



City of Bellevue  
Transportation Department

# South Downtown I-405 Access Study Report

July, 2021



Image provided by King County Parks

# Acknowledgements

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# Table of Contents

<b>Executive Summary .....</b>	<b>2</b>
<b>Introduction .....</b>	<b>4</b>
Study Area .....	4
Project Purpose and Need.....	5
Planning Context .....	6
<b>Study Guiding Principles/Objectives.....</b>	<b>9</b>
<b>Methodology.....</b>	<b>11</b>
<b>Existing Conditions .....</b>	<b>13</b>
Roadway Network .....	13
Non-Motorized Travel .....	14
Arterial Vehicle Volumes .....	14
Traffic Operations at Intersections .....	14
Crash Data .....	17
<b>2035 Baseline Conditions.....</b>	<b>19</b>
2035 Land Use Assumptions .....	19
2035 Baseline Network Assumptions .....	21
2035 Baseline Traffic Forecasts .....	22
2035 No Build/Baseline Traffic Conditions.....	25
<b>Alternatives Development and Analysis .....</b>	<b>26</b>
Stakeholder and Community Engagement .....	26
Alternative Evaluation Criteria .....	26
Development of Alternatives.....	27
Alternative Analysis .....	32
Tier 1 Fatal Flaw Screening .....	32
Tier 2 Alternatives Conceptual Design and Analysis .....	36
NE 2nd Street Extension – Alternative Alignments .....	36
SE 6th Street Extension – Lane Configuration.....	38
SE 6th Street Extension – Nonmotorized Facilities .....	39
Lake Hills Connector Southbound On-Ramp – Nonmotorized Facilities.....	41
Tier 2 Alternatives Evaluation.....	41
Lake Hills Connector Southbound On-Ramp .....	42
SE 6th Street Extension with Southbound On-Ramp .....	44
SE 6 <sup>th</sup> Street Extension with Direct Access.....	46

NE 2 <sup>nd</sup> Street Extension.....	50
No Build.....	52
Traffic Analysis for Tier 2 Alternatives Evaluation.....	53
I-405 Access Capacity Added.....	53
2035 Traffic Forecasts for Alternatives.....	53
2035 Alternatives Traffic Analysis.....	59
Alternative Analysis Summary .....	61
Community Input .....	63
<b>Recommended Alternative .....</b>	<b>65</b>
<b>Next Steps .....</b>	<b>67</b>

## Figures

Figure 1	Study Area and Traffic Analysis Area .....	5
Figure 2	Decision-Making Process .....	11
Figure 3	Project Analysis Process .....	12
Figure 4	2018 PM Peak Hour Traffic Volumes.....	15
Figure 5	Existing Turning Movement Volumes at Study Intersections.....	16
Figure 6	Non-residential and Housing Unit Growth Distribution .....	21
Figure 7	2035 Baseline PM Peak Hour Traffic Volumes .....	22
Figure 8	2035 Baseline Turning Movement Volumes at Study Intersections.....	24
Figure 9	Screening Process .....	32
Figure 10	Concept Design for NE 2 <sup>nd</sup> Street North Alignment .....	37
Figure 11	Concept Design for NE 2 <sup>nd</sup> Street South Alignment.....	38
Figure 12	Concept Design for SE 6 <sup>th</sup> Street Four Lane Roadway .....	39
Figure 13	Concept Design for SE 6 <sup>th</sup> Street Two Lane Roadway .....	39
Figure 14	Concept Design for SE 6 <sup>th</sup> Street Multipurpose Path to Lake Hills Connector .....	40
Figure 15	Concept Design for SE 6 <sup>th</sup> Street Multipurpose Path to SE 5 <sup>th</sup> Street .....	40
Figure 16	Concept Design for Lake Hills Connector with Multipurpose Path .....	41
Figure 17	Concept Design for Lake Hills Connector Southbound On-Ramp Alternative.....	42
Figure 18	Concept Design for SE 6 <sup>th</sup> Street Extension with Southbound On-Ramp Alternative	44
Figure 19	Concept Design for SE 6 <sup>th</sup> Street Extension Direct Access Alternative.....	47
Figure 20	Concept Design for the NE 2 <sup>nd</sup> Street Extension Alternative .....	50
Figure 21	I-405 Access Capacity .....	53
Figure 22	Additional Intersection Improvements .....	54
Figure 23	Modification of Lane Configuration for Lake Hills Connector Southbound On-Ramp Alternative	54
Figure 24	2035 Lake Hills Connector Southbound On-Ramp Alternative Turning Movement Volumes at Study Intersections.....	55
Figure 25	2035 SE 6 <sup>th</sup> Street Extension Inside Access Alternative Turning Movement Volumes at Study Intersections.....	56
Figure 26	2035 SE 6 <sup>th</sup> Street Extension and Southbound On-Ramp Alternative Turning Movement Volumes at Study Intersections .....	57
Figure 27	2035 NE 2 <sup>nd</sup> Street Extension Alternative Turning Movement Volumes at Study Intersections	58
Figure 28	Citywide Travel Time Savings.....	59
Figure 29	Overall PM Peak Hour Vehicle Delay Reduction Compared to 2035 No Action ...	61
Figure 30	Improvements Included in Recommended Alternative .....	66

## Tables

Table 1	2018 PM Peak Hour Traffic Volumes and Delay for Study Intersections.....	17
Table 2	2018 Citywide Crash Data .....	17
Table 3	Crash Data, Average Traffic Volumes and Crash Rates for North-South Corridors .	18
Table 4	Crash Data, Average Traffic Volumes and Crash Rates for East-West Corridors ....	18
Table 5	Crash Data, Average Traffic Volumes and Crash Rates for Ramp Terminals .....	18
Table 6	2019 Existing Land Uses by Mobility Management Area .....	19
Table 7	2035 Projected Land Uses by Mobility Management Area.....	20
Table 8	Projected 2019 to 2035 Land Use Changes .....	20
Table 9	Downtown Bellevue Trips by Purpose .....	23
Table 10	Daily Downtown Tour* Mode Share.....	23
Table 11	2035 Baseline PM Peak Hour Volumes and Delay for Study Intersections .....	25
Table 12	South Downtown I-405 Access Alternative Tier 1 Fatal Flaw Screening .....	35
Table 13	Major Construction Quantities and Impacts for Lake Hills Connector Southbound On-Ramp Alternative .....	43
Table 14	Major Construction Quantities and Impacts for SE 6th Street Extension with Southbound On-Ramp Alternative.....	46
Table 15	Major Construction Quantities and Impacts for SE 6th Street Extension with Direct Access Alternative .....	50
Table 16	Major Construction Quantities and Impacts for NE 2 <sup>nd</sup> Street Extension Alternative	52
Table 17	Comparison of 2035 PM Peak Hour Volumes and Delay for Study Intersections .....	60
Table 18	Alternative Evaluation Summary.....	62

# Executive Summary

Bellevue is entering a new phase of rapid growth, most of which is expected to occur in Downtown and the nearby commercial areas of Wilburton and BelRed. Multimodal transportation infrastructure improvements are needed to support this anticipated growth, both on local facilities and on facilities that serve longer distance trips via state routes and interstate routes.

The I-405 Corridor Program Master Plan approved in 2002 anticipated the need for additional access points through Bellevue, including a new half-diamond interchange in the vicinity of NE 2nd Street to improve vehicle access to/from the south (I-405 Project #108). In late 2019, Council determined that further study was needed to evaluate all plausible options before identifying an alternative(s) that would best meet the city's transportation needs and support anticipated growth. More immediately, private sector redevelopment along 114th Avenue and the East Main Transit Oriented Development (TOD) land use code amendment (LUCA), as well as the development concepts proposed for the Wilburton area, have created a pressing need for the city to conduct a study and identify a preferred option.

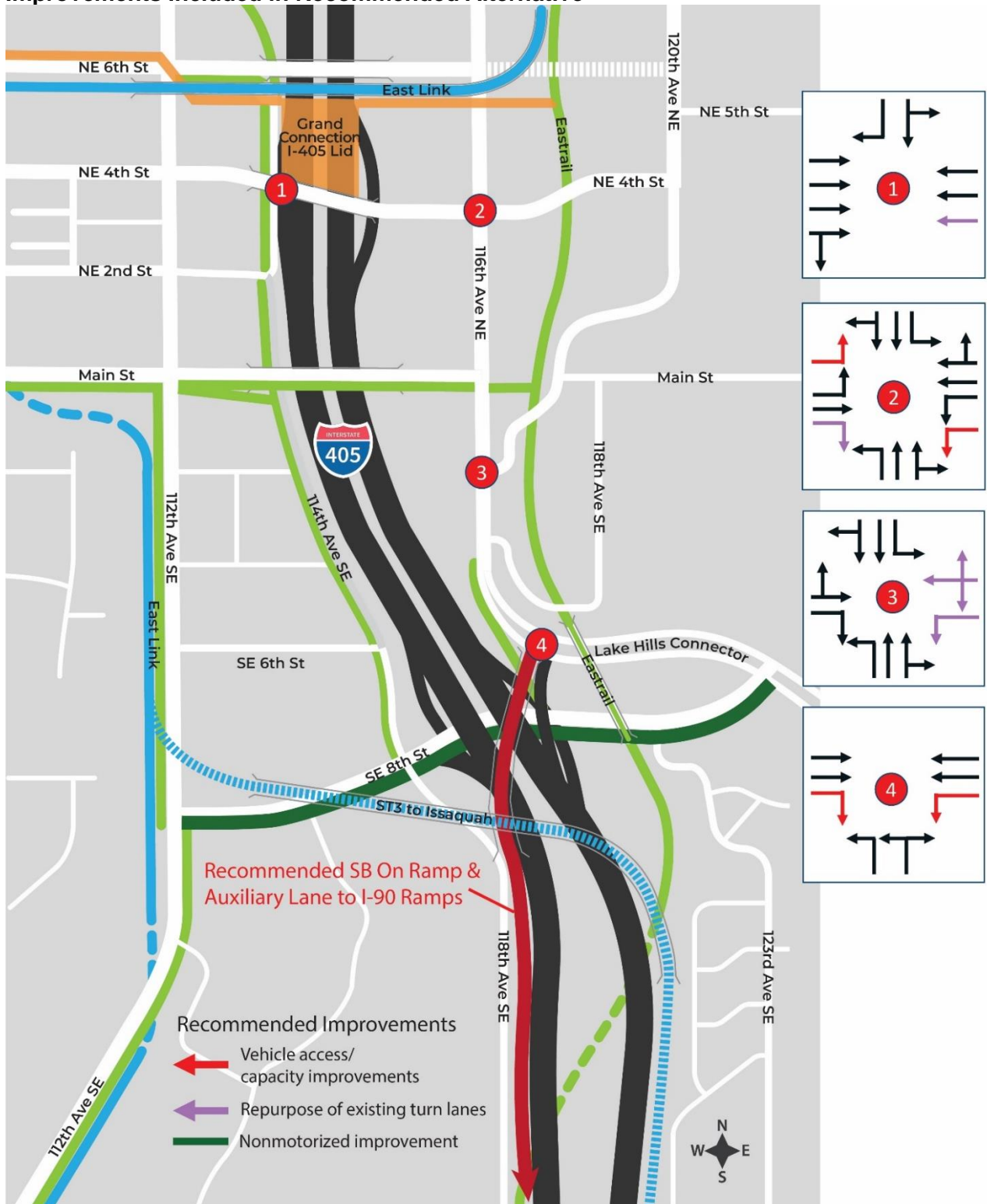
Following a year of analysis and public engagement, the study confirmed the need for additional access to/from south Downtown and I-405. In April 2020, the City Council unanimously supported the staff recommendation to advance a Lake Hills Connector southbound on-ramp to I-405 as the alternative that best meets the city's transportation needs in the south Downtown area. The Lake Hills Connector southbound on-ramp concept adds vehicle access to southbound I-405 with minimal property and environmental impacts at a reasonable cost (estimated at \$150 million in 2030 dollars) as compared to the other alternatives studied. The Council recommended alternative also aligns with city land use and urban design policies and allows the East Main TOD land use code amendment process to continue.

Accompanying the Lake Hills Connector alternative, several intersection improvements along 116<sup>th</sup> Avenue NE and non-motorized system improvements along SE 8<sup>th</sup> Street were identified as important elements of the transportation package. The map on the following page depicts the improvements included in the recommended alternative.

The study was conducted by the city, in partnership with the Washington State Department of Transportation (WSDOT). To the extent possible, the study followed the Planning Environmental Linkage (PEL) protocol, a Federal Highway Administration initiative to accelerate project delivery. PEL is a collaborative and integrated approach to transportation decision-making that 1) considers environmental, community, and economic goals early in the transportation planning process, and 2) uses the information, analysis, and products developed during planning to inform the environmental review process that will be carried out by WSDOT when design and/or construction funding is available.

The information developed during this study, including public and stakeholder engagement, project purpose and needs, goal statements, and alternatives analysis provide the analytical foundation for including the study recommendation in the city's Transportation Improvement Program, ensuring its eligibility for funding. Further, identifying an alternative(s) allows the project to begin the environmental review and access revision request processes when funding is secured by WSDOT. Additional environmental work and Federal Highway Administration (FHWA) approvals are required before formally selecting a preferred alternative.

## Improvements Included in Recommended Alternative





# Introduction

The I-405 Corridor Program Master Plan approved in 2002 includes a new half-diamond interchange at NE 2nd Street (hereafter referred to as south Downtown I-405 Access) to improve vehicle access to/from the south. This new interchange would complement the half-diamond interchange to/from the north at NE 10th Street.

As part of the Renton to Bellevue Widening and Express Toll Lanes project (ETL), the Main Street bridge over I-405 is being replaced with a longer span to accommodate the new express toll lanes. In 2015 and 2016, WSDOT, in collaboration with the City, performed an analysis to ensure that the new Main Street bridge would be forward compatible and would not preclude potential options to implement the south Downtown I-405 Access. The 2015/2016 analysis identified several potential locations/options where a south Downtown access connection could be accommodated by the new Main Street bridge. Those options were carried forward for further evaluation in a future study.

Aligned with the I-405 Master Plan, the City of Bellevue's Comprehensive Plan includes a new I-405 access at NE 2<sup>nd</sup> Street. The Comprehensive Plan provides consistency through the years yet is dynamic and may be amended annually as circumstances change. Because the 2015/2016 study identified a number of options to consider in addition to or in lieu of a NE 2<sup>nd</sup> Street location, a new access at NE 2<sup>nd</sup> Street is considered a placeholder pending further study.

More recently, private sector redevelopment along 114th Avenue NE, the East Main transit-oriented development (TOD) land use code amendment (LUCA), as well as development concepts proposed for the Wilburton commercial area, have created a pressing need for the city to identify transportation improvements in the south Downtown area. The identification of an alternative(s) enables the City to set clear expectations for property owners/developers regarding right-of-way needs and site access options and restrictions, thereby minimizing the potential incompatibility between land use and transportation decisions.

The South Downtown I-405 Access Study was to kick off following a briefing to the Bellevue City Council on April 20, 2020. The city attorney's office determined that the meeting could not be conducted as it did not satisfy the "necessary and routine" requirements for City Council meetings as per the Governor's Emergency Proclamation issued in response to the COVID-19 pandemic. The decision was made to initiate the study and return to Council for a mid-point review. A final Council presentation and alternative recommendation would occur before concluding the study.

## Study Area

Figure 1 shows the study area and the traffic analysis area. The study area is bounded by NE 4<sup>th</sup> Street and SE 8<sup>th</sup> Street and defines the area within which physical project improvements are expected to occur. The traffic analysis area includes all major intersections and ramp terminals bounded by NE 8<sup>th</sup> Street in the north, SE 8<sup>th</sup> Street in the south, 112<sup>th</sup> Avenue NE/SE to the west, and 116<sup>th</sup> Avenue NE/SE to the east.

Figure 1 Study Area and Traffic Analysis Area



## Project Purpose and Need

The Purpose and Need statement is important for the development of a reasonable range of alternatives, providing guidance for screening those alternatives, and for selecting a preferred location and configuration for the improvement. The Project Team developed the following Purpose and Need statement based on policy and planning factors, as well as community and stakeholder input.

## **Purpose**

The purpose of this project is to improve south Downtown Bellevue vehicle access to/from I-405 for better regional connectivity. Additionally, the project will improve circulation with the local street network for motorized and non-motorized traffic, while minimizing community and environmental impacts. The project should support the City of Bellevue urban design, land use, economic development, and transportation policies, improve community connectivity and be consistent with the I-405 Master Plan.

## **Need**

By 2035, it is estimated that approximately 22 million square feet of commercial building space and 9000 dwelling units will be added to the study area and vicinity. The existing interchanges cannot meet this anticipated demand. To relieve congestion, accommodate growth and improve safety, additional interchange capacity in the south Downtown area is needed. This need is also identified in the I-405 Master Plan and is intended to complement the half interchange at NE 10th Street and the NE 6th Street extension.

## **Planning Context**

Many planning efforts have been completed within the study area. The relevant plans are described below.

### **I-405 Corridor Master Plan**

In 2002, after a three-year study of the area and extensive work with stakeholders up and down the I-405 corridor, WSDOT adopted an environmental impact statement, which became the basis of the I-405 Master Plan. The Master Plan contains a set of long-term improvements designed to get more people moving through the corridor, to be accomplished with the incremental completion of more than 150 individual projects. One of those projects is a new I-405 freeway interchange at NE 2nd Street in Downtown Bellevue, envisioned as a half diamond interchange to/from the south. See page 41 of the [I-405 Master Plan Report \(2002\)](#) for the project description.

### **Puget Sound Regional Council Transportation 2040**

Transportation 2040 is the long-range multimodal transportation plan for central Puget Sound, including the counties of Pierce, King, Snohomish, and Kitsap. It lays out comprehensive transportation investments and strategies to accommodate an expected 1.5 million additional people and 1.2 million new jobs by 2040. The Transportation 2040 Regional Capacity Project List includes a half interchange at NE 2<sup>nd</sup> Street (pending further study), echoing the need identified in the I-405 Master Plan.

### **Bellevue's Comprehensive Plan**

The Comprehensive Plan is the Bellevue City Council-adopted policy document. It is a dynamic document which provides policy guidance for transportation, land use, parks, recreation, and open space. The current Comprehensive Plan was adopted in 2015, and has been amended twice, once in 2018 for Downtown policies and another in 2019 for Southwest Bellevue (East Main TOD) policies.

## **Bellevue's Comprehensive Transportation Project List (2015)**

The Comprehensive Transportation Project List aggregates all types of transportation system projects that have been vetted through a public process. The following projects relate to improving Downtown access to I-405 pending further study:

CTPL-67. Add new I-405 access at NE 2nd Street via collector-distributor lanes from and to the south.

CTPL-75. Extend NE 2nd Street from 112th Avenue NE across I-405 to 116th Avenue NE, including intersection improvements at 112th Avenue NE and 116th Avenue NE.

CTPL-76. Widen NE 2nd Street between Bellevue Way and 112th Avenue NE from 3 or 4 to 5 lanes.

In addition, the Pedestrian and Bicycle Transportation Plan (2009) identifies projects that support a connected and safe non-motorized transportation network. Lastly, Multimodal Level-of-Service Metrics, Standards and Guidelines (Transportation Commission 2017) provide both regulatory and qualitative expectations for components of the non-motorized transportation system.

### **Other Transportation Projects in the Vicinity**

Several important transportation facilities are being implemented or planned in the vicinity to provide additional multimodal capacity to serve the City. These include:

- I-405 Renton to Bellevue Widening and Express Toll Lanes

This project, currently under construction, will add one new lane in each direction to create a two-lane express toll lane system between SR 167 in Renton and Northeast 6th Street in Bellevue. It also includes:

- A new southbound auxiliary lane in the I-90 to 112th Avenue Southeast vicinity
- Improvements to the I-405/I-90 Interchange by adding a new lane to the I-405 southbound to I-90 eastbound ramp.

- I-405 Bus Rapid Transit

Funded by the voter approved Sound Transit 3 package, I-405 Bus Rapid Transit (BRT) will connect communities along I-405 and SR 518 between Lynnwood and Burien. With buses running as often as every 10 minutes, this new service will connect to Link light rail at Lynnwood, Bellevue, and Tukwila as well as to other transit service provided by Sound Transit and King County Metro. It builds upon the Washington State Department of Transportation's I-405 Master Plan with roadway improvements for faster travel. The project is in final design and construction is expected to start in 2023. The new service is expected to open in 2025.

- Sound Transit Light Rail Projects

Two light rail lines, one under construction and the other in the planning stage, cross the study area. The East Link, currently under construction, extends 14 miles from downtown Seattle, through downtown Bellevue, crosses I-405 near NE 6<sup>th</sup> Street and connects to the Overlake area in Redmond. The South Kirkland to Issaquah Light Rail via Bellevue is in the early planning

stage. It is envisioned to share a portion of the East Link rail tracks through Wilburton and Downtown Bellevue. It then splits out just south of the East Main Station and crosses I-405 in the vicinity of SE 8<sup>th</sup> Street. This project is expected to be completed in 2041.

- Eastrail

The Eastrail will be a 42-mile trail that will connect Renton, Bellevue, Kirkland, Woodinville, Snohomish, and Redmond with new opportunities for non-motorized recreation and transportation. Currently 13 miles of the Eastrail are open. A 2.5-mile paved section and a new crossing over I-405 near downtown Bellevue at the site of the former Wilburton rail bridge will be constructed by WSDOT as part of the I-405 Bellevue to Renton Widening and Express Toll Lanes Project.

- Grand Connection

The Grand Connection is a planned facility to create landmark, pedestrian-focused experiences through the heart of downtown Bellevue. With a length of over 1.5 miles, the Grand Connection begins at the waterfront of Lake Washington at Meydenbauer Bay Park, and winds through Old Bellevue and Bellevue Downtown Park. It continues through Bellevue's retail and civic-focused parts of downtown, across I-405 and ultimately connects with Eastrail. Several segments of the Grand Connection in Downtown are under construction by private developers. The segment of the Grand Connection east to Wilburton and the Eastrail is currently in the planning stage.

- Lake to Lake Trail

The Lake to Lake Trail connects nine parks across Bellevue. From east to west, the trail starts at Weowna Park next to Lake Sammamish. From there, the trail heads to the Lake Hills Greenbelt via SE 24<sup>th</sup> Street or SE 16<sup>th</sup> Street. After meandering through the Lake Hills Greenbelt, the trail leads to Main Street then heads west to the Downtown Park and ends at Meydenbauer Beach Park on Lake Washington.

- NE 6<sup>th</sup> Street Extension

Likely through a partnership between the City and WSDOT, this project will extend NE 6<sup>th</sup> Street from the middle of I-405 to either 116<sup>th</sup> Avenue NE or 120<sup>th</sup> Avenue NE. It will provide access to the express toll lanes from Wilburton.

# Study Guiding Principles/Objectives

Building on the project Purpose and Need Statement and input from the community outreach efforts, the study team identified a set of study guiding principles and objectives to establish the desired outcomes and processes for the study.

- **Align with and support adopted plans and policies**

This guiding principle is to ensure the identified alternative(s) are in alignment with and in support of:

- Federal interstate access policies as reflected in the I-405 Master Plan.
- The City's Comprehensive Plan and policies including the elements of transportation, land use, urban design, and environmental stewardship.

- **Reduce congestion and improve system performance**

This guiding principle is to ensure the identified alternative(s) achieves the goal of improving overall performance of the transportation system including I-405 and local multimodal transportation networks. The performance measures used in the assessment focus on travel time and delay. It includes the following objectives:

- Reduce overall travel time as measured by daily vehicle hours of travel time reduced.
- Improve intersection operations within the study area.
- Improve travel time from Downtown to major destinations such as Bellevue College and Mercer Island.

- **Encourage safe multimodal connections**

This guiding principle is to ensure the identified alternative(s) achieve the goal of improving access to I-405 and at the same time do not compromise the safety and connectivity of the local multimodal transportation networks. The performance measures used in the assessment focus on access and safety. The objectives are:

- Improve travel safety for all modes.
- Avoid creating vehicle/non-motorized movement conflicts that impede access to the major multimodal hubs such as East Main Light Rail Station, Bellevue Transit Center, and the Lake to Lake Trail along Main Street.

- **Support economic development and minimize property impacts**

This guiding principle ensures the alternative evaluation considers full and partial impacts to adjacent property in terms of right-of-way needs that may reduce the property's development potential. The performance measures used in the assessment focus on property/economic impact.

- **Manage cost and minimize environmental impacts**

This guiding principle sets the goal to minimize cost and impact by accounting for all costs in the analysis, including construction and mitigation.

- **Engage stakeholders and public**

The guiding principle ensures that community engagement, including stakeholders, interested groups, and the general public, is an integral part of the study process, ensuring that the preferred alternative considers community needs and preferences. Early and continuous community engagement brings diverse viewpoints and values into the decision-making process. This process enables the city and partner agencies to make decisions through collaborative efforts and builds mutual understanding and trust between the City and the public it serves.

Community engagement during the study included the following:

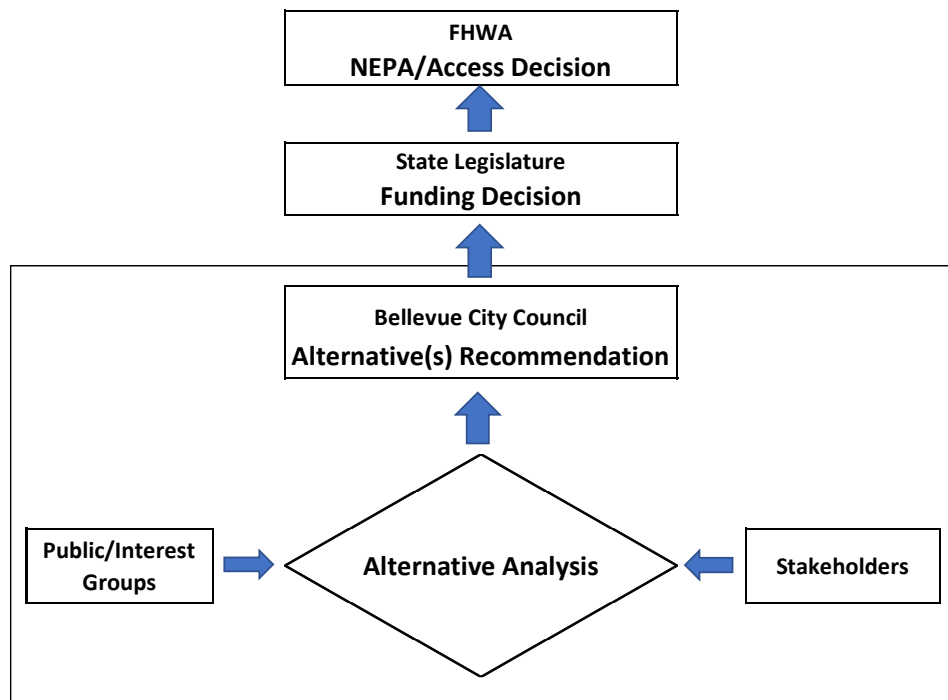
- Included WSDOT as a partner in the study
- Hosted four stakeholder meetings at key stages of the study process to solicit input and feedback. Stakeholders included representatives from the following groups:
  - o Property/business owners who may be directly impacted
  - o Downtown Bellevue Residents Association
  - o Surrey Downs Community Club
  - o Wilburton Community Association
  - o Bellecrest Neighborhood Association
  - o Woodridge Community Association
- Conducted two online open houses to gather public input
- Provided information briefings to interest groups as requested

For more details, please see [City of Bellevue/South Downtown I-405 Access Study Community Engagement Report](#).

# Methodology

To the extent possible, the study followed the Planning Environmental Linkage (PEL) protocol, a Federal Highway Administration initiative to accelerate project delivery. PEL is a collaborative and integrated approach to transportation decision-making that 1) considers environmental, community, and economic goals early in the transportation planning process, and 2) uses the information, analysis, and products developed during planning to inform the environmental review process that will be carried out by WSDOT when additional design, access study, and/or construction funding become available. The overall decision process is shown in the chart below.

Figure 2 Decision-Making Process



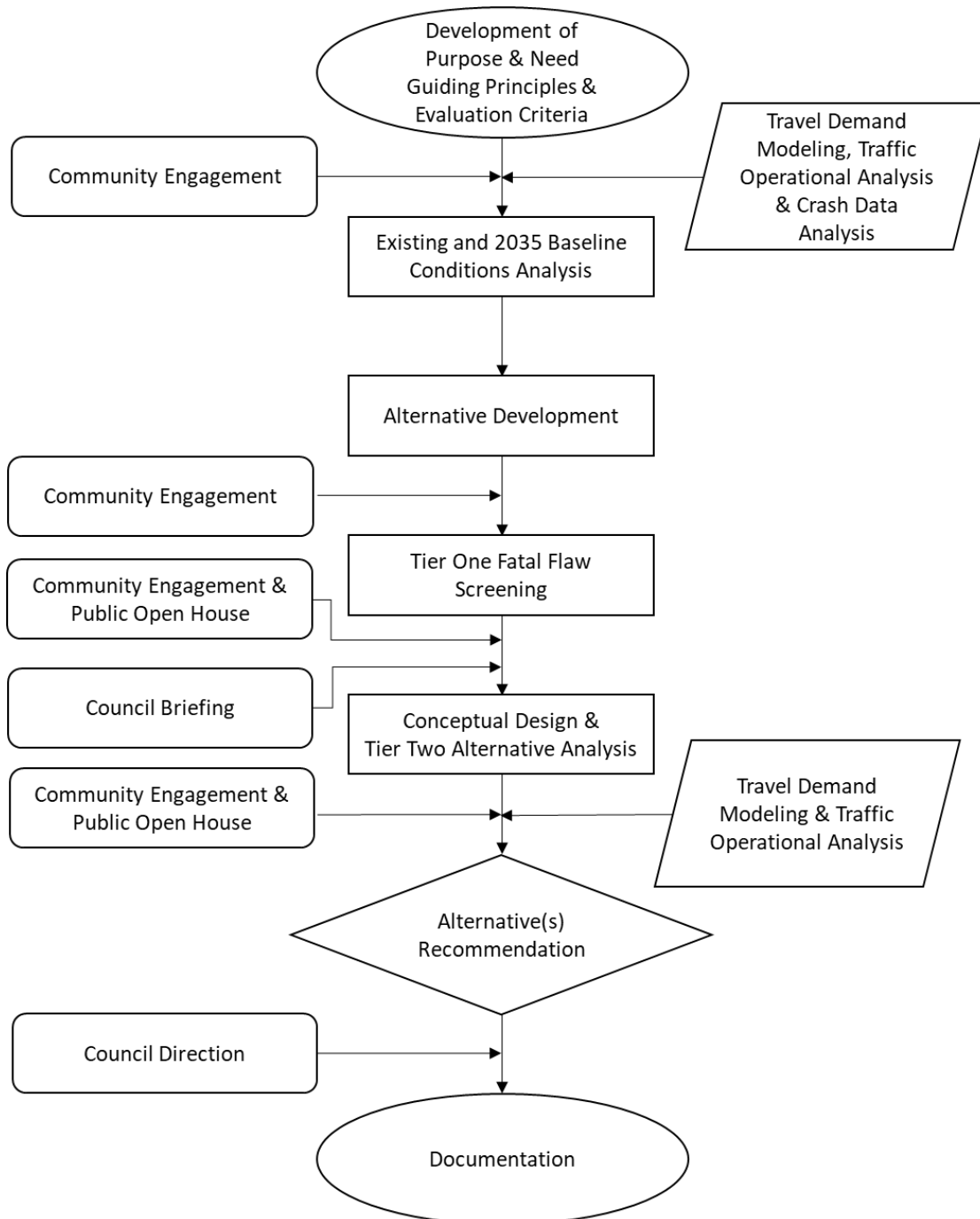
The City carried out this study in partnership with WSDOT. The study started with the development of the purpose and need, guiding principles and evaluation criteria, followed by the development of alternatives and alternative analysis. It included a community engagement component consisting of stakeholder forums, public online open houses, and interest group briefings at key stages throughout the process.

The bulk of the scope of work focused on alternative development and analysis. The study team deployed a two-tiered alternative analysis approach. Tier 1 was a fatal flaw screening process aimed at qualitatively identifying alternatives with apparent “fatal flaws”. Alternatives passing the Tier 1 fatal flaw screening were advanced to the Tier 2 analysis. Tier 2 was an in-depth analysis, including alternative conceptual design, traffic modeling, impact analysis, and cost estimation. The detailed descriptions for the two-tiered screening and analysis can be seen in the later sections. Community engagement occurred as part of both tiers of evaluation.



The study team applied the City’s travel demand model, BKRCast, using forecast demand based on land use assumptions. Taking the outputs from BKRCast, the study team used Synchro traffic operation software to analyze intersection performance. Additionally, a mesoscopic simulation model called Dynameq was utilized to develop travel time savings and intersection delay estimations for the study area.

Figure 3 Project Analysis Process



# Existing Conditions

This section describes the existing roadway network, interchange issues and deficiencies, non-motorized travel, transit service, vehicle volumes, traffic operations, and historic crash data.

## Roadway Network

### Freeway System

Downtown Bellevue is served by three major freeway systems. I-405 is the north-south travel corridor, forming the east boundary of Downtown. It provides immediate access for Downtown traffic through interchanges at NE 8th Street, NE 6th Street and NE 4th Street. In addition, the interchange at SE 8th Street provides a viable option to access Downtown. To relieve heavy peak hour congestion on I-405, the north section of the express toll lane (ETL) project that added two-lanes in each direction between Bellevue and Lynwood was opened in 2015. The south section between Bellevue and Renton is under construction with a planned opening in 2024. The NE 6th Street interchange provides direct access to the ETL lanes to the north and current HOV lane (future ETL lanes) to the south.

Interstate 90 and SR 520 are two east-west travel corridors connecting Bellevue with Seattle and other cities on the eastside. Both freeways provide additional access to Downtown Bellevue from the south (via the Bellevue Way interchange) and the north (via interchanges at Bellevue Way and 108th Avenue NE).

### East-West Arterials

Downtown Bellevue is connected with the Wilburton area (east of I-405) through I-405 overcrossings at NE 12th Street, NE 10th Street, NE 8th Street, NE 4th Street, and Main Street. NE 10th Street and Main Street are classified as minor arterials and the others are classified as major arterials. Ramp terminals at NE 8th Street and NE 4th Street provide full access to I-405 in both directions. The ramp terminal at NE 6th Street provides exclusive access to I-405 north for ETL traffic, and I-405 south for HOV (2+) traffic. After completion of the ETL project between Bellevue and Renton, access from NE 6th Street will become ETL traffic only. NE 12th Street and Main Street cross I-405 but provide no vehicle access to the freeway.

SE 8th Street, connecting South Bellevue and Wilburton area, serves as another freeway access in close proximity to the south section of Downtown.

### North-South Arterials

Bellevue Way and 112th Avenue NE, are classified as major arterials, and run parallel to I-405 which connects to SR 520 to the north. Both arterials pass through the entire Downtown area. After SE 8th Street, 112th Avenue SE bends to the southwest and terminates at the intersection of Bellevue Way, which runs farther south to I-90.

114th Avenue NE/SE runs immediately to the west of I-405. It provides access to businesses and services at the east boundary of Downtown. The segment to the north of SE 8th Street is classified as a minor arterial. South of SE 8th Street, it continues as 118th Avenue SE and is classified as a collector road, serving as the only roadway west of I-405 connecting Downtown Bellevue to Factoria.

### **Interchange Issues and Deficiencies**

During the PM peak period, traffic between Downtown Bellevue and I-405 experiences significant congestion and queuing, exacerbated by closely spaced intersections. High traffic volumes plus freeway congestion result in travel delays and queuing at numerous locations along NE 8<sup>th</sup> Street, NE 4<sup>th</sup> Street and 112<sup>th</sup> Avenue NE.

Closely spaced ramp terminals on the NE 4<sup>th</sup> Street overcrossing also create operational inefficiencies. During peak periods, vehicle queues often block upstream, adjacent intersections in both directions due to limited storage space on the bridge.

The existing interchanges in the area are largely built out. All the general purpose on-ramps have ramp meters in place.

### **Non-Motorized Travel**

I-405 is a major barrier to non-motorized travel between Downtown and the Wilburton area. There are five crossings within Downtown. Three crossings are at NE 12<sup>th</sup> Street, NE 10<sup>th</sup> Street and Main Street. Each crossing has raised sidewalks on both sides. The NE 12<sup>th</sup> Street crossing includes a multi-purpose path along the north side. No bike lanes are available to cross the freeway on NE 10<sup>th</sup> Street or Main Street.

Although nonmotorized paths exist on the NE 4<sup>th</sup> Street and NE 8<sup>th</sup> Street connecting the Downtown core and the Wilburton commercial zone, to cross the freeway, pedestrians and bicyclists must cross a number of high-volume intersections and oversaturated freeway ramps that are designed with wide turning radii. This creates obstacles and safety issues for people walking and biking.

### **Arterial Vehicle Volumes**

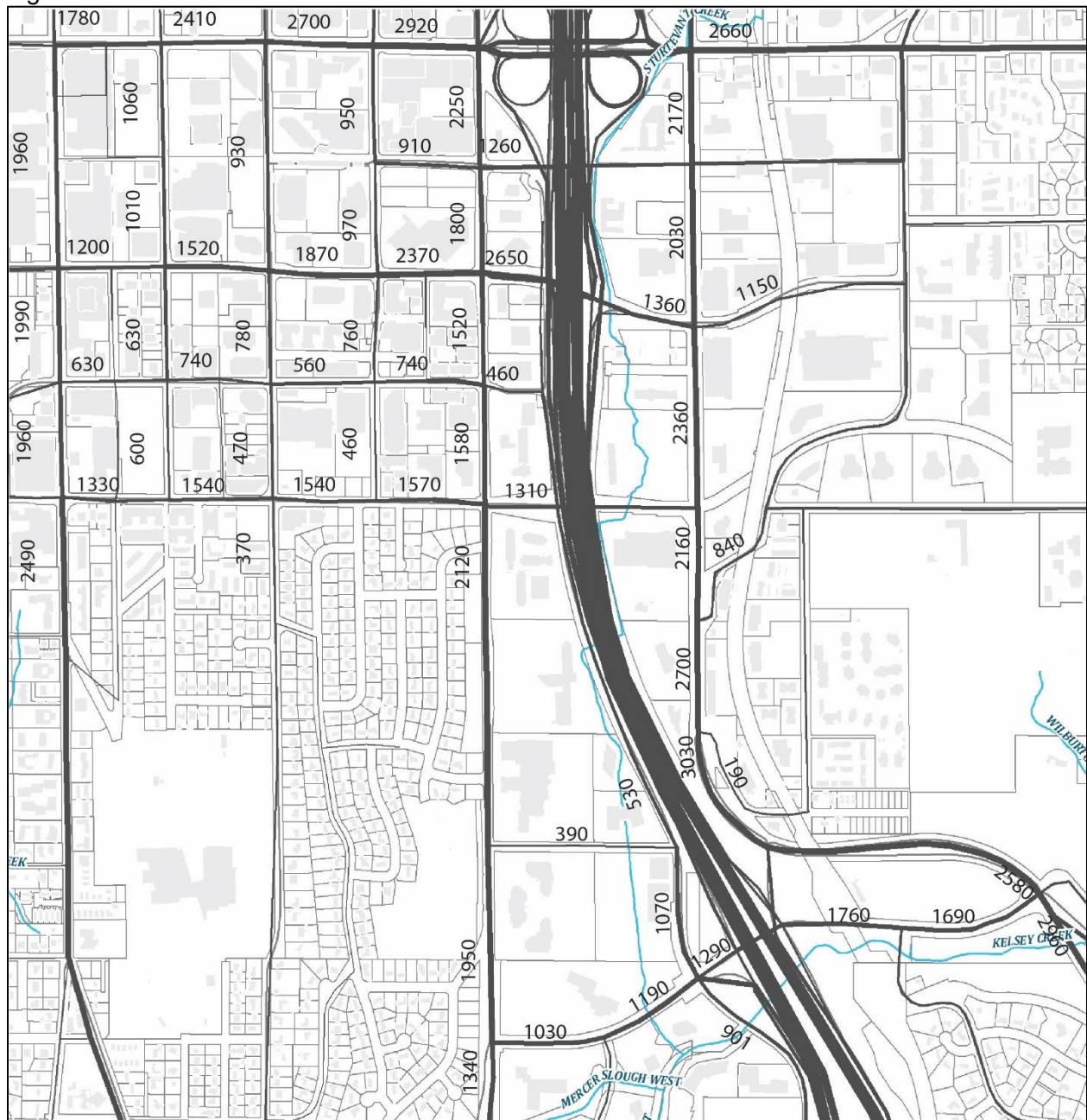
In 2018, the segment of I-405 south of Downtown Bellevue carried approximately 169,000 vehicles per weekday, and 178,000 vehicles to the north of Downtown. For the City's arterials, the 2018 PM peak hour traffic counts were analyzed and can be seen in Figure 4.

### **Traffic Operations at Intersections**

Intersection operation analyses focused on the overall intersection average delay per vehicle based on the methodology contained in the Highway Capacity Manual (HCM). The traffic analysis software Synchro was used for calculating intersection delays. Intersection geometry, signal cycle length, effective green time, phasing, arterial signal coordination, and traffic volumes were important inputs into the analyses. It accounted for control delay and queue delay.

During the 2018 PM peak hour, the 118th Avenue SE/SE 8th Street intersection experiences 81.2 seconds of delay per vehicle. The 112th Avenue NE/NE 8th Street intersection operates at the average of 61.1 seconds of delay. The rest of the intersections operate at less delays. The list of study intersection and the results of the existing PM peak hour intersection analysis are summarized in Table 2. The total observed PM peak hour volumes are also provided.

Figure 4 2018 PM Peak Hour Traffic Volumes



The existing turning movement volumes at the study intersections are shown in the following diagram.

Figure 5 Existing Turning Movement Volumes at Study Intersections

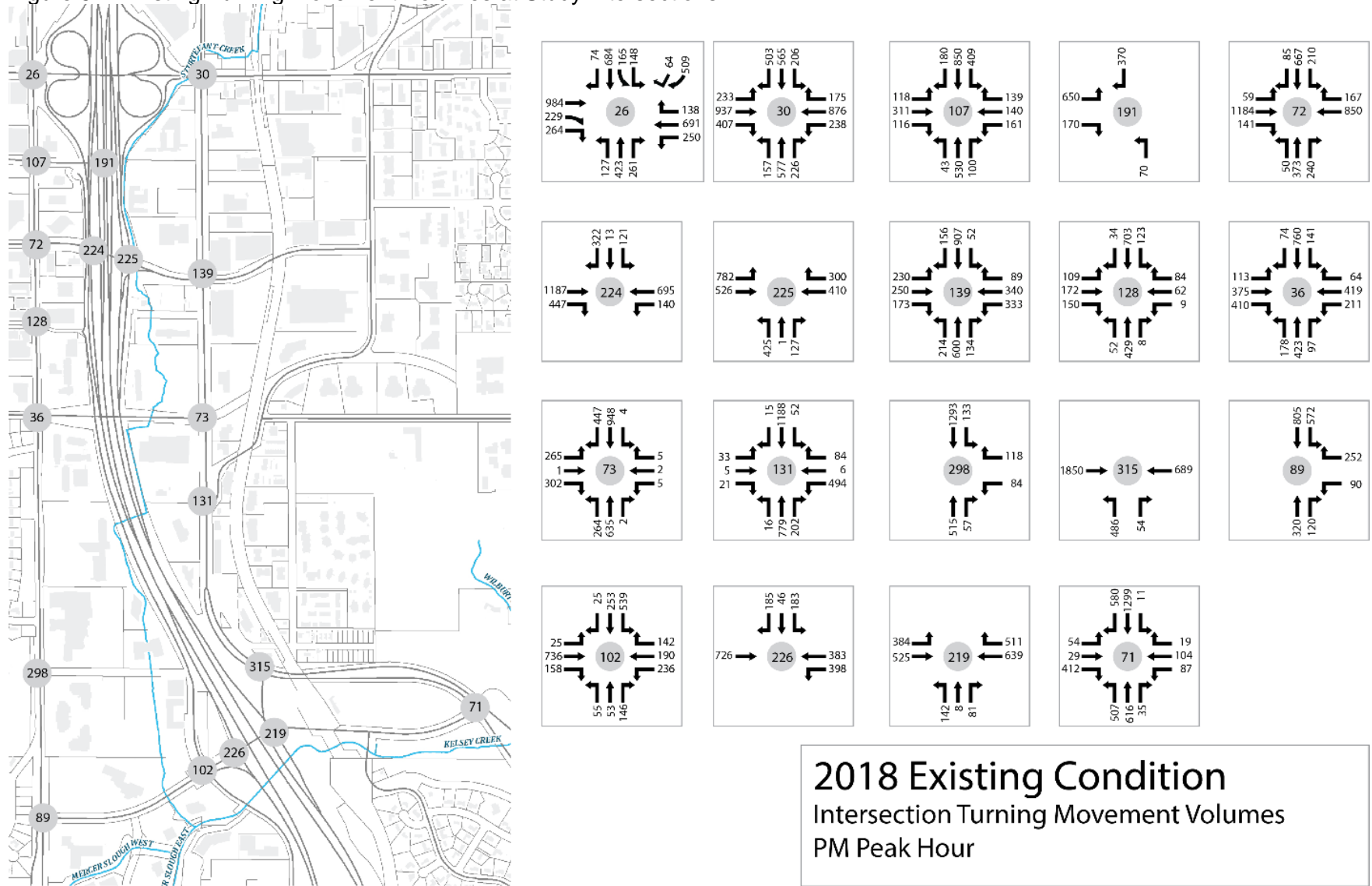


Table 1 2018 PM Peak Hour Traffic Volumes and Delay for Study Intersections

Intsection ID	Cross Streets		Intersection Volume	Delay (sec/veh)
	N-S Address	E-W Address		
26	112th Ave NE	NE 8th St	4,975	57.4
30	116th Ave NE	NE 8th St	5,100	41.4
107	112th Ave NE	NE 6th St	3,097	40.1
191	I-405 HOV Ramps	NE 6th St	1,260	9.9
72	112th Ave NE	NE 4th St	4,026	30.3
224	I-405 SB Ramps	NE 4th St	2,925	14.1
225	I-405 NB Ramps	NE 4th St	2,571	32.9
139	116th Ave NE	NE 4th St	3,478	42.5
128	112th Ave NE	NE 2nd St	1,935	18.3
36	112th Ave	Main St	3,265	41.7
73	116th Ave	Main St	2,880	29.5
131	116th Ave SE	SE 1st St	2,895	31.2
315	I-405 Off Ramp	Lake Hills Connector	3,079	20.8
71	Lake Hills Connector	SE 8th St	3,753	37.3
298	112th Ave SE	SE 6th St	2,200	7.0
89	112th Ave SE	SE 8th St	2,159	19.3
102	118th Ave SE	SE 8th St	2,558	63.7
226	I-405 SB Ramps	SE 8th St	1,921	24.8
219	I-405 NB Off and On Ramps	SE 8th St	2,290	17.0

## Crash Data

Five years of crash data (2015 – 2019) were collected and analyzed for major corridors, ramp terminals and intersections expected to be impacted by the alternatives being considered. The crash data, average volumes, and crash rates are summarized citywide as well as for the major corridors.

### Citywide Crash Data

In 2018, a total of 2824 crashes were reported on local and state roads within the City of Bellevue. Crash rates on local roads were about 20% higher than the rates seen on state facilities.

Table 2 2018 Citywide Crash Data

Jurisdiction	Total Crashes	Estimated Annual Million Vehicle Miles Traveled	Crashes per 100 Million Vehicle Miles Traveled
Local Roadways	1427	650	220
State Roadways	1397	770	181
Total	2824	1420	199

### North-South Corridors

Crash data on 8.0 miles of four north-south corridors was analyzed. Between 2015 and 2019 the north-south corridors experienced 1,227 vehicle crashes, including 306 injury crashes and 2

fatal crashes. The highest rate in the study area was along 112th Avenue NE between NE 8th Street and Bellevue Way where there were 442 crashes per 100 million vehicle miles traveled.

Table 3 Crash Data, Average Traffic Volumes and Crash Rates for North-South Corridors

N - S Corridors	Segment	Crash Severity				2015-2019 Million VMT	Rate per 100 Million VMT	Rear-End Collisions	
		PDO*	Injury	Fatal	Total			Total	Percent
Bellevue Way	NE 8th St to I-90	368	104	2	474	133	356	175	37%
112th Ave NE	NE 8th St to Bellevue Way	198	62	-	260	59	442	68	26%
114th Ave NE	NE 2nd St to SE 8th St	11	6	-	17	13	133	3	18%
116th Ave NE/ Richards Rd	NE 8th St to I-90	342	134	-	476	163	292	123	26%
TOTAL North-South Corridors		919	306	2	1,227	368	334	369	30%

\* PDO - Property damage only

### East-West Corridors

Crash data on 3.9 miles of six east-west corridors was evaluated. A total of 747 crashes occurred between 2015 and 2019, with 184 injury crashes and no fatalities. The highest rates were on NE 8th Street between Bellevue Way and 116th Avenue NE, NE 4th Street between Bellevue Way and 116th Avenue NE, and NE 2nd Street between Bellevue Way and 114th Avenue NE, all with rates exceeding 700 crashes per 100 million vehicle miles traveled.

Table 4 Crash Data, Average Traffic Volumes and Crash Rates for East-West Corridors

E - W Corridors	Segment	Crash Severity				2015-2019 Million VMT	Rate per 100 Million VMT	Rear-End Collisions	
		PDO*	Injury	Fatal	Total			Total	Percent
NE 8th St	Bellevue Way to 116th Ave NE	204	54	-	258	36	713	104	40%
NE 6th St	110th Ave NE to I405 ramps	7	2	-	9	6	163	3	33%
NE 4th St	Bellevue Way to 116th Ave NE	194	60	-	254	32	785	87	34%
SE 8th St	112th Ave SE to Lake Hills Conn.	75	32	-	107	17	612	24	22%
TOTAL East-West Corridors		563	184	-	747	119	627	231	31%
TOTAL All Corridors		1,482	490	2	1,974	487	406	600	30%

\* PDO - Property damage only

### Ramp Terminals / Intersections

Crash data on eight ramp terminals and intersections was analyzed. Between 2015 and 2019 252 crashes occurred, with 65 injuries and no fatalities. The highest rates were at NE 8th Street and 112th Avenue NE and SE 8th Street at the I-405 SB ramps, with both rates exceeding 0.70 crashes per million vehicles.

Table 5 Crash Data, Average Traffic Volumes and Crash Rates for Ramp Terminals

Intersections/Ramp Terminals	Crash Severity				Five Year Total Entering Volume	Crash Rate (per million entering vehicles)	Rear-End	Percent Rear-End
	PDO*	Injury	Fatal	Total				
NE 10th St at I-405 NB on-ramp	5	-	-	5	45,000,000	0.11	-	0%
NE 8th St at 112th Ave NE	54	20	-	74	96,000,000	0.77	32	43%
NE 8th St at 116th Ave NE	53	18	-	71	101,000,000	0.70	25	35%
NE 6th St at 112th Ave NE	10	3	-	13	55,000,000	0.24	1	8%
NE 4th St at I-405 SB ramps	23	6	-	29	58,000,000	0.50	13	45%
NE 4th St at I-405 NB ramps	15	4	-	19	45,000,000	0.42	9	47%
SE 8th St at I-405 SB ramps	18	8	-	26	36,000,000	0.72	3	12%
SE 8th St at I-405 NB ramps	9	6	-	15	44,000,000	0.34	3	20%
TOTAL	187	65	-	252	479,000,000	0.53	86	34%

\* PDO - Property damage only

# 2035 Baseline Conditions

This section describes the 2035 future land use development, planned transportation system improvements, and forecast PM peak hour traffic volumes and operations.

## 2035 Land Use Assumptions

Land use used in this study assumed growth throughout the city. Most of the non-residential growth (55%) would occur within Downtown Bellevue, another 21 percent in Wilburton, 19 percent in the BelRed/Northup area, and five percent in the remaining parts of the city. Housing growth was more evenly distributed with 33 percent occurring within BelRed/Northup, 31 percent in Downtown, 21 percent in Wilburton, and the remaining 15 percent in other parts of the city. Tables 1, 2 and 3 below summarize land use inputs by mobility management area (MMA) for 2019 and 2035 and the change during this time.

Table 6 2019 Existing Land Uses by Mobility Management Area

MMA	Name	Commercial Square Feet				Residential Units		
		Office	Retail	Other	Total	SF Units	MF Units	Total Units
1	North Bellevue	1,157,035	175,859	511,238	1,844,132	2,153	2,208	4,361
2	Bridle Trails	618,889	602,266	439,308	1,660,462	1,689	3,254	4,943
3	Downtown	12,330,538	7,504,898	2,876,274	22,711,710	22	10,546	10,568
4	Wilburton	2,107,775	923,185	683,269	3,714,229	18	608	626
5	Crossroads	305,464	693,973	94,192	1,093,629	59	3,732	3,791
6	Northeast Bellevue	420,092	79,914	513,860	1,013,866	3,296	255	3,551
7	South Bellevue	990,161	890,575	452,484	2,333,220	2,602	2,003	4,605
8	Richards Valley	318,600	86,663	237,596	642,859	2,541	3,560	6,101
9	East Bellevue	462,985	450,170	1,169,974	2,083,130	6,801	2,346	9,147
10	Eastgate	3,889,681	1,223,130	2,679,018	7,791,830	255	682	937
11	Southeast Bellevue	101,089	178,669	475,351	755,109	8,365	1,017	9,382
12	Bel-Red Northup	1,878,715	1,781,642	3,335,754	6,996,111	1	1,543	1,544
13	Factoria	1,400,677	947,938	474,929	2,823,543	385	1,218	1,603
14	Newport Hills	15,439	91,816	130,369	237,624	2,679	442	3,121
Total		25,997,140	15,630,698	14,073,617	55,701,455	30,866	33,414	64,280

SF: Single-Family; MF: Multi-Family



Table 7 2035 Projected Land Uses by Mobility Management Area

MMA	Name	Commercial Square Feet				Residential Units		
		Office	Retail	Other	Total	SF Units	MF Units	Total Units
1	North Bellevue	1,167,928	175,859	511,238	1,855,025	2,156	2,213	4,369
2	Bridle Trails	667,277	602,266	439,308	1,708,851	1,688	3,254	4,942
3	Downtown	25,611,572	9,749,637	2,861,741	38,222,950	22	15,606	15,628
4	Wilburton	6,694,851	2,145,148	686,728	9,526,727	18	4,079	4,097
5	Crossroads	312,174	704,737	96,839	1,113,750	59	4,195	4,254
6	Northeast Bellevue	420,092	79,914	513,860	1,013,866	3,298	255	3,553
7	South Bellevue	1,443,889	1,112,895	452,484	3,009,269	2,608	2,327	4,935
8	Richards Valley	531,405	118,968	320,456	970,829	2,544	3,635	6,179
9	East Bellevue	484,582	450,170	1,328,487	2,263,239	6,807	2,424	9,231
10	Eastgate	3,968,670	1,202,977	2,628,445	7,800,092	255	1,479	1,734
11	Southeast Bellevue	101,089	179,245	423,886	704,219	8,380	1,017	9,397
12	Bel-Red Northup	5,395,402	2,810,675	4,260,357	12,466,434	1	7,017	7,018
13	Factoria	1,400,677	1,145,455	482,136	3,028,267	390	1,937	2,327
14	Newport Hills	15,439	91,816	130,369	237,624	2,680	442	3,122
Total		48,215,047	20,569,761	15,136,334	83,921,143	30,906	49,880	80,786

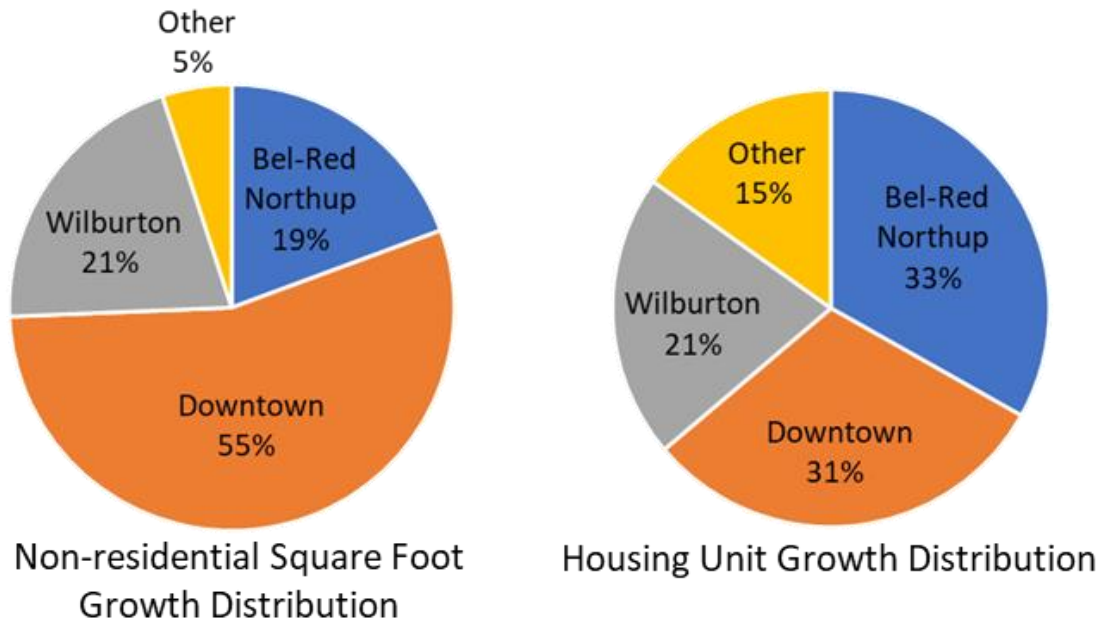
SF: Single-Family; MF: Multi-Family

Table 8 Projected 2019 to 2035 Land Use Changes

MMA	Name	Commercial Square Feet				Residential Units		
		Office	Retail	Other	Total	SF Units	MF Units	Total Units
1	North Bellevue	10,894	-	-	10,894	3	5	8
2	Bridle Trails	48,389	-	-	48,389	-1	-	-1
3	Downtown	13,281,034	2,244,739	-14,533	15,511,240	-	5,060	5,060
4	Wilburton	4,587,075	1,221,963	3,460	5,812,498	-	3,471	3,471
5	Crossroads	6,710	10,764	2,647	20,121	-	463	463
6	Northeast Bellevue	-	-	-	-	2	-	2
7	South Bellevue	453,728	222,321	-	676,049	6	324	330
8	Richards Valley	212,805	32,305	82,860	327,970	3	75	78
9	East Bellevue	21,596	-	158,513	180,109	6	78	84
10	Eastgate	78,989	-20,153	-50,573	8,263	-	797	797
11	Southeast Bellevue	-	576	-51,466	-50,890	15	-	15
12	Bel-Red Northup	3,516,687	1,029,032	924,603	5,470,322	-	5,474	5,474
13	Factoria	-	197,517	7,207	204,724	5	719	724
14	Newport Hills	-	-	-	-	1	-	1
Total		22,217,907	4,939,063	1,062,717	28,219,688	40	16,466	16,506

SF: Single-Family; MF: Multi-Family

Figure 6 Non-residential and Housing Unit Growth Distribution



## 2035 Baseline Network Assumptions

The assumed 2035 baseline transportation network includes currently funded capacity projects (auto, transit, and bike projects) within the City limits and other major projects in or near the study area that are planned and expected to be completed by 2035. Specifically, the projects listed below are included in the 2035 baseline demand model.

### I-405 projects:

- I-405 Renton to Bellevue Widening and Express Toll Lanes
- NE 132nd Street ramps to/from I405 north (new partial interchange)
- Braided ramp from SR 520 WB to I-405 SB at NE 10<sup>th</sup> Street.

### SR 520 projects:

- SR 520 complete interchange at 124th Avenue NE (new ramps to/ from SR 520 East)
- SR 520 - 148th Ave NE Interchange - Overlake Access Ramp

### I-90 - Eastgate to SR 900 - Corridor Improvements

### Local projects:

- NE 6th Street extension to 120th Avenue NE (through traffic between 112<sup>th</sup> Avenue NE and 116<sup>th</sup> Avenue NE is not allowed)
- 120th Avenue NE widening from NE 16<sup>th</sup> Street to Northup Way
- NE 2<sup>nd</sup> Street widening from Bellevue Way to 112<sup>th</sup> Avenue NE
- 124th Avenue NE widening from NE 12<sup>th</sup> Street to Northup Way
- Bellevue Way HOV lane southbound from 112th Avenue SE to the South Bellevue Park & Ride to align with planned southbound HOV lane from between the South Bellevue Park & Ride and I-90
- Spring Blvd between NE 12th Street and 136th PL NE
- Closure of the slip ramp to 114<sup>th</sup> Avenue NE at 112<sup>th</sup> Avenue/Main Street intersection

Transit and Non-motorized projects:

- Light rail between Seattle and Redmond Town Center
- Grand Connection
- Eastrail through Wilburton to Kirkland and Renton
- Lake to Lake Trail

## 2035 Baseline Traffic Forecasts

The BKRCast traffic demand forecasting model platform is used to develop future (2035) traffic volumes in baseline and other build alternatives. BKRCast is an activity-based travel demand forecast model recently developed in collaboration with the cities of Kirkland and Redmond. It is a localized implementation of the Puget Sound Regional Council’s activity-based travel demand forecast model named SoundCast. BKRCast has much more refined traffic analysis zones and more detailed transportation networks (including auto, transit, and non-motorized networks) in the BKR region. It is calibrated and validated to the local conditions and is used to inform local policy and planning decisions.

The following figure shows modeled 2035 baseline PM Peak hour traffic volumes on the study area network. Total trips by purpose and by mode for both the 2018 base year and the 2035 baseline for the Downtown area are shown in the following tables.

Figure 7 2035 Baseline PM Peak Hour Traffic Volumes

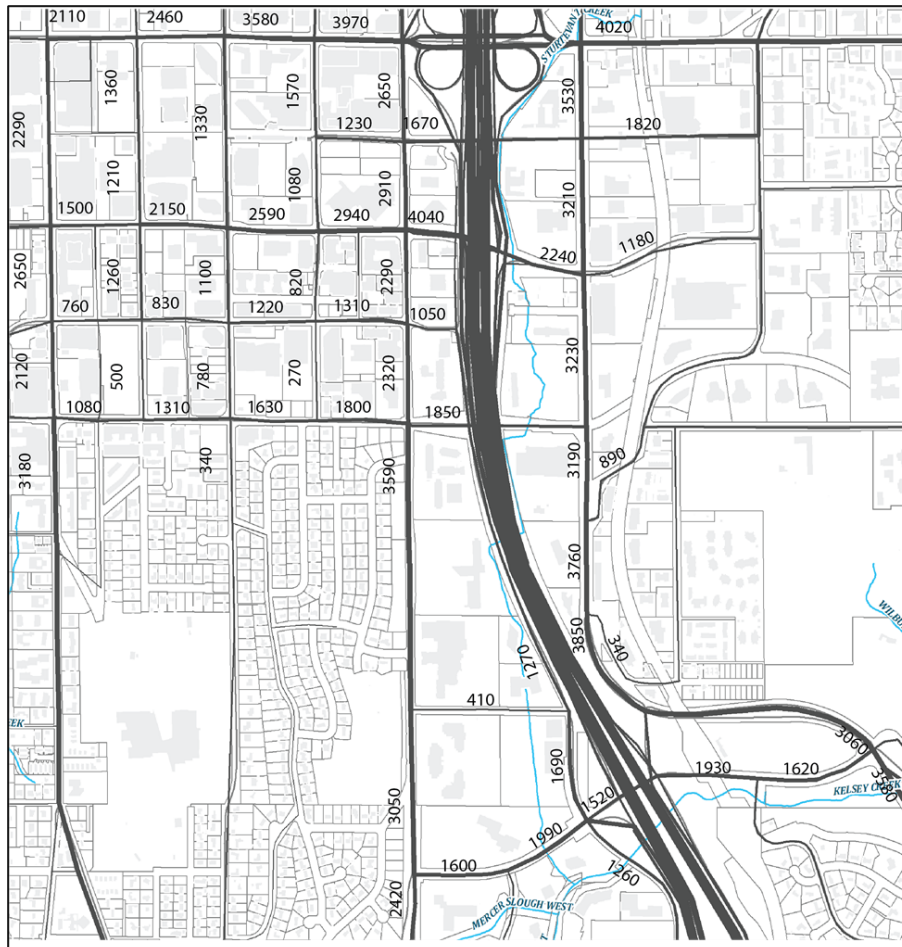


Table 9 Downtown Bellevue Trips by Purpose

Trip Purpose	2018 (Base Year)	2035 (Baseline)	Growth
Home	111,570	150,054	38,484
Work	96,185	164,198	68,013
School	3,703	8,235	4,532
Escort	20,006	25,803	5,797
Personal Business	43,874	54,722	10,848
Shopping	73,660	89,030	15,370
Meal	38,210	50,335	12,125
Social	24,172	31,636	7,464
Change at PnR	7,916	20,733	12,817
Total	419,296	594,746	175,450

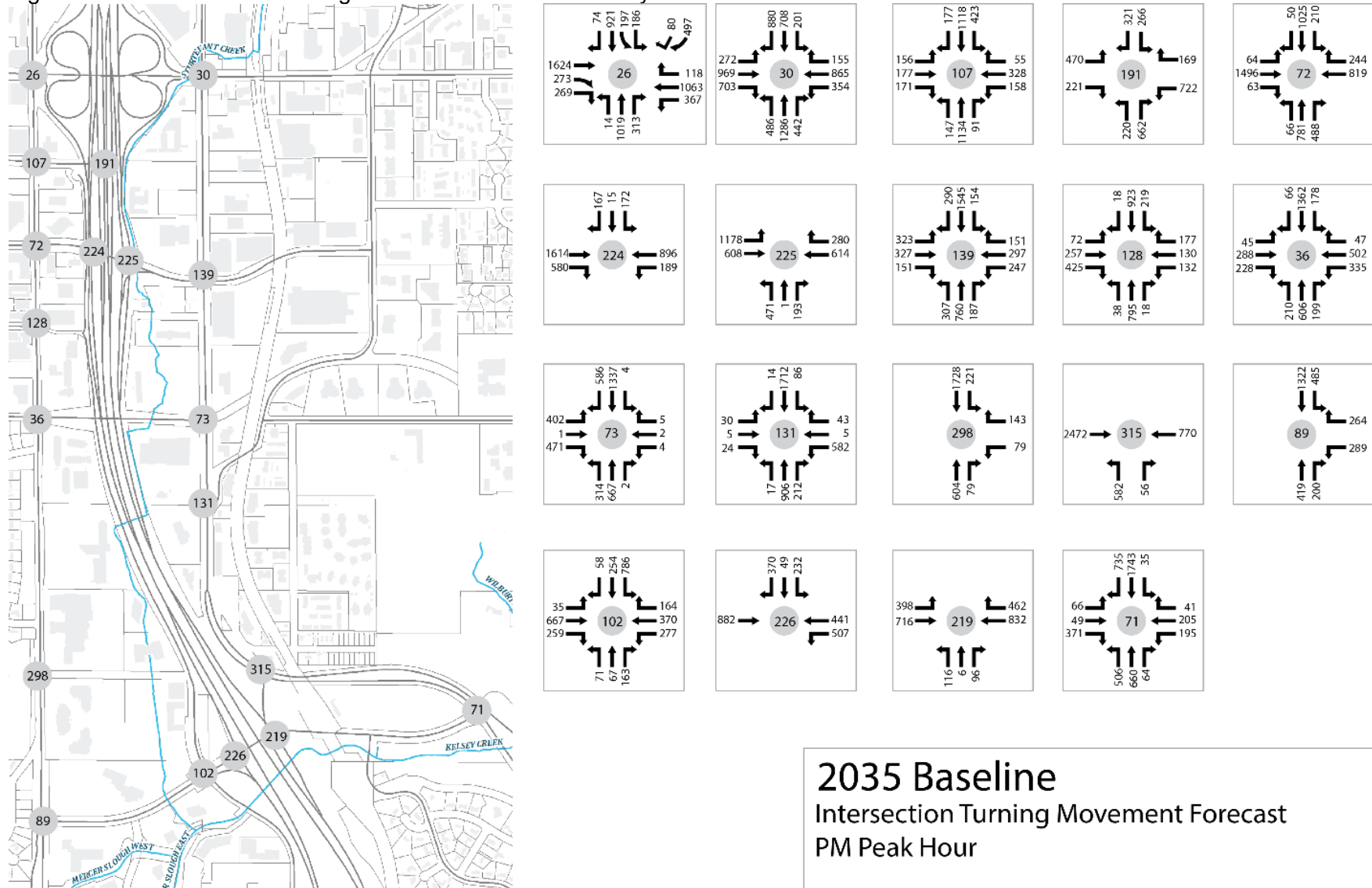
Table 10 Daily Downtown Tour\* Mode Share

Mode	2018 All Purpose		2035 All Purpose		2018 Work		2035 Work	
	Tours	% Share	Tours	% Share	Tours	% Share	Tours	% Share
Walk	22,888	14.5%	38,461	16.8%	1,628	2.4%	3,537	3.0%
Bike	3,029	1.9%	5,892	2.6%	1,537	2.3%	3,267	2.7%
SOV	57,792	36.7%	78,245	34.1%	37,989	55.7%	58,337	48.9%
HOV2	37,001	23.5%	46,197	20.2%	11,641	17.1%	18,879	15.8%
HOV3+	24,633	15.6%	28,470	12.4%	5,800	8.5%	9,674	8.1%
Transit	12,255	7.8%	31,903	13.9%	9,617	14.1%	25,531	21.4%
Total	157,598	100.0%	229,168	100.0%	68,212	100.0%	119,225	100.0%

*\*Note: Tour includes a series of short trips linked together between two anchor destinations, such as home and work, including intervening stops. Note that it is possible to have the two anchor destinations be the same location, as in a home-to-home or work-to-work tour.*

The 2035 Baseline turning movement volumes at the study intersections are shown in the following diagram.

Figure 8 2035 Baseline Turning Movement Volumes at Study Intersections



## 2035 No Build/Baseline Traffic Conditions

The 2035 forecast volumes and the network assumptions with funded projects listed above were used to calculate the delay per vehicle for analyzed intersections. The signals were optimized in Synchro. The results of the 2035 baseline PM peak hour intersection analysis and total forecasted PM peak hour volumes are summarized in the following table.

With the growth anticipated in the study area, four intersections would be expected to operate over 80 seconds of delays per vehicle. All adjacent to the existing interchanges:

- 112<sup>th</sup> Ave NE/NE 8<sup>th</sup> Street
- 116<sup>th</sup> Ave NE/NE 4<sup>th</sup> Street
- 118<sup>th</sup> Ave SE/SE 8<sup>th</sup> Street
- Lake Hill Connector/SE 8<sup>th</sup> Street intersections

Table 11 2035 Baseline PM Peak Hour Volumes and Delay for Study Intersections

Intersection ID	Cross Streets		Intersection Volume	Delay (sec/veh)
	N-S Address	E-W Address		
26	112th Ave NE	NE 8th St	6,997	133.5
30	116th Ave NE	NE 8th St	7,321	67.6
107	112th Ave NE	NE 6th St	4,135	53.9
191	I-405 HOV Ramps	NE 6th St	3,051	67.7
72	112th Ave NE	NE 4th St	5,306	33.6
224	I-405 SB Ramps	NE 4th St	3,633	15.6
225	I-405 NB Ramps	NE 4th St	3,345	28.0
139	116th Ave NE	NE 4th St	4,739	86.0
128	112th Ave NE	NE 2nd St	3,204	28.3
36	112th Ave	Main St	4,066	64.9
73	116th Ave	Main St	3,795	54.5
131	116th Ave SE	SE 1st St	3,636	67.4
315	I-405 Off-ramp	Lake Hills Connector	3,880	25.6
71	Lake Hills Connector	SE 8th St	4,670	99.3
298	112th Ave SE	SE 6th St	2,854	9.4
89	112th Ave SE	SE 8th St	2,979	22.2
102	118th Ave SE	SE 8th St	3,171	87.3
226	I-405 SB Ramps	SE 8th St	2,481	46.3
219	I-405 NB Off- and On-ramps	SE 8th St	2,626	18.5

# Alternatives Development and Analysis

This section describes the approach by which the transportation alternatives were developed, screened, and evaluated to identify alternative(s) that best meet the needs of the south Downtown area. To set a solid foundation for ultimate FHWA approval, this process follows the principles of the National Environmental Policy Act (NEPA), which requires the analysis and documentation of the impacts of alternatives. The evaluation of alternatives within this study allows agencies, stakeholders, and public to make informed choices about which alternatives provide the best balance between meeting community needs and project goals and minimizing environmental impacts.

## Stakeholder and Community Engagement

Community engagement, including stakeholders, interested groups, and the public, was an integral part of the study process and helped ensure that the evaluation of alternatives reflects community needs and preferences. Throughout the study process, the study team kept people who live, work or travel through the study area informed and engaged. Engagement included interviews, information briefings, forums, and online open houses to gain stakeholder and public perspectives at key milestones in the study process.

## Alternative Evaluation Criteria

Following the guiding principles established for the study, evaluation criteria and performance measures were developed as described in this section. These criteria and performance measures were used to evaluate the alternatives, which is described in the subsequent sections.

- **Align with and support adopted plans and policies**

The criteria and performance measures for this principle are qualitative and were assessed within the framework of:

- Alignment with the I-405 Master Plan
- Alignment with the City's transportation plans and policies
- Alignment with the City's environmental stewardship policies and minimization of impacts to natural environment
- Alignment with the adopted East Main TOD policies
- Alignment with Sound Transit planned light rail from Kirkland to Issaquah via Bellevue

- **Reduce congestion and improve system performance**

The criteria and performance measures for this principle include:

- Travel time/travel time savings
- Intersection average delay per vehicle

- **Encourage safe multimodal connections**

The criteria and performance measures for this principle are:

- Access capacity added to I-405

- Impact to multimodal access, connectivity, and safety
  - o 114<sup>th</sup> Avenue NE
  - o Lake to Lake Trail along Main Street
  - o Non-motorized access to East Main light rail station and Bellevue Transit Center
- Impact to potential vehicle collisions

- **Support economic development and minimize property impacts**

The criterion for this principle is:

- Amount of right-of-way needed and measured in acres

- **Manage cost and minimize environmental Impacts**




The criteria and performance measures for this principle are:

- Cost to acquire properties for right-of-way
- Preliminary engineering and construction cost
- Utilities relocation
- Wetland mitigation
- Removal of fish barriers and restoration of stream connections

## **Development of Alternatives**

The Study Team began by identifying options between NE 4th Street and SE 8th Street. Over the course of multiple meetings, the Team identified 12 concepts that had the potential to meet the project's Purpose and Need statement. The 12 concepts are described with their conceptual drawings below.



<b>Southbound On-Ramp from Lake Hills Connector Ramp to Express Toll Lanes</b>	<b>Lake Hills Connector Southbound On-Ramp</b>	<b>SE 6th Street Extension with Inside Access to Express Toll Lanes</b>
<p>Adds a southbound on-ramp from Lake Hills Connector and connects to the southbound express toll lanes. Includes a braided ramp from the southbound ETL to outside I-405 south of SE 8<sup>th</sup> Street to eliminate weaving of vehicles traveling to I-90.</p>	<p>Constructs a new on-ramp from Lake Hills Connector to southbound I-405 that flies over I-405 and connects to the southbound general purpose lanes from the outside. Adds an auxiliary lane to the off-ramps to I-90.</p>	<p>Constructs a new SE 6<sup>th</sup> Street overpass of I-405, connecting 112<sup>th</sup> Ave SE with Lake Hills Connector. Adds a new southbound on-ramp and northbound off-ramp, directly connecting SE 6<sup>th</sup> Street with the I-405 ETL.</p>
		

SE 6 <sup>th</sup> Street Extension with Southbound On-Ramp	SE 5 <sup>th</sup> Street Extension with Southbound On-Ramp	Main Street Half Diamond
<p>Constructs a new SE 6<sup>th</sup> Street overpass of I-405, connecting 112<sup>th</sup> Ave SE with Lake Hills Connector. Adds an on-ramp from SE 6<sup>th</sup> Street to southbound I-405.</p>	<p>Constructs a new SE 5<sup>th</sup> Street overpass of I-405, connecting 112<sup>th</sup> Ave SE with 116<sup>th</sup> Ave SE. Includes an on-ramp from SE 5<sup>th</sup> Street to southbound I-405.</p>	<p>Constructs a new southbound on-ramp and northbound off-ramp at Main Street.</p>

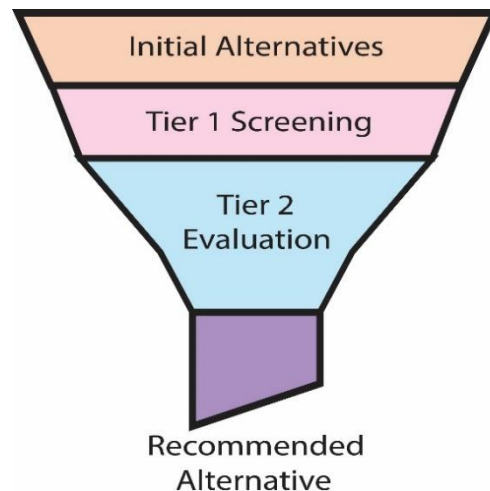
NE 2 <sup>nd</sup> Street Extension with Half Diamond	NE 2 <sup>nd</sup> Street Southbound On-Ramp and Northbound Overpass	NE 2 <sup>nd</sup> Street Extension
<p>Constructs a new NE 2<sup>nd</sup> Street overpass of I-405 to connect 112<sup>th</sup> Ave NE with 116<sup>th</sup> Ave NE. Adds a southbound on-ramp and northbound off-ramp at NE 2<sup>nd</sup> Street.</p>	<p>Constructs a new on-ramp to southbound I-405 and a new off-ramp from northbound I-405, terminating at the intersection of NE 2<sup>nd</sup> Street and 112<sup>th</sup> Ave NE.</p>	<p>Constructs a new NE 2<sup>nd</sup> Street overpass of I-405, connecting 112<sup>th</sup> Ave NE with 116<sup>th</sup> Ave NE without new freeway access ramps.</p>

<b>NE 2<sup>nd</sup> Street Extension with Westbound to Southbound On-Ramp</b>	<b>NE 2<sup>nd</sup> Street/NE 4<sup>th</sup> Street Couplet</b>	<b>No Action (Baseline)</b>
<p>Constructs a new NE 2<sup>nd</sup> Street overpass of I-405, connecting 112<sup>th</sup> Ave NE with 116<sup>th</sup> Ave NE. Adds an on-ramp from NE 2<sup>nd</sup> Street to southbound I-405. Closes the existing westbound to southbound on-ramp at NE 4<sup>th</sup> Street.</p>	<p>Converts NE 2<sup>nd</sup> Street and NE 4<sup>th</sup> Street to one-way operation and reconstructs the southbound on-ramp and northbound off-ramp at NE 4<sup>th</sup> Street to intersect with NE 2<sup>nd</sup> Street.</p>	<p>Establishes the baseline against which other alternatives are compared.</p>

## Alternative Analysis

The study team applied a two-tiered process to screen and evaluate the alternatives identified. Tier 1, or fatal flaw screening, was conducted for each of the 12 alternatives. In Tier 2, more detailed analyses were conducted for the remaining alternatives that passed the Tier 1 fatal flaw screening. The figure below illustrates the screening process.

Figure 9 Screening Process



### Tier 1 Fatal Flaw Screening

The study team performed an initial screening of the twelve concepts, with the goal of qualitatively identifying apparent “fatal flaws” prior to further screening of a subset of the concepts. Criteria for this screening included:

- Alignment with City of Bellevue’s plans and policies
- Alignment with federal and state policies, including the I-405 Master Plan
- Constructability

Over the course of two stakeholder meetings, the study team performed Tier 1 fatal flaw analysis of the 11 action alternatives plus a no-action alternative. Based on the fatal flaw screening and stakeholder input, the study team recommended that seven of the 12 alternatives be dropped from further consideration. The recommendation was unanimously approved the City Council at their September 28 meeting. The seven alternatives that did not pass at least one of the three screening criteria are as follows:

- Lake Hills Connector Southbound Direct Access Ramp with Braid to Outside Lanes  
This alternative would require the construction of two structures, one to flyover northbound I-405 to connect with the southbound express toll lanes, and another to flyover over southbound I-405 to connect with the outside general-purpose lane. The extensive structure required was deemed not practical and was recommended for removal from further analysis.
- SE 5th Street Extension with Southbound On-Ramp

This alternative conflicts with several Comprehensive Plan policies that support the East Main TOD vision. The area surrounding SE 5th Street is the East Main TOD land use district. This area is envisioned in the Southwest Bellevue Subarea Plan (2019) as a vibrant, livable transit-oriented station area of safe, walkable and bikeable blocks served by light rail. A connection to I-405 via a SE 5th Street extension and subsequent increase in traffic volume and reduction in developable land would not be compatible with this vision.

- Main Street Half Diamond

This alternative does not align with several planning policies. Main Street is envisioned as a pedestrian and bike friendly street with an 'Old Bellevue' look and feel. Additionally, the planned Lake to Lake Trail runs along Main Street and the East Main light rail station is located at Main Street and 112th Avenue NE. Providing access to I-405 from Main Street would draw significantly more vehicle traffic to Main Street, which would make the Lake to Lake Trail much less attractive for bikers and pedestrians. It would also create a traffic barrier between Downtown and the East Main Station and make the station more difficult to access. Furthermore, the ramps would displace a significant section of 114th Avenue SE, which is envisioned as a critical facility to support the land use vision in the south Downtown area. To preserve 114th Avenue SE, the ramps would have to be elevated for an extended distance along the planned East Main TOD area. The elevated structure would incur significant cost and would not be compatible with the planned character of the East Main TOD.

- NE 2nd Street Extension with Westbound to Southbound On-Ramp

In order for NE 2nd Street to cross above I-405 and intersect with a new southbound on-ramp, the NE 2nd Street profile grade would be greater than 5%. Meeting Americans with Disabilities Act (ADA) criteria through the intersection, while on the structure, would not be feasible. The intersection of NE 2nd Street with the new on-ramp terminal would be located above the existing southbound freeway and ramp lanes.

- NE 2nd Street Extension with Half Diamond

The NE 2nd Street Extension alignment would run parallel to, and roughly 500 feet north of, Main Street. The separation between the proposed NE 2nd Street bridge and the existing Main Street bridge would be too short to accommodate required vertical alignments for the new ramps. A further complication is that the I-405 Renton to Bellevue Widening and Express Toll Lanes, currently under construction, include a north side widening of the Main Street bridge. The ETL project reserved space for the southbound ramps by identifying a portal west of 114th. Were this to be used, it would significantly impact redevelopment of the properties west of 114th.

The study team also looked at how the NE 2nd Street bridge would impact property access. To cross over I-405, NE 2nd Street would need to climb at a steep rate. The elevated section of roadway and bridge would eliminate any at-grade access to NE 2nd Street from adjacent properties. It would also require closing the intersection at 114th Avenue NE, and NE 2nd Street would no longer provide an east-west connection between 112th Avenue NE and 114th Avenue NE. This would also have land use implications as it prevents access to the backside of properties off 114th to the north.

- NE 2nd Street Southbound On-Ramp and Northbound Overpass

With limited space available, right of way would have to be acquired to accommodate the new southbound on-ramp and northbound off-ramp for this concept. Several parcels along both sides of I-405 would be impacted. The termination of the ramps at NE 2nd Street would require closing a significant portion of 114th Avenue NE and eliminating the access to 114th Avenue NE from NE 2nd Street. This would have land use implications as it prevents access to the backside of properties off 114th to the north.

The new northbound off-ramp would be constructed primarily on a bridge, crossing above Main Street and I-405. The complex and expensive structure would be difficult to construct above the existing freeway, with traffic impacts for an estimated two to three years of duration.

- NE 2nd Street/NE 4th Street Couplet

The couplet would reconfigure NE 4th Street and NE 2nd Street to one-way operation and construct a new NE 2nd Street overcrossing. Two new freeway ramps would be constructed, and the existing ramps from NE 4th Street would be reconstructed as north-south connections between NE 2nd Street and NE 4th Street. Most construction activities would occur within the existing freeway, in confined right of way, with major impacts to traffic for an estimated three-year duration.

The increased footprint of the new connections would require reconstruction of the existing ramps from NE 8th Street, impacting 114th Avenue NE, properties along 114th Avenue NE, and properties adjacent to the freeway.

Tier 1 fatal flaw screening assessments are summarized in the following table. Each alternative is assigned a colored circle under each of the three screening criteria. A red circle denotes failed to pass the criterion; an orange circle indicates a likely pass, but further evaluation is needed; a green circle indicates a pass. An alternative is deemed as “fatally flawed” if it gets a red circle under one or more criteria.

Table 12 South Downtown I-405 Access Alternative Tier 1 Fatal Flaw Screening

Alternatives	Alignment with City's plans and policies	Alignment with FHWA/WSDOT Policies and I-405 Master Plan	Constructability
No Build (no action)	Required by FHWA to include a no build alternative to serve as a baseline for comparing alternatives and demonstrate the need.		
Lake Hills Connector Southbound Direct Access Ramp w/Braid to Outside	Reduce weaving/merging conflict on I-405 and therefore improve Downtown access to it.	FHWA approval required	Extensive structure would be required, need to resolve conflict with access from SE 8 <sup>th</sup> St. as well.
Lake Hill Connector SB on ramp (close WB to SB on ramp movement at NE 4th St. Bridge)	Provide 405 SB access from Wilburton.	It complements with the existing NB off-ramp to Lake Hills Connector, but FHWA approval required	Yes
SE 6th Street Extension with Inside Access to Express Toll Lanes	SE 6th St intended as a local access street within East Main TOD which emphasizes on creating a safe and comfortable environment for walking and biking.	Requires FHWA approval	Steep grade involved
SE 6th Street Extension with Southbound On-Ramp	SE 6th St intended as a local access street within East Main TOD which emphasizes on creating a safe and comfortable environment for walking and biking.	Yes, It complements with the existing NB off-ramp to Lake Hills Connector, but FHWA approval required	Steep grade involved
SE 5th Street Extension with Southbound On-Ramp	A new High capacity roadway (SE 5th Street) would be inserted through the East Main TOD core area. It would not be consistent with the City's Comp Plan and East Main TOD subarea plan.	Yes, it complements with the existing NB off-ramp to Lake Hills Connector but requires FHWA approval	Steep grade involved
Main Street Half Diamond	Inconsistent with the East Main TOD plan and character; would increase vehicle & non-motorized conflicts with Lake to Lake trail and East Main LR station; would displace 114th Ave.	Yes, It complements with the existing NB on-ramp and planned SB off-ramp at NE 10th Street. But FHWA approval required	Need to avoid displacing 114th Ave. to succeed.
NE 2nd Street Extension with Half Diamond	Consistent with the City's plans and policies. But may be flawed if displacing 114th Ave is unavoidable	Yes, complements with the existing NB on-ramp and planned SB off-ramp at NE 10th Street. FHWA approval required	Incompatible with the new Main St. Bridge, would displace 114th Ave.
SB on ramp and NB fly over at NE 2 <sup>nd</sup> St. without extension	Provides additional access to I-405; no extension of NE 2nd Street east to 116th Ave NE is a minus, may be flawed if displacing 114th Ave is unavoidable	Yes, It complements with the existing NB on-ramp and planned SB off-ramp at NE 10th Street.	Require closure/displacing 114th Ave.
Extend NE 2nd St. with WB to SB on ramp (close WB to SB on ramp movement at NE 4 <sup>th</sup> St.)	Provide 405 SB access from Wilburton, reduce congestion on NE 4th St. bridge, enhance connection between Downtown and Wilburton; no EB to SB on ramp is a minus.	Not a conventional design, FHWA approval required	Steep grades required to avoid impacts to Main Street bridge, structure over I-405 potentially challenging due to curvature (horizontal and vertical) to avoid impacts to all other ramps.
NE 2nd Street Extension to 116th Ave NE	Enhanced connection between Downtown and Wilburton, provide additional access from Wilburton.	Does not involve I-405 access revision	Yes
NE 2nd/NE 4th One Way Couplet	Provide access from NE 2nd St.; help reduce congestion on 4th St bridge, may not provide significant capacity overall; may be flawed if impact to 114th Ave is unavoidable	Not conventional design, FHWA approval required	Require reconstructing existing ramps Require realigning portion of 114th Avenue NE/SE Significant structure required

**Legend:**

- Pass, no apparent conflicts or flaws
- Maybe, but there are issues to be investigated further
- Fail with clear fatal flaws



## **Tier 2 Alternatives Conceptual Design and Analysis**

The study team presented the four action alternatives that passed Tier 1 fatal flaw screening along with the No Action alternative to the City Council at their September 28, 2020 meeting. The Council unanimously voted to support the staff recommendation to carry forward five alternatives to Tier 2 for further evaluation.

To carry out the Tier 2 analysis, the study design team completed conceptual designs for the four action alternatives. Conceptual design included preliminary horizontal and vertical geometry development, selection of roadway widths in coordination with traffic analysis, selection of nonmotorized facilities, and three-dimensional modeling. Variations in roadway alignment, lane configuration, and nonmotorized facilities were considered.

Construction quantities were derived from computer generated models and plan take-offs. Impacts to property, potential property acquisitions, known utilities, and environmentally sensitive areas were quantified. Source data included City of Bellevue GIS and staff, King County GIS, as-builts, Washington Department of Transportation surveys from adjacent projects, Washington Department of Fish and Wildlife databases, and National Fish and Wildlife wetlands databases.

The study team evaluated the benefits, impacts, and cost of each option. Trade-offs associated with the options are described below.

### **NE 2nd Street Extension – Alternative Alignments**

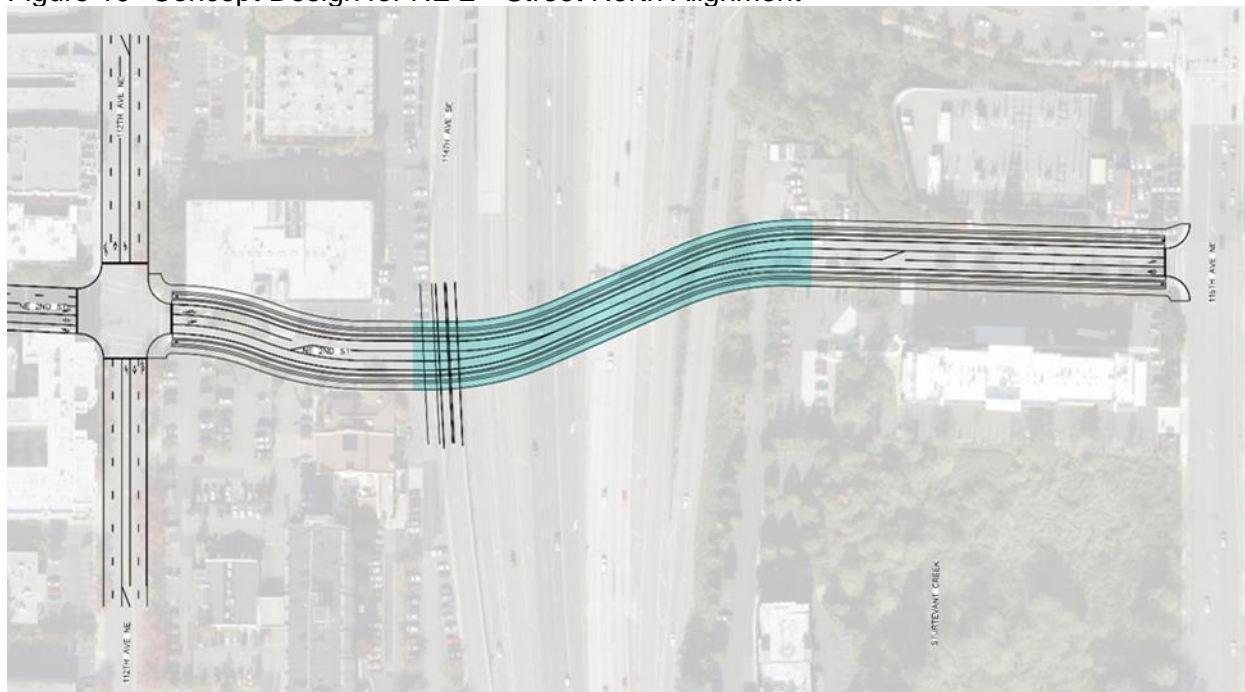
West of I-405, the NE 2nd Street Extension alignment is constrained to following the existing roadway alignment. East of I-405, two alignment alternatives were considered:

#### **North alignment – follow existing NE 2<sup>nd</sup> Place, between I-405 and 116<sup>th</sup> Avenue NE**

The north alignment would follow the existing NE 2<sup>nd</sup> Place roadway, east of I-405, placing the proposed bridge in close proximity to NE 4<sup>th</sup> Street. The NE 2nd Street bridge would need to be built high enough to maintain minimum vertical clearance above the existing northbound off-ramp from I-405 to NE 4th Street. Due to the higher elevation and longer, elevated approach, most of NE 2nd Place would be reconstructed and local business access would be closed. Roadway grades would be steeper than 5%.

At 116<sup>th</sup> Avenue NE, intersection spacing between NE 4<sup>th</sup> Street and NE 2<sup>nd</sup> Place is constrained. Traffic model analysis showed that the southbound queue from NE 2nd Place would spill back and extend beyond NE 4th Street. The separation between NE 2nd Place and NE 4th Street would not be enough to accommodate storage requirements of projected traffic volumes.

Figure 10 Concept Design for NE 2<sup>nd</sup> Street North Alignment

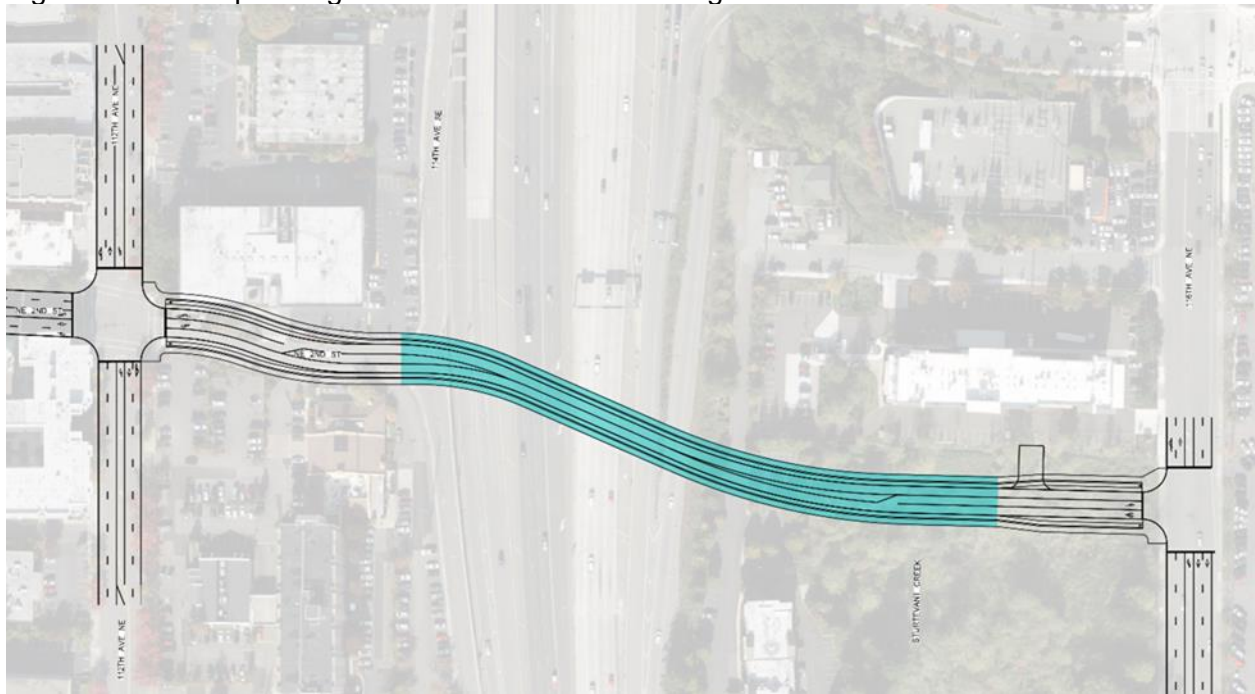


**South alignment – Construct new roadway through northern half the Extended Stay property**

The south alignment would provide greater separation between NE 2nd Street and NE 4th Street, when compared to the north alignment. Increased separation would allow the new bridge to remain lower as it crosses above the existing northbound off-ramp. Roadway grades could remain at, or below, 5%.

Because the south alignment would not be built along an existing roadway, east of I-405, impacts to existing business access would be less extensive. In general, the access impacts would be limited to driveway relocations. However, the new bridge and roadway would be constructed above Sturtevant Creek and through a wetland.

Figure 11 Concept Design for NE 2<sup>nd</sup> Street South Alignment



The study team recommended advancing the south alignment of the NE 2nd Street Extension alternative.

## SE 6th Street Extension – Lane Configuration

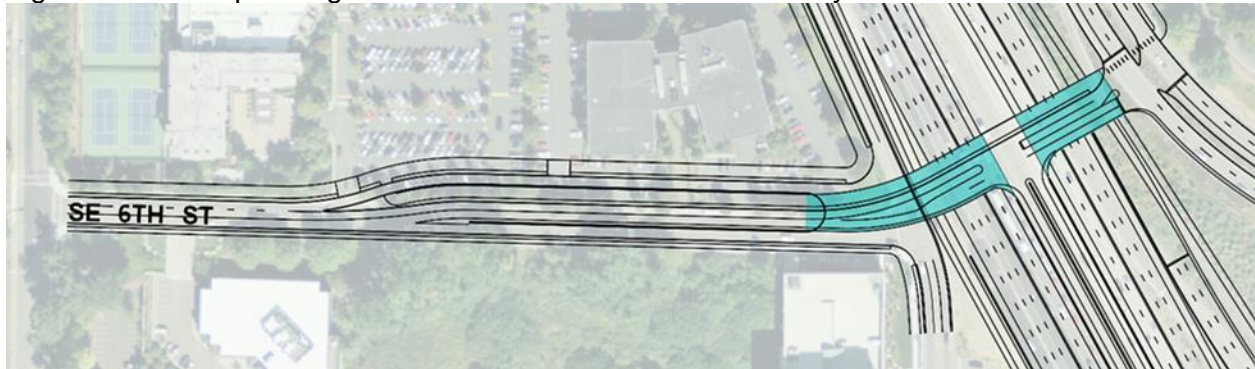
### Four-lane roadway

To preserve the existing connection between 112<sup>th</sup> and 114<sup>th</sup> Avenues NE along SE 6<sup>th</sup> Street, the study team considered a four-lane configuration. In this option, two lanes in the center of SE 6<sup>th</sup> Street would climb to cross over I-405, while two outside lanes would remain at-grade, operating as single lane, one-way streets.

This option would require an additional 34 feet of right of way, creating a property impact area that would reduce the development potential of adjacent properties. Large takes of at-grade parking and the elimination of driveway access from SE 6<sup>th</sup> Street would be required to accommodate the larger roadway.

The widened roadway would introduce impacts to Sturtevant Creek as it crosses under SE 6<sup>th</sup> Street and it would increase the potential for impacts to wetlands south of SE 6<sup>th</sup> Street.

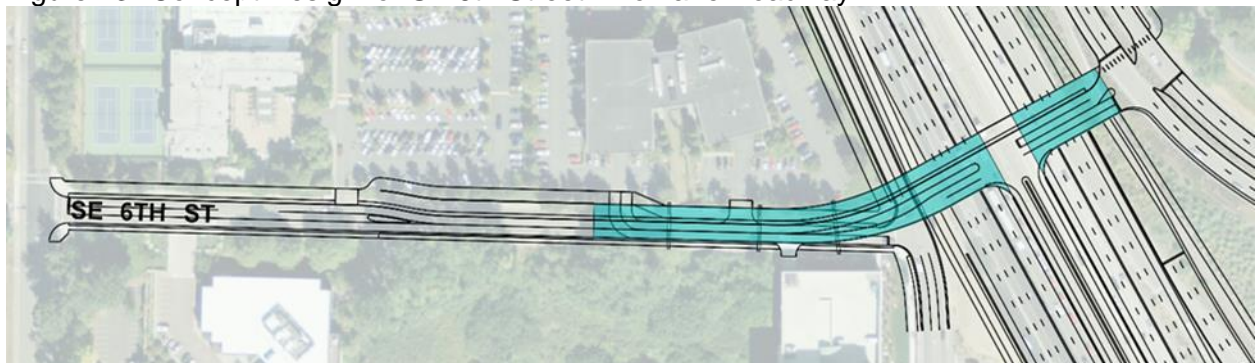
Figure 12 Concept Design for SE 6<sup>th</sup> Street Four Lane Roadway



### Two-lane roadway

To minimize property impacts along SE 6<sup>th</sup> Street, the study team considered a two lane, two level configuration. In this option, SE 6<sup>th</sup> Street would cross over 114<sup>th</sup> Avenue SE and I-405, before intersecting with Lake Hills Connector. The connection between 112<sup>th</sup> and 114<sup>th</sup> Avenues SE along SE 6<sup>th</sup> Street, would be closed. Beneath the new SE 6<sup>th</sup> Street bridge, driveway access to adjacent businesses would be maintained. An alternative route providing connection between 112<sup>th</sup> and 114<sup>th</sup> Avenues SE would be available nearby, via SE 8<sup>th</sup> Street.

Figure 13 Concept Design for SE 6<sup>th</sup> Street Two Lane Roadway



With reduced property and environmental impacts, the study team recommended advancing the two-lane roadway option of the SE 6<sup>th</sup> Street Extension alternatives.

### SE 6<sup>th</sup> Street Extension – Nonmotorized Facilities

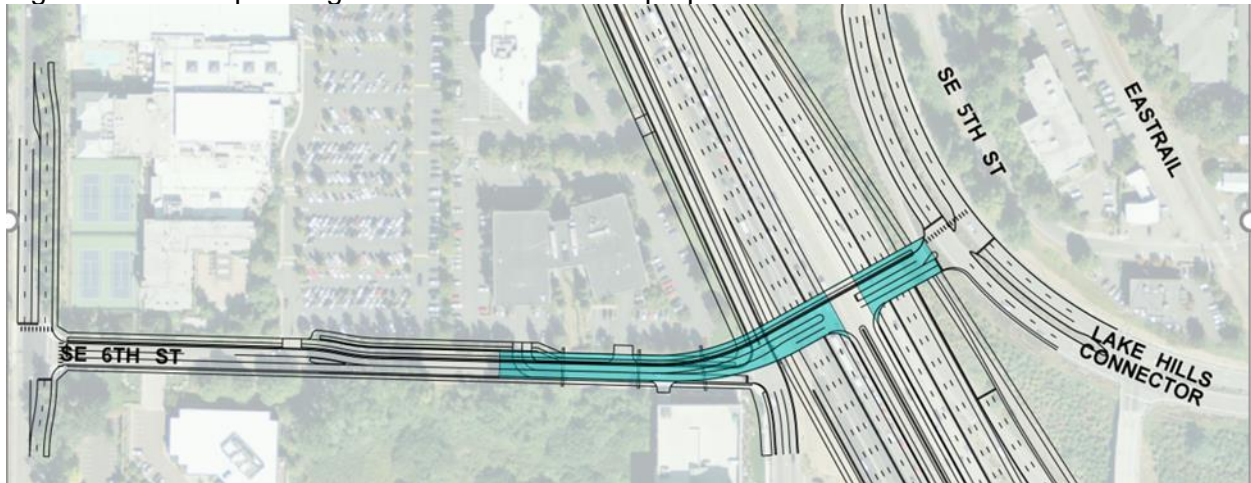
#### No Multipurpose Path

The study team considered a SE 6<sup>th</sup> Street Extension without a pedestrian connection over I-405. The steep roadway grade of the SE 6<sup>th</sup> Street overcrossing would be difficult to climb for some users. Additionally, with an at-grade crossing of the freeway nearby at SE 8<sup>th</sup> Street, a new crossing may be underutilized. Eliminating the multipurpose path from the proposed structure would reduce the width of the bridge by 13 feet and reduce the overall width of SE 6<sup>th</sup> Street by as much as 21 feet in some locations.

#### Multipurpose Path to Lake Hills Connector

The proposed design of the SE 6<sup>th</sup> Street Extension terminates at the Lake Hills Connector intersection. Roughly 350 feet east of the intersection, and 30 feet higher in elevation, is the Eastrail corridor. Nonmotorized users from SE 6<sup>th</sup> Street would have access to Eastrail by following the Lake Hills Connector sidewalk north to the SE 5<sup>th</sup> Street intersection, then heading east along SE 5<sup>th</sup> Street. This route would include a signalized, at-grade crossing of Lake Hills Connector. Nonmotorized users would experience a maximum profile grade of 6.75% along SE 6<sup>th</sup> Street with this option.

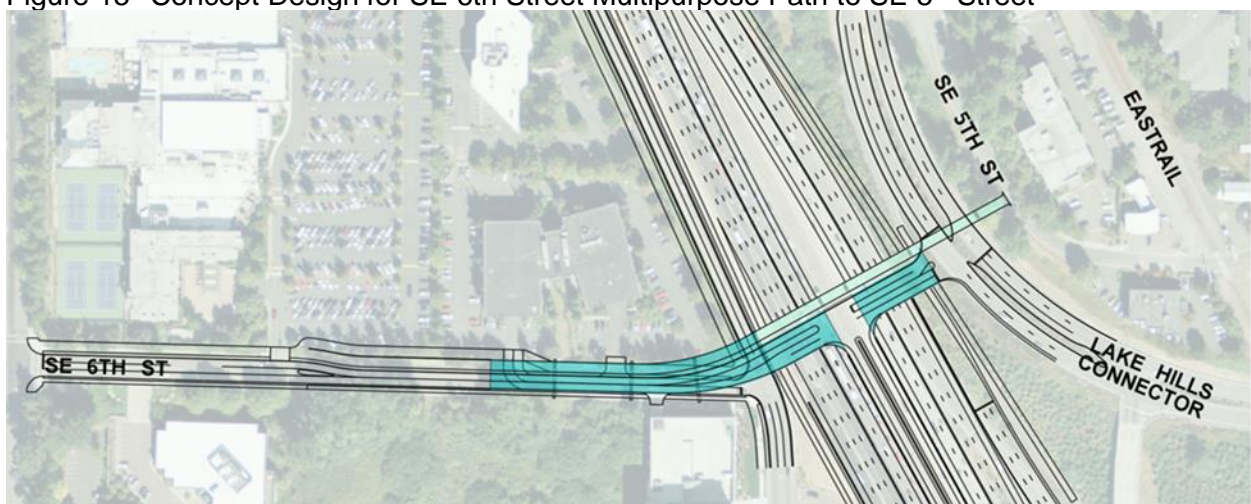
Figure 14 Concept Design for SE 6<sup>th</sup> Street Multipurpose Path to Lake Hills Connector



### Multipurpose Path to SE 5<sup>th</sup> Street

To avoid an at-grade crossing of Lake Hills Connector, the study team considered an elevated, nonmotorized overcrossing. A grade-separated crossing would create a nearly direct, nonmotorized connection between SE 6<sup>th</sup> Street and Eastrail. West of I-405, the proposed multipurpose path would adjoin the SE 6<sup>th</sup> Street roadway and climb at a 9% grade. Crossing over the freeway, the multipurpose path and roadway would separate to independent bridges. The roadway would crest and connect to Lake Hills Connector. The multipurpose path would continue to climb at a 5% grade, above Lake Hills Connector, and connect to SE 5<sup>th</sup> Street.

Figure 15 Concept Design for SE 6<sup>th</sup> Street Multipurpose Path to SE 5<sup>th</sup> Street

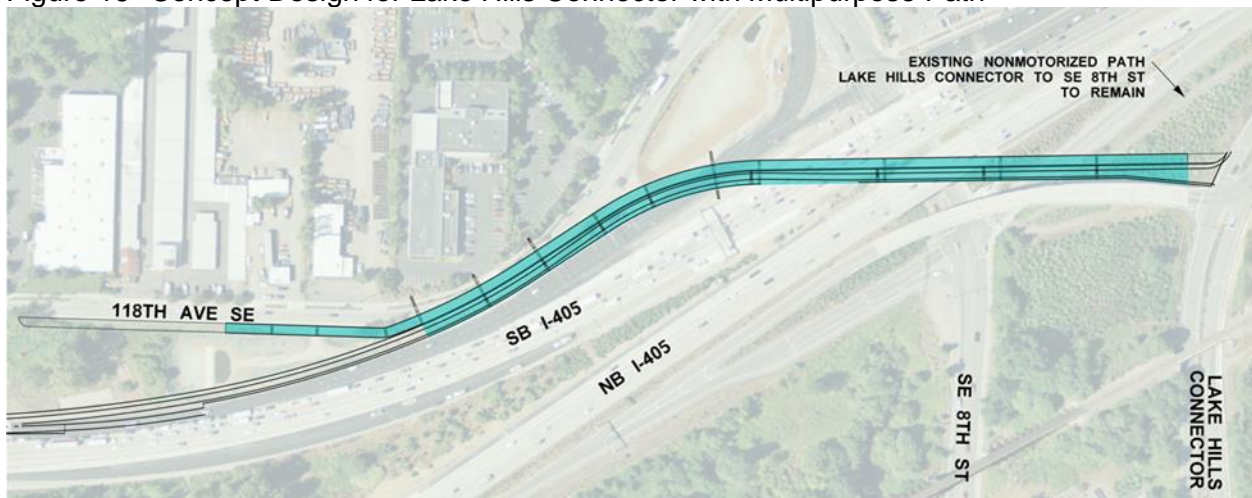


The study team recommended including nonmotorized facilities to align with the City of Bellevue’s adopted plans and urban design policies. Although a nonmotorized, grade-separated crossing of Lake Hills Connector would provide some safety and operational benefit, the team determined constructability challenges, cost, and required design variances to outweigh the benefits. The team recommended advancing the SE 6<sup>th</sup> Street Extension with Multipurpose Path to Lake Hills Connector.

### Lake Hills Connector Southbound On-Ramp – Nonmotorized Facilities

The study team considered including a multipurpose path adjacent to the new southbound on-ramp, between Lake Hills Connector and 118<sup>th</sup> Avenue SE. The pathway would follow the roadway grade at a maximum of 8%, with a traffic barrier and fencing separating the pathway from the freeway ramp traffic. Constructing the multipurpose path along the ramp would require an additional 18 feet of bridge width. Due to limited space beneath the bridge for column placement, the added width would require skewing and complicate the design and construction of the structure, adding significant cost to the project.

Figure 16 Concept Design for Lake Hills Connector with Multipurpose Path



Steep grades and close proximity to freeway ramp traffic would create an uninviting environment for pedestrians and cyclists. The study team concluded that the proposed pathway to be less attractive than following the existing nonmotorized path, from Lake Hills Connector to SE 8<sup>th</sup> Street, where nonmotorized users can cross I-405, below the freeway, adjacent to relatively low vehicle speeds. The team recommended eliminating a multipurpose path at the Lake Hills Connector Southbound On-Ramp from further consideration.

## Tier 2 Alternatives Evaluation

This section summarizes the evaluation of each of the five alternatives in the Tier 2 analysis. Both qualitative and quantitative criteria were used for the evaluation. With alternative conceptual design information available, the Tier 2 analysis takes a closer look at how the alternatives perform both qualitatively and quantitatively.

Qualitative criteria:

- Alignment with adopted plans and policies, particularly transportation, land use and urban design, environmental stewardship, and the adopted East Main TOD policies. Relationship to the planned Kirkland-Bellevue-Issaquah light rail line is also examined.
- Access and safety
- Impact to property/economic development

The quantitative criteria included:

- Cost, which included ROW, construction, utility relocation, fish barrier removal, wetland/stream mitigations
- Traffic operational performance such as travel time and intersection delays

This section is organized by assessing each of the four action alternatives relative to the No Build by the above criteria. Traffic operations analysis results for all the alternatives are presented together for easy comparison.

### Lake Hills Connector Southbound On-Ramp

The concept design drawing for the Lake Hills Connector Southbound On-Ramp Alternative is in the following figure.

Figure 17 Concept Design for Lake Hills Connector Southbound On-Ramp Alternative



### Alignment with Adopted Plans and Policies

This alternative includes a new SB on-ramp but does not include additional local connections between Downtown and Wilburton as envisioned in the adopted plans.

This alternative does not require the amendment to the adopted East Main TOD policies. It is not expected to significantly change urban design characteristics in the vicinity.

No wetland or stream impact was identified. Compared to the other alternatives, this alternative has the least impact to natural environment. There will likely be temporary impacts and disturbance to the wetland and/or stream buffers from construction. There will also be permanent impacts from shade/shadow, lighting, noise, water quality, and pollutants/emissions created by the freeway ramp and vehicle traffic.

This alternative is also compatible with the representative alignment for the Kirkland to Issaquah via Bellevue light rail project. The planned light rail crosses over I-405 in the vicinity of the proposed ramp. The conceptual vertical profile of the light rail line indicates that there is sufficient vertical clearance for the proposed ramp to pass below without conflict.

### Access and Safety

The Lake Hills Connector Southbound On-Ramp would not add or improve or degrade nonmotorized facilities. Lower rear-end crashes are expected due to the reduction in intersection and network delay. Because the proposed access would draw more vehicles from local roads to I-405 and freeways generally have lower crash rates than local roads, this alternative is likely to have safety benefits.

**Impact on property and economic development**

All existing nonmotorized access would remain. The added I-405 access capacity would support economic development in Wilburton. No business access would be physically impacted by this project.

The proposed southbound on-ramp from Lake Hills Connector would merge with the existing on-ramp from SE 8<sup>th</sup> Street. A southbound auxiliary lane from SE 8<sup>th</sup> Street to I-90 would be added, and a small construction easement would likely be required to construct retaining walls necessary to support the widened freeway. The total area of impact to properties adjacent to I-405 would be less than 1/20 of an acre.

**Cost**

The study team estimated the 2030 projected cost of the Lake Hills Connector Southbound On-Ramp at \$150 million.

The new southbound on-ramp from Lake Hills Connector would be constructed almost entirely on a bridge, as it crosses over the I-405/ SE 8<sup>th</sup> Street interchange. Long bridge spans would be required due to the skew of the bridge crossing over the freeway, with limited space below for column placement. An estimated 40,000 square feet of bridge would be required to carry the new on-ramp over I-405. The approach roadway and widened I-405 would be supported by an estimated 20,000 square feet of retaining wall.

Two culvert crossings, Trail Creek and Hixson Creek, are within this alternative’s limits and are identified by the Washington Department of Fish and Wildlife (WDFW) as barriers to fish passage, subject to a federal court injunction.

No major utility impacts were identified with the Lake Hills Connector Southbound On-Ramp alternative.

The major construction quantities and impacts of the proposed design are summarized in the table below.

Table 13 Major Construction Quantities and Impacts for Lake Hills Connector Southbound On-Ramp Alternative

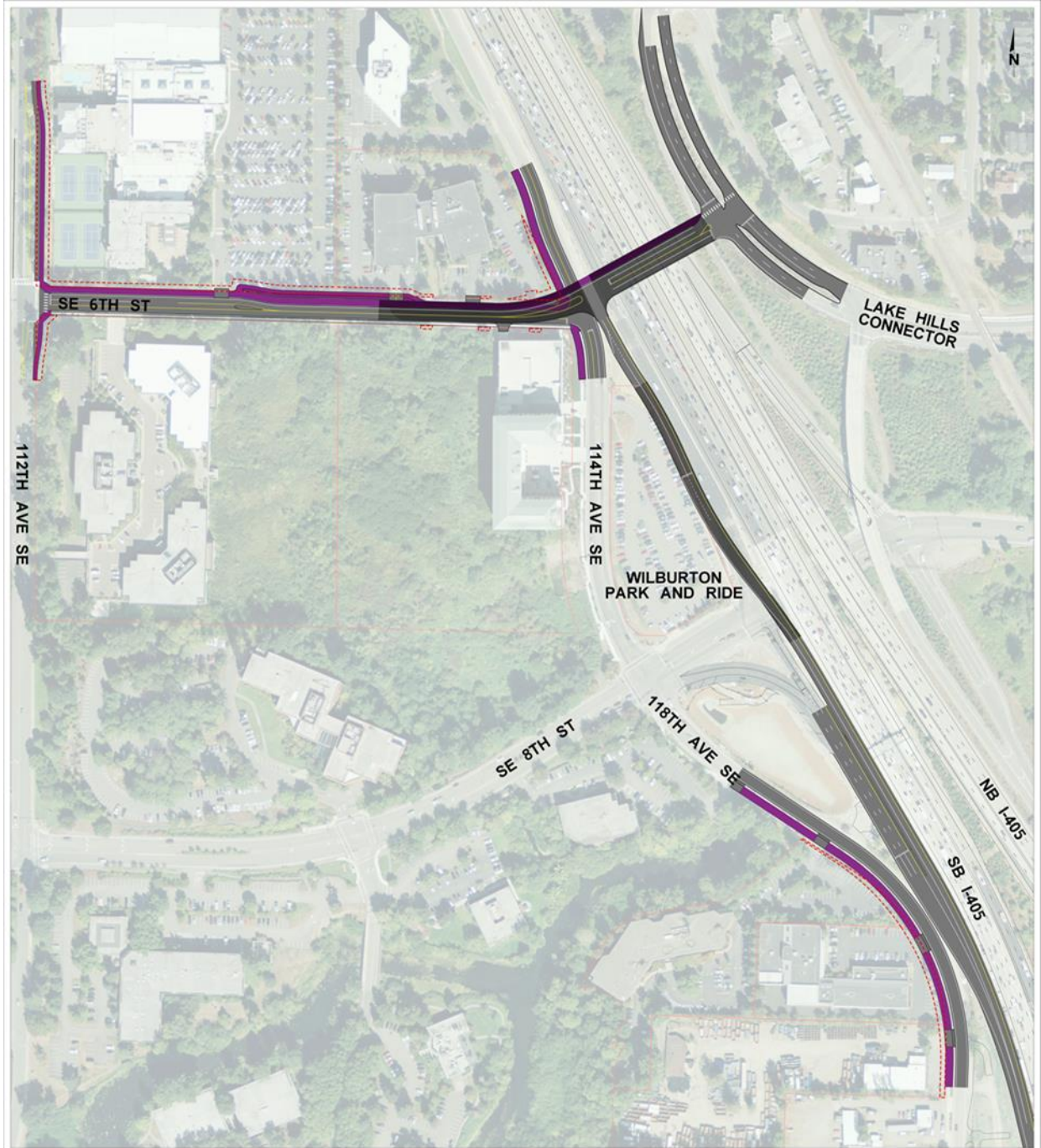
<b>Construction Element</b>	<b>Quantity / Impact</b>
Earthwork	5,000 CY
Pavement	10,000 SY
Sidewalk	5,000 SF
Walls	20,000 SF
Bridge	40,000 SF
Right-of-way impact area (acres)	0.01 AC
Parcel Impacts	1 EA



## SE 6th Street Extension with Southbound On-Ramp

The concept design drawing for the SE 6th Street Extension with Southbound On-Ramp Alternative is in the following figure.

Figure 18 Concept Design for SE 6th Street Extension with Southbound On-Ramp Alternative



### Alignment with Adopted Plans and Policies

The existing Comprehensive Plan Comprehensive Transportation Project List includes a new interchange in the south Downtown area with the NE 2nd Street as a placeholder.

The area surrounding SE 6th Street is the East Main Transit-Oriented Development land use district. This area is envisioned in the Southwest Bellevue Subarea Plan (2019) as a vibrant, livable transit-oriented station area of safe, walkable and bikeable blocks served by light rail. A connection to I-405 via a SE 6th Street extension and subsequent increase in traffic volume and reduction in developable land may not be compatible with this vision.

Buildings sited along SE 6th Street and within the TOD are intended to serve the new mixed-use neighborhood. Freeway access ramps at SE 6th Street have the potential to change the intended character, appearance, and physical characteristics of the site.

There will likely be temporary impacts and disturbance to the wetland and/or stream buffers from construction. There will also be permanent impacts from shade/shadow, lighting, noise, water quality, and pollutants/emissions created by the freeway ramp and vehicle traffic.

This alternative does not have conflict with the planned light rail from Kirkland to Issaquah via Bellevue.

### **Access and Safety**

A new motorized connection would be added in the south Downtown and Wilburton areas, connecting 112th Avenue with 116th Avenue/Lake Hills Connector via SE 6th Street. A new signalized intersection would be constructed at Lake Hills Connector. The motorized connection between 112th Avenue SE and 114th Avenue SE would be closed.

A new nonmotorized path would be constructed along the north side of the SE 6th Street bridge. This path would connect SE 6th Street with the Eastrail Corridor via Lake Hills Connector and SE 5th Street. Although the new nonmotorized path would increase the available options for crossing I-405, the pedestrian and cyclist experience would be less than ideal due to the steep grades required. Existing nonmotorized facilities along 112th Avenue SE, 114th Avenue SE, and SE 6th Street would be improved.

The southbound on-ramp option would include minor realignment of 118th Avenue SE to provide the width necessary for the new ramp between I-405 and 118th Avenue SE. Realignment would include reconstruction and widening of the nonmotorized facilities along the west side of 118th Avenue SE.

Nonmotorized facilities included in this alternative would provide another access to the East Main light rail station for residents living in the South Wilburton and Woodridge neighborhoods. The increase in vehicular traffic on 112th Avenue SE will negatively impact passenger travel between the light rail station and the TOD.

Due to reductions in intersection and network delay, lower rear-end crashes would be expected. The proposed access would allow more freeway travel, which tends to have lower crash rates than local roads.

### **Impact on Property Development**

Several properties along 112th Avenue SE, 114th Avenue SE, and SE 6th Street would be impacted due to added lanes and widened nonmotorized facilities. Impacts would be limited to parking lots and planter strips, with roughly ½ acre in total impact area, including temporary and permanent easements, and no impact to existing structures.

The proposed reconstruction of SE 6<sup>th</sup> Street would eliminate the east-west connection between 112<sup>th</sup> Avenue SE and 114<sup>th</sup> Avenue SE. Beneath the new SE 6<sup>th</sup> Street structure, driveway access to adjacent businesses along SE 6<sup>th</sup> Street would be maintained.

Realignment of 118<sup>th</sup> Avenue SE and the proposed nonmotorized improvements would generate some minor impacts to adjacent properties. However, these impacts would be limited to planter strip and driveway reconstruction. No impact to developable property is expected.

The new southbound on-ramp from SE 6<sup>th</sup> Street would be constructed on a new bridge above the existing southbound off-ramp to SE 8<sup>th</sup> Street and the Wilburton Park and Ride. Impacts to the ramp and park and ride would be minimal, limited to the space required to construct the bridge and bridge columns.

The modest amount of ROW needed (see Table 15) could reduce the development potential. However, opportunity exists for property owners to dedicate property in exchange for retaining the same development capacity.

### Cost

The study team estimated the 2030 projected cost of the SE 6<sup>th</sup> Street Extension with Southbound On-Ramp at \$175 million. A new SE 6<sup>th</sup> Street bridge over I-405, a new bridge for the southbound on-ramp, and retaining walls for the approach roadway are the primary structural cost drivers. Roughly 55,000 square feet of new bridge and 35,000 square feet of new retaining wall would be required to construct the southbound on-ramp alternative.

One culvert crossing, Hixson Creek, is within this alternative’s limits and is identified by the Washington Department of Fish and Wildlife (WDFW) as a barrier to fish passage, subject to a federal court injunction.

City of Bellevue and King County utilities were identified within the project area. Wastewater and storm sewer lines may require relocation. As the roadway reconstruction would be at, or above, grade, access concerns from the street level would dictate the need for relocation. Relocation costs for unavoidable impacts are anticipated to be minimal.

The major construction quantities and impacts of the proposed design are summarized in the table below.

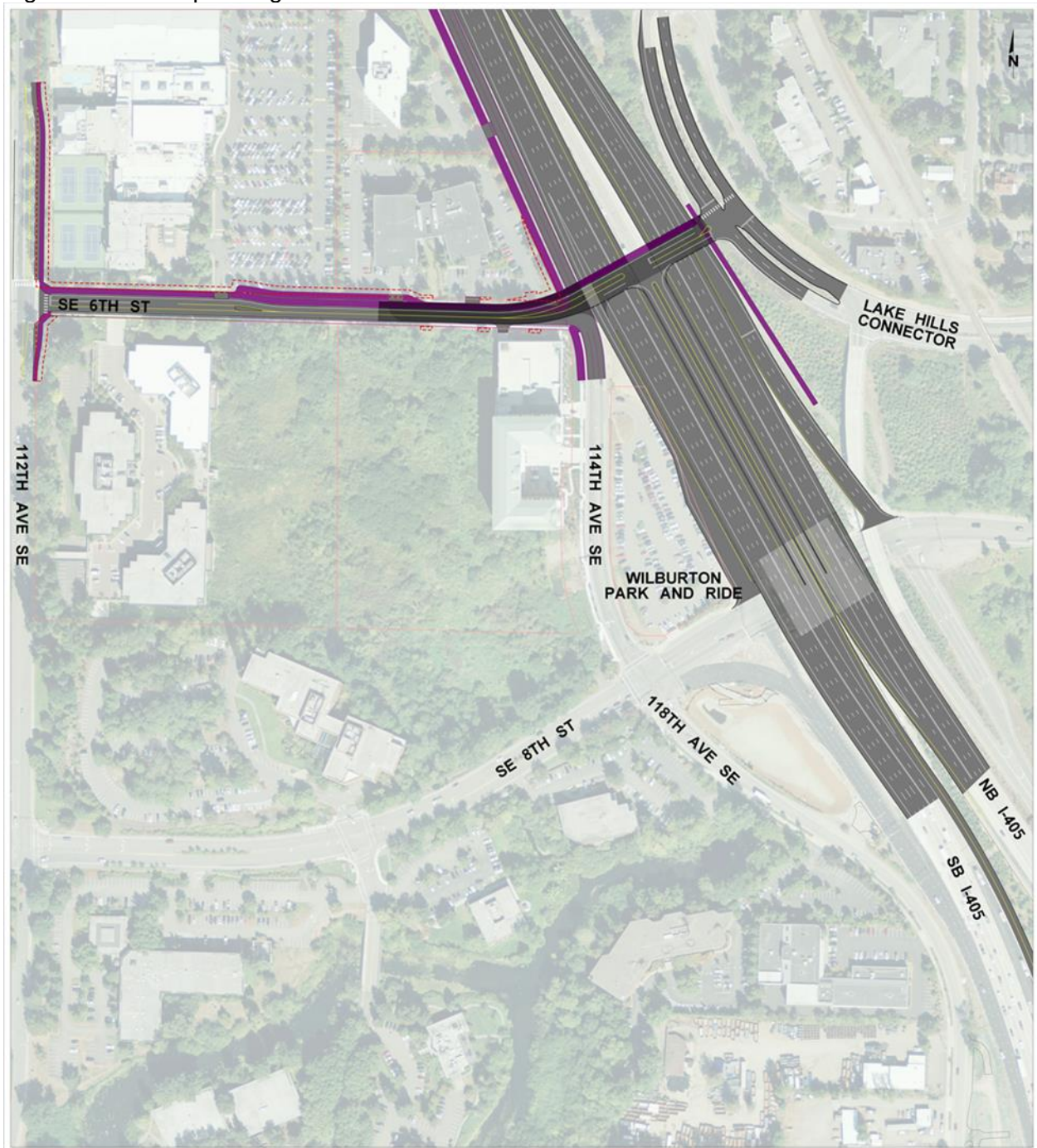
Table 14 Major Construction Quantities and Impacts for SE 6th Street Extension with Southbound On-Ramp Alternative

Construction Element	Quantity / Impact
Earthwork	20,000 CY
Pavement	25,000 SY
Sidewalk	55,000 SF
Walls	35,000 SF
Bridge	55,000 SF
Right-of-way impact area (acres)	0.82 AC
Parcel Impacts	8 EA

### SE 6<sup>th</sup> Street Extension with Direct Access

The concept design drawing for the SE 6th Street Extension with Direct Access Alternative is in the following figure.

Figure 19 Concept Design for SE 6th Street Extension Direct Access Alternative



### Alignment with Adopted Plans and Policies

The existing Comprehensive Plan Comprehensive Transportation Project List includes a new interchange in the south Downtown area with the NE 2nd Street as a placeholder. If extending

NE 2nd Street with access to I-405 is deemed more impactful and costlier to implement, this could be a viable alternative.

The area surrounding SE 6th Street is the East Main Transit-Oriented Development land use district. This area is envisioned in the Southwest Bellevue Subarea Plan (2019) as a vibrant, livable transit-oriented station area of safe, walkable and bikeable blocks served by light rail. A connection to I-405 via a SE 6th Street extension and subsequent increase in traffic volume and reduction in developable land may not be compatible with this vision.

Buildings sited along SE 6th Street and within the TOD are intended to serve the new mixed-use neighborhood. Freeway access ramps at NE 6<sup>th</sup> Street have the potential to change the intended character, appearance, and physical characteristics of the site.

There will likely be temporary impacts and disturbance to the wetland and/or stream buffers from construction. There will also be permanent impacts from shade/shadow, lighting, noise, water quality, and pollutants/emissions created by the freeway ramp and vehicle traffic.

This alternative does not conflict with the planned light rail from Kirkland to Issaquah via Bellevue.

### **Access and Safety**

A new motorized connection would be added in the south Downtown and Wilburton areas, connecting 112th Avenue with 116<sup>th</sup> Avenue/Lake Hills Connector via SE 6<sup>th</sup> Street. A new signalized intersection would be constructed at Lake Hills Connector. The motorized connection between 112<sup>th</sup> Avenue and 114<sup>th</sup> Avenue would be closed.

A new nonmotorized path would be constructed along the north side of SE 6<sup>th</sup> Street bridge. This path would connect SE 6<sup>th</sup> Street with the Eastrail via Lake Hills Connector and SE 5<sup>th</sup> Street. Although the new nonmotorized path would increase the available options for crossing I-405, the pedestrian and cyclist experience would be less than ideal due to the steep grades required. Existing nonmotorized facilities along 112th Avenue SE, 114<sup>th</sup> Avenue SE, and SE 6<sup>th</sup> Street would be improved.

Nonmotorized facilities included in this alternative would provide another access to the East Main light rail station for residents living in the South Wilburton and Woodridge neighborhoods. The increase in vehicular traffic on 112th Avenue SE will impact the ease of passenger travel from the light rail station to the TOD.

Due to reduction in intersection and network delay, lower rear-end crashes would be expected. The proposed access would allow more freeway travel, which tends to have lower crash rates than local roads.

### **Impact on Property Development**

Several properties along 112<sup>th</sup> Avenue SE, 114<sup>th</sup> Avenue SE, and SE 6<sup>th</sup> Street would be impacted due to added lanes and widened nonmotorized facilities. In general, these impacts would be limited to parking lots and planter strips, with roughly ½ acre in total impact area including temporary and permanent easements, and no impact to existing structures.

The proposed reconstruction of SE 6<sup>th</sup> Street would eliminate the east-west connection between 112<sup>th</sup> Avenue SE and 114<sup>th</sup> Avenue SE. Beneath the new SE 6<sup>th</sup> Street structure, driveway access to adjacent businesses along SE 6<sup>th</sup> Street would be maintained.

Widening I-405 to fit the new direct-access ramps in the median would introduce impacts to the Wilburton Park and Ride. At minimum, 50 parking stalls along the east side of the park and ride would be impacted. It is anticipated that structured parking would be required if the impacted parking spaces needed to be replaced.

The modest amount of ROW needed (see Table 16) could reduce development potential. However, opportunity exists for property owners to dedicate property in exchange for retaining the same development capacity.

The added access would support planned development in the study area.

### **Cost**

The study team estimated the 2030 projected cost of the SE 6<sup>th</sup> Street Extension with Direct Access at \$325 million.

A new bridge carrying SE 6<sup>th</sup> Street over I-405, widening of the existing freeway bridges, and new construction, or reconstruction, of several retaining walls would be required to for the new direct-access ramps at SE 6<sup>th</sup> Street. Added width in the median for the new ramps would require realignment of I-405, north of SE 6<sup>th</sup> Street, and widening of the freeway, south of SE 6<sup>th</sup> Street. Realignment to the north would include reconstruction of several large retaining walls. Freeway widening to the south would require reconstruction of retaining walls, as well as widening of the existing freeway bridges over SE 8<sup>th</sup> Street. New retaining walls would be constructed to support the SE 6<sup>th</sup> Street overcrossing and new direct-access ramps. In total, an estimated 45,000 square feet of bridge and 70,000 square feet of retaining wall would be required. Reconstruction of SE 6<sup>th</sup> and I-405 would include an estimated 70,000 square yards of asphalt and 35,000 cubic yards of earthwork.

Two culvert crossings, Sturtevant Creek and Hixson Creek, are within this alternative's limits and are identified by the Washington Department of Fish and Wildlife (WDFW) as barriers to fish passage, subject to a federal court injunction.

City of Bellevue and King County utilities were identified within the project area. Wastewater and storm sewer lines may require relocation. As the roadway reconstruction would be at, or above, grade, access concerns from the street level would dictate the need for relocation. Relocation costs for unavoidable impacts are anticipated to be minimal.

The major construction quantities and impacts of the proposed design are summarized in the table below.

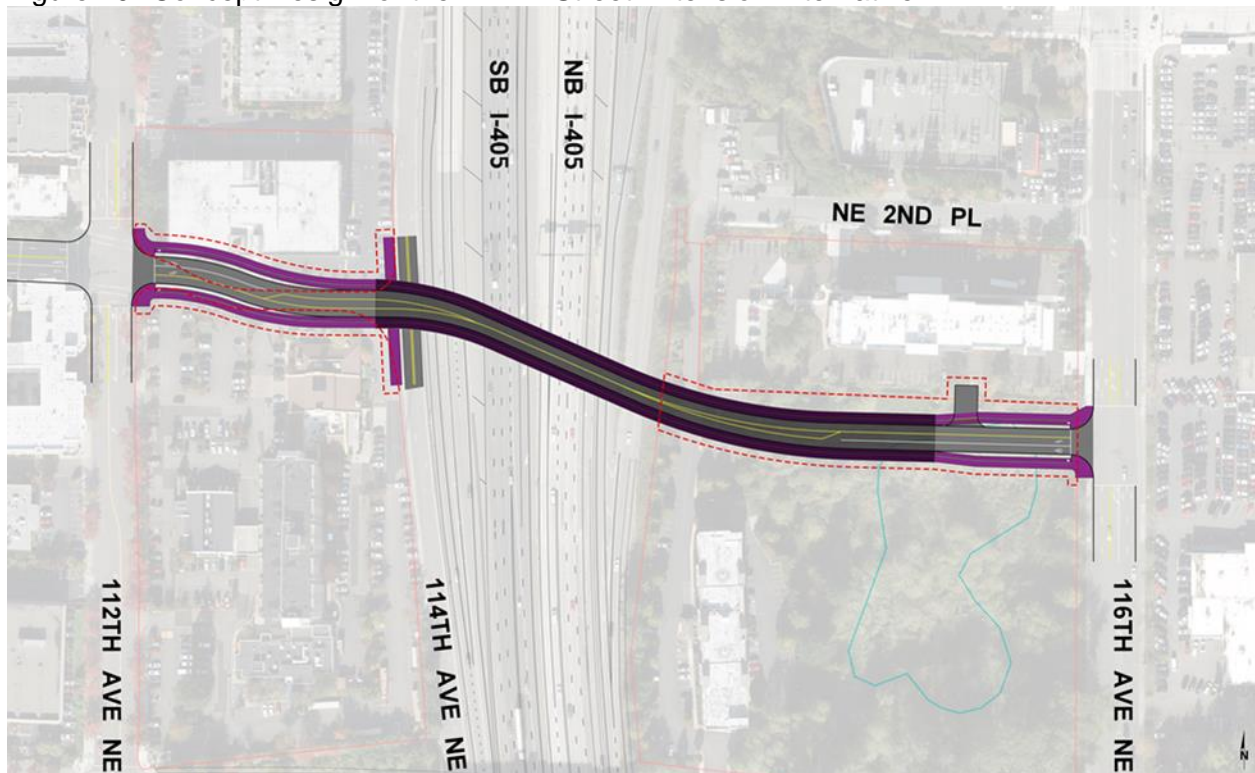
Table 15 Major Construction Quantities and Impacts for SE 6th Street Extension with Direct Access Alternative

Construction Element	Quantity / Impact
Earthwork	35,000 CY
Pavement	70,000 SY
Sidewalk	55,000 SF
Walls	70,000 SF
Bridge	45,000 SF
Right-of-way impact area (acres)	0.64 AC
Parcel Impacts	6 EA

### NE 2<sup>nd</sup> Street Extension

The concept design drawing for the NE 2<sup>nd</sup> Street Extension Alternative is in the following figure.

Figure 20 Concept Design for the NE 2<sup>nd</sup> Street Extension Alternative



### Alignment with Adopted Plans and Policies

The existing Comprehensive Plan Comprehensive Transportation Project List includes the extension of NE 2nd Street between 112th Ave NE and 116th Ave NE with access to I-405 to and from south. This alternative includes the extension but without new access.

This alternative does not directly impact the adopted East Main TOD policies.

This alternative is expected to have permanent wetland and stream impacts that will require mitigation.

This alternative does not have conflict with the planned light rail from Kirkland to Issaquah.

## **Access and Safety**

A new motorized connection and crossing of I-405 would be provided between 112th Avenue NE and 116<sup>th</sup> Avenue NE, increasing access to Downtown and the Bellevue Transit Center.

The proposed design would also include a new nonmotorized connection between 112th Avenue NE and 116<sup>th</sup> Avenue NE. Short stretches of existing nonmotorized facilities along 112th Avenue NE, 114<sup>th</sup> Avenue NE, and 116<sup>th</sup> Avenue NE would be improved.

Properties along NE 2<sup>nd</sup> Street, between 112th Avenue NE and 114<sup>th</sup> Avenue NE, are in the planning phase of redevelopment. Access to the north parcel is proposed off NE 2nd (project in design review). A new NE 2<sup>nd</sup> Street bridge over I-405, and the approach roadway, would eliminate access to adjacent sites in this block, and the redevelopment proposal would need to be modified.

Due to increases in intersection delay and intersections added, a higher number of crashes would be expected.

## **Impact on Property Development**

Several significant property impacts were identified during the conceptual development of the NE 2<sup>nd</sup> Street Extension. West of I-405, forty feet of additional width would be required to accommodate a widened roadway and nonmotorized facilities. The widening would generate roughly ½ acre of parcel impacts along NE 2<sup>nd</sup> Street. East of I-405, more than an acre of private property, through environmentally sensitive areas, would need to be acquired.

NE 2<sup>nd</sup> Street would be raised to cross over 114<sup>th</sup> Avenue NE, the existing intersection of NE 2<sup>nd</sup> Street and 114<sup>th</sup> Avenue NE would be closed, and an east-west connection between 112<sup>th</sup> Avenue NE and 114<sup>th</sup> Avenue NE would be eliminated. Property access along the reconstructed portion of NE 2<sup>nd</sup> Street would be eliminated. The elevated segment of the NE 2nd Street bridge would also eliminate nonmotorized access to adjacent properties.

At 116<sup>th</sup> Avenue NE, commercial driveways would be relocated around the new NE 2<sup>nd</sup> Street intersection. In some instances, required separation of the driveways from the new intersection may not be achievable.

Right of way acquisition and access relocation would reduce the development potential of impacted properties. However, opportunity exists for property owners to dedicate property in exchange for retaining the same development capacity. Does not provide additional freeway access capacity needed to support economic development vision.

## **Cost**

The study team estimated the 2030 projected cost of the NE 2<sup>nd</sup> Street Extension at \$125 million.

Property impacts in downtown Bellevue, especially for parcels with planned developments, would be expensive and require lengthy negotiation to determine an agreed upon price. Depending on the final roadway alignment for the project, full acquisition of some parcels may be required.



An estimated 45,000 square feet of new bridge would be required to accommodate the new roadway and nonmotorized facilities over 114<sup>th</sup> Avenue NE, I-405, and environmentally sensitive areas. To minimize property impacts, large retaining walls would support the approach roadway at either end of the bridge.

City of Bellevue, King County, and private utilities would likely be impacted by the project. Water, wastewater, and storm sewer lines beneath NE 2<sup>nd</sup> Street may require relocation due to access concerns from the street level. Utility relocations along NE 2<sup>nd</sup> Street would be constrained by narrow right of way, requiring costly easements, and present the potential for significant impacts to adjacent property owners and the public during construction.

Major construction quantities and impacts of the proposed design are summarized in the table below.

Table 16 Major Construction Quantities and Impacts for NE 2<sup>nd</sup> Street Extension Alternative

Construction Element	Quantity / Impact
Earthwork	12,200 CY
Pavement	2,800 SY
Sidewalk	35,000 SF
Walls	9,800 SF
Bridge	45,000 SF
Right-of-way impact area (acres)	1.57 AC
Parcel Impacts	4 EA
Wetland (acres)	0.16 AC
Stream (feet)	70 LF

## No Build

### Alignment with Adopted Plans and Policies

The existing Comprehensive Plan Comprehensive Transportation Project List calls for a new connection between Downtown and Wilburton with access to I-405 to and from south. The No Build does not include these elements to support future growth in Downtown and surrounding areas. On the other hand, because this alternative does not construct anything new, it poses no negative impacts to the natural environment, urban design, or the planned light rail line from Kirkland to Issaquah via Bellevue.

### Access and Safety

This alternative maintains the status quo. As the area continues to grow, increased congestion will likely lead to more rear-end crashes.

### Impact on property development

No build means no new right of way is needed and no negative impact to developable land would occur. However, no additional access capacity would negatively impact overall development potential in the study area, as well as future economic growth.

## Cost

Because this alternative does not build anything beyond what's already planned, it does not incur any additional monetary costs.

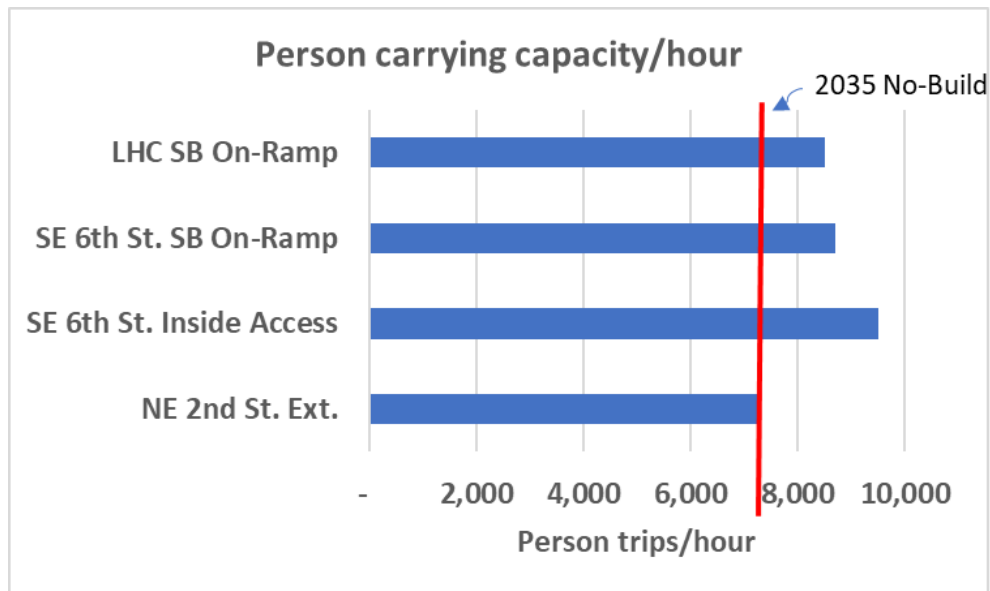
## Traffic Analysis for Tier 2 Alternatives Evaluation

This section summarizes the traffic operational performance for the alternatives compared to the baseline alternative. The forecast turning movement volumes at study area intersections are also described.

### I-405 Access Capacity Added

The figure below shows the total I-405 SB on-ramp and NB off-ramp person carrying capacities provided between NE 8th Street and SE 8th Street by each of the five alternatives as predicted by the BKRCast model. The vertical red line in the chart shows the No Build, or the 2035 baseline access capacity. The four horizontal bars correspond to the four action alternatives. It is important to note that the added capacity values have a significant relationship to the travel delay reduction data presented in the following section.

Figure 21 I-405 Access Capacity



## 2035 Traffic Forecasts for Alternatives

In addition to the design concept for each alternative, there are two additional improvements added to three alternatives – Lake Hills Connector southbound on-ramp, SE 6th Street extension and southbound on-ramp, and SE 6th Street extension inside access. The WB lane configuration at I-405 SB Ramps/NE 4th Street Intersection was also modified to eliminate the WB left turn for Lake Hills Connector southbound on-ramp Alternative. These improvements are needed to accommodate/mitigate changes in the area traffic flows and patterns.

The following diagrams show the baseline and modified configurations at 116th Ave NE/NE 4th Street and 116th Ave SE/SE 1st Street intersections and the modified lane configuration at I-405 SB Ramps/NE 4th Street Intersection.

Figure 22 Additional Intersection Improvements

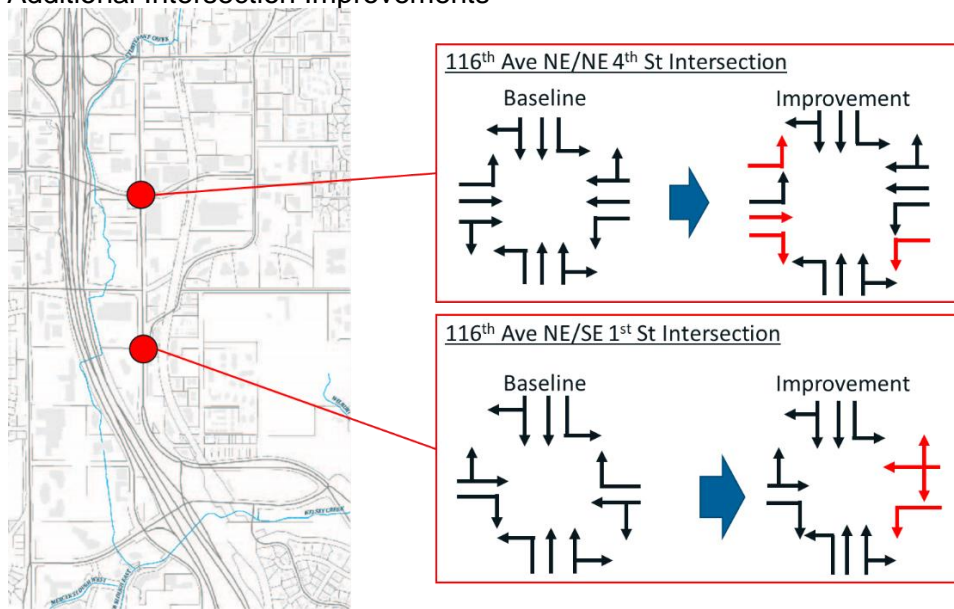
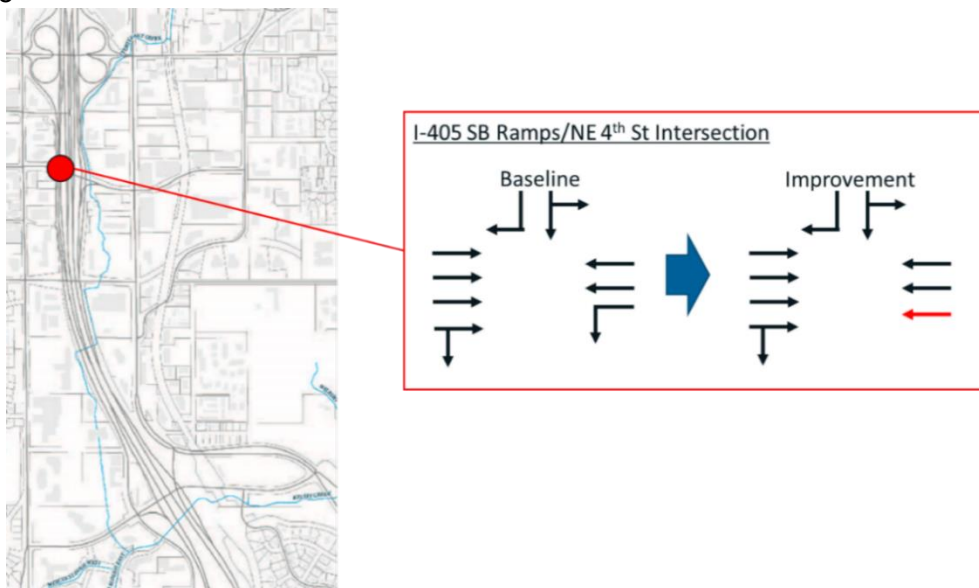
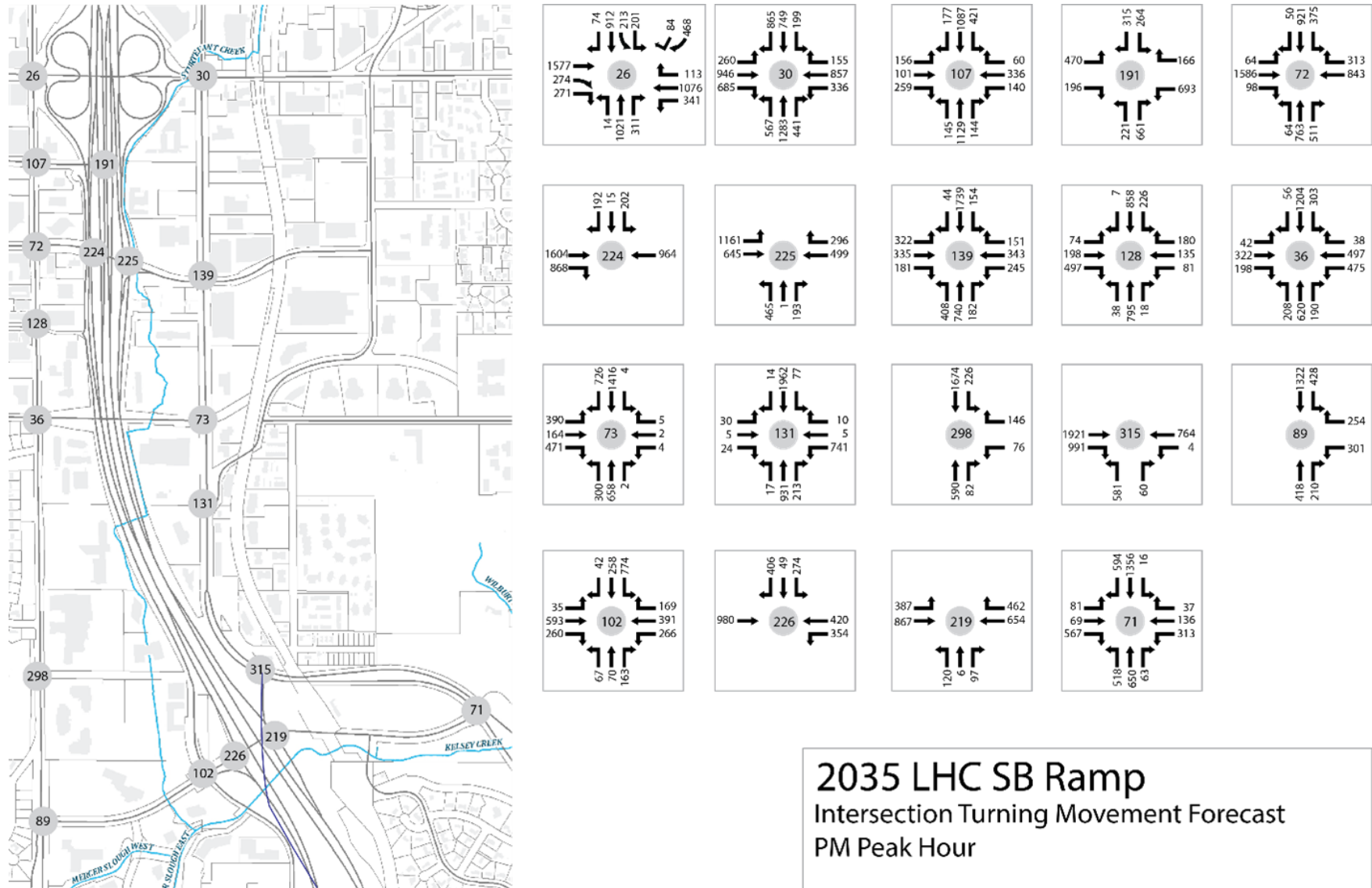


Figure 23 Modification of Lane Configuration for Lake Hills Connector Southbound On-Ramp Alternative



Using the same demand for the alternatives as the 2035 baseline, the 2035 turning movement volumes at the study intersections in each alternative are shown in the diagrams below.

Figure 24 2035 Lake Hills Connector Southbound On-Ramp Alternative Turning Movement Volumes at Study Intersections



2035 LHC SB Ramp  
Intersection Turning Movement Forecast  
PM Peak Hour

Figure 25 2035 SE 6th Street Extension Inside Access Alternative Turning Movement Volumes at Study Intersections

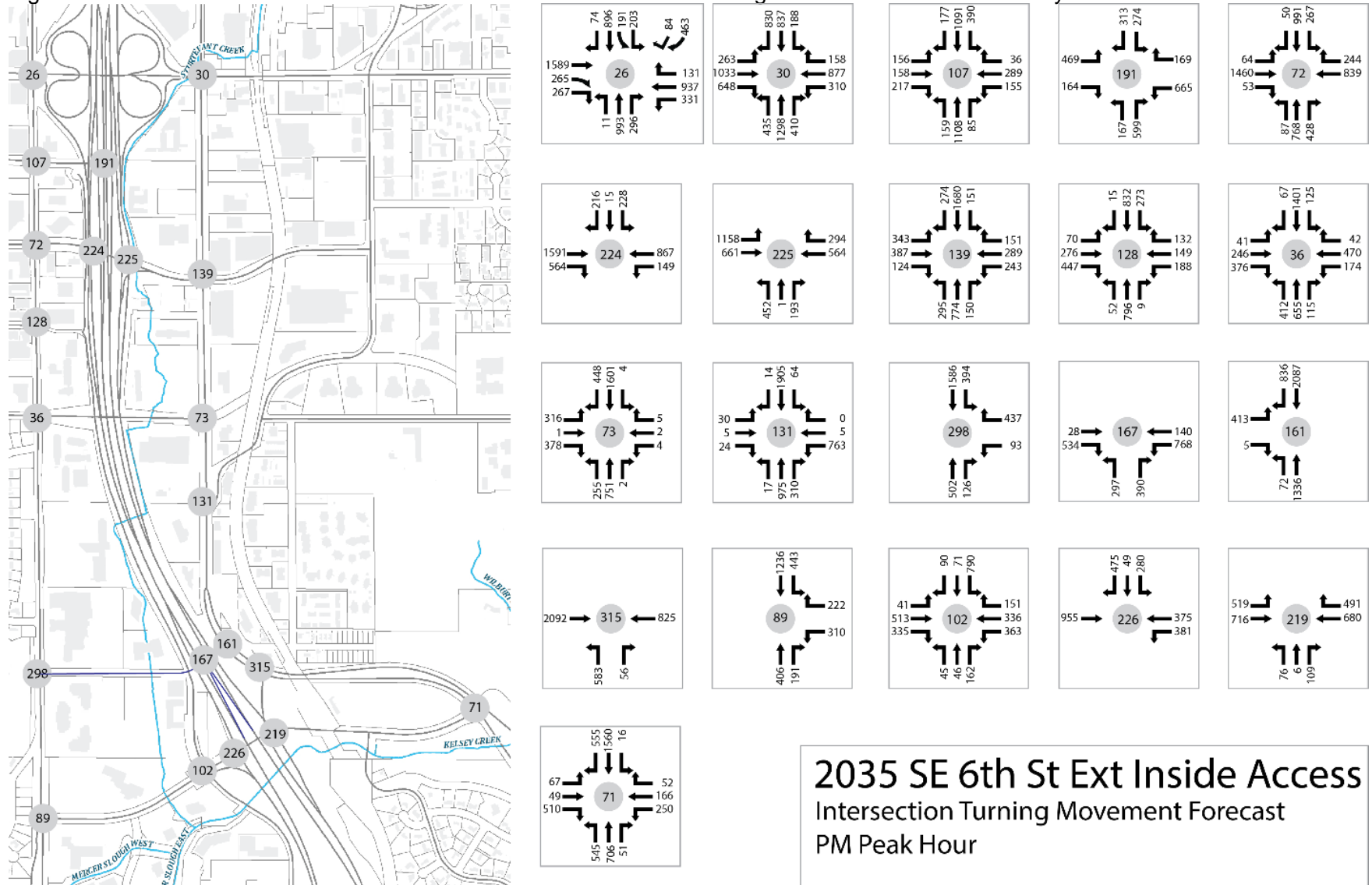


Figure 26 2035 SE 6th Street Extension and Southbound On-Ramp Alternative Turning Movement Volumes at Study Intersections

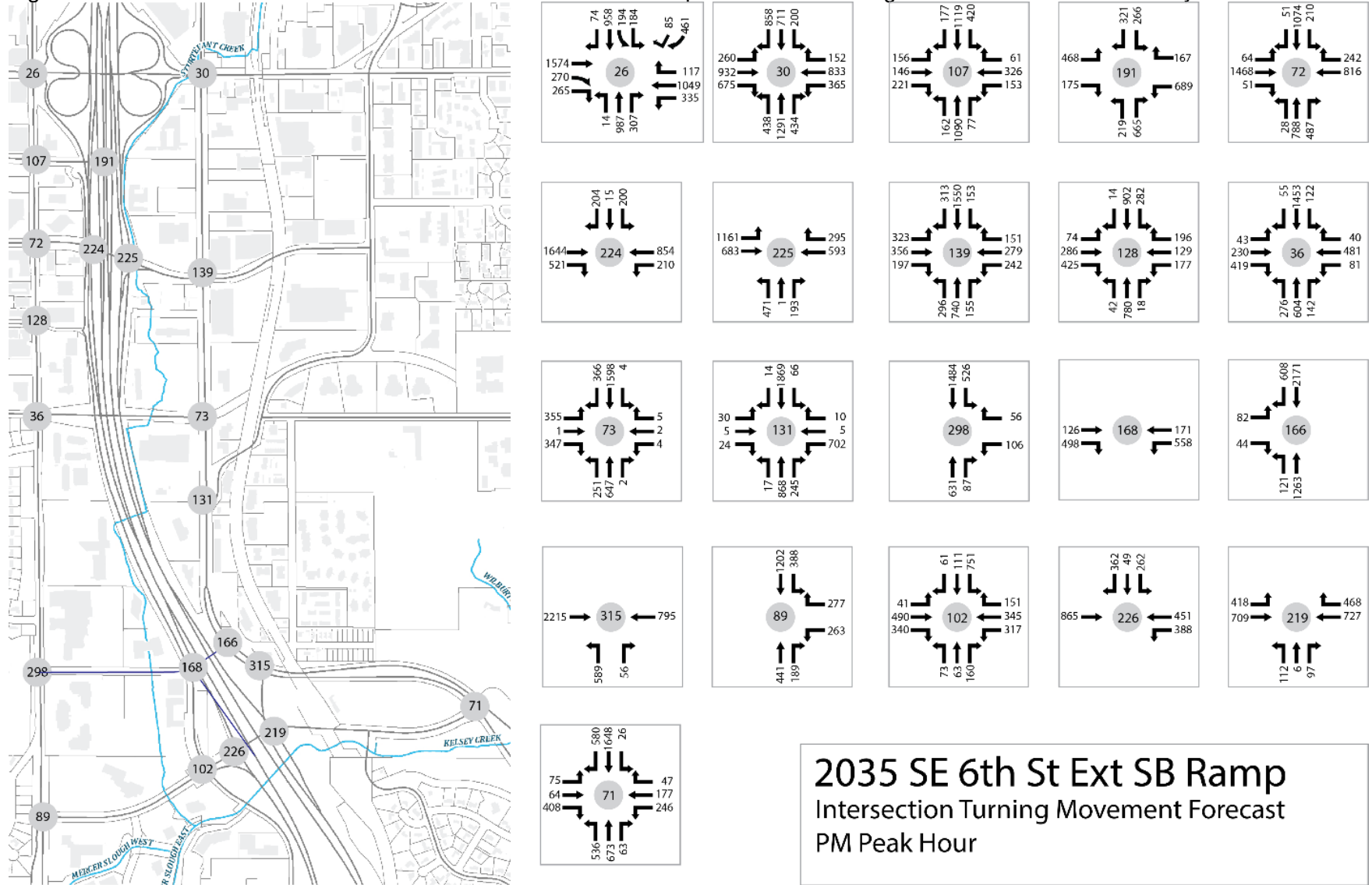
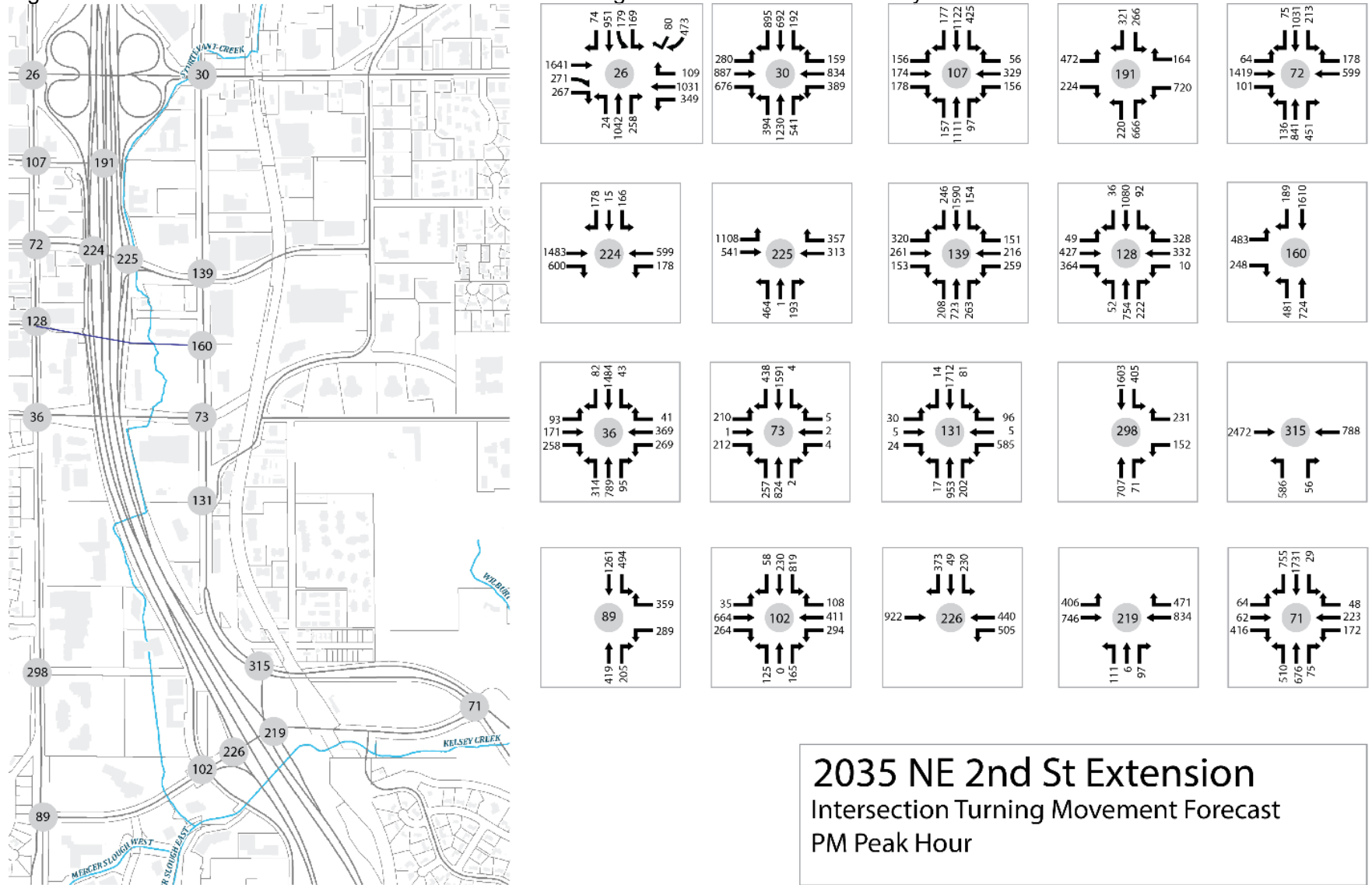


Figure 27 2035 NE 2nd Street Extension Alternative Turning Movement Volumes at Study Intersections

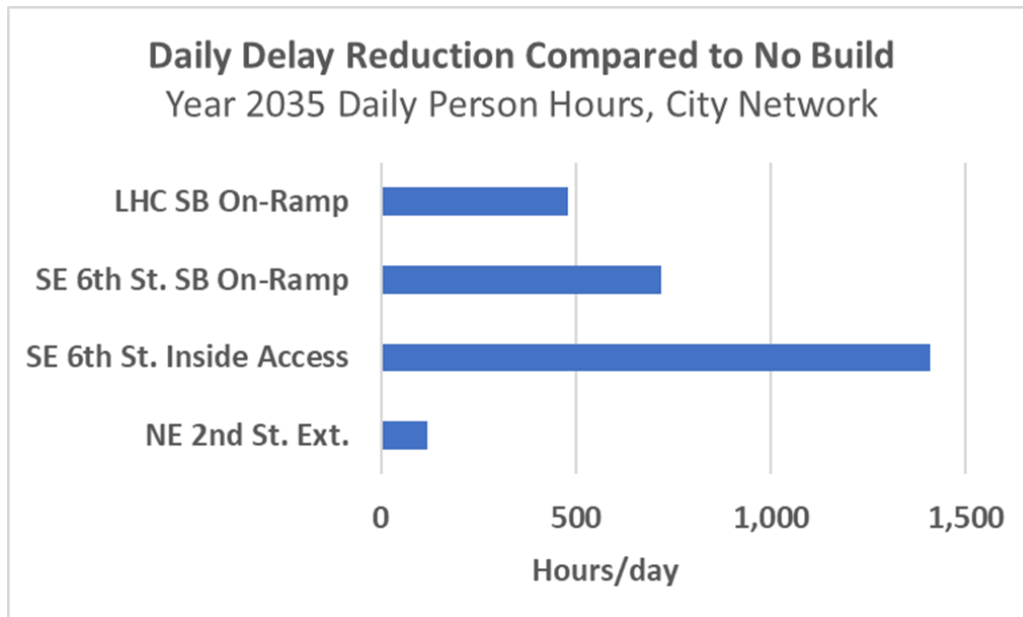


2035 NE 2nd St Extension  
 Intersection Turning Movement Forecast  
 PM Peak Hour

## 2035 Alternatives Traffic Analysis

One of the key performance measures for evaluating the alternatives was travel time savings. The project team calculated the daily person hour travel for all roads in Bellevue for each alternative using the BKRCast model and compared these results with the 2035 baseline condition. The SE 6th Street Extension with Inside Access Alternative would save about 1400 hours compared to the baseline, while the NE 2nd Street Extension Alternative would save about 120 hours. The Citywide travel time savings for each alternative are shown in the following chart.

Figure 28 Citywide Travel Time Savings



In addition to the Citywide performance, operations at key intersections within the study area were analyzed. The 2035 forecast volumes and the design concept for each alternative were used to calculate the delay per vehicle. Prior to analyzing intersection delay, signal timings were optimized to adapt to modeled future volumes. The detailed delay results for the 2035 PM peak hour intersection analyses are in the following table. The total forecasted PM peak hour volumes are also shown in the table for the 2035 baseline and the alternatives.



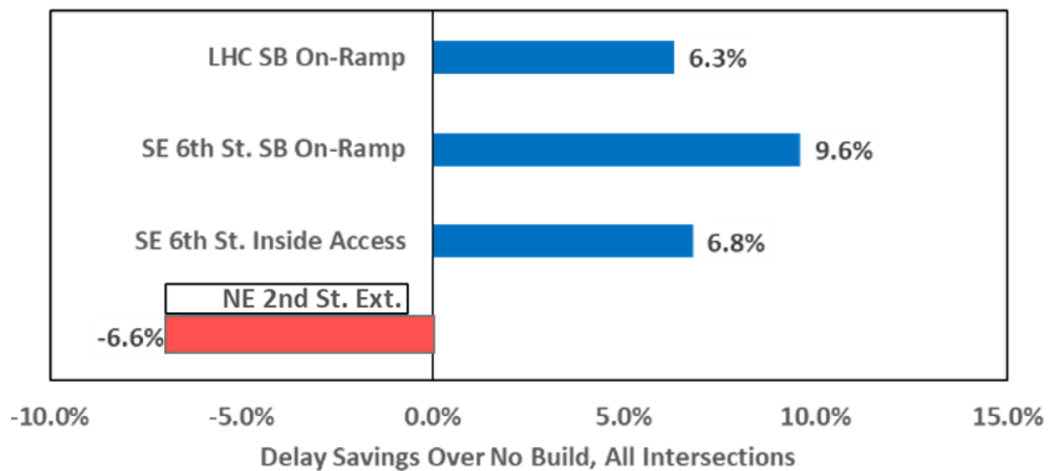
Table 17 Comparison of 2035 PM Peak Hour Volumes and Delay for Study Intersections

Int ID	Cross Streets		2035 Baseline		Lake Hills Connector SB Ramp		SE 6th St Extension SB Ramp		SE 6th St Extension Inside Access		NE 2nd St Extension	
	NS Address	EW Address	Intersection Volume	Delay (sec/veh)	Intersection Volume	Delay (sec/veh)	Intersection Volume	Delay (sec/veh)	Intersection Volume	Delay (sec/veh)	Intersection Volume	Delay (sec/veh)
26	112th Ave NE	NE 8th St	6,997	133.5	6,950	125.6	6,874	121.7	6,731	122.6	6,918	132.8
30	116th Ave NE	NE 8th St	7,321	67.6	7,343	77.6	7,149	59.5	7,287	59.8	7,169	58.6
107	112th Ave NE	NE 6th St	4,135	53.9	4,155	55.4	4,108	53.2	4,021	51.1	4,138	56.0
191	I-405 HOV Ramps	NE 6th St	3,051	67.7	2,986	64.4	2,970	63.2	2,820	57.6	3,053	67.2
72	112th Ave NE	NE 4th St	5,306	33.6	5,588	36.3	5,279	34.1	5,251	34.1	5,108	40.9
224	I-405 SB Ramps	NE 4th St	3,633	15.6	3,845	10.1	3,648	19.0	3,630	18.4	3,219	15.0
225	I-405 NB Ramps	NE 4th St	3,345	28.0	3,260	27.0	3,397	30.5	3,323	22.4	2,977	21.4
139	116th Ave NE	NE 4th St	4,739	86.0	4,844	78.0	4,755	71.6	4,861	77.1	4,544	69.4
128	112th Ave NE	NE 2nd St	3,204	28.3	3,107	30.8	3,325	56.3	3,239	51.8	3,746	45.2
36	112th Ave	Main St	4,066	64.9	4,153	79.9	3,946	50.7	4,124	78.0	4,008	67.0
73	116th Ave	Main St	3,795	54.5	4,142	40.3	3,582	47.2	3,767	27.8	3,550	38.9
131	116th Ave SE	SE 1st St	3,636	67.4	4,029	38.8	3,855	40.7	4,112	37.7	3,723	64.1
315	I-405 Off-ramp	Lake Hills Connector	3,880	25.6	4,321	19.5	3,655	21.2	3,556	28.3	3,902	25.5
71	Lake Hills Connector	SE 8th St	4,670	99.3	4,400	78.5	4,543	96.4	4,527	90.2	4,761	96.0
298	112th Ave SE	SE 6th St	2,854	9.4	2,794	8.9	2,890	12.6	3,138	11.4	3,169	48.8
89	112th Ave SE	SE 8th St	2,979	22.2	2,933	20.6	2,760	20.5	2,808	23.7	3,027	22.2
102	118th Ave SE	SE 8th St	3,171	87.3	3,088	84.9	2,903	76.9	2,943	68.4	3,173	82.2
226	I-405 SB Ramps	SE 8th St	2,481	46.3	2,483	30.3	2,377	25.0	2,515	21.9	2,519	41.5
219	I-405 NB Off- and On-ramps	SE 8th St	2,626	18.5	2,593	14.8	2,537	18.8	2,597	19.5	2,671	20.6
160	116th Ave	NE 2nd St			-	-	-	-	-	-	3,735	98.4
161	116th Ave	SE 6th St			-	-	-	-	4,749	23.2	-	-
167	I-405 Direct Access Ramps	SE 6th St			-	-	-	-	2,157	42.7	-	-
166	116th Ave	SE 6th St			-	-	4,289	7.4	-	-	-	-
168	I-405 SB GP On-ramp	SE 6th St			-	-	1,353	16.2	-	-	-	-

The study team used Synchro software to evaluate overall vehicle delays for all study intersections, aggregated them for each alternative, and compared them to the 2035 baseline. The following chart shows the overall vehicle delay reductions compared to the 2035 baseline for each alternative.

As shown, the Lake Hills Connector Southbound On-ramp, SE 6th Street Extension and Southbound On-ramp, and SE 6th Street Extension Inside Access alternatives would reduce total delay compared to the baseline. But the NE 2<sup>nd</sup> Street Extension would cause higher overall vehicle delay for all study intersections combined as compared to the baseline. This is because the loss of direct connection between 112th Avenue NE and 114th Avenue NE via NE at NE 2nd Street would force some trips accessing the properties abutting 114th Avenue NE to use SE 6th Street resulting in longer trips. The SE 6<sup>th</sup> Street SB On-Ramp would reduce vehicle delay by 9.6%, the highest reduction compared to the baseline.

Figure 29 Overall PM Peak Hour Vehicle Delay Reduction Compared to 2035 No Action



## Alternative Analysis Summary

The table below summarizes the assessment of the five alternatives under all criteria sub-categories.

Table 18 Alternative Evaluation Summary

Evaluation Criteria		Plans and Policies				Access & Safety				Property/Economic Impact			Cost (Construction and Mitigations)					Travel Time/Delay				
Criteria Sub-Categories	405 Master Plan	Transportation	Land Use/Urban Design	Environmental Stewardship	ST 3	Access		Safety		Property Impact	Property Access Restrictions	Economic Development	Property Impacts	Wetland/Stream Mitigation	Utilities Relocation	Fish Barriers Removal	Construction	Travel Time Savings	City Roads	I-405		
Definition/Measurements	Qualitative	Qualitative	Qualitative	Stream, Wetland, Storm Water, Air Quality	Qualitative	Downtown-Wilburton Access	Transit	Motorized Safety Performance	Non-Motorized Safety Performance	Total & Partial Property Take	Vehicle, Bike and Pedestrian	Development Potential, Support Economic Development	# Parcels and Acres	Feet of Stream, Acres of Wetland	Feet of Pipe/Line	Qualitative	\$ Cost	Daily Vehicle Hours of Saving	Volume & Delay	Access Capacity Added		
Tools/Method	Plan Review	Plan Review	Policy Review	GIS, Field Observation	Plan Review	Map/Visual	Map/Visual	Historical Data	Map/Visual	Map/Visual	Map/Visual	Map/Visual	GIS, Tax Assessor Data	GIS, Empirical	GIS, Empirical	GIS, Empirical	Planning Estimate	BKRCast	Synchro/SimTraffic	BKRCast		
Assessment	<b>Lake Hills Connector SB On-Ramp</b>	In alignment	This alternative includes new SB on-ramp but does include additional local connection	No negative impacts were identified	No wetland or stream impact was identified.	Compatible	Does not add new east-west connectivity.	No new connections, does not provide additional roads to access to transit.	Reduced rear-end crashes likely due to reduction in intersection and network delay; added access allows more vehicles to use freeway that is safer than local roads; slightly offset by new intersection added.	No new facilities added	Potential for temporary construction impact to Nirvana Wines property adjacent to SB I-405	No impacts to existing nonmotorized access	No property acquisition required, therefore no development potential lost. The added I-405 access capacity would support economic development in Wilburton.	1 parcel, 0.01 acre	Potential construction impact to wetland buffers along the west side of SB I-405.	No major utility impacts identified.	Likely address Hixson Creek and Trail Creek.	\$150M	Model shows 500 daily person hours of savings.	Compared to the baseline, 6% intersection delay reduction expected within the study area.	Adds 16% freeway access capacity to the south within the study area. Travel time reduction is consistent with the capacity added.	
	<b>SE 6th St Extension - SB On-Ramp</b>	In alignment	The existing Comp Plan transportation element includes a new interchange in the south Downtown area with the NE 2nd Street as a placeholder. If extending NE 2nd St with access to I-405 is deemed more impactful and costlier to implement, this could be a viable alternative. Without an additional NB off ramp is a minus.	East Main transit-oriented development work did not anticipate ramps at SE 6th Street. The area surrounding SE 6th Street is envisioned in the Southwest Bellevue Subarea Plan (2019) as a vibrant, livable transit-oriented station area of safe, walkable and bikeable blocks served by light rail. The ramp has the potential to change the intended character, appearance, and physical characteristics of the site. Buildings sited along SE 6th and within the TOD are intended to serve the new mixed-use neighborhood.	There will likely be temporary impacts and disturbance to the wetland and/or stream buffer from construction. There will also be permanent impacts from shade/shadow, lighting, noise, water quality, and pollutants/emissions created by the freeway ramp and vehicle traffic.	Compatible	Additional motorized and non-motorized connection added in the south Downtown and Wilburton areas. Additionally, it would provide an auto connection from 112th to 114th on SE 6th.	Non-motorized facilities included in this alternative would improve access to the East Main LRT Station for residents living in the South Wilburton and Woodridge neighborhoods. The increase in vehicular traffic on 112th will impact the ease of passenger travel from the LRT Station to the TOD.	Reduced rear-end crashes likely due to reduction in intersection and network delay; added access allows more vehicles to use freeway that is safer than local roads; slightly offset by new intersection added.	Including a nonmotorized MPP on the north side of the roadway is a plus, however, the quality of the pedestrian and bicycle access between 112th and 114th is less than ideal due to steep grade.	Planter strip and potential parking lot impacts along 112th Ave SE, SE 6th Street, 114th Ave SE, and 118th Ave SE.	Minor impacts to nonmotorized facilities along 112th Ave SE and SE 6th. Crossing over I-405 restricts pedestrians to north side of bridge.	The modest amount of ROW (14,500 SF) needed could reduce the development potential. However, opportunity exists for property owner to dedicate property in exchange for retaining the same FAR/capacity. The added access would support the planned developments in the study area.	8 parcels, 0.82 acre	Potential construction impacts to wetland buffers and stream buffers north and south of SE 6th Street.	600 feet of County utilities below SE 6th Street likely impacted, primarily due to access as the roadway would become elevated.	Likely addresses Kelsey Creek and Hixson Creek.	\$175M	Model shows 700 daily person hours of travel time savings, the 2nd highest	Compared to the baseline, 6% intersection delay reduction expected within the study area.	Adds 19% freeway access capacity to the south within the study area. Travel time reduction is consistent with the capacity added.	
	<b>SE 6th St Extension - Inside Connection</b>	Yes	The existing Comp Plan transportation element includes a new interchange in the south Downtown area with the NE 2nd Street as a placeholder. If extending NE 2nd St with access to I-405 is deemed more impactful and costlier to implement, this could be a viable alternative.	East Main transit-oriented development work did not anticipate ramps at SE 6th Street. The area surrounding SE 6th Street is envisioned in the Southwest Bellevue Subarea Plan (2019) as a vibrant, livable transit-oriented station area of safe, walkable and bikeable blocks served by light rail. The ramp has the potential to change the intended character, appearance, and physical characteristics of the site. Buildings sited along SE 6th and within the TOD are intended to serve the new mixed-use neighborhood.	There will likely be temporary impacts and disturbance to the wetland and/or stream buffer from construction. There will also be permanent impacts from shade/shadow, lighting, noise, water quality, and pollutants/emissions created by the freeway ramp and vehicle traffic.	Compatible	Additional motorized and non-motorized connection added in the south Downtown and Wilburton areas. Additionally, it would provide an auto connection from 112th to 114th on SE 6th.	Non-motorized facilities included in this alternative would improve access to the East Main LRT Station for residents living in the South Wilburton and Woodridge neighborhoods. The increase in vehicular traffic on 112th will impact the ease of passenger travel from the LRT Station to the TOD.	Reduced rear-end crashes likely due to reduction in intersection and network delay; added access allows more vehicles to use freeway that is safer than local roads; slightly offset by new intersection added.	Including a nonmotorized MPP on the north side of the roadway is a plus, however, the quality of the pedestrian and bicycle access between 112th and 114th is less than ideal due to steep grade.	Planter strip and potential parking lot impacts along 112th Ave SE, SE 6th Street, and 114th Ave SE. Impact to Wilburton Park and Ride (WSDOT owned).	Minor impacts to nonmotorized facilities along 112th Ave SE and SE 6th. Crossing over I-405 restricts pedestrians to north side of bridge.	The modest amount of ROW (14,500 SF) needed could reduce the development potential. However, opportunity exists for property owner to dedicate property in exchange for retaining the same FAR/capacity. The added access would support the planned developments in the study area.	6 parcels, 0.64 acre	Potential construction impacts to wetland buffers and stream buffers north and south SE 6th Street. Potential for wetland buffer impact in median of I-405	Some impacts to County utilities below SE 6th Street, primarily due to access as the roadway would become elevated.	600	Likely addresses Sturtevant Creek, Kelsey Creek, and Hixson Creek	\$325M	Model shows 1400 person hours of daily travel time savings, the highest of any alternative.	Compared to the baseline, nearly 10% intersection delay reduction expected within the study area.	Adds 30% freeway access capacity to and from the south within the study area. Travel time reduction is consistent with the capacity added.
	<b>NE 2nd St. Extension</b>	In alignment	The existing Comp Plan transportation element includes the extension of NE 2nd Street between 112th Ave NE and 116th Ave NE with access to I-405 to and from south. This alternative includes the extension but without new access.	New Downtown Office Limited Business (OLB) Zoning was updated in 2017 to allow TOD, including residential uses and additional height and density, in this area. Development interest in the Downtown OLB has been accelerated by these code changes and the 2023 opening of light rail. NE 2nd currently is curved and straightening out of the roadway would affect how development can occur on adjacent parcels - particularly on the parcel to the north.	There are permanent wetland and stream impacts requiring mitigation.	Compatible	Additional motorized and non-motorized connection added in the central Downtown and Wilburton areas.	Provides a new road for accessing the transit center. No additional barriers introduced.	Higher number of rear-ended crashes likely due to increase in intersection delay and intersections added.	Additional facilities added on both sides on NE 2nd.	Significant impacts both north and south of NE 2nd Street on the west side of I-405. Large take from Extended Stay property east of I-405.	Elevated segment of NE 2nd Street bridge restricts nonmotorized access to adjacent properties.	Full or partial take of the 200 NE 112th Ave property could reduce development potential. However, opportunity exists for property owner to dedicate property in exchange for retaining the same FAR/capacity. Does not provide additional freeway access capacity needed to support economic development vision.	4 parcels, 1.57 acre	Crosses over Sturtevant Creek and wetland in the Extended Stay property, east of I-405	1400 feet of utility lines likely impacted below NE 2nd Street including County, City, and private facilities.	Does not address any fish barriers within project limits.	\$125M	The benefit from direct connection between Downtown and Wilburton would be partially offset by the elimination of direct connection between 112th Ave and 114th Ave via NE at NE 2nd St would force some trips accessing the properties abutting 114th Ave to use SE 6th St., resulting longer trips.	The loss of direct connection between 112th Ave and 114th Ave via NE at NE 2nd St would force some trips accessing the properties abutting 114th Ave to use SE 6th St., resulting longer trips.	No freeway access capacity added.	
	<b>No Build</b>	Although no build is an option, it doesn't align with I-405 Master Plan.	No new local connection, no new access to I-405	No immediate impact to developable land and urban design but has long term impact on overall development potential within the study area due to lack of additional infrastructure.	No improvements, no negative impacts were identified.	Compatible	No additional connections between the neighborhoods are added	No new connections, does not provide additional transit access	Increased congestion due to no-action would likely result in more rear-end crashes.	No additional facilities added	No build, no new ROW needed	No new restrictions	No negative impacts to development potential (FAR gain or loss) identified. No new access capacity added would hinder economic growth	N/A	0 LF/ 0 acre	0	No	\$0	Higher congestion likely due to growth and no additional access	High intersection delay/basis of comparison	No capacity added	

## Community Input

The project study team, with the support of consultant PRR Inc, carried out a robust community engagement process using several online venues compliant with COVID-19 requirements. The process included four stakeholder forums, two public open houses, and a series of meetings with individual stakeholders and interest groups.

### Stakeholder feedback

At the fourth stakeholder forum, the study team shared Tier 2 analysis results and conducted post forum opinion polls. Below is a list of major themes from the input received from stakeholders.

- Broad support for all three alternatives with added access, including Lake Hills Connector Southbound On-Ramp, and the two SE 6<sup>th</sup> Street Extension alternatives
- Property owners adjacent to SE 6<sup>th</sup> Street voiced strong concerns about the two extension alternatives' impact to their properties and access
- Few supported the NE 2<sup>nd</sup> Street Extension
- No Build alternative is unacceptable

### Interest Group Feedback

The study team provided briefings to key interest groups including Bellevue Chamber of Commerce, Bellevue Downtown Association (BDA), and Eastside Transportation Association (ETA). Following the final briefings with Tier 2 study information, each of the three boards developed and presented recommendations to the City Council for their consideration.

- Lake Hills Connector SB On-Ramp is among the recommendations of all three boards.
- BDA also recommends SE 6th Street SB On-Ramp contingent on adoption of the East Main Land Use Code by fall this year.
- ETA additionally recommends implementing the SB auxiliary lane immediately and keeping the NE 2nd Street extension option open for future consideration.

### Public Input

The study team hosted two public online open houses. The first open house was launched in early August 2020 and lasted three weeks. It introduced the South Downtown I-405 Access Study to the public and asked for feedback on seven transportation improvement options that passed an initial fatal flaw screening. The second online open house launched in mid-February 2021 and lasted for two weeks. It shared detailed analysis findings of five options.

The study team received over 350 comments from both virtual open houses (combined). Below are the key findings:

- Support and concern expressed for each option studied by the City
- Support for improving I-405 access and reducing freeway merging and weaving
- Support for multimodal connections for pedestrians, bicyclists, and transit riders
- Concerns:
  - Would not solve congestion on I-405.
  - Would encourage vehicle travel, impact local streets, and contribute to climate change.

- High cost and would divert resources from funding other high transportation priorities.
- Some downtown residents suggested reconsidering the Main Street option. (Note: This option did not pass the fatal flaw screening).

For more information regarding community engagement process and inputs received, please see [City of Bellevue/South Downtown I-405 Access Study Community Engagement Report](#).

# Recommended Alternative

The project team presented the study findings and community input to the City Council at their April 5, 2021 meeting. The Council unanimously voted to affirm the study team's recommendation to select the **Lake Hills Connector southbound on-ramp** as the option that best meets the City's needs for the following reasons:

- It meets the primary objective of providing additional access to I-405.
- Compared to other alternatives, it is better aligned with urban design policies and allows the East Main TOD land use code amendment work to move forward without additional delay.
- It would provide significant travel time reduction benefits and reduce delays at intersections within the study area with the least property and environmental impacts compared to other alternatives.
- It is compatible with the representative alignment for the Kirkland to Issaquah via Bellevue light rail project.
- It is more reasonable to fund than the most expensive option.
- Stakeholders and key interest groups are supportive.

The other alternatives were not recommended for the following reasons:

## Both SE 6th Street alternatives

- Requires amendment to East Main TOD plan and thus would delay the land use code amendment (LUCA delay)

## NE 2<sup>nd</sup> Street extension

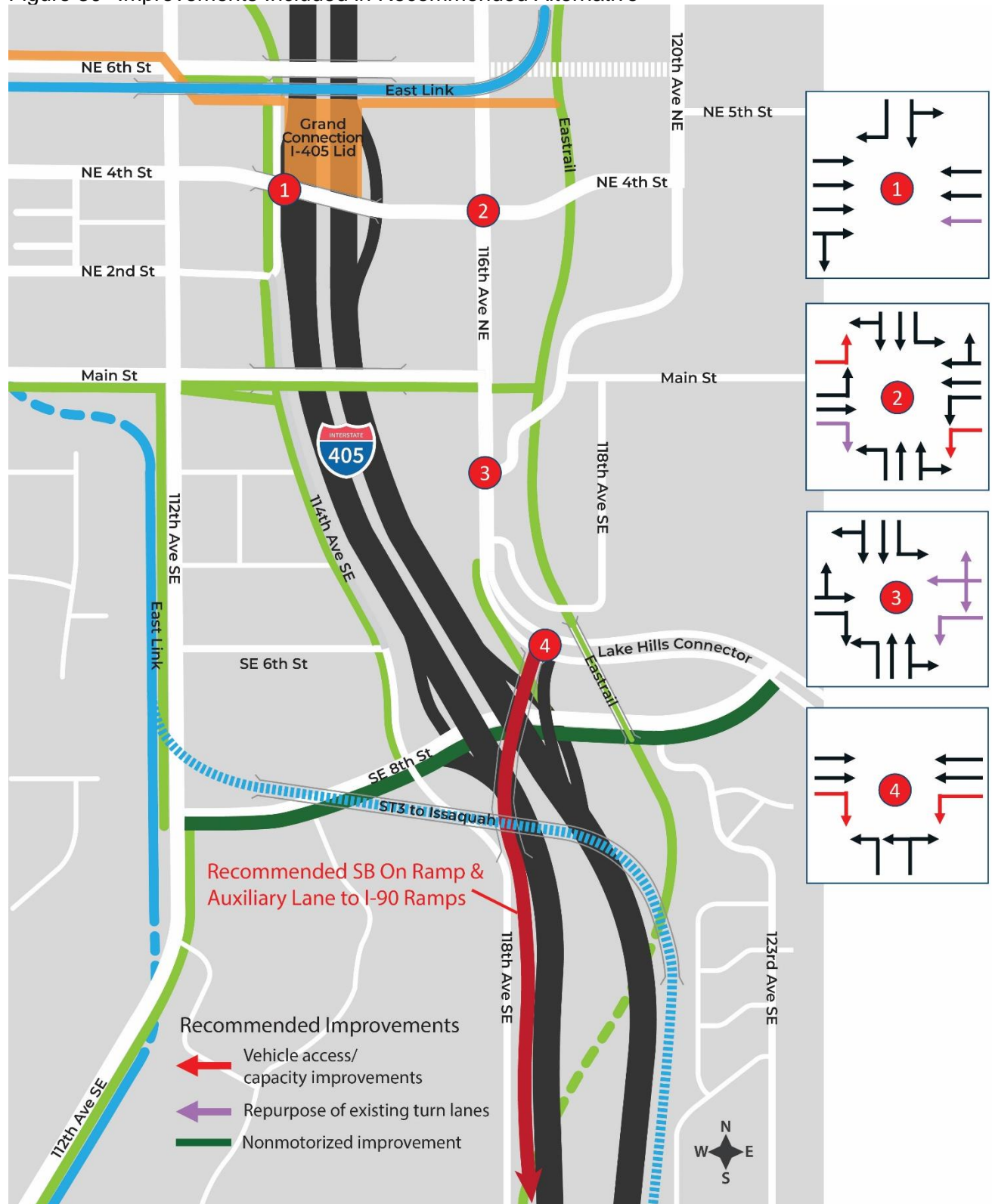
- Provides little overall transportation benefit
- Significant impacts to adjacent properties, wetlands
- Received minimal stakeholder and public support

## No Build

- Does not support City's planned growth
- Received strong stakeholder opposition

Upon identifying the Lake Hills Connector SB On-Ramp as the recommended alternative, the Council further directed the Transportation Department to accelerate the implementation of non-motorized improvements project along SE 8<sup>th</sup> Street eastward from SE 112<sup>th</sup> Avenue to make this a truly multi-modal solution. See the map on the next page for elements included in the recommended alternative.

Figure 30 Improvements Included in Recommended Alternative



## **Next Steps**

The I-405 Access Study confirmed the need for additional access to South Downtown from I-405 as identified in the I-405 Master Plan. The study identified the Lake Hills Connector Southbound On-Ramp as the alternative that best meets City needs as measured by the project purpose and need and the results of the evaluation of alternatives completed by the staff study team. Because I-405 is an Interstate facility, FHWA has the ultimate authority to approve the recommended access addition. The alternative identified in this study allows the project to begin the environmental review and access revision request processes when funding is secured. This study provides critical information to inform those future processes.