3.9 TRANSPORTATION

3.9.1 INTRODUCTION

This section presents a multimodal transportation analysis to evaluate the potential impacts from enacting proposed zoning and transportation network changes in the Wilburton Commercial Area (Study Area). The section documents existing transportation conditions in the Study Area, as well as future transportation conditions under three alternatives—the No Action Alternative that represents the condition if zoning remains the same, and Alternatives 1 and 2 that analyze potential changes of proposed new zoning provisions that could be implemented. The analysis identifies significant impacts using thresholds developed for each mode: vehicle, transit, pedestrian, and bicycle. Safety impacts are also considered. This impact analysis informs the evaluation of transportation performance measures based upon the City Council Guiding Principles:

- Connectivity index
- Access to services
- Multimodal level of service
- Increase in walk and bike trips

Potential capital and programmatic mitigation measures are identified for Alternatives 1 and 2.

3.9.2 AFFECTED ENVIRONMENT

This section describes the existing conditions of the area that would be affected by the proposed action alternatives.

REGULATORY ENVIRONMENT

The Growth Management Act (GMA), passed by the Washington State Legislature in 1990, requires jurisdictions to include a Transportation Element in their Comprehensive Plans. The Transportation Element must define a level of service (LOS) standard to be used for long-term planning purposes to evaluate locally owned arterials and transit routes. The GMA also requires transportation concurrency, a regulatory process to ensure that development be permitted only if transportation improvements are implemented concurrent with development such that LOS does not fall below the adopted standard.

The Bellevue Traffic Standards Code (Chapter 14.10 BCC) governs how vehicle operations are evaluated for concurrency purposes. The Traffic Standards Code calls for intersection level of service (LOS) to be analyzed by Mobility Management Areas (MMAs). MMAs have LOS standards that are specifically tailored to the unique conditions of the area. Vehicle LOS is measured using the average PM peak two-hour Volume-to-Capacity (V/C) ratio at designated "system" intersections within each MMA. While this measurement is well suited for engineering and development review purposes, it is not easily understood by the general public. For long-range planning purposes, and to make it more understandable for the general public, intersection LOS is estimated and expressed as the average delay that drivers of vehicles experience at an intersection.

The Bellevue Comprehensive Plan includes policy TR-30 which states the City should establish multimodal level of service standards. In April 2017, the Bellevue Transportation Commission recommended multimodal metrics, standards, and guidelines. Multimodal level of service is used to evaluate the performance of vehicle, pedestrian, bicycle, and transit modes. The details of these metrics are discussed in the Analysis Methodology section.

STUDY AREA

Characteristics of the Study Area that influence mobility include large block sizes, which results in pedestrians walking long distances to reach crosswalks, and a built environment that favors driving between destinations within the Wilburton Commercial Area (see Exhibit 3.9–1). The Study Area is bisected by the Eastside Rail Corridor (ERC), the location for a planned regional multi-use path that will be a key community asset when completed. Currently, auto dealerships, large format retail, hospitals, small offices, and smaller retail stores are the dominant land uses, which, in conjunction with an abundance of surface parking lots, contributes to an auto-centric environment. NE 8th Street and 116th Avenue NE are major arterials that carry high traffic volumes through the Study Area. The intersection of NE 8th Street and 116th Avenue NE is one of the largest in the city, with nine lanes of traffic on the west leg. The Study Area is also affected by regional traffic patterns. For residents of east Bellevue, NE 8th Street, NE 12th Street, and Bel-Red Road represent major routes to reach Downtown and I-405 because of the lack of street connectivity through the Glendale Country Club and Kelsey Creek Park areas. Emergency response vehicles frequently access the Medical Institution District in the north end of the Study Area, which can disrupt the signal sequencing.

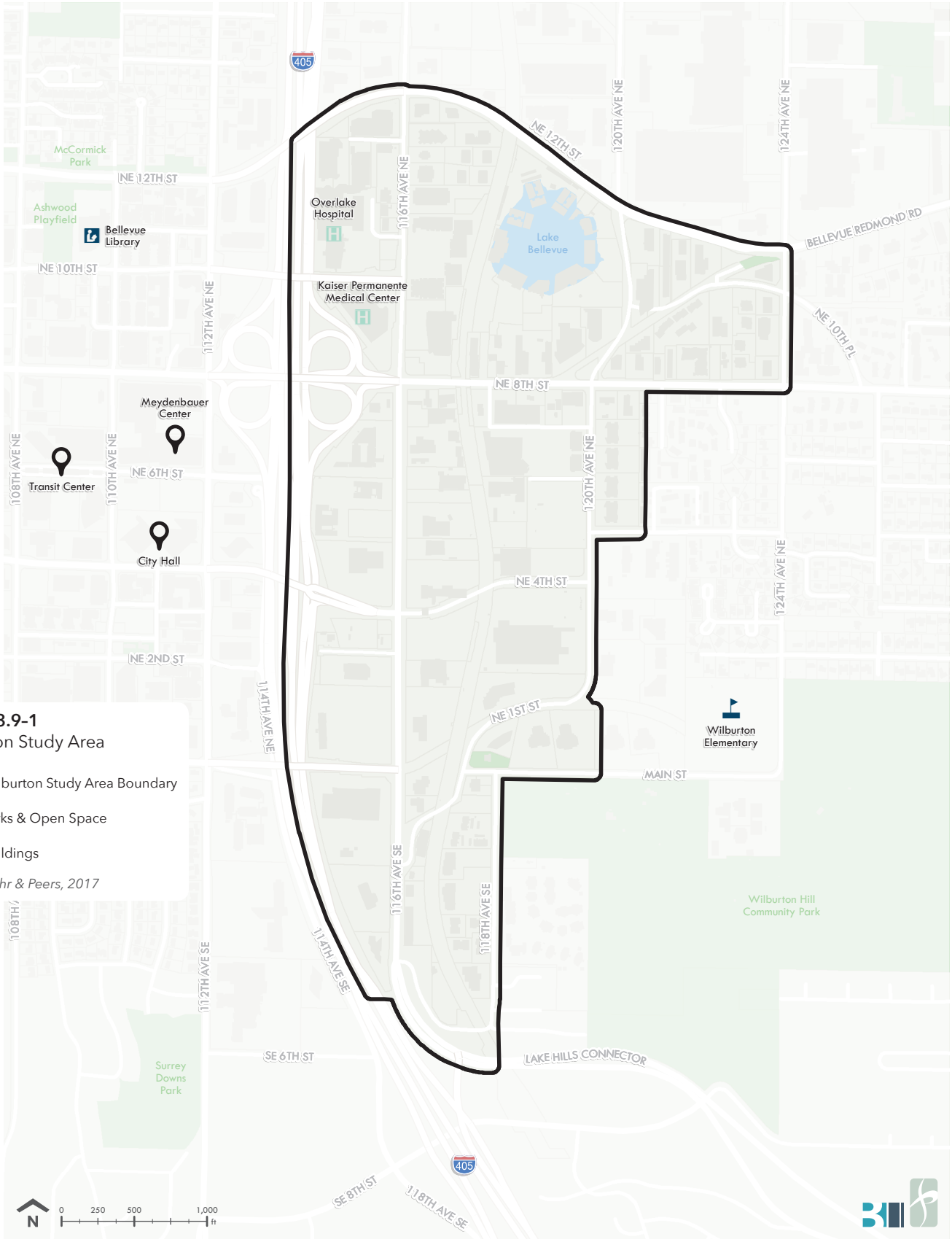


Exhibit 3.9-1
Wilburton Study Area

- Wilburton Study Area Boundary
- Parks & Open Space
- Buildings

Source: Fehr & Peers, 2017

EXISTING TRANSPORTATION NETWORK

This section describes the existing transportation network in the Wilburton Commercial Area for all modes, including pedestrians, bicycles, transit, autos, and freight.

Pedestrian Network

Pedestrians can access the Wilburton Commercial Area from all directions, although there are a limited number of connections. From the west, pedestrians can cross I-405 at NE 12th Street, NE 10th Street, NE 8th Street, NE 4th Street, and Main Street/SE 1st Street. The crossing at NE 8th Street is particularly difficult for pedestrians due to the cloverleaf ramps to and from I-405 that must be crossed without the aid of any traffic signals. From the east, pedestrians can access the Study Area via Bel-Red Road/NE 12th Street, NE 8th Street, NE 5th Street, and Main Street. From the north, the Study Area is primarily accessed via 116th Avenue NE, 120th Avenue NE, and 124th Avenue NE. Pedestrian access from the south is more limited. Pedestrians can access the Study Area via the Lake Hills Connector, which turns into 116th Avenue NE, and local roads east of 118th Avenue SE and south of Main Street.

As shown in Exhibit 3.9–2, there are existing sidewalks on nearly all streets in the Study Area, but large blocks, large parcels, auto-oriented land uses, and steep grades have resulted in a challenging pedestrian environment. Some parts of the Study Area provide a landscaping buffer, street trees, and newer sidewalks, while other areas lack vegetation and buffer, which creates a less attractive pedestrian environment due to high motor vehicle speeds and adjacent parking lots.

Pedestrian Crossings

While there are marked crossings at the major signalized intersections in the Study Area, large blocks, a lack of mid-block crossings, and large intersections make it difficult in many areas to cross the street as a pedestrian. The distance between marked crossings ranges from 300 to 1,700 feet. Pedestrians crossing between marked crosswalks are frequently observed in locations along pedestrian route lines. Notable areas where pedestrians crossing were observed in field visits include NE 8th Street between 116th Avenue and 120th Avenue NE, NE 4th Street between 116th Avenue and 120th Avenue NE, 116th Avenue NE between NE 8th

Street and NE 4th Street, and 116th Avenue NE between NE 12th Street and the Overlake Hospital/Design Market signal.

Multi-Use Paths

The Eastside Rail Corridor (ERC), which bisects the Study Area in the north-south direction, extends between Renton and Snohomish, passing through Bellevue, Kirkland, Woodinville, and sections of unincorporated King County. King County has developed a Master Plan for a regional 16.7-mile multi-use path, which, when complete, will connect Wilburton to Renton, Bellevue, Redmond, Kirkland, and Woodinville. The trail will enhance pedestrian and cyclist connectivity on the Eastside.

Within the Study Area, ownership of the ERC is divided between Sound Transit (north of NE 4th Street) and King County (south of NE 4th Street). WSDOT will be building a bicycle/pedestrian bridge across the southbound lanes of I-405 to reconnect a missing section of the ERC that was removed when the freeway was widened in 2008. This section, known as the "Wilburton Gap," is a key component in the overall connectivity of the ERC.

Pedestrian Volumes

Pedestrian activity is high in Downtown Bellevue on the west side of I-405; however, very little of that activity continues across the freeway into Wilburton. Increasing pedestrian activity is noted, despite the environment of freeway interchanges, as destinations in Wilburton such as Whole Foods, REI, and Trader Joe's attract Downtown residents and employees. The north end of the Study Area has substantial pedestrian activity due to the presence of Overlake Hospital, Kaiser Permanente Medical Center, and other medical facilities. A multipurpose path on the north side of the NE 12th Street bridge provides a comfortable freeway crossing. Pedestrian activity is lower in the rest of the Study Area where the land use is more auto-oriented and dispersed.

Exhibit 3.9-2
Pedestrian Facilities–Existing

- Wilburton Study Area Boundary
- Parks & Open Space
- Buildings
- Signalized Pedestrian Crossing
- Sidewalk

Source: Fehr & Peers, 2017

Bicycle Network

Bicycle infrastructure is limited within the Study Area. The bicycle network includes two bike lanes, short sections of a multi-use path, and other bicycle facilities, such as sharrows, bicycle shoulders, shared shoulders, and wide outside lanes. As shown in Exhibit 3.9–3, bicycle lanes are provided on 120th Avenue NE between NE 5th Street and Spring Boulevard, as well as on NE 4th Street between 116th Avenue NE and 120th Avenue NE. A multi-use path on the north side of NE 12th Street connects 112th Avenue NE and 116th Avenue NE at the perimeter of the Study Area. Bicycle lanes on both sides of 116th Avenue NE north of NE 12th Street provide a connection between the Study Area and the SR 520 Trail.

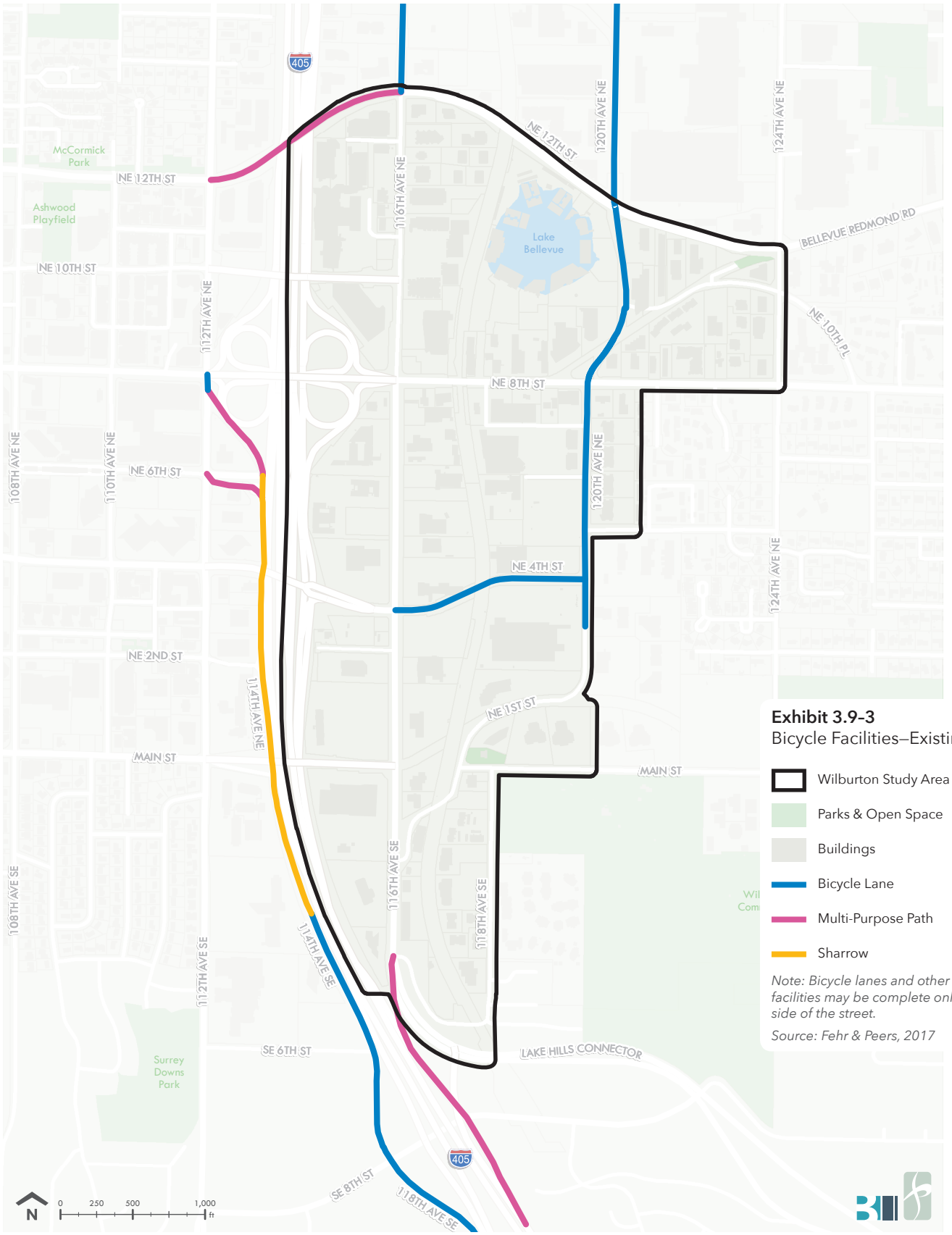
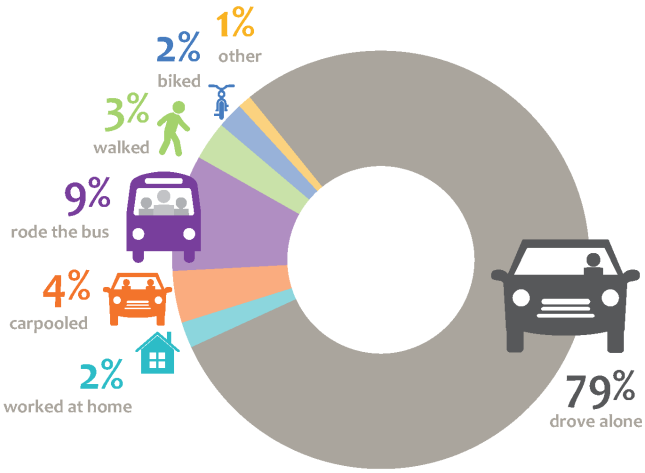


Exhibit 3.9-3
Bicycle Facilities—Existing

- Wilburton Study Area Boundary
- Parks & Open Space
- Buildings
- Bicycle Lane
- Multi-Purpose Path
- Sharrow

Note: Bicycle lanes and other bicycle facilities may be complete only on one side of the street.

Source: Fehr & Peers, 2017



Transit Services

The Study Area spans two census tracts. American Community Survey (ACS) data was extracted for the tract covering the majority of the Study Area and areas to the east. According to the ACS data, nine percent of workers over the age of 16 take public transit to work. (U.S. Census Bureau, 2017) In contrast, 79 percent drive alone and about five percent walk or bike. As shown in Exhibit 3.9–5, the only transit routes in this section run along NE 8th Street and 116th Avenue NE. However, the routes that do serve Wilburton are on the Frequent Transit Network and connect to major population and employment centers, so there is a potential for increased ridership as the area redevelops. RapidRide B and Metro Route 271 have amongst the highest ridership of all bus routes in East King County.

Exhibit 3.9–4 and Exhibit 3.9–5 outline existing King County Metro routes through the Study Area, which operate throughout the day. Transit stops are defined using terminology from the City's MMLOS Metrics, Standards & Guidelines report: a local stop is defined as serving a single route with headways greater than 30 minutes, a primary transit stop is defined as serving multiple routes or with headways of 30 minutes or less, and a Frequent Transit Network (FTN)/RapidRide stop is defined as serving primarily RapidRide routes along with other local and regional frequent transit network routes.

Exhibit 3.9–4 Transit Routes in Wilburton

ROUTE	ROUTE DESCRIPTION	AM PEAK HEADWAY[1] 6–9 AM	PM PEAK HEADWAY 3–6 PM	OFF-PEAK HEADWAY
RapidRide B	Downtown Bellevue, Crossroads, Overlake, Downtown Redmond	10	10	15–30
226	Downtown Bellevue, Wilburton hospitals, Crossroads, Lake Hills, Bellevue College, Eastgate P&R	30	30	60
234	Downtown Bellevue, Kirkland, Juanita, Kenmore P&R	30	30	30
235	Downtown Bellevue, Kirkland, Totem Lake, Kingsgate P&R	15	15	30
271	University District, Downtown Bellevue, Bellevue College, Eastgate P&R, Issaquah	8–10	8–10	15–30

1 Headway is the number of minutes between bus arrivals.

Source: King County Metro, 2017

Exhibit 3.9-5
Transit Routes and Stops–Existing

- Wilburton Study Area Boundary
- Parks & Open Space
- Buildings
- Bus Route
- RapidRide
- Primary Bus Stop
- Frequent Transit Network Bus Stop

Source: Fehr & Peers, 2017

EXISTING STREET NETWORK

The local street network is made up of two-way streets that serve all travel modes. Arterial streets generally have a speed limit of 30 miles per hour (MPH), though 120th Avenue NE south of NE 8th Street and NE 1st Street have a speed limit of 25 MPH. Signals exist at all intersections of arterials. Approximately half of the signals in the Study Area are coordinated to improve mobility.

Regional Access

Interstate 405 is a north/south freeway that serves regional traffic. I–405 experiences congestion during a substantial portion of the day since it links key regional activity centers. Bellevue arterials in the Study Area that have access to I–405 are NE 10th Street (to and from the north), NE 8th Street, NE 4th Street, and SE 8th Street. There are HOV ramps connecting to both directions of the I-405 express toll lanes at NE 6th Street; however, the half interchange is oriented to the west, so it is not directly accessible from the Study Area.

SR 520 is an east-west freeway located north of the Study Area. The highway connects communities on the east side of Lake Washington to I-5 and Downtown Seattle via a toll bridge. Travelers from SR 520 generally use I-405 or 124th Avenue NE to reach the Study Area. Another east-west highway, Interstate 90 (I-90), is located south of the Study Area. I-90 also connects Seattle to communities east of Lake Washington although the bridge is not tolled. Travelers from I-90 generally use I-405 or Richards Road and Lake Hills Connector to reach the Study Area.

Arterial and Local Access

The Study Area is accessible from the west side of I–405 via principal arterials NE 12th Street, NE 8th Street, and NE 4th Street, and via minor arterials NE 10th Street and Main Street. To the east, vehicles can directly access the Study Area via principal arterials Bel-Red Road/NE 12th Street and NE 8th Street, and via local roads south of NE 8th Street and east of 124th Avenue NE. From the north, the Study Area is primarily accessed via the principal arterial 124th Avenue NE and via minor arterials 116th Avenue NE and 120th Avenue NE. From the south, direct access into the Study Area is available only via the principal arterial Lake Hills Connector, which turns into 116th Avenue NE, and local roads east of 118th Avenue SE and south of Main Street. Access is also available from SE 1st Street from 116th Avenue NE into the eastern portions of the study area onto 120th Avenue NE.

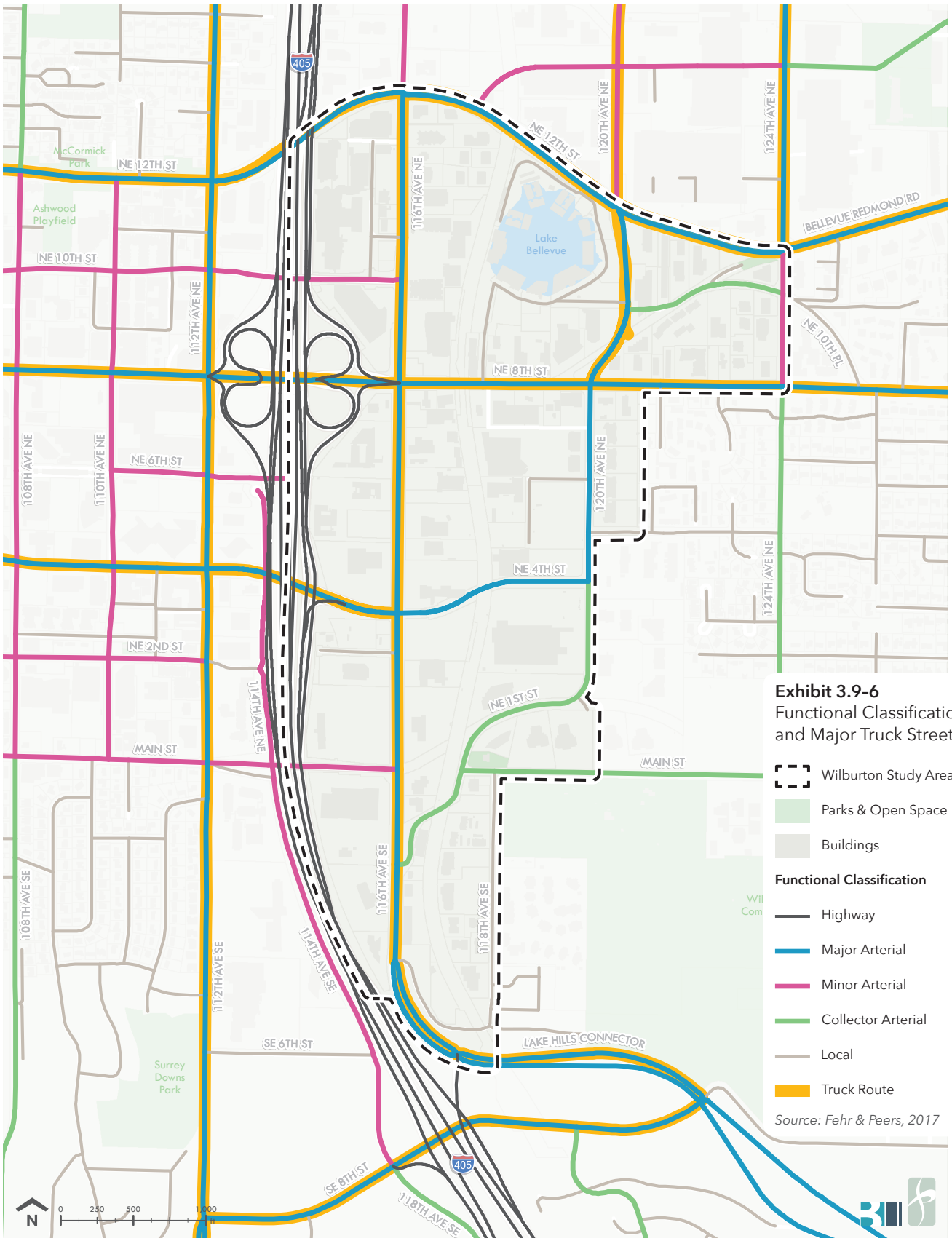


Exhibit 3.9-6
Functional Classification and Major Truck Streets

- Wilburton Study Area Boundary
- Parks & Open Space
- Buildings

Functional Classification

- Highway
- Major Arterial
- Minor Arterial
- Collector Arterial
- Local
- Truck Route

Source: Fehr & Peers, 2017

Functional Classification of Streets

The Wilburton Commercial Area's street functional classification, including roadways designated as major truck streets, is shown in Exhibit 3.9–6. Descriptions of principal arterials, minor arterials, and collector arterials in the Study Area are provided below.

NORTH-SOUTH STREET CORRIDORS

The following corridors run north-south in the Study Area and have been listed from the west side to the east side of the Study Area.

116th Avenue NE is a minor arterial. It is a two-way street with two northbound travel lanes, two southbound travel lanes, and a center turn lane. There is a wide shoulder on the east side used for loading. Signalized intersections include SE 1st Street, Main Street, NE 4th Street, NE 8th Street, NE 10th Street, Overlake Hospital/ Design Market, and NE 12th Street. Local street intersections are side-street stop controlled.

A hospital and several medical facilities are located on the west side of 116th Avenue NE between NE 8th Street and NE 12th Street. The east side of this street segment is a mix of retail and medical uses, and the future Wilburton light rail station will be located at the intersection of NE 8th Street and the Eastside Rail Corridor. South of NE 8th Street, there is a combination of auto dealerships, offices, hotels, and retail uses on both sides of the street.

120th Avenue NE is a minor arterial north of NE 4th Street and a collector arterial south of NE 4th Street. Between NE 12th Street and NE 4th Street, it has two northbound travel lanes, two southbound travel lanes, bike lanes on both sides, and a center turn lane. There is no on-street parking. Signalized intersections include NE 4th Street, NE 6th Street, NE 8th Street, BelRed Road, and NE 12th Street. Most local street intersections are side-street stop controlled.

Land use along this corridor is a mixture of retail, restaurants, offices, auto dealerships, medical facilities, and large format retail stores.

124th Avenue NE is a principal arterial. In the Study Area, it is a two-way street with one travel lane in each direction and turn lanes at each intersection approach. There is no on-street parking. Signalized intersections include NE 8th Street and NE 12th Street. Local street intersections are side-street stop controlled. Land

use along this corridor is comprised of a mixture of retail, offices, medical services, and residences.

EAST-WEST STREET CORRIDORS

The following street corridors run east-west in the Study Area and are listed from the north side to south side of the Study Area.

NE 12th Street/Bel-Red Road is a principal arterial. Within the Study Area, it is a divided two-way street with two travel lanes in each direction and an intermittent center turn lane. There is no on-street parking. Signalized intersections include 116th Avenue NE, 120th Avenue NE, and 124th Avenue NE. There are no local street intersections on NE 12th Street through the Study Area. Land use along this corridor is comprised of a mixture of retail, offices, medical facilities, and residences. Bel-Red Mini Park is located on the southwest corner of NE 12th Street and 124th Avenue NE.

NE 8th Street is a principal arterial, ranging from five to nine lanes wide. NE 8th Street is one of the busiest streets in Bellevue providing access to and from Downtown, I-405, and across the city to Lake Sammamish. There is no on-street parking. Signalized intersections include 116th Avenue NE, 120th Avenue NE, and 124th Avenue NE. Local street intersections are side-street stop controlled. Land use along NE 8th Street is a mixture of retail, restaurants, offices, auto dealerships, medical facilities, and large format retail stores.

NE 4th Street is a principal arterial. NE 4th Street has two travel lanes in each direction, a two-way left turn lane, and a bicycle lane each direction between 116th Avenue NE and 120th Avenue NE. NE 4th Street ends on the east at 120th Avenue NE. There is no on-street parking. Signalized intersections include I-405 ramps, 116th Avenue NE, and 120th Avenue NE. There are no local street intersections on NE 4th Street through the Study Area. The primary land uses are big box retail, auto dealerships, and a few smaller retail stores.

Main Street is a minor arterial. It is a two-way street with two travel lanes in each direction, and its terminus on the east is at 116th Avenue NE. There is no on-street parking. The only signalized intersection in the Study Area is at 116th Avenue NE. There are no local street intersections on Main Street through the Study Area. The land use adjacent to Main Street in the Study Area includes a hotel, auto dealerships, and several office buildings.

MAJOR TRUCK STREETS

Designated major truck streets are primary routes for goods movement throughout the city. Designation as a major truck street helps the Bellevue Transportation Department determine street design, traffic management plans, and pavement improvement projects that allow and facilitate the movement and more frequent use of larger vehicles along the designated street. The City's 2015 Comprehensive Plan designates NE 8th Street, NE 12th Street, 116th Avenue NE south of NE 12th Street, and 120th Avenue NE north of NE 8th Street as major truck streets.

PARKING

There is very little on-street parking on arterials in the Study Area, but on-street parking exists on NE 2nd Place, a local street west of 116th Avenue NE. There is an abundance of off-street privately managed parking, specific to its correlating use, available throughout the Study Area.

RELEVANT STUDIES

Bellevue Comprehensive Plan

The Bellevue Comprehensive Plan provides policy guidance on the City's development to support future growth. The Plan identifies four core values: Community, Environmental Stewardship, Economic Opportunity and Security, and Social Equity. These values are developed further and articulated for topic areas within the various elements of the Comprehensive Plan, including the Transportation Element.

Transportation Element

The Transportation Element of the Comprehensive Plan provides policy direction to address local and regional mobility. It integrates land use planning with transportation planning to support the City's land use vision by providing options for people to get to the city and travel within it. Its goal is to maintain and enhance a multimodal system through policies that promote mobility options, including alternatives to driving alone.

Comprehensive Transportation Project List

A Comprehensive Transportation Project List, in Part 2 of the Comprehensive Plan, identifies specific transportation system improvements.

Wilburton/NE 8th Street Subarea Plan

The Wilburton/NE 8th Street Subarea Plan—also in Part 2 of the Comprehensive Plan - is a detailed plan to address goals for this neighborhood. Its goals are to separate commercial areas from residential and recreational space, improve pedestrian access, and support commercial services that complement downtown. The Plan, last amended in 2013, identifies 53 policies that support these goals and provide guidance for future development.

BelRed Subarea Plan

Part of the Study Area (bounded by 116th Avenue N, NE 8th Street, and Bel-Red Road) lies within the neighborhood studied in the BelRed Subarea Plan. The BelRed Subarea Plan was adopted in 2009 and outlines zoning and code changes to encourage an evolution of the neighborhood from a light industrial area to a mixed-use neighborhood including residences, businesses, and green spaces. The City has actively monitored development in BelRed since that time and may make amendments to the Subarea Plan if it determines that any key strategies require adjustments.

Bellevue Pedestrian and Bicycle Transportation Plan

The Pedestrian and Bicycle Transportation Plan (February 2009) establishes the City's vision to build and maintain a comprehensive network of bicycle and pedestrian facilities throughout the city. It aims to provide non-motorized transportation choices to all users, improve citizen health and recreation opportunities, improve safety, meet sustainability goals, and support economic development. The Plan includes a detailed project list with 435 projects to construct or improve sidewalks, bicycle facilities, trails, and associated facilities. Two bicycle priority corridors run through the Study Area—the Downtown-Overlake Connection (running along NE 12th Street) and the ERC. Over a dozen sidewalk and off-street path projects crisscross the Study Area and are prioritized for future development.

116th Avenue NE Streetscape Plan

The 116th Avenue NE Streetscape Plan (September 2015) develops a comprehensive vision for redevelopment of 116th Avenue NE from Main Street to NE 8th Street. The Plan aims to rebuild the roadway into a more pedestrian-friendly zone with inviting connections and pedestrian amenities. It proposes and examines three development scenarios and recommends that the street within the Study Area be transformed into an urban boulevard with multimodal options.

NE 6th Street Extension Design Report

As described in the NE 6th Street Extension (I-405 to 120th Avenue NE) Design Report (August 2012), the NE 6th St Extension will provide a new crossing over I-405, primarily for HOV, transit, and non-motorized modes of travel. It is intended to relieve traffic congestion on parallel streets, provide direct access from the east side of I-405 to the Bellevue Transit Center for improved bus circulation, and better connect Downtown Bellevue and the Wilburton area.

Eastside Rail Corridor Trail Master Plan

The Eastside Rail Corridor Trail will be 16.7 miles of regional trail connecting Renton, Bellevue, Kirkland, Woodinville and Redmond. It is part of a larger 42-mile Eastside Rail Corridor (ERC) stretching between King and Snohomish Counties with a collaborative multijurisdictional vision to develop options for non-motorized use, transit, and utilities. The trail will link commercial districts, neighborhoods, employment, and transit along with major individual trails crossing the region.

The Wilburton segment of the ERC Trail begins on the south at I-90 and extends north to 108th Ave NE in Kirkland. Multiple highway crossings, a new bridge across I-405, and integration with the East Link light rail line, under construction, add complexity to the project. South of the Study Area, the ERC will have a connection to the Mountains to Sound Greenway/I-90 Trail that extends into Seattle and to the Cascade Mountains and a scenic crossing at the historic Wilburton Trestle. To the north, the ERC will connect to the SR 520 Trail with connections to the University of Washington and Redmond. The ERC will provide accessible bicycle and pedestrian

travel through the Study Area with connections to other modes along the route. This segment of the ERC represents the most urban of the entire route.

Bellevue Transit Master Plan

The 2009 Bellevue Transit Master Plan establishes strategies and projects to meet the City's transit needs for a 20-year planning period. It has a policy element that guides the planning process, a service element with route-level recommendations, and a capital element that identifies projects. It looks to ensure a simplified system with high frequency service that integrates with planned light rail connections. These service changes and expansion will affect the current bus routes running through the Study Area and provide better transit connections to the people who live and work in the area. Specifically, the Plan calls for frequent service between Downtown Bellevue and Crossroads via an extended NE 6th Street across I-405, and along 120th Avenue NE and NE 8th Street. Frequent service is also planned across NE 10th Street and up 116th Avenue over to the Spring District in BelRed.

Sound Transit Plans

The Sound Transit 2 East Link Extension will provide Link light rail service between Downtown Seattle and the Overlake Transit Center. Four stations will be constructed within a quarter mile of the Study Area, as shown in Exhibit 3.9–20—the East Main Station at Main Street and 112th Avenue SE; the Bellevue Downtown Station on NE 6th Street between 110th Avenue NE and 112th Avenue NE; the Wilburton Station at 116th Avenue NE and NE 8th Street; and the Spring District/120th Street Station north of Spring Boulevard between 120th and 124th Avenues NE. The expected completion date for this segment is 2023.

The Wilburton station is the only station within the Study Area boundaries and will be an elevated structure with pedestrian access from NE 8th Street to the south, the Eastside Rail Corridor to the north, and 116th Avenue NE to the west via a new pedestrian walkway. Most of the Study Area falls within a half-mile radius (i.e. approximately a 10-minute walk) of the station. No commuter parking is planned at the station, but there will be a pick-up and drop-off area to the east. While the Wilburton station will be the

main station serving the Study Area, the East Main and Bellevue Downtown stations may be most convenient from the southern and western edges of the Study Area, respectively.

In addition to East Link, Sound Transit is also planning for a Bus Rapid Transit (BRT) corridor along I-405 connecting Lynnwood and Burien. As currently planned, the I-405 BRT station would be in Downtown Bellevue, but transit connections via East Link, RapidRide B, and Metro Route 271 would provide convenient access to the I-405 BRT routes. BRT service is planned for 2024.

Interstate 405 Corridor Program

Interstate 405 is one of the most congested corridors in the state and the focus of numerous ambitious planning projects. The state created a master plan to evaluate and coordinate more than 150 projects to ultimately reduce delay and improve multimodal trips along the length of the interstate. Major projects include adding up to two lanes in each direction, developing BRT with new stations, increasing local transit service, increasing park and ride capacity, and creating eight new pedestrian and bicycle crossings over I-405. While not technically a part of the Wilburton Study Area, its location on the western boundary means that major multimodal changes will affect the traffic patterns and travel options for those living and working in Wilburton.

ANALYSIS METHODOLOGY–AFFECTED ENVIRONMENT

Several multimodal performance measures are used to evaluate the transportation conditions in this EIS. These measures speak to vehicle, transit, pedestrian, and bicycle conditions and are based on Bellevue's multimodal level of service (MMLOS) standards and guidelines.

Vehicle–Mobility Management Area (Intersection LOS)

As described in the Regulatory Environment section, the City uses average intersection delay for long-range planning purposes. For signalized and all-way stop controlled intersections, the LOS is based on the average delay for all approaches. For two-way

Exhibit 3.9–7 Level of Service Definitions

LEVEL OF SERVICE	DESCRIPTION	SIGNALIZED INTERSECTION DELAY (seconds/vehicle)	UNSIGNALIZED INTERSECTION DELAY (seconds/vehicle)
	Free-flowing Conditions	≤ 10	0–10
	Stable Flow (slight delays)	>10–20	>10–15
	Stable Flow (acceptable delays)	>20–35	>15–25
	Approaching Unstable Flow (tolerable delay)	>35–55	>25–35
	Unstable Flow (intolerable delay)	>55–80	>35–50
	Forced Flow (congested and queues fail to clear)	>80	>50

Source: 2010 Highway Capacity Manual (HCM)

stop controlled intersections, the approach with the highest delay is used. Exhibit 3.9–7 summarizes the LOS and delay thresholds specified in the 2010 Highway Capacity Manual (HCM), which is a standard methodology for measuring intersection performance.

Translating the equivalent V/C ratio standard to delay, the LOS standard for the Wilburton Commercial Area MMA is no more than 55 seconds of average delay for signalized intersections. To assess existing LOS in Wilburton, 11 study intersections were examined, five of which are MMA system intersections:

- 116th Avenue NE and NE 10th Street
- 116th Avenue NE and NE 8th Street
- 124th Avenue NE and NE 8th Street
- 120th Avenue NE and NE 4th Street
- 116th Avenue NE and Main Street

Traffic operations were analyzed using Synchro/SimTraffic software. The Synchro/SimTraffic network reflects Wilburton's existing roadway network including segment and intersection geometry, signal timings, and recent traffic counts. The existing LOS results were assessed using the SimTraffic microsimulation tool to reflect the interaction between intersections and typical queuing patterns. The intersection map and resulting analysis is included in the following section.

Vehicle—Primary Vehicle Corridor Speed

Vehicle speed on primary vehicle corridors was also used to evaluate each alternative. Existing travel times were collected along each corridor during the PM peak period. The actual travel speed was then calculated as a percentage of free flow traffic speed (based on the speed limit). Bellevue's corridor LOS guidelines are based on HCM standards, but adjusted to reflect expectations for an urban context, as shown in Exhibit 3.9–8. Bellevue's guideline assumes "typical urban travel speed" is equivalent to 40 percent of the posted speed limit (free flow speed), and LOS thresholds are expressed as a percentage of that typical urban travel speed. The standard for the Wilburton Commercial Area is 0.9 to 0.65 times the typical urban travel speed.

Exhibit 3.9–8 Bellevue Vehicle Corridor Level of Service Standards

LEVEL OF SERVICE	PROPORTION OF TYPICAL URBAN TRAVEL SPEED
	Faster than 1.1 times typical speed
	Between 1.1 and 0.9 times typical speed
	Between 0.9 and 0.65 times typical speed
	Between 0.65 and 0.5 times typical speed
	Slower than 0.5 times typical speed

Source: City of Bellevue, 2017

Transit

Transit LOS within the Study Area was evaluated based on City-controlled amenities at stops and stations. Guidelines vary depending on the type of transit stop involved: a local stop (defined as serving a single route with headways greater than 30 minutes); a primary transit stop (defined as serving multiple routes or with headways of 30 minutes or less); or a Frequent Transit Network (FTN)/RapidRide stop. Sixteen transit stops fall within the Study Area and each was evaluated on the presence of weather protection, seating, transit landing zone, and wayfinding. A stop must meet all four criteria to achieve the LOS guidelines for transit.

Pedestrian

Pedestrian LOS considered three factors: sidewalk and buffer width, arterial crossing frequency, and signalized intersection treatments. The MMLOS Activity Center standards and guidelines will apply to the Study Area. To meet the pedestrian LOS recommendations, each arterial corridor must:

- Have cumulative sidewalk and buffer width of at least 16 feet.
- Have pedestrian crossing frequency of no more than 600 feet at locations determined by the Transportation Department (unless there are steep grades or incompatible adjacent land uses).
- Meet Downtown Transportation Plan "Enhanced" intersection guidelines—intersection elements could include components such as weather protection, minor/local wayfinding, special paving treatment, wider crosswalk than standard, generous crossing time, curb bump-out, and alternative striping.

Bicycle

Bicycle LOS was measured using the level of traffic stress (LTS) concept, which considers vehicle speed, auto volume, and bicycle facility type to evaluate the level of comfort for a person riding a bicycle along a particular facility. There are also specific guidelines for intersections and trail crossings along each study corridor. An LTS 1 is a facility appropriate for all levels of ability while an LTS 4 is for the most experienced bicyclists.

- LTS 1—Interested but Concerned—Children and Older Adults
- LTS 2—Interested but Concerned—Adults
- LTS 3—Enthused and Confident
- LTS 4—Strong and Fearless

In the Study Area, Bicycle LTS 3 (see Exhibit 3.9–9 for details) was used as the guideline.

More detailed discussion of all LOS evaluations can be found in Appendix D.

Exhibit 3.9-9 Bicycle Level of Service Guidelines

SPEED LIMIT (MPH)	ARTERIAL TRAFFIC VOLUME*	NO MARKING	SHARROW LANE MARKING	STRIPED BIKE LANE	BUFFERED BIKE LANE	PROTECTED BIKE LANE	PHYSICALLY SEPARATED BIKEWAY
≤25	<3k	1	1	1	1	1	1
	3–7k	3	2	2	2	1	1
	≥7k	3	3	2	2	1	1
30	<15k	3	3	2	2	1	1
	15–25k	4	4	3	3	3	1
	≥25k	4	4	3	3	3	1
35	<25k	4	4	3	3	3	1
	≥25k	4	4	4	3	3	1
40	Any volume	4	4	4	4	3	1

Source: City of Bellevue, 2017

Non-Motorized Connectivity

Using a tool that Fehr & Peers developed for King County Metro and Sound Transit, non-motorized connectivity LOS evaluates how accessible the Study Area is for people walking or biking. The light rail station is used as the center point of analysis. Evaluation included route directness, intersection/sidewalk density, and arterial crossing frequency. The regression-based analysis results in a composite connectivity coefficient based on this evaluation and a number of demographic and land use variables. Details of the tool can be found in Appendix D.

Safety

Crash data for the years 2014-2016 was evaluated for the Study Area. WSDOT provided all data for collisions reported to police, including details of the location and any injuries that occurred. The collisions were first associated either with one of the study intersections or one of the major corridors in the Study Area. The number of crashes per intersection or corridor was then compared to the number of vehicles that travel through that roadway to determine the number of crashes per million entering vehicles (intersections) or million vehicle miles traveled (corridor). Using this method ensures that the analysis is comparable across both major and minor streets.

ANALYSIS RESULTS—AFFECTED ENVIRONMENT

This section presents the results of the existing transportation conditions analysis.

Vehicle—Mobility Management Area (Intersection LOS)

Exhibit 3.9–10 and Exhibit 3.9–11 summarize existing level of service for the study intersections. Study intersection average delay ranges from 11 seconds to 48 seconds. The MMA system intersections currently operate with an average delay of 38 seconds, well within the 55-second threshold.

Exhibit 3.9–10 PM Peak Hour Delay—Existing

ID	INTERSECTION	AVERAGE DELAY (in seconds)
1	116th Ave NE and NE 12th St	39
2	120th Ave NE and NE 12th St	25
3	124th Ave NE and NE 12th St	37
4	116th Ave NE and NE 10th St	18
5	116th Ave NE and NE 8th St	39
6	120th Ave NE and NE 8th St	48
7	124th Ave NE and NE 8th St	28
8	116th Ave NE and NE 4th St	48
9	120th Ave NE and NE 4th St	11
10	116th Ave NE and Main St	27
11	116th Ave NE and SE 1st St	26
	Wilburton MMA Average	**38**

Note: Wilburton MMA #4 includes intersections 5, 6, 8, 10 & 11. Average MMA delay is weighted by volume and the LOS Standard is average delay of 55 seconds.

Source: Fehr & Peers, 2017

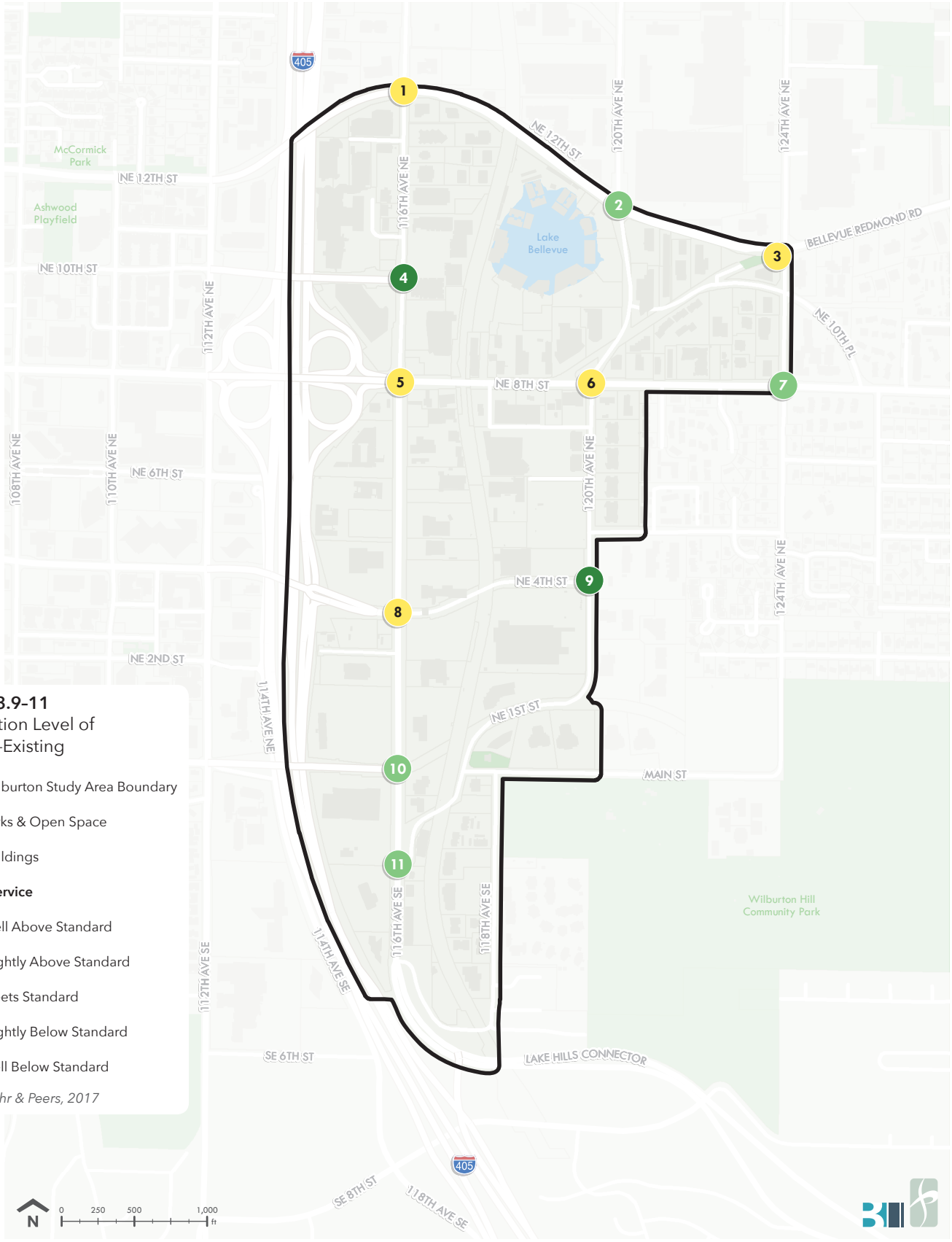


Exhibit 3.9-11
Intersection Level of Service–Existing

- Wilburton Study Area Boundary
- Parks & Open Space
- Buildings

Level of Service

- Well Above Standard
- Slightly Above Standard
- Meets Standard
- Slightly Below Standard
- Well Below Standard

Source: Fehr & Peers, 2017

Vehicle–Primary Vehicle Corridor Speed

Vehicle travel times were collected in 2017 along the five study corridors in both directions, which are shown in Exhibit 3.9–12 and Exhibit 3.9–13. These travel times, and associated speed, were compared to typical urban travel speed as described in the Methodology section. All corridors currently meet Wilburton's guideline of no less than 0.65 times the typical urban travel speed. NE 4th Street had the lowest performance of the five corridors largely due to the signal delay at NE 116th Street. However, NE 4th Street still falls within the Bellevue LOS standards.

NE 12th St, NE 8th St, 116th Ave NE, 120th Ave NE, and 124th Ave NE are all designated truck routes. The travel time analysis suggests that these corridors currently perform acceptably and do not unduly delay goods movement.

Exhibit 3.9–12 PM Peak Hour Vehicle Travel Speed and Corridor Level of Service–Existing

			NORTH & EASTBOUND LOS		SOUTH & WESTBOUND LOS	
ID	ROAD	SEGMENT	Speed (miles per hour)	LOS/Proportion of Typical Urban Travel Speed	Speed (miles per hour)	LOS/Proportion of Typical Urban Travel Speed
1	116th Ave NE	Northup Way to SE 8th St	19	1.61	13	1.04
2	120th Ave NE/NE 1st St	NE 12th St to 116th Ave NE	20	1.96	11	1.14
3	NE 12th St	112th Ave NE to 140th Ave NE	16	1.23	21	1.56
4	NE 8th St	112th Ave NE to 140th Ave NE	17	1.28	16	1.25
5	NE 4th St	112th Ave NE to 120th Ave NE	12	0.99	8	0.69

Source: Fehr & Peers, 2017

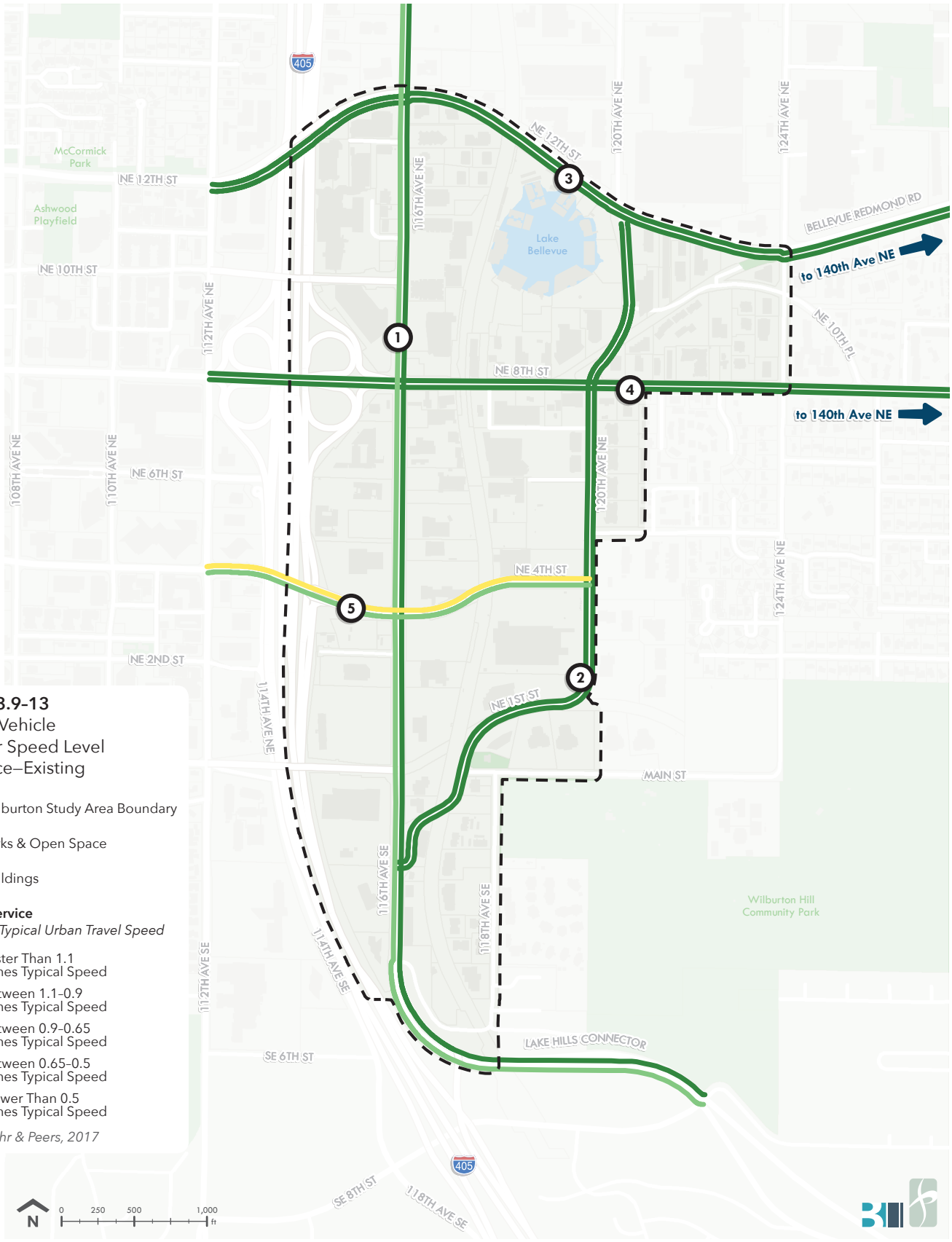


Exhibit 3.9-13
Primary Vehicle Corridor Speed Level of Service–Existing

Wilburton Study Area Boundary

Parks & Open Space

Buildings

Level of Service
Percent of Typical Urban Travel Speed

- Faster Than 1.1 Times Typical Speed
- Between 1.1–0.9 Times Typical Speed
- Between 0.9–0.65 Times Typical Speed
- Between 0.65–0.5 Times Typical Speed
- Slower Than 0.5 Times Typical Speed

Source: Fehr & Peers, 2017

Transit

Transit LOS is determined by the presence of City-controlled amenities at stops. To meet the transit rider LOS expectations, a stop must have:

- Weather protection
- Seating
- Wayfinding
- A 40-foot landing zone for a primary stop or 60-foot landing zone for a frequent transit network stop

Of the 16 transit stops in the Study Area, only one met the LOS for all four criteria (located at westbound NE 8th Street and 124th Avenue NE), as shown in Exhibit 3.9–14. A common missing component was wayfinding information, as no other stop included this element. Thirteen of the stops (81 percent) have the minimum loading zone, seven (44 percent) have a bench, and six (38 percent) have a shelter.

Pedestrian

Pedestrian LOS considers sidewalk and buffer width, arterial crossing frequency, and signalized intersection treatments. No roadway segment within the Study Area met all three criteria. As shown in Exhibit 3.9–15, five short segments along 116th Avenue NE, NE 12th Street, NE 8th Street, NE 4th Street, and Main Street have a sidewalk and buffer width of at least 16 feet, and several segments along 116th Avenue NE have a crossing frequency of 600 feet or less. No intersections have enhanced treatments.

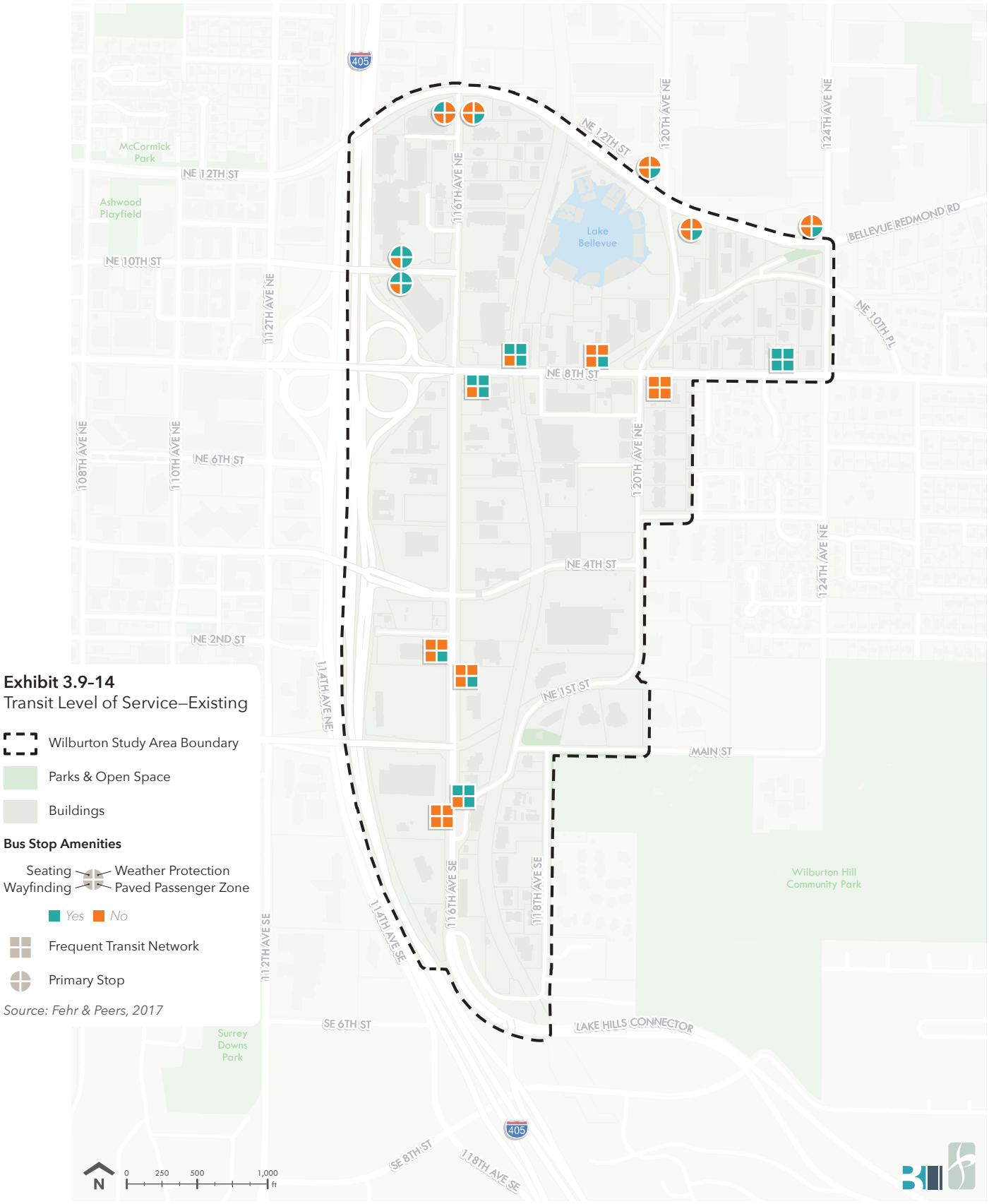


Exhibit 3.9-14
Transit Level of Service—Existing

- Wilburton Study Area Boundary
- Parks & Open Space
- Buildings

Bus Stop Amenities

Seating
Wayfinding
Weather Protection
Paved Passenger Zone

Yes *No*

- Frequent Transit Network
- Primary Stop

Source: Fehr & Peers, 2017

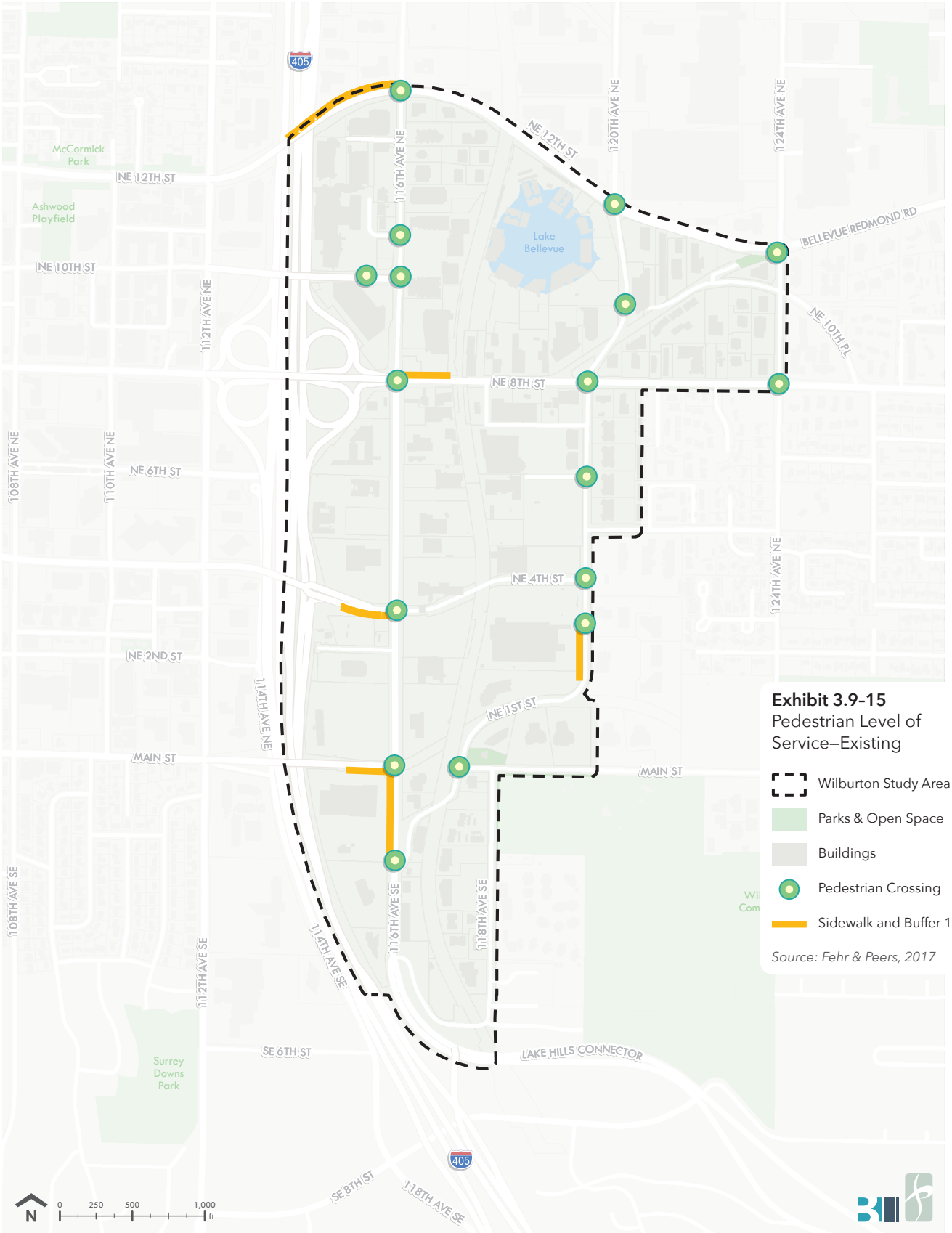


Exhibit 3.9-15
Pedestrian Level of Service–Existing

- Wilburton Study Area Boundary
- Parks & Open Space
- Buildings
- Pedestrian Crossing
- Sidewalk and Buffer 16ft or More

Source: Fehr & Peers, 2017

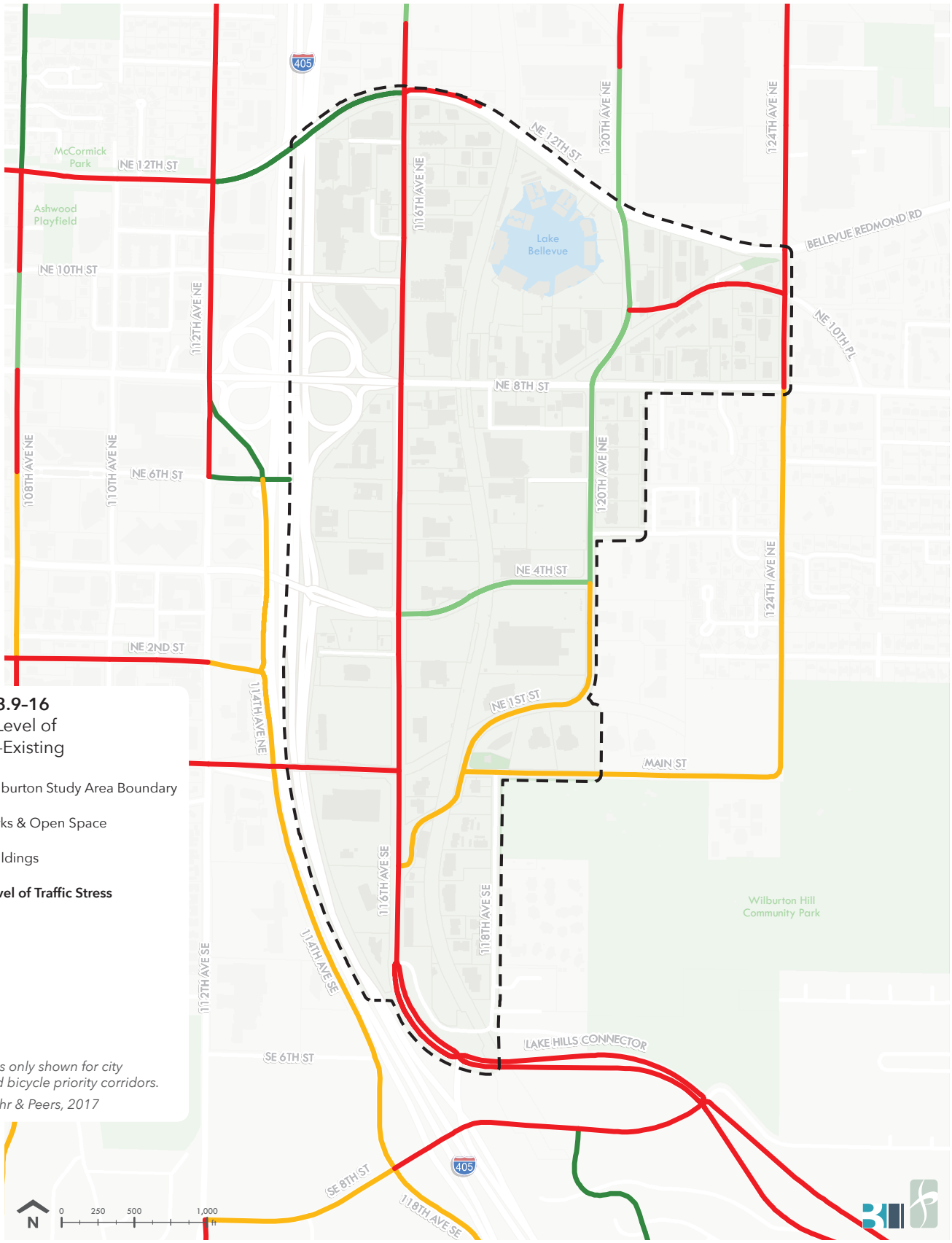


Exhibit 3.9-16
Bicycle Level of Service–Existing

- Wilburton Study Area Boundary
- Parks & Open Space
- Buildings

Bicycle Level of Traffic Stress

- 1
- 2
- 3
- 4

Note: LTS is only shown for city designated bicycle priority corridors.

Source: Fehr & Peers, 2017

Bicycle

Bicycle Level of Traffic Stress (LTS) considers vehicle speed, auto volume, and facility type to evaluate the level of comfort for a person riding a bicycle along a particular street on Bellevue's bicycle network (as defined in the 2009 Pedestrian and Bicycle Transportation Plan). Exhibit 3.9–16 shows existing bicycle LTS along arterial streets in the Study Area. Within the Study Area, the existing network has multiple corridors that meet the LTS 3 standard. Note that NE 12th Street/Bel-Red Road east of the future Spring Boulevard connection and NE 8th Street through the entire Study Area do not have a bicycle LOS standard.

West of 116th Ave NE, NE 12th Street has a multipurpose path that is completely separated from the roadway which translates to an LTS 1—the most comfortable level for cyclists. The recently constructed portions of NE 4th Street (between 116th and 120th Avenues NE) and 120th Avenue NE (between NE 4th Street and Spring Boulevard) have striped bicycle lanes and function at LTS 2. Despite having no bicycle markings, the sections of 120th Avenue NE to the south of NE 4th Street and Main Street east of NE 1st Street operate at LTS 3 due to relatively low traffic volume and speed. All remaining bicycle corridors operate at LTS 4, below the Study Area guideline. These roads tend to have higher traffic volumes and lack dedicated bicycle facilities, resulting in a cycling environment that is comfortable only for the most confident cyclists.

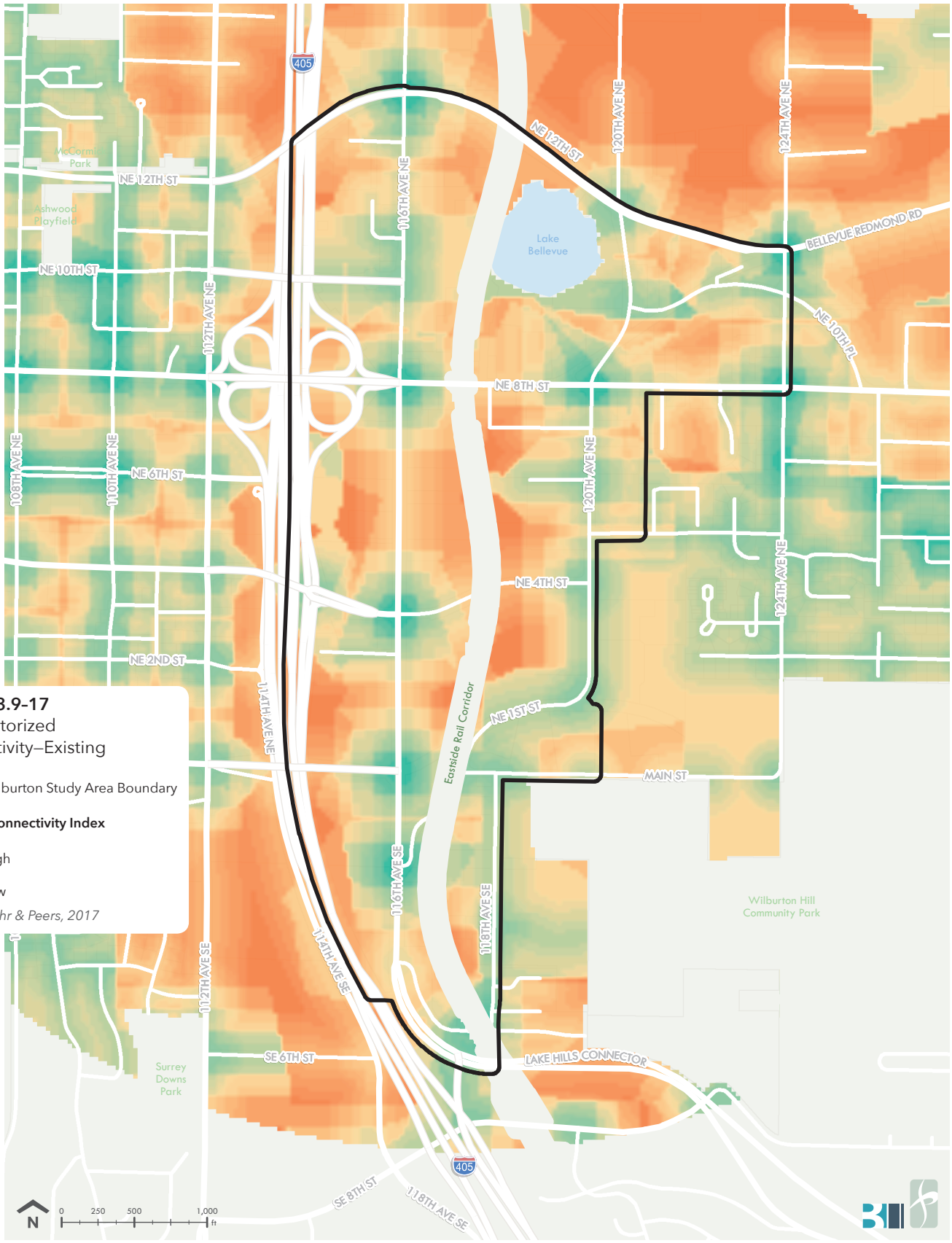


Exhibit 3.9-17
Non-Motorized Connectivity–Existing

Wilburton Study Area Boundary

Existing Connectivity Index

High

Low

Source: Fehr & Peers, 2017

Non-Motorized Connectivity

Exhibit 3.9–17 displays the composite connectivity evaluation for the Study Area. The variation in scores between the east and west sides of I-405 reflects the connectivity differences between Downtown and the Wilburton Commercial Area. The large blocks and infrequent arterial crossings in the Study Area result in a disjointed system within the Study Area. I-405 and the large blocks to the north are also apparent as barriers to connectivity from adjacent neighborhoods.

Because these scores are composite, the rationale behind the score for an individual area can be complex. However, in the mapped area, the strongest drivers for a low score were generally intersection density and signalized arterial crossings. Although not in the Study Area itself, it should be noted that the GIS layer used for analysis did not include all through-block connections within Downtown—those connections result in a more walkable environment than the composite score may suggest.

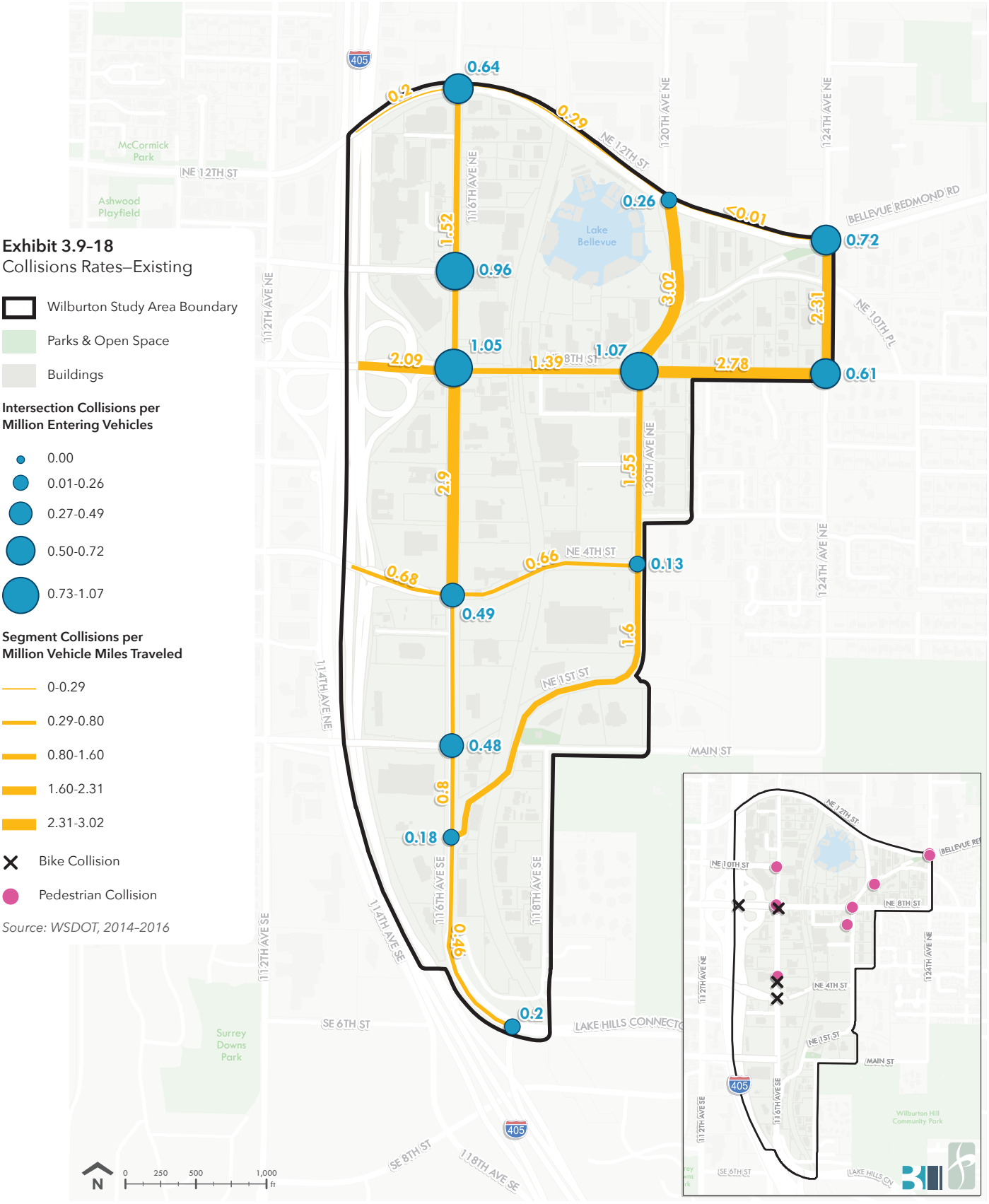
Safety

Collision rates were analyzed at 12 intersections and along 17 corridors, as shown in Exhibit 3.9–18. Of those 12 intersections, 116th Avenue NE at NE 8th Street and 120th Avenue NE at NE 8th Street had the highest crash rates. The roadway segments with the highest crash rates per million vehicle miles traveled include:

- 116th Avenue NE between NE 8th Street and NE 4th Street
- 120th Avenue NE between NE 12th Street and NE 8th Street
- 124th Avenue NE between NE 12th Street and NE 8th Street
- NE 8th Street between 120th Avenue NE and 124th Avenue NE
- NE 8th Street between I-405 and 116th Avenue NE

There were three severe injury crashes and one fatality crash in the Study Area during the three-year analysis period. One severe injury crash occurred on NE 1st Street between NE 4th Street and 116th Avenue NE and another occurred at the intersection of NE 10th Street and 116th Avenue NE. One severe injury crash and one fatality crash occurred at the intersection of NE 12th Street and 124th Avenue NE. The fatality was the result of a vehicle-pedestrian collision, while the three severe crashes were all vehicle-vehicle collisions.

Exhibit 3.9-18
Collisions Rates–Existing



3.9.3 IMPACTS

ANALYSIS METHODOLOGY– PLANNING SCENARIOS EVALUATED

This section describes the planning scenarios that will be evaluated as well as the methodology and assumptions used to analyze the alternatives.

Three alternatives are evaluated under future year 2035 conditions: a No Action alternative and two Action Alternatives (Alternatives 1 and 2). The No Action Alternative maintains the Study Area's current zoning and modifies the transportation network only according to assumptions currently in City plans. Alternatives 1 and 2 vary the amount of growth, land use pattern, building height and floor area ratio, and the transportation network. The No Action Alternative would retain similar building forms as found in the Study Area today, while Alternatives 1 and 2 would allow for varying degrees of increased building height and intensity.

Transportation Network and Land Use Assumptions

To assess transportation system operations in 2035 for the three alternatives, the project team used a citywide travel demand forecasting model to forecast traffic volume and speed along roadways within the Study Area.

Citywide Travel Demand Forecasting Model

City of Bellevue staff provided travel demand model runs for the base year of 2016 and the three future year (2035) scenarios. The model is called the Bellevue-Kirkland-Redmond (BKR) travel demand forecasting model. The following is a description of some of the travel demand model's key features.

- **Analysis Years.** This version of the model has a base year of 2016 and a horizon year of 2035.
- **Land Use.** The City of Bellevue developed Study Area land use forecasts for the three 2035 scenarios for comparison to the base year 2016 land use. These Study Area forecasts were used in combination with citywide land use forecasts.

- **Network Representation.** The highway and major street systems (including all study corridors) within the Study Area are fully represented in the model. The model also assumes the expansion of the I-405 Express Toll Lane system south to Renton.
- **Transit.** The travel model reflects the Study Area transit system under base year conditions. The horizon year transit system is based on assumptions of service from Sound Transit and King County Metro's plans. Major improvements assumed by 2035 include the ST2 and ST3 East Link extensions between Seattle and Downtown Redmond and Metro Connects service improvements.
- **Travel Costs.** The model accounts for the effects of vehicle operating costs, parking, transit fares, and tolls (on the SR 520 bridge and the I-405 Express Toll Lanes) on travel demand.
- **Travel Demand.** The model predicts travel demand for four modes of travel: drive alone, low occupancy vehicle (2 person), high occupancy vehicle (3 plus), and transit. Travel demand is estimated for three time periods: AM peak, midday peak, and PM peak. This analysis will focus on the PM peak hour.

Transportation Network Assumptions

All future year alternatives reflect the same regional transportation network improvements outside of the Study Area. These key transportation network assumptions include:

- I-405:
  - » Southbound braid from SR 520 to NE 10th Street
  - » I-405 and 132nd Street (Kirkland) half diamond ramps to the north
  - » Renton to Bellevue Widening and Express Toll Lanes
- SR 520:
  - » Corridor widening and transit improvements between I-405 and I-5
  - » Eastbound slip ramp under 148th Avenue NE to 152nd Avenue NE
  - » Ramps to/from east at 124th Avenue NE (complete full interchange)
- I-90:
  - » Removal of reversible express lanes (Mercer Island)
  - » PM Peak period shoulder lane eastbound from Eastgate to Issaquah

- ST2: International District/Chinatown to Overlake Transit Center LRT
- ST3: Overlake Transit Center to Downtown Redmond LRT and I-405 Bus Rapid Transit from Lynnwood to Burien

Within the Study Area, the City has plans to construct the following projects regardless of the land use alternative selected:

- Spring Boulevard—new five-lane roadway extending from NE 12th Street to the east
- 120th Avenue NE—widening to five lanes from NE 12th Street to Northup Way
- 124th Avenue NE—widening to five lanes from Bel-Red Road to Northup Way

These projects are assumed to be in place under all future year alternatives.

While much of the transportation network within the Study Area is committed—for example East Link light rail, the ERC, and most arterial cross-sections—there are some key decisions that would be influenced by the Wilburton Commercial Area Land Use & Transportation Project. Those decisions are the NE 6th Street extension, the cross-section of 116th Avenue NE, and the ERC crossings at NE 8th and NE 4th Streets. The assumptions of how these improvements would be matched to each alternative are identified in Exhibit 3.9–19 and Exhibit 3.9–20.

Exhibit 3.9–19 Transportation Network Assumptions by Alternatives

LOCATION	NO ACTION ALTERNATIVE	ALTERNATIVE 1	ALTERNATIVE 2
NE 6th St Extension	• To 120th • To 116th	• To 120th	• To 120th • To 116th
NE 4th St/ERC	• At grade	• At grade	• At grade
NE 8th St/ERC	• Overcrossing	• Overcrossing	• Overcrossing • At grade crossing
116th Ave NE	• No changes	• 5 lanes with buffered bike lanes	• 5 lanes with buffered bike lanes
Throughout Study Area: New Street Grid	• No changes	• See Exhibit 3.9–20	• See Exhibit 3.9–20

Source: Fehr & Peers, 2017

Model Limitations

The project team used the best available tools to estimate trip generation for the Wilburton Commercial Area land use alternatives. However, it should be noted that even these tools have limitations. Travel demand models tend to project trip generation in a linear fashion with limited sensitivity to potential changes in travel behavior that could occur with more supportive urban design, robust transit systems, expanded transportation demand management programs, and disruptive technologies such as autonomous vehicles and Transportation Network Companies like Uber and Lyft. For that reason, the model is best used as a tool to compare among the alternatives rather than to compare existing conditions to the future given the wide range of unknowns that could occur over the next twenty years.

To provide context for the model's trip rates, data on vehicle trip generation at several buildings in Downtown Bellevue was collected. This comparison found that observed vehicle trip rates are roughly one-third lower than those predicted by the travel demand model for the Study Area. This suggests that the traffic operations analysis in this EIS is conservative in terms of impact identification. As the Wilburton Commercial Area evolves toward denser land use with more transit accessibility, it is expected that trip rates will decrease to be more similar to Downtown.

All alternatives assume that the NE 6th Street extension is constructed to 120th Avenue NE with an overpass at 116th Avenue NE (i.e. no access to 116th Avenue NE). To provide additional information, operations analyses were conducted for the No Action Alternative and Alternative 2 to test how a NE 6th Street extension to 116th Avenue NE would perform. These results are provided for informational purposes only and not used to identify impacts of the alternatives.

The project team worked with the Citizen Advisory Committee (CAC) to develop a concept for a finer-grained transportation grid that would be implemented as redevelopment occurs under Alternatives 1 and 2. The transportation grid concept proposes a combination of new local streets, pedestrian paths, and alleys to provide a more permeable network. The new grid would allow more direct travel within the Study Area, particularly for pedestrians and bicycles. Signals would be implemented at arterial intersections, resulting in a higher intersection density and more frequent crossing opportunities under Alternatives 1 and 2. For the purposes of the EIS analysis, these assumptions are used for the traffic operations and non-motorized connectivity evaluations discussed in subsequent sections of this document.

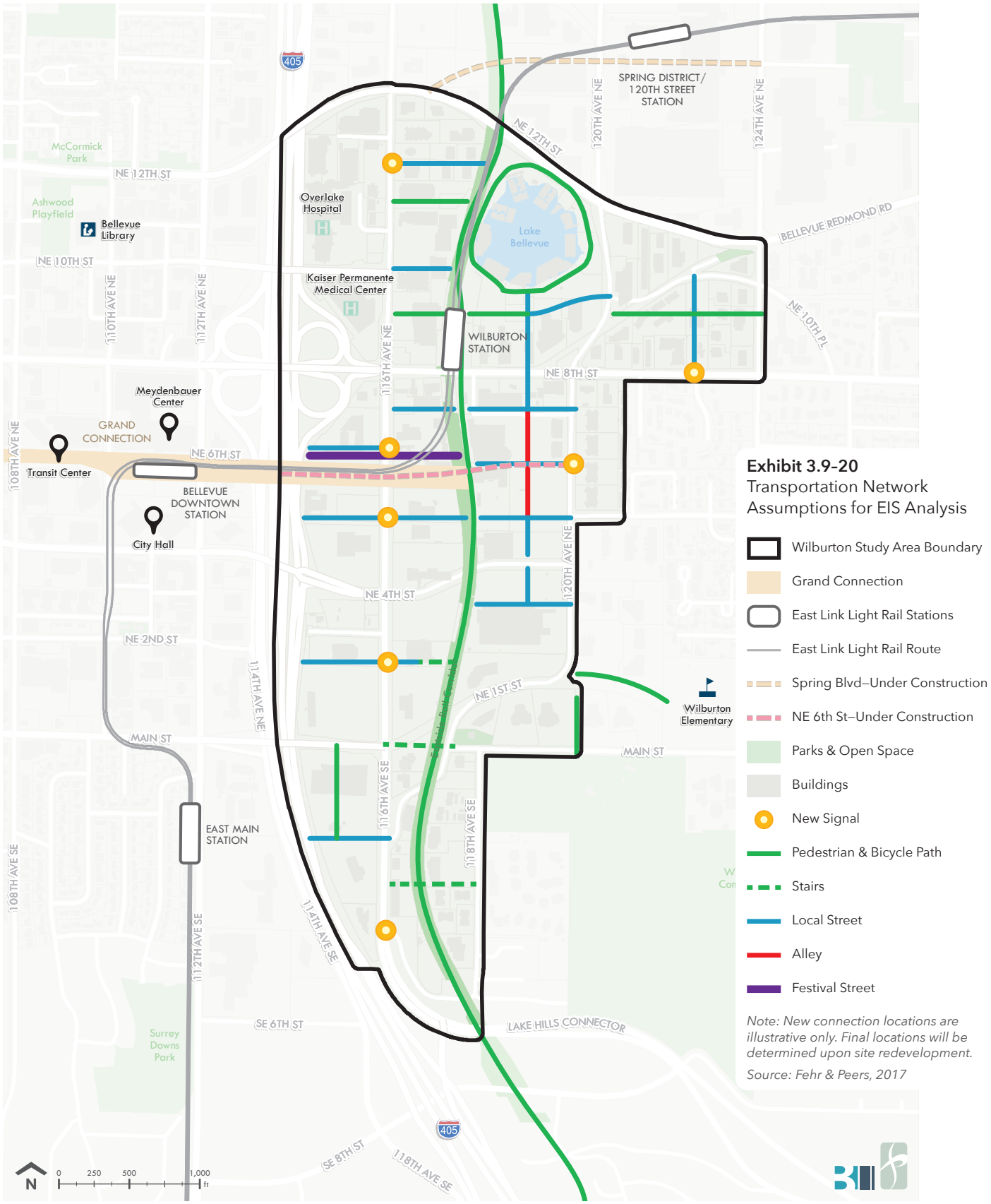


Exhibit 3.9-20
Transportation Network Assumptions for EIS Analysis

- Wilburton Study Area Boundary
- Grand Connection
- East Link Light Rail Stations
- East Link Light Rail Route
- Spring Blvd–Under Construction
- NE 6th St–Under Construction
- Parks & Open Space
- Buildings
- New Signal
- Pedestrian & Bicycle Path
- Stairs
- Local Street
- Alley
- Festival Street

Note: New connection locations are illustrative only. Final locations will be determined upon site redevelopment.

Source: Fehr & Peers, 2017

Land Use Assumptions

The No Action Alternative anticipates 4.2 million square feet of development in the Study Area, compared to roughly 3.6 million square feet of existing development. Alternative 1would provide 8.9 million square feet more than No Action by 2035, and Alternative 2 assumes 12.1 million square feet more than No Action by 2035. For context, Downtown Bellevue has about 10 million square feet of office building space plus several million square feet of commercial/retail and residential space as of 2017. See Section 3.5 for additional detail on the land use assumptions.

Trip Distribution

The travel demand model distributes projected vehicle trips originating from the Study Area as well as background traffic from other areas of the city and region. The model indicates the following general distribution pattern for vehicle trips originating from the Study Area during the PM peak period in 2035 (also shown in Exhibit 3.9–21).

- 27 percent west to Downtown Bellevue
- 22 percent north on I-405
- 17 percent south on I-405
- 12 percent eastbound on Bel-Red Road and NE 8th Street
- 10 percent south on 116th Avenue NE
- 6 percent east on SR 520
- 4 percent north on 116th Avenue NE

Traffic Operations Analysis

Traffic operations, including intersection LOS and speed, were analyzed using Synchro/SimTraffic software. The existing Synchro/SimTraffic network was updated to reflect roadway modifications planned to be in place by 2035 as well as the vehicle volumes forecasted using the BKR model. Signal timings were optimized to maximize the efficiency of the system based upon the projected future year vehicle volumes.

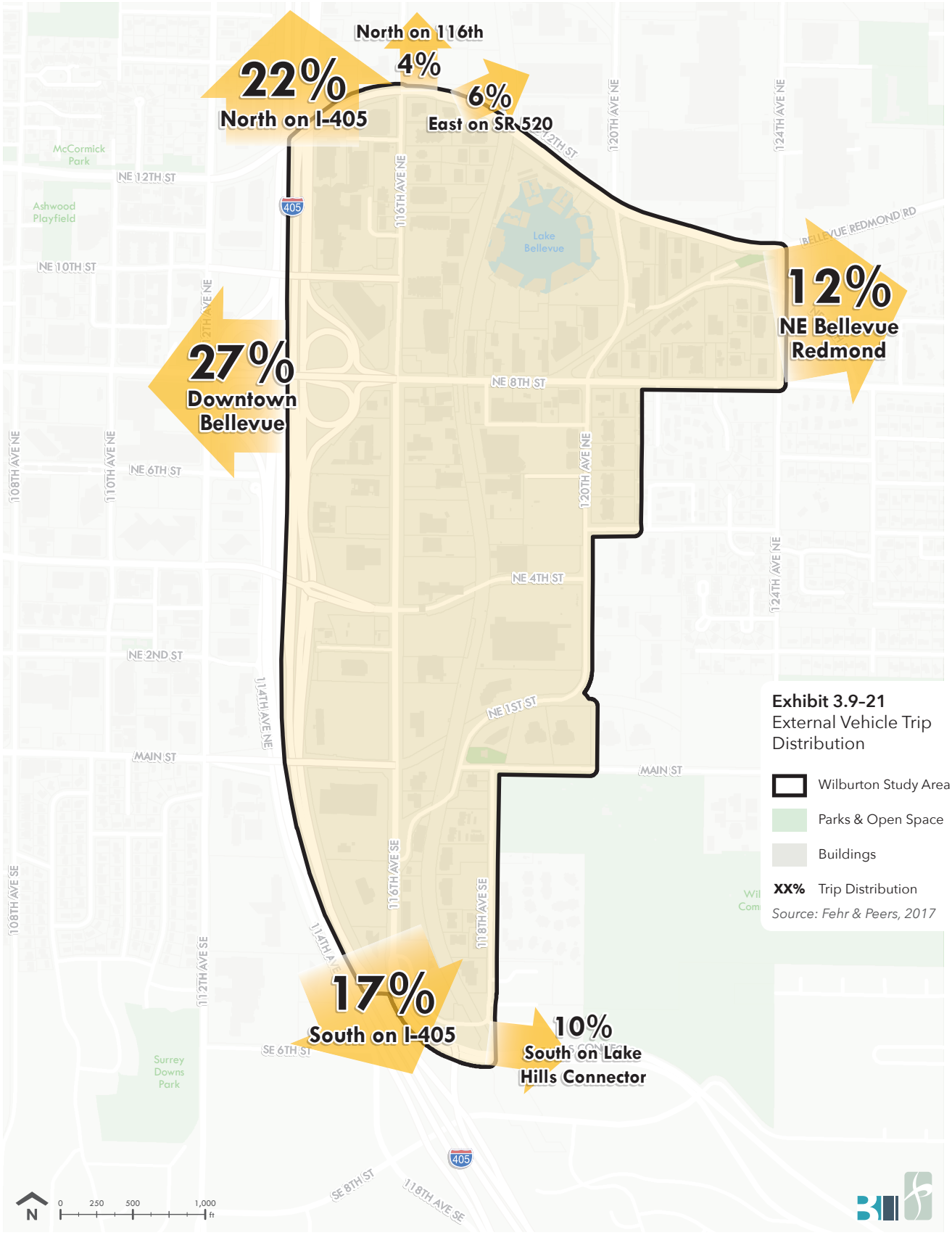


Exhibit 3.9-21
External Vehicle Trip Distribution

- Wilburton Study Area Boundary
- Parks & Open Space
- Buildings
- **XX%** Trip Distribution

Source: Fehr & Peers, 2017

IMPACTS COMMON TO ALL ALTERNATIVES

Short-Term Impacts

Redevelopment would occur under all three alternatives. During redevelopment, there would be localized and temporary construction impacts that could impact transportation in the immediate vicinity of a project site, for example a sidewalk closure or increased truck traffic. The City will manage such temporary uses through their street use permit process. While these impacts would occur under any of the alternatives, they would occur more frequently and potentially with longer duration under alternatives 1 and 2 due to the higher density of land use expected within the Study Area.

Long-Term Impacts

Long-term impacts are explored for the No Action Alternative and then for Alternatives 1 and 2 below.

IMPACTS OF THE NO ACTION ALTERNATIVE

The No Action Alternative serves as the baseline for the impact analysis of the action alternatives (Alternatives 1 and 2). It represents the operation of the transportation system if no actions were taken by the City Council and no zoning changes were made in the Study Area.

This section summarizes analysis results and environmental impacts of the No Action Alternative. Impact definitions are based on the City's MMLOS guidelines as described in the Analysis Methodology-Affected Environment section. Specifically, impacts are identified if the No Action Alternative results in:

- The average vehicle delay at the Wilburton MMA system intersections exceeding 55 seconds.
- A primary vehicle corridor falling below the threshold of 0.65 times typical urban travel speed.
- A pedestrian facility failing to meet the 16-foot minimum sidewalk and buffer width and/or arterial crossings at least every 600 feet.
- A bicycle corridor failing to meet LTS 3 on designated routes in the City's bicycle network.
- A transit stop failing to meet any of the following criteria: weather protection, seating, wayfinding, and/or paved passenger zone of 40 feet for a primary stop and 60 feet for a FTN stop.

As defined above, this EIS identifies impacts if future transportation operations are not expected to meet the City's adopted level of service standards and/or guidelines. Individual project-level mitigation could reduce the magnitude of the impact; however, this level of detail is not known and cannot be considered in this programmatic EIS.

Analysis Results

The following section describes the results of the evaluation of transportation conditions under the 2035 No Action Alternative.

Vehicle–Mobility Management Area (Intersection LOS)

Exhibit 3.9–22 and Exhibit 3.9–23 summarize the average vehicle delay for each study intersection. By 2035, the Study Area is expected to experience more congestion than it does today. This is primarily a function of growing background traffic throughout the region rather

Exhibit 3.9-22 PM Peak Hour Intersection Delay—2035 No Action Alternative

		AVERAGE VEHICLE DELAY (IN SECONDS)	
ID	INTERSECTION	Existing Conditions	2035 No Action Alt.
1	116th Ave NE and NE 12th St	39	96
2	120th Ave NE and NE 12th St	25	86
3	124th Ave NE and NE 12th St	37	60
4	116th Ave NE and NE 10th St	18	24
5	116th Ave NE and NE 8th St	39	51
6	120th Ave NE and NE 8th St	48	422
7	124th Ave NE and NE 8th St	28	56
8	116th Ave NE and NE 4th St	48	105
9	120th Ave NE and NE 4th St	11	12
10	116th Ave NE and Main St	27	27
11	116th Ave NE and SE 1st St	26	26
12	120th Ave NE and NE 6th St	N/A	22
13	116th Ave NE and NE 6th St	N/A	N/A
14	Spring Boulevard and Bel-Red Road	N/A	68
	Wilburton MMA Average	**38**	**51**

Note: Wilburton MMA #4 includes intersections 5, 6, 8, 10 & 11. Average MMA delay is weighted by volume and the LOS Standard is average delay of 55 seconds.

Note: The No Action Alternative vehicle delay is slightly lower than existing conditions because the existing analysis reflected construction circumstances.

Source: Fehr & Peers, 2017

than the relatively limited development that would occur within the Wilburton Commercial Area under the No Action Alternative. Much of the projected congestion is related to freeway access. In particular, the travel demand model projects that development in the Spring District would introduce substantial traffic to the northern portion of the Study Area as travelers pass through to reach I-405 and SR 520 at NE 10th Street and NE 8th Street. The NE 6th Street extension would change travel patterns in the Study Area as additional traffic to and from the east uses 120th Avenue NE and NE 6th Street to reach I-405 or cross the freeway into Downtown Bellevue. The I-405 ramps at NE 4th Street are also expected to have substantial increases in demand which would add delay at the intersection of 116th Avenue NE and NE 4th Street. Operations in the southern portion of the Study Area are expected to remain similar to today.

The Wilburton MMA average vehicle delay is projected to increase to 51 seconds under the No Action Alternative, slightly below the impact threshold and LOS standard of 55 seconds.

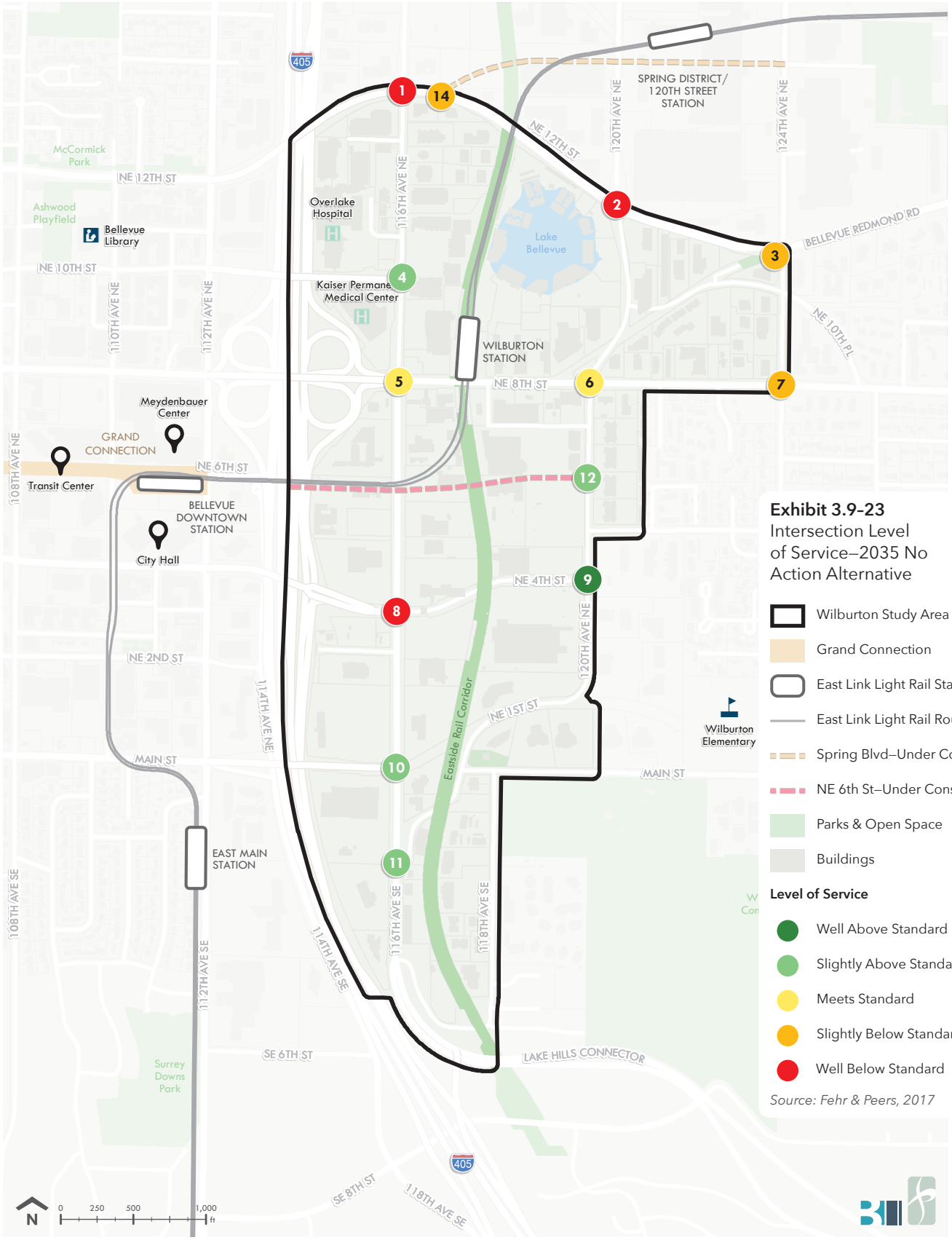


Exhibit 3.9-23
Intersection Level of Service–2035 No Action Alternative

- Wilburton Study Area Boundary
- Grand Connection
- East Link Light Rail Stations
- East Link Light Rail Route
- Spring Blvd–Under Construction
- NE 6th St–Under Construction
- Parks & Open Space
- Buildings

Level of Service

- Well Above Standard
- Slightly Above Standard
- Meets Standard
- Slightly Below Standard
- Well Below Standard

Source: Fehr & Peers, 2017

NE 6th Street Extension to 116th Avenue NE—No Action Alternative

Exhibit 3.9-24 displays the traffic operations findings for the No Action Alternative if NE 6th Street is extended to 116th Avenue NE, rather than 120th Avenue NE. With that option in place, traffic volumes are expected to increase along the arterials from the north and east leading to the eastern terminus of the extension: 116th Avenue NE north of NE 6th Street and NE 8th Street east of 116th Avenue NE. Traffic operations along 116th Avenue NE south of NE 6th Street are expected to be similar or better because high numbers of southbound vehicles are drawn off the corridor at NE 6th Street rather than proceeding to NE 4th Street. The average vehicle delay at the MMA system intersections would increase from 51 seconds to 63 seconds, bringing the Study Area LOS beyond the EIS impact threshold.

In summary, the NE 6th Street extension to 120th Avenue NE would distribute traffic more evenly among Wilburton's arterials while the extension to 116th Avenue NE would exacerbate congested conditions on the corridors that are already the most congested. In particular, this would degrade vehicle speed due to intersection delay along the 116th Avenue NE and NE 8th Street corridors beyond the Level of Service standard. In particular, the intersection of 116th Ave NE/NE 8th Street would experience a substantial increase in vehicle delay under this alternative.

Exhibit 3.9-24 PM Peak Hour Intersection Delay—2035 No Action Alternative, NE 6th Street Options

		AVERAGE VEHICLE DELAY (IN SECONDS)	
ID	INTERSECTION	NE 6th St Extension to 120th Ave NE	NE 6th St Extension to 116th Ave NE
1	116th Ave NE and NE 12th St	96	108
2	120th Ave NE and NE 12th St	86	85
3	124th Ave NE and NE 12th St	60	56
4	116th Ave NE and NE 10th St	24	21
5	116th Ave NE and NE 8th St	51	136
6	120th Ave NE and NE 8th St	42	51
7	124th Ave NE and NE 8th St	56	50
8	116th Ave NE and NE 4th St	105	64
9	120th Ave NE and NE 4th St	12	12
10	116th Ave NE and Main St	27	26
11	116th Ave NE and SE 1st St	26	29
12	120th Ave NE and NE 6th St	22	N/A
13	116th Ave NE and NE 6th St	N/A	90
14	Spring Boulevard and Bel-Red Road	68	81
	Wilburton MMA Average	**51**	**68**

Note: Wilburton MMA #4 includes intersections 5, 6, 8, 10 & 11. Average MMA delay is weighted by volume and the LOS Standard is average delay of 55 seconds.

Source: Fehr & Peers, 2017

Another option that could be considered is to not extend NE 6th Street from its current terminus into the Study Area. While that would not improve access from Downtown for HOV and transit, it would likely result in less regional traffic being drawn through the Wilburton Commercial Area. Without an extension, the travel demand model suggests that NE 4th Street would be most affected as vehicles divert there to access the I-405 ramps and 116th Avenue NE would see reductions in volume and delay, particularly north of the extension.

Vehicle–Primary Vehicle Corridor Speed

Exhibit 3.9-25 and Exhibit 3.9-26 summarize travel speed under the 2035 No Action Alternative. Speeds were estimated using Synchro/SimTraffic software within the micro-simulation area and BKR travel model outputs for the remaining areas.

Compared to existing conditions, travel times along the primary vehicle corridors are generally expected to increase by no more than three minutes by 2035. This corresponds to travel speed decreases of up to 4 miles per hour. The exception is NE 12th Street/Bel-Red Road between 112th Avenue NE and 140th Avenue NE. Eastbound speed is expected to decrease by 5 miles per hour and westbound speed is expected to decrease by 12 miles per hour. This decrease in speed is largely due to the level of development projected in the Spring District and BelRed areas. However, the Spring District has been building out at lower densities than originally planned. Therefore, the travel demand model is likely forecasting conservatively high volumes causing speed estimates to be lower than may occur in the future.

Exhibit 3.9-25 PM Peak Hour Vehicle Travel Speed and Corridor Level of Service–2035 No Action Alternative

		SPEED (MILES PER HOUR) / LOS / PROPORTION OF TYPICAL URBAN TRAVEL SPEED			
		EXISTING		2035 NO ACTION ALTERNATIVE	
ID	SEGMENT	Northbound or Eastbound	Southbound or Westbound	Northbound or Eastbound	Southbound or Westbound
1	116th Ave NE from Northup Way to SE 8th St	19 / / 1.61	13 / / 1.04	15 / / 1.26	10 / / 0.86
2	120th Ave NE/NE 1st St from NE 12th St to 116th Ave NE	20 / / 1.96	11 / / 1.14	21 / / 2.06	10 / / 1.02
3	NE 12th St from 112th Ave NE to 140th Ave NE	16/ / 1.23	21 / / 1.56	11 / / 0.83	9 / / 0.72
4	NE 8th St from 112th Ave NE to 140th Ave NE	17 / / 1.28	16 / / 1.21	16 / / 1.23	13 / / 0.98
5	NE 4th St from 112th Ave NE to 120th Ave NE	12 / / 0.99	8 / / 0.69	11 / / 0.88	**5 / / 10.45**

Note: Bold text indicates performance below the City LOS guideline of 0.65 times the typical urban travel speed.
Source: Fehr & Peers, 2017

The NE 4th Street corridor is the only study facility that is expected to fall below the City's LOS guideline of 0.65 times the typical urban travel speed for corridor travel speed under the No Action Alternative.

Transit

Transit stop amenities would be implemented as capital projects or as frontage improvements associated with property redevelopment. As discussed in the Affected Environment section, only one of the Study Area's transit stops currently meets all four criteria outlined in the City's transit LOS guidelines. While it is unknown which parcels may redevelop by 2035 under the No Action Alternative, given the limited amount of anticipated development, it is unlikely that frontage improvements would occur at all remaining transit stops. Therefore, a transit impact is identified under the No Action Alternative.

Pedestrian

Similar to transit stop improvements, sidewalk and buffer widening would be implemented as capital investments or frontage improvements associated with property redevelopment. As shown in Exhibit 3.9–15, most of the Study Area pedestrian facilities would require improvements to meet the City's pedestrian LOS guidelines of 16 feet sidewalk and landscaped buffer. Given the limited amount of anticipated development under the No Action Alternative, it is expected that many sidewalks would not meet the pedestrian LOS guidelines by 2035. Moreover, the only planned additional crossings are at NE 8th Street and NE 4th Street with the Eastside Rail Corridor (NE 8th Street is currently planned to be a bridge rather than at grade), and the Grand Connection, that would cross 116th Ave NE. Overall crossing frequency would fail the 600 foot guideline. Therefore, a pedestrian impact is identified under the No Action Alternative.

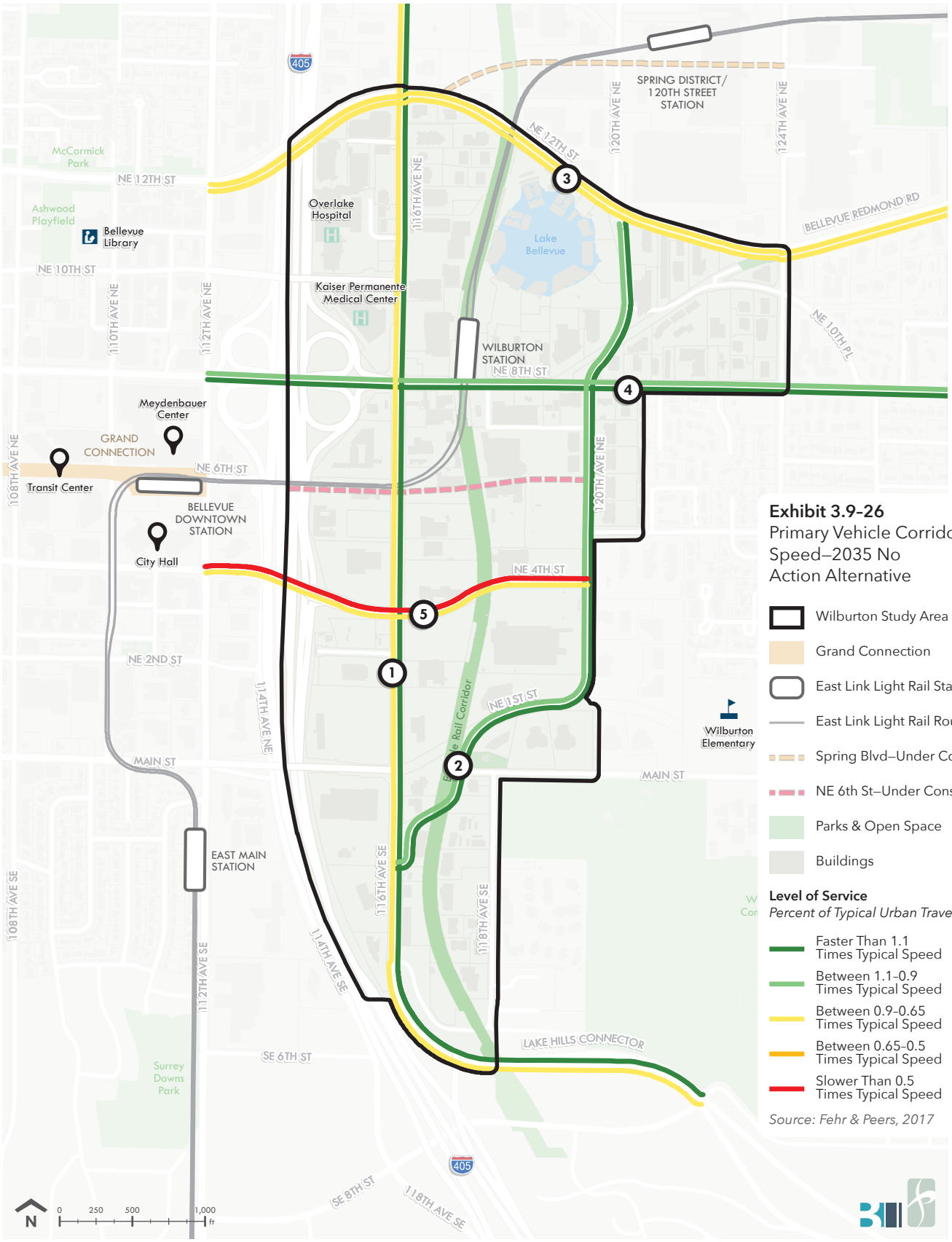


Exhibit 3.9-26
Primary Vehicle Corridor Speed—2035 No Action Alternative

- Wilburton Study Area Boundary
- Grand Connection
- East Link Light Rail Stations
- East Link Light Rail Route
- Spring Blvd—Under Construction
- NE 6th St—Under Construction
- Parks & Open Space
- Buildings

Level of Service
Percent of Typical Urban Travel Speed

- Faster Than 1.1 Times Typical Speed
- Between 1.1–0.9 Times Typical Speed
- Between 0.9–0.65 Times Typical Speed
- Between 0.65–0.5 Times Typical Speed
- Slower Than 0.5 Times Typical Speed

Source: Fehr & Peers, 2017

Bicycle

Under the No Action Alternative, the Eastside Rail Corridor would serve bicyclists by 2035. In addition, it is assumed that the off-street trail on NE 12th Street would extend east along Spring Boulevard to 120th Avenue NE. No other on-street bicycle improvements are planned under the No Action Alternative. Vehicle volumes would increase along many bicycle corridors making cycling more uncomfortable for riders. However, based upon the City's guidelines, the bicycle LTS would remain unchanged under the No Action Alternative with LTS 4 on 116th Avenue NE, 124th Avenue NE and portions of NE 12th Street, Bel-Red Road, and Main Street.

Exhibit 3.9–27 summarizes the projected bicycle LTS under the No Action Alternative. Because some segments of the bicycle corridors would operate below the LTS 3 threshold, a bicycle impact is identified under the No Action Alternative.

Non-Motorized Connectivity

The project team applied the non-motorized connectivity tool to the 2035 network to evaluate how pedestrian and bicycle travel would change. The results are shown in Exhibit 3.9–28. The addition of the Eastside Rail Corridor and Wilburton light rail station improve non-motorized connectivity in the Study Area, mainly in locations where pedestrians and cyclists can access the ERC. The NE 6th Street extension would not provide much non-motorized connectivity benefit because it would be grade separated through the Study Area until touching down at 120th Avenue NE. Even with these improvements, there are still locations with low connectivity scores due to large blocks and infrequent arterial crossings. Non-motorized connectivity would also be improved in the Spring District immediately north of the Study Area due to the construction of Spring Boulevard.

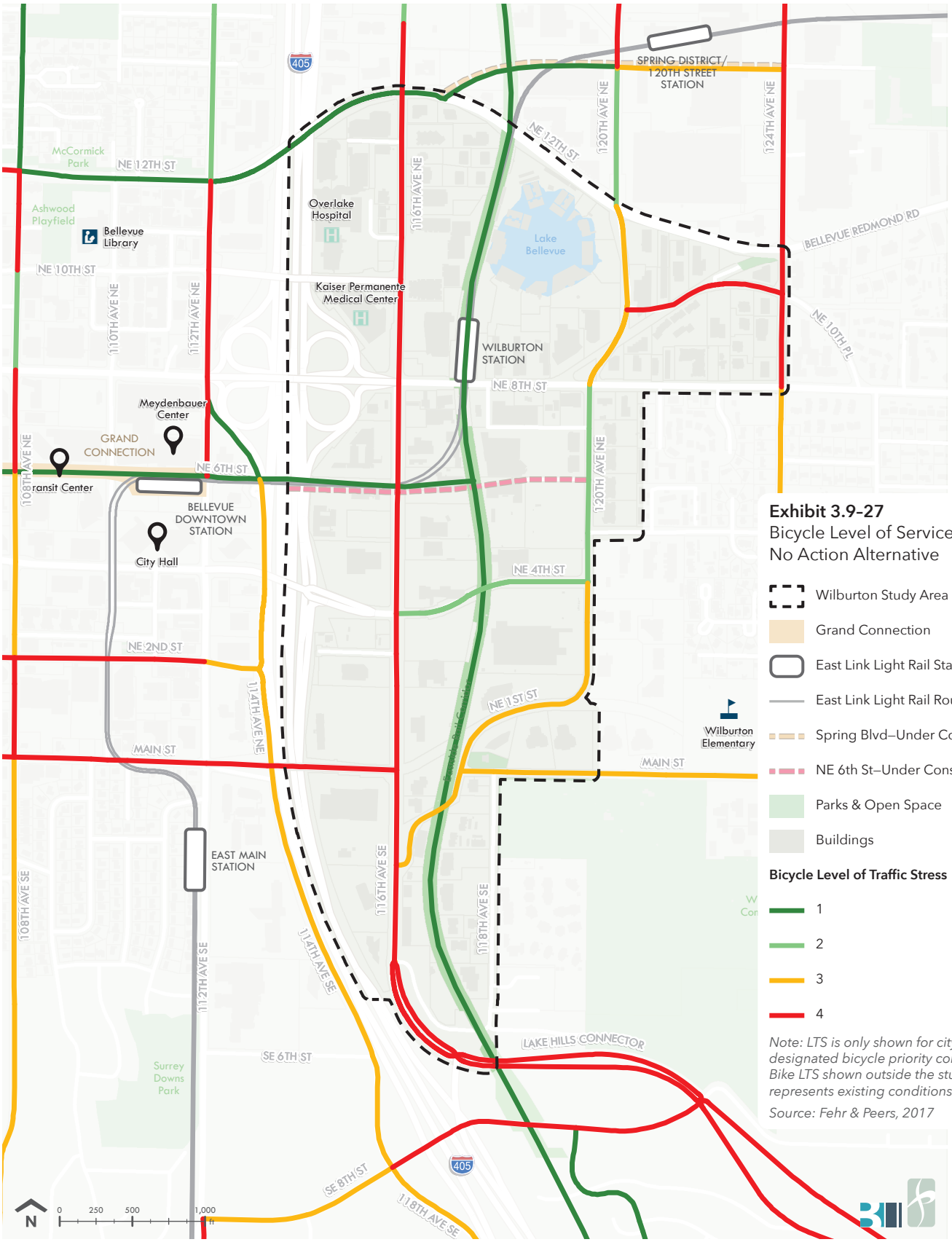


Exhibit 3.9-27
Bicycle Level of Service—2035
No Action Alternative

- Wilburton Study Area Boundary
- Grand Connection
- East Link Light Rail Stations
- East Link Light Rail Route
- Spring Blvd—Under Construction
- NE 6th St—Under Construction
- Parks & Open Space
- Buildings

Bicycle Level of Traffic Stress

- 1
- 2
- 3
- 4

Note: LTS is only shown for city designated bicycle priority corridors. Bike LTS shown outside the study area represents existing conditions.

Source: Fehr & Peers, 2017

Existing | **2035 No Action Alternative**

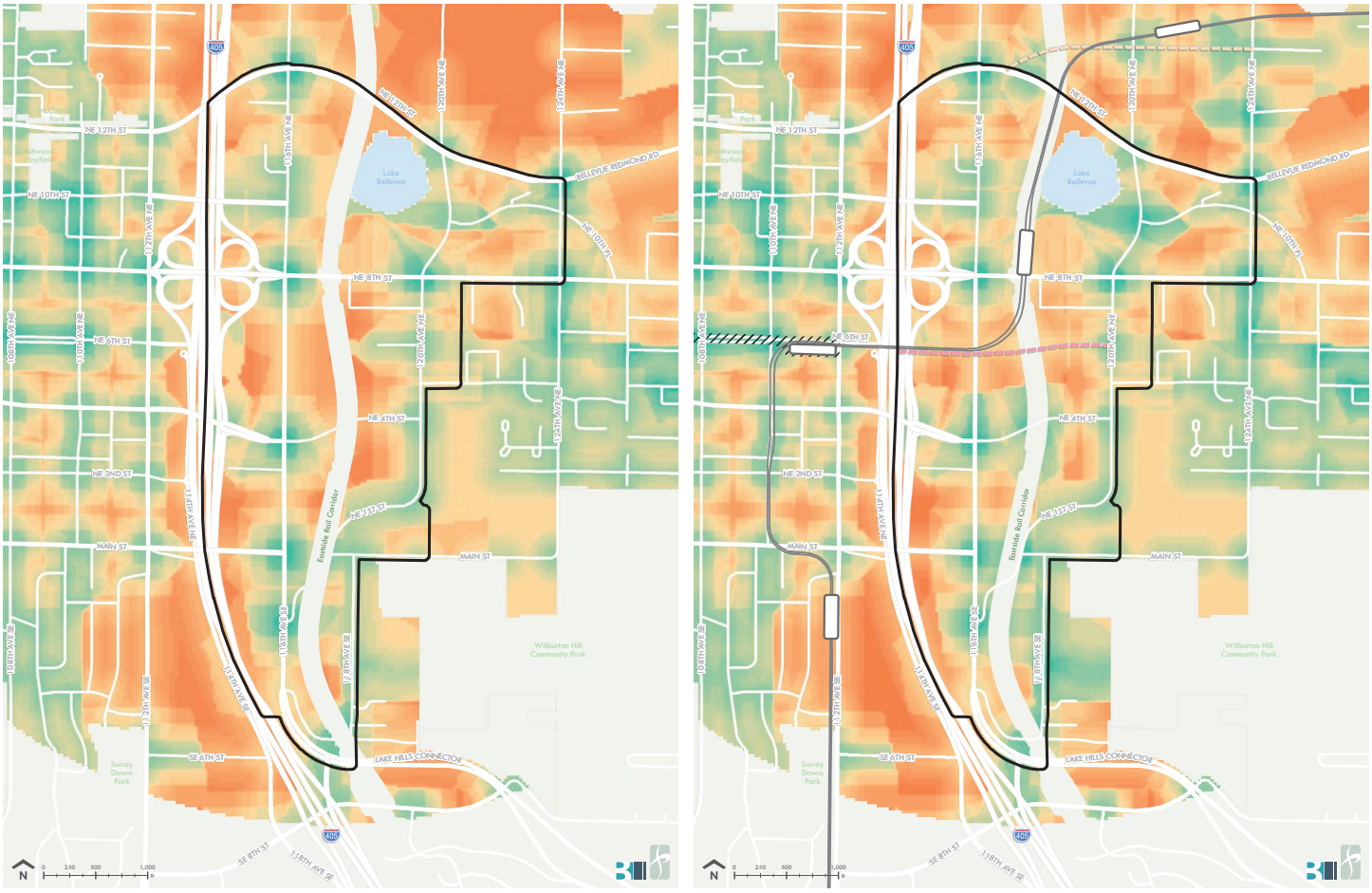


Exhibit 3.9-28 Non-Motorized Connectivity—2035 No Action Alternative

- Wilburton Study Area Boundary
- Grand Connection
- East Link Light Rail Stations
- East Link Light Rail Route
- Spring Blvd—Under Construction
- NE 6th St—Under Construction

Connectivity Index

- High
- Low

Source: Fehr & Peers, 2017

Safety

Traffic volumes in the Study Area are projected to increase substantially by 2035. With higher volumes, there is potential for an increased number of collisions. However, there is no indication that collision rates at intersections or along segments would increase. Therefore, no safety impacts are identified under the No Action Alternative.

IMPACTS OF ALTERNATIVE 1 AND 2

The action alternatives (Alternatives 1 and 2) are assessed against the No Action Alternative to identify transportation impacts. This approach compares the changes in the transportation system expected to result from Alternatives 1 or 2 against transportation changes expected under the No Action Alternative.

Thresholds of Significance

Impact definitions are based on the City's MMLOS guidelines as described in the Analysis Methodology-Affected Environment section. Significant impacts are identified if an action alternative results in:

- The average vehicle delay at the Wilburton MMA system intersections exceeding 55 seconds.
- An increase in delay compared to the No Action Alternative at a system intersection outside the Wilburton MMA that operates with delays above 55 seconds under the No Action Alternative.
- A primary vehicle corridor falling below the threshold of 0.65 times the typical urban travel speed on a corridor that met the standard under the No Action Alternative or a primary vehicle corridor falling below the threshold by at least five percent more on a corridor that did not meet the standard under the No Action Alternative.
- More pedestrian facilities failing to meet the 16-foot minimum sidewalk and buffer width and/or arterial crossings at least every 600 feet than under the No Action Alternative.
- More bicycle corridors failing to meet LTS 3 on designated roadways than under the No Action Alternative.
- More transit stops failing to meet any of the following criteria than under the No Action Alternative: weather protection, seating, wayfinding, and/or paved passenger zone of 40 feet for a primary stop and 60 feet for a FTN stop.

As defined above, this EIS identifies significant impacts if future transportation operations are not expected to meet the City's adopted level of service standards and/or guidelines and do so at a level worse than the No Action Alternative. Individual project-level mitigation could reduce the magnitude of the impact; however, this level of detail is not known and cannot be considered in this programmatic EIS.

Analysis Results

Vehicle–Mobility Management Area (Intersection LOS)

Exhibit 3.9–29 summarizes the average vehicle delay for each study intersection under Alternatives 1 and 2. The results are mapped in Exhibit 3.9–30 and Exhibit 3.9–31. Alternatives 1 and 2 would generate traffic in addition to the regional background traffic growth. The traffic generated by Alternative 2 would be higher than Alternative 1; therefore, vehicle delay at intersections is expected to be more pronounced under Alternative 2.

Exhibit 3.9–29 PM Peak Hour Intersection Delay–2035 Alternatives 1 and 2

		AVERAGE VEHICLE DELAY (IN SECONDS)		
ID	INTERSECTION	2035 No Action Alt.	2035 Alt. 1	2035 Alt. 2
1	116th Ave NE and NE 12th St	96	112	117
2	120th Ave NE and NE 12th St	86	103	104
3	124th Ave NE and NE 12th St	60	64	65
4	116th Ave NE and NE 10th St	24	25	27
5	116th Ave NE and NE 8th St	51	53	71
6	120th Ave NE and NE 8th St	42	56	58
7	124th Ave NE and NE 8th St	56	103	112
8	116th Ave NE and NE 4th St	105	>150	>150
9	120th Ave NE and NE 4th St	12	14	16
10	116th Ave NE and Main St	27	37	39
11	116th Ave NE and SE 1st St	26	26	29
12	120th Ave NE and NE 6th St	22	23	28
13	116th Ave NE and NE 6th St	N/A	N/A	N/A
14	Spring Boulevard and Bel-Red Road	68	77	79
	Wilburton MMA Average	**51**	**74**	**81**

Note: Wilburton MMA #4 includes intersections 5, 6, 8, 10 & 11. Average MMA vehicle delay is weighted by volume and the LOS Standard is average delay of 55 seconds.

Source: Fehr & Peers, 2017

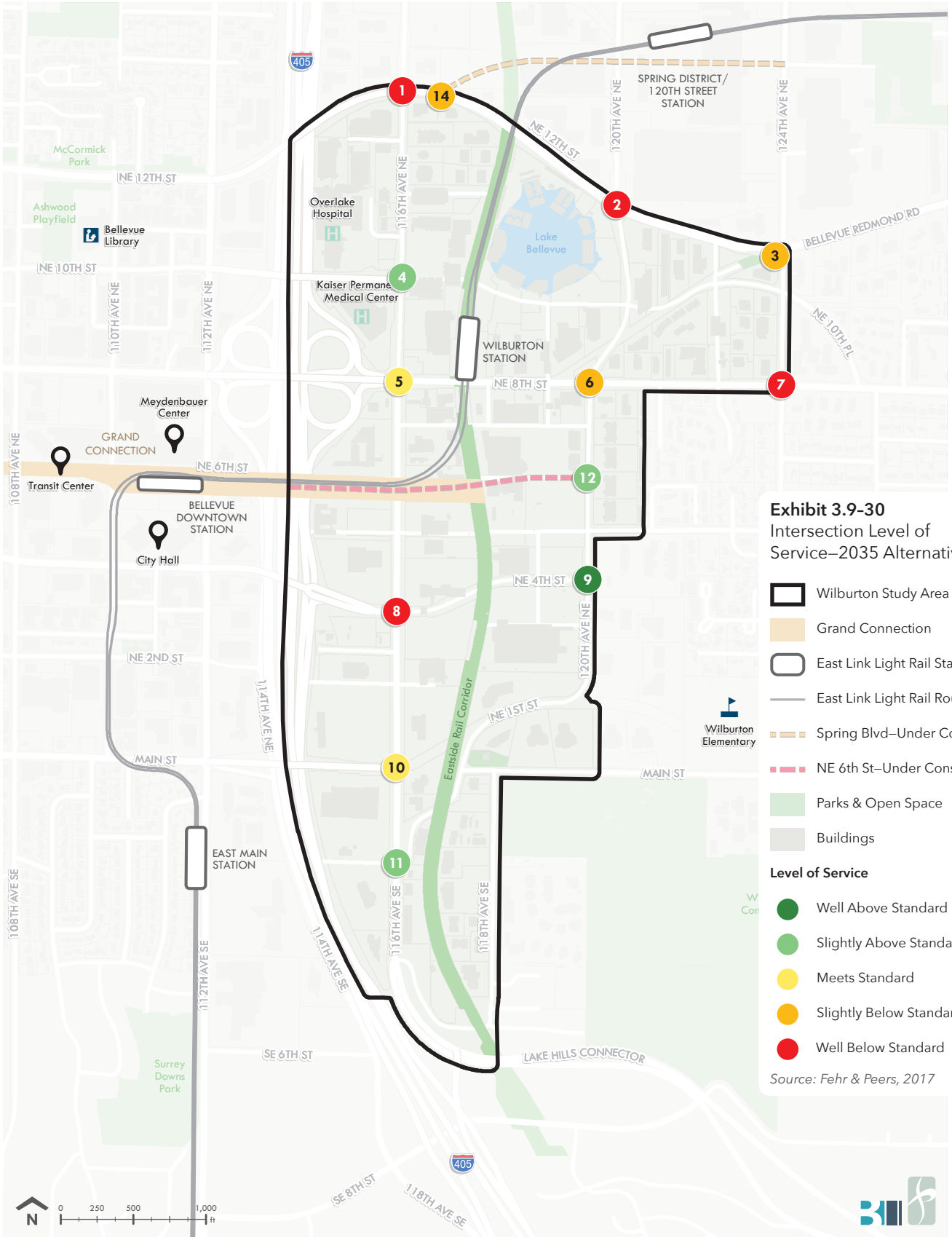


Exhibit 3.9-30
Intersection Level of Service–2035 Alternative 1

- Wilburton Study Area Boundary
- Grand Connection
- East Link Light Rail Stations
- East Link Light Rail Route
- Spring Blvd–Under Construction
- NE 6th St–Under Construction
- Parks & Open Space
- Buildings

Level of Service

- Well Above Standard
- Slightly Above Standard
- Meets Standard
- Slightly Below Standard
- Well Below Standard

Source: Fehr & Peers, 2017

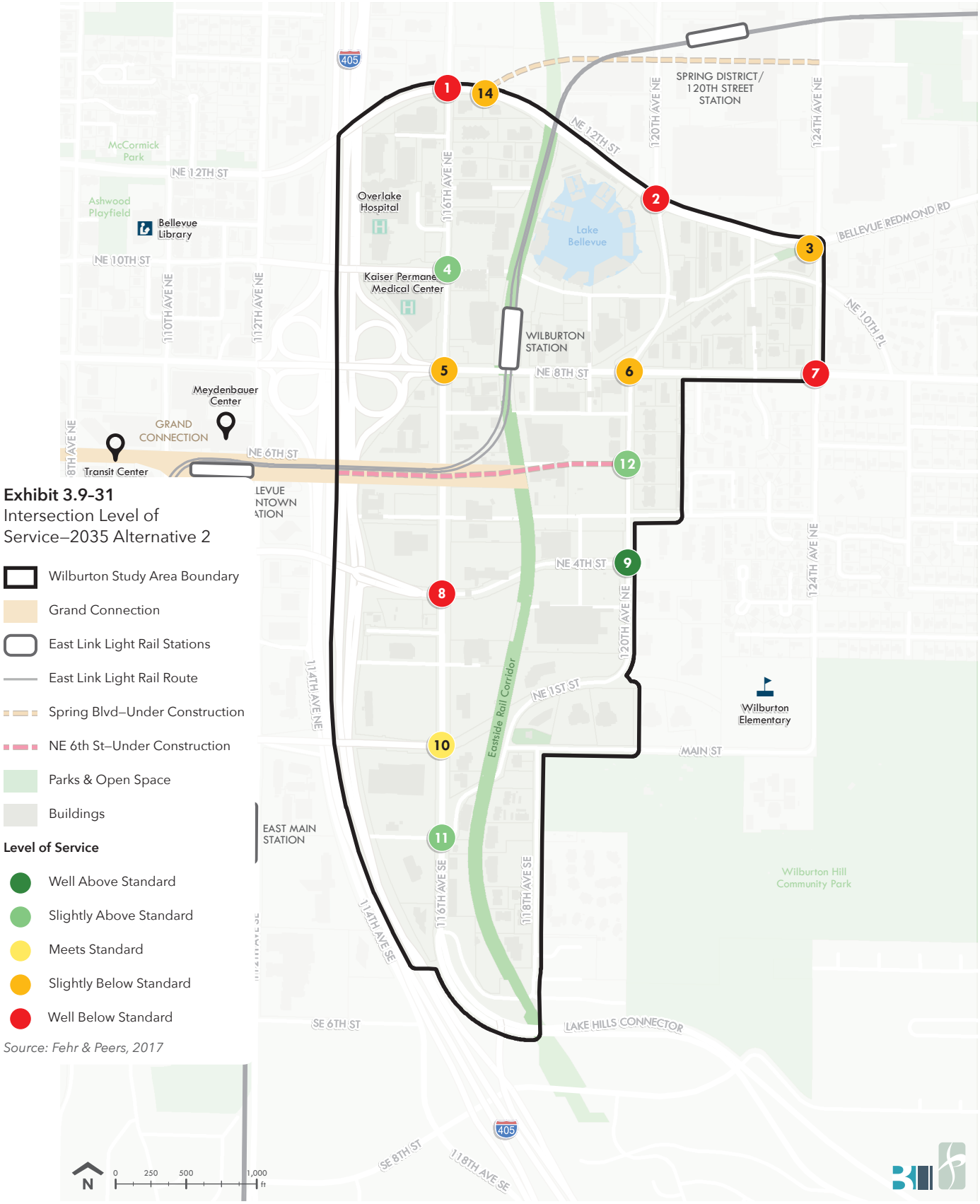


Exhibit 3.9-31
Intersection Level of Service–2035 Alternative 2

- Wilburton Study Area Boundary
- Grand Connection
- East Link Light Rail Stations
- East Link Light Rail Route
- Spring Blvd–Under Construction
- NE 6th St–Under Construction
- Parks & Open Space
- Buildings

Level of Service

- Well Above Standard
- Slightly Above Standard
- Meets Standard
- Slightly Below Standard
- Well Below Standard

Source: Fehr & Peers, 2017

NE 6th Street Extension to 116th Avenue NE–Alternative 2

The NE 6th extension to 116th Avenue NE was also tested under Alternative 2 to determine how the transportation network would function with the traffic volume associated with the most intense land use alternative. The results are shown in Exhibit 3.9-32. Again, the regional travel demand forecasting model predicts that traffic patterns would shift to reach the new overpass with increased volumes along 116th Avenue NE north of NE 6th Street and NE 8th Street east of 116th Avenue NE. Traffic operations along 116th Avenue NE south of NE 6th Street are expected to be similar to the other NE 6th Street extension option because southbound vehicles are drawn off the corridor at NE 6th Street rather than proceeding to NE 4th Street. Compared to Alternative 2 with the NE 6th Street extension to 120th Avenue NE, the average vehicle delay at the MMA system intersections would increase by 36 seconds to 117 seconds.

Exhibit 3.9-32 PM Peak Hour Intersection Delay–2035 Alternative 2, NE 6th Street Options

		AVERAGE VEHICLE DELAY (IN SECONDS)	
ID	INTERSECTION	NE 6th St Extension to 120th Ave NE	NE 6th St Extension to 116th Ave NE
1	116th Ave NE and NE 12th St	117	141
2	120th Ave NE and NE 12th St	104	102
3	124th Ave NE and NE 12th St	65	64
4	116th Ave NE and NE 10th St	27	25
5	116th Ave NE and NE 8th St	71	>150
6	120th Ave NE and NE 8th St	58	65
7	124th Ave NE and NE 8th St	112	71
8	116th Ave NE and NE 4th St	>150	>150
9	120th Ave NE and NE 4th St	16	14
10	116th Ave NE and Main St	39	33
11	116th Ave NE and SE 1st St	29	34
12	120th Ave NE and NE 6th St	28	N/A
13	116th Ave NE and NE 6th St	N/A	> 150
14	Spring Boulevard and Bel-Red Road	79	100
	Wilburton MMA Average	**81**	**117**

Note: Wilburton MMA #4 includes intersections 5, 6, 8, 10 & 11. Average MMA delay is weighted by volume and the LOS Standard is average delay of 55 seconds.

Source: Fehr & Peers, 2017

As discussed in the No Action Alternative section, the NE 6th Street extension to 120th Avenue NE distributes traffic more evenly among the Study Area's arterials while the extension to 116th Avenue NE would exacerbate conditions on the corridors that are already the most congested. In particular, the extension terminating at 116th Avenue NE would degrade vehicle speed along southbound 116th Avenue NE by roughly two minutes and westbound NE 8th Street by roughly one minute beyond the Alternative 2 120th Avenue NE extension option.

The following intersections are expected to operate in excess of the impact threshold of 55 seconds of delay under both Alternatives 1 and 2:

- 116th Avenue NE and NE 12th Street
- 120th Avenue NE and NE 12th Street
- 124th Avenue NE and NE 12th Street
- 120th Avenue NE and NE 8th Street
- 124th Avenue NE and NE 8th Street
- 116th Avenue and NE 4th Street
- Spring Boulevard and NE 12th Street

Under Alternative 2, the intersection of 116th Avenue NE and NE 8th Street would also operate with more than 55 seconds of vehicle delay.

Under Alternative 1, the Wilburton MMA average vehicle delay is projected to increase to 74 seconds of delay, falling below the City's standard. Under Alternative 2, increased demand would result in more vehicle delay bringing the MMA average delay to 81 seconds. Therefore, significant impacts are expected to traffic operations within the Wilburton MMA under both Alternatives 1 and 2.

In addition to the impact to the MMA average vehicle delay, several of the aforementioned intersections which act as system intersections to adjacent MMAs would be affected (116th Avenue NE/NE 12th Street, 120th Avenue NE/NE 12th Street, 124th Avenue NE/NE 8th Street and Spring Boulevard/Bel-Red Road). This is also identified as a significant impact to traffic operations in the Study Area.

Vehicle—Primary Vehicle Corridor Speed

Exhibit 3.9–33 summarizes travel speed under Alternatives 1 and 2. Results are mapped in Exhibit 3.9–34 and Exhibit 3.9–35. Speeds were estimated using Synchro/SimTraffic software.

Compared to the No Action Alternative, speeds along the primary vehicle corridors are expected to decrease by up to four miles per hour under Alternative 1. The corridor with the largest expected decrease is northbound 116th Avenue NE between SE 8th Street and Northup Way. The NE 4th Street corridor is the only study facility that is expected to operate below the City LOS guideline of 0.65 times the typical urban travel speed. Based upon the thresholds of

Exhibit 3.9-33 PM Peak Hour Vehicle Travel Speed and Corridor Level of Service–2035 Alternatives 1 and 2

		SPEED (MILES PER HOUR) / LOS / PROPORTION OF TYPICAL URBAN TRAVEL SPEED					
		2035 NO ACTION ALTERNATIVE		2035 ALTERNATIVE 1		2035 ALTERNATIVE 2	
ID	SEGMENT	Northbound or Eastbound	Southbound or Westbound	Northbound or Eastbound	Southbound or Westbound	Northbound or Eastbound	Southbound or Westbound
1	116th Ave NE from Northup Way to SE 8th St	15 / A / 1.26	10 / C / 0.86	11 / B / 0.94	8 / C / 0.69	10 / C / 0.83	**8 / D / 0.63**
2	120th Ave NE/NE 1st St from NE 12th St to 116th Ave NE	21 / A / 2.06	10 / B / 1.02	18 / A / 1.84	9 / B / 0.93	18 / A / 1.76	9 / C / 0.90
3	NE 12th St from 112th Ave NE to 140th Ave NE	11 / C / 0.83	9 / C / 0.72	10 / C / 0.78	9 / C / 0.66	10 / C / 0.78	9 / C / 0.65
4	NE 8th St from 112th Ave NE to 140th Ave NE	16 / A / 1.23	13 / B / 0.98	13 / B / 1.01	12 / C / 0.87	13 / B / 0.96	11 / C / 0.85
5	NE 4th St from 112th Ave NE to 120th Ave NE	11 / C / 0.88	**5 / F / 0.45**	**7 / D / 0.62**	**5 / F / 0.45**	**6 / F / 0.47**	**5 / F / 0.39**

Note: Bold text indicates performance below the City LOS guideline.
Source: Fehr & Peers, 2017

significance, a significant impact is identified for eastbound NE 4th Street under Alternative 1. Although westbound NE 4th Street would operate below the 0.65 threshold, it is not considered a significant impact because it is forecasted to operate at the same speed as the No Action Alternative.

Alternative 2 is expected to have more substantial decreases in speed on the Study Area's arterial corridors. Compared to the No Action Alternative, travel speed along the 116th Avenue NE corridor is expected to decrease by five miles per hour northbound and two miles per hour southbound. Travel speed along the NE 4th Street corridor would degrade further with the increased traffic volume. Based upon the thresholds of significance, a significant impact is identified for the following segments:

- Eastbound NE 4th Street (operates at less than 0.65 times the typical urban travel speed);
- Westbound NE 4th Street (operates at a typical urban travel speed ratio at least five percent lower than the No Action Alternative which was already less than 0.65 times the typical urban travel speed); and
- Southbound 116th Avenue NE under Alternative 2 (operates at less than 0.65 times the typical urban travel speed).

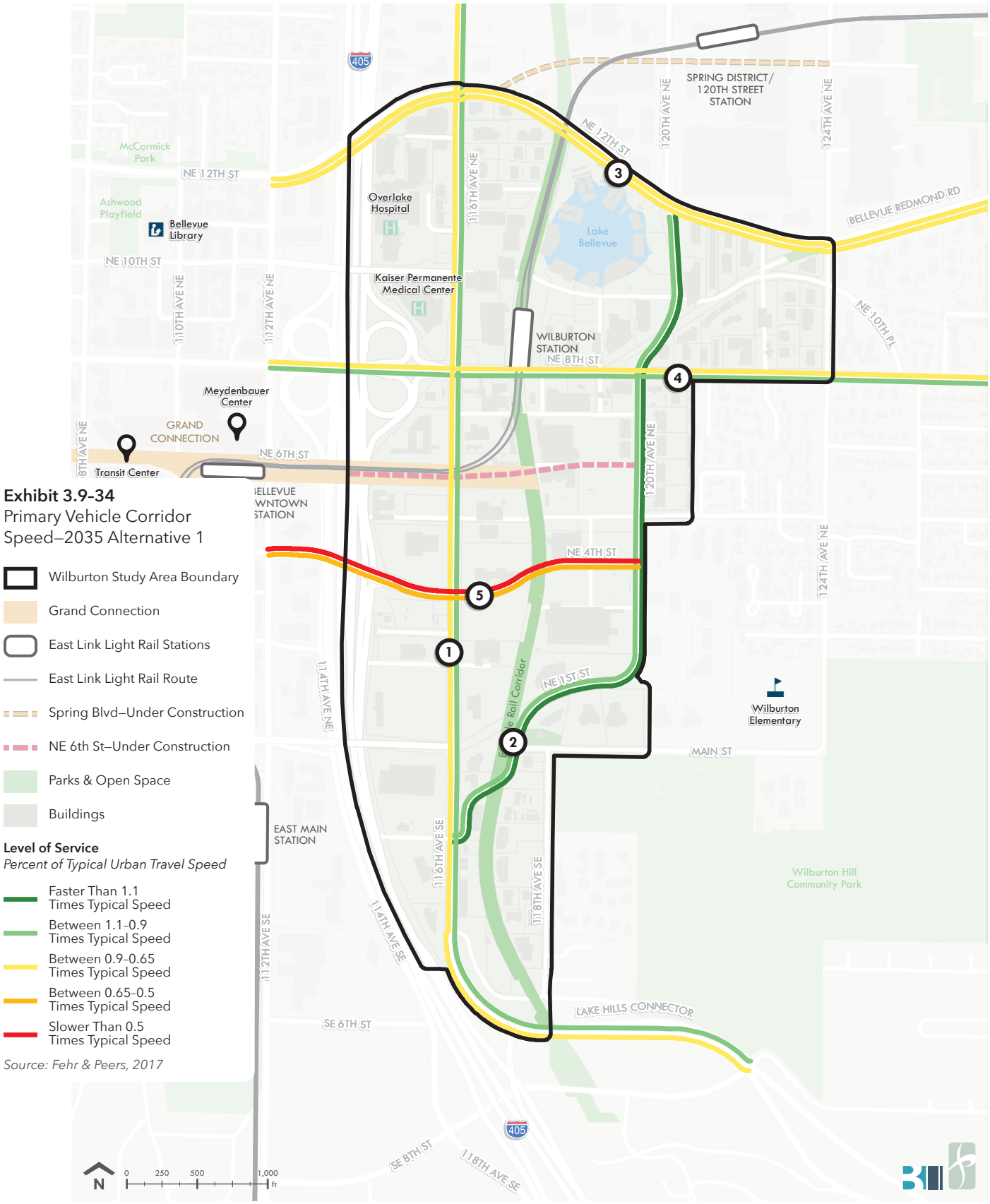


Exhibit 3.9-34
Primary Vehicle Corridor Speed–2035 Alternative 1

- Wilburton Study Area Boundary
- Grand Connection
- East Link Light Rail Stations
- East Link Light Rail Route
- Spring Blvd–Under Construction
- NE 6th St–Under Construction
- Parks & Open Space
- Buildings

Level of Service
Percent of Typical Urban Travel Speed

- Faster Than 1.1 Times Typical Speed
- Between 1.1–0.9 Times Typical Speed
- Between 0.9–0.65 Times Typical Speed
- Between 0.65–0.5 Times Typical Speed
- Slower Than 0.5 Times Typical Speed

Source: Fehr & Peers, 2017

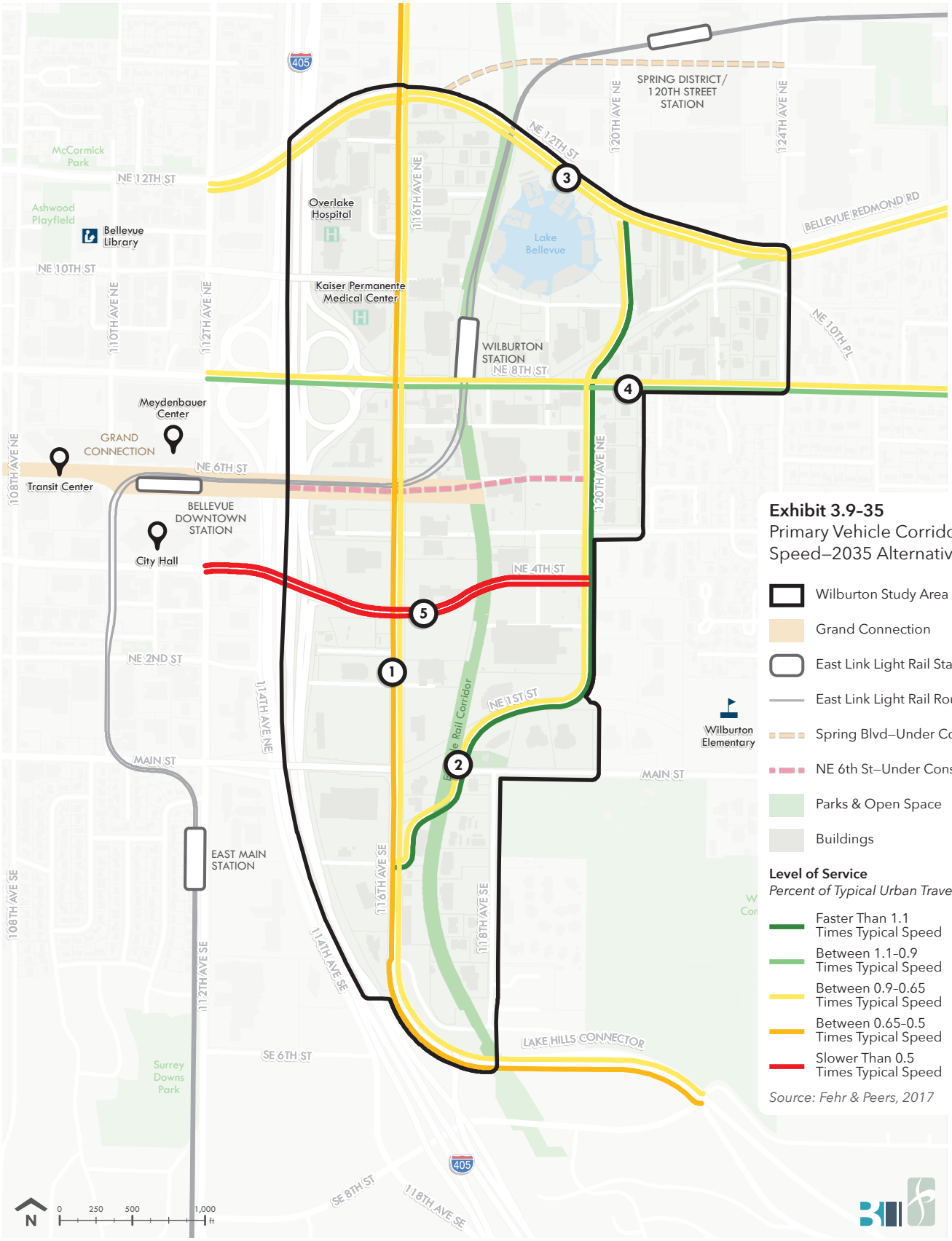


Exhibit 3.9-35
Primary Vehicle Corridor Speed–2035 Alternative 2

- Wilburton Study Area Boundary
- Grand Connection
- East Link Light Rail Stations
- East Link Light Rail Route
- Spring Blvd–Under Construction
- NE 6th St–Under Construction
- Parks & Open Space
- Buildings

Level of Service
Percent of Typical Urban Travel Speed

- Faster Than 1.1 Times Typical Speed
- Between 1.1-0.9 Times Typical Speed
- Between 0.9-0.65 Times Typical Speed
- Between 0.65-0.5 Times Typical Speed
- Slower Than 0.5 Times Typical Speed

Source: Fehr & Peers, 2017

Transit

As with the No Action Alternative, transit stop amenities would be implemented as capital improvements or frontage improvements associated with property redevelopment. Because more parcels are likely to redevelop under Alternatives 1 and 2 than under the No Action Alternative, more transit stops are likely to be improved. Therefore, the transit environment would be better than under the No Action Alternative and no significant transit impacts are identified for Alternatives 1 or 2.

Pedestrian

Similar to transit stop improvements, sidewalk and buffer widening would be implemented as capital improvements or frontage improvements associated with property redevelopment. Because more parcels are likely to redevelop under Alternatives 1 and 2 than under the No Action Alternative, more sections of sidewalk are likely to be improved consistent with the City's LOS guidelines of 16-foot wide sidewalk and landscape buffer. Moreover, the denser street grid network planned under Alternatives 1 and 2 will result in more frequent arterial crossings. Therefore, the pedestrian environment would be better than under the No Action Alternative and no significant pedestrian impacts are identified for Alternatives 1 or 2.

Bicycle

Bicycle LTS ratings were updated for Alternatives 1 and 2 based on the change in traffic volumes as well as the new buffered bike lane planned for 116th Avenue NE. The results are shown in Exhibit 3.9–36. Although Alternative 2 would have higher vehicle volumes than Alternative 1, the LTS ratings would be identical between the two action alternatives. The LTS ratings for most bicycle corridors would remain the same as the No Action Alternative despite the increase in traffic volume. However, the 116th Avenue NE corridor would improve from LTS 4 to LTS 3 due to the presence of the buffered bike lanes. Because bicycle LTS would stay the same or improve on all bicycle corridors compared to the No Action Alternative, no significant bicycle impacts are identified for Alternatives 1 or 2.

Non-Motorized Connectivity

Non-motorized connectivity under Alternatives 1 and 2 is shown in Exhibit 3.9–37 alongside the No Action Alternative for comparison.

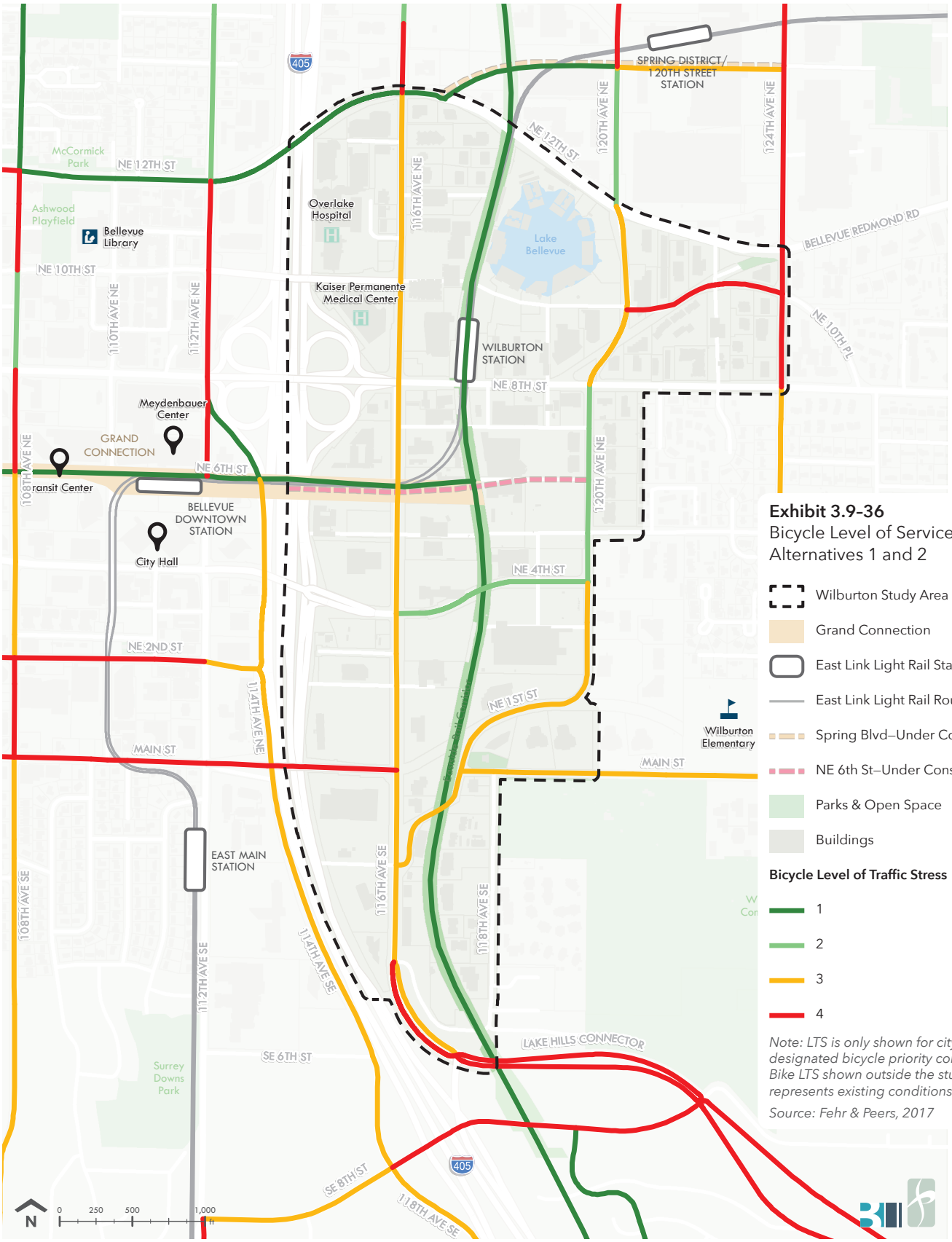


Exhibit 3.9-36
Bicycle Level of Service—2035
Alternatives 1 and 2

- Wilburton Study Area Boundary
- Grand Connection
- East Link Light Rail Stations
- East Link Light Rail Route
- Spring Blvd—Under Construction
- NE 6th St—Under Construction
- Parks & Open Space
- Buildings

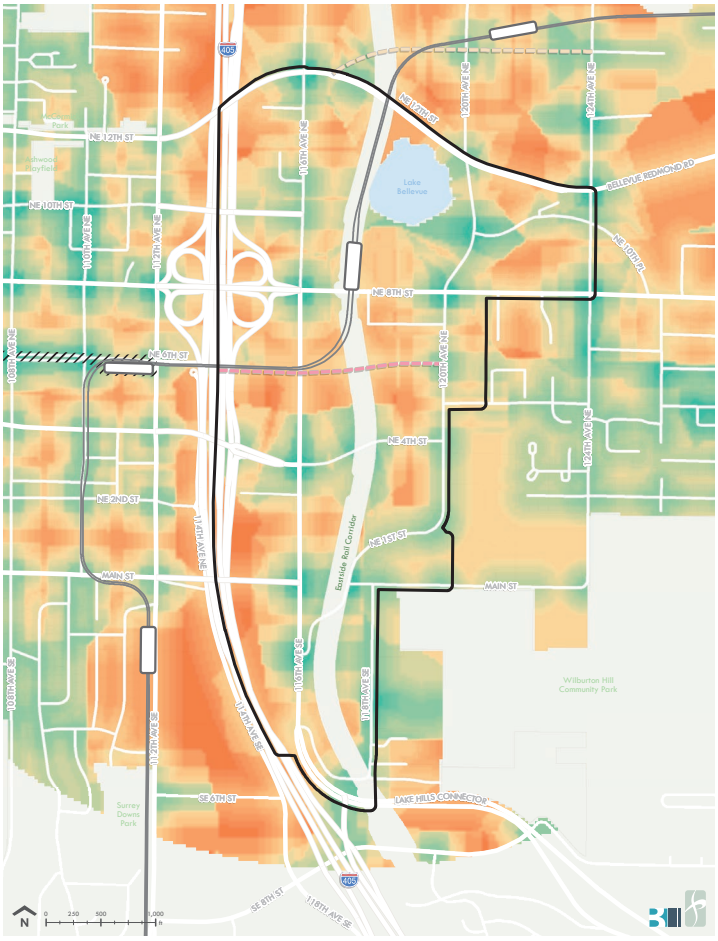
Bicycle Level of Traffic Stress

- 1
- 2
- 3
- 4

Note: LTS is only shown for city designated bicycle priority corridors. Bike LTS shown outside the study area represents existing conditions.

Source: Fehr & Peers, 2017

2035 No Action Alternative



2035 Alternatives 1 and 2

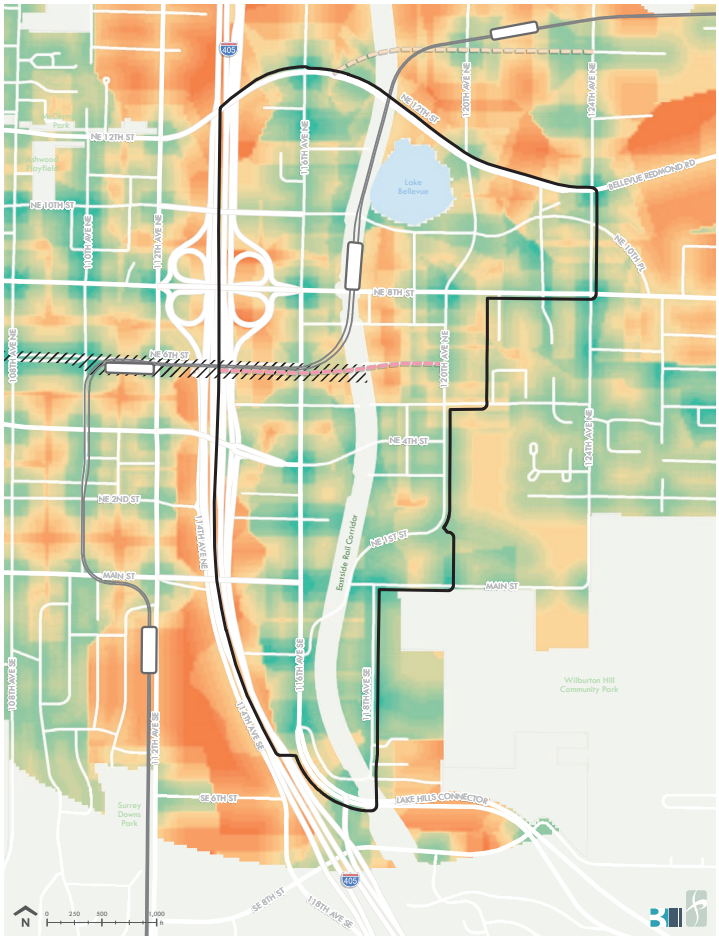


Exhibit 3.9-37 Non-Motorized Connectivity—2035 Alternatives

- Wilburton Study Area Boundary
- Grand Connection
- East Link Light Rail Stations
- East Link Light Rail Route
- Spring Blvd—Under Construction
- NE 6th St—Under Construction

Connectivity Index

- High
- Low

Source: Fehr & Peers, 2017

The addition of new local streets, alleys, pedestrian paths, stairs, and arterial crossings under Alternatives 1 and 2 would substantially improve non-motorized connectivity throughout the Study Area. Moreover, the Grand Connection is assumed to extend across I-405 to the ERC under the action alternatives. Connectivity is greatly improved along and adjacent to 116th Avenue NE, a new north-south street between the ERC and 120th Avenue NE, and along and adjacent to NE 8th Street between 120th Avenue NE and 124th Avenue NE. This improvement in the composite score is driven largely by the improved intersection density and signalized arterial crossing frequency. However, one location continues to see low connectivity due to a lack of signalized arterial crossings: between 116th Avenue NE and 120th Avenue NE from NE 6th Street to Lake Bellevue.

Safety

Traffic volumes in the Study Area are projected to increase under Alternatives 1 and 2 compared to the No Action Alternative, with Alternative 2 resulting in the highest volumes. With higher volumes, there is potential for an increased number of collisions. However, there is no indication that collision rates at intersections or along segments would increase meaningfully compared to the No Action Alternative. Therefore, no significant safety impacts are identified for Alternatives 1 or 2.

NE 8th Street/Eastside Rail Corridor Pedestrian Signal

The previously presented traffic operations analyses assume that the Eastside Rail Corridor (ERC) crosses NE 8th Street on an overpass which would have no interaction with vehicle traffic. Because the CAC has expressed interest in an at-grade crossing of NE 8th Street to enhance connectivity and forego (or supplement) another elevated structure, this EIS considers the possibility of a pedestrian signal at the intersection of the ERC and NE 8th Street.

Assuming that NE 6th Street is extended all the way to 120th Avenue NE, the addition of a pedestrian/bicycle signal on NE 8th Street has relatively little effect on delay in the corridor, less than a minute in either direction (which is not expected to result in a speed impact to NE 8th Street in either direction). While this result might seem counterintuitive on such a busy corridor, the pedestrian/bicycle signal is assumed to be coordinated with the other signals at 116th Avenue NE and 120th Avenue NE. Since those traffic signals create gaps in traffic along NE 8th Street, the delay is relatively modest. More travelers would be affected if the NE 6th Street extension terminates at 116th Avenue NE due to the shifted travel pattern.

While vehicle delays are generally short with the pedestrian/bicycle signal, there is a substantial delay for bicyclists wishing to cross NE 8th Street when compared with the grade-separated crossing. Assuming a total cycle length of 120 seconds, on average, a cyclist will need to wait about one minute for the traffic signal to turn green. There is no delay for the grade-separated crossing. The delay for pedestrians is assumed to be less substantial, since many pedestrians will either be accessing uses on either side of NE 8th Street or be crossing to access the light rail platform. In these cases, the delay added by the traffic signal is probably similar or even shorter than using the overpass when the time it takes to climb stairs or loop back on the trail is considered, particularly as it relates to the transit station access.

SUMMARY OF IMPACTS

Exhibit 3.9–38 summarizes the significant impacts for each alternative. Note that the table only includes the metrics used for impact identification.

Exhibit 3.9–38 Summary of Transportation Impacts

TYPE OF IMPACT	NO ACTION ALT.	ALT. 1	ALT. 2
Vehicle Operations Average Vehicle Delay at MMA and Non-MMA Intersections	No	Yes	Yes
Primary Vehicle Corridor Speed Ratio to Typical Urban Travel Speed	Yes	Yes	Yes
Transit Transit Stop Amenities	Yes	No	No
Pedestrian Sidewalk/Buffer Width and Crossing Frequency	Yes	No	No
Bicycle Level of Traffic Stress	Yes	No	No
Safety Effect on Collision Rates	No	No	No

Source: Fehr & Peers, 2017

Performance Measures Evaluation

Exhibit 3.9–39 summarizes the transportation performance standards identified for the Wilburton Commercial Area EIS. The No Action Alternative would improve connectivity and access to services via the ERC. Both Alternatives 1 and 2 would build upon the

Exhibit 3.9–39 Evaluation Framework: Comparison of Alternatives—Transportation

PERFORMANCE MEASURE	NO ACTION ALTERNATIVE	ALTERNATIVE 1	ALTERNATIVE 2
Connectivity index and map	●	▲	▲
Access to services (parks, schools etc.)	▼	▲	▲
Multimodal level of service performance measures	▼	●	●
Increase in walk and bike trips	▼	●	▲

▲ *Strong Emphasis* ● *Moderate Emphasis* ▼ *Weak Emphasis*

No Action Alternative improvements by providing a more connected neighborhood with increased access to services. Walk and bike trips under Alternatives 1 and 2 are expected to be higher than under the No Action Alternative, with the highest increases under Alternative 2 because it would have the most intense land uses.

As shown in Exhibit 3.9–38, the multimodal LOS measures would vary among alternatives, with the No Action Alternative having the least impact on traffic operations, but more substantial impacts on transit, pedestrians, and bicycles. In contrast, Alternatives 1 and 2 would have more impacts to traffic operations (particularly under Alternative 2), but have beneficial impacts to transit, pedestrians, and bicycles.

3.9.4 MITIGATION MEASURES

This section identifies a range of potential mitigation strategies that could be implemented to help reduce the significance of the adverse impacts identified for Alternatives 1 and 2 in the previous section. These include impacts to vehicles through the MMA intersection LOS standard as well as primary vehicle corridor speed.

INCORPORATED PLAN FEATURES

Managing demand for auto travel is an important part of mitigating the traffic congestion impacts identified in this EIS. The City of Bellevue incorporates a variety of Transportation Demand Management (TDM) strategies to encourage travel by carpooling, vanpooling, transit, walking, biking, and teleworking. The City published a TDM plan in 2015 guiding its TDM strategies and implementation through 2023. Key strategies include:

- Requirement–based programs, including Commute Trip Reduction and Transportation Management Programs
- Product subsidies and discounts, including transportation benefit rebates, transportation mini-grants, and emergency ride home
- Education and assistance, including commute program consulting services, program expert consulting services, real-time and longer-term travel information assistance, rideshare and ridematch promotion, and school programs aimed at K-12 students and their parents.

- Incentives and rewards, including trip logging and rewards programs, commute challenges, and parking cashout.
- Marketing and promotions of TDM strategies, the Choose Your Way Bellevue website, carsharing, recognition programs, and email newsletters.
- Research, planning, and coordination to explore new TDM concepts and programs.

Several of these programs are discussed here; additional details on the other strategies are provided in Appendix D.

Washington state Commute Trip Reduction (CTR) law focuses on employers with 100 or more employees whose shifts begin during the typical AM commute. This law requires employers to develop commute trip reduction plans and work toward meeting their mode share targets through internal programs and monitoring. Bellevue's monitoring of CTR worksites reflects a steady decrease in SOV rates over the past twenty years, particularly Downtown. As more businesses subject to CTR locate in the Study Area, it is expected that a similar decrease in SOV commute rates will result.

Transportation Management Programs (TMPs) are required by City code (BCC Sections 14.60.070 and 14.60.080) for property owners of newly constructed buildings. TMPs are designed to encourage tenants to reduce their traffic and parking impacts on city facilities. Both the CTR and TMP programs are currently geared toward large employers; however, they could be adapted to smaller employers and residential buildings to maximize their effect.

The TDM strategies discussed here would be implemented regardless of which land use alternative is selected. As demonstrated by the CTR data in Bellevue, TDM programs can have a substantial effect on travel behavior—something which is not fully captured by the travel demand modeling process. With a robust TDM program in place, it is expected that actual trip generation in the Study Area would be lower than that analyzed in the impacts section of this EIS.

OTHER PROPOSED MITIGATION MEASURES

Level of Service Policy

The City could approach mitigation through revision of its LOS policy—in particular, through the designation of MMA system intersections and revising the LOS standard for the MMA and primary vehicle corridors to be consistent with more urban areas of the city.

Mobility Management Areas

Since the City originally designated Wilburton MMA system intersections, two new signalized intersections have been constructed: 116th Avenue NE at NE 10th Street, and 120th Avenue NE at NE 4th Street. The City considers system intersections to be intersections that contribute to the system function within the MMA. Both of the aforementioned intersections contribute to the system function and therefore the City could consider including them as system intersections. The City also recently added the 120th Avenue NE at BelRed Road intersection, which could also be considered a system intersection, although it was not studied as part of this EIS.

The City of Bellevue designates LOS standards for MMAs based upon the unique conditions and community objectives of the area. In the Downtown, BelRed/Northup and Factoria MMAs, the City uses LOS E+ as the standard (Volume-to-Capacity of 0.95 or 70 seconds of average delay). Given the vision for an urban and transit-oriented neighborhood in Wilburton, it is reasonable to consider modifying the Wilburton MMA standard to LOS E+ consistent with other urban areas in Bellevue.

If the two new system intersections are included and the LOS standard is changed to E+ (Volume-to-Capacity of 0.95 or 70 seconds average delay), the MMA average vehicle delay under Alternative 1 would be 65 seconds, fully accommodating the identified traffic impact. Under Alternative 2, the average vehicle delay would be 72 seconds, slightly above the threshold. However, one mitigation measure to the 120th Avenue NE/NE 8th Street intersection would bring the vehicle delay down to 68 seconds: prohibiting the eastbound U-turn to allow a southbound right turn overlap. This improvement was just implemented by the City (August 2017), and was therefore not considered in the EIS analysis. With this improvement in place, the only further change required

would be to update the MMA LOS standard in the Comprehensive Plan and the Traffic Standards Code.

Primary Vehicle Corridor Speeds

Similar to the MMA LOS standard, the City could consider revising the Study Area's primary vehicle speed guideline to be the same as that designated for BelRed/Northup, Downtown and Factoria: 0.5 times the typical urban travel speed. To fully mitigate the identified impacts, this approach would need to be taken in conjunction with intersection-specific improvements which are discussed in the next section.

Intersection-Specific Improvements

Another potential approach to reduce the MMA intersection impacts is to make capital improvements to increase the capacity of the intersections and roadways in the Study Area. This section describes potential improvements to the MMA system intersections that are operating with more than 55 seconds of vehicle delay.

Exhibit 3.9–40 describes capacity improvements that could be made to better accommodate the traffic demand generated by Alternatives 1 and 2. Note that the proposed mitigation at 120th Avenue NE/NE 8th Street was completed by the City after the EIS analysis was completed. The mitigation measures to prohibit U-turns may require accommodation of a U-turn downstream to allow travelers to backtrack to reach their destination.

If all of the modifications listed above were implemented, the MMA average delay under Alternative 1 would decrease to 54 seconds and under Alternative 2 would decrease to 49 seconds, meeting the City's current standard. A complete table of the mitigated intersection operations may be found in Appendix D. Mitigation measures for the non-MMA system intersections were also considered.

Exhibit 3.9–41 summarizes capital improvements that would reduce delay to the level forecasted for the No Action condition.

The intersection modifications proposed above would increase crossing distances for pedestrians and bicycles and may not be desirable in a dense urban area near light rail stations where pedestrian orientation and an urban sense of place are high priorities. If these modifications are pursued, substantial pedestrian crossing improvements may be warranted to meet MMLOS guidelines.

Exhibit 3.9-40 Potential Mitigation Measures for MMA System Intersections

			VEHICLE DELAY (IN SECONDS)			
INTERSECTION IMPROVEMENT	ALT. 1	ALT. 2	Alt. 1	Alt. 1 Mitigated	Alt. 2	Alt. 2 Mitigated
116th Avenue NE/NE 8th Street						
Dual NB left turn lanes		X	53	53	71	58
Prohibit WB U-turns to allow NB right turn overlap		X				
120th Avenue NE/NE 8th Street						
Prohibit EB U-turns to allow SB right turn overlap		X	56	56	58	34
116th Avenue NE/NE 4th Street						
Dual NB left turn lanes		X	>150	85	>150	72
Dual EB left turn lanes	X	X				
EB right turn pocket with overlap		X				
SB right turn pocket with overlap	X	X				
Modify signal phasing	X	X				

Source: Fehr & Peers, 2017

Exhibit 3.9-41 Potential Mitigation Measures for Non-MMA System Intersections

			VEHICLE DELAY (IN SECONDS)				
INTERSECTION IMPROVEMENT	ALT. 1	ALT. 2	No Action Alt.	Alt. 1	Alt. 1 Mitigated	Alt 2	Alt. 2 Mitigated
116th Avenue NE/NE 12th Street							
NB right turn lane	X	X	96	112	86	117	89
120th Avenue NE/NE 12th Street							
NB right turn lane	X	X	86	103	82	104	78
124th Avenue NE/NE 8th Street							
Protected phase for SB left turn		X	56	103	53	112	56
WB right turn lane	X	X					
Signal timing changes including WB right turn overlap	X	X					
Dual SB left turn lanes	X	X					
Spring Boulevard/BelRed Road							
Dual EB left turn lanes	X	X	68	77	54	79	55

Source: Fehr & Peers, 2017

It should be noted that some of the above intersections are system intersections for other MMAs. While this study proposes mitigations to return their operations to the No Action Alternative conditions, it is recommended that they be viewed more holistically as part of a Transportation Facilities Plan update to determine if the modifications are warranted given the envisioned urban, multimodal nature of the area.

Vehicle Speed

Significant impacts to vehicle travel speed were identified for eastbound NE 4th Street under Alternative 1 and both eastbound and westbound NE 4th Street and southbound 116th Avenue NE under Alternative 2. If the intersection improvements proposed above were implemented, vehicle travel speed would increase along both 116th Avenue NE and NE 4th Street.

Under Alternative 2, the mitigations would bring vehicle travel speed on southbound 116th Avenue NE and eastbound NE 4th Street within the City LOS guideline. However, westbound NE 4th Street would remain at 49 percent of typical urban travel speed under Alternatives 1 and 2. A major reason for the slow travel speed along the NE 4th Street corridor is related to the operation of the I-405 off-ramp signals. WSDOT operates the off-ramp signals to minimize the likelihood of vehicle queues spilling back onto the freeway, which makes traffic on NE 4th Street traveling between

NE 6th Street Extension to 116th Avenue NE

The previously described capacity enhancements would not be sufficient to achieve efficient operations under the NE 6th Street extension option to 116th Avenue NE. More aggressive capacity improvements would be required such as triple left turn lanes, dual right turn lanes and/or more through lanes at major intersections like NE 8th Street/116th Avenue NE. Revising the MMA system intersections and LOS standards/guidelines would reduce the extent of required improvements, but either major capacity enhancements or an acceptance of poor peak hour intersection operations/corridor travel speeds in the area around the NE 8th Street/116th Avenue intersection would be required for the NE 6th Street Extension to 116th Avenue NE.

112th Avenue and 116th Avenue slower since vehicles typically have to wait at one of the two ramp signals.

These improvements should also be considered in conjunction with a revision of the LOS guideline to be 50 percent of typical urban travel speed consistent with the adjacent neighborhoods of Downtown and BelRed/Northup. It is anticipated that with further signal timing refinements, the impact on westbound NE 4th Street could be mitigated as the speed correlates to less than ten seconds above the threshold.

3.9.5 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

This section identifies significant adverse impacts to intersection operations and primary vehicle corridor speed under both Action Alternatives. With some combination of the potential mitigation measures outlined in the previous chapter, including measurement of impacts consistent with other urban areas in Bellevue, the magnitude of the intersection LOS and primary vehicle corridor speed impacts could be mitigated to a less-than-significant level. Therefore, no significant and unavoidable adverse impacts to transportation are expected.

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