

June 27, 2019

Eastgate Transportation Study

Volume 1 - DRAFT



City of Bellevue

450 110th Ave NE
Bellevue, WA 98004

Concord Engineering

1109 1st Ave
Seattle, WA 98101

Fehr & Peers

1001 4th Ave
Seattle, WA 98101

Table of Contents

Section	Page
→ List of Figures and Tables	3
→ Acknowledgments	4
→ Introduction from the Bellevue Transportation Commission	5
→ Executive Summary	6
→ Project Overview	10
→ Planning Context	12
→ Existing Conditions	13
→ 2035 Baseline	19
→ Project Identification Framework	28
→ Recommended Traffic Congestion Reduction Projects	32
→ Project Implementation and Funding	41

List of Figures and Tables

Figures

- **Figure ES-1.** Recommended Traffic Congestion Reduction Projects
- **Figure 1.** Study Area: Mobility Management Areas (MMA) and Intersections
- **Figure 2.** 2018 Existing Intersection LOS
- **Figure 3.** 2018 Existing Conditions Vehicle Travel Speed
- **Figure 4.** Vehicle Volume Growth by Direction, 2018-2035
- **Figure 5.** 2018 Existing & 2035 Baseline Intersection LOS
- **Figure 6.** 148th- 150th Avenue SE Corridor - 2018 Existing & 2035 Baseline Vehicle Travel Speed
- **Figure 7.** Richards Road-Factoria Boulevard SE Corridor - 2018 Existing & 2035 Baseline Vehicle Travel Speed
- **Figure 8.** Recommended Traffic Congestion Reduction Project Locations
- **Figure 9.** 2035 Baseline & 2035 Recommended Projects Intersection LOS
- **Figure 10.** 148th- 150th Avenue SE Corridor - 2035 Baseline & 2035 Recommended Projects Vehicle Travel Speed
- **Figure 11.** Richards Road-Factoria Boulevard SE Corridor - 2035 Baseline & 2035 Recommended Projects Vehicle Travel Speed

Tables

- **Table ES-1.** Recommended Traffic Congestion Reduction Projects
- **Table 1.** 2018 Existing Intersection LOS
- **Table 2.** 2018 Existing Conditions Vehicle Travel Speed
- **Table 3.** 2035 Baseline Planned Transportation Projects and Services in/near Study Area
- **Table 4.** 2018 Existing & 2035 Baseline Intersection LOS
- **Table 5.** Intersections Performing Below V/C Threshold Under the 2035 Baseline
- **Table 6.** 2018 Existing & 2035 Baseline Vehicle Travel Speed
- **Table 7.** Recommended Traffic Congestion Reduction Projects
- **Table 8.** 2035 Baseline & 2035 Recommended Project Intersection LOS
- **Table 9.** Intersections that Exceed V/C Threshold in 2035 with Recommended Projects
- **Table 10.** 2035 Baseline & 2035 Recommended Projects Vehicle Travel Speed
- **Table 11.** Potential Early Implementation Projects

Acknowledgments

► 2019 Bellevue City Council

- John Chelminiak, Mayor
- Lynne Robinson, Deputy Mayor
- Conrad Lee
- Jared Nieuwenhuis
- Jennifer Robertson
- John Stokes
- Janice Zahn

► 2017-2019 Bellevue Transportation Commission

- Lei Wu, Chair
- Clifford Chirls, Vice Chair
- Vic Bishop
- Scott Lampe
- Loreana Marciante
- Khek Teh
- Todd Woosley

► City of Bellevue Staff

- Andrew Singelakis, AICP, Director, Transportation Department
- Paula Stevens, AICP, Assistant Director, Transportation Department
- Kevin McDonald, AICP, Co-Project Manager
- Jeremy Chin, PE, PTOE, Co-Project Manager
- Darcy Akers, EIT
- Hu Dong, PE
- Fred Liang, PE
- Chris Long, PE, PTOE
- Gwen Rousseau
- Dave Tallent
- Raid Tirhi, PE
- Sean Wellander, PTP
- Shuming Yan, PE

► Consulting Team

- Concord Engineering
- Fehr & Peers
- KPFF

► Special Thanks

- South Bellevue Community Center



Introduction from the Bellevue Transportation Commission

With robust growth in Bellevue and the rest of the region, traffic congestion is a topic of concern for Bellevue residents. Hearing this concern, on November 28, 2016, the City Council directed the Transportation Commission to study the situation and recommended projects to ease traffic congestion in the Eastgate/Factoria area along I-90.

Our work began with an objective look at existing conditions; using metrics, standards and guidelines to determine locations where congestion occurs and to describe the magnitude of the congestion at intersections and along arterial corridors. We used a forecast year of 2035 to ensure that our recommended projects would have long-term value for the community, and we also looked for early implementation opportunities. The 2035 Baseline forecast included funded Bellevue transportation projects, and also the capital and service projects planned by WSDOT, King County Metro and Sound Transit. Assumptions about land use for 2035 were derived from forecast development under the existing zoning.

Early in the process we developed an objective methodology, informed by data, to help us develop and evaluate project concepts. From this framework and analysis emerged a list of infrastructure projects that address vehicle level-of-service at intersections and along corridors. We describe the benefits of recommended congestion reduction projects in terms of the vehicle delay that would be reduced in 2035, versus not doing the project. Each project was separately evaluated, but it is the cumulative value to reduce delay along a corridor that is the compelling story. For instance, our recommended projects along the 148th-150th Avenue SE corridor could nearly double the southbound travel speed relative to the 2035 Baseline. Smaller reductions in future delay may be expected along Factoria Boulevard and at other isolated intersections.

We used "planning level" cost estimates to help describe the cost-effectiveness of a project. We avoided recommending projects that looked promising for congestion reduction but would be unreasonably expensive to build due to right-of-way needs, environmental constraints, or construction costs.

Our recommended projects achieve congestion reduction in the Eastgate/Factoria area versus the 2035 Baseline. We know that expanding vehicle capacity cannot by itself reduce traffic congestion in the long term, and that a comprehensive multimodal strategy is the ultimate solution. However, the strategic investments we identify will provide measurable congestion reduction in the context of a multimodal approach to mobility and will complement current and future multimodal transportation investments by the City of Bellevue and our regional transportation partners.

Executive Summary

As part of Bellevue's comprehensive planning process, the City works to balance growth and development with complementary improvements to the transportation system. This has resulted in new transportation projects in the Eastgate/Factoria area like the landscaped medians, safety and connectivity projects along Factoria Boulevard, traffic signal timing enhancements along 150th Avenue SE, the southbound right turn at 150th Avenue SE and SE Newport Way (under construction in 2019), and transit service and access enhancements around the Eastgate Park-and-Ride. Over the past several years, there has been growing concern that transportation infrastructure has not kept pace with development and that traffic congestion is degrading mobility for motorists and transit riders while creating a less comfortable environment for bicycles and pedestrians. This trend is particularly pronounced in the Eastgate/Factoria area where the City Council directed the Transportation Commission to develop a set of congestion reduction projects and strategies that Bellevue can implement.

This study funded by the Bellevue Neighborhood Safety, Connectivity and Congestion Levy describes how the potential traffic congestion reduction projects were identified, evaluates the performance of the projects with a range of metrics from a multimodal perspective, and prioritizes the projects for potential early and long-term implementation.

A summary of the Transportation Commission's recommended projects follows in **Table ES-1**. **Figure ES-1** shows the location of each of the projects.





Table ES-1. Recommended Traffic Congestion Reduction Projects

ID	Location	Description
A	Factoria Boulevard SE & SE 36th Street & I-90 EB Off-Ramp	Add variable channelization for eastbound (EB) approach (1 EB through and 1 EB through-right in AM; 1 EB through and 1 EB right in the PM), plus 1 additional EB receiving lane
B	Factoria Boulevard SE & SE 38th Street	Add second westbound (WB) left turn lane, add two exclusive EB left turn lanes
C	139th Avenue SE & SE 32nd Street	Add traffic signal
D	142nd Place SE & SE 36th Street	Add southbound (SB) right turn lane
E	150th Avenue SE & SE Eastgate Way	Add a second northbound (NB) left turn lane, add third SB through lane across I-90, extend SB left turn lane and add NB right turn lane
F	150th Avenue SE & SE 37th Street & I-90 EB Off-Ramp	Add a second EB right turn lane, extend SB left turn lane, extend SB through lane from loop ramp to SE 38th Street, restrict EB left turn, add second WB left turn lane and extend WB right turn lane
G	150th Avenue SE & SE 38th Street	Adjust signal timing to remove split phasing and optimize green time, extend third NB lane between SE 38th Street and SE 37th Street
H	SE 37th Street & I-90 EB On-Ramp	Modify channelization between 150th Avenue SE and I-90 EB on-ramp and add traffic signal at EB on-ramp intersection with SE 37th Street
I	SE 37th Street & SE Eastgate Way	Add traffic signal and modify channelization

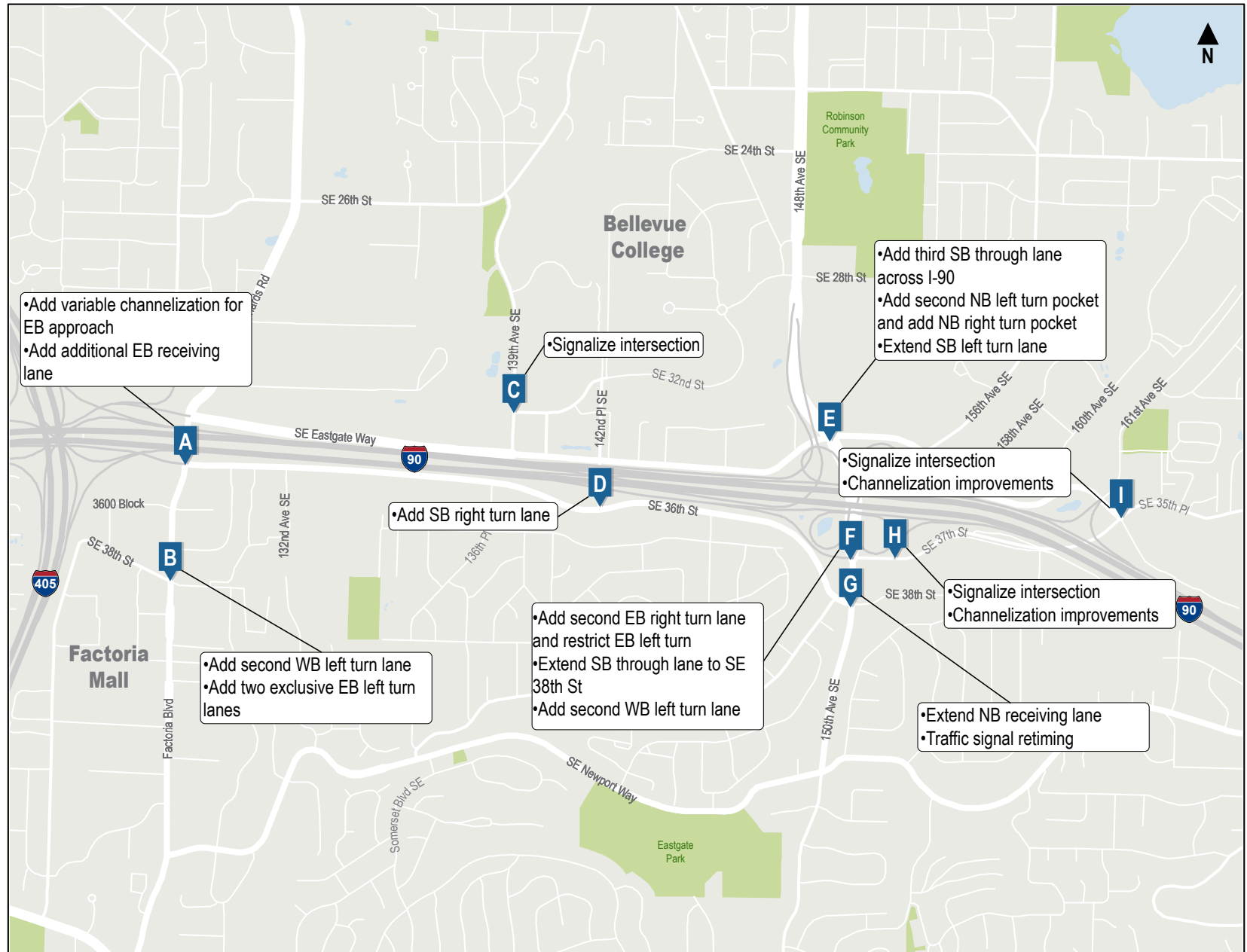
The projects identified in **Table ES-1** are forecast to increase the peak period vehicle travel speed by 12% for the Richards Road-Factoria Boulevard SE corridor and by 93% for the 148th-150th Avenue SE corridor in the PM peak direction when compared to the 2035 Baseline. Recommended projects also improve the intersection volume/capacity ratio (which is a measure of congestion at intersections).

In addition to the projects listed above, the Transportation Commission supports ongoing City efforts that enhance the ability to manage traffic congestion. Specifically, the Commission endorses continued implementation and refinement of Bellevue's Transportation Demand Management (TDM) program that has been shown to reduce the growth in vehicle trips by 3-5% within the study area. The Commission also supports the Bellevue College Connector project that removes most buses from the 150th Avenue SE & SE Eastgate Way intersection and provides a quicker and more reliable transit pathway between Eastgate and the rest of the region. Lastly, community input during the study identified that Factoria Boulevard SE between SE 38th Street and SE Coal Creek Parkway experiences consistent PM peak period congestion. This portion of Factoria Boulevard SE was outside the scope of this study and it is the Transportation Commission's recommendation that another study be prepared to identify traffic congestion reduction opportunities along this corridor.

Compared to the 2035 Baseline, the recommended projects reduce traffic congestion in the Eastgate/Factoria area. The projects will also accommodate Bellevue's Multimodal Level of Service standards and guidelines for pedestrian, bicycle, and transit travel and can be constructed with minimal impacts to area homes and businesses. Thus, the recommended projects meet Bellevue's goals for a balanced multimodal transportation system that supports growth and development.



Figure ES-1. Recommended Traffic Congestion Reduction Projects



Project Overview

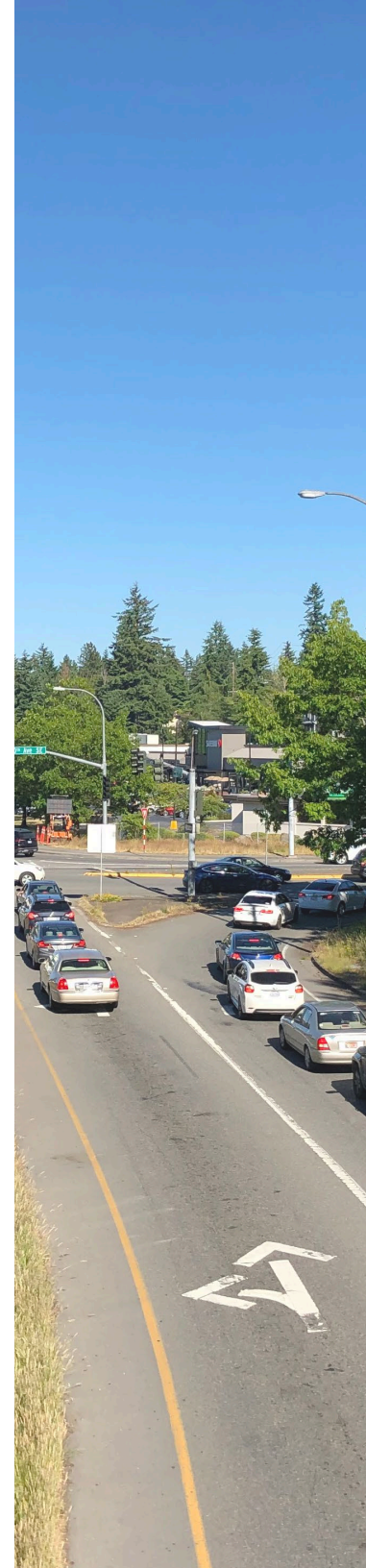
The Eastgate and Factoria neighborhoods are two of Bellevue's most active commercial areas that host thousands of jobs and major retail destinations. These areas are hubs of activity, and land use plans and transportation projects have generally kept pace with one another such that traffic congestion is typical of other commercial areas in Bellevue and the Puget Sound region.

Of late, increased development both locally and across the region has resulted in traffic congestion that has, to many people, become intolerable. The current level of traffic congestion is an inconvenience to drivers, creates delays for transit riders, and adversely affects the safety and comfort of the pedestrians and bicycle riders who share the roadway corridors with cars, trucks, and buses.

To address concerns about traffic congestion, the Bellevue City Council directed the Transportation Commission to conduct a detailed traffic analysis of the Eastgate/Factoria area to answer some key questions:

- How might traffic congestion change in the future as forecasted land uses develop and planned regional transportation investments are completed? (e.g., I-90 Auxiliary Lanes between 150th Avenue SE and West Lake Sammamish Parkway, Express Toll Lanes on I-405, new RapidRide service between Eastgate and Kirkland and Eastgate and Renton, etc.)
- What additional traffic congestion reduction projects could be built to provide congestion reduction in a 2035 time-frame, with opportunities identified for early implementation?

This report summarizes the approach the Transportation Commission took to answer the questions above and presents a set of recommended traffic congestion reduction projects. Throughout the project, the traffic congestion reduction projects were evaluated to ensure they have long-term congestion reduction viability, meet Bellevue's multimodal transportation goals, and are phased such that they can be logically implemented by the City. **Figure 1** shows the study area and identifies the intersections that were studied.



Planning Context

Bellevue has conducted a number of land use and transportation studies in the Eastgate/Factoria area over the past 15 years. Key studies and relevant findings/outcomes are listed below:

- **Factoria Area Transportation Study (FATS, 2005)** - FATS evaluated ways to manage traffic congestion throughout the Factoria neighborhood in response to land use growth. This emphasized a fully integrated and multimodal transportation network to create a transit-supportive, pedestrian-oriented, mixed-use neighborhood.
- **[Eastgate Land Use and Transportation Study \(2012\)](#)** - This study evaluated options to accommodate mixed-use, transit oriented development along the I-90 corridor in Eastgate along with associated transportation improvements. This study was the precursor to the Eastgate Land Use Code Amendments and identified several potential transportation projects including improvements to the intersections along the 150th Avenue SE corridor, transit routing enhancements, and bicycle/pedestrian connectivity projects.
- **[Mountain to Sound Greenway Trail](#)** - In 2013, Bellevue began the final design for the Greenway Trail between Factoria Boulevard SE and 150th Avenue SE. The Greenway Trail will be an off-street facility in the WSDOT right-of-way between I-90 and SE 36th street and will include grade separated crossings of Richards Road-Factoria Boulevard SE and 142nd Place SE. The segment of the trail between Richards Road-Factoria Boulevard SE and 132nd Avenue SE will begin construction in 2019 and finish by 2021.
- **[WSDOT I-90 Eastgate to SR 900 Corridor Improvements \(2016-2021\)](#)** - WSDOT will be making improvements to I-90 between the 150th Avenue SE interchange and SR 900 in Issaquah. Specifically, WSDOT will relocate the existing ramp meter from SE 37th Street to eastbound I-90 farther east to reduce queuing, and add new eastbound and westbound lanes between West Lake Sammamish Parkway and 150th Avenue SE. Construction is expected to be complete by 2021.



Existing Conditions

Given that this study is primarily focused on traffic congestion reduction, the analysis results focus on vehicle level of service (LOS). Per [Bellevue's Multimodal Level of Service \(MMLOS\) Metrics, Standards, and Guidelines](#) vehicle LOS may be measured at intersections and along corridors. To complete the multimodal picture, a brief description of the pedestrian, bicycle, and transit systems are included at the end of this chapter.

► Vehicle Intersection Level of Service (LOS)

Consistent with the City's Comprehensive Plan and MMLOS guidance, intersection LOS is measured using the concept of traffic volume-to-capacity ratio (V/C). V/C measures the ratio of the observed or forecasted peak period traffic volume over an intersection's capacity to accommodate that volume, as defined by the Highway Capacity Manual. An intersection that is "over capacity" (e.g., has a V/C greater than 1.0) is one where drivers typically experience long queues and delays.

The City of Bellevue establishes intersection LOS **standards** for short-term transportation evaluation and extrapolates these standards as **guidelines** for long-range planning that are the metric for 2035. This study's objective is to identify traffic congestion reduction projects that have value in both the near and long-term. Therefore, in this document the LOS guidelines and standards constitute a "**threshold**" that is used to identify when traffic congestion reduction projects are needed. The Comprehensive Plan defines the following V/C standards for the [Mobility Management Area \(MMA\)](#) in which the intersection is located. [Figure 1](#) shows the MMAs in the study area.

- **MMA 8 Richards Valley:** 0.85
- **MMA 10 Eastgate:** 0.90
- **MMA 11 Southeast Bellevue:** 0.85
- **MMA 13 Factoria:** 0.95

► Guidance from the Comprehensive Plan

While the Eastgate Transportation Study is primarily focused on strategies to reduce traffic congestion, the [Comprehensive Plan Transportation Element](#) puts the idea of traffic congestion reduction in perspective. Put simply, the Transportation Element outlines a strategy to ensure safe and reliable mobility for all modes. Therefore, when evaluating traffic congestion reduction projects, safety and accommodations for travel by walking, biking, and riding transit must also be considered. Below are some relevant policies from the Transportation Element:

- **TR-21:** Ensure that the transportation system infrastructure in Bellevue provides mobility options for all modes, and accommodates the mobility needs of everyone, including underserved populations.
- **TR-34:** Monitor the level-of-service for all modes and adjust programs and resources as necessary to achieve mobility targets and objectives.
- **TR-50:** Expand arterial capacity in consideration of the multimodal expectations and livability factors for the corridor and neighborhood.
- **TR-51:** Provide sufficient arterial rights-of-way to provide space for street trees and landscaping, and to accommodate pedestrian and bicycle facilities, while considering neighborhood character and context.
- **TR-53:** Maintain and enhance safety for all users of the roadway network.

Table 1 and **Figure 2** summarize the intersection LOS for 2018 existing conditions. The V/C is calculated using the methodologies defined in the Highway Capacity Manual. As shown in Table 1, most of the study intersections meet the V/C threshold under existing conditions. The exceptions include: 150th Avenue SE & SE Eastgate Way which does not meet the LOS threshold in the AM or PM peak period and 150th Avenue SE & SE Newport Way intersection which is congested in the PM peak period. Intersections along the Factoria Boulevard SE corridor meet the V/C thresholds, which may seem counterintuitive to drivers who travel this corridor and experience delay. Vehicle speed is another MMLOS metric that quantify the experience of the driver traveling through several intersections on a corridor.

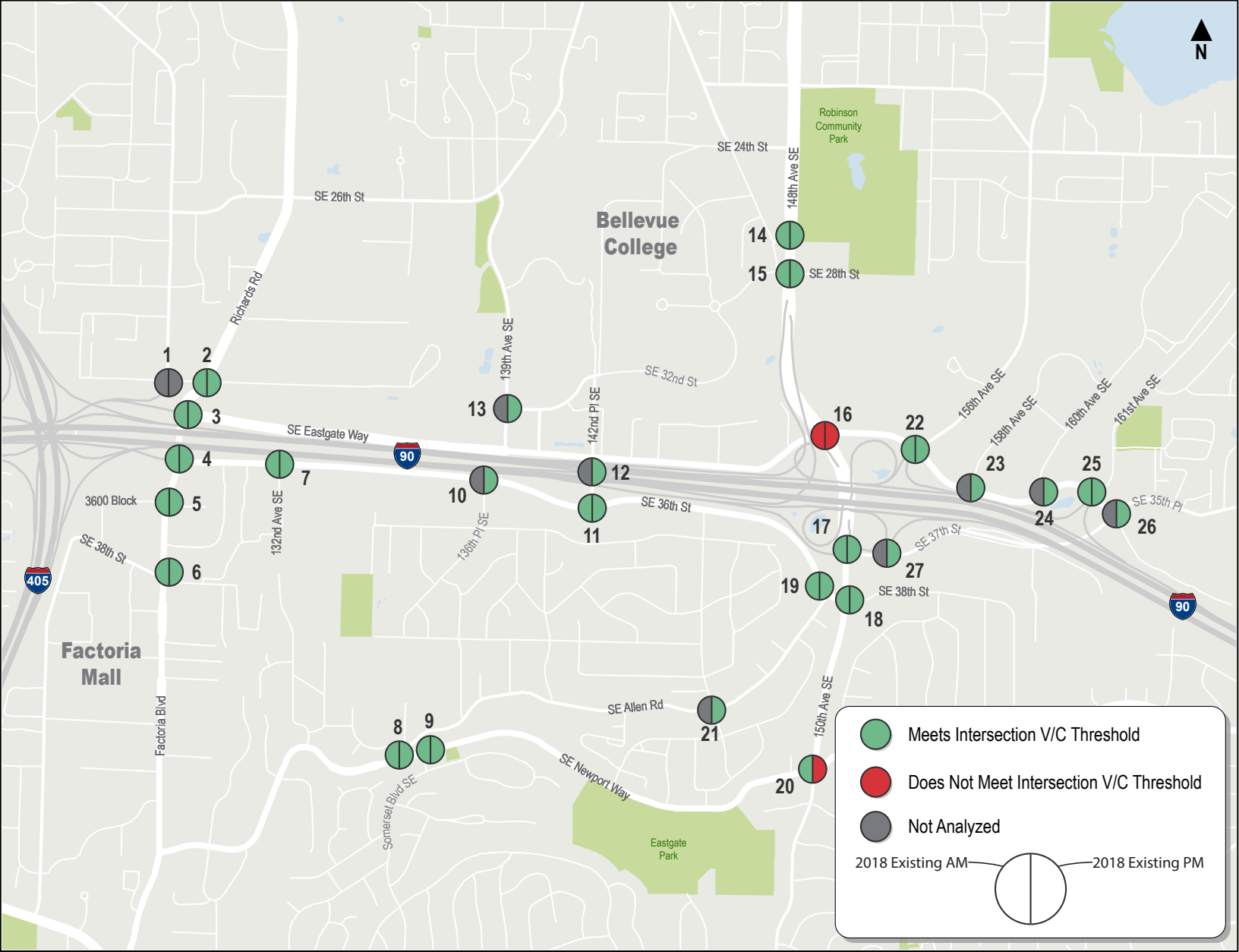
Notes:

- HCM 2000 methodology used to analyze study intersections
- V/C reported for unsignalized intersections is the V/C for the worst movement
- Cells highlighted in black indicates that the intersection V/C exceeds the LOS threshold
- *Intersections not studied for the AM peak
- **V/C results not available for intersection due to lane configuration

Table 1. 2018 Existing Intersection LOS

ID	Intersection	V/C Threshold	Control	V/C Ratio	
				AM Peak	PM Peak
1	I-90 WB On-Ramp & SE 32nd Street	0.85	Signalized	N/A**	N/A**
2	Richards Road & SE 32nd Street	0.85	Unsignalized	0.54	0.72
3	Richards Road & WB I-90 On-Ramp/Eastgate Way	0.95	Signalized	0.47	0.77
4	Factoria Boulevard & EB I-90 Off-Ramp/SE 36th Street	0.95	Signalized	0.90	0.89
5	Factoria Boulevard & 3600 Block	0.95	Signalized	0.50	0.60
6	Factoria Boulevard & SE 38th Street	0.95	Signalized	0.79	0.94
7	132nd Avenue SE & SE 36th Street	0.95	Signalized	0.54	0.66
8	SE Newport Way & SE Allen Road	0.85	Unsignalized	0.72	0.66
9	SE Newport Way & Somerset Boulevard SE	0.85	Signalized	0.67	0.62
10	136th Place SE & SE 36th Street	0.90	Unsignalized	N/A*	0.70
11	142nd Place SE & SE 36th Street	0.90	Signalized	0.80	0.78
12	142nd Place SE & I-90 Direct Access	0.90	Signalized	N/A*	0.54
13	139th Avenue SE & SE 32nd Street	0.90	Signalized	N/A*	0.52
14	148th Avenue SE & SE 27th Street	0.90	Signalized	0.61	0.58
15	148th Avenue SE & SE 28th Street	0.90	Unsignalized	0.75	0.77
16	148th/150th Avenue SE & SE Eastgate Way	0.90	Unsignalized	0.95	0.92
17	150th Avenue SE & WB I-90 Off-Ramp/SE 37th Street	0.90	Signalized	0.80	0.79
18	150th Avenue SE & SE 38th Street	0.85	Signalized	0.67	0.79
19	SE Allen Road & SE 38th Street	0.85	Unsignalized	0.12	0.21
20	150th Avenue SE & SE Newport Way	0.85	Signalized	0.68	0.89
21	146th Avenue SE & SE Allen Rd	0.85	Unsignalized	N/A*	0.37*
22	SE Eastgate Way & 156th Avenue SE	0.90	Signalized	0.69	0.66
23	SE Eastgate Way & 158th Avenue SE	0.90	Signalized	N/A*	0.21
24	SE Eastgate Way & 160th Avenue SE	0.90	Signalized	N/A*	0.33
25	SE Eastgate Way & 161st Avenue SE	0.90	Signalized	0.75	0.57
26	SE Eastgate Way & SE 37th Street	0.90	Unsignalized	N/A*	0.51*
27	I-90 EB On-Ramp & SE 37th Street	0.90	Unsignalized	N/A*	N/A**

Figure 2. 2018 Existing Intersection LOS



► Vehicle Travel Speed

To supplement intersection LOS, the MMLOS metrics, standards, and guidelines define another vehicle LOS metric: vehicle travel speed. Similar to intersection V/C ratios, thresholds for vehicle travel speed are set for each MMA across the City based on a percent of "typical urban travel speed." Typical urban travel speed for the PM peak period is 40% of the posted speed limit. Vehicle travel speed was calculated for the Richards Road-Factoria Boulevard SE and 148th-150th Avenue SE corridors.

Vehicle travel speed was calculated using a traffic simulation software. Traffic simulation considers how vehicles interact at intersections and how queues and bottlenecks can propagate along a corridor. Traffic simulation software requires calibration and validation to replicate observed conditions. **Appendix A** summarizes the traffic simulation model calibration process and validation results.

Table 2 and **Figure 3** show the existing (2018) peak period and directional vehicle travel speed along each corridor as described. **Appendix B** includes detailed vehicle travel speed results. Along the 148th-150th Avenue SE corridor, the AM peak direction (northbound) operates with little congestion with a vehicle travel speed faster than the City's threshold. In the PM peak, traffic is more congested in the southbound direction and the vehicle travel speed is 7.2 miles per hour, which is slower than the vehicle travel speed threshold of 13.3 miles per hour. Along the Richards Road-Factoria Boulevard SE corridor, the PM peak southbound direction operates at 4.3 miles per hour, which is slower than the vehicle travel speed threshold of 12.8 miles per hour.

Table 2. 2018 Existing Conditions Vehicle Travel Speed

Corridor	Direction and Peak	Speed Threshold (mph)	Vehicle Travel Speed (mph)
148th-150th Avenue SE: SE 24th Street to SE Newport Way	AM Peak: Northbound	13.3	14.7
	PM Peak: Southbound	13.3	7.2
Richards Road-Factoria Blvd SE: SE 26th Street to SE 38th Street	PM Peak: Southbound	12.8	4.3

Note:

Richards Road-Factoria Boulevard SE was not analyzed in the AM peak period

► Traffic LOS Analysis Tools: Applications and Limitations

Traffic LOS analysis tools provide detailed output related to V/C, travel speed, delay, queues, and many other variables. The analysis tool outputs can convey a sense of being very precise, but it is important to recognize the limitations of these tools. Specifically, these tools have a number of assumptions and inputs that are based on the best currently available information, but which could change in the future. The best use of the LOS analysis tool output is to compare alternatives to understand the difference in LOS.



Vehicle Corridor Level of Service
Percent of Typical Urban Travel Speed

- Faster than 110% of typical urban travel speed
- Between 110% & 90% of typical urban travel speed
- Between 90% & 75% of typical urban travel speed
- Between 75% & 50% of typical urban travel speed
- Slower than 50% of typical urban travel speed

► Pedestrian, Bicycle, and Transit Infrastructure

The pedestrian network in the study area is extensive with sidewalks along most arterials. An exception is Eastgate Way between Richards Road to about 700 feet west of 139th Avenue SE which has no sidewalk (other than a short segment in front of the Seattle Humane Society property). While most arterials have sidewalks, the width of sidewalks and crossing frequency do not match the City's pedestrian facility standards and guidelines. Over time, Bellevue is improving the pedestrian network to include wider sidewalks and more frequent crossings, particularly as land uses change and the area becomes denser with buildings and pedestrians.

The bicycle network in the study area is a subset of the intended facilities identified in Bellevue's 2009 [Pedestrian and Bicycle Transportation Plan](#). There are bike lanes on SE 36th Street and portions of SE Eastgate Way and multipurpose paths between 124th Avenue SE and Factoria Boulevard SE and along the side of 148th-150th Avenue SE between SE 24th Street and SE 36th Street. The Mountains to Sound Greenway Trail exists west of Factoria Boulevard SE and extends from there to Seattle. As noted earlier, the Mountains to Sound Greenway Trail is being extended to the east to 132nd Avenue SE in 2019 and the City is also extending bike lanes in the eastbound direction of SE Eastgate Way, east of 150th Avenue SE in 2019.

There are several frequent all-day bus routes in the study area that serve downtown Seattle, Issaquah, downtown Bellevue, Crossroads, and Overlake. The main transit hub is the Eastgate Park-and-Ride. Several frequent bus routes also serve Factoria Boulevard SE between SE 36th Street and SE 41st Place. To enhance transit speed and reliability, King County Metro recently completed a new transit lane along 148th-150th Avenue SE just north of SE Eastgate Way.



2035 Baseline

The 2035 Baseline is the basis against which the effectiveness of future traffic congestion relief projects is evaluated. Under the 2035 Baseline, regional land use growth meets forecasted projections and funded transportation projects are assumed to be constructed.

► Travel Demand Modeling

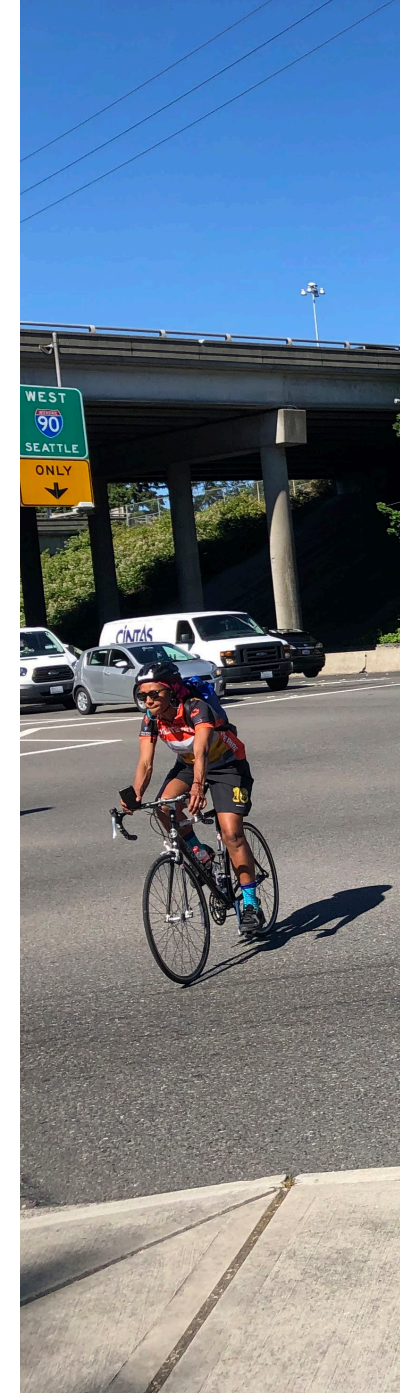
The primary tool to develop the 2035 Baseline travel forecast is the Bellevue-Kirkland-Redmond (BKR) Travel Demand Model. This is a software tool developed and maintained by the City of Bellevue to forecast future vehicle travel, transit, and traffic patterns. The BKR travel demand model's forecasts are based on the best available assumptions about land development, the transportation network, costs of travel, available modes of travel, and a myriad of other factors. Due to the uncertainty of many of the assumptions in the BKR model, the output is best used in a comparative approach. In other words, the BKR model does not predict exactly how many vehicles will be on any given street in the future, but the model can forecast the difference between two project concepts.

► Land use growth

Land use assumptions in the BKR model are based on the City's adopted land use plans, zoning codes, and a market-based forecast of future development. Between 2018 and 2035, new development is expected to add about 8,300 new jobs and 850 dwelling units to the study area. Most of the residential growth is expected to be in the Factoria area and most of the employment growth is expected to be in Eastgate, north of I-90 between 139th Avenue SE and 161st Avenue SE. [Appendix C](#) includes more detailed land use growth information.

► Summary of traffic volume forecasts

The traffic forecasts from the 2035 Baseline BKR model are summarized in [Figure 4](#) and show that traffic volume along the key corridors (148th-150th Avenue SE in Eastgate and Richards Road/Factoria Blvd SE in Factoria) is expected to grow by 0.7 to 1.5% annually between 2018 and 2035, depending upon the location. This translates into total growth in traffic volume between 13 to 39%.



PM Peak Corridor Traffic Volume
2018 Existing Volume (2035 Baseline Volume)

Segment	2018 Existing Volume	2035 Baseline Volume	% Growth	Annual Growth %
SE 38th St to SE 37th St	1,700	2,100	29%	1.5%
SE 37th St to SE 36th St	800	800	7%	0.4%
SE 36th St to SE 35th St	1,800	2,300	30%	1.5%
SE 35th St to SE 34th St	700	800	18%	1.0%
SE 34th St to SE 33rd St	700	900	29%	1.5%
SE 33rd St to SE 32nd St	400	500	32%	1.6%
SE 32nd St to SE 31st St	1,300	1,900	50%	2.4%
SE 31st St to SE 30th St	1,000	1,200	12%	0.7%
SE 30th St to SE 29th St	2,000	2,300	15%	0.8%
SE 29th St to SE 28th St	1,700	1,800	5%	0.3%

► Planned Transportation Projects, 2035 Baseline

To support the planned land use growth, Bellevue, Washington State Department of Transportation (WSDOT), and King County Metro are planning a number of transportation investments for the study area. These projects and services are assumed in the 2035 Baseline BKR model and are summarized in **Table 3**.

Table 3. 2035 Baseline Planned Transportation Projects and Services in/near Study Area

Project	Agency	Status
Mountains to Sound Greenway Trail: I-405 to 132nd Avenue SE. Lengthen right turn pocket on EB off-ramp to Factoria Boulevard in conjunction with trail extension. Build portion of Mountains to Sound Greenway Trail between Factoria Boulevard to 132nd Avenue SE with new overpass over Factoria Boulevard SE.	Bellevue	Construction in 2019
150th Ave SE - South of SE 38th St to SE Newport Way: Add SB right turn pocket on 150th Avenue SE at the Newport Way intersection.	Bellevue	Construction in 2019
150th Avenue SE & SE Eastgate Way: Reconfigure the eastbound approach to include dual right turn lanes and separate through and left-turn lanes. Add EB bike lane through the intersection.	Bellevue	Construction in 2019
150th Avenue SE & SE 38th Street: Reconfigure the west leg of the intersection to include eastbound and WB bike lanes. Remove the second WB lane departing the 150th Avenue SE intersection.	Bellevue	Construction in 2019
I-90/Eastgate to SR 900 Corridor Improvement: Add an auxiliary lane on EB I-90 between Eastgate and the West Lake Sammamish Parkway interchange. Extend I-90 Eastgate interchange EB on-ramp merging length and move ramp meter approximately 600 feet further east to reduce queueing onto 150th Avenue SE. Add a second NB left turn lane from the off-ramp to westbound SE Eastgate Way.	WSDOT	Construction in 2019
I-405 Express Toll Lane; Bellevue to Renton: Extend express toll lanes (two in each direction) on I-405 between Bellevue and Renton. Also supports Sound Transit BRT along I-405, which is a separate project.	WSDOT	Design-Build commencing in 2019
RapidRide Route 1027: New RapidRide service between Eastgate, downtown Bellevue, downtown Kirkland, and Totem Lake	King County Metro	2025
150th Avenue SE Bus Stop Improvement: Construct a queue bypass lane, relocate bus shelter, and rebuild sidewalk on SB 150th Avenue SE north of SE Eastgate Way.	King County Metro	Construction in 2019

Table 4. 2018 Existing & 2035 Baseline Intersection LOS

ID	Intersection	V/C Threshold	Control	2018 V/C Ratio		2035 Baseline V/C Ratio	
				AM Peak	PM Peak	AM Peak	PM Peak
1	I-90 WB On-Ramp & SE 32nd Street	0.85	Unsignalized	N/A**	N/A**	N/A**	N/A**
2	Richards Road & SE 32nd Street	0.85	Signalized	0.54	0.72	0.72	0.97
3	Richards Road & WB I-90 On-Ramp/Eastgate Way	0.95	Signalized	0.47	0.77	0.57	0.93
4	Factoria Boulevard & EB I-90 Off-Ramp/SE 36th Street	0.95	Signalized	0.90	0.89	1.03	1.00
5	Factoria Boulevard & 3600 Block	0.95	Signalized	0.50	0.60	0.62	0.73
6	Factoria Boulevard & SE 38th Street	0.95	Signalized	0.79	0.94	0.90	1.12
7	132nd Avenue SE & SE 36th Street	0.95	Signalized	0.54	0.66	0.66	0.71
8	SE Newport Way & SE Allen Road	0.85	Signalized	0.72	0.66	0.84	0.74
9	SE Newport Way & Somerset Boulevard SE	0.85	Signalized	0.67	0.62	0.80	0.72
10	136th Place SE & SE 36th Street	0.90	Signalized	N/A*	0.70	N/A*	0.74
11	142nd Place SE & SE 36th Street	0.90	Signalized	0.80	0.78	0.90	0.95
12	142nd Place SE & I-90 Direct Access	0.90	Signalized	N/A*	0.54	N/A*	1.03
13	139th Avenue SE & SE 32nd Street	0.90	Unsignalized	N/A*	0.52	N/A*	1.25
14	148th Avenue SE & SE 27th Street	0.90	Signalized	0.61	0.58	0.74	0.68
15	148th Avenue SE & SE 28th Street	0.90	Signalized	0.75	0.77	0.86	0.81
16	148th/150th Avenue SE & SE Eastgate Way	0.90	Signalized	0.95	0.92	1.20	1.14
17	150th Avenue SE & WB I-90 Off-Ramp/SE 37th Street	0.90	Signalized	0.80	0.79	1.02	1.05
18	150th Avenue SE & SE 38th Street	0.85	Signalized	0.67	0.79	0.92	0.97
19	SE Allen Road & SE 38th Street	0.85	Unsignalized	0.12	0.21	0.35	0.27
20	150th Avenue SE & SE Newport Way	0.85	Signalized	0.68	0.89	1.06	0.99
21	146th Avenue SE & SE Allen Rd	0.85	Unsignalized	N/A*	0.37*	N/A*	0.68*
22	SE Eastgate Way & 156th Avenue SE	0.90	Signalized	0.69	0.66	0.60	0.61
23	SE Eastgate Way & 158th Avenue SE	0.90	Signalized	N/A*	0.21	N/A*	0.23
24	SE Eastgate Way & 160th Avenue SE	0.90	Signalized	N/A*	0.33	N/A*	0.41
25	SE Eastgate Way & 161st Avenue SE	0.90	Signalized	0.75	0.57	1.02	0.86
26	SE Eastgate Way & SE 37th Street	0.90	Unsignalized	N/A*	0.51*	N/A*	0.80
27	I-90 EB On-Ramp & SE 37th Street	0.90	Unsignalized	N/A*	N/A**	N/A*	0.67

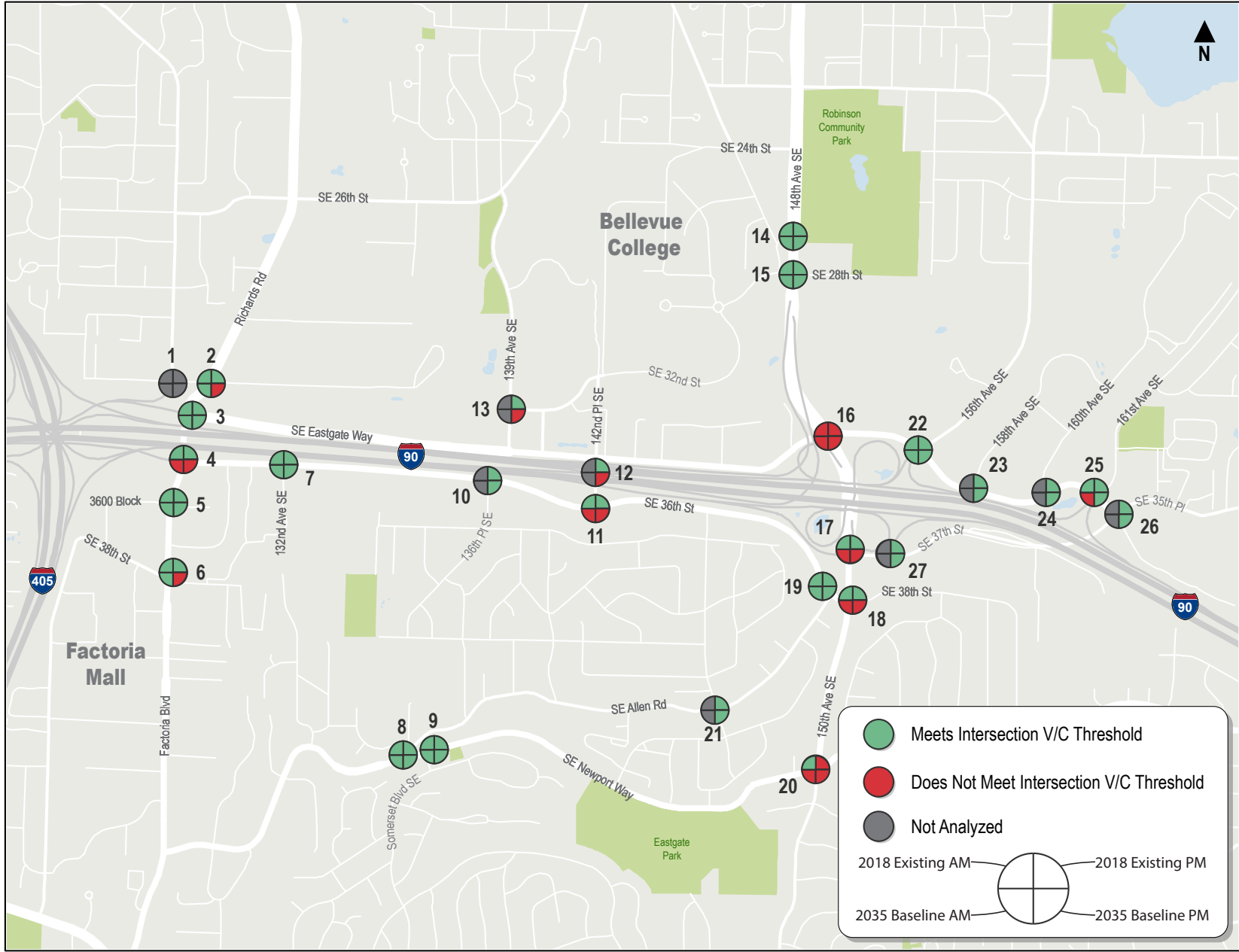
► 2035 Baseline Vehicle LOS Results

The 2035 Baseline BKR traffic volume forecast was evaluated for intersection V/C and vehicle travel speed. The analysis included the updated intersection geometries and travel pattern changes resulting from the projects listed in [Table 3](#). The results of the intersection LOS analysis are summarized in [Table 4](#) and [Figure 5](#). In both the table and figure, the 2035 Baseline results are compared to existing conditions.

Notes:

- HCM 2000 methodology used to analyze study intersections
- V/C reported for unsignalized intersections is the V/C for the worst movement
- Cells highlighted in black indicates that the intersection V/C exceeds the LOS threshold
- *Intersections not studied for the AM peak
- **V/C results not available for intersection due to lane configuration

Figure 5. 2018 Existing & 2035 Baseline Intersection LOS



Of the 27 intersections in the study area, 11 are forecast to perform below the V/C threshold in 2035 Baseline during either the AM or PM peak period. These intersections are listed in **Table 5**.

Table 5. Intersections Performing Below V/C Threshold Under the 2035 Baseline

ID	Intersection
2	Richards Road & SE 32nd Street
4	Factoria Boulevard SE & EB I-90 Off-Ramp/SE 36th Street
6	Factoria Boulevard SE & SE 38th Street
11	142nd Place SE & SE 36th Street
12	142nd Place SE & I-90 Direct Access
13	139th Avenue SE & SE 32nd Street
16	148th-150th Avenue SE & SE Eastgate Way
17	150th Avenue SE & EB I-90 Off-Ramp/SE 37th Street
18	150th Avenue SE & SE 38th Street
20	150th Avenue SE & SE Newport Way
25	SE Eastgate Way & 161st Avenue SE



Table 6 and **Figures 6 and 7** summarize the vehicle travel speed results for the 2035 Baseline and compare the results to existing conditions.

Appendix B presents the detailed corridor vehicle travel speed results.

Table 6. 2018 Existing & 2035 Baseline Vehicle Travel Speed

Corridor	Direction and Peak	Speed Threshold (mph)	2018 Vehicle Travel Speed (mph)	2035 Baseline Vehicle Travel Speed (mph)
148th-150th Avenue SE: SE 24th Street to SE Newport Way	AM Peak: Northbound	13.3	16.0	11.0
	PM Peak: Southbound	13.3	7.2	4.9
Richards Road-Factoria Blvd SE: SE 26th Street to SE 38th Street	PM Peak: Southbound	12.8	4.3	3.6

Figure 6. 148th- 150th Avenue SE Corridor - 2018 Existing & 2035 Baseline Vehicle Travel Speed

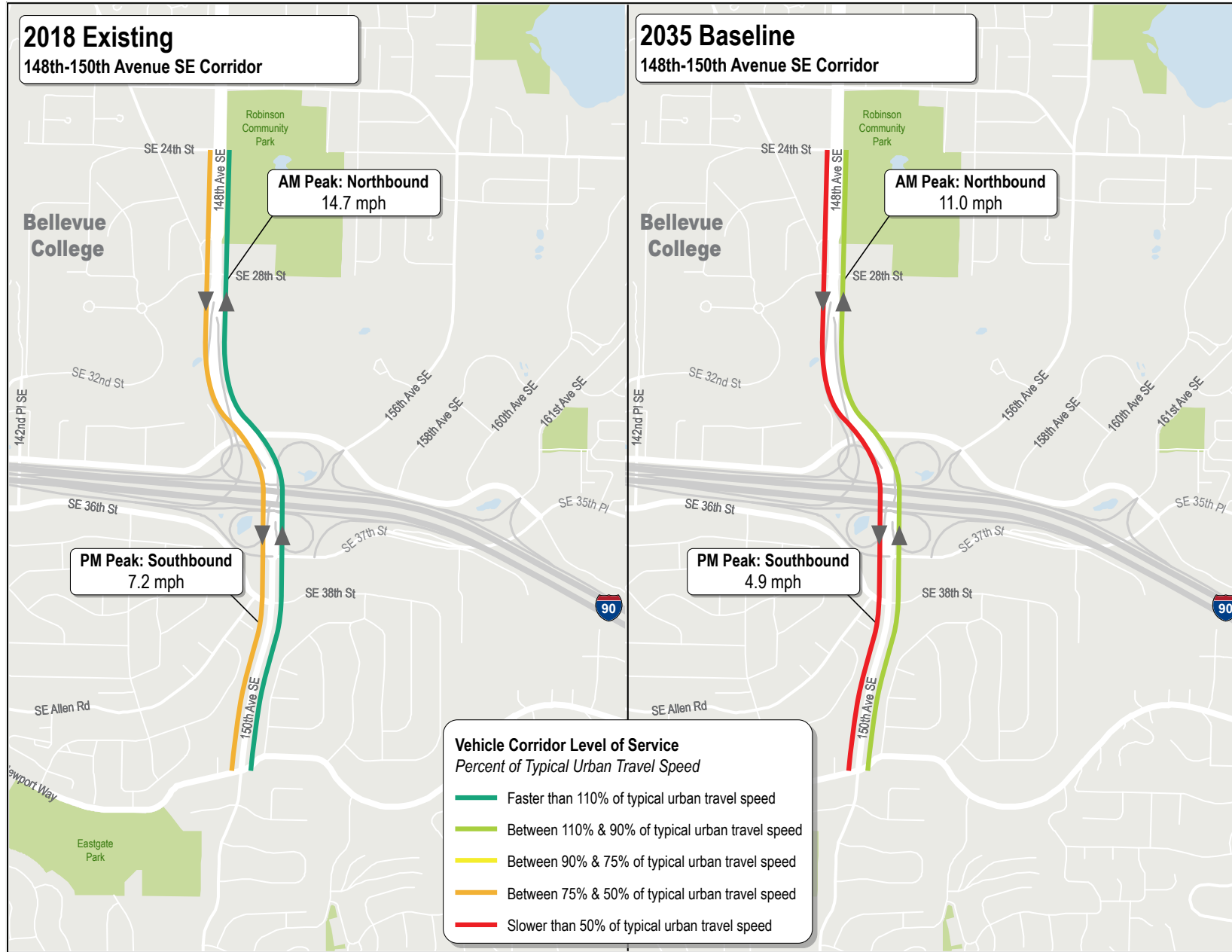
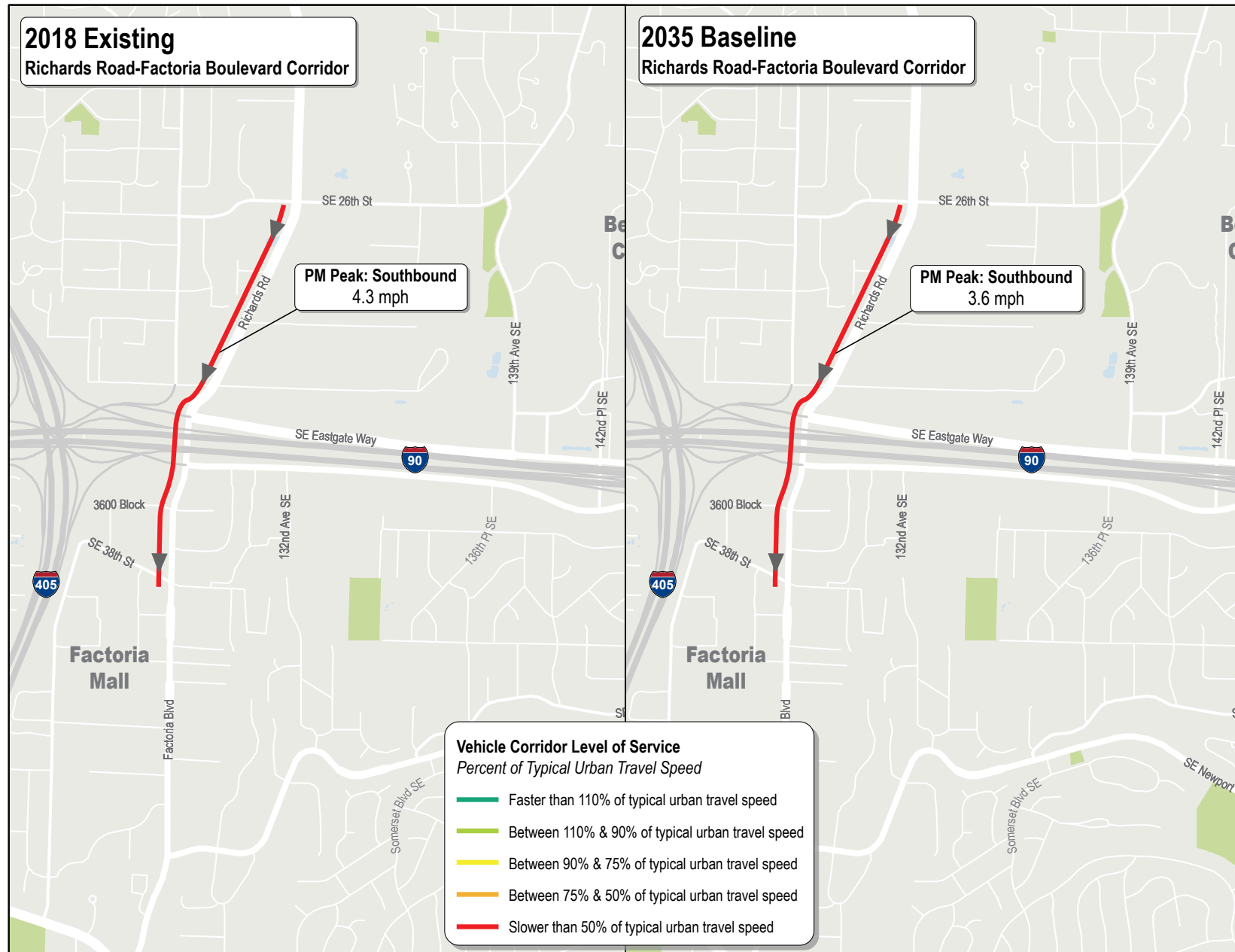


Figure 7. Richards Road-Factoria Boulevard SE Corridor - 2018 Existing & 2035 Baseline Vehicle Travel Speed



Southbound PM peak period vehicle travel speed along the 148th-150th Avenue SE corridor between SE 24th Street and SE Newport Way is forecasted at 4.9 mph for the 2035 Baseline, which is slower than the vehicle travel speed threshold of 13.3 mph. The northbound AM peak vehicle travel speed along 150th Avenue SE between SE Newport Way 11 mph, is also slower than the vehicle travel speed threshold of 13.3 mph and slower than existing conditions.

2035 Baseline southbound PM peak period vehicle travel speed along Richards Road-Factoria Boulevard SE between SE 26th Street and SE 38th Street is forecast at 3.6 mph, which is slower than the vehicle travel speed threshold of 12.8 mph. The 2035 Baseline vehicle travel speed is also slower than existing conditions along the corridor, which operates at 4.3 mph.

► 2035 Vehicle LOS Conclusions

The 2035 Baseline V/C and vehicle travel speed analysis shows increasing traffic congestion along the Richards Road-Factoria Boulevard SE corridor, around the Eastgate Park-and-Ride, and along the 148th-150th Avenue SE corridor. These results are a reflection of the forecast traffic generated by development expected in the study area and throughout the region. Traffic congestion between existing and 2035 Baseline is forecast to increase even with the local and regional transportation improvements identified in this chapter.

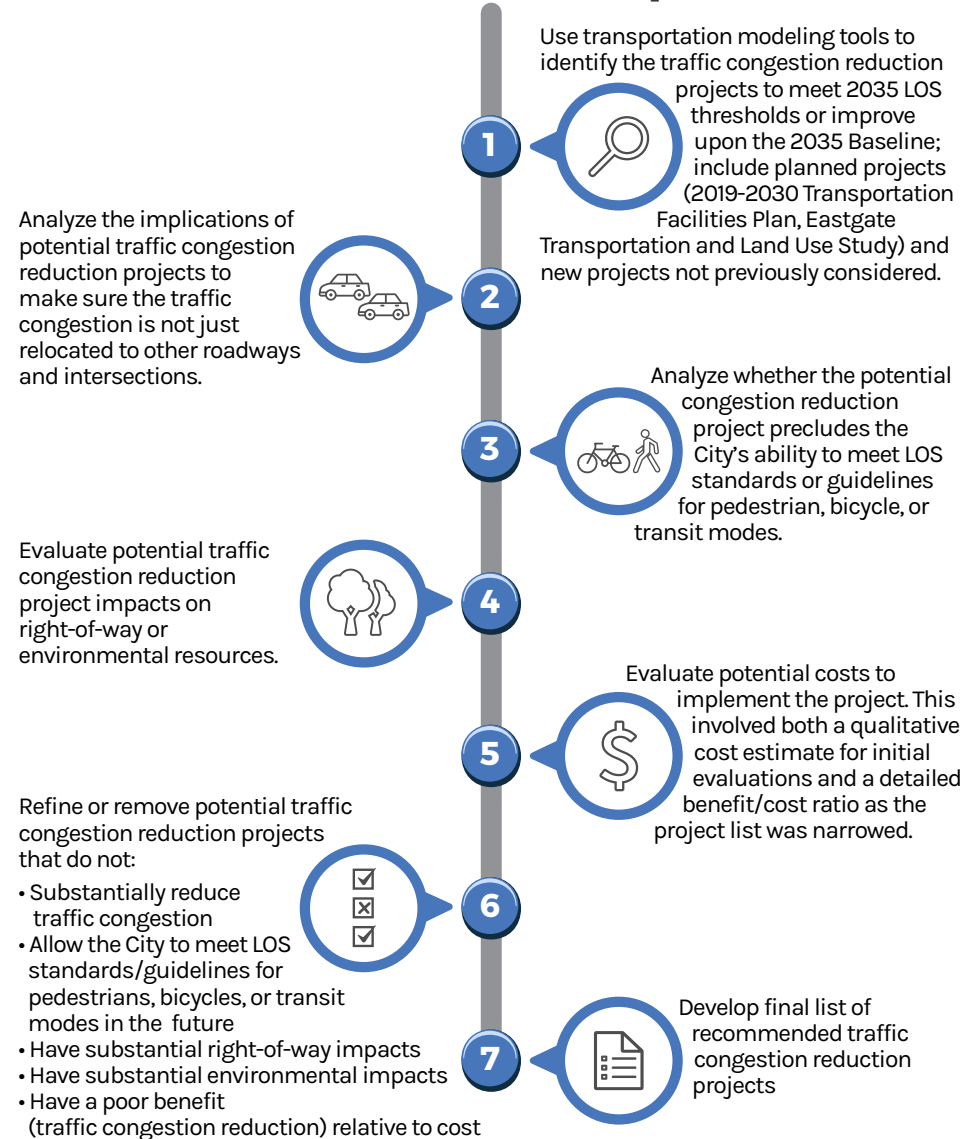


Project Identification Framework

As Bellevue and the rest of the region continue to grow, traffic congestion in the Factoria/Eastgate area is expected increase. While this study's primary objective is to identify projects to slow the growth of traffic congestion, this objective is integrated with other City mobility goals and priorities. The Comprehensive Plan states that congestion reduction projects must be safe for all modes and not hinder Bellevue's ability to implement other transportation projects. Moreover, Bellevue is committed to environmental sustainability and fiscal prudence. Therefore, other factors are considered when evaluating traffic congestion reduction projects include environmental or property impacts, cost effectiveness, and implementation feasibility.

A project identification framework was created to narrow a list of more than 20 potential traffic congestion reduction projects for the study area into a set of recommended projects. The project identification framework considers mobility, environmental, cost, and implementation factors. Progressing through each step of the framework, potential projects were refined, reconsidered, or removed from further evaluation. **Appendix D** includes a matrix of the congestion reduction projects initially considered and those that were ultimately carried through to the final set of recommended projects.

Framework Step



► **2035 Traffic Congestion Reduction Projects – Benefit/Cost and MMLOS Analysis**

A quantitative benefit/cost and multimodal level-of-service (MMLOS) evaluation was performed on all the projects that passed through step two of the project identification framework. These analyses are important in narrowing the project list by identifying projects that have small delay reduction per cost to construct and projects that could impede the ability to provide infrastructure for pedestrians, bicycles, and transit riders. The methods and findings are briefly summarized below and details are in [Appendix E](#).

► **Benefit/Cost Analysis**

To determine relative cost-effectiveness of promising traffic congestion reduction projects, a calculation of the traffic congestion reduction benefit relative to project cost was performed. The benefit is defined as the reduction in traffic congestion as measured by vehicle hours of delay (VHD) reduced by the traffic congestion reduction project compared to the 2035 Baseline. The cost is defined as the cost to design and build the traffic congestion reduction project in 2019 dollars. The formula for the benefit/cost analysis is:

Vehicle Hours of Delay ÷ Project Concept Cost (\$M)

=

Benefit to Cost Ratio

This analysis helped to highlight projects that had relatively low benefit/cost ratios. However, it should be noted that the benefit/cost ratio was not used as a "hard line" to include or exclude projects from the recommended project list. For example, some projects had a high benefit (large VHD reduction) and a good, but not the highest benefit/cost ratio. Eliminating these high-benefit projects because they did not have the highest benefit/cost ratio would result in excluding some of the projects with the greatest total traffic congestion reduction benefit. In the end, all the recommended traffic congestion reduction projects had favorable benefit/cost ratios compared to each other and to some of the projects that were not carried forward.

► **Multimodal Level of Service (MMLOS)**

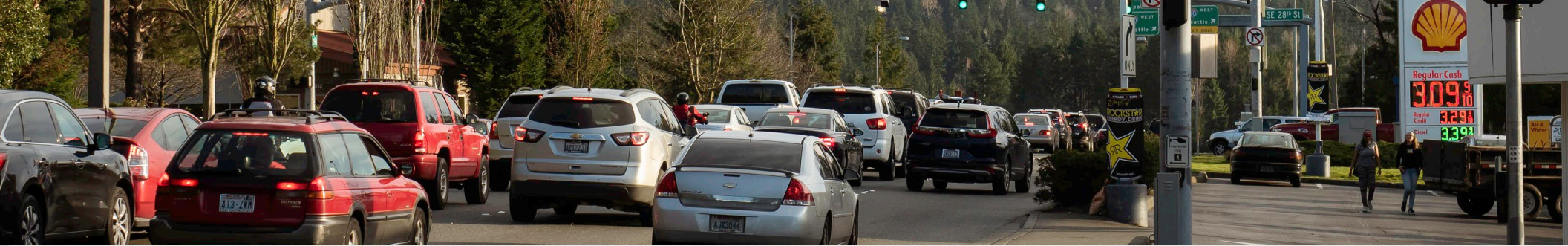
Bellevue's Comprehensive Plan calls for a transportation network that is safe and effective for all modes. To ensure that traffic congestion reduction does not come at the expense of LOS for other modes, potential traffic congestion reduction projects underwent a full MMLOS analysis. MMLOS is defined by Bellevue using metrics, standards, and guidelines that identify features such as sidewalk width, crossing frequency, bicycle facility design, and transit stop amenities that are appropriate for different parts of the City. In the study area, the standards and guidelines for "Activity Centers" such as Eastgate and Factoria call for sidewalks with a landscape area that is between 12-16 feet wide, arterial pedestrian crossings within 600-800 feet of pedestrian destinations, a mix of on-street bicycle facilities and off-street trails, and transit shelters. Implementing the MMLOS standards and guidelines will better accommodate people walking, biking, and riding transit. [Appendix E](#) has detailed analysis methods and results. The summary finding is that the recommended projects can implement (or developers of sites with frontage improvements can later implement) sidewalks, crossings, bicycle lanes/paths, and transit amenities that meet the MMLOS standards and guidelines.

► How Benefit/Cost and MMLOS Analyses Enhanced the Recommended Projects

This project took deliberate steps to include a holistic and comprehensive analysis when evaluating potential traffic congestion reduction projects. This resulted in projects that are effective at reducing the growth of traffic congestion and provide the opportunities for a complete multimodal transportation network in the Eastgate/Factoria area. Some examples of the benefits of the analysis include:

- The project identification framework eliminated projects that would have permanently eliminated a sidewalk connection or resulted in the major property impacts and high costs.
- The benefit/cost analysis helped to identify low-cost enhancements to some of the initial concepts (e.g., extending a turn lane farther back because the project would already require replacement of curb and sidewalk).
- The MMLOS analysis ensured that crosswalks were not eliminated at key locations (e.g., the east leg of the 142nd Place SE & SE 36th Street intersection which is planned as a trailhead for Mountains to Sound Greenway Trail).





► Non-Infrastructure Approaches to Reduce Traffic Congestion

A standard approach to address traffic congestion is to add lanes at intersections and along streets. Capacity is expanded with the new lanes and the V/C ratio and delay improve until growth in traffic results in a higher V/C ratio and more delay. By adding capacity, more auto passengers are accommodated, but there is continual pressure to keep adding new capacity. Bellevue is a regional leader in using "non-infrastructure" approaches to reduce the growth rate of new vehicle trips. For example, the Comprehensive Plan identifies that around much of Bellevue, investments in non-auto infrastructure and transportation demand management has resulted in daily traffic volume remaining unchanged on most major arterials over the past decade, despite rapid growth. This project also includes assumptions about the latest innovations in non-infrastructure strategies to reduce congestion. Following are some of the strategies that are assumed to be in place as part of the 2035 Baseline:

→ **Transportation Demand Management (TDM)** – Bellevue has long promoted and supported TDM programs that building managers implement to discourage the use of single occupant vehicles (SOVs) in favor of non-SOV modes like walking, bicycling, riding transit, and telecommuting. In 2018, Bellevue updated TDM requirements to cover all developments citywide. Modeling analysis suggests that TDM requirements throughout Factoria and Eastgate reduces peak period trip generation by 3-5%. Examples of TDM strategies include employee shuttle programs, vanpool and transit subsidies, mandatory paid employee parking, and information on the best routes to walk and bike to work.

- **Enhanced Transit Service** – The BKR model includes planned transit service enhancements like King County Metro's RapidRide expansion to Kirkland, Redmond, and Renton from Eastgate. The model also includes Sound Transit regional transit enhancements like East Link that will provide a connection from Eastgate/Factoria to Seattle via a bus transfer at Mercer Island or South Bellevue and I-405 Bus Rapid Transit, that provides a new transit option for I-405 commuters.
- **Enhanced Access to Transit** – King County Metro recently started its Ride2 connection to the Eastgate Park-and-Ride. This program improves access to transit and strongly reinforces the other transit service improvements being made to the Eastgate/Factoria area. Ride 2 also dovetails with Bellevue's work to provide accessible facilities for people who walk or bike to/from transit.

While these strategies may seem like incremental improvements compared to the congestion reduction projects recommended in this study, they have a positive cumulative benefit to reducing traffic congestion, and more importantly, ensuring that a variety of mobility options are available to area residents, employees, and visitors.

Recommended Traffic Congestion Reduction Projects

A list of recommended traffic congestion reduction projects is the outcome of applying the project evaluation framework and refining the designs for the most promising projects. [Figure 8](#) highlights the recommended congestion reduction projects on a map of the study area and [Table 7](#) provides a detailed description of each project along with planning-level cost estimates. [Appendix F](#) shows detailed plan-level views of the recommended traffic congestion reduction projects within the study area compared to the 2035 Baseline. [Appendix G](#) provides additional details on the cost estimates.

Table 7. Recommended Traffic Congestion Reduction Projects

ID	Location	Description	Cost Estimate (\$ Thousands)
A	Factoria Boulevard SE & EB I-90 Off-Ramp/SE 36th Street	Add variable channelization for EB approach (1 EB through lane and 1 EB through/right turn lane in AM; 1 EB through lane and 1 EB right turn lane in the PM), plus 1 additional EB receiving lane	Additional Study Needed*
B	Factoria Boulevard SE & SE 38th Street	Add second WB left turn lane, add two exclusive EB left turn lanes	\$950
C	139th Avenue SE & SE 32nd Street	Add traffic signal	\$930
D	142nd Place SE & SE 36th Street	Add SB right turn lane	\$810
E	150th Avenue SE & SE Eastgate Way	Add a second NB left turn lane, add third SB through lane across I-90, extend SB left turn lane and add NB right turn lane	\$5,040
F	150th Avenue SE & SE 37th Street & I-90 EB Off-Ramp	Add a second EB right turn lane, extend SB left turn lane, extend SB through lane from loop ramp to SE 38th Street, restrict EB left turn, add second WB left turn lane and a extend WB right turn lane	\$2,565
G	150th Avenue SE & SE 38th Street	Adjust signal timing to remove split phasing and optimize green time, extend third NB lane between SE 38th Street and SE 37th Street	\$545
H	SE 37th Street & I-90 EB On-Ramp	Modify channelization between 150th Avenue SE and I-90 EB on-ramp and add traffic signal at EB on-ramp intersection with SE 37th Street	\$450
I	SE 37th Street & SE Eastgate Way	Add traffic signal and modify channelization	\$1,150

Note:

* East of the QFC shopping area, there may be underground utilities and structure for an underground parking garage. Further exploration is needed to determine the extent of these structures to prepare a more detailed cost estimate.

Figure 8. Recommended Traffic Congestion Reduction Project Locations

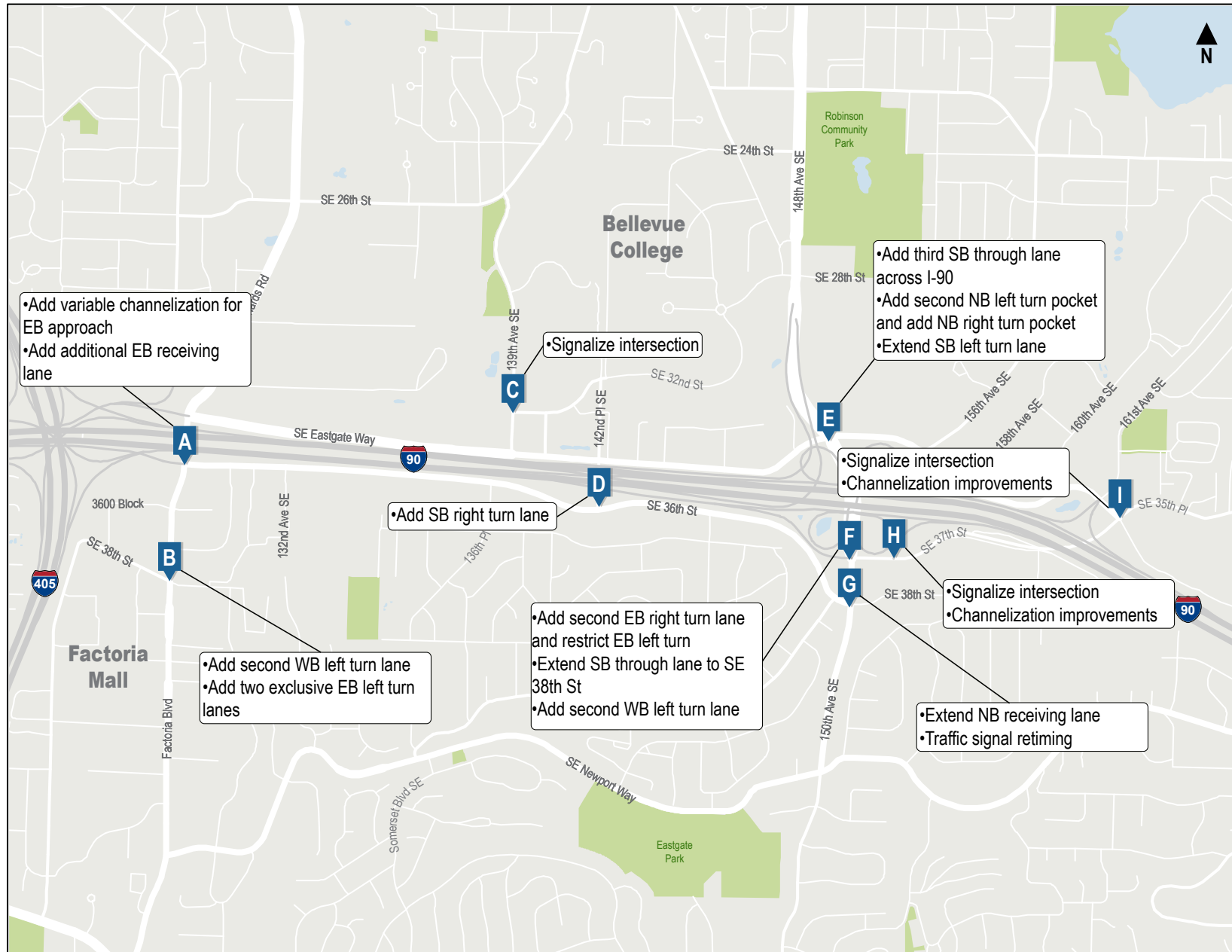


Table 8. 2035 Baseline & 2035 Recommended Project Intersection LOS

ID	Intersection	V/C Threshold	Control	2035 Baseline V/C Ratio		2035 Recommended Projects V/C Ratio	
				AM Peak	PM Peak	AM Peak	PM Peak
1	I-90 WB On-Ramp & SE 32nd Street	0.85	Unsignalized	N/A**	N/A**	N/A**	N/A**
2	Richards Road & SE 32nd Street	0.85	Signalized	0.72	0.97	0.72	0.97
3	Richards Road & WB I-90 On-Ramp/Eastgate Way	0.95	Signalized	0.57	0.93	0.57	0.93
4	Factoria Boulevard & EB I-90 Off-Ramp/SE 36th Street	0.95	Signalized	1.03	1.00	0.98	1.00
5	Factoria Boulevard & 3600 Block	0.95	Signalized	0.62	0.73	0.62	0.73
6	Factoria Boulevard & SE 38th Street	0.95	Signalized	0.90	1.12	0.84	0.98
7	132nd Avenue SE & SE 36th Street	0.95	Signalized	0.66	0.71	0.66	0.69
8	SE Newport Way & SE Allen Road	0.85	Signalized	0.84	0.74	0.84	0.74
9	SE Newport Way & Somerset Boulevard SE	0.85	Signalized	0.80	0.72	0.80	0.72
10	136th Place SE & SE 36th Street	0.90	Signalized	N/A**	0.74	N/A**	0.73
11	142nd Place SE & SE 36th Street	0.90	Signalized	0.90	0.95	0.77	0.64
12	142nd Place SE & I-90 Direct Access	0.90	Signalized	N/A*	1.03	N/A*	1.03
13	139th Avenue SE & SE 32nd Street	0.90	Unsignalized	N/A*	1.25	N/A*	0.50
14	148th Avenue SE & SE 27th Street	0.90	Signalized	0.74	0.68	0.74	0.68
15	148th Avenue SE & SE 28th Street	0.90	Signalized	0.86	0.81	0.86	0.81
16	148th/150th Avenue SE & SE Eastgate Way	0.90	Signalized	1.20	1.14	0.96	0.91
17	150th Avenue SE & WB I-90 Off-Ramp/SE 37th Street	0.90	Signalized	1.02	1.05	0.88	0.71
18	150th Avenue SE & SE 38th Street	0.85	Signalized	0.92	0.97	0.92	0.96
19	SE Allen Road & SE 38th Street	0.85	Unsignalized	0.35	0.27	0.35	0.27
20	150th Avenue SE & SE Newport Way	0.85	Signalized	1.06	0.99	1.06	0.99
21	146th Avenue SE & SE Allen Rd	0.85	Unsignalized	N/A*	0.68*	N/A*	0.68*
22	SE Eastgate Way & 156th Avenue SE	0.90	Signalized	0.60	0.61	0.60	0.59
23	SE Eastgate Way & 158th Avenue SE	0.90	Signalized	N/A*	0.23	N/A*	0.23
24	SE Eastgate Way & 160th Avenue SE	0.90	Signalized	N/A*	0.41	N/A*	0.41
25	SE Eastgate Way & 161st Avenue SE	0.90	Signalized	1.02	0.86	1.02	0.85
26	SE Eastgate Way & SE 37th Street	0.90	Signalized	N/A*	0.80	N/A*	0.60
27	I-90 EB On-Ramp & SE 37th Street	0.90	Signalized	N/A*	0.67	N/A*	0.89

► 2035 Recommended Projects Vehicle LOS Results

The intersection V/C and vehicle travel speed results for the recommended projects are presented in this section and compared to the 2035 Baseline. The results of the intersection LOS analysis are summarized in **Table 8** and **Figure 9**.

Notes:

- HCM 2000 methodology used to analyze study intersections
- V/C reported for unsignalized intersections is the V/C for the worst movement
- Cells highlighted in black indicates that the intersection V/C exceeds the LOS threshold
- *Intersections not studied for the AM peak
- **V/C results not available for intersection due to lane configuration

Table 9. Intersections that Exceed V/C Threshold in 2035 with Recommended Projects

ID	Intersection
2	Richards Road & SE 32nd Street
4	Factoria Boulevard SE & EB I-90 Off-Ramp/SE 36th Street
6	Factoria Boulevard SE & SE 38th Street
12	142nd Place SE & I-90 Direct Access
16	148th-150th Avenue SE & SE Eastgate Way
18	150th Avenue SE & SE 38th Street
20	150th Avenue SE & SE Newport Way
25	SE Eastgate Way & 161st Avenue SE

Of the 27 intersections in the study area, 8 are forecast to perform below the V/C threshold in 2035 with the recommended projects in place. This compares to 11 under the 2035 Baseline. This result indicates that the recommended traffic congestion reduction projects reduce delay at some locations, but traffic congestion is still expected in 2035. Vehicle travel speed provides more detail about the magnitude of traffic congestion reduction provided by the recommended projects. The intersections that would not meet the V/C thresholds with the recommended projects are shown in [Table 9](#).



Table 10. 2035 Baseline & 2035 Recommended Projects Vehicle Travel Speed

Corridor Segment	Direction and Peak	Speed Threshold (mph)	2035 Baseline Vehicle Travel Speed (mph)	2035 Recommended Projects Vehicle Travel Speed (mph)
148th-150th Avenue SE: SE 24th Street to SE Newport Way	AM Peak: Northbound	13.3	11.0	16.3
	PM Peak: Southbound	13.3	4.9	9.5
Richards Road-Factoria Blvd SE: SE 26th Street to SE 38th Street	PM Peak: Southbound	12.8	3.6	4.0

Vehicle travel speed LOS results are presented for the 2035 Baseline and recommended projects in [Table 10](#) and [Figures 10 and 11](#).

[Appendix B](#) presents the detailed vehicle travel speed.

Figure 10. 148th- 150th Avenue SE Corridor - 2035 Baseline & 2035 Recommended Projects Vehicle Travel Speed

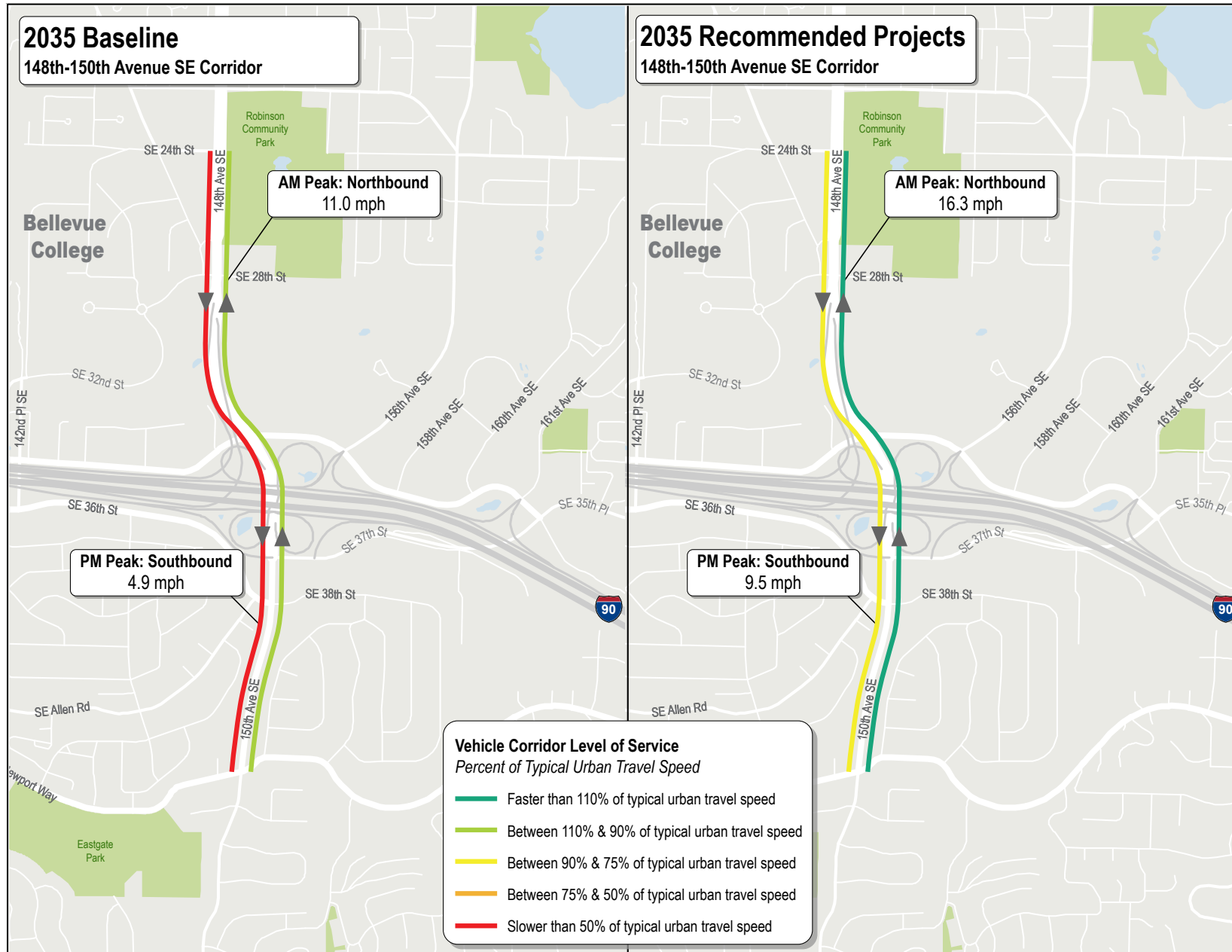


Figure 11. Richards Road-Factoria Boulevard SE Corridor - 2035 Baseline & 2035 Recommended Projects Vehicle Travel Speed



► 2035 Recommended Project Vehicle LOS Conclusions

The vehicle LOS results for both intersections and vehicle travel speed indicate the following:

→ Richards Road-Factoria Boulevard SE Corridor

- Projects recommended along this corridor result in a 12% improvement in the southbound vehicle travel speed in the PM peak period compared to 2035 Baseline.
- Southbound PM vehicle travel speed is 4.0 mph, compared to the threshold of 12.8 mph.
- Intersection LOS improves at Factoria Boulevard SE & SE 36th Street (AM peak period V/C improves from 1.03 to 0.98) and at Factoria Boulevard SE & SE 38th Street (PM peak period V/C improves from 1.12 to 0.99). The intersection V/C threshold is 0.95.

→ Eastgate Park-and-Ride Area

- Adding a traffic signal at 139th Avenue SE & SE 32nd Street and adding the additional southbound right turn lane at 142nd Place SE & SE 36th Street will allow these intersections to meet the intersection LOS V/C threshold of 0.90.

→ 148th-150th Avenue SE Corridor

- The recommended projects increase vehicle travel speed compared to the 2035 Baseline. The southbound PM peak period vehicle travel speed increases by 93% between SE 24th Street and SE Newport Way (from 4.9 to 9.5 mph). The northbound AM peak period speed between SE Newport Way and SE 24th Street increases by 48% (from 11.0 to 16.3 mph).
- Intersection LOS improves at 150th Avenue SE & SE Eastgate Way, 150th Avenue SE & SE 37th Street, and 150th Avenue SE & SE 38th Street. However, the intersection V/C ratio is still below the LOS threshold of 0.85 at SE Eastgate Way and SE 38th Street (although improved over the 2035 Baseline).

→ SE 37th Street & SE Eastgate Way

- A traffic signal is recommended at the intersection to address future traffic volume growth on the east end of the study area and provide a V/C ratio that meets the threshold of 0.90.

► Complementary Projects and Studies

The Transportation Commission identified two other projects/studies that would complement the traffic congestion reduction projects identified through this study. These projects and studies are as follows:

→ **Bellevue College Connector** – This is a priority project in the Bellevue Transit Master Plan and for King County Metro. This project would provide a more direct routing of buses through the Bellevue College campus (rather than through the 150th Avenue SE & Eastgate Way intersection). This project improves bus speed and reliability between the Factoria/Eastgate area and other destinations like downtown Bellevue, Kirkland, Overlake, and Redmond. This project also complements the non-infrastructure projects described earlier.

→ **Factoria Boulevard SE Corridor Study** – Traffic congestion is forecast to increase even with the recommended traffic congestion reduction projects. A more comprehensive evaluation of traffic congestion and potential projects is recommended for the Factoria Boulevard SE corridor between SE 38th Street and SE Coal Creek Parkway.

► 2035 Recommended Project Early Implementation Opportunities

A goal of this study is to define "early implementation projects." These are traffic congestion reduction projects that have near-term benefit and can be phased in with longer-term projects. To identify early implementation projects, intersection LOS and vehicle travel speed was forecast for 2024 using output from the BKR model. Projects that stood out for early implementation met the following criteria:

- Address a traffic congestion issue forecasted for 2024
- Have no "throw away" components that would need to be rebuilt as part of the long-term project
- Does not require substantial private right-of-way or depend on property redevelopment

Table 11 lists the recommended traffic congestion reduction projects that are candidates for early implementation. **Appendix H** has detailed 2024 intersection V/C and vehicle travel speed results for the early implementation projects.



Table 11. Potential Early Implementation Projects

ID	Location	Description
B	Factoria Boulevard SE & SE 38th Street	Add second WB left turn lane
E	150th Avenue SE & SE Eastgate Way	Add a second NB left turn lane, add third SB through lane across I-90, extend SB left turn lane and add NB right turn lane
F	150th Avenue SE & SE 37th Street & I-90 EB Off-Ramp	Add a second EB right turn lane, extend SB left turn lane, extend SB through lane from loop ramp to SE 38th Street, restrict EB left turn, add second WB left turn lane and extend WB right turn lane
G	150th Avenue SE & SE 38th Street	Adjust signal timings to remove split phasing and optimize green time
H	SE 37th Street & I-90 EB On-Ramp	Modify channelization between 150th Avenue SE and I-90 EB on-ramp and add traffic signal at EB on-ramp intersection with SE 37th Street
I	SE 37th Street & SE Eastgate Way	Add traffic signal and modify channelization

Project Implementation and Funding

The recommended traffic congestion reduction projects will be considered in updates to the Transportation Improvement Program, the Transportation Facilities Plan, and the Comprehensive Transportation Project List. Projects that are on the current lists but not recommended in this study will be removed or modified if their design has changed.

It is important to recognize that funding is not allocated to design or construct any of these specific projects. The recommended projects will be eligible for funding through the Neighborhood Safety, Connectivity, and Congestion Levy and the Capital Improvement Program. This study has identified the need and justification for the traffic congestion reduction projects in the Eastgate/Factoria area, but previous studies have identified traffic, safety, and multimodal priorities elsewhere in the City. The Transportation Commission and City Council will determine how the Eastgate/Factoria area projects compare to other City priorities and they will be implemented based on this evaluation and available capital resources.

