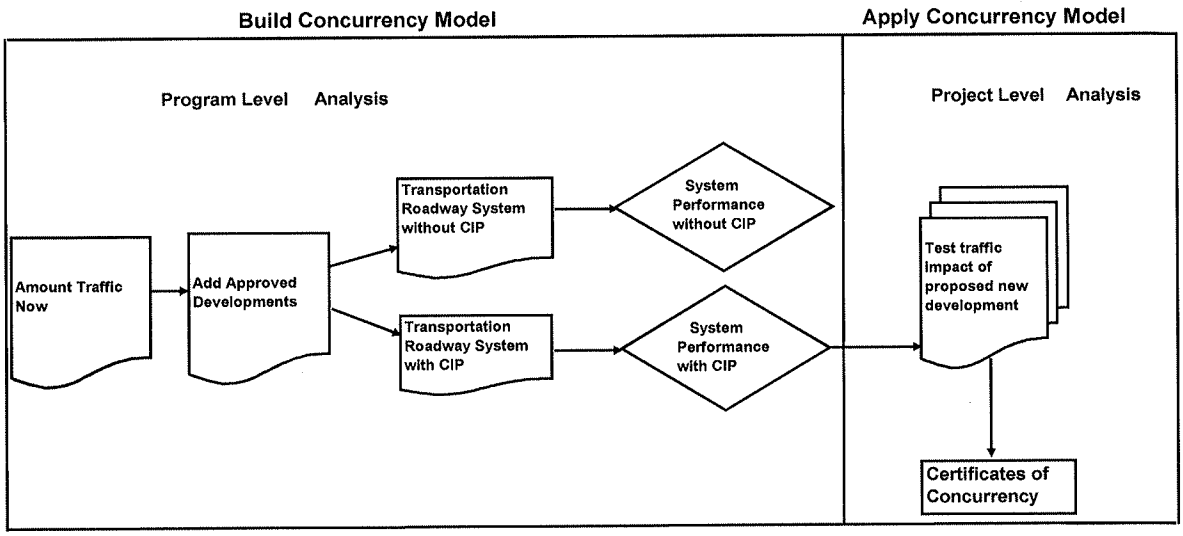


Figure 1 Concurrency Methodology

MMA Boundary

In 2009 the Comprehensive Plan was updated after the Bel-Red Study in order to adjust some Mobility Management Areas (MMAs). The boundaries of MMA 12 (Bel-Red/Northup) were changed, as part of the Transportation Element, to match the boundaries of the Bel-Red Subarea. New boundaries for MMA 12 and also for MMA 4 (Wilburton) were established, together with minor adjustments to the boundaries of the MMA 2 (Bridle Trails) where the boundary between the Bridle Trails Subarea and the Bel-Red Subarea was aligned along SR-520. Also some adjustments were made to the boundaries along Bel-Red Road of MMA 12 and MMA 8 (Richards Valley) and MMA 9 (East Bellevue). The new MMA boundaries are shown in Figure 2.

As a result of the MMA boundary changes, some of the "system intersections" – those intersections that are used to calculate transportation concurrency for the MMA – have been reassigned to the MMA in which they now occur. This change largely involved reassigning MMA 4 intersections to the new MMA 12, a few MMA 12 and MMA 4 intersections to MMA 2 and one intersection from MMA 4 to MMA 8.

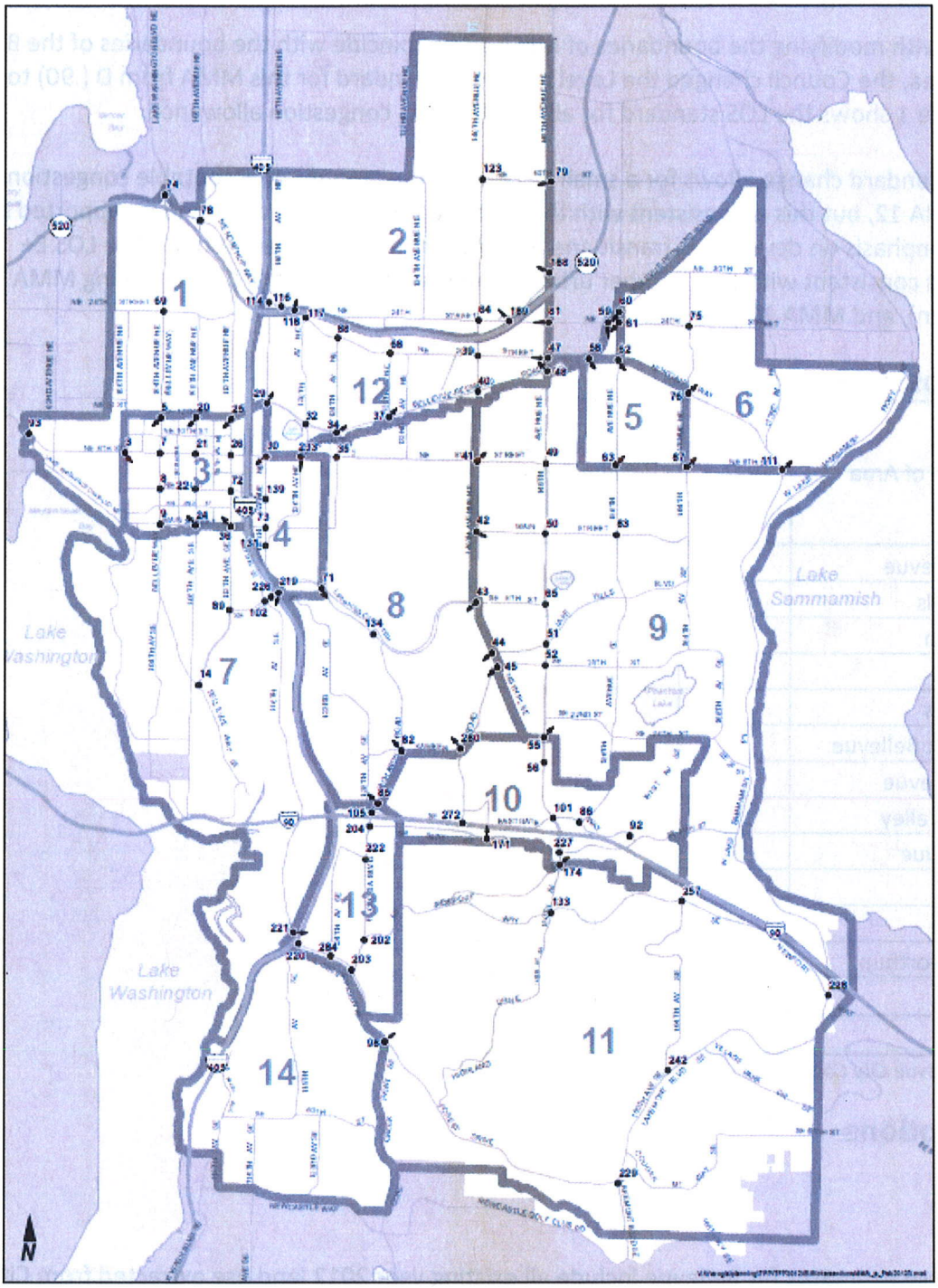


Figure 2 Mobility Management Areas (MMA) of Bellevue and System Intersections

LOS Standards

Together with modifying the boundaries of MMA 12 to coincide with the boundaries of the Bel-Red Subarea, the Council changed the Level of Service standard for this MMA from D (.90) to E+ (.95). Table 1 shows the LOS standard for all MMA and its congestion allowance.

This LOS standard change allows for a small increase in the amount of acceptable congestion within MMA 12, but this is consistent with the land use vision for the area, and is supported by a strong emphasis on developing transit and non-motorized commute options. The LOS E+ standard is consistent with that in other urban/mixed-use MMAs in the City, including MMA 3 (Downtown), and MMA 13 (Factoria).

Table 1 LOS Standards for Subareas

Name of Area	MMA #	LOS Standard (Volume/Capacity Ratios)	Congestion Allowance
North Bellevue	1	0.85	3
Bridle Trails	2	0.80	4
Downtown	3	0.95	9
Wilburton	4	0.90	3
Crossroads	5	0.90	2
North-East Bellevue	6	0.80	2
South Bellevue	7	0.85	4
Richards Valley	8	0.85	5
East Bellevue	9	0.85	5
Eastgate	10	0.90	4
Newcastle	11	0.80	3
Bel-Red/Northup	12	0.95	7
Factoria	13	0.95	5
			56

Source: Bellevue City Code 14.10.030 Level-of-service Standard.

Assumptions

Land Use

The land use estimates for Bellevue include all existing year 2012 land use extracted from City's Land Information System (LIS) as of December 31, 2012. The land use permit tracking system (AMANDA) is the source of permitted developments approved by the City of Bellevue by that date. These permitted developments represent the new increment of land use change for concurrency testing. Table 2 provides an MMA-level summary of the estimate of the existing

2012 land use. Since not all development occurred on formerly vacant land, the land use information also accounted for demolition and conversions of land use. This provides the net amount of development in the various land use categories. Table 3 provides details of new and permitted land use as of the end of 2012, and Table 4 provides its aggregation by MMA.

This concurrency update indicates that more than 1.836 million additional gross square feet (GSF) of Office and .528 million GSF of Retail space are being built or have been permitted by the City since the update for year end 2012. Other non-residential development would add nearly 209,541 GSF, and 1,268 new multifamily dwelling units are being built in the City or have been permitted since then. In addition, 26 single family homes are in this category, spread across several areas. Table 5 contains the land use totals by category for the 14 MMAs for concurrency.

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.

Note that more houses may be under construction but this counts ones that are built on vacant land. When one structure is built to replace an existing home, the system does not increase the amount, instead showing just the net additions.

Table 2 Base Year (2012) Land Use Summary

(2012 Year End Existing Land Use)

MMA	Subarea	Commercial (sqft)			Dwelling Units	
		Office	Retail	Others	SF	MF
1	North Bellevue	1,449,549	180,899	407,334	2,186	2,174
2	Bridle Trails	697,636	405,611	511,940	1,678	3,252
3	Downtown Bellevue	9,035,217	3,874,590	2,017,866	0	7,406
4	Wilburton	1,271,252	658,289	929,540	76	577
5	Crossroads	153,921	678,471	223,295	51	3,365
6	Northeast Bellevue	426,995	12,816	469,632	3,308	255
7	South Bellevue	1,168,056	261,203	1,270,155	2,594	1,984
8	Richards Valley	211,470	76,782	279,557	2,465	3,507
9	East Bellevue	433,171	197,225	1,162,129	6,676	2,403
10	Eastgate	4,006,455	464,802	1,874,720	313	654
11	Newcastle	156,521	128,412	856,876	8,190	1,017
12	Bel-Red/Northup	2,548,521	2,362,388	3,371,096	1	113
13	Factoria	1,463,466	852,832	434,742	330	1,150
14	Newport Hills	13,464	94,510	164,208	2,638	472
Total		23,035,694	10,248,830	13,973,090	30,506	28,329

Table 3 Projects Permitted But Not Completed as of December 31, 2012

Project Name	Office (sqft)	Retail (sqft)	Others (sqft)	Multi-family (units)
The Park Metro Apartments	-	4,478	2,383	75
Bellevue Park II Apartments	-	-	-	160
Bellevue at Main	-	-	-	260
Bellevue Apartments	-	-	-	57
Summit III	342,930	-	-	-
Soma Towers - Garage	4,562	6,443	-	-
Soma Towers - North Tower	11,118	3,879	10,065	145
Soma Towers	-	-	-	121
Lincoln Square Expansion	720,000	370,000	150,000	186
Beacon Capital NE 8th Office	690,613		-	-
Tateuchi Center	54,229	110,296	16,195	-
Pacific Regent Phase II	-	-	-	168
Castle-Gouzoun Duplex	-	-	-	2
Wade's Gun Shop	9,149	-	691	-
McDonald's	-	3,910	-	-
Eastside Torah Center (LUX)	-	-	9,239	-
Wilburton Gateway - Bldg 4	-	-	-	13
Wilburton Gateway - Bldg 2	-	-	-	4
Wilburton Gateway - Bldg 3	-	-	-	7
Wilburton Gateway - Bldg 1	-	-	-	4
Starbucks - Kelsey Creek Bldg C	-	2,776	-	-
Kelsey Creek Center	-	20,900	-	-
Woodland Commons Apartments	-	-	-	66
Bellevue Childrens Academy Phase I Expansion	-	-	18,947	-
Factoria North Plaza Building	3,951	5,994	2,021	-
Total	**1,836,552**	**528,676**	**209,541**	**1,268**

Note: The 2012 totals in the table 2 compared to the 2006 Land Use table, used in the 2007-2013 concurrency report, are smaller in some categories. The reason is that the source for the data has been changed for 2012. The previous table relied on data from the permit tracking system that was determined to be incomplete. The City has since developed the Land Use Information System (LIS) that pulls data from the King County Assessor Department records. This is the same method being used by Comprehensive Planning and is consistent with data used for multiple City purposes.

Table 4 Approved Projects Aggregated by MMA (As of December 31, 2012)

MMA	Subarea	Commercial (sqft)			Dwelling Units	
		Office	Retail	Others	SF	MF
1	North Bellevue					2
2	Bridle Trail				1	
3	Downtown	1,823,452	495,096	178,643	0	1,172
4	Bel-Red/Northup					28
5	Crossroads		3,910	9,239	2	
6	N-E Bellevue				1	66
7	South Bellevue				1	
8	Richards Valley				7	
9	East Bellevue		23,676		3	
10	Eastgate				4	
11	Newcastle				5	
12	Overlake	9,149		19,638	2	
13	Factoria	3,951	5,994	2,021		
14	Newport Hills					
Total		1,836,552	528,676	209,541	26	1,268

Table 5 Land Use Assumed for Concurrency Base 2019

MMA	Subarea	Commercial (sqft)			Dwelling Units	
		Office	Retail	Others	SF	MF
1	North Bellevue	1,449,549	180,899	407,834	2,186	2,176
2	Bridle Trails	697,636	405,611	535,007	1,679	3,252
3	Downtown Bellevue	10,729,075	4,369,686	2,169,270	0	8,577
4	Wilburton	1,271,252	658,289	929,540	76	605
5	Crossroads	153,921	738,603	177,062	53	3,365
6	Northeast Bellevue	426,995	12,816	469,632	3,309	321
7	South Bellevue	1,168,056	261,203	1,274,173	2,712	1,984
8	Richards Valley	211,470	76,782	284,729	2,472	3,507
9	East Bellevue	505,637	389,593	1,205,819	6,679	2,403
10	Eastgate	4,006,455	464,802	1,874,720	317	654
11	Newcastle	156,521	128,412	733,196	8,195	1,017
12	Bel-Red/Northup	2,572,899	2,362,388	3,426,686	3	113
13	Factoria	1,467,417	858,826	436,763	330	1,150
14	Newport Hills	13,464	94,510	159,050	2,638	472
Total		**24,830,347**	**11,002,420**	**14,083,481**	**30,649**	**29,596**

Note: This is not the same as a forecast for 2019. It is simply current and committed development.

Transportation Network

The adopted 2013-2019 CIP is assumed in this analysis and report. The concurrency model network includes all funded projects that would add capacity to roadways and intersections, as listed in Table 7. These capacity projects include roadway widening, intersection signalization and channelization, and access improvements. The 2013-2019 CIP capacity project locations are shown in Figure 3.

This concurrency update includes the 2012 base year LOS analysis as a benchmark to compare concurrency LOS with the 2013-2019 CIP projects.

Traffic Counts

The 2012 base year PM peak two hour average counts were used along with the 2012 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 8.

The concurrency model outputs from MP6-R11 were adjusted using a post processor (a computer program) to account for model validation differences. The base year 2012 two hour average counts were post-processed to adjust the model output for the predicted concurrency intersection traffic volumes.

Table 6 Intersection LOS Definition

LOS Category		Average Volume-to-Capacity Ratios	Description
LOS A		<= 0.600	Highest driver comfort.Little delay. Free flow.
LOS B		0.601 - 0.700	High degree of driver comfort.Little delay.
LOS C		0.701-0.800	Some delays. Acceptable level of driver comfort. Efficient traffic operation
LOS D	LOS D+	0.801-0.850	Some driver frustration. Efficient traffic operation.
	LOS D-	0.851 - 0.900	Increased driver frustration. Long cycle length.
LOS E	LOS E+	0.901 - 0.950	Near capacity. Notable delays. Low driver comfort. Difficulty of signal progression.
	LOS E-	0.951 - 1.000	At capacity. High level of congestion. High level of driver frustration.
LOS F		>= 1.001	Breakdown flow. Excessive delays.

Note: The information reported represents the City's adopted Traffic Standards 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.

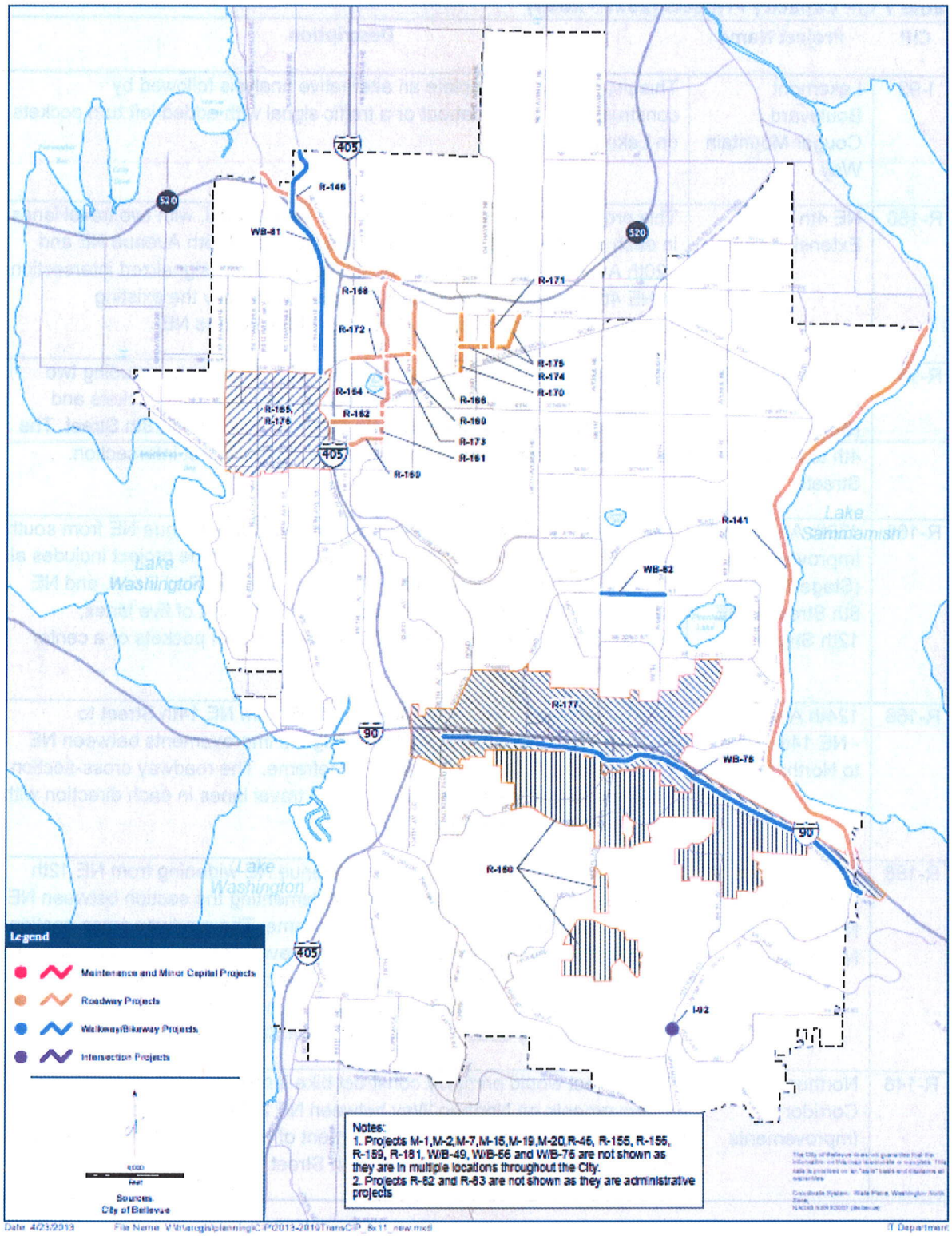


Figure 3 CIP Projects (2013 - 2019)

Table 7 CIP Capacity Projects (2013 - 2019)

CIP	Project Name	Description
I-92	Lakemont Boulevard / Cougar Mountain Way	This project would complete an alternative analysis followed by construction of a roundabout or a traffic signal with added left turn pockets on Lakemont Blvd.
R-160	NE 4th Street Extension	This project would implement a new five lane arterial, with two travel lanes in each direction and a center turn lane between 116th Avenue NE and 120th Avenue NE. The project would include a new signalized intersection at NE 4th Street/120th Avenue NE and would modify the existing signalized intersection at NE 4th Street/116th Avenue NE.
R-161	120th Avenue NE Improvements (Stage 1) - NE 4th to NE 8th Streets	This project would widen 120th Avenue NE to five lanes, including two travel lanes in each direction with a center turn lane, turn pockets and medians, beginning south of NE 4th Street to south of NE 8th Street. The project would install a traffic signal at the NE 6th Street intersection.
R-164	120th Avenue NE Improvements (Stage 2) - NE 8th Street to NE 12th Street	This project would extend, realign and widen 120th Avenue NE from south of NE 8th Street through NE 12th Street. Stage 2 of the project includes all intersection improvements at NE 8th Street, Old Bel-Red Road, and NE 12th Street. The roadway cross-section would consist of five lanes, including two travel lanes in each direction with turn pockets or a center turn lane.
R-166	124th Avenue NE - NE 14th Street to Northup Way	This project would widen 124th Avenue NE from NE 14th Street to Northup Way, though only implementing the improvements between NE 14th and NE 18th Streets in the CIP timeframe. The roadway cross-section would consist of five lanes, including two travel lanes in each direction with turn pockets or a center turn lane.
R-168	120th Avenue NE Improvements - NE 12th Street to Northup Way	This project would extend the 120th Avenue NE widening from NE 12th Street to Northup Way, though only implementing the section between NE 12th and NE 16th Streets in the CIP timeframe. The roadway cross-section would consist of five lanes, including two travel lanes in each direction with turn pockets or a center turn lane. The project would be designed to accommodate future intersections at NE 15th Street, NE 16th Street, and potential property access near the NE 14th Street alignment.
R-146	Northup Way Corridor Improvements	This project would primarily construct bike lane and sidewalk improvements on Northup Way between NE 24th Street and NE 33rd Place, but would include a short segment of two-way left turn lane east of the Yarrow Creek crossing to NE 30th Street.

Table 8 Existing Year (2012) LOS

MMA #	MMA Name	LOS Standard (Volume/Capacity Ratios)	Congestion Allowance	*Based on 2012 Actual Counts*			
				Average V/C Ratio	% Capacity Available	No of Intersections Over the Standard	Meets LOS Standards
1	North Bellevue	0.85	3	0.49	36%	0	Yes
2	Bridle Trails	0.80	4	0.63	17%	1	Yes
3	Downtown	0.95	9	0.64	31%	1	Yes
4	Wilburton	0.90	3	0.74	16%	0	Yes
5	Crossroads	0.90	2	0.60	30%	0	Yes
6	North-East Bellevue	0.80	2	0.60	20%	0	Yes
7	South Bellevue	0.85	4	0.60	25%	0	Yes
8	Richards Valley	0.85	5	0.60	25%	0	Yes
9	East Bellevue	0.85	5	0.70	15%	0	Yes
10	Eastgate	0.90	4	0.62	28%	0	Yes
11	Newcastle	0.80	3	0.77	3%	1	Yes
12	Bel-Red/Northup	0.95	7	0.64	31%	0	Yes
13	Factoria	0.95	5	0.79	16%	1	Yes
	TOTAL		56			4	

LOS Snapshots

This section presents these LOS snapshots for comparison over time.

- Existing condition (2012) LOS Snapshot reporting average traffic condition in 2012 PM peak hour, based on the observed traffic counts in a two hour average.
- 2019 PM PM peak hour LOS Forecast (CIP Scenario) including land use permits issued as of December 31, 2012 and the adopted 2013-2019 CIP capacity projects.

Table 9 shows the comparison between the two scenarios. Figures 4 and 5 depict the detailed system intersection LOS for each individual scenario.

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 9 Intersection LOS by MMA for 2019 PM Peak Hour

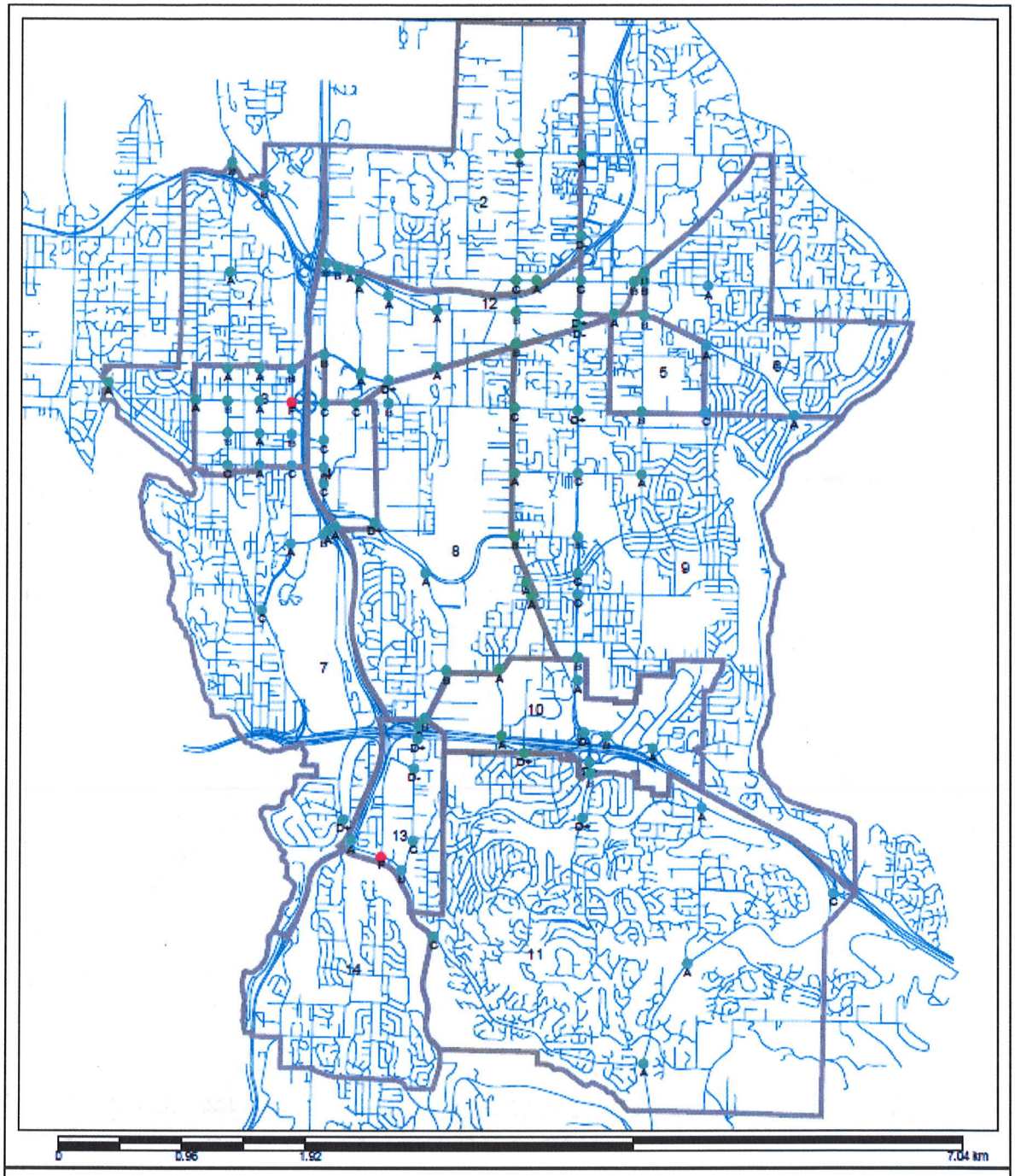
		Standards		2019 MP6R11 w/ CIP			
MMA #	MMA Name	LOS Standard (Volume/Capacity Ratios)	No of Intersec-tions Allowed Over the Standard	Average V/C Ratio	Inter-section LOS	No of Intersec-tions Over the Standard	% Capacity Available
1	North Bellevue	0.85	3	0.47	A	0	39%
2	Bridle Trails	0.80	4	0.60	A	1	20%
3	Downtown	0.95	9	0.70	C	1	25%
4	Wilburton	0.90	3	0.78	C	1	12%
5	Crossroads	0.90	2	0.63	B	0	28%
6	North-East Bellevue	0.80	2	0.63	B	0	17%
7	South Bellevue	0.85	4	0.55	A	0	30%
8	Richards Valley	0.85	5	0.61	B	0	24%
9	East Bellevue	0.85	5	0.72	C	1	13%
10	Eastgate	0.90	4	0.64	B	1	27%
11	Newcastle	0.80	3	0.79	C	1	1%
12	Bel-Red/Northup	0.95	7	0.65	B	0	30%
13	Factoria	0.95	5	0.78	C	1	17%
		0.89	56	0.66		7	23%

Notes:

1 *MMA 14 Newport Hills has no signalized intersections, and is therefore not considered here.*

2 *Change in v/c ratio is due to the 2013-2019 CIP capacity projects or/and traffic redistribution.*

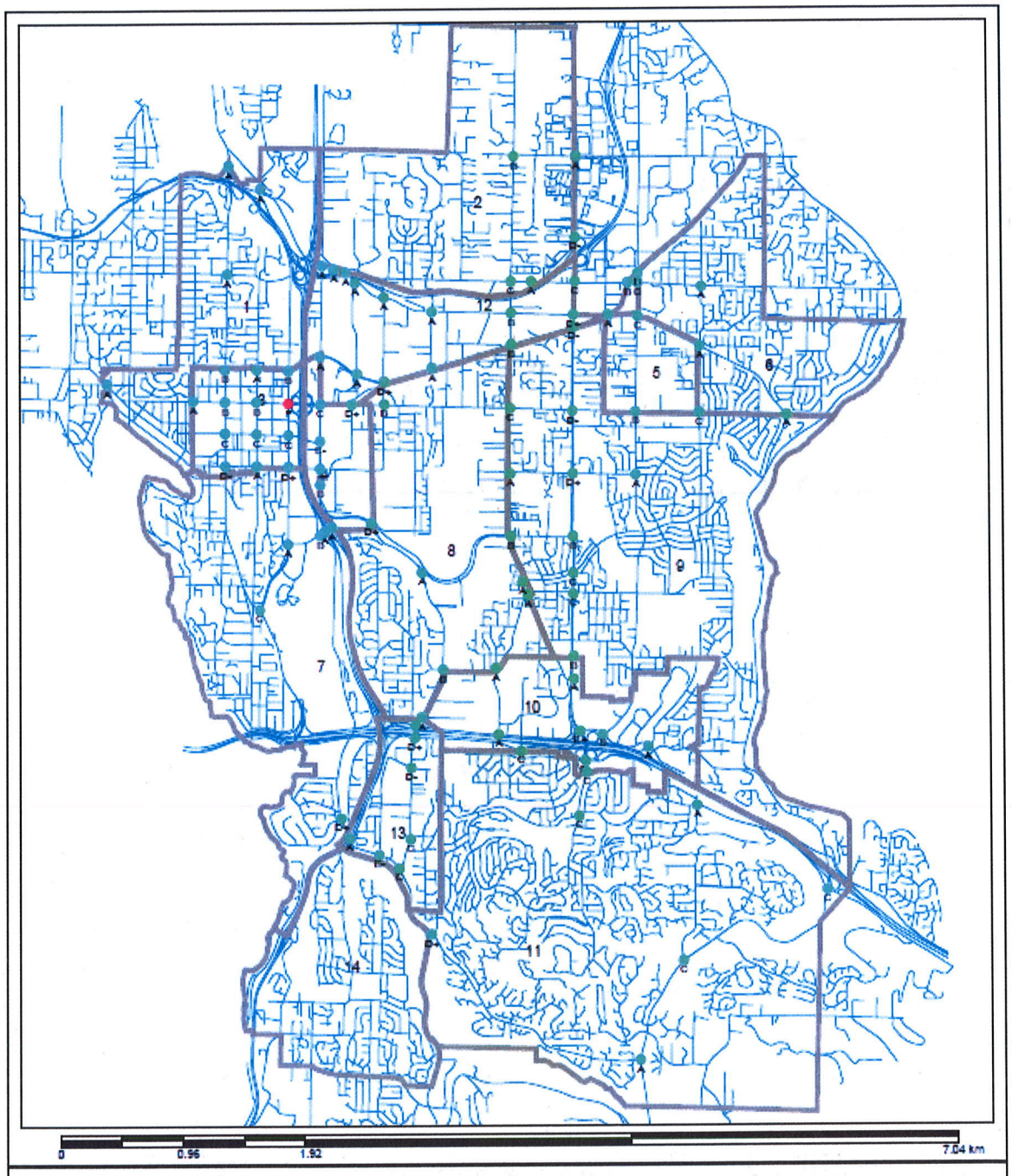
3 *Positive v/c ratio changes indicate MMA degradation while negative shows MMA improvement.*



2012 PM PK 2hr Avg HCM209 LOS

Prepared by Bellevue Transportation Modeling Group

Figure 4 System Intersection LOS for 2012 PM Peak Hour



2019 Concurrency Background PM PK 2hr Avg HCM209 LOS

Prepared by Bellevue Transportation Modeling Group

Figure 5 System Intersection LOS for 2019 PM Peak Hour

Findings

Evaluation of concurrency standards in the base year 2012

The number of intersections failing the LOS MMA standards was four in 2012. This quantity of failing intersections is much lower than the maximum number of failing intersections allowed (congestion allowance) in any MMA. For that year, the excess reserved capacity was an average over all MMAs of 44% compared to the standard.

Evaluation of the 2019 horizon with the CIP fulfilled

The 2019 LOS Snapshot with the 2013-2019 CIP assumes that the City completes the 2013-2019 programmed capacity improvement projects to offset the permitted land use.

The North Bellevue MMA has the most reserve capacity (39%) before reaching its LOS standard of 0.85. The Newcastle MMA has the least reserve capacity (1%) under its LOS standard of 0.80.

It is forecast that seven system intersections would fail the LOS standards, which is much fewer than the number of intersections allowed over the standard (56).

CIP Impact

In the Build (With CIP) scenario, all MMAs met their congestion allowance, and in that scenario all MMAs were within the average v/c ratios allowed.

In eight of the MMAs, the average v/c ratio increased (degraded), resulting in less available capacity in the Downtown, Bel-Red, Crossroads, Eastgate, Newcastle, Wilburton, NE Bellevue, Richards Valley and East Bellevue. The v/c ratio decreased (improved) for 2019 in the With CIP in North Bellevue, Bridle Trails, South Bellevue, and Factoria MMAs. Those five MMA v/c ratios declined in the range of -0.03 (Bridle Trails) and -0.005 (Richards Valley).

With the CIP completed by 2019, the South Bellevue MMA would gain the most (5%) 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 seven intersections citywide exceed their respective MMA standards (refer to Appendix A).

Conclusion

The 2013-2019 CIP would mitigate traffic volume growth in five MMAs while serving existing land developments and those permitted as of December 31, 2012.

Funded 2013-2019 CIP capacity projects would improve system intersections in the North Bellevue, Bridle Trails, South Bellevue, and Factoria MMAs, respectively.

Improved signal design, intersection channelization and markings, and continuous efforts to improve signal system operations, including the implementation of the SCATS adaptive signal system, have added to arterial system operational efficiency, but these effects cannot be modeled by the current methodology.

Following the release of this Concurrency Report, the concurrency model platform (MP6-R11) will be used as a background condition for project-level development review modeling until a new concurrency update is completed.

Appendix A: Table of Intersection LOS Results by MMA

Area 1: North Bellevue

INT	ADDRESS		2012			2019 w/ CIP		
69	Bellevue Way NE	NE 24th Street	0.527	A		0.541	A	
74	Bellevue Way NE	Northup Way NE	0.605	B		0.584	A	
78	108th Ave NE	Northup Way NE	0.692	B		0.596	A	
93	Lk Washington B	NE 1st/NE 10 St.	0.135	A		0.138	A	
		Area wide average >	**0.490**	**A**		**0.465**	**A**	
	LOS Threshold	**0.850**						
	Allowance	**3**			**0**			**0**

Area 2: Bridle Trail

INT	ADDRESS		2012			2019 w/ CIP		
64	140th Ave NE	NE 24th Street	0.735	C		0.708	C	
79	148th Ave NE	NE 40th Street	0.594	A		0.562	A	
114	116th Ave NE	Northup Way NE	0.673	B		0.570	A	
116	115th Place NE	Northup Way	0.621	B		0.595	A	
118	Northup Way	NE 24th Street	0.444	A		0.427	A	
123	140th Ave NE	NE 40th Street	-----	---		-----	---	
188	148th Ave NE	NE 29th Place	0.861	D-	1	0.851	D-	1
189	NE 29th Place	NE 24th Street	0.461	A		0.462	A	
		Area wide average >	**0.627**	**B**		**0.596**	**A**	
	LOS Threshold	**0.800**						
	Allowance	**3**			**1**			**1**

Area 3: Downtown

INT	ADDRESS		2012			2019 w/ CIP		
3	100th Ave NE	NE 8th Street	0.510	A		0.527	A	
5	Bellevue Way NE	NE 12th Street	0.590	A		0.629	B	
7	Bellevue Way NE	NE 8th Street	0.623	B		0.632	B	
8	Bellevue Way NE	NE 4th Street	0.654	B		0.733	C	
9	Bellevue Way	Main Street	0.755	C		0.861	D-	
20	108th Ave NE	NE 12th Street	0.407	A		0.445	A	
21	108th Ave NE	NE 8th Street	0.588	A		0.619	B	
22	108th Ave NE	NE 4th Street	0.599	A		0.744	C	
24	108th Ave	Main Street	0.445	A		0.550	A	
25	112th Ave NE	NE 12th Street	0.647	B		0.667	B	
26	112th Ave NE	NE 8th Street	1.073	F	1	1.148	F	1
36	112th Ave	Main Street	0.774	C		0.825	D+	
72	112th Ave NE	NE 4th Street	0.640	B		0.774	C	
		Area wide average >	**0.639**	**B**		**0.704**	**C**	
	LOS Threshold	**0.950**						
	Allowance	**9**			**1**			**1**

Area 4: Wilburton

INT	ADDRESS		2012		2019 w/ CIP		
30	116th Ave NE	NE 8th Street	0.793	C	0.726	C	
73	116th Ave	Main Street	0.672	B	0.695	B	
131	116th Ave SE	SE 1st Street	0.727	C	0.666	B	
139	116th Ave NE	NE 4th Street	0.717	C	0.986	E-	1
233	120th Ave NE	NE 8th Street	0.788	C	0.840	D+	
		Area wide average >	**0.739**	**C**	**0.783**	**C**	
	LOS Threshold	**0.900**					
	Allowance	**3**		**0**			**1**

Area 5: Crossroads

INT	ADDRESS		2012		2019 w/ CIP	
58	Bellevue-Redmond	NE 20th Street	0.495	A	0.511	A
62	156th Ave NE	Northup Way	0.691	B	0.720	C
63	156th Ave NE	NE 8th Street	0.626	B	0.645	B
		Area wide average >	**0.604**	**B**	**0.625**	**B**
	LOS Threshold	**0.900**				
	Allowance	**2**		**0**		**0**

Area 6: North-East Bellevue

INT	ADDRESS		2012		2019 w/ CIP	
75	164th Ave NE	NE 24th Street	0.527	A	0.552	A
76	164th Ave NE	Northup Way	0.562	A	0.567	A
87	164th Ave NE	NE 8th Street	0.708	C	0.760	C
111	Northup Way	NE 8th Street	-----	---	-----	---
		Area wide average >	**0.599**	**A**	**0.626**	**B**
	LOS Threshold	**0.800**				
	Allowance	**2**		**0**		**0**

Area 7: South Bellevue

INT	ADDRESS		2012		2019 w/ CIP	
14	112th Ave SE	Bellevue Way SE	0.730	C	0.776	C
89	112th Ave SE	SE 8th Street	0.584	A	0.556	A
102	118th Ave SE	SE 8th Street	0.651	B	0.661	B
219	I-405 NB Ramps	SE 8th Street	0.516	A	0.330	A
226	I-405 SB Ramps	SE 8th Street	0.514	A	0.433	A
		Area wide average >	**0.599**	**A**	**0.551**	**A**
	LOS Threshold	**0.850**				
	Allowance	**4**		**0**		**0**

Area 8: Richards Valley

INT	ADDRESS		2012		2019 w/ CIP		
35	124th Ave NE	NE 8th Street	0.701	C	0.660	B	
43	140th Ave SE	SE 8th Street	0.634	B	0.648	B	
44	145th Place SE	Lake Hills Blvd	0.505	A	0.539	A	
45	145th Place SE	SE 16th Street	0.536	A	0.550	A	
71	Lk Hills Connec	SE 8th St/7t	0.812	D+	0.845	D+	
82	Richards Rd	Kamber Rd	0.638	B	0.672	B	
85	Richards Rd	SE 32nd Street	0.626	B	0.588	A	
134	Richards Rd	Lk Hills Connec	0.509	A	0.511	A	
280	139th Ave SE	Kamber Road	0.438	A	0.457	A	
		Area wide average >	**0.600**	**A**	**0.608**	**B**	
	LOS Threshold	**0.850**					
	Allowance	**5**		**0**			**0**

Area 9: East Bellevue

INT	ADDRESS		2012		2019 w/ CIP		
41	140th Ave NE	NE 8th Street	0.715	C	0.731	C	
42	140th Ave	Main Street	0.527	A	0.522	A	
49	148th Ave NE	NE 8th Street	0.841	D+	0.872	D-	1
50	148th Ave	Main Street	0.795	C	0.815	D+	
51	148th Ave SE	Lake Hills Blvd	0.756	C	0.794	C	
52	148th Ave SE	SE 16th Street	0.752	C	0.777	C	
55	148th Ave SE	SE 24th Street	0.679	B	0.683	B	
65	148th Ave SE	SE 8th Street	0.672	B	0.690	B	
83	156th Ave	Main Street	0.552	A	0.581	A	
		Area wide average >	**0.699**	**B**	**0.718**	**C**	
	LOS Threshold	**0.850**					
	Allowance	**5**		**0**			**1**

Area 10: Eastgate

INT	ADDRESS		2012		2019 w/ CIP		
56	148th Ave SE	SE 27th Street	0.567	A	0.553	A	
86	156th Ave SE	SE Eastgate Way	0.638	B	0.660	B	
92	161st Ave SE	SE Eastgate Way	0.444	A	0.462	A	
101	150th Ave SE	SE Eastgate Way	0.895	D-	0.923	E+	1
171	142nd Ave SE	SE 36th Street	-----	---	-----	---	
174	150th Ave SE	SE 38th Street	0.699	B	0.730	C	
227	150th Ave SE	I-90 EB Off-Ram	0.849	D+	0.854	D-	
272	139th Ave SE	SE Eastgate Way	0.273	A	0.262	A	
		Area wide average >	**0.624**	**B**	**0.635**	**B**	
	LOS Threshold	**0.900**					
	Allowance	**4**		**0**			**1**

Area 11: Newcastle

INT	ADDRESS		2012			2019 w/ CIP		
98	Coal Creek Park	Forest Drive	0.729	C		0.828	D+	1
133	150th Ave SE	SE Newport Way	0.814	D+	1	0.794	C	
228	Lakemont Blvd (	SE Newport Way	0.771	C		0.760	C	
229	Lakemont Blvd	Forest Drive	-----	---		-----	---	
242	164th Ave SE	Lakemont Blvd	-----	---		-----	---	
257	164th Ave SE	SE Newport Way	-----	---		-----	---	
		Area wide average >	**0.771**	**C**		**0.794**	**C**	
	LOS Threshold	**0.800**						
	Allowance	**3**			**1**			**1**

Area 12: Bel-Red/Northup

INT	ADDRESS		2012			2019 w/ CIP		
29	116th Ave NE	NE 12th Street	0.616	B		0.542	A	
32	120th Ave NE	NE 12th Street	0.482	A		0.568	A	
34	124th Ave NE	Bellevue-Redmond	0.824	D+		0.822	D+	
37	130th Ave NE	Bellevue-Redmond	0.597	A		0.598	A	
39	140th Ave NE	NE 20th Street	0.686	B		0.679	B	
40	140th Ave NE	Bellevue-Redmond	0.672	B		0.681	B	
47	148th Ave NE	NE 20th Street	0.805	D+		0.804	D+	
48	148th Ave NE	Bellevue-Redmond	0.870	D-		0.890	D-	
59	Bellevue-Redmond	NE 24th Street	0.653	B		0.671	B	
60	156th Ave NE	Bellevue-Redmond	0.617	B		0.644	B	
61	156th Ave NE	NE 24th Street	0.697	B		0.713	C	
68	130th Ave NE	NE 20th Street	0.508	A		0.508	A	
81	148th Ave NE	NE 24th Street	0.754	C		0.779	C	
88	124th Ave NE	Northup Way NE	0.440	A		0.451	A	
117	120th Ave NE	NE 20th Street	0.340	A		0.361	A	
		Area wide average >	**0.637**	**B**		**0.647**	**B**	
	LOS Threshold	**0.950**						
	Allowance	**7**			**0**			**0**

Area 13: Factoria

INT	ADDRESS		2012			2019 w/ CIP		
105	Richards Rd	SE Eastgate Way	0.760	C		0.761	C	
202	128th Ave SE/Ne	SE Newport Way	0.725	C		0.738	C	
203	SE Newport Way	Coal Creek Pkwy	0.698	B		0.705	C	
204	128th Ave SE	SE 36th Street	0.836	D+		0.809	D+	
220	I-405 NB Ramps	Coal Creek Park	0.591	A		0.577	A	
221	I-405 SB Ramps	Coal Creek Park	0.836	D+		0.811	D+	
222	128th Ave SE	SE 38th Place	0.858	D-		0.868	D-	
284	124th Ave SE	Coal Creek Park	1.008	F	1	0.999	E-	1
		Area wide average >	**0.789**	**C**		**0.784**	**C**	
	LOS Threshold	**0.950**						
	Allowance	**5**			**1**			**1**

SUMMARY BY MMA

		Standards	2012			2019 w/ CIP		
1	North Bellevue	0.850	0.490	A		0.465	A	
2	Bridle Trails	0.800	0.627	B	1	0.596	A	1
3	Downtown	0.950	0.639	B	1	0.704	C	1
4	Wilburton	0.900	0.739	C		0.783	C	1
5	Crossroads	0.900	0.604	B		0.625	B	
6	North-East Bellevue	0.800	0.599	A		0.626	B	
7	South Bellevue	0.850	0.599	A		0.551	A	
8	Richards Valley	0.850	0.600	A		0.608	B	
9	East Bellevue	0.850	0.699	B		0.718	C	1
10	Eastgate	0.900	0.624	B		0.635	B	1
11	Newcastle	0.800	0.771	C	1	0.794	C	1
12	Bel-Red/Northup	0.950	0.637	B		0.647	B	
13	Factoria	0.950	0.789	C	1	0.784	C	1

Note: MMA 14 Newport Hills has no signalized intersections, and is therefore not considered here.

Total Intersections Exceeding Threshold	**4**	**7**

APPENDIX B: List of Contributors

Concurrency Modeling
Modeling and Analysis Group, Transportation Department, City of Bellevue
Judy Clark, Modeling Manager
Dave Tallent, Senior Transportation Analyst
Sean Wellander, Senior Transportation Analyst
Hu Dong, Senior Transportation Engineer

CIP and Concurrency References
Eric Miller, Capital Programming Manager, Transportation Department
Mike Ingram, Senior Planner, Transportation Department
Kristi Oosterveen, Management Policy Analyst, Transportation Department
Chris Dreaney, Development Review Manager, Transportation Department

Bellevue Land Use Data
Gwen Rousseau, Demographer, Department of Planning & Community Development
Liz Stead, Urban Design Plan Mgr. Development Services Department
Angela Lillie. Permit Services Manager, Development Services Department

Bellevue Traffic Count Data
Gaje Wagner, Traffic Counting Staff, Transportation Department

Bellevue GIS Maps
Zorba Conlen and Ruchi Bhutani, GIS Analysts, IT Department

CONTACT INFORMATION

For inquires or suggestions for the BKR Concurrency Update, please contact Judy Clark at jclark@bellevuewa.gov or (425)452-7858.