3 Environment, Impacts, and Mitigation

This chapter describes the affected environment, potential impacts, and mitigation measures for the following topics:

- Section 3.1 Air Quality/Greenhouse Gas
- Section 3.2 Surface Water and Stormwater
- Section 3.3 Land Use Patterns and Policies
- Section 3.4 Plans and Policies
- Section 3.5 Aesthetics
- Section 3.6 Transportation
- Section 3.7 Public Services
- Section 3.8 Utilities

Following a description of current conditions (affected environment), the analysis compares and contrasts the alternatives and provides mitigation measures for identified impacts. It also summarizes whether there are significant unavoidable adverse impacts.

3.1 Air Quality/Greenhouse Gas Emissions

Climate change and greenhouse gas emissions are addressed as air elements of the environment under the State Environmental Policy Act (SEPA) analyses. Transportation and land use changes can contribute to climate change due to increases in greenhouse gas (GHG) emissions. Land use changes can result in GHG emissions through the construction process; utilities used during operations, such as electricity, natural gas, and water; and waste production. Land use also generates vehicle trips. Travel completed using gasoline and diesel-fueled passenger, commercial, or transit vehicles can emit carbon dioxide, methane, and nitrous oxide. The accumulation of GHG in the atmosphere contributes to climate change.

3.1.1 Affected Environment

Current Conditions

City of Kirkland

The City of Kirkland is committed to achieving reductions in GHG for both the Kirkland community and government operations, as outlined in the City of Kirkland 2018 Greenhouse Gas Emission Report.[10] In 2017, 640,900 metric tons of carbon dioxide equivalent greenhouse gases (MTCO2e) were emitted by the Kirkland community primarily from stationary combustion (emissions from natural gas used for heat and other gas appliances), electricity, and mobile combustion (emissions from vehicles traveling in and through Kirkland (gas and diesel)). As highlighted in the report, overall community emissions have been trending downward since 2005 despite population growth.

Regional and County

In 2018, the Puget Sound Clean Air Agency (PSCAA) published greenhouse gas emissions information representing 2015 conditions in the four-county region of King, Pierce, Snohomish, and Kitsap counties.[11] The inventory follows the GHG accounting protocols and datasets outlined in the *U.S. Community Protocol for Accounting and Reporting Greenhouse Gas Emissions*. Emissions are broken out at the county level and quantified using the Metric Ton Carbon Dioxide Equivalent ($MTCO_2e$) unit, which equates to 2204.62 pounds of CO_2. As shown in Exhibit 3-1, the built environment accounts for more than half of King County

[10] City of Kirkland, 2018.
[11] Puget Sound Clean Air Agency, 2018.

emissions, and transportation and other mobile sources account for an additional 36%. The remaining 3% is made up of emissions generated by generation and disposal of solid waste, water and wastewater process emissions, agriculture, and supplementary emission sectors.

Exhibit 3-1. King County GHG Emissions - 2015

Emissions ($MTCO_2e$)	King County Total Emissions – 2015	King County Emissions per Capita
Built Environment	12,602,600	6.1
Transportation and Other Mobile Sources	7,318,300	3.6
Solid Waste	225,600	0.1
Water and Wastewater	73,300	<0.1
Agriculture	145,500	<0.1
Supplementary Emission Sectors	58,800	<0.1
Total	**20,424,100**	**9.9**

Source: Puget Sound Clean Air Agency, 2018.

Of the transportation and mobile sources emissions, 87% were caused by on-road vehicle emissions; the remainder is caused by marine and off-road transportation. Exhibit 3-2 summarizes the daily vehicle miles traveled in King County by type of vehicle, as well as per capita.

Exhibit 3-2. King County Daily Vehicle Miles Traveled - 2015

Vehicle Miles Traveled	King County Total Daily Vehicle Mile Traveled – 2015	King County Daily Vehicle Miles Traveled per Capita
Single Occupant Vehicle	29,644,700	14.4
High Occupancy Vehicle – 2 passengers	7,589,900	3.7
High Occupancy Vehicle – 3 or more passengers	3,641,500	1.8
Medium Truck	2,265,900	1.1
Heavy Truck	1,151,400	0.6
Total	**44,293,400**	**21.6**

Source: Puget Sound Clean Air Agency, 2018.

Kirkland NE 85th Street Station Study Area

A more detailed evaluation of GHG emissions generated by the Study Area was also conducted. The BKR travel demand model, which encompasses Bellevue, Kirkland and Redmond, was used to determine the following existing land use data for the Study Area:

- 840 single family homes;
- 1,069 multi-family units;
- 2,508 office jobs;
- 1,410 retail jobs; and
- 1,070 industrial jobs.

This land use data forms the basis of the GHG evaluation described below.

King County has specific GHG analysis requirements as part of its SEPA process for development projects and is among the first jurisdictions to develop policies that consider the impacts of GHG emissions, utilizing a spreadsheet tool to support this process. The SEPA GHG Emissions Worksheet is a comprehensive tool that estimates all GHG emissions that would be created over the lifespan of a project:

- Embodied Emissions: the extraction, processing, transportation, construction, and disposal of materials and landscape disturbance;
- Energy Emissions: energy demands created by the development after it is completed; and
- Transportation Emissions: transportation demands created by the development after it is completed.

For this evaluation, the SEPA GHG Emissions Worksheet was used to estimate the GHG emissions associated with embodied and energy emissions. While the spreadsheet tool encompasses a variety of emissions categories, it is designed for high-level planning. To provide a location- specific estimate of the transportation-related GHG emissions of the Study Area, a more detailed evaluation was prepared.

Using the existing land use in the Study Area, the total vehicle miles traveled (VMT) was calculated using Fehr & Peers' MXD+ trip generation tool. Average running emissions rates per mile traveled were extracted from the California Environmental Protection Agency Air Resources Board EMFAC2017 web database[12]; this model is the most recently approved version by the Federal Environmental Protection Agency. To develop "lifetime" GHG emissions estimates that are comparable to those produced by the King County SEPA GHG Emissions worksheet, the average building lifespan defined in the King County tool was used to factor up the annual GHG emissions estimates.

Exhibit 3-3 summarizes the GHG emissions estimates from the existing Study Area developments. Based on this evaluation, the Study Area currently generates roughly 6,661,700 $MTCO_2e$ GHG emissions over the lifespan of its development, with transportation accounting for approximately a third of the total emissions. This equates to approximately 726 $MTCO_2e$ per current resident and employee in the Study Area.

Exhibit 3-3. Lifetime GHG Emissions of the Study Area, Existing Conditions

Emissions ($MTCO_2e$)	Study Area – Existing Conditions
Embodied Emissions	227,100
Energy Emissions	4,032,700

[12] See: https://arb.ca.gov/emfac/2017

Emissions ($MTCO_2e$)	Study Area – Existing Conditions
Transportation Emissions	2,401,900
Total Emissions	6,661,700
Population + Jobs	9,175
Emissions per Capita	726

Sources: King County SEPA GHG Emissions Worksheet, 2019; Fehr & Peers, 2020.

3.1.2 Impacts

This section describes the planning scenarios that are evaluated as well as the methodology and assumptions used to analyze the alternatives. Three alternatives are evaluated under future year conditions: Alternative 1 No Action and the Action Alternatives – Alternative 2 and Alternative 3. Alternative 1 No Action maintains the Study Area's current zoning and includes only projects identified in the City's adopted plans. Both Action Alternatives would allow for growth throughout the district, primarily focused on existing commercial areas such as Rose Hill. However more growth is anticipated for Alternative 3. A full description of the land use assumptions may be found in Chapter 2.

GHG emissions under future annual conditions were estimated for the three alternatives using a similar approach as described for existing conditions. The total vehicle miles traveled (VMT) for each alternative were estimated using Fehr & Peers' MXD+ tool. Average running emissions rates per mile traveled were extracted from the California Environmental Protection Agency Air Resources Board EMFAC2017 web database. Because vehicle emissions requirements will become more stringent in the future, the average emissions rates per mile in the horizon year would be lower than those for existing conditions. The SEPA GHG Emissions Worksheet was used to estimate the GHG emissions associated with embodied and energy emissions.

Thresholds of Significance

The alternatives would be considered to result in significant GHG emission impacts under the following conditions:

- Alternative 1 No Action if it increased per capita emissions compared to existing conditions.
- Alternatives 2 and 3 if they increased per capita emissions compared to Alternative 1 No Action.

The scale of climate change is so large that a project's GHG impacts should be considered on a cumulative scale and in relation to the service population (residents and employees) of the area.

Impacts Common to All Alternatives

Impacts are discussed separately for each alternative below.

No Action Alternative 1

This section summarizes analysis results and environmental impacts of Alternative 1 No Action. Exhibit 3-4 summarizes the GHG emissions estimates from the existing Study Area and for Alternative 1 No Action. Based on this evaluation, the Study Area is expected to generate roughly 12,076,100 $MTCO_2e$ GHG emissions under Alternative 1 No Action over the lifespan of its development. On a per capita (population and jobs) basis, Alternative 1 No Action is expected to generate 725.5 $MTCO_2e$ per resident and employee within the Study Area.

Exhibit 3-4. Lifetime GHG Emissions of the Study Area, Alternative 1 No Action

Emissions ($MTCO_2e$)	Existing Conditions	Alternative 1 No Action
Embodied Emissions	227,100	371,800
Energy Emissions	4,032,700	7,967,300
Transportation Emissions	2,401,900	3,737,000
Total Emissions	6,661,700	12,076,100
Population + Jobs	9,175	16,640
Emissions per Capita	726	725.5

Sources: King County SEPA GHG Emissions Worksheet, 2019; Fehr & Peers, 2020.

Both the embodied emissions associated with redevelopment and the energy emissions generated would increase compared to existing conditions due to the intensified land use. Vehicle emission rates are expected to be lower in 2035 as vehicles become more fuel efficient due to more stringent regulations; therefore, each vehicle mile traveled will contribute fewer GHG emissions to the environment. However, the transportation emissions are expected to increase by roughly 80%. The main driver for this increase is VMT. The estimated VMT under the existing conditions is 327,000 and is expected to more than double to 751,100 under Alternative 1 No Action.

Although total emissions would increase, no significant impact is identified under this alternative as it is expected to generate fewer per capita emissions compared to existing conditions.

Alternative 2

Exhibit 3-5 summarizes the GHG emissions estimates for the Study Area under Alternative 2. The Study Area is expected to generate roughly 20,790,800 $MTCO_2e$

GHG emissions under Alternative 2 over the lifespan of its development. This equates to an increase of approximately 70% compared to Alternative 1 No Action as the higher residential and employment uses will increase embodied, energy, and transportation emissions. The population and jobs in the Study Area under this Alternative are expected to be approximately three times that of Alternative 1 No Action. Consequently, the VMT and trips generated by Alternative 2 are also expected to be higher. However, the increase in GHG emissions is less than the overall growth in population and jobs because most of the land use growth under this Alternative is for office use, which is characterized by a low trip generation rate and there would be higher trip internalization (i.e. non-vehicle trips occurring within the Study Area between complementary land uses). As shown in Exhibit 3-5, transportation emissions generated by the Study Area are expected to be roughly 70% higher under Alternative 2 compared to Alternative 1 No Action Alternative. Moreover, the emissions per capita are expected to be less under Alternative 2 than under Alternative 1 No Action.

Exhibit 3-5. Lifetime GHG Emissions of the Study Area, Alternative 2

Emissions ($MTCO_2e$)	Alternative 1 No Action	Alternative 2
Embodied Emissions	371,800	778,300
Energy Emissions	7,967,300	13,687,000
Transportation Emissions	3,737,000	6,325,500
Total Emissions	12,076,100	20,790,800
Population + Jobs	16,640	45,010
Emissions per Capita	725.5	460

Sources: King County SEPA GHG Emissions Worksheet, 2019; Fehr & Peers, 2020.

The scale of climate change is so large that a project's impacts should be considered on a cumulative scale and in relation to the service population (residents and employees) of the area. Alternative 2's emissions are likely to be less than similar development located elsewhere in the county given the Study Area's proximity to transit. Therefore, no significant emissions impacts are expected under Alternative 2.

Alternative 3

Exhibit 3-6 summarizes the GHG emissions estimates for the Study Area under Alternative 3. The Study Area is expected to generate roughly 22,817,700 $MTCO_2e$ GHG emissions under Alternative 3 over the lifespan of its development. This is almost 90% higher than under Alternative 1 No Action and 10% higher than under Alternative 2. The population and jobs in the Study Area under this Alternative are expected to be more than three times that of Alternative 1 No Action. As a result, VMT and generated trips are expected to be highest under this Alternative.

Again, the growth in VMT and trips generated is expected to be less than the relative increase in population and jobs due to office land use growth and trip internalization. As shown in Exhibit 3-6, emissions per capita for this alternative are substantially less than those for the Alternative 1 No Action and Alternative 2.

Exhibit 3-6. Lifetime GHG Emissions of the Study Area, Alternative 3

Emissions ($MTCO_2e$)	Alternative 1 No Action	Alternative 2	Alternative 3
Embodied Emissions	371,800	778,300	922,900
Energy Emissions	7,967,300	13,687,000	15,111,400
Transportation Emissions	3,737,000	6,325,500	6,783,400
Total Emissions	12,076,100	20,790,800	22,817,700
Population + Jobs	16,640	45,010	55,710
Emissions per Capita	725.5	460	410

Sources: King County SEPA GHG Emissions Worksheet, 2019; Fehr & Peers, 2020.

The scale of climate change is so large that a project's impacts should be considered on a cumulative scale and in relation to the service population (residents and employees) of the area. Alternative 3's emissions are likely to be less than similar development located elsewhere in the county given the Study Area's proximity to transit. Moreover, the emissions per capita are expected to be less under Alternative 3 than under Alternative 1 No Action as shown in Exhibit 3-6. Therefore, no significant emissions impacts are expected under Alternative 3.

3.1.3 Mitigation Measures

Based on the evaluation in the preceding sections, no significant impacts are expected under the Study Area Alternatives. However, given the greater growth anticipated and to be consistent with City's Comprehensive Plan, Climate Protection Action Plan, Sustainability Master Plan, and SEIS scoping input, the following are offered as mitigation measures.

Incorporated Plan Features

- Dense landscaping along roadways can reduce air pollutants by up to 50% (Deshmukh, 2019). Green infrastructure is a source of potential air emission mitigation at a microscale (Tiwari, 2019). As part of the Station Area Plan and Code associated with the Action Alternatives, the City is proposing green streets with optimal implementation of landscaping to contribute towards meeting the citywide tree canopy goal.
- The Washington Environmental Health Disparities Map[13] shows that

[13] See: https://www.doh.wa.gov/DataandStatisticalReports/WashingtonTrackingNetworkWTN/InformationbyLocation/WashingtonEnvironmentalHealthDisparitiesMap

populations in the Study Area are at high risk for environmental exposures (scoring 7 or 8 out of 10 on the risk factor scale, depending on the location.) Alternatives 2 and 3 propose growth near I-405 that is office-focused with residential and mixed uses buffered beyond office uses to reduce the potential for localized air quality effects on vulnerable populations and improve land use compatibility adjacent to the freeway.

Applicable Regulations and Commitments

- The City's Comprehensive Plan Environment Chapter cites promotion of cleaner fuels, a reduction in vehicle miles of travel, and more reliance on renewable energy as three key transportation related actions to meet the City's GHG reduction targets.
- Kirkland's Climate Protection Action Plan (CPAP) 2013 and 2018 Gas Emission Report promote reduction in GHG.
- The Kirkland Sustainability Master Plan approved December 2020 includes key recommendations to reduce GHG, including but not limited to:
  - Incentivize construction of high-performing, low energy use zero-emission structures.
  - Retrofit existing buildings to reduce energy use.
  - Employ Smart Growth principles in all City planning practices and codes.
  - Reduce the average amount each person drives by 20% by 2030 and 50% by 2050.
  - Ensure that people of all ages and abilities can comfortably get around by walking or bicycling.
  - Grow the annual number of weekday transit riders by 10% each year.
  - Manage Kirkland's urban forest resource for optimal health, climate resiliency and social equity.
  - Develop a diversified, equitable and resilient local green economy.

Mitigation Measures Related to Embodied and Energy Emissions

- In the Form-Based Code, the City could include site by site green building standards or implement districtwide green building standards / incentives, credentialing programs (e.g. Living Building Challenge, LEED, Passivhaus, Built Green, etc.), and district energy.

3.1.4 Significant Unavoidable Adverse Impacts

Based on the evaluation in the preceding sections, there are no significant unavoidable adverse impacts expected under the studied alternatives.

3.2 Surface Water and Stormwater

This section addresses current conditions, impacts, and mitigation measures on constructed drainage facilities such as ditches, culverts, enclosed drainage system, detention ponds, and infiltration facilities; and on natural surface water bodies such as creeks, lakes, and wetlands. These elements were addressed in the November 2015 Comprehensive Plan Update Final Environmental Impact Statement (2015 Comprehensive Plan EIS). This section also includes consideration of tree canopy, which was not explicitly addressed in the prior EIS.

3.2.1 Affected Environment

Existing Regulatory Requirements

Stormwater

The regulatory context for stormwater is similar to that identified in the 2015 Comprehensive Plan EIS. Since that time however an updated National Pollutant Discharge Elimination System (NPDES) Phase II Municipal Separated Storm Sewer System (MS4) Permit (Permit) became effective August 1, 2019.This permit is effective until July 31, 2024. To regulate new development, the City adopted the 2016 King County Surface Water Design Manual (KCSWDM) effective January 1, 2017, along with associated published policies and plans.

Wetlands

The City regulates wetlands and requires buffers in accordance with Kirkland Zoning Code (KZC) 90.55.1. Wetland buffer width standards are listed in Table 90.55.1. and are based on the wetland category and overall habitat score. Per KCZ 90.55.1, an official wetland determination and critical area report is needed to evaluate the wetland's category and buffer width.

Streams

The City of Kirkland uses the Washington State water typing system to categorize streams and other water bodies based on fish habitat and seasonal flows. Streams are classified as Type F (Fish bearing), Np (Perennial non-fish bearing), or Ns (Seasonal non-fish bearing) (KCZ 90.65). The City requires buffers from the ordinary high water mark of streams to protect stream functions. Buffer width standards are listed in KCZ Table 90.65.1 and assigned according to stream type. Results of stream typing are presented below, including identification of the Type F Forbes Creek.

Shorelines

Per KCZ 83.510.1c, shoreline provisions do not apply to Forbes Lake. The Final Shoreline Analysis Report for the City's Lake Washington Shoreline states that because Forbes Lake is smaller than 20 acres, it is not subject to regulation under the Shoreline Management Act (The Watershed Company 2006). Per KCZ 83, the Study Area is not within shoreline jurisdiction. Therefore, shorelines will not be discussed further in this SEIS.

Tree Canopy

Kirkland Zoning Code (Chapter 95 – Tree Management and Required Landscaping) requires development to follow sustainable practices including approval of a tree retention plan in conjunction with development permits for activities resulting in site disturbance and potential impact of trees on developed sites. KZC 95.20 allows exemptions for emergency removal, utility maintenance and commercial nurseries or tree farms. Code provisions include meeting tree density standards for infill in residential lots, on-site tree protection, supplemental plantings for parking areas and driveways, and minimum land use buffer requirements. Code also provisions that street trees that are removed be replaced at a one-for-one tree replacement in a suitable location. The City is in the process of updating KZC 95 regulations, with adoption slated for mid-2021.

Stormwater Conditions

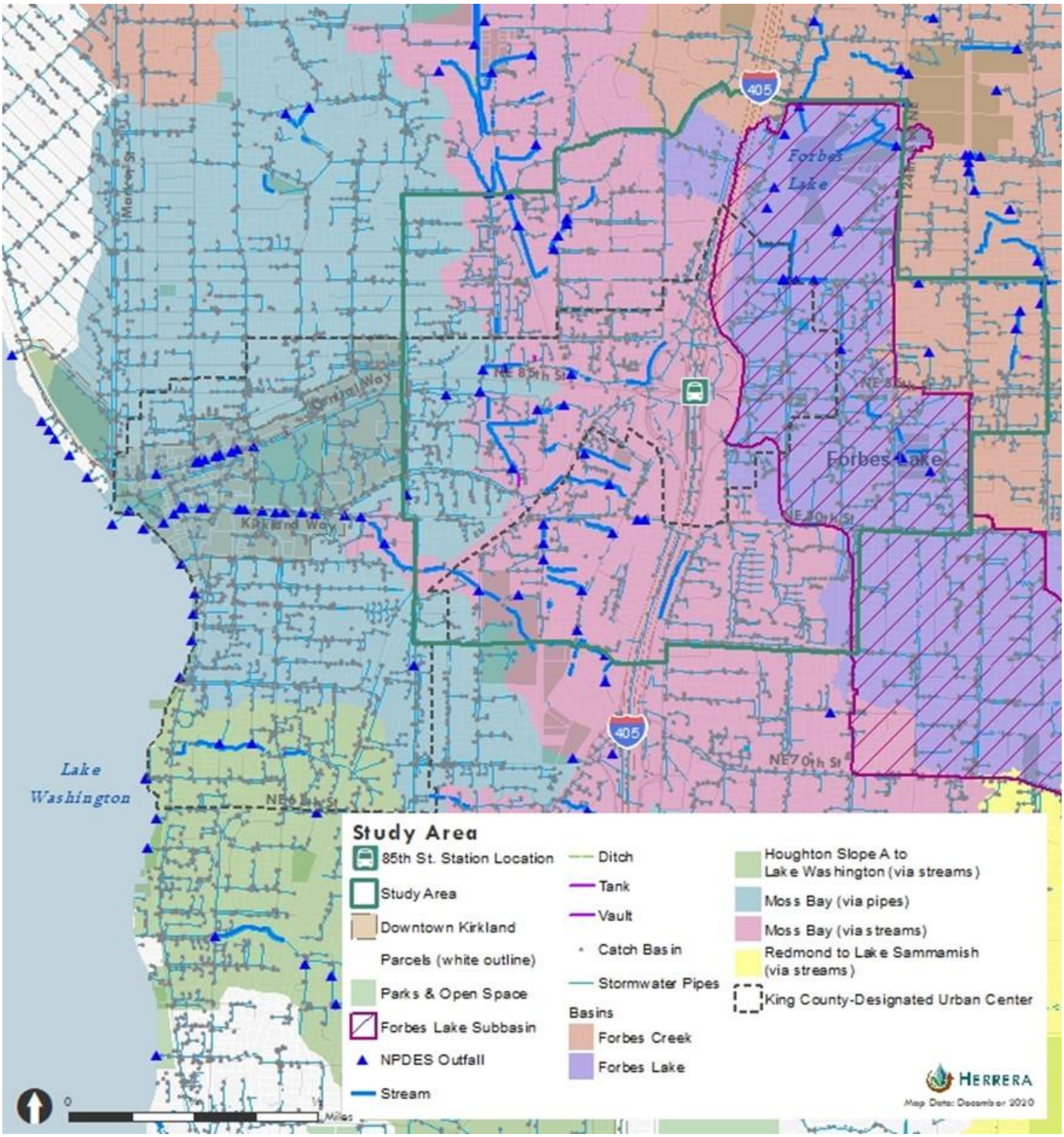
The Storm and Surface Water Division of Kirkland Public Works is responsible for managing the City's stormwater system. Within the SAP Study Area, a large portion of the stormwater conveyance is owned by WSDOT along I-405. The Study Area for stormwater is coincident with SAP boundary, which includes a portion of both the Forbes Creek and Moss Bay drainage basins; see Exhibit 3-7.

The Forbes Creek basin is an 1,837-acre basin that is over 60% developed for single family residential use. Compared to other drainage basins in the City, the Forbes Creek basin has one of the lowest levels of impervious surface coverage, with more wetland coverage than any other basin and 40% forested land use. However, impervious coverage has increased over the past 20 years due to development. Soils are typically classified as Type C (sandy clay loam), which indicates low potential for infiltration as a stormwater management strategy in this basin. There are 14.2 miles of stream channel in the Forbes Creek basin, including 2.9 miles of piped channel. Forbes Creek flows out of Forbes Lake, is crossed by I-405, and then flows west and enters Lake Washington near Juanita Bay. Forbes Creek is on the EPA 303(d) list for temperature, dissolved oxygen, pH, ammonia nitrogen, mercury, and bacteria (City of Kirkland 2015a). Forbes Lake is

listed as a Category 5 water body for phosphorus. All projects that drain to Forbes Lake that trigger water quality treatment shall be assumed to be located within a designated Sensitive Lake WQ Treatment Area for the purposes of applying area-specific water quality treatment requirement in Section 1.2.8.1 of the King County Surface Water Design Manual.

The Study Area is 720 acres of which 375 are impervious surface. The Moss Bay Basin is a 487-acre basin with over 46% impervious coverage, which is more developed than any other Kirkland basin. Most of the development occurred prior to current stormwater regulations and therefore do not comply with the existing requirements under the NPDES permit for water quality and stormwater infiltration; due to limited space, redevelopment and retrofit opportunities would provide the main opportunity to reduce stormwater impacts in this basin. Soils are primarily fine with poor infiltration potential and like the Forbes Creek basin may limit infiltration as a stormwater management strategy in this basin. Approximately 15% of the basin area has mapped slide areas. In the Moss Bay Basin, there are 9.3 miles of an unnamed stream, including 4.5 miles of piped channel. The open channel segments are primarily manipulated or straightened. The unnamed stream is on the EPA 303(d) list for bacteria and sediment bioassay (City of Kirkland 2020a).

Exhibit 3-7. Stormwater Features



Source: City of Kirkland, 2020; Herrera, 2020.

Wetlands

City of Kirkland GIS data (2020) document several wetlands in the Study Area (Exhibit 3-8). Per Kirkland Zoning Code (KZC) 90.75, the majority, if not the entirety, of the perimeter of Forbes Lake meet the definition of wetlands. The wetlands associated with Forbes Lake are mapped as priority habitats by Washington Department of Fish and Wildlife (WDFW 2020b). Priority habitats are habitats or elements that provide unique or significant value to a diverse range of species.

Forbes Creek has four large wetlands that total 127.63 acres (City of Kirkland 2015a). Of those, wetland FORBES 17 around Forbes Lake (approximately 26.22 acres) is in the Study Area. The Moss Bay basin has approximately 20.24 acres of total wetland, of which only a small portion near the Neal-Landguth Wetland Park is in the Study Area. Additional wetlands in Rose Hill Meadows are also in the eastern portion of the Study Area. These wetlands provide important ecological functions, such as water quality improvements, flow attenuation, and wildlife habitat. Many of these wetlands face development pressure as the surrounding properties are developed, limiting habitat connectivity and species diversity.

Buffer widths within the Study Area vary based on wetland category and habitat points. Wetlands associated with Forbes Lake are rated as Category I wetlands and require a minimum 190-foot and maximum 225-foot buffer, depending on habitat score. Category 2 wetlands require a minimum 75-foot buffer and a maximum 225-foot buffer, depending on habitat score. Category 3 wetlands require a 60-foot to 225-foot buffer, and Category 4 wetlands require a buffer of 40 feet.

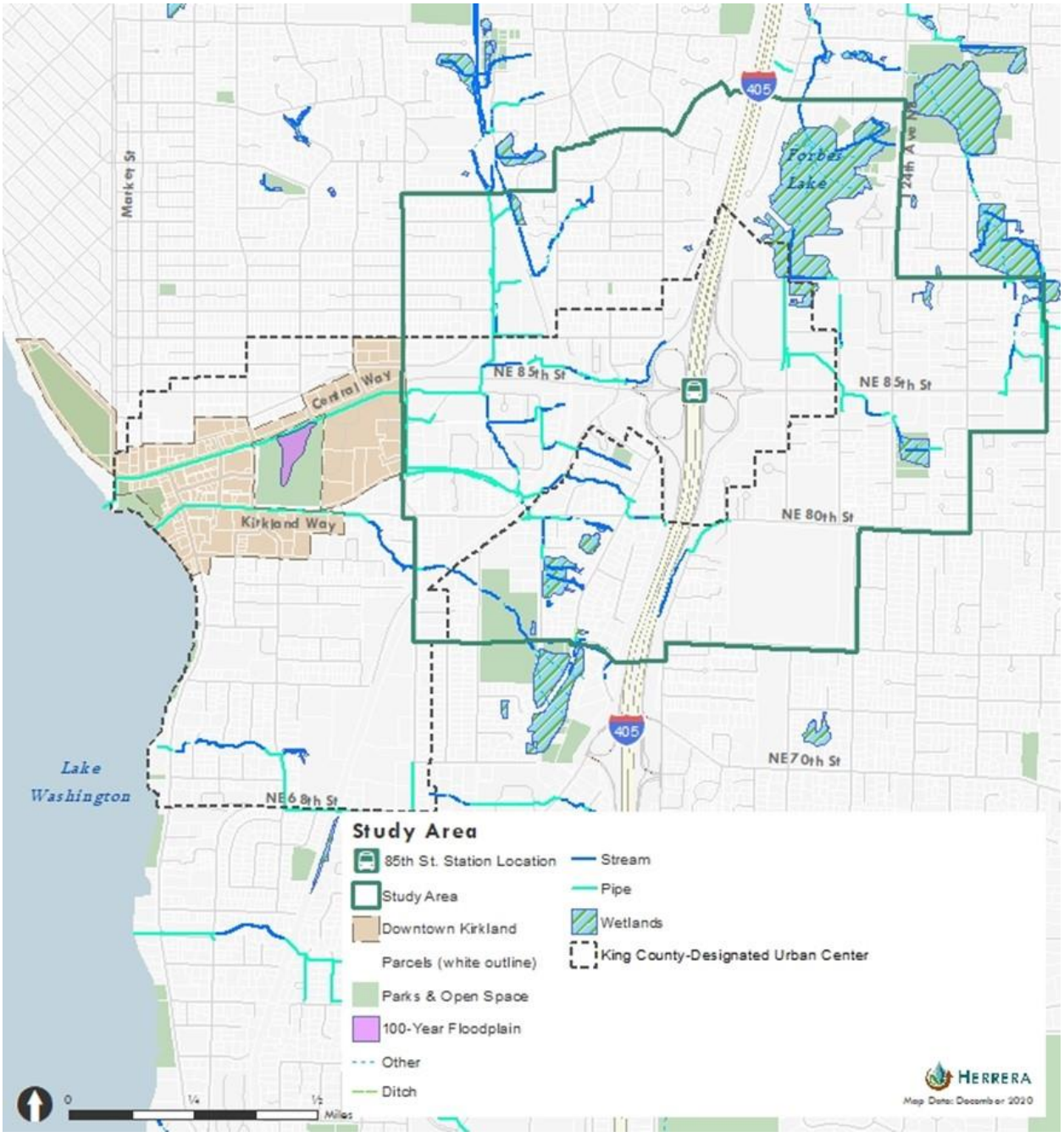
Streams

Herrera biologists classified streams within the Study Area, which include Forbes Creek and an unnamed stream in the Moss Bay Basin, using the City of Kirkland stream rating system (KCZ 90.65; Exhibit 3-8). Forbes Creek is a Type F stream north of Forbes Lake. WDFW and City GIS data document the presence of resident coastal cutthroat trout (*Oncorhynchus clarki*)in Forbes Creek where it flows through the Study Area (WDFW 2020a; City of Kirkland 2020). Per KCZ 90.65.1, Type F streams require a 100-foot buffer. The unnamed stream flows into the Study Area west of the Cross Kirkland Corridor Trail between 15th Avenue and 17th Avenue. This stream is also a Type F stream and requires a 100-foot buffer.

Although King County does not currently operate any gauges on Forbes Creek (King County 2016), flood and stormwater conveyance was identified as one of the primary ecological functions of the Forbes Creek basin in Kirkland's Streams, Wetlands and Wildlife Study report (The Watershed Company 1998). In a review of drainage complaints between 2000 and 2012, most complaints occurred in the

Juanita Creek, Moss Bay and Forbes Creek basins(City of Kirkland 2015a). Most calls were about drainage and water quality issues, followed by flooding and erosion (City of Kirkland 2015a). The regional detention facilities in the Forbes Creek and Juanita Creek basins are the only flood reduction projects identified on capital projects list for the City of Kirkland (City of Kirkland 2015a).

Exhibit 3-8. Surface Water



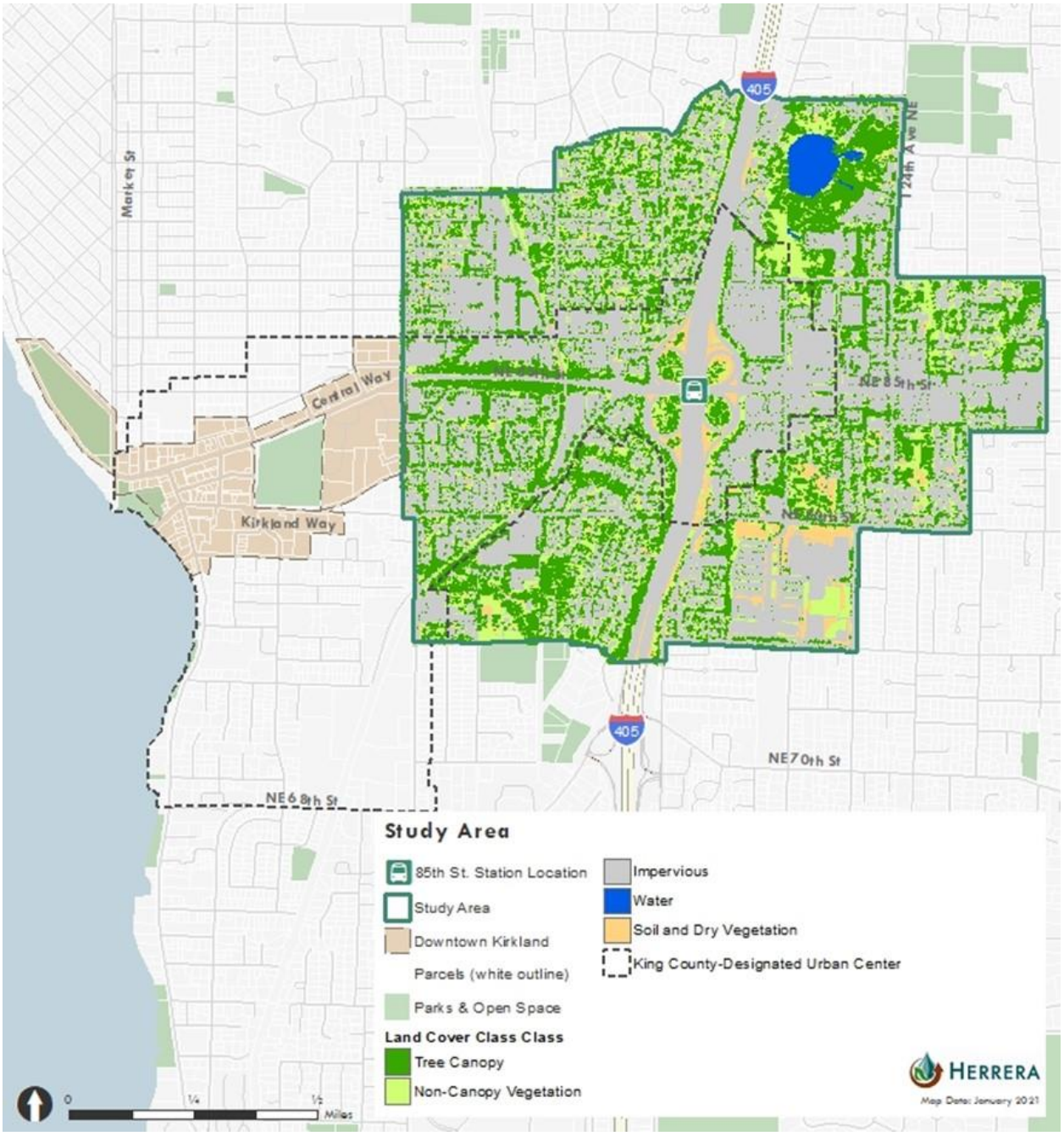
Source: City of Kirkland, 2020; Herrera, 2020.

Tree Canopy

The City recognizes that urban forests provide many benefits to the public, including improved air quality (as noted in section 3.1.3) and water quality, human health, safety, community character, and economic stability. Policy E-2.1 of the Comprehensive Plan establishes an objective to achieve a healthy, resilient urban forest with citywide 40% tree canopy coverage. In 2013, the City adopted an Urban Forestry Strategic Management Plan (UFSMP) that outlines long-range management strategies towards a healthy, sustainable urban forest, such as: inventory public trees, increase tree planting efforts, provide adequate public tree maintenance and conduct ongoing public outreach. A comprehensive city-wide Tree Canopy Analysis in 2017 showed that the City had an overall tree canopy coverage of 38%, a loss of canopy from the prior 8-year tree canopy analysis cycle (Plan-It Geo 2018). The tree canopy coverage in the Study Area is 30%. The potential impact on total tree canopy coverage is the primary urban-forestry metric that differentiate the No Action option from Alternatives 2 and 3 in this section.

Trees within the urban landscape, particularly those with well-established canopies and root systems, are important in maximizing the benefits that urban forests provide, particularly those linked to human health outcomes. This includes noise and pollution attenuation, air quality, urban heat effects and reducing stormwater runoff. Urban trees reduce stormwater runoff by intercepting rainfall with their canopy, increasing evaporation and reducing the impact energy of water droplets on bare soil. Root growth and decomposition increase the stormwater infiltration rate and capacity of soil to reduce the flow and volume of stormwater runoff, reducing erosion and preventing sediment and other pollutants from entering streams, rivers, and lakes. The Study Area, including WSDOT ROW, is currently estimated by Herrera to have 30% or 216.85 acres of tree canopy coverage (see Exhibit 33), and represents approximately 4.79% of the total tree canopy in the City.

Exhibit 3-9. Tree Canopy



Source: City of Kirkland, 2020; Herrera, 2020.

3.2.2 Impacts

Thresholds of Significance

Stormwater impacts would be considered to rise to the level of significance when

projects 1) create impervious surfaces without stormwater management that increase the rate and volume of stormwater entering the City's separated storm sewer system exceeding its conveyance capacity and causing local flooding or degrading habitat in downstream receiving waters due to streambank erosion or changes in wetlands hydroperiod, 2) release untreated stormwater from pollution generating hard surfaces that leads to a decrease in water quality in local receiving waters, or 3) release stormwater contaminated with silt or other pollutants during construction.

Impacts to surface waters, including streams and wetlands, would be considered to rise to the level of significance if streams would receive substantial changes in flow volumes and velocities that affect water quality and habitat and cannot be mitigated. Surface water impacts are also of significance if wetlands or wetland buffers are filled or substantially reduced in function and these losses cannot be mitigated.

For tree canopy, impacts would be considered to rise to the level of significance when the project would cause a net loss in the City's overall current 38% tree canopy coverage.

Impacts Common to All Alternatives

Stormwater

Under all alternatives, additional growth and development would likely increase the total amount of impervious surface in some areas of the Study Area, creating additional stormwater runoff that would require management and treatment. However, this new development would be required by existing development regulations to implement stormwater flow control and water quality treatment, mitigating its impacts. Additionally, All projects that drain to Forbes Lake that trigger water quality treatment shall be assumed to be located within a designated Sensitive Lake WQ Treatment Area for the purposes of applying area-specific water quality treatment requirement in Section 1.2.8.1 of the King County Surface Water Design Manual because Forbes Lake is listed as a Category 5 water body for phosphorus.

Redevelopment within the Study Area at higher densities would likely result in improved water quality and a reduction in peak run-off rates as older developments with outdated stormwater controls are replaced by new developments with modern stormwater controls. For example, the conversion of a large surface parking lot to high density mixed-use development would result in increased intensity and quantity of development (for housing and employment growth), but may result in an overall decrease in impervious surfaces and the

implementation of stormwater controls designed under the current KCSWDM. Low Impact Development (LID) practices are expected to improve water quality and the hydrologic regime of the run-off, in particular for the peak flows and durations from smaller storm events.

Wetlands and Streams

Development allowed under each alternative could result in impacts to Forbes Creek and the unnamed stream located in Moss Bay Basin, as well as wetlands along the eastern portion of the Study Area. Under all alternatives, the increase in impervious surfaces and decrease in tree canopy cover associated with development would increase the flow volume and velocity during storm events and reduce baseflow during drier periods. The required implementation of LID practices would mitigate for this impact to flow and minimize the impact to associated stream and wetland habitat.

Similar to impacts described for stormwater, redevelopment , including new roads, would improve stream and wetland habitat by implementing current stormwater controls including LID practices, requiring appropriate buffer widths, and retaining existing native vegetation. The buffer width and vegetative cover attenuate and retain stormwater so flow rate and volume during storm events decreases. The gradual change in flow during storm events reduces impacts to habitat, decreasing the rate of erosion and improving water quality over existing conditions for resident fish species. During drier periods, the improved buffer widths and vegetation would maintain healthy baseflow, necessary for fish species that reside in Forbes Creek and the unnamed creek in the Moss Bay basin. Enhanced vegetation cover improves water quality by decreasing temperature and pollutant loads.

No Action Alternative 1

Stormwater

Stormwater impacts for the No Action Alternative are the same as those described under Impacts Common to All Alternatives, above.

Wetlands and Streams

Changes to stream and wetland habitat would be minimal under the No Action Alternative and less than either Action Alternative due to reduced development activity. Development activities under the no action would be consistent with current land-use planning and environmental regulations and would not further

encroach on stream or wetland buffers. With less development activity fewer legacy stormwater systems would be upgraded to current standards and therefore water quality may improve more slowly under the no Action Alternative. Similarly, with less development activity there may be fewer opportunities to enhance habitat through mitigation projects.

Tree Canopy

Under the No Action Alternative, changes to tree canopy in the Study Area would likely be minimal because they would be related to gradual infill and development activities consistent with current land-use and tree retention code. The loss of canopy coverage though infill development, combined with an increase in coverage due to future street tree planting and minor streetscape improvements account for the minimal overall change. Infill and development activities under the No Action Alternative would result in a relatively slow rate of both tree removal and subsequent planting. Canopy loss would be limited in scope but could be relatively drawn out as small numbers of trees are occasionally removed, replanted, and gradually reach maturity.

Alternative 2

Stormwater

Stormwater impacts for Alternative 2 are the same as those described under Impacts Common to All Alternatives, above. While all alternatives would implement LID practices, Alternative 2 provides a form of LID measures that promote a multifunctional green street. For example, a public green street for 120th Avenue NE could include: a complete street with vegetated green stormwater infrastructure, traffic calming, bike/pedestrian mobility, and place making design elements. Private green streets could be identified in the Station Area Plan and Form-Based Code regulating plan, e.g. as mid-block crossings or new mixed use complete streets. When built by the developers, there could be enhanced tree canopy and green infrastructure.

Wetlands and Streams

Alternative 2 would result in more development in the vicinity of stream and wetland buffers than the No Action Alternative, and the same impact as Alternative 3. The area west of 120th Avenue NE and north of NE 90th Street would allow mid-rise office buildings near the FORBES 17 wetland buffer and the buffer for Forbes Creek, mainly within the footprint of the existing development. Development adjacent to stream and wetland buffers has the potential to

reduce buffer functions by increasing the amount of stormwater flowing into the buffer, thereby decreasing water quality functions, and increasing disturbance, which can reduce habitat quality. The use of stormwater quality and flow control practices (including LID practices) during development would ameliorate some of these adverse effects to water quality. If development resulted in temporary impacts to buffers during construction, habitat would be enhanced by planting native species and removing invasive species in restored areas.

Tree Canopy

Alternative 2 would result in more significant growth and urban development than the No Action Alternative. Building heights would increase to about 150 feet in areas closest to the transit station east of I-405, stepping down to 45 feet as distance increases from the freeway. Building height and proximity to potential planting areas in public rights of way in this alternative could affect existing trees or restrict the choice of tree species for some future plantings to those with a smaller or more columnar structure, potentially limiting tree canopy coverage. The potential impact area for Alternative 2 includes parcels identified for development as well as adjacent public rights of way. There is no comprehensive survey data available on the numbers of trees on private property. However, canopy coverage was assessed using remote sensing and is available across all property ownership types. There are an estimated 1,032 trees and 67.36 acres of tree canopy cover in the potential impact area for Alternative 2. The more intensive development activities proposed in Alternative 2 would likely result in more canopy loss than the No Action Alternative; it is anticipated that about 25 acres of the potential maximum loss of 67 acres could be replanted in the Study Area in available space; if new green streets are added as there could be incrementally more planting area beyond 25 acres. Although 25 acres are available to be planted, the trees planted in these areas will at maturity extend beyond the planting limits and result in canopy coverage greater than the planting area. This coverage area would depend upon the species planted and planting conditions. Under Alternative 2, loss of tree canopy would be due to redevelopment of existing commercial areas and large parking lots with tree cover into mixed-use development, as well as infill development in residential areas. Some existing street trees may need to be removed due to adjacent property development, but generally the public ROW would be used as a planting opportunity to offset canopy lost through development. Trees would be replanted in the ROW to the full extent possible, but some trees may need to be planted in suitable locations outside the project area but within the city limits. There may be opportunities to preserve particular areas of canopy, but it will not be known how likely that will be until final design. Development activities under Alternative 2 would be rapid in comparison to the No Action Alternative and would result in a more abrupt loss of canopy. However, development would be

subject to tree retention codes and street tree requirements and replanting would occur more rapidly. Under all alternatives, tree canopy will continue to be analyzed under the current 8-year tree canopy study cycle.

Alternative 3

Stormwater

Stormwater impacts for Alternative 3 are expected to be about the same as those described under Impacts Common to All Alternatives, above. Like for Alternative2, Alternative 3 would provide green streets as a location for green infrastructure as private development occurs, as well as a blue-green street concept for 120th Avenue NE. This street improvement could involve a vegetated stormwater infrastructure element in the median of the street which has flowing water on the surface. It would provide stormwater conveyance, attenuation (detention), and water quality treatment. The design may incorporate grey infrastructure elements below grade. The corridor may also be integrated with multimodal infrastructure and community gathering spaces.

Wetlands and Streams

Alternative 3 would have greater impact on stream and wetland habitat than the No Action Alternative and the same level of impact as Alternative 2. Like Alternative 2, Alternative 3 would allow a mid-rise office building near the FORBES 17 wetland buffer and the Forbes Creek buffer, mainly within the footprint of the existing development. Increased development adjacent to buffers could reduce water quality and habitat functions provided by buffers.. The use of LID practices during development would ameliorate some of these adverse effects. If development resulted in temporary impacts to buffers during construction, habitat could be enhanced with planting native species and removing invasive species within restored areas.

Tree Canopy

Alternative 3 would result in more significant growth and urban development than both the No Alternative option and Alternative 2. In general, the maximum building height for Alternative 3 is greater than for Alternative 2, especially closer to the proposed I-405 transit center. However, taller buildings in these locations would have little impact on potential tree canopy coverage compared to Alternative 2 because proposed building heights and proximity to potential planting areas in both alternatives would be tall and close enough to limit the choice of tree species to those that are smaller or with a narrower columnar structure. Alternative 3 would

also result in a similar loss of canopy through development of treed parking lots. The potential impact area for Alternative 3 includes parcels identified for development and adjacent public rights of way. The potential impact area of Alternative 3 could affect slightly more trees and acres of canopy than the other alternatives. There are an estimated 1,039 trees and 68.03 acres of canopy across all property ownership types in the potential impact area for alternative 3. Development under Alternatives 2 and 3 would be subject to the same street tree and tree retention codes. Alternative 3 would add new street trees in the public ROW and would include additional green-street midblock connections that could be built in city rights of way or easements on private property. When these additional tree planting opportunities are considered, net loss of tree canopy under Alternative 3 would likely be similar to the net loss of canopy under Alternative 2. Like Alternative 2, Development activities under Alternative 3 would be rapid in comparison to the No Action Alternative and would be subject to tree retention codes and street tree requirements. Approximately 25 acres of the affected development area could be replanted, and there may need to be planting in other parts of the City on public parks or in residential areas. Although 25 acres are available to be planted, the trees planted in these areas will at maturity extend beyond the planting limits and result in canopy coverage greater than the planting area. This coverage area would depend upon the species planted and planting conditions.

3.2.3 Mitigation Measures

Incorporated Plan Features

Both Action Alternatives may implement measures from the Water & Sustainability Options Matrix to provide additional mitigation. (See Appendix B).

Regulations and Commitments

Stormwater

Under both Action Alternatives the City would require projects to implement enhanced stormwater treatment for all hard surfaces requiring treatment within the Forbes Creek watershed in addition to the existing stormwater code requirements. Additionally, the final plan may incorporate elements from the Water Mitigation matrix in Appendix B.

Wetlands and Streams

While under the No Action Alternative there would be less development than

under the Action Alternatives, and fewer direct impacts on wetlands and streams, there would therefore be fewer opportunities to perform mitigation. The Action Alternatives would have more impacts on wetlands and streams than the no action alternative, but required mitigation would be triggered and this would create opportunities to improve wetland and stream conditions. Per KZC 90.60 and 90.70, modifications to wetlands, streams, and associated buffers are prohibited except under certain circumstances. Activities may be permitted in critical areas provided they meet the following standards (among others): general mitigation requirements, including mitigation sequencing; requirements for compensatory mitigation; are protective of fish or wildlife habitat conservation areas; have no adverse impact on water quality or conveyance or degradation of critical area functions and values; minimize the removal of significant trees; and restore temporarily disturbed areas to pre-project conditions or better.

Tree Canopy

Per KZC 95, a Tree Retention Plan would be developed under all alternatives, including inventory and survey of significant trees that may be impacted by the proposal. Tree canopy loss would be minimized through the retention of high value street trees and on-site trees to the maximum extent possible, and moderate value trees where feasible. Additionally, a forest management plan may be required for significantly wooded sites greater than 35,000 square feet. New tree canopy would be added with new street tree plantings, installation of required landscaping, and general project landscaping.

Other Proposed Mitigation Measures

Tree Canopy

Tree loss should be minimized where possible through the development of a Tree Protection Plan in accordance with City requirements, with an emphasis to retain and protect high-value, significant trees. Large trees are the most difficult to replace and can be considered for relocation/translating. It is unlikely that all trees and tree canopy identified within the potential impact areas for Alternatives 2 and 3 would be removed. However, because the maximum impact to tree canopy under these alternatives is approximately 67-68 acres respectively, and there are only roughly 25 acres of potential planting area within the Study Area, it may be necessary to replace some outside of the Study Area in suitable locations. Recommended locations for tree plantings outside the Study Area include residential neighborhoods, public open space, parks, and stormwater retention facilities. In order to maximize replanting within the Study Area, unconventional potential planting opportunities within impervious surfaces using suspended

pavement systems (Silva cell) could be implemented. Where replanting within the Study Area is not possible, an in-lieu-fee option may provide flexibility to fund and support best management practices outlined in the City of Kirkland Urban Forestry Strategic Management Plan.

3.2.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts are expected to stormwater and surface water.

There may be indirect impacts to stream and wetland buffers due to increased development adjacent to buffers. No additional impacts to streams or wetlands are anticipated in any alternatives.

Based on Citywide data from historic canopy assessments, the Study Area would see near-term canopy loss under all alternatives as larger trees are removed to make way for redevelopment. The rate of near-term canopy loss likely accelerates based on the intensity of allowed development. The tree canopy would be restored over time as replacement trees reach maturity; however, all alternatives may result in significant unavoidable impact to city-wide tree canopy coverage temporarily over the next 10-20 years.

3.3 Land Use Patterns and Socioeconomics

This section evaluates land use patterns, housing, jobs, and growth today and in the future. This section describes potential impacts of the No Action and Action Alternatives on land use, growth, and displacement of vulnerable populations as development occurs. The data considered for this section include demographic data collected pre-COVID 19 from state and federal sources.

3.3.1 Affected Environment

Current Land Use

Today, most of the Study Area consists of residential areas with the primary type being single-family, followed by multifamily and retail uses. See Exhibit 3-10.

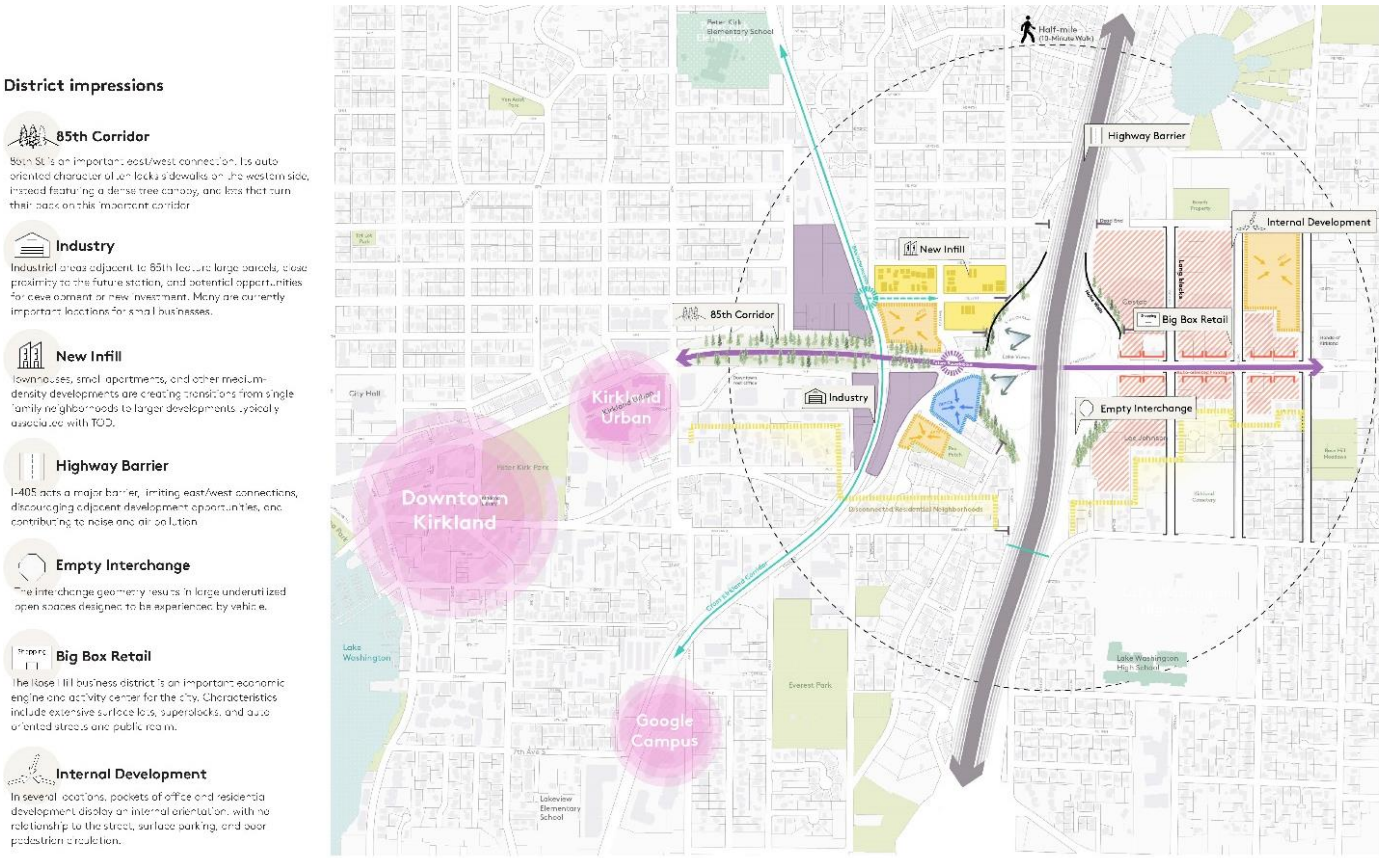
Exhibit 3-10. Existing Land Use by Type and Acres

Existing Land Use	Parcel Acres	Percent
Single Family Residential	211.4	41%
Multifamily Residential	65.0	13%
Manufactured Housing	0.8	0%
Commercial Services	17.9	4%
Education	33.7	7%
Government	3.4	1%
Industrial	26.8	5%
Institutional	6.7	1%
Office	21.8	4%
Parking	6.6	1%
Public	21.8	4%
Retail	45.1	9%
Vacant Land	44.7	9%
No Data	5.0	1%
Grand Total	**510.9**	**100%**

Sources: King County Assessor, 2020; BERK, 2020.

The district shows most land is used for low density residential and industrial purposes on the northwest quadrant, big box retail and residential to the northeast and southeast, and office, residential, and industrial to the southwest. See Exhibit 3-11.

Exhibit 3-11. Existing Station Area District Character

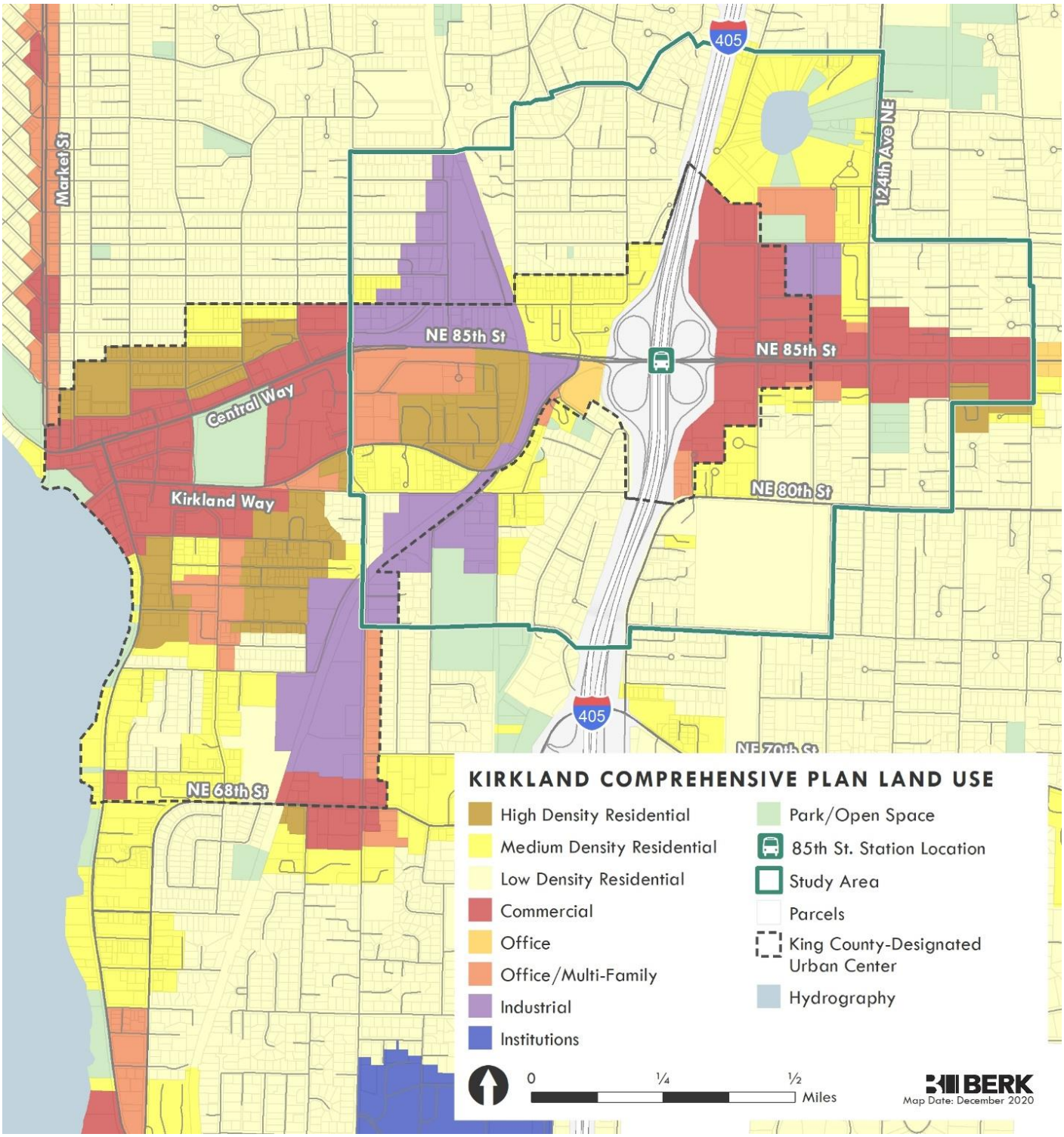


Source: Mithun, 2020.

Planned Land Use and Growth

Future land use in the Comprehensive Plan is similar to the pattern of land use today, with a greater share of residential designations and a focus of commercial uses along NE 85th Street and Industrial uses west of the Cross Kirkland Corridor. Residential areas abut the more intense job and commercial areas. See Exhibit 3-12.

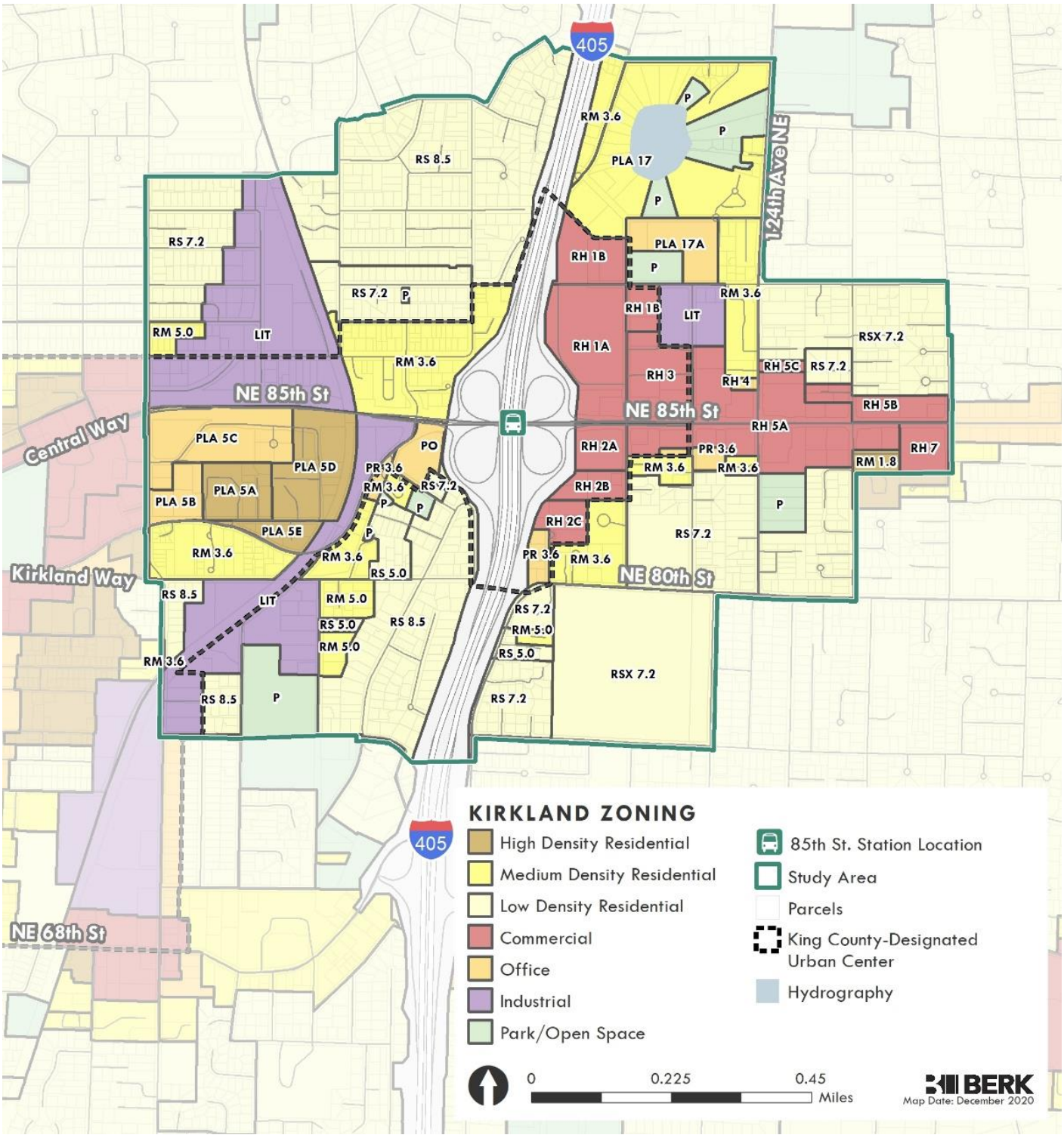
Exhibit 3-12. Comprehensive Plan Land Use Designations in Station Area



Sources: City of Kirkland, 2020; BERK, 2020.

Zoning districts implement the Comprehensive Plan. A high level map of zoning categories appears in Exhibit 3-13.

Exhibit 3-13. Zoning Districts in Station Area



Sources: City of Kirkland, 2020; BERK, 2020.

The City has zoned areas more finely block by block. The list of detailed zones is shown in Exhibit 3-14.

Exhibit 3-14. Zoning District Detail

Zoning	Acres
Commercial	**69.22**
Rose Hill (RH) RH 1A	17.14
RH 1B	4.54
RH 2A	3.21
RH 2B	2.12
RH 2C	4.09
RH 3	7.50
RH 5A	21.75
RH 5B	4.60
RH 5C	0.83
RH 7	3.43
High Density Residential	**18.00**
PLA 5A	6.09
PLA 5D	8.32
PLA 5E	1.89
RM 1.8	1.70
Industrial	**52.69**
LIT	52.69
Low Density Residential	**225.43**
RS 5.0	6.46
RS 7.2	57.97
RS 8.5	86.35
RSX 7.2	74.65
Medium Density Residential	**87.50**
PLA 17	30.26
RM 3.6	50.10
RM 5.0	7.13
Office	**2.72**
PO	2.72
Office/Multi-Family	**21.72**
PLA 17A	6.03
PLA 5B	3.50
PLA 5C	8.75
PR 3.6	3.01
RH 4	0.43
Park/Open Space	**33.64**
P	33.64
Grand Total	**510.90**

Sources: City of Kirkland, 2020; BERK, 2020.

Population, Housing, and Jobs

Currently there are about 1,900 households, 4,200 residents, and 5,500 jobs in the Study Area. It has about 5% of the City's population and housing and 11% of the City's jobs.

Exhibit 3-15. Population, Housing, and Jobs in Station Area, 2019

Geography	Population	Housing Units	Covered Employment
Station Area	4,187	2,056*	4,998-5,503**
City of Kirkland	88,940	39,312	50,754
Study Area Share	5%	5%	11%

* Occupied households are approximately 1,907. Based on distributing housing units and households by parcel, elsewhere the household number is reported as 1,909.
**Study area estimates using the BKR traffic model and commercial zoning is 4,498 whereas the higher figure is based on PSRC/ESD Covered job estimates.
Sources: Puget Sound Regional Council (PSRC), 2019; OFM, 2019.

The City's growth targets assume about 8,400 new housing units and 22,500 new jobs. Most of the City's capacity for housing and jobs is in the Totem Lake Urban Center. See Exhibit 3-16.

Exhibit 3-16. Kirkland Comprehensive Plan Targets and Capacity, 2035

	2013 Existing[1]	2035 Growth Targets[2]	Available Capacity[1]
Housing Units	36,866	45,277 (8,361 new housing units)	46,111 to 54,156 (13,664 to 23,817 new housing units)
Employment	37,981	60,416 (22,435 new jobs)	58,797 to 85,094 (22,984 to 57,155 new jobs)

Sources:
1. City Estimates (as of 2015). Upper range of available capacity reflects alternative methodology for Totem Lake Urban Center.
2. Targets for housing unit and employment growth between 2006 and 2031 were assigned by the King County Countywide Planning Policies. The City adjusted the numbers for housing units and employment by the amount of actual new development between 2006 and 2012 and by extending the target date to 2035 using the average growth rate needed to meet targets.

The City will be planning for new 2044 growth targets in its next periodic update due in 2024. The region is anticipated to see continued strong growth as identified in growth forecasts by the State Office of Financial Management and the Puget Sound Regional Council's (PSRC) VISION 2050.

Under current plans and zoning, and associated regional traffic modeling, about 873 new housing units were anticipated by 2035 in the Station Area, a fraction of the City's target and capacity. As of 2020, there are 1,145 units anticipated in two proposed mixed use developments ("pipeline development") on properties in the Study Area, exceeding the planned housing by 2035.

There would be another nearly estimated 190 jobs proposed with the two proposed mixed use (or "pipeline development") projects, though that is a fraction of the anticipated 5,900 new jobs planned by the year 2035 in the Study Area. See Exhibit 3-17.

Exhibit 3-17. 2035 Growth Targets and Capacity: City and Station Area

	Housing	Jobs
Citywide Growth Target: 2012-2035	8,361	22,435
Citywide Growth Capacity: 2016*	13,664 to 23,817	22,984 to 57,155
Totem Lake Urban Center Capacity Share of Citywide Capacity	25%-55%	30%-70%
Station Area Planned Growth 2019-2035	873	5,871
Station Area Pipeline Development: 2020	1,145	193 (est)

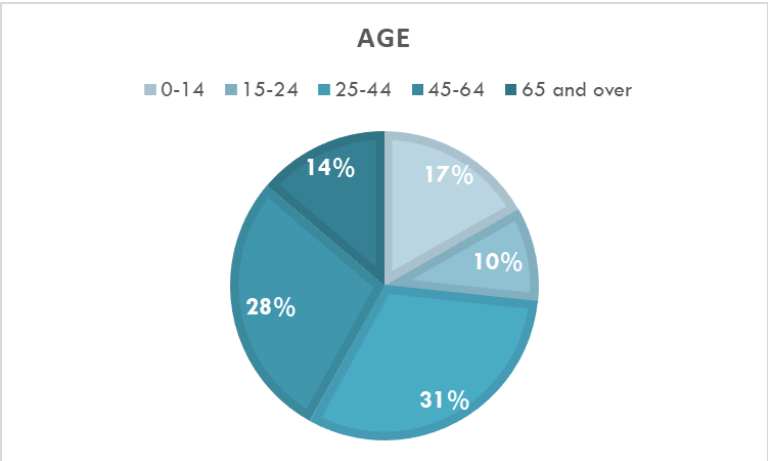
* Higher end uses alternative approach to estimating capacity in Totem Lake where development is added if a parcel development less than 25% of the maximum permitted development.
Sources: King County, 2014; City of Kirkland, 2016; OFM, 2019.

Demographics

In the Study Area, 27% of residents are children and young adults 0-24 years old, 31% are 25-44 years old, 28% are 45-64 years old, and 14% are 65 years and older. See Exhibit 3-18. This is similar to the City of Kirkland as a whole showing 13.7% above 65 years old.

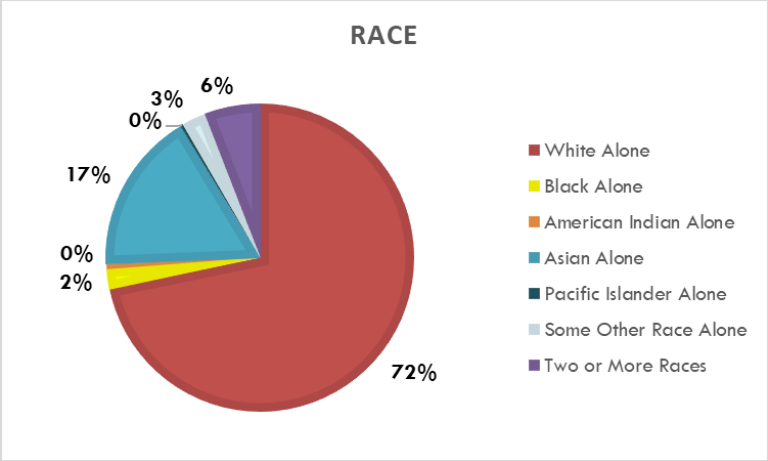
The Study Area has about 72% white residents and 28% persons of color. See Exhibit 3-19. This is a lower share of white residents than in 2010 when the share was 79%. The Study Area share of white residents in 2020 is similar to the City as a whole at 70%.

Exhibit 3-18. Station Area Residents Age Range, 2020



City of Kirkland 65+ 2019: 13.7%
Source: ESRI Business Analyst, 2020.

Exhibit 3-19. Study Area Race, 2020



City of Kirkland White Alone 2019: 70.0%
Source: ESRI Business Analyst, 2020.

Populations Lacking Opportunities

The Puget Sound Regional Council (PSRC) has developed an Opportunity Index identifying whether people living in a census tract have more or less access to opportunities for education, employment, housing, mobility, and health/environment.

Exhibit 3-20 and Exhibit 3-21 identifies Census Tracts in the vicinity of the station area. The area east of I-405 and along NE 85th Street is considered to have a Low Opportunity Index score, based on Very Low Health and Environmental quality (likely due to less access to parks/open space or location near I-405), and Low Housing quality due to housing conditions or other factors. Other Census Tracts are rated as having Moderate or High Opportunity. Elements of the area also scored lower for Health and Housing.

Opportunity Index Factors – Puget Sound Regional Council July 2019

Education

Reading test scores, math test scores, student poverty, teacher qualifications, graduation rates.

Economic Health

Access to living wage jobs, job growth, unemployment rates.

Housing and Neighborhood Quality

Housing vacancy rates, housing stock condition, crime index.

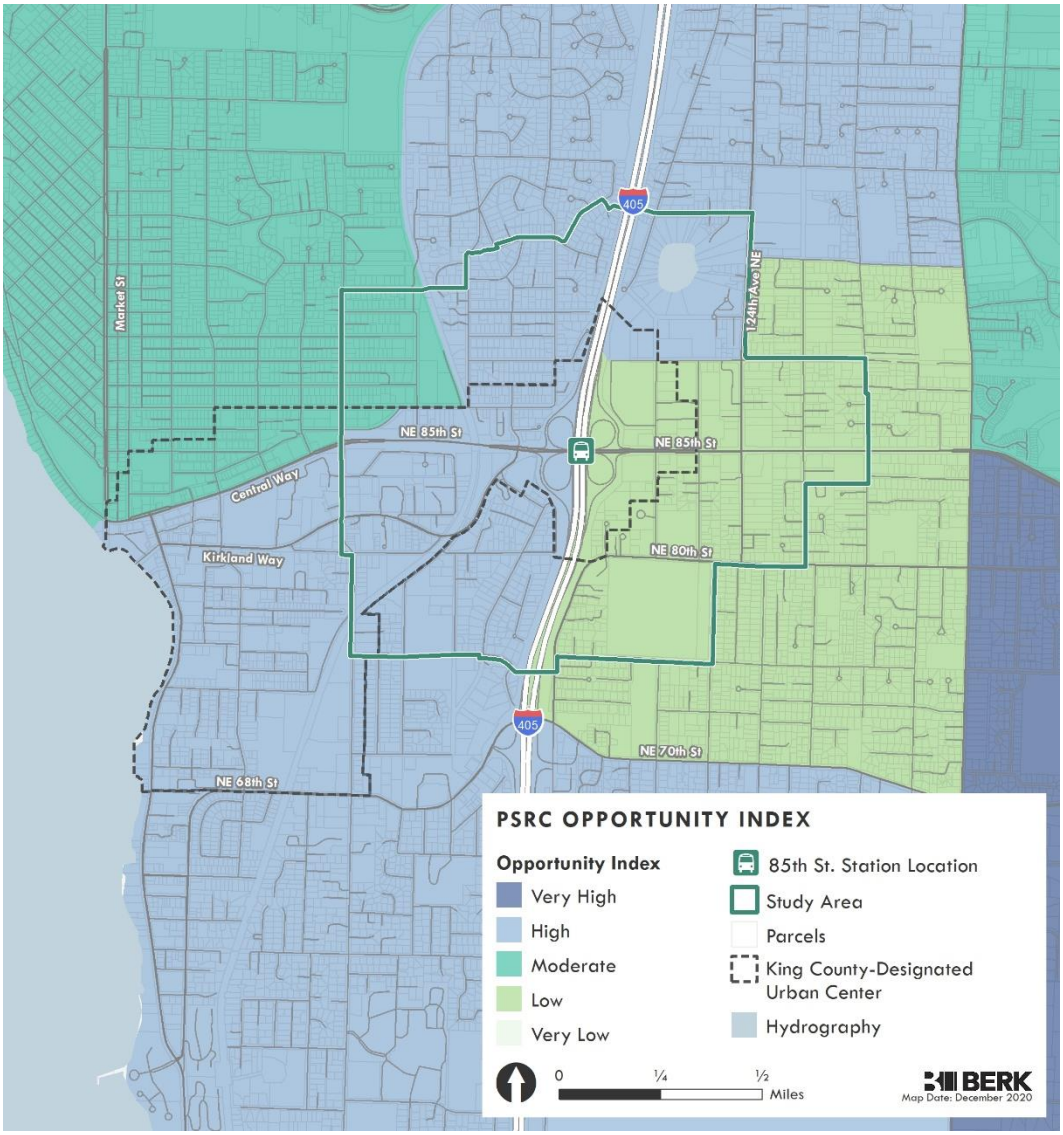
Mobility and Transportation

Drive commute cost, access to transit, transit fare cost, walkability (% walk to work).

Health and Environment

Proximity to park/open space, access to healthy food, proximity to toxic site release.

Exhibit 3-20. PSRC Opportunity Index Map – Census Tracks Overlapping Station Area



Source: PSRC, 2019.

Exhibit 3-21. Opportunity Index and Factors by Census Tract (CT)

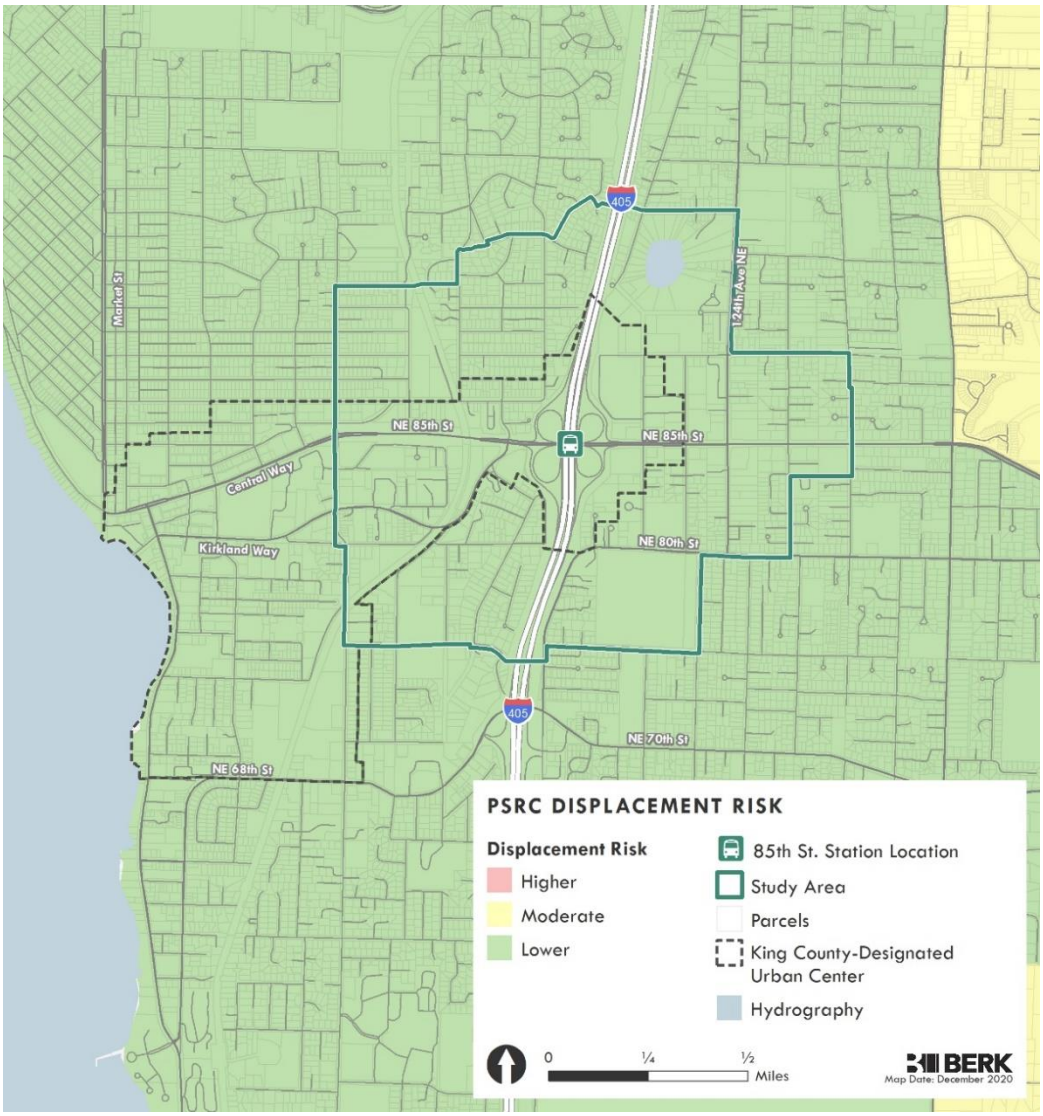
	Rose Hill Area East of I-405: CT 53033022604	Forbes Lake Area + Northeast: CT 53033022603	West of I-405: CT 53033022500	Downtown/ Waterfront Area: CT 53033022400
Opportunity Index	**Low**	**High**	**High**	**Moderate**
Economics	High	Low	Very High	Very High
Education	High	High	Very High	Very High
Health	Very Low	High	Very Low	Very Low
Housing	Low	Low	High	Low
Transportation	High	High	High	High
% Persons of Color 2016	24%	30%	18%	15%

Source: PSRC, 2019.

Potential for Displacement

PSRC has published a Displacement Risk study and map considering socio-demographics, transportation qualities, neighborhood characteristics, housing, and civic engagement factors. See Exhibit 3-22. Displacement of existing residents or businesses refers to when housing or neighborhood conditions force residents or businesses to move: "Displacement can be physical, when building conditions deteriorate or are taken off the market for renovation or demolition, or economic, as costs rise." (Puget Sound Regional Council, 2019) Based on the regional study, areas at higher risk of displacement are concentrated in south King County, Tacoma, and along the I-5 corridor in Snohomish County. By Census Tract, the level of displacement risk is considered low in the Study Area.

Exhibit 3-22. Displacement Risk in Census Tracts including Study Area



Source: Puget Sound Regional Council, 2019.

While on the whole the Study Area is not at high risk of displacement, amongst larger chain grocery stores, restaurants, and auto sales and services, there are smaller businesses, some of which are ethnic restaurants or personal service shops. As well, there are relatively higher percentages of people of color in the Census Tracts containing the Study Area and room to improve housing quality; see Exhibit 3-21.

Affordable Housing

Generally, affordable housing is designed so that households pay no more than 30% of their income on rent. Households that spend more than 30% of their income on housing and earn less than 80% of the King County median household income for ownership housing are considered cost burdened. Those spending more than 50% on rent and earning 80% or less of the county median household income are considered severely cost burdened.

The City's Housing Strategy Plan (City of Kirkland, 2018) reports for the city:

- Only 16% of the low- and very low-income renters in Kirkland live in housing where they can pay less than 30% of their gross incomes. Almost two-thirds (62%) pay more than half their incomes for housing—known as "severe cost burden."
- The median wage paid in Kirkland is comparable to other Eastside cities, but 54% of those jobs pay less than $50,000 per year.
- Traffic congestion in Kirkland--and the cost of vehicular infrastructure built to accommodate it--can be attributed to workers commuting into and out of Kirkland for their jobs, as well as on auto-dependent residential growth in Kirkland.
- The median price of a Kirkland home more than doubled in just the last five years.
- Kirkland has housing affordable to moderate income households, but has significant deficits in housing affordable to low- very low-income households (30% of the area median income; earning $26,000 for a family of 3).

The City requires the inclusion of affordable housing in most new multifamily development and also offers incentives, including:

- Either low-, moderate-, or middle-income housing is required as a portion of new multifamily developments in many neighborhoods.
  - At least 10% of the units provided in new residential developments of four units or greater shall be affordable housing units.
  - Height and density bonuses may be granted in exchange for affordable housing units provided on site.
- Multi-family property tax exemptions (MFTE) are offered in all areas where affordable housing is required.

- MFTE is offered as an added incentive where affordable housing is not required, such as the CBD.
- Partial impact fee and permit fee waivers are allowed, as well as dimensional standard modifications, for affordable housing.
- Contribution are made to the ARCH Housing Trust Fund.

The City's results through 2016 are identified below:

- ARCH Trust Fund Supported Units 1993-2016 in Kirkland: 382 units (142 general, 97 senior, 11 homeless, 28 special needs)
- MFTE through 2016: 176 units (83 rental, 23 senior, 31 owner, 6 special needs)
- Fee in Lieu/Fee Waiver Value Collected 1999-2016: $1,296,915 (City of Kirkland, 2017)

Recently, the City required that a developer associated with Kirkland Urban should pay the difference in affordable housing units expected when the master plan was amended to replace planned dwellings units with additional office space, resulting in the loss of the 10% affordable units expected (Kirkland Ordinance 0-4711). The plan had authorized 367 dwelling units, reduced to 185 units with the master plan amendment. The City identified that there would be only 19 affordable units instead of the planned 37 units. The City required the developer to pay $148,385.00 per affordable unit foregone by the amendment.

The more recent Washington Joint Legislative Audit and Review Committee Study of MFTE units between 2007-2019 identified 328 market rate units and 81 affordable units built in Kirkland using the MFTE program. (Washington Joint Legislative Audit and Review Committee, 2019)At best this is about 3.7% of total units built in the city:

- Citywide unit increase: 2012-2019: 2,177 (to include major annexation area not part of Kirkland from 2007-2011)
- Share of new units MFTE market rate: 15.1%
- Share new units MFTE affordable: 3.7%

3.3.2 Impacts

Thresholds of Significance

Land use and socioeconomic impacts would be considered to rise to a significant level if there are:

- Differences in activity levels at boundaries of uses of different intensities likely to result in incompatibilities.
- Intensities of expected growth likely to have an impact on direct displacement of a marginalized population (low-income people, people of color).

– Inadequate physical capacity to accommodate growth and displaced residents and businesses.
– Developments at intensities that would not support transit investments.

Impacts Common to All Alternatives

Land Use Patterns

The No Action Alternative has a similar acreage of Low Density Residential compared to Infill residential in the Action Alternatives, though more small scale attached housing (e.g. townhomes) could be added in the Infill Residential areas of Alternative 3.

Action Alternatives propose similar medium and high density residential, commercial, and industrial land use patterns as the No Action Alternative but emphasize mixed use residential/commercial, and mixed use office development. The transition from one type of land use to another is addressed under each alternative.

Exhibit 3-23. Zoning Comparison

No Action Zoning	Acres	Action Typologies	Alt. 2 Acres	Alt. 3 Acres
Commercial: Rose Hill Business District	69.22	Residential Mixed Use High Intensity		12.81
		Residential Mixed Use Mid Intensity	38.17	25.36
High Density Residential	18.00	Residential High Intensity*	0.00	0.00
Medium Density Residential	87.50	Residential Mid Intensity*	26.00	33.49
Office and Office/Multi-family	24.43	Infill per zoning (Office)	18.58	18.58
		Office Low Intensity	6.23	
		Office Mid Intensity	34.24	23.08
		Office High Intensity		22.50
		Office Mixed Use High Intensity		20.31
		Office Mixed Use Mid Intensity	20.31	
Industrial	52.69	Industrial/Tech	12.15	12.15
		Infill per zoning (Industrial)	34.58	34.58
Low Density Residential	225.43	Infill with Residential (Alt 3)	0	38.82
		Infill Per Zoning (Residential)	310.91	272.09
Parks and Open Space	33.64	Parks and Open Space	30.57	30.57
Total	**510.90**		**510.9**	**510.9**

* Residential Mid- and Residential High- Intensity are intended for single-purpose residential uses at different densities.
Sources: City of Kirkland, 2020; Mithun, 2020; BERK, 2020.

Compatibility

Land Use Transitions

All Alternatives would maintain a pattern of greater mixed use or employment intensity near NE 85th Street and I-405, though Alternatives 2 and 3 create a more distinct difference in intensity of uses in the northeast and southeast quadrants of the interchange where there are more abrupt changes in intensity from these uses to medium and lower density residential. This is addressed to a greater degree in the Aesthetics analysis.

Air Quality

At a programmatic level, the Action Alternatives consider business oriented and residential mixed uses similar to allowances found today in the No Action Alternative along NE 85th Street. Compared to the No Action Alternative, Action Alternatives provide a transition or buffer of greater employment uses along I-405 in the northeast and southeast quadrants of the interchange; residential uses would be located beyond these office-focused areas further from I-405.

Dense landscaping along roadways can reduce air pollutants by up to 50% (Deshmukh, 2019)[OBJ] Green infrastructure is another source of mitigation for potential air emissions (Tiwari, 2019)[OBJ]. The Action Alternatives promote landscaping and green infrastructure such as with green streets. The Action Alternatives also include a Form-Based Code that can address orientation and location of residential uses in mixed use developments to reduce potential exposure to adverse air quality and improve land use compatibility.

Activity Levels

All alternatives allow for increased growth in the Study Area, with No Action the least and Alternative 3 the most.

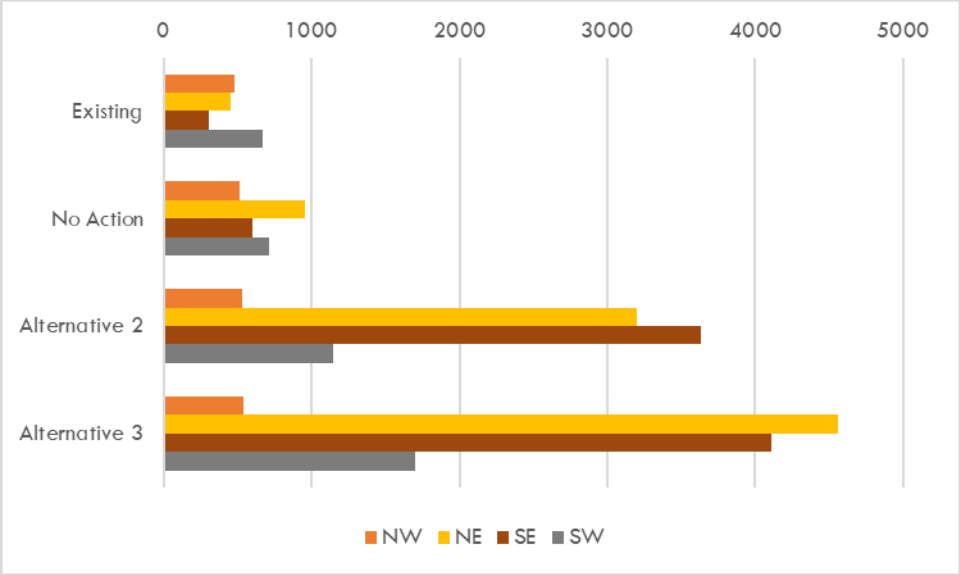
Exhibit 3-24. Households and Jobs by Alternative

Alternative	Households	% Increase Above Existing	% Increase Above No Action	Jobs	% Increase Above Existing	% Increase Above No Action
Existing	1,909			4,988		
No Action	2,782	46%		10,859	118%	
Alternative 2	8,509	346%	206%	28,688	475%	164%
Alternative 3	10,909	471%	292%	34,988	601%	222%

Sources: Mithun, 2020; BERK, 2020.

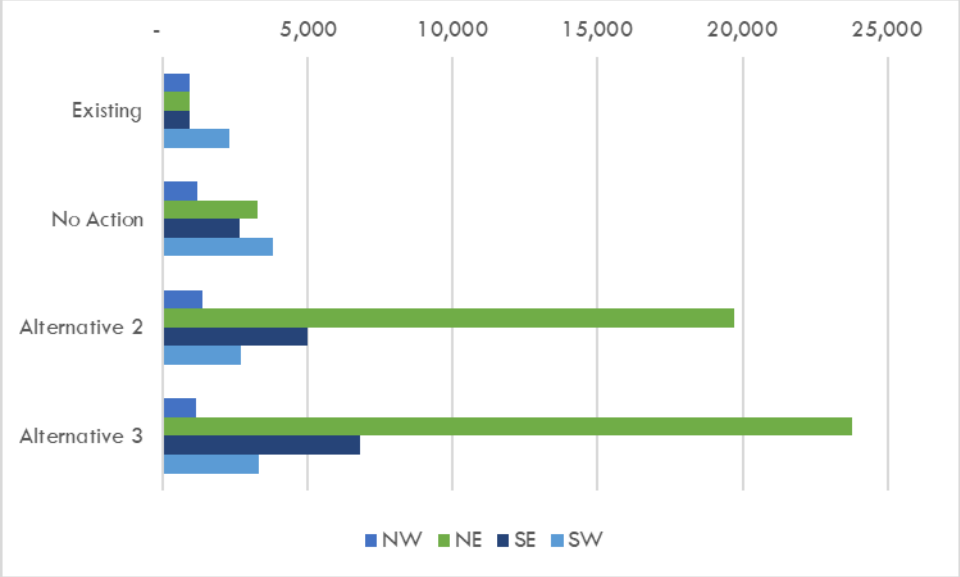
See Exhibit 3-25 for allowed housing and Exhibit 3-26 for jobs by quadrant. The Northeast and Southeast quadrants are planned to incorporate the most growth.

Exhibit 3-25. Housing Levels by Quadrant by Alternative



Sources: Mithun, 2020; BERK, 2020.

Exhibit 3-26. Jobs by Quadrant by Alternative



Sources: Mithun, 2020; BERK, 2020.

Increases in growth activity levels could increase ambient noise such as at the interface of commercial or industrial and residential uses with delivery bays or other equipment. The City has adopted maximum permissible noise levels between land use classes of different types consistent with state rules (WAC 173-60). Noise levels may increase temporally during construction, and City rules also address appropriate daytime hours.

The change in activity levels at the boundary of the Study Area is further addressed under each alternative.

Potential Displacement, Growth Capacity, Equity

All alternatives provide capacity for growth as seen in Exhibit 3-25 and Exhibit 3-26. Some of the areas most likely to change abut I-405 on the northeast and southeast portions of the interchange along the station and along NE 85th Street.

Under all alternatives, there would be more intensive office mixed use or residential mixed use buildings replacing single-story big box retail and parking lots along NE 85th Street, though the degree and character differs among alternatives.

New typologies would generally abut lower density and medium density residential areas but not replace them See discussions of each alternative for more detail on changes in typologies in some locations.

Most of the change would occur in Census Tract 53033022604, the Rose Hill area east of I-405. This Census Tract has a low opportunity index, and a quarter of the current residents are persons of color. There is a relatively low potential for displacement of small and ethnic businesses as indicated in Exhibit 3-22; to the extent there are limited displacements, there is capacity under all alternatives to contain space to accommodate them. Likewise, there may be lower income households in the Study Area that could be displaced in limited instances according to Exhibit 3-22, but there is substantial capacity to add new housing including affordable housing (see below).

Affordable Housing

If the City continues the current affordable housing program of both its inclusionary housing program and its voluntary MFTE program, the lowest number of affordable units would be added under Alternative 1 and the most under Alternative 3. If the City improved these programs (e.g., make MFTE for affordable housing more likely to be used) or increased its inclusionary housing program in association with the increase in heights and densities allowed, more affordable housing could be achieved. See Exhibit 3-27.

Exhibit 3-27. Affordable Housing Increases by Alternative

Alternative	Net Increase in Households Above Existing	10% Inclusionary Affordable Units	3.7% MFTE Affordable units	Total Potential Affordable Units
No Action Alternative 1	873	87	32	119
Alternative 2	6,600	660	244	904
Alternative 3	9,000	900	333	1,233

Sources: Mithun, 2020; BERK, 2020.

It should be noted that the balance of jobs and housing is not 1:1 in any alternative, and there is a greater share of jobs to future population under each alternative. Those working in the Study Area in the future may create demand for housing both in the Study Area and city or region. Though under the Action Alternatives, anticipated jobs would largely include technology and professional service office jobs, a share would also be in retail or services as found today. Typically retail and service workers would earn lesser incomes and rely on availability of affordable housing.

Transit Supportive Land Use

The PSRC requires that designated Regional Growth Centers allow 45 activity units (population and/or jobs) per acre to help ensure that land use supports transportation investments. The Station Area is within a proposed Regional Growth Center.

All alternatives would increase activity units in the station area with Alternatives 2 and 3 exceeding the activity unit density required, though the Station Area is only a portion of a larger proposed Regional Growth Center, and density should be confirmed within the appropriate boundary. See Exhibit 3-28.

Exhibit 3-28. Activity Units – Station Area

	Existing	No Action	Alternative 2	Alternative 3
Study Area				
Total Study Area Population *	4,192	5,791	18,687	23,957
Total Jobs (estimated)	4,988	10,859	28,688	34,988
Population and Jobs Activity Units – Study Area	**9,200**	**16,650**	**44,300**	**55,000**
Gross Acres – Study Area	719.40	719.40	719.40	719.40
Activity Unit/Gross Ac	12.8	23.1	61.6	76.5
Core Area – Regional Growth Center				
To be determined by PSRC for Preferred Alternative				

*Existing and No Action assume the Study Area household size of 2.2 derived from PSRC household and population estimates; this higher household size reflects a nearly even mix of single family and multifamily households. Action Alternatives assume a household size of 1.83, the multifamily household size estimated in the 2015 Comprehensive Plan EIS and used in the City's recent Regional Growth Center application. The share of multifamily units will be much higher in these alternatives.
Sources: Mithun, 2020; BERK, 2020.

No Action Alternative 1

The No Action retains the current Comprehensive Plan and zoning and anticipates the least amount of growth, though based on pipeline development

nearly all the housing growth anticipated by 2035 would happen sooner. Jobs are anticipated to increase by more than 100% over existing jobs.

The No Action Alternative would result in 2,782 total dwelling units in the Study Area, a 46% increase over existing units; the potential dwellings could be higher than projected by the current Comprehensive Plan growth target estimates since pipeline development already consumes what was estimated for the area. The residential units are part of mixed use developments primarily along the NE 85th Street Corridor in the Commercial area. If 10% of the new units are affordable, about 87 affordable units would be created or funded. If another 3.7% are developed under MFTE as affordable that would mean 32 affordable units.

Higher activity levels and differences in types and scale of development exist where Industrial abuts Low Density Residential and Medium Density Residential west of the Cross Kirkland Corridor or along 122nd Avenue NE, or Commercial and Office near Low and Medium Density Residential along NE 85th Street.

There is capacity in the alternative to accommodate commercial or residential uses that may be displaced by new development.

When the entire station area is taken into consideration, there is not sufficient capacity for jobs and population to achieve the PSRC-desired activity units in proximity to the transit investments to meet the Regional Growth Center criterion of 45 activity units per acre (the City's nomination before PSRC includes the station area and the Moss Bay neighborhood).

Action Alternative 2

Under Action Alternative 2, housing would increase by over 200% above the No Action Alternative, and there would be nearly a 164% increase in jobs. The location of general development typologies and relative intensity of development are in similar places as the No Action Alternative – along the boundary of Industrial/Tech and Residential Mixed Use Intensity.

Areas of change in land use patterns from current zoning include:

- East of I-405 near the transit station, there is more emphasis on Office Mid Intensity and Office Mixed Use Mid Intensity instead of Commercial. This could mean replacement of existing businesses for residential or mixed use purposes.
- NE 122nd Avenue NE north of NE 85th Street: There is more area of Residential Mid Intensity instead of Commercial and Industrial Zoning. The planned uses are more similar to existing abutting uses but could replace existing businesses.
- The taller, more intense Residential Mixed Use Mid Intensity would place more growth along abutting Low and Medium Density Residential areas identified

for Incremental Infill. Form-based code design guidelines could establish upper story stepbacks and other techniques at the ground floor to help ensure compatible growth.

Alternative 2 has the potential capacity to accommodate not only 2035 growth targets but more growth beyond to 2044. Its capacity would be in the range of housing and jobs assumed for the Totem Lake Urban Center. While displacement risk has been identified as low by PSRC per Exhibit 3-22, should there be potential displacement of homes or businesses Alternative 2 would provide space that could accommodate them; it is possible that those who may be displaced could relocate outside the Study Area. There is more opportunity for inclusionary housing and MFTE affordable units under Alternative 2 compared to the No Action Alternative. Together these could total over 900 under the City's existing regulations and potentially more if additional programs or incentives are implemented as described under Mitigation Measures.

Action Alternative 2 exceeds the level of activity units in proximity to the transit investments and would support the Regional Growth Center criterion.

Action Alternative 3

Action Alternative 3 proposes more building intensity related to greater height, particularly near the new station, and has slightly more transitional densities than Action Alternative 2 south of NE 85th Street. Its potential for land use pattern transitional impacts, accommodating potential displacement, and activity level change locations are similar to Action Alternative 2, though the level of growth and activity is higher. There are 292% more housing units compared to the No Action Alternative and 222% more jobs. This alternative would achieve more than 1,200 affordable units and potentially more if additional programs or incentives are implemented as described under Mitigation Measures.

There would be much greater capacity than the 2035 growth targets though the City will be planning for 2044 targets soon, and the growth in this area will assist the City in anticipating future households and jobs. Under Action Alternative 3 the number of dwellings and jobs would be at the upper end of the range of housing and jobs anticipated for the Totem Lake Urban Center.

Action Alternative 3 exceeds the level of activity units in proximity to the transit investments to meet the Regional Growth Center criterion for the Study Area though only a portion of the proposed Center.

3.3.3 Mitigation Measures

Incorporated Plan Features

- Alternatives 2 and 3 would have a higher number of housing units and jobs to support transit, and a likely higher number of affordable units produced through MFTE or inclusionary housing programs.
- Alternatives 2 and 3 would include a Form-Based Code intended to implement design standards to ensure compatible development and transitions. This could include transitional development standards with upper story stepbacks and landscaping.
- Alternatives 2 and 3 promote office closer to I-405 and housing at a further distance, which could reduce exposure of residents in new mixed use developments to emissions and freeway noise impacts. Carefully-selected landscaping along rights of way and other locations can mitigate air quality affected by emissions. (See also these topics in Section 3.1, Air Quality/GHG).

Regulations and Commitments

- Kirkland Zoning Code regulates land use, landscaping, parking, and other aspects of development to ensure development meets the City's long-term vision. Design guidelines, adopted by Section 3.30.040 of the Kirkland Municipal Code establish urban design policies to be used in development design review. See also Section 3.5 Aesthetics.
- Kirkland Zoning Code Chapter 112 addresses affordable housing incentives.
- RCW 36.70A.540 authorizes affordable housing incentive programs applicable to residential, commercial, and mixed-use development.
- Kirkland Zoning Code Chapter 113 addresses opportunities for "Missing Middle Housing" types of development in low-density residential zones
- The City regulates noise under Chapter 115.95 of the Kirkland Zoning Code. Noise related to construction activities is regulated under Chapter 115.25 of the Kirkland Zoning Code.

Other Proposed Mitigation Measures

Housing Strategy Plan Implementation

The Kirkland Housing Strategy Plan, April 2018, includes strategies the City could implement to improve its support for affordable housing. Strategies include, but are not limited to:

- Infrastructure for walkability and open spaces/pocket parks.

- All-inclusive neighborhoods with nodes of commercial and gathering places.
- Infill housing including alterative housing types.
- Increase overall housing and choices in Transit Oriented Development (TOD) and other centers.
- Mandate and incentivize the inclusion of residential uses in mixed-use developments. Examples of incentives include additional height, reduced setbacks, reduced parking, and tax breaks.

Commercial Space Linkage Fees

Action Alternatives 2 and 3 increase the capacity for jobs by 475%-600% above existing levels, and 164% to 222% above the No Action Alternative, respectively. This capacity is realized by creating new form-based zoning and allowing heights of up to 150-300 feet closest to the station and 25-85 feet elsewhere. Action Alternatives 2 and 3 also increase housing above existing levels by 345%-470% above existing units or 206% to 292% above the No Action Alternative, respectively.

Most of the jobs are expected to be office (e.g. 80-90%) given the development typologies planned next to the transit center with mixed use office towers. Retail jobs would also be created to support new households and employees. Industrial jobs would also occur as infill in existing zoned areas. The Study Area would allow for living and working in the same area, although provision of affordable housing choices would be key to ensuring that the employees of the area have a choice to live there. The housing in the Study Area could also help meet the City's affordable housing gaps in the City as a whole, as identified in the Kirkland Housing Strategy Plan. Such gaps included but were not limited to:

- A low proportion of workers in the City actually live in the City, while many who live in the City go elsewhere to work.
- Available housing for lower income (up to $45,000) and moderate income (up to $75,000) households, especially lower income seniors and individuals and more moderate-income families including single parents. (City of Kirkland, 2018)

A Kirkland strategy to help fill gaps is to "Increase overall housing and choices in Transit Oriented Development (TOD) and other centers." (City of Kirkland, 2018)

A means to address the impacts of new job growth on the Kirkland area housing market is to identify a commercial linkage fee applicable to new commercial square footage, described more specifically below:

> *Commercial linkage fees are a form of impact fee assessed on new commercial developments or major employers based on the need for workforce housing generated by new and expanding businesses.*

> *Revenues generated by the fee are then used to help fund the development of affordable housing within accessible commuting distance to the employment center. Commercial linkage fees help to better tie economic growth with housing growth. (Puget Sound Regional Council, 2020)*

Commercial linkage fees help cities address the problem of a "jobs-housing fit," where the range of housing affordability choices need to fit the range of worker incomes in the community. A commercial linkage fee is a per-square foot fee assessed to new, non-residential construction uses, such as hotel, office, retail and restaurant, to address the affordable housing demand from new workers necessary to run these uses. To establish the commercial linkage fee, the City must first develop a "nexus" study that demonstrates and quantifies the relationship between new development of commercial space and the demand for affordable housing units; in other words, a study to demonstrate that the increased demand for affordable housing in the City is a direct result of new non-residential development in the City. Such a study could be developed in coordination with A Regional Coalition for Housing ("ARCH").

An example of this type of nexus study was completed for the City of Seattle. After the nexus study, and in reliance on the nexus study, Seattle eventually adopted the Mandatory Housing Affordability (MHA) Program. (City of Seattle, 2014) Seattle modeled the share of units that could be funded with the program. (City of Seattle, 2016) The City also funded an economic analysis of the MHA program. (CAI Community Attributes, 2016) Other commercial linkage fee programs have been established in California, Virginia, Massachusetts and elsewhere. Regionally, other communities are considering commercial linkage fee programs, including the City of Bothell for the Canyon Park Regional Growth Center.

Regional Participation to Leverage Funding

The City could leverage regional partnerships such as with ARCH to add affordable housing opportunities in the Study Area. New regional efforts may also arise over time. For example, there is draft "Housing Benefit Districts" legislation (HB2898 and SB 6618) that would allow for an opt in incremental taxing district and ability for cities to acquire, assemble, landbank land to be developed into affordable / mixed income housing through partnering with the development community and supporting infrastructure. It has been tested in the Cities of Renton, Everett, and Tacoma.

Other Development Code Concepts

The Form-Based Code could include companion amendments meant to address

affordable housing such as:

- Expanded inclusionary housing requirements above the present 10%.
- Creating density bonuses that prioritize affordable housing.
- Establishing minimum requirements for family-size units, so a range of households can live in the Study Area.
- Requirements that development provide a minimum number of activity units to achieve its desired transit oriented development, as well as establish an expected amount of affordable housing.
- The region is experiencing displacement of general commercial uses and small, affordable spaces from more urban areas as redevelopment occurs. The Form-Based Code could create commercial space standards for both small and large businesses in new developments to retain area businesses in new urban formats. Building flexible tenant spaces that can accommodate small businesses can make the spaces more affordable.
- The City could provide incentives for development that retain space for existing businesses or households (e.g. right of first refusal). The City could also require relocation assistance for those displaced.

3.3.4 Significant Unavoidable Adverse Impacts

Under all alternatives, additional growth would occur in the Study Area, leading to a generalized increase in building height and bulk and development intensity over time, as well as the gradual conversion of low-intensity uses to higher-intensity development patterns. This transition would be unavoidable but it is not significant and adverse since this is an expected characteristic of a designated Urban Center in the Countywide Planning Policies.

In addition, future growth is likely to create localized land use compatibility issues as development occurs. The potential impacts related to these changes may differ in intensity and location in each of the alternatives. However, with the combination of existing and new development regulations, zoning requirements, and design guidelines, no significant unavoidable adverse impacts are anticipated.

As the area develops, there may be displacement of existing jobs as most of the areas of intensification are in commercial or mixed use areas; however, there is sufficient employment space under any alternative to relocate the businesses and thus no significant unavoidable adverse impacts are anticipated.

All alternatives could see some risk of displacement of existing residents or businesses; this risk would be higher under Alternatives 2 and 3 but so would the capacity for relocation in new housing units. Alternatives 2 and 3 would increase substantially the capacity for housing that could better meet demand. Increasing

affordable housing programs and incentives for providing units affordable to diverse income groups and to investment in affordable housing development could offset affordability pressures. Measures to encourage small businesses in the Form-Based Code would also help avoid displacement and create a more vibrant urban hub. The capacity of alternatives together with mitigation measures encouraging and requiring affordable housing and a variety of employment space should avoid significant adverse impacts.

3.4 Plans and Policies

This section of the Draft SEIS describes pertinent plans, policies, and regulations that guide or inform the proposal. Plans and policies evaluated in this section include the Growth Management Act (GMA), Puget Sound Regional Council's (PSRC) VISION 2050, and the King County Countywide Planning Policies (CPPs), each establishing a regulatory or policy framework with which comprehensive plans must be consistent. In addition, policy guidance established by the City' current Comprehensive Plan provides a basis for evaluating change and potential impacts associated with the proposal.

For the purpose of this analysis, the general direction of anticipated policy changes to the City's Comprehensive Plan are noted. The Final SEIS will further evaluate any specific policy or regulatory proposals that emerge from the City's planning process, after a draft of the Station Area Plan (SAP) is published. For this Draft SEIS analysis, the most significant components of the proposal and alternatives identified at this time include:

- Support for GMA urban growth, housing, economic development, and multimodal transportation goals,
- Relationship of the proposal to the PSRC VISION 2050 regional growth strategy and the adopted Urban Center designation in the Countywide Planning Policies and
- Relationship of the Study Area to the City's 2035 Comprehensive Plan and its current growth strategy.

3.4.1 Affected Environment

Washington State Growth Management Act (GMA)

The Washington State GMA was adopted in 1990 in response to concerns over uncoordinated growth and its impacts on communities and the environment. The GMA includes 13 planning goals to help guide its implementation. These goals address the following: 1) encouraging growth in urban areas, 2) reducing sprawl, 3) encouraging multimodal transportation systems, 4) encouraging a variety of housing types, including affordable housing, 5) encouraging economic development, 6) recognizing property rights, 7) ensuring timely and fair permitting processes, 8) protecting agricultural, forest and mineral lands, 9) retaining and enhancing open space and supporting recreation opportunities, 10) protecting the environment, 11) encouraging citizen involvement in planning processes, 12) ensuring adequate public facilities and services, and 13) encouraging historic preservation. A fourteenth goal was added to the GMA to reference the use

preferences of the Shoreline Management Act.

Comprehensive plans are mandated by the GMA to include specific chapters, referred to as elements. Required elements include land use, housing, capital facilities, utilities, transportation, economic development, and parks and recreation. The GMA and other state and regional policies provide specific guidance for the contents of these elements. Cities are also allowed to include optional elements in their comprehensive plans such as subarea plans like the pending NE 85th Street SAP.

The entire comprehensive plan, including the required and optional elements, must be internally and externally consistent. Internal consistency means that all elements of a plan are consistent with the future land use map contained in the land use element, and that the different elements are mutually supportive. For instance, the transportation projects outlined in the transportation element must support the land use patterns called for in the land use element. The requirement for external consistency means that the comprehensive plan must be coordinated with adjacent jurisdictions.

The GMA also requires that comprehensive plans address provision of sufficient land capacity to meet growth targets, establishment of level of service (LOS) standards, and public participation. A city must designate adequate land to accommodate twenty-year growth forecasts from the Office of Financial Management and King County, based on the requirement to provide sufficient capacity to meet growth targets. The current planning period for the Comprehensive Plan is 2035, but soon Kirkland and other Central Puget Sound communities will be planning for 2044. A comprehensive plan must include LOS standards for transportation facilities and may include LOS standards for other types of public facilities as well. The comprehensive planning process must include a public participation program providing for early and continuous opportunities to share input and ideas for the plan and its implementation.

Implementation of comprehensive plans is accomplished largely through development regulations and capital budget decisions. The GMA states that jurisdictions' development regulations and budget decisions must conform to comprehensive plans.

VISION 2050

Adopted in October 2020, the PSRC VISION 2050 provides a framework for planning for future development within the four-county region.[14] Within this

[14] King, Pierce, Snohomish, and Kitsap counties.

framework, the VISION 2050 regional growth strategy envisions a future where the region:

- Maintains a stable urban growth area.
- Focuses the great majority of new population and employment within the urban growth area.
- Maintains a variety of community types, densities, and sizes.
- Achieves a better balance of jobs and housing across the region.
- Within the urban growth area, focuses growth in cities.
- Within cities, creates and supports centers to serve as concentrations of jobs, housing, services, and other activities.
- Builds transit-oriented development around existing and planned infrastructure.
- Uses existing infrastructure and new investments efficiently.

VISION 2050 builds on current growth management plans, including a continuing emphasis of focused growth in centers as the heart of its approach to growth management. Regional growth centers are envisioned as major focal points of higher-density population and employment, served with efficient multimodal transportation infrastructure and services. Mixed-use centers of different sizes and scales are envisioned for all the region's cities and are intended to maximize use of existing infrastructure, support more efficient investments in new infrastructure, and minimize environmental impacts of growth.

VISION 2050 contains multicounty planning policies intended to support collaboration and coordination among all member jurisdictions and agencies. Policy chapters address regional collaboration, regional growth strategy, environment, climate change, development patterns, housing, economy, transportation, and public services.

Regional Growth Strategy

As stated in the VISION 2050 Regional Growth Strategy chapter, the goal of the regional growth strategy is:

> *Goal: The region accommodates growth in urban areas, focused in designated centers and near transit stations, to create healthy, equitable, vibrant communities well served by infrastructure and services. Rural and resource lands continue to be vital parts of the region that retain important cultural, economic, and rural lifestyle opportunities over the long run.*

The roles of different communities in implementing the growth strategy are

described in the Regional Growth Strategy chapter. Five types of urban geographies are identified based on their size, function, and access to high-capacity transit: Metropolitan Cities, Core Cities, High Capacity Transit Communities, Cities and Towns, and Urban Unincorporated Areas. Kirkland is one of 16 cities/urban areas in the Core Cities designation. Core Cities are described as containing designated regional growth centers, with the majority connected to the region's high-capacity transit system. Together with Metropolitan Cities, Core Cities currently are and will be the most intensely urban places in the region.

In August 2019, the City of Kirkland adopted a Greater Downtown Plan, which includes parts of the NE 85th Station Area, see Exhibit 3-29. This subarea plan is a compilation of pertinent goals and policies from existing subarea plans that are part of the Greater Downtown Area. In November, King County designated the Greater Downtown Area as an Urban Center. Following this action, the City applied to the PSRC to designate the Greater Downtown Area as a Regional Growth Center. This application is currently pending PSRC approval following completion of the SAP and the update to the Moss Bay Neighborhood Plan planned for 2021. As the SAP evolves and prior to the Final SEIS, the City will revise the boundaries of the Regional Growth Center within the Plan to designate a "core area" of properties that represent the regional center component of the Plan, consistent with PSRC's centers criteria. This core area, combined with the Moss Bay neighborhood, will comprise the Greater Downtown Regional Growth Center.

The designation of Totem Lake and the Greater Downtown Area as regional centers signifies the City's commitment to accepting its share of regional housing and employment growth in complete communities, focused near high-capacity transit. Because of that commitment, these regional centers receive higher priority for state and federal transportation funding that enables local governments to complete the infrastructure necessary to accommodate growth.

King County Countywide Planning Policies

The King County CPPs were developed by the King County Growth Management Council in collaboration with cities, and adopted in 2012 and ratified and amended periodically since then. The CPPs address growth management issues, provide a countywide vision for the future and support regional planning and the GMA. The GMA requires that local comprehensive plans be consistent with the CPPs.

The vision set forth in the CPPs calls for King County to be characterized by four types of land uses: 1) protected critical areas, such as wetlands and fish and wildlife conservation areas; 2) viable rural areas permanently protected with a clear boundary separating urban growth areas from rural areas; 3) bountiful resource

lands including farms and forests; and 4) vibrant, compact, diverse urban communities. The vision further describes a centers strategy that is consistent with and supports the Vision 2040 regional growth strategy.[15] The strategy aims to concentrate housing and employment growth in designated centers, providing urban and industrial places with higher intensity development and concentrations of services and amenities to support growth. The Totem Lake Center and Greater Downtown area are designated as urban centers in the CPPs.

Growth target policies in the CPPs set local growth targets for all cities within King County. These targets are based on 20-year growth forecasts prepared by the Washington Office of Financial Management (OFM) and are allocated to all jurisdictions in King County through a collaborative planning process between the cities and the County. Kirkland's growth targets for the 2015-2035 planning period are 8,361 new housing units and 22,435 new jobs.

Consistent with the GMA and VISION 2050, the CPPs will be updated in 2021 and will include updated growth targets to support the next major update of GMA comprehensive plans in 2024.

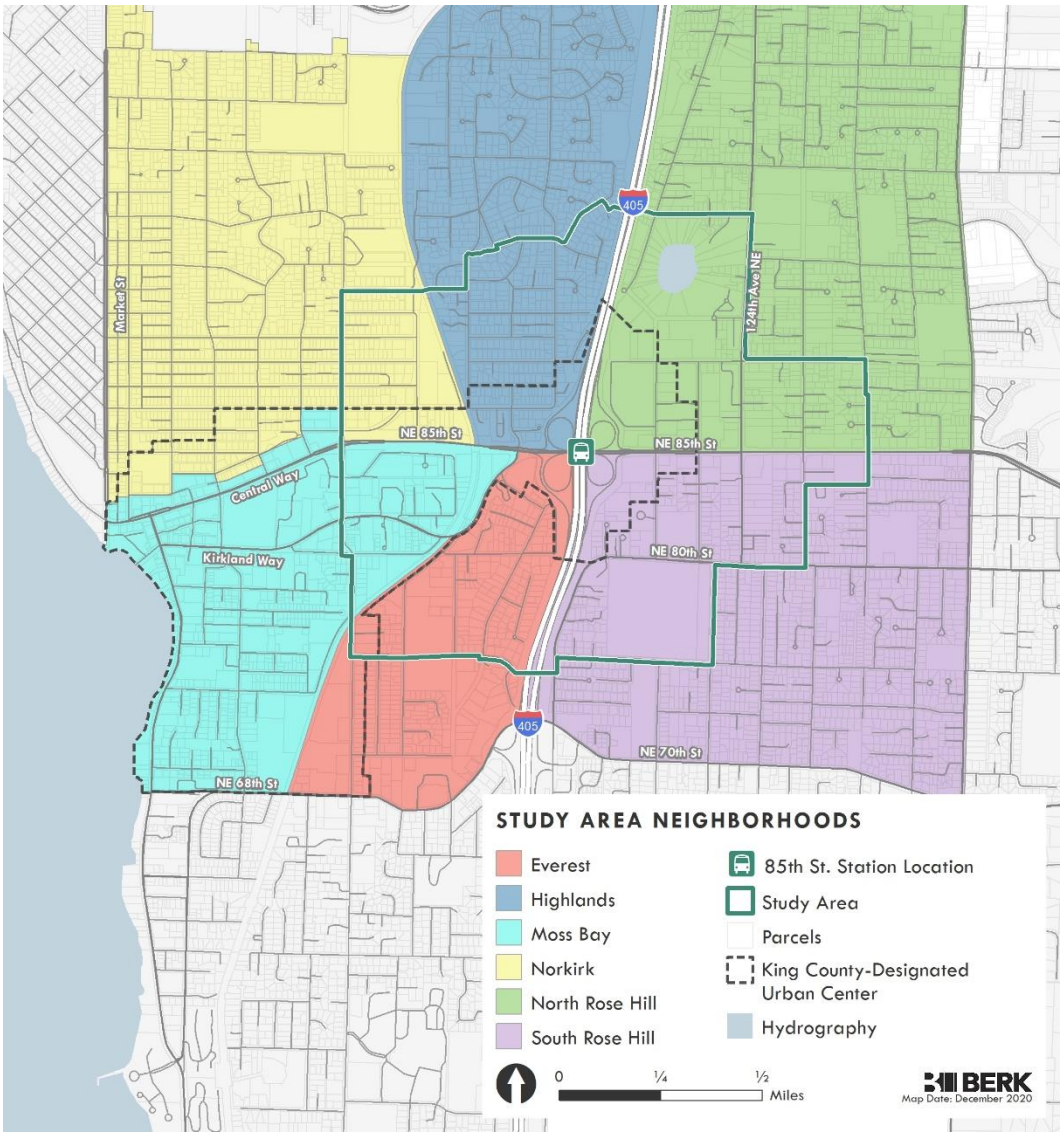
City of Kirkland Comprehensive Plan

The City of Kirkland's first GMA Comprehensive Plan was adopted in 1995 and has been regularly amended, including two major updates in 2004 and 2015 to meet the requirements of the GMA. The City of Kirkland's current Comprehensive Plan includes the following citywide elements: Vision/Guiding Principles; General; Community Character; Environment; Land Use; Housing; Economic Development; Transportation; Parks, Recreation and Open Space; Utilities, Public Services; Human Services, Capital Facilities; and Implementation Strategies.

The Comprehensive Plan also includes 13 neighborhood plans, a plan for the Market Street Corridor, and the City's shoreline area plan. The Study Area encompasses portions of six neighborhood areas, including the North Rose Hill, South Rose Hill, Highlands, Everest, Moss Bay, and Norkirk neighborhoods.[16] See Exhibit 3-29.

[15] The King County CPPs are anticipated to be amended to address the recently adopted PSRC VISION 2050.
[16] North and South Rose Hill are addressed in the Rose Hill Neighborhood element.

Exhibit 3-29. Neighborhood and Study Area Boundaries



Sources: City of Kirkland, 2020; BERK, 2020.

Each comprehensive plan element contains goals, policies, and supporting narrative. Goals describe the desired outcome that the City is striving to attain, policies are principles to achieve the goals, while the narrative provides further explanation of the goals and policies. Relevant to the proposal, applicable goals from the Land Use, Housing, Transportation, Rose Hill Neighborhood, Highlands Neighborhood, Everest Neighborhood, Moss Bay Neighborhood, and Norkirk Neighborhood elements are excerpted below.

Land Use Element

The fundamental goal of the Land Use Element is to maintain a balanced and

complete community by retaining the community's character and quality life, while accommodating growth and minimizing traffic congestion and service delivery costs.

Key goals include:

- **LU-1:** Manage community growth and redevelopment to ensure:
  - An orderly pattern of land use;
  - A balanced and complete community;
  - Maintenance and improvement of the City's existing character; and
  - Protection of environmentally sensitive areas.
- **LU-2:** Promote a compact, efficient, and sustainable land use pattern in Kirkland that:
  - Supports a multimodal transportation system that efficiently moves people and goods;
  - Minimizes energy use, greenhouse gas emissions, and service costs:
  - Conserves land, water, and natural resources; and
  - Provides sufficient land areas and development intensity to accommodate Kirkland's share of the regionally adopted population and employment targets.
- **LU-3:** Provide a land use pattern and transportation network that promotes mobility, transportation choices, and convenient access to goods and services.
- **LU-4:** Protect and enhance the character and quality of residential neighborhoods while accommodating the City's growth targets.
- **LU-5:** Plan for a hierarchy of commercial and mixed use areas serving neighborhood, community, and/or regional needs.

Housing Element

The central goal of the Housing Element is to preserve neighborhood quality while improving housing opportunities for all residents. Key goals are shared below:

- **H-1:** Maintain and enhance the unique residential character of each City neighborhood.
- **H-2:** Ensure that Kirkland has a sufficient quantity and variety of housing to meet projected growth and needs of the community,
- **H-3:** Promote affordable and special needs housing throughout the City for all economic segments of the population.

Transportation Element

Four major principles for transportation are identified in the Comprehensive Plan:

- **Safely move people:** Support a transportation system and related

government and private actions that promote all viable forms of transportation.

- **Link to land use:** Ensure consistency between land use, transportation planning, and implementation.
- **Be sustainable:** Support a transportation system that can be sustained over the next 50 years.
- **Be an active partner:** Actively build and maintain partnerships locally, regionally, and nationally to further our transportation goals.

Goals for each mode are shared below:

- **T-1: Walking.** Complete a safe network of sidewalks, trails and crosswalks where walking is comfortable and the first choice for many trips.
- **T-2: Biking.** Interconnect bicycle facilities that are safe, nearby, easy to use and popular with people of all ages and abilities.
- **T-3: Public Transportation.** Support and promote a transit system that is recognized as a high value option for many trips.
- **T-4: Motor Vehicles.** Provide for efficient and safe vehicular circulation recognizing congestion is present during parts of most days.
- **T-5: Link to Land Use.** Create a transportation system that supports Kirkland's land use plan.
- **T-6: Be Sustainable.** As the transportation system is planned, design, built, maintained, and operated, provide mobility for all using reasonably assured revenue sources while minimizing environmental impacts.

Rose Hill Neighborhood Area Plan

The Rose Hill Neighborhood covers a large area generally bounded on the east by NE 132nd St, on the west by I-405, on the north by Slater Ave NE, and on the south by NE 70th St. The Rose Hill Business District extends along NE 85th St in an east/west direction between I-405 and 132nd Ave NE. The Study Area occupies a portion of the Rose Hill Neighborhood generally bounded by I-405 on the west, 122nd, 124th, and 126th Avenues NE on the east, NE 75th St on the south, and NE 100th St on the north. The Rose Hill Business District runs through the center of the Study Area. See Exhibit 3-29 for the general neighborhood boundaries and Exhibit 3-30 for business district boundaries.

Applicable policies are excerpted below.

- **RH-3:** Retain the residential character of the neighborhood while accommodating new and innovative compact housing opportunities to serve a diverse population.
- **RH-7:** Locate and design new development to protect and restore the natural

areas of Forbes Lake, Forbes Creek, and associated wetlands, while providing opportunities for a variety of housing styles and public access to the Lake.

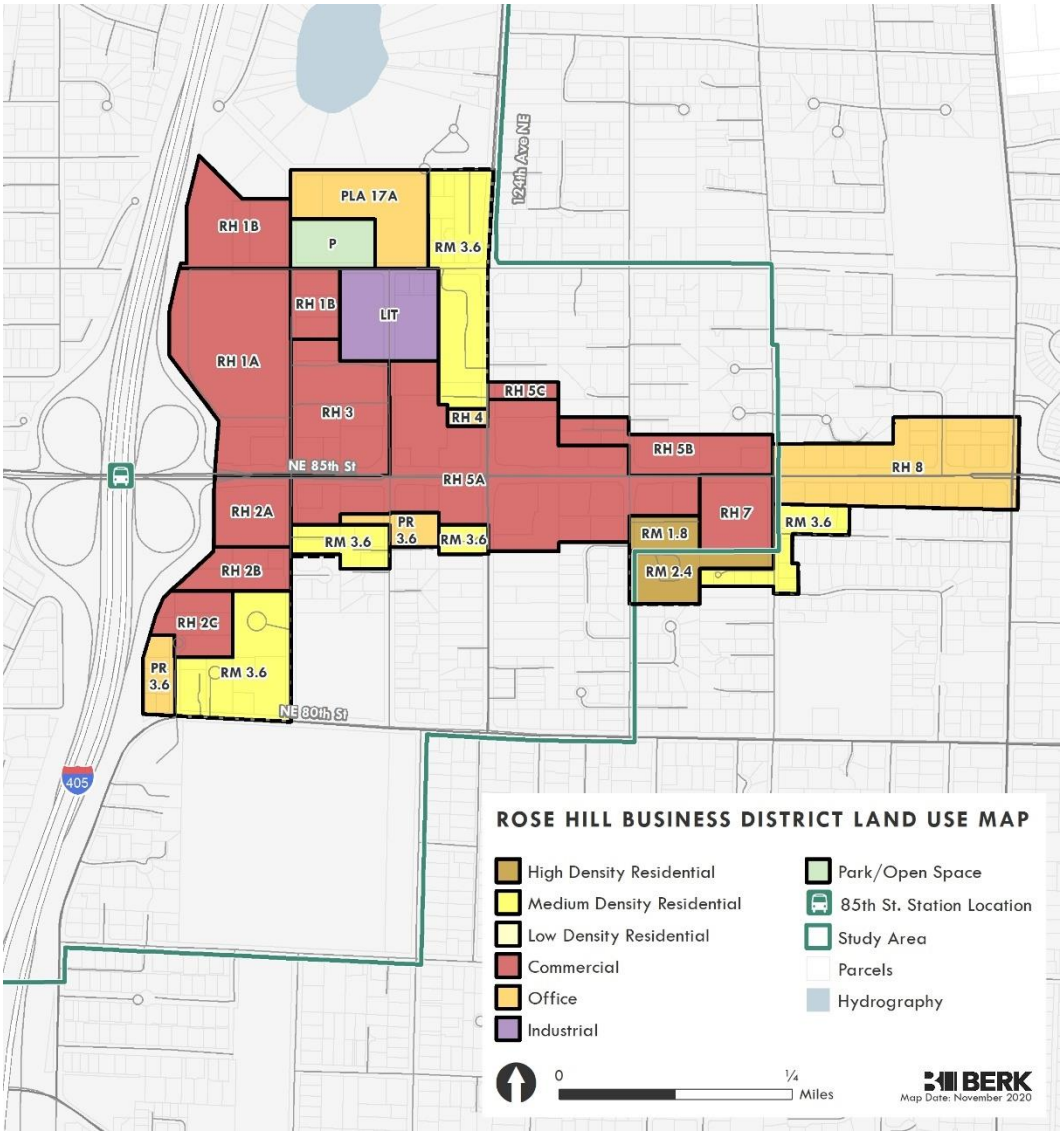
- **RH-8:** Focus commercial and mixed-use development in the following locations:
  - In established portions of the North Rose Hill Business District;
  - In the NE 85th Street corridor, close to existing or planned high capacity transit, utilizing both the new South Transit I-405 Bus Rapid Transit Station at the NE 85th Street/I-405 freeway interchange and future business access and transit (BAT) lanes along NE 85th Street as a catalyst for expanded transit-oriented development in the Rose Hill Business District; and
  - Within the existing boundaries of the small commercial node that is across the street from the Bridle Trails Shopping Center in South Rose Hill.
- **RH-9:** Provide seamless transitions between commercial districts and lower density areas in Rose Hill, by promoting a hierarchy of commercial uses from larger footprint regional uses, closer to the freeway interchanges, to more local serving neighborhood services near the residential core.

Rose Hill Business District

- **Vision:** Over time, the Rose Hill Business District is envisioned to be an attractive, vibrant, transit-oriented mixed-use commercial area combining housing, regional and local retailers.
- **Policy RH 23:** Promote vibrant walkable employment destinations and affordable housing near the future Sound Transit Bus Rapid Transit Station near the I-405/NE 85th St Interchange.
- **Policy RH 24:** Utilize zoning incentives or other techniques to encourage commercial redevelopment in the District that will foster the 10-minute neighborhood concept.

Regional Center

Exhibit 3-30. Rose Hill Business District Land Use Designations



Source: City of Kirkland, 2020; BERK, 2020.

Regional Center

- **Policy RH 25:** Establish the parameters of future transit-oriented redevelopment in RH 1, 2 and 3 in a Transit Station Area Plan that coordinates land use, transportation, economics and urban design elements in partnership with Sound Transit, King County Metro, and WSDOT. The initial stages of the Transit Station Area Plan should establish the full boundaries of the station area to fully integrate the station with the surrounding land uses.
- **Policy RH 26:** Until the Transit Station Area Plan is adopted, the regional retail nature of this portion of the District should be preserved in order to provide

regional shops and services in addition to generating sales tax revenue that is important to fund necessary City services.

- **Policy RH 27:** In RH 1A preserve the large regional retailer.
- **Policy RH 28:** In RH 1B limit new development in recognition of wetland and stream constraints on these properties and observe the applicable critical area regulations.
- **Policy RH 29:** In RH 2A, B and C, require retail uses (including car dealer), and permit office and/or residential uses. Require retail use to be the predominant ground level use and discourage extensive surface parking lots. Encourage consolidation of properties into a coordinated site design; however, discourage large, singular retail or wholesale uses through establishment of a size limitation that, in recognition of convenient access to I-405, may be greater than in the rest of the District.

  Other site design considerations include the following:
  - Allow a range of building height four to five stories if offices above retail or a maximum of six stories if residential above retail. Additional height may be allowed to encourage a variety of roof forms and roof top amenities. Step back upper stories from NE 85th Street. Three stories on the south of NE 85th St is appropriate where buildings are adjacent to existing residences.
  - Limit the total floor area, separate the buildings and include ample building modulation to create open space within and around the development.
  - In order to prevent commercial access to and from 118th Avenue NE, limit vehicular access to NE 85th Street and 120th Avenue NE. Allow office and residential uses and emergency vehicles to access from 118th Avenue NE.
  - Encourage underground or structured parking (discourage large ground level parking lots).
  - Limit the impacts of new signs to residents across 120th Avenue NE.

  Policy RH 30: In RH 3 require consolidated mixed-use transit-oriented development with an emphasis on ground level retail and/or pedestrian amenities along street frontages to promote walkability in the neighborhood. Allow a range of building height from four to a maximum of six stories, with increased height on the northern portion of site where the ground elevation is lower. Additional height may be allowed to encourage a variety of roof forms and roof top amenities. Emphasize transit access to the Transit Station at the freeway interchange, and include connections between 120th and 122nd Avenues NE. Limit vehicular access points onto NE 85th Street.

Rose Hill Business District: Transportation

- **Policy RH 72:** Develop a multimodal transportation network for NE 85th Street and surrounding streets that provides safe and convenient facilities for transit,

pedestrians, and bicycles, maintains vehicular traffic capacity, and supports existing and planned land uses in the Rose Hill Business District.

- **Policy RH 73:** Add east-west pedestrian pathways in the Rose Hill Business District as redevelopment occurs. When developing these pathways, retain existing significant trees where possible.
- **Policy RH 74:** Work with Sound Transit, King County Metro Transit and WSDOT, to maximize transit facilities that would improve the speed and reliability of bus operation on NE 85th Street and adjacent streets. Provide preferential treatments for buses at congested intersections. Install transit improvements at appropriate locations.

Everest Neighborhood Area Plan

The Everest Neighborhood is generally bounded by the Cross Kirkland Corridor on the west, I-405 on the east, NE 68th St on the south, and NE 85th St on the north. The Study Area generally extends from the north neighborhood boundary to roughly 5th Ave S on the south. This area contains a mix of industrial mixed-use development along the Cross Kirkland Corridor, medium density residential and low density residential development. An area of office development is located at the northern edge of the neighborhood. Everest Park also crosses into the southern portion of the Study Area, Exhibit 3-29.

The Everest Neighborhood Plan generally describes the land use pattern contained in the City's Comprehensive Plan Land Use Map and affirms that it should be maintained.

Highlands Neighborhood Area Plan

The Highlands Neighborhood is generally bounded by NE 85th St on the south, I-405 on the east, and the Cross Kirkland Corridor to the north and west. The Study Area occupies the southern portion of the neighborhood, extending from NE 85th St on the south to approximately NE 102nd St on the north. The majority of this area contains low density residential development, with some medium residential development at the southern end adjoining NE 85th St, Exhibit 3-29.

Highlighted goals include:

- **H-13:** Encourage medium-density multifamily development as a transition between lower-intensity residential areas in Highlands and more intensive land use development to the south of the neighborhood and surrounding the Bus Rapid Transit (BRT) Station to the east.
- **H-14:** Promote land uses, mobility improvements, and new infrastructure that support transit-oriented development around the I-405/NE 85th Street Bus

Rapid Transit (BRT) Station and the associated Station Area Plan.

- **H-21:** Enhance and maintain pedestrian and bicycle infrastructure within the Highlands neighborhood, especially on routes to schools, activity nodes, adjacent neighborhoods, Cross Kirkland Corridor and Sound Transit Bus Rapid Transit Station at I-405/NE 85th Street.

Moss Bay Neighborhood Area Plan

The Moss Bay Neighborhood contains Kirkland's downtown area and a diverse mix of uses, including retail businesses, industrial activities, offices, established low-density residential neighborhoods, and medium and high-density residential areas. The Study Area occupies a portion of the neighborhood described as a downtown perimeter area, adjoining the east boundary of the downtown core, Exhibit 3-29. This area is developed with a mix of office, retail and service, low-, medium-, and high-density residential uses,

The Moss Bay Neighborhood Plan describes the land use pattern contained in the City's Comprehensive Plan Land Use Map and addresses specific priorities and considerations in these designations.

Norkirk Neighborhood Area Plan

The Norkirk Neighborhood is generally bounded by the Moss Bay Neighborhood to the south, approximately 20th Ave to the north, the Cross Kirkland Corridor to the east, and Market Street to the west. It is primarily a low-density residential area, with some higher densities and a light industrial area in the southern part of the neighborhood. The Market Street Corridor is developed with a mix of office, multifamily, and commercial uses. The Study Area extends from the southern boundary of the neighborhood to approximately 12th Ave, Exhibit 3-29. Within this area, development is primarily low-density residential, but also includes the higher residential densities and the light industrial area in the southern part of the neighborhood. Key goals include:

- **N-12:** Retain and enhance the existing residential character of the Norkirk neighborhood while accommodating more compact new housing so that residents can age in place and the neighborhood can accommodate generational shifts in housing needs and welcome new residents.
- **N-14:** Maintain effective transitional uses between the downtown and the low density residential core of the neighborhood.
- **N-16:** Focus commercial development in established commercial areas.
- **N-18:** Maintain the light industrial area to serve the needs of the community.
- **N-19:** Encourage limited light industrial uses, auto repair and similar service commercial uses, and offices to serve the neighborhood and surrounding

community.

- **N-21:** Ensure that adverse impacts associated with industrial uses are minimized.
- **N-23:** Promote land uses, mobility improvements, and new infrastructure that support transit-oriented development around the I-405/NE 85th Street Bus Rapid Transit (BRT) Station and the associated Station Area Plan.
- **N-24:** Promote shared parking arrangements to encourage efficient utilization of surface parking lots in the neighborhood.

3.4.2 Impacts

Thresholds of Significance

This analysis reviews the alternatives for consistency with the state, regional, and local plans and policies listed above. For the purposes of this analysis, consistency means that the alternative can occur and be implemented together with the selected goal or policy without contradiction. In this section, a finding of inconsistency or contradiction with plans and policies would be considered to result in a significant adverse impact.

Impacts Common to All Alternatives

Washington Growth Management Act (GMA)

All alternatives are consistent with the intent of the GMA goals. However, Alternatives 2 and 3 would provide new momentum in focusing growth in the NE 85th Street Station Area. See Exhibit 3-31 for a summary assessment of consistency of the alternatives with GMA goals.

Exhibit 3-31. GMA Goal Evaluation Matrix

GMA Goal	Discussion
Encourage growth in urban areas	All alternatives focus growth in the NE 85th Street Station Area. Alternative 1 (No Action) plans for 2,782 total households and 10,859 jobs, consistent with the City's updated 2015 – 2035 growth estimates. Alternatives 2 and 3 provide for higher levels of growth in the Station Area, with 8,509 total housing units and 28,688 jobs under Alternative 2 and 10,909 total housing units and 34,988 jobs under Alternative 3 for a longer planning period to 2044.
Reduce sprawl	All alternatives provide development capacity that meets or exceeds the City's 2035 growth target requirements. Comparatively, Alternative 1 would accommodate the least amount of growth in the Station Area and Alternative 3

GMA Goal	Discussion
	the greatest amount of growth. By accommodating growth in the Station Area, all the alternatives contribute to reducing sprawl.
Protect rural character	By reducing sprawl, as discussed above, all the alternatives would help to protect rural character in areas outside of the city.
Encourage an efficient multimodal transportation system	All alternatives seek to leverage the benefits of regional investment in the future Bus Rapid Transit (BRT) station as part of the city's multimodal transportation system. All alternatives would provide greater residential and employment development within a 10-minute walking distance and include pedestrian and bicycle improvements for improvement multimodal access. Comparatively, Alternative 1 would provide the least level of non-motorized improvements, while Alternative 3 would provide the most substantial bicycle and pedestrian improvements. Mitigation measures could be applied to alternatives 2 or 3 to provide a shuttle service to provide first-mile/last-mile access to surrounding neighborhoods and Downtown; see Section 3.6 Transportation.
Encourage a variety of housing types, including affordable housing	All alternatives will provide for a combination of mixed-use development, smaller scale residential development, and infill housing types, including accessory dwelling units and missing middle housing. Compared to Alternative 1, Alternatives 2 and 3 would provide greater opportunities for mixed-use residential development in the Station Area, and allow for more affordable housing under inclusionary housing and multifamily tax exemption or other programs.
Promote economic development	All alternatives would provide significant employment opportunities in and near the station area. Comparatively, Alternative 1 would provide 10,859 new jobs, or the least number of new jobs, and Alternative 3 would provide 34,988 new jobs, or the greatest number of new jobs.
Recognize property rights	None of the alternatives would restrict or constrain reasonable use of property in the station area.
Ensure timely and fair permit procedures	All alternatives are consistent with the goal of timely and fair permit procedures. The proposal includes a planned action designation in the station, which would help to streamline future project-level environmental review. It is anticipated that the City would continue to process permits consistent with its adopted code.
Protect agricultural, forest and mineral lands	The NE 85th station area is not located near any designated agricultural, forest, or mineral lands. To the extent that the Action Alternatives provide increased capacity for future growth, they may help to reduce pressure for future growth that could impact agricultural, forest, and mineral lands.
Retain and enhance open space and support recreation opportunities	Development under all alternatives would meet requirements for open space established by city code, and support implementation of the City's adopted Park, Recreation, and Open Space Plan. Mitigation measures applicable to Alternatives 2 and 3 explore measures to provide neighborhood pocket parks or other smaller scale open space; see Section 3.7 Public Services.
Protect the environment	All the alternatives would minimize development near Forbes Lake, provide stormwater improvements as part of the WSDOT I-405 interchange project, and continue to require compliance with the City's adopted critical area, tree and stormwater regulations. Alternative 2 would provide minor green infrastructure investments. Alternative 3 would coordinate environmental strategies at the

GMA Goal	Discussion
	district scale to maximize environmental performance through green infrastructure and a signature "blue street" for addressing stormwater; see Chapter 2 for additional descriptions of these features.
Ensure adequate public facilities and services	The station area is in an urban area with good access to public facilities and services and immediately adjacent to the new BRT station. Increased growth will result in greater demand for public facilities and utilities. See evaluations in Draft SEIS sections 3.7 and 3.8.
Foster citizen participation	All the alternatives allow for public participation. The Action Alternatives have been developed through an inclusive public outreach process that has included surveys, interviews, public meetings, online workshops, opportunities for written comment, and targeted engagement to meet equity goals. Comprehensive engagement efforts are planned for the balance of the planning process, including public outreach and comment for this Draft SEIS (see Draft SEIS Fact Sheet).
Encourage historic preservation	Future development in the Study Area would comply with state and federal requirements for protection of historic and archaeological sites.

Source: BERK, 2020.

VISION 2050

Regional Growth Strategy. Consistent with the VISION 2050 Regional Growth Strategy goal, the proposed SAP would accommodate growth in an urban area and near the new BRT station. By providing focused growth in a location near the new BRT station, all alternatives support the City's designation as a Core City. Compared the Alternative 1 (No Action), Alternatives 2 and 3 provide greater growth capacity in the station area and are more likely to accommodate focused station area growth consistent with VISION 2050 guidance.

Regional Growth Center. As noted previously, the City has applied to PSRC for designation of the Greater Downtown Area, including the NE 85th Street station area, as a Regional Growth Center. This application is pending PSRC approval. Designation of the NE 85th Street station area as part of a Regional Growth Center would be consistent with VISION 2050 description of Core Cities as containing regional growth centers connected to the region's high-capacity transit system.

King County Countywide Planning Policies

All alternatives are consistent with the King County CPPs goals described below. To the extent that the CPPs emphasize compact centers-focused growth pattern, Alternatives 2 and 3 provide the most capacity and amenities package to support this type of growth compared to Alternative 1 (No Action). See Exhibit 3-32 for a summary of the consistency of the proposal and alternatives with pertinent King County CPP goals.

Exhibit 3-32. Countywide Planning Policy Evaluation Matrix

King County CPPs	Discussion
Environment Overarching Goal: The quality of the natural environment in King County is restored and protected for future generations.	All the alternatives would minimize development near Forbes Lake, provide stormwater improvements as part of the WSDOT I-405 interchange project, and continue to require compliance with the City's adopted critical area and stormwater regulations. Alternative 2 would provide minor green infrastructure investments. Alternative 3 would coordinate environmental strategies at the district scale to maximize environmental performance through green infrastructure and a signature "blue street" for addressing stormwater; see Chapter 2 for additional descriptions of these features.
Development Pattern Overarching Goal: Growth in King County occurs in a compact, centers-focused pattern that uses land and infrastructure efficiently and that protects Rural and Resource Lands.	All alternatives provide development capacity that meets or exceeds the City's 2035 growth target requirements. Comparatively, Alternative 1 would accommodate the least amount of growth in the station area and Alternative 3 the greatest amount of growth. By accommodating growth in the station area, all the alternatives contribute to a compact development pattern consistent with this goal.
Urban Growth Area Goal Statement: The Urban Growth Area accommodates growth consistent with the Regional Growth Strategy and growth targets through land use patterns and practices that create vibrant, healthy, and sustainable communities.	Consistent with the VISION 2050 Regional Growth Strategy goal, all alternatives would accommodate growth in an urban area and near the new BRT station. By providing focused growth in a location near the new BRT station, all alternatives support the VISION 2050 designation of Kirkland as a Core City.
Centers Goal Statement: King County grows in a manner that reinforces and expands upon a system of existing and planned central places within which concentrated residential communities and economic activities can flourish.	The proposal would focus compact growth in an urban area adjacent to a new station in the region's high-capacity transit system. All alternatives provide for concentrated mix of residential and commercial uses. The City is seeking designation of the Greater Downtown Area, including the NE 85th Street station area, as a Regional Growth Center. This application is pending PSRC approval and would be consistent with this centers goal statement and VISION 2050 description of Core Cities as containing regional growth centers connected to the region's high-capacity transit system.
Rural Area Goal Statement: The Rural Area provides a variety of landscapes, maintains diverse low density communities, and supports rural economic activities based on sustainable stewardship of the land.	By reducing sprawl, as discussed above, all the alternatives would help to protect rural character in areas outside of the city.
Resource Lands Goal Statement: Resources Lands are valuable assets of King County and are renowned for their productivity and sustainable management.	The NE 85th station area is not located near any designated agricultural, forest or mineral lands. To the extent that the Action Alternatives provide increased capacity for future growth, they may help to reduce pressure for future growth that could impact agricultural, forest, and mineral lands.
Housing Overarching Goal: The housing needs of all economic and	All alternatives will provide for a combination of mixed-use development, smaller scale residential development, and infill housing types, including accessory dwelling units and missing middle housing. Compared to

King County CPPs	Discussion
demographic groups are met within all jurisdictions.	Alternative 1, Alternatives 2 and 3 would provide greater opportunities for mixed-use residential development in the station area, and allow for more affordable housing under existing requirements and programs.
Economy Overarching Goal: People throughout King County have opportunities to prosper and enjoy a high quality of life through economic growth and job creation.	All alternatives would provide significant employment opportunities in and near the station area. Comparatively, Alternative 1 would provide 10,859 jobs, or the least number, and Alternative 3 would provide 34,988 jobs, or the greatest number of jobs.
Transportation Overarching Goal: The region is well served by an integrated, multi-modal transportation system that supports the regional vision for growth, efficiently moves people and goods, and is environmentally and functionally sustainable over the long term.	All alternatives seek to maximize the benefit of the new BRT service by locating housing, employment, and amenities near the station. All alternatives would provide greater residential and employment development within a 10-minute walking distance and include pedestrian and bicycle improvements for improvement multimodal access. Comparatively, Alternative 1 would provide relatively minor multimodal improvements based on new development, while Alternative 3 would provide the most substantial bicycle and pedestrian improvements. Alternatives 2 and 3 would also provide a shuttle service to provide first-mile/last-mile access to surrounding neighborhoods and Downtown.
Public Facilities and Services Overarching Goal: County residents in both Urban and Rural Areas have access to the public services needed in order to advance public health and safety, protect the environment, and carry out the Regional Growth Strategy.	The proposal would enhance access to the region, help to protect the environment through increased opportunities for multimodal travel, and help to implement the Regional Growth Strategy as discussed above.

Kirkland Comprehensive Plan

Relevant to the proposal, applicable goals from the Land Use, Housing, Transportation general elements, and the Rose Hill Neighborhood, Highlands Neighborhood, Everest Neighborhood, Moss Bay Neighborhood, and Norkirk Neighborhood elements are discussed below.

Exhibit 3-33. Comprehensive Plan Evaluation Matrix

Kirkland Comprehensive Plan: General Elements	Discussion
Land Use	
LU-1: Manage community growth and redevelopment to ensure: ▪ An orderly pattern of land use; ▪ A balanced and complete community; ▪ Maintenance and improvement of the City's existing character; and ▪ Protection of environmentally sensitive areas.	Through the SAP effort, the proposal seeks to provide for an orderly pattern of land use and a balanced complete community. A Form-Based Code under the Action Alternatives would focus on the physical character of development, including the relationship between buildings and streets, ground floor pedestrian character, building heights, and public realm areas.

Kirkland Comprehensive Plan: General Elements	Discussion
	All alternatives would minimize development near Forbes Lake, provide stormwater improvements as part of the WSDOT I-405 interchange improvements. The Action Alternatives would provide green infrastructure improvements.
LU-2: Promote a compact, efficient, and sustainable land use pattern in Kirkland that: Supports a multimodal transportation system that efficiently moves people and goods; Minimizes energy use, greenhouse gas emissions, and service costs: Conserves land, water, and natural resources; and Provides sufficient land areas and development intensity to accommodate Kirkland's share of the regionally adopted population and employment targets.	The proposal is for a compact mixed-use community with convenient access to the new BRT station. By providing easy access to the regional transportation system, the proposal will help to minimize energy use, greenhouse gas emissions, conserve land and natural resources.
LU-3: Provide a land use pattern and transportation network that promotes mobility, transportation choices, and convenient access to goods and services.	By providing housing, employment, and services in a compact development with easy access to the new BRT station, the proposal promotes mobility, transportation choices, and convenient access to goods and services.
LU-4: Protect and enhance the character and quality of residential neighborhoods while accommodating the City's growth targets.	The proposal seeks to focus new development in the area with immediate access to the new BRT station while avoiding significant development in adjoining residential neighborhoods.
Housing	
H-1: Maintain and enhance the unique residential character of each City neighborhood.	The proposal seeks to focus new development in the area with immediate access to the new BRT station while avoiding significant development in adjoining residential neighborhoods.
H-2: Ensure that Kirkland has a sufficient quantity and variety of housing to meet projected growth and needs of the community.	All alternatives provide development capacity that meets or exceeds the City's 2035 growth target requirements. Comparatively, Alternative 1 would accommodate the least amount of growth in the station area and Alternative 3 the greatest amount of growth.
H-3: Promote affordable and special needs housing throughout the City for all economic segments of the population.	Alternatives 2 and 3 would increase housing supply, and as a result the share of units meeting the 10% affordability requirement, or voluntarily implement the multifamily tax exemption.
Transportation	
T-1: Walking. Complete a safe network of sidewalks, trails and crosswalks where walking is comfortable and the first choice for many trips.	All alternatives will provide pedestrian improvements to serve the station area. Comparatively, Alternative 1 would provide relatively minor streetscape improvements, while Alternative 3 would provide the most substantial bicycle and pedestrian improvements.

Kirkland Comprehensive Plan: General Elements	Discussion
T-2: Biking. Interconnect bicycle facilities that are safe, nearby, easy to use and popular with people of all ages and abilities.	All alternatives will provide pedestrian improvements to serve the station area. The Action Alternatives would provide the most substantial improvements, including bike lanes and/or a cycle track on key streets.
T-3: Public Transportation. Support and promote a transit system that is recognized as a high value option for many trips.	All alternatives seek to maximize the benefit of the new BRT service by locating housing, employment, and amenities near the station. The Action Alternatives would provide a shuttle service to support first mile/last mile access for surrounding neighborhoods and downtown.
T-4: Motor Vehicles. Provide for efficient and safe vehicular circulation recognizing congestion is present during parts of most days.	All alternatives would include multi-modal improvements that would seek to reduce vehicular congestion. The Action Alternatives would seek to further manage access and automobile congestion on key streets.
T-5: Link to Land Use. Create a transportation system that supports Kirkland's land use plan.	The SAP process follows an integrated land use transportation approach that ensures that land use and transportation plans are coordinated and work together effectively.
T-6: Be Sustainable. As the transportation system is planned, design, built, maintained, and operated, provide mobility for all using reasonably assured revenue sources while minimizing environmental impacts.	The proposal would enhance access to the region, help to protect the environment through increased opportunities for multimodal travel, and expand mobility for city residents. The proposal does not directly affect ongoing revenue sources for the City's transportation system.

Exhibit 3-34. Kirkland Subarea Plan Evaluation Matrix

Kirkland Comprehensive Plan: Subarea Plans	Discussion
Rose Hill	
General	
RH-3: Retain the residential character of the neighborhood while accommodating new and innovative compact housing opportunities to serve a diverse population.	No changes to the residential areas outside of the station area are proposed under any alternative. Under the Action Alternatives, potential residential uses could include accessory dwelling units (ADUs), cottage housing, duplexes, triplexes in low density residential areas consistent with Ordinance 4717. In addition, in Residential Infill areas, Alternative 3 would also potentially allow townhouses as a transitional use in areas that adjoin mid-and high-rise areas. The character of the area would continue to be residential and low-density development would continue to be allowed, together with a greater variety of housing types, including slightly higher densities and taller buildings. In the Study Area south of NE 75th St, the Action Alternatives propose smaller scale low-density residential infill consistent the existing low-density

Kirkland Comprehensive Plan: Subarea Plans	Discussion
	residential designation in the Comprehensive Plan Land Use Map. Existing multifamily residential designations is this area would also be maintained. Consistent with this policy, the Action Alternatives would retain residential character while accommodating new and innovative compact housing opportunities. Over time, the low-density character of the infill area north of NE 85th St may change incrementally as new development occurs. Use of design standards and other measures to ensure that new development is well integrated into the neighborhood could address this concern.
RH-7: Locate and design new development to protect and restore the natural areas of Forbes Lake, Forbes Creek, and associated wetlands, while providing opportunities for a variety of housing styles and public access to the Lake.	All alternatives would minimize development near Forbes Lake.
RH-8: Focus commercial and mixed-use development in the following locations: In established portions of the North Rose Hill Business District; In the NE 85th Street corridor, close to existing or planned high capacity transit, utilizing both the new Sound Transit I-405 Bus Rapid Transit Station at the NE 85th Street/I-405 freeway interchange and future business access and transit (BAT) lanes along NE 85th Street as a catalyst for expanded transit-oriented development in the Rose Hill Business District; and Within the existing boundaries of the small commercial node that is across the street from the Bridle Trails Shopping Center in South Rose Hill.	Consistent with this policy, the proposal leverages the new BRT station at the NE 85th St/I-405 interchange as a catalyst for a new transit-oriented community in the Rose Hill Business District.
RH-9: Provide seamless transitions between commercial districts and lower density areas in Rose Hill, by promoting a hierarchy of commercial uses from larger footprint regional uses, closer to the freeway interchanges, to more local serving neighborhood services near the residential core.	The proposal and alternatives are consistent with this policy. Under all alternatives, commercial uses would be focused in areas closest to I-405 and along NE 85th St. The Action Alternatives would focus the greatest intensity of development in the area generally between I-405 and 120th Ave NE. Mid-rise mixed-use and incremental infill development would provide a transition from the more intensive development to the existing low-density residential areas.
Rose Hill Business District	
Policy RH 23: Promote vibrant walkable employment destinations and affordable housing near the future Sound Transit Bus	Consistent with this policy, all alternatives would focus employment and housing near the new BRT station. Comparatively, Alternative 3 proposes

Kirkland Comprehensive Plan: Subarea Plans	Discussion
Rapid Transit Station near the I-405/NE 85th St Interchange.	the most housing, employment, and walking amenities relative to the other alternatives.
Policy RH 24: Utilize zoning incentives or other techniques to encourage commercial redevelopment in the District that will foster the 10-minute neighborhood concept.	The proposal does not currently include incentives or other measures to encourage commercial redevelopment within the Study Area. Such measures could be considered in the next phase of the planning process.
Rose Hill Business District: Transportation	
Policy RH 72: Develop a multimodal transportation network for NE 85th Street and surrounding streets that provides safe and convenient facilities for transit, pedestrians, and bicycles, maintains vehicular traffic capacity, and supports existing and planned land uses in the Rose Hill Business District.	All alternatives support a multimodal transportation network in the Rose Hill Business District, including access to the future BRT station and pedestrian and bicycle improvements. Comparatively, Alternative 1 would provide relatively minor streetscape improvements, while Alternative 3 would provide the most substantial bicycle and pedestrian improvements. Mitigation measures proposed for the increase in trips and need for transportation demand management associated with Alternatives 2 and 3 would include a shuttle service to provide first-mile/last-mile access to surrounding neighborhoods and Downtown. See Section 3.6 Transportation.
Policy RH 73: Add east-west pedestrian pathways in the Rose Hill Business District as redevelopment occurs. When developing these pathways, retain existing significant trees where possible.	All alternatives proposed east/west pedestrian corridors along key streets, including NE 90th, NE 85th, and NE 80th Streets. Comparatively, Alternative 3 proposes a more extensive set of east/west connections between these key streets that would provide increased bicycle and pedestrian mobility.
Regional Center	
Policy RH 25: Establish the parameters of future transit-oriented redevelopment in RH 1, 2 and 3 (Exhibit 3-30) in a Transit Station Area Plan that coordinates land use, transportation, economics and urban design elements in partnership with Sound Transit, King County Metro, and WSDOT. The initial stages of the Transit Station Area Plan should establish the full boundaries of the station area to fully integrate the station with the surrounding land uses.	As described in this policy, the current SAP process is intended to establish the parameters of future transit-oriented development in a SAP that includes areas RH1, 2, and 3. The alternatives considered in this SEIS provide a range of parameters for consideration in the planning process.
Policy RH 26: Until the Transit Station Area Plan is adopted, the regional retail nature of this portion of the District should be preserved in order to provide regional shops and services in addition to generating sales tax revenue that is important to fund necessary City services.	Regional retail development has not been restricted in the Rose Hill Business District.
Policy RH 27: In RH 1A preserve the large regional retailer. (Exhibit 3-30)	Under Alternative 1, the existing commercial designation would allow continuation of the large regional retailer. Under the Action Alternatives,

Kirkland Comprehensive Plan: Subarea Plans	Discussion
	proposed land use designations provide for mid- to high-rise mixed-use development in RH 1A. The existing large format retail use could continue in this location. Additionally,, a large format retail use could be integrated into a the more intensive residential and office development that is planned for this location. .
Policy RH 28: In RH 1B limit new development in recognition of wetland and stream constraints on these properties and observe the applicable critical area regulations. (Exhibit 3-30)	Under all alternatives, future development would be required to identify wetlands and streams and observe applicable critical area regulations.
Policy RH 29: In RH 2A, B and C (Exhibit 3-30), require retail uses (including car dealer), and permit office and/or residential uses. Require retail use to be the predominant ground level use and discourage extensive surface parking lots. Encourage consolidation of properties into a coordinated site design; however, discourage large, singular retail or wholesale uses through establishment of a size limitation that, in recognition of convenient access to I-405, may be greater than in the rest of the District. Other site design considerations include the following: ▪ Allow a range of building height four to five stories if offices above retail or a maximum of six stories if residential above retail. Additional height may be allowed to encourage a variety of roof forms and roof top amenities. Step back upper stories from NE 85th Street. Three stories on the south of NE 85th St is appropriate where buildings are adjacent to existing residences. ▪ Limit the total floor area, separate the buildings and include ample building modulation to create open space within and around the development. ▪ In order to prevent commercial access to and from 118th Avenue NE, limit vehicular access to NE 85th Street and 120th Avenue NE. Allow office and residential uses and emergency vehicles to access from 118th Avenue NE.	Under Alternative 1 (No Action) future development could be consistent with the design considerations identified in this policy. This policy provides guidance for specific uses and design considerations that have not yet been fully addressed in the SAP process. The issues raised in this policy should be addressed as part of the ongoing SAP and Form-Based Code planning process and potential comprehensive plan amendments identified as needed.

Kirkland Comprehensive Plan: Subarea Plans	Discussion
▪ Encourage underground or structured parking (discourage large ground level parking lots). ▪ Limit the impacts of new signs to residents across 120th Avenue NE.	
Policy RH 30: In RH 3 (Exhibit 3-30) require consolidated mixed-use transit-oriented development with an emphasis on ground level retail and/or pedestrian amenities along street frontages to promote walkability in the neighborhood. Allow a range of building height from four to a maximum of six stories, with increased height on the northern portion of site where the ground elevation is lower. Additional height may be allowed to encourage a variety of roof forms and roof top amenities. Emphasize transit access to the Transit Station at the freeway interchange, and include connections between 120th and 122nd Avenues NE. Limit vehicular access points onto NE 85th Street.	The proposal is for focused mixed-use transit-oriented development in RH3 and surrounding areas. Pedestrian amenities would be provided under all alternatives, with Alternative 1 providing the least and Alternative 3 providing the greatest level of pedestrian improvements. In RH 3, Alternative 2 would allow building heights of 65 – 85 feet and Alternative 3 85 – 150 feet. Assuming 15-feet per floor, Alternative 2 would allow roughly 4 – 6 stories, and Alternative 3 6 – 10 stories. If either of these alternatives move forward, this policy should be amended to incorporate applicable height standards and design considerations.
Everest	
Policy guidance supports Kirkland Comprehensive Plan Land Use Map	In the area immediately south of NE 85th St, all alternatives propose a continuation of office use, consistent with the existing Comprehensive Plan Land Use Map. In the area north and west of Everest Park, the Action Alternatives propose infill per the industrial zoning consistent with the Comprehensive Plan Land Use Map. In the low-density residential designated areas surrounding Everest Park, the Action Alternatives propose modest incremental infill consistent with residential zoning, including ADUs, duplexes, triplexes, and cottage housing. This type of development is currently permitted in low-density residential areas (Ordinance 4717) and is not anticipated to result in adverse impacts. If needed, design standards and other measures to ensure that new development is well integrated into the neighborhood could address any potential impacts.
Highlands	
H-11: Retain and enhance the residential character of the neighborhood while accommodating more compact new housing so that residents can age in place and the neighborhood can	All alternatives would maintain the existing low- and medium-density residential land use designations in the Study Area. In the low-density area, alternatives propose modest incremental infill development such as ADUs, duplexes, triplexes, and cottage housing (Ordinance 4717). This type of development is currently permitted in the low-density area and is not anticipated to result in adverse impacts. In

Kirkland Comprehensive Plan: Subarea Plans	Discussion
accommodate generational shifts in housing needs.	addition, design standards and other measures to ensure that new development is well integrated into the neighborhood could address any potential impacts.
H-13: Encourage medium-density multifamily development as a transition between lower-intensity residential areas in Highlands and more intensive land use development to the south of the neighborhood and surrounding the Bus Rapid Transit (BRT) Station to the east.	Both Action Alternatives propose infill in the medium-density area just east of I-405 and south of NE 90th St.
H-14: Promote land uses, mobility improvements, and new infrastructure that support transit-oriented development around the I-405/NE85th Street Bus Rapid Transit (BRT) Station and the associated Station Area Plan.	As described above, the City's Comprehensive Land Use Map designates much of the Highlands neighborhood area adjacent to the I-405/NE 85th St interchange for medium-density multifamily uses. With respect to mobility improvements, the Action Alternatives identify 116th Ave NE and NE 87th St as priority pedestrian routes. New bicycle infrastructure is proposed along these streets as well, together with connections to the new BRT station at NE 85th St and across I-405 at NE 90th St. These land use designations and infrastructure improvements are consistent with this policy.
H-21: Enhance and maintain pedestrian and bicycle infrastructure within the Highlands neighborhood, especially on routes to schools, activity nodes, adjacent neighborhoods, Cross Kirkland Corridor, and Sound Transit Bus Rapid Transit (BRT) at I-405/NE 85th Street.	As noted above, the Action Alternatives identify 116th Ave NE and NE 87th St as priority pedestrian routes. New bicycle infrastructure is proposed along these streets as well, together with connections to the new BRT station at NE 85th St and across I-405 at NE 90th St.
Moss Bay	
Policy guidance supports Kirkland Comprehensive Plan Land Use Map	All alternatives are consistent with the Comprehensive Land Use Map in this area. In the area immediately south of NE 85th St. and west of the Cross Kirkland Corridor, all alternatives would provide for a mix of office and multifamily residential use, consistent with Comprehensive Plan designations. In the area between the Cross Kirkland Corridor and Kirkland Way, the Action Alternatives propose low rise office use, consistent with the existing industrial mixed-use land use designation.
Norkirk	
N-12: Retain and enhance the existing residential character of the Norkirk neighborhood while accommodating more compact new housing so that residents can age in place and the neighborhood can accommodate generational shifts in housing needs and welcome new residents.	In the Study Area, much of the Norkirk neighborhood is designated for low-density residential development. In this area, alternatives propose modest infill, including ADUs, duplexes, triplexes, and cottage housing. This type of development is currently permitted in the low-density area (Ordinance 4717) and is not anticipated to result in adverse impacts. If needed, design standards and other measures to ensure that new development is well integrated into the neighborhood could address any potential impacts.

Kirkland Comprehensive Plan: Subarea Plans	Discussion
N-14: Maintain effective transitional uses between the downtown and the low-density residential core of the neighborhood.	All alternatives would retain the existing transitional land use designations between the downtown and the low-density residential core of the neighborhood.
N-16: Focus commercial development in established commercial areas.	All alternatives would continue to focus commercial development within established commercial areas.
N-18: Maintain the light industrial area to serve the needs of the community.	All the alternatives would retain the existing light industrial area.
N-19: Encourage limited light industrial uses, auto repair and similar commercial uses, and offices to serve the neighborhood and surrounding community.	The Action Alternatives propose industrial/tech /office small businesses that would be likely to serve the neighborhood and surrounding community.
N-21: Ensure that adverse impacts associated with industrial uses are minimized.	The Action Alternatives propose office/industrial/tech in a portion of the industrial area, which could help to minimize potential adverse impacts associated with industrial uses.
N-23: Promote land uses, mobility improvements, and new infrastructure that support transit-oriented development around the I-405/NE85th Street Bus Rapid Transit (BRT) Station and the associated Station Plan.	The City's Comprehensive Land Use Map designates much of the neighborhood area adjacent to the downtown for high- to medium-density multifamily uses. The Action Alternatives identify the Cross Kirkland Corridor and Market Street as priority pedestrian routes. Central Way is identified as a shuttle route, priority pedestrian route, and for new bicycle infrastructure. These land use designations and infrastructure improvements are consistent with this policy.
N-24: Promote shared parking arrangements to encourage efficient utilization of surface parking lots in the neighborhood.	Consistent with this policy, the Action Alternatives identify the existing commercial/multifamily area adjacent to downtown and light industrial area in the southeast part of the neighborhood for shared and reduced parking.

3.4.3 Mitigation Measures

Incorporated Plan Features

– All alternatives would accommodate the City's 2015-2035 growth targets for housing and employment identified in the Comprehensive Plan, as well as general guidance supporting transit-oriented development in the vicinity of the new BRT station at the I-405/NE 85th St interchange.

Regulations and Commitments

– As required by GMA, the City must submit proposed Comprehensive Plan amendments and updated regulations for review and comment by the State prior to final adoption.

Other Proposed Mitigation Measures

- The relationship of the SAP to neighborhood plans should be specifically articulated in the Comprehensive Plan.
- Rose Hill Neighborhood Plan policies RH-24, RH-27, RH-29, and RH-30 should be reviewed to determine the need for amendments to the Comprehensive Plan or potential inclusion in future development regulations/design standards.
- Consider the need for design standards and other measures to ensure that residential character is retained as infill development occurs.

3.4.4 Significant Unavoidable Adverse Impacts

With implementation of mitigation measures, no significant unavoidable adverse impacts are anticipated with respect to consistency with adopted plans and policies under any of the alternatives.

3.5 Aesthetics

This section evaluates the scale and visual quality of development that would potentially occur under each of the alternatives, including the effects of proposed building height increases on community character, views, and shading conditions. Section 3.5.1 – Affected Environment, below, documents existing conditions in the Study Area, including current development typologies, allowed building heights, and overall visual and architectural character. Section 3.5.2 – Impacts assesses the potential for adverse effects as a result of future development under each of the alternatives.

The analysis area for the Aesthetics analysis consists of the entire Study Area, as shown in Exhibit 2-1, though detailed analysis is focused in portions of the Study Area targeted for substantial levels of additional growth and increases in allowed building height, as described in Chapter 2.

3.5.1 Affected Environment

Visual Character

As described in the project Opportunities and Challenges Report (Mithun et al., 2020), the Study Area's land use patterns and visual character differ on either side of I-405. The eastern portion of the Study Area is characterized by auto-oriented commercial development along NE 85th Street, including large areas of surface parking. Development along NE 85th Street generally consists of 1- or 2-story commercial buildings, including "big box" retail formats, car dealerships, and superblock shopping centers containing multiple businesses (grocery, pharmacy, gas stations, fast food, etc.). Despite the commercial nature of the district, the landscape buffers and right of way trees along NE 85th Street screen development and surface parking areas from view. Sidewalks are present along NE 85th Street, but the streetscape is more oriented toward automobiles, and blocks are large, creating long distances between street crossings and other pedestrian amenities and destinations.

Residential areas are located behind the commercial uses fronting on NE 85th Street, generally consisting of single-family residential uses at moderate densities. Mature trees along side streets (such as 126th Avenue NE and 128th Avenue NE), provide tree canopy cover with a much different character than the adjacent commercial district. Streets are narrow, and sidewalks are present in most areas, though coverage is incomplete on smaller streets.

West of I-405, the mixed pattern of industrial, office, and residential development

results in a lack of cohesive visual character. The most prominent unifying visual feature of this portion of the Study Area is the extensive roadside vegetation. In this area, NE 85th Street is a limited access, grade-separated road, and the adjacent tree cover, consisting primarily of declining Bigleaf maple here almost completely screens adjacent office and industrial development north and south of road from view. Likewise, the residential areas north of NE 85th Street are screened from nearby industrial and office development and the I-405 interchange by trees and the presence of the Cross Kirkland Corridor trail.

The area south of NE 85th Street and west of the Cross Kirkland Corridor shares characteristics with the adjacent Downtown Area. Residences consist primarily of low-rise multifamily buildings, blocks are smaller, and pedestrian infrastructure is more extensive.

Views

The topography of the Study Area slopes gently downward from east to west; the portion of the Study Area east of I-405 is relatively flat, with the terrain sloping down between the I-405 interchange and the western edge of the Study Area, which borders Downtown Kirkland. Due to this downward slope, westbound NE 85th Street offers views of Downtown and portions of Seattle on the far side of Lake Washington. The lake itself is visible from NE 85th Street near the western edge of the Study Area. Intermittent territorial views are also occasionally available from residential side streets north of NE 85th Street.

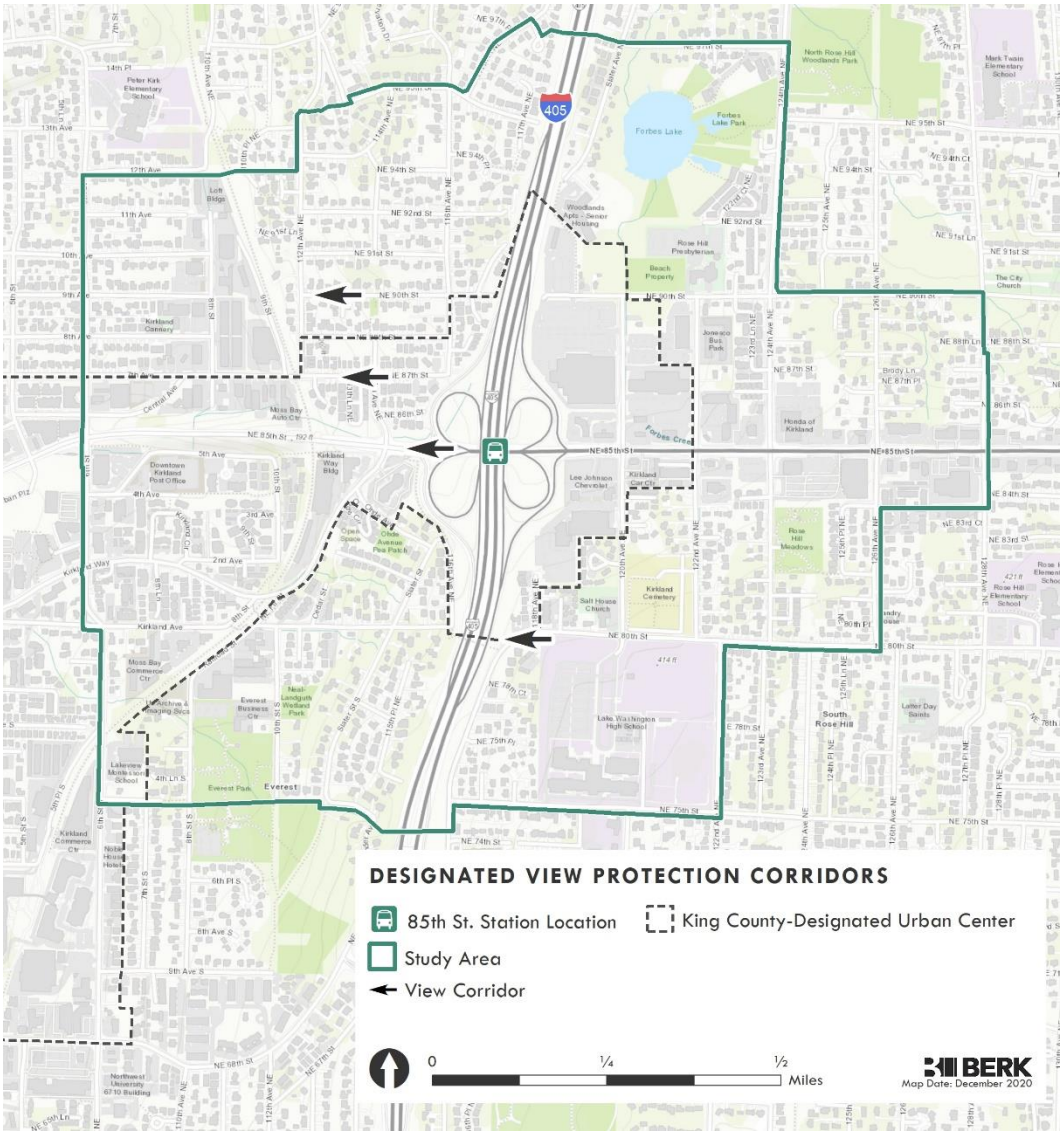
Views of Downtown and Lake Washington from east of I-405 are generally blocked by topography, vegetation cover, and the freeway. Along NE 85th Street, the existing I-405 overpass blocks views looking westward down the corridor. Intermittent, isolated westward territorial views are available along NE 80th Street/116th Avenue NE, though mature vegetation and noise screening walls along the I-405 right-of-way obstruct most ground-level public views to the west in this area.

The Study Area overlaps the North Rose Hill, South Rose Hill, Everest, Highland, Norkirk, and Moss Bay Neighborhoods. The neighborhood plans for each of these neighborhoods establish policies for the preservation and enhancement of major public views, and the neighborhood plans for North Rose Hill, South Rose Hill, Highlands, and Everest define the following westward public view corridors within the Study Area:

- NE 85th Street at the I-405 interchange;
- NE 80th Street at 116th Avenue NE;
- NE 87th Street between 116th Avenue NE and 112th Avenue NE; and
- NE 90th Street between 116th Avenue NE and 112th Avenue NE.

The locations of view corridors in the Study Area are illustrated in Exhibit 3-35.

Exhibit 3-35. Designated Public View Corridors



Sources: City of Kirkland, 2020; BERK, 2020.

Shading Conditions

Shading conditions vary by season and time of day. Shadows are shortest at mid-day during summer months, when sun angles are closest to directly overhead. They are longest in the morning and evening hours of the winter months, when sun angles are more extreme. As described in the Visual Character section above, the Study Area has extensive tree cover outside the commercial district east of I-405. This also contributes to a higher degree of shading, even where

building heights are low, due to long shadows cast by large, mature trees. As a result, shading effects are generally more pronounced in the predominantly single-family residential areas than in the commercial districts; though development in the commercial areas is more intense, tree cover is less extensive, and the low heights and widely spaced buildings produce mild shading conditions in these locations.

Light and Glare

Light and glare in an urban setting can be produced from a variety of sources, including automobile headlights, exterior building illumination, streetlights, and illuminated signage. The more intensely developed portions of the analysis area, such as the NE 85th Street commercial district east of I-405, currently have the highest levels of ambient light and glare. The less intensely developed single-family areas along the northern and southern edges of the Study Area have relatively low levels of light and glare, especially properties located on side streets with few or no streetlights. The extensive presence of tree cover provides screening from light sources, particularly along the western portion of NE 85th Street.

3.5.2 Impacts

Thresholds of Significance

The following conditions would be considered to result significant impacts:

- **Visual Character:** Would the alternative result in substantial visual changes to the Study Area, including building height, architectural style, streetscape and pedestrian environment, and overall intensity of development?
- **Views:** Would the alternative impede protected view corridors within the Study Area or alter views from the Study Area of nearby major landmarks or natural features?
- **Shading Conditions:** Would the alternative result in a substantial increase in ground-level shading of public spaces, including parks, open space, and the streetscape, or result in shading of adjacent lower-intensity development by higher-intensity development within the Study Area?
- **Light and Glare:** Would the alternative create a substantial increase in the ambient light level in the Study Area or create an acute source of light and glare that adversely affects surrounding development? Changes to nighttime lighting conditions are of particular concern.

Impacts Common to All Alternatives

Under all alternatives, construction of regional transit infrastructure in Kirkland would continue, including the NE 85th Street BRT Station, and additional population and employment growth would occur in the Study Area, primarily focused in the existing Rose Hill Business District. Additional growth in the Study Area would gradually increase development intensity over time, but specific effects related to Visual Character, Views, Shading, and Light and Glare would vary by alternatives, as described in the following sections.

No Action Alternative 1

As described in Chapter 2, the No Action Alternative represents the land use policies and zoning regulations currently adopted for the Study Area. No Station Area Plan would be adopted, and no changes would be made to development standards. Construction of the NE 85th Street BRT Station and associated transportation infrastructure would still occur, as would minor planned streetscape improvements along designated pedestrian and bicycle routes.

Visual Character

Under the No Action Alternative, the overall visual character of the Study Area would be similar to existing conditions, though anticipated growth would result in a moderate increase in the overall intensity of development, particularly in the Rose Hill Business District east of I-405. As described in Chapter 2, the Study Area would experience moderate commercial growth and limited infill in residential areas on both sides of I-405. Because most of the future growth anticipated under the No Action Alternative would occur in the commercial areas along NE 85th Street east of I-405, the visual character of this area is likely to experience the most pronounced effects, while residential areas would remain relatively unchanged.

Under the No Action Alternative, office and retail development in the commercial corridor east of I-405 would result in a moderate increase in the intensity of the built environment. This would likely take the form of infill and redevelopment on underutilized sites, resulting in newer, larger buildings, greater building site coverage, or both. On many properties in the Rose Hill Business District, existing building heights are below the maximum height allowed, particularly in the RH-1A and RH-2A zones near I-405, which allow buildings up to 67 feet. Redevelopment of properties in this commercial corridor with larger buildings would be allowed under the No Action Alternative and could result in an incrementally more urban visual character in the Study Area; however, it would not fundamentally change the nature of development the area.

Views

Under the No Action Alternative, allowed building heights would not increase, and most redevelopment and infill activity in the Study Area is anticipated to occur in the Rose Hill Business District, east of I-405, where views are limited. Of the four designated public view corridors within the Study Area, two are located on residential streets in North Rose Hill, one is located on a residential street in South Rose Hill, and one consists of the NE 85th Street corridor west of the I-405 interchange. As described in Chapter 2, infill residential development under the No Action Alternative would be limited, resulting in very little change to development conditions in these areas. As a result, no significant impacts to protected views are anticipated under the No Action Alternative.

Shading Conditions

Under the No Action Alternative, no increases to building heights would occur, resulting in no major changes to shading conditions. Minimal localized increases in shading conditions could occur in portions of the Study Area where greater amounts of redevelopment or infill are anticipated, such as the NE 85th Street commercial corridor east of I-405 or the office and industrial areas in western portions of the Study Area. Because building heights would be limited by current zoning and development regulations, increases in shading conditions associated with redevelopment infill are anticipated to be less than significant.

Light and Glare

Development under the No Action Alternative could generate additional light and glare in the Study Area through the addition of new exterior building and site illumination and increase vehicular traffic associate with commercial development. Development under the No Action Alternative could generate additional light and glare in the Study Area through the addition of new exterior building and site illumination and increase vehicular traffic associate with commercial development. However, given that development under the No Action Alternative would be relatively limited in scope and concentrated in areas already characterized by commercial development, light and glare impacts are anticipated to be minor.

Alternative 2

As described in Chapter 2, the Action Alternatives would establish a land use pattern focused on office and mixed-use development centered on the I-405 interchange and the associated future BRT station. As shown in Exhibit 2-6, the

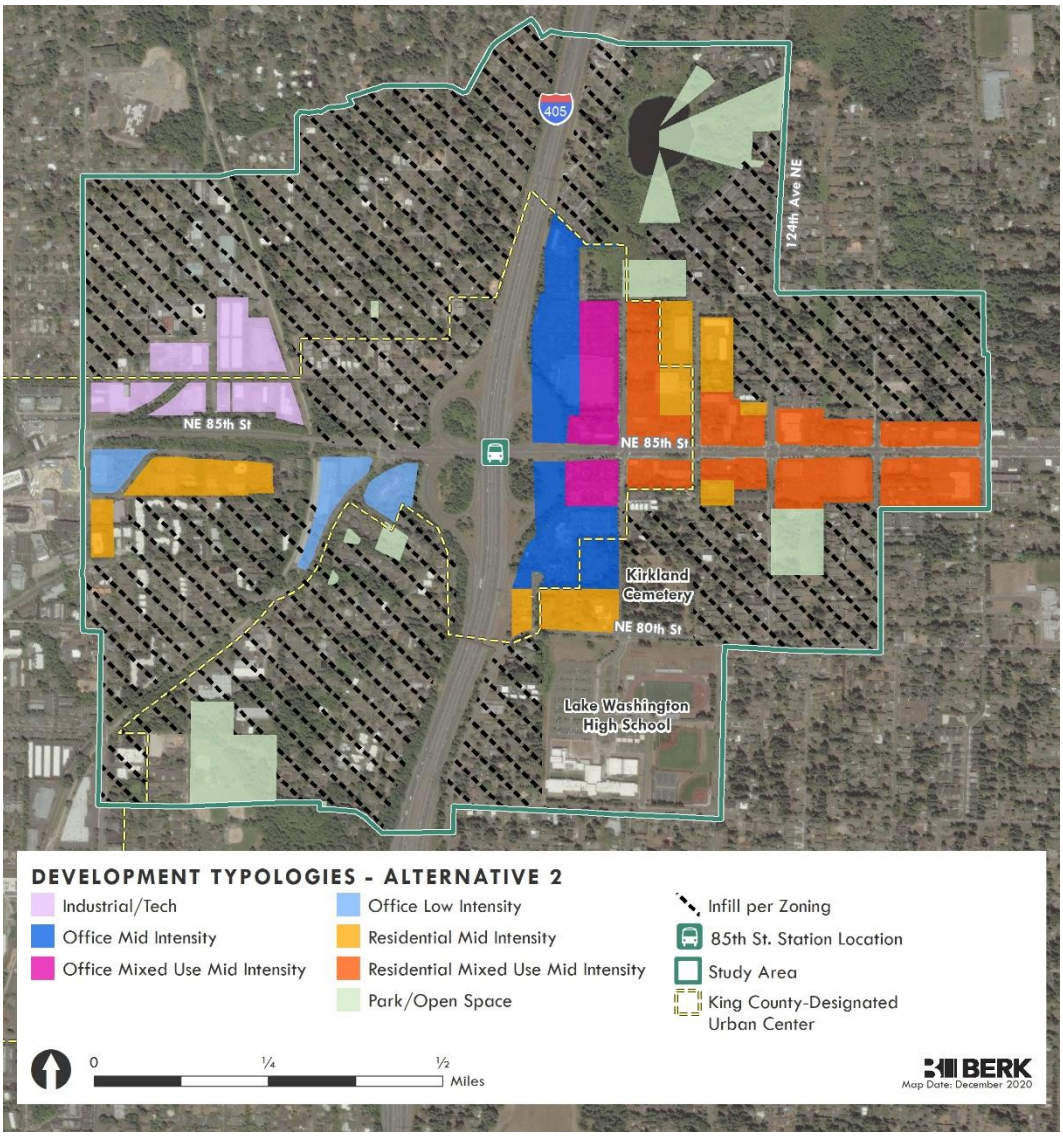
Action Alternatives would concentrate higher-intensity office/commercial uses along NE 85th Street, immediately east of the I-405 interchange. The eastern portion of the NE 85th Street corridor would be devoted to mixed-use development incorporating both commercial and higher-density residential uses. West of I-405, the Action Alternatives would promote lower-intensity office and mixed-use development on the south side of NE 85th Street. The Norkirk portion of the Study Area would be primarily devoted to industrial/tech development. Much of the rest of the Study Area would experience incremental infill development based on existing land uses and development typologies.

Both Action Alternatives would implement the same general land use concept. Alternative 2 represents a lower-intensity variant of the concept, as shown in Exhibit 2-7 and Exhibit 2-11. The overall amount of new development would be less compared to Alternative 3, generally leading to less extensive aesthetic and visual impacts.

Visual Character

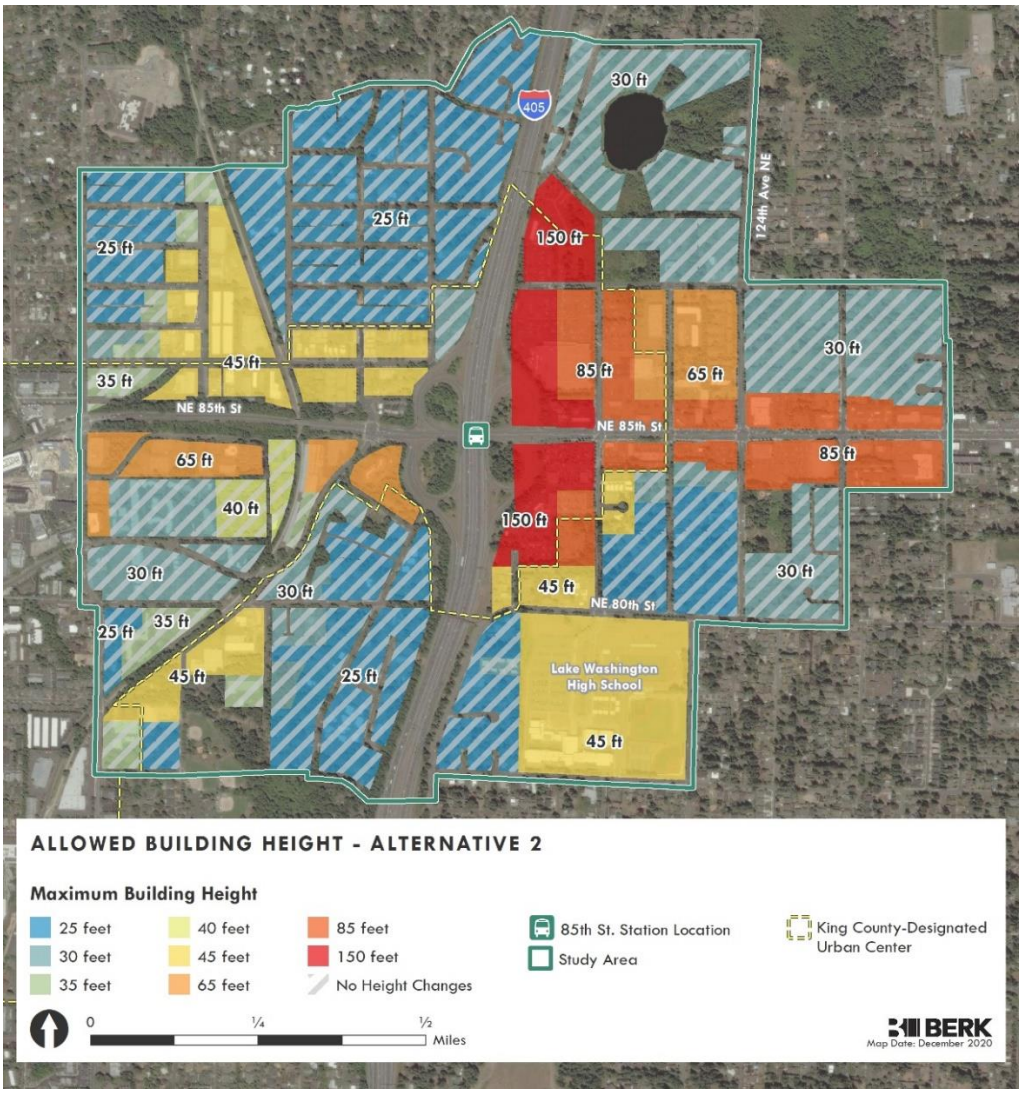
Under Alternative 2, the Study Area would experience substantial residential and employment growth, resulting in new development at greater densities and intensities than currently allowed. As shown in Exhibit 3-36 and Exhibit 3-37, the greatest development intensity would be concentrated on the east side of the I-405 interchange along NE 85th Street. This area would allow increases in building heights from approximately 67 feet to 150 feet, and the remainder of the NE 85th Street corridor eastward would increase allowed heights from 30-35 feet to 85 feet. Allowed heights in Rose Hill residential areas north of NE 85th Street would increase from 35 feet to 65 feet on blocks adjacent to the commercial/office core near the freeway interchange, and from 30-35 feet up to 45 feet near the eastern end of the Study Area. Areas west of I-405 would experience less pronounced height increases. As shown in Exhibit 3-37, office and mixed-use blocks would increase heights from 30-35 feet to 65 feet, and industrial blocks in Norkirk would increase heights from 35 feet to 45 feet.

Exhibit 3-36. Land Use Change Areas – Alternative 2



Sources: City of Kirkland, 2020; Mithun, 2020; BERK, 2020.

Exhibit 3-37. Allowed Building Heights – Alternative 2



Sources: City of Kirkland, 2020; Mithun, 2020; BERK, 2020.

These height increases have the potential to introduce new building typologies that are taller and more visually massive than existing buildings and what is currently allowed by existing development regulations. Introduction of these more intense typologies would gradually alter the architectural character and scale of development in the Study Area. Visual character impacts would be most pronounced in the areas with proposed land use changes highlighted in Exhibit 3-36. While some areas marked for incremental infill could experience limited changes in building height, the building typologies, development intensity, density, and architectural character of these areas would remain similar to the No Action Alternative.

Examples of building typologies anticipated to develop under the Action Alternatives are shown in Exhibit 3-38.

Exhibit 3-38. Development Typology Examples – Alternative 2

Industrial/Tech

Office Mid Intensity

Office Mixed-Use Mid Intensity

Office Low Intensity

Residential Mid Intensity

Residential Mixed-Use Mid Intensity

Source: Mithun, 2020.

The following figures illustrate the maximum development envelopes for each block (not actual building or development proposals) allowed under Alternative 2. Gray-shaded envelopes represent maximum heights for each block allowed under current development regulations (No Action), and blue shaded envelopes represent additional height for each block allowed under Alternative 2. As described in Chapter 2, both Action Alternatives would include the adoption of a Station Area Plan and associated Form-Based Code that would include development regulations and design standards governing future development in the Study Area. The design standards in the Form-Based Code would incorporate mass-reduction features, such as upper-story setbacks and open space requirements. The modeling represented in the following figures assumes a 10-foot upper-story setback above 65 feet and an additional 5-foot setback above 85 feet.

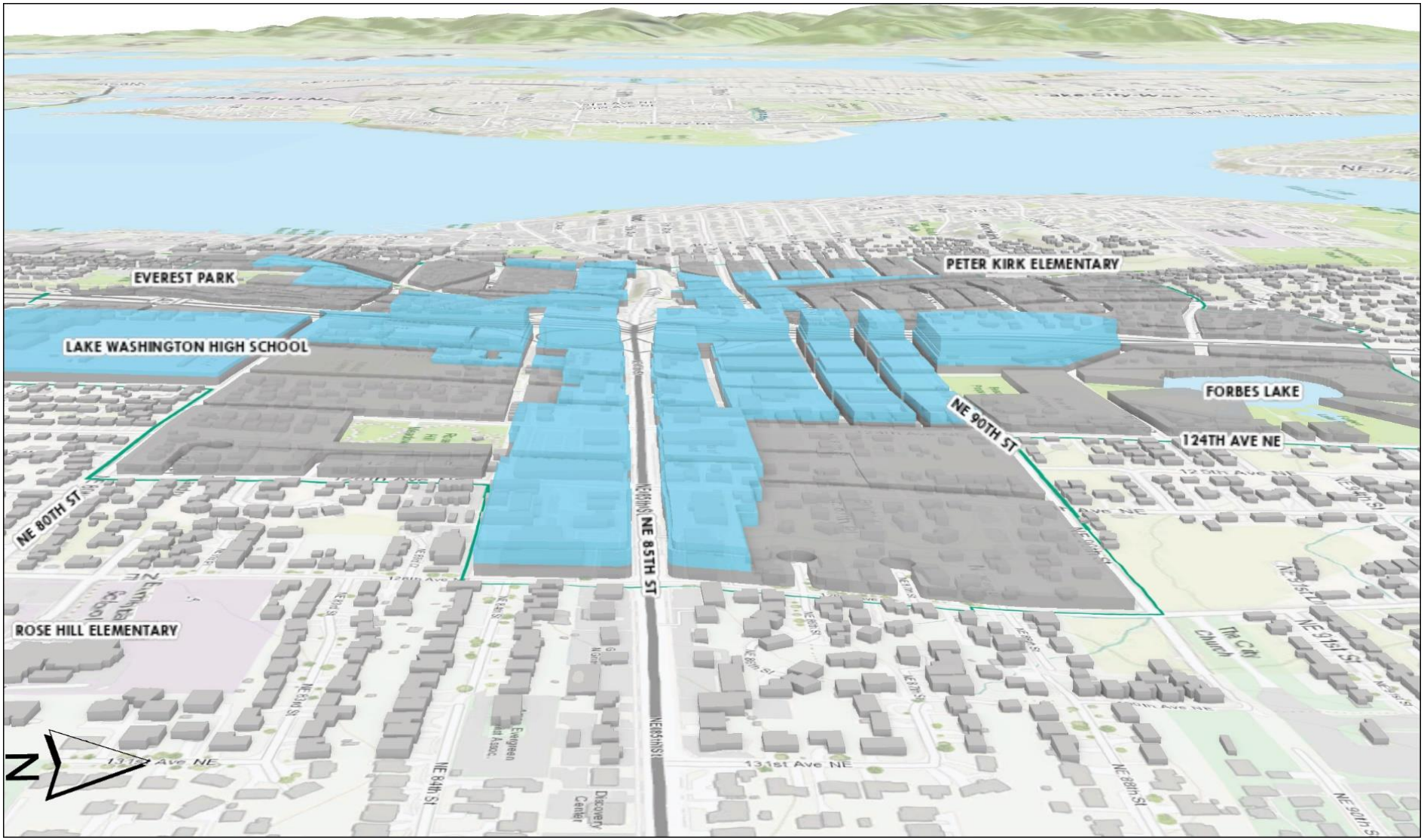
Exhibit 3-39. Maximum Development Envelope – Alternative 2 (Southwest View)

Sources: City of Kirkland, 2020; Mithun, 2020; BERK, 2020.

Exhibit 3-40. Maximum Development Envelope – Alternative 2 (Northwest View)

Sources: City of Kirkland, 2020; Mithun, 2020; BERK, 2020.

Exhibit 3-41. Maximum Development Envelope – Alternative 2 (NE 85th Street Corridor View)



Sources: City of Kirkland, 2020; Mithun, 2020; BERK, 2020.

As shown in the preceding figures, future development under Alternative 2 would substantially increase building heights and development intensity in the Study Area. Development in the primary focus areas along NE 85th Street, particularly in the Rose Hill Business District, would introduce new development typologies that would shift the overall character of the area from low-intensity, auto-oriented commercial to a higher-intensity, mixed-use district with less emphasis on auto-oriented uses, and more extensive use of transit and non-motorized transportation. In addition, increased building height and development intensity may be visible from nearby neighborhoods outside the Study Area. However, as shown in Exhibit 3-36, areas designated for incremental infill form a buffer around areas of more intensive development, separating them from lower-density development outside the Study Area. Adverse effects on the visual character of surrounding neighborhoods are anticipated to be minimal.

While development under Alternative 2 represents a significant change to the existing visual character of the Study Area, implementation of the planned Form-Based Code would provide measures to minimize the adverse effects of increased height and mass, as well as gradually providing a greater degree of architectural unity to the Study Area. Specific measures recommended for inclusion in the Form-Based Code are described in Section 3.5.3 – Mitigation Measures.

Development Scale and Pedestrian Environment

As described above, Alternative 2 would substantially increase building heights in the Study Area. In many locations, new development would be inconsistent with the scale of existing development, which could adversely affect the experience of pedestrians at ground level. However, Alternative 2 would include implementation of both a Form-Based Code and a program of streetscape improvements and bicycle/pedestrian connections through the Study Area. In particular, streetscape improvements and non-motorized connections in the Rose Hill portion of the Study Area would serve to break up development blocks, which would reduce the presence of large, monolithic building sites that would be out of scale with the pedestrian environment. Additionally, the Form-Based Code would include design standards regarding street-level building façades and required streetscape improvements to minimize impacts to the pedestrian environment. Specific measures recommended for inclusion in the Form-Based Code are described in Section 3.5.3 – Mitigation Measures.

Views

As described in Section 3.5.1 – Affected Environment, the primary view corridor within the Study Area is the portion of NE 85th Street west of the I-405 interchange.

Local neighborhood plans define several other view corridors for protection on smaller, residential streets in the western half of the study, but views in the eastern Study Area are generally obstructed by existing vegetation or transportation infrastructure. The highest intensity development under Alternative 2 would be concentrated in the Rose Hill Business District, east of I-405, where risk of obstructing important and publicly accessible territorial views of Lake Washington are low. Development along NE 85th Street between the interchange and the western Study Area boundary would generally be screened from the roadway by topography and extensive vegetation. Height increases in this area would range from 15 to 30 feet above existing allowances. Provided that vegetation cover is maintained at a similar level to existing conditions along this corridor, the potential adverse effects of Alternative 2 on protected view corridors in the Study Area is anticipated to be less than significant.

Conversely, the concentration of the most intense development on blocks immediately east of the interchange would alter views from NE 85th Street looking east across I-405. Alternative 2 would allow new buildings up to 150 feet in this location; this is substantially taller than existing buildings, which are generally shorter than the 67 feet allowed under current zoning. While such development would alter the existing viewscape in the Study Area, there are no designated view corridors in the area for east-facing views.

Shading Conditions

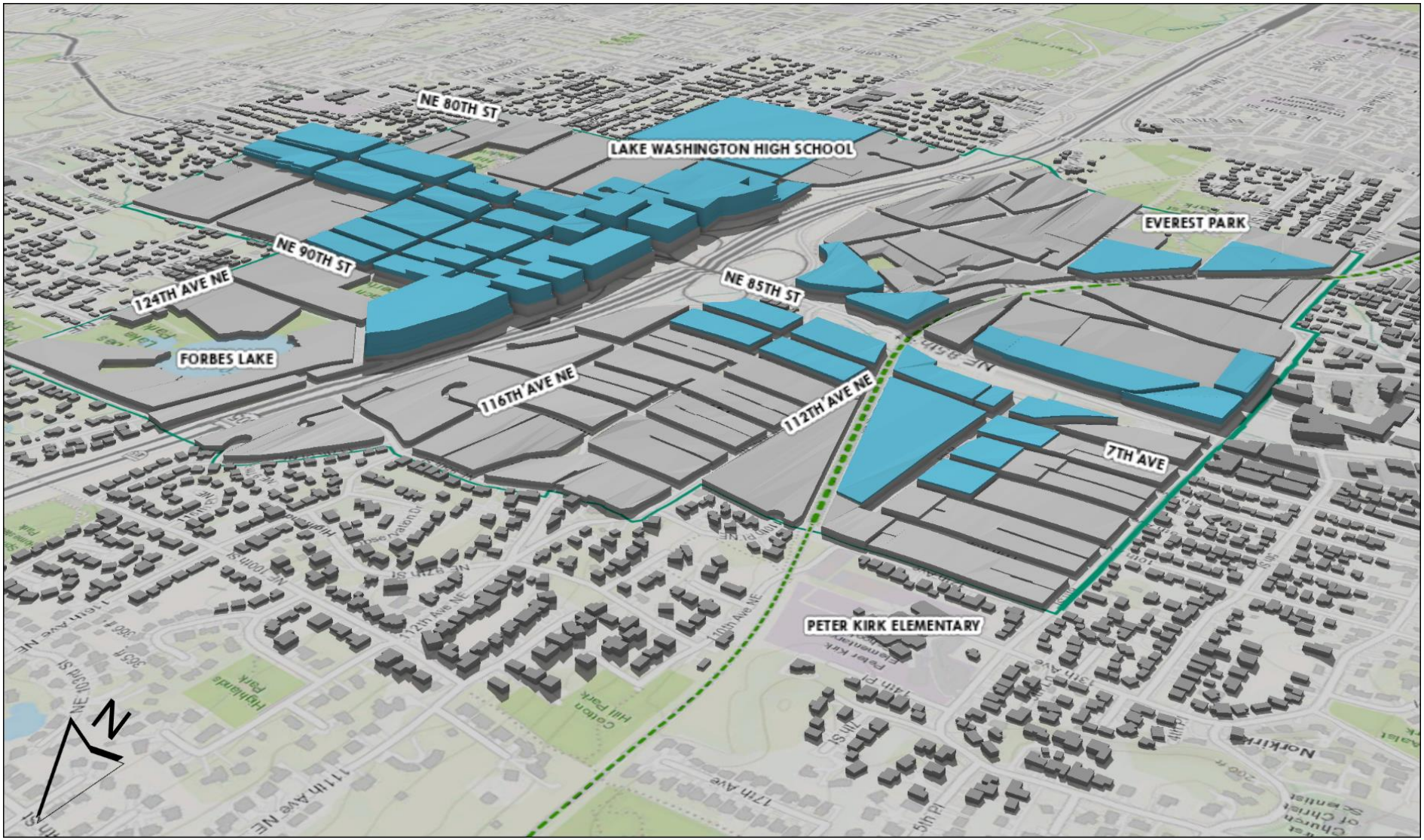
Under Alternative 2, additional building height would have the potential to increase shading conditions in the Study Area, as well as on surrounding properties. Sun angles vary by latitude, growing more extreme farther from the equator. In Washington, the sun's path passes to the south, reaching a maximum altitude of approximately 66 degrees above the horizon in summer (June 21) and approximately 19 degrees above the horizon in winter (December 21). As a result, shadows are shortest around mid-day in summer and longest in early morning and late evening during the winter. This analysis models shading conditions on the fall equinox (September 21, 10:00 am), when day and night are of equal lengths. Sun angles change throughout the year, but fall equinox sun angles (equivalent to spring equinox sun angles) are less extreme than summer or winter conditions and provide a balanced view of shading conditions visible during most of the year.

Shading impacts within the Study Area would primarily result from increased building heights and lot coverage, which would allow a greater density of tall buildings in close proximity. If buildings are not sufficiently spaced, they could block light at the ground level, creating adverse effects on public spaces and pedestrian paths. The development of buildings up to 10 stories in the Rose Hill Business District could cast mid-afternoon shadows on nearby development

outside the Study Area (across NE 90th Street) and morning shadows on portions of the Cross Kirkland Corridor. NE 85th Street would also experience substantial shading during spring and fall morning and afternoon hours. Internal streets adjacent to areas of increased building height, particularly in the Rose Hill Business District, would also be subject to shading due to the close proximity of tall buildings, as would planned mid-block pedestrian/bicycle connections in this area. These shading effects would be transitory throughout the day and would be less intense during summer months.

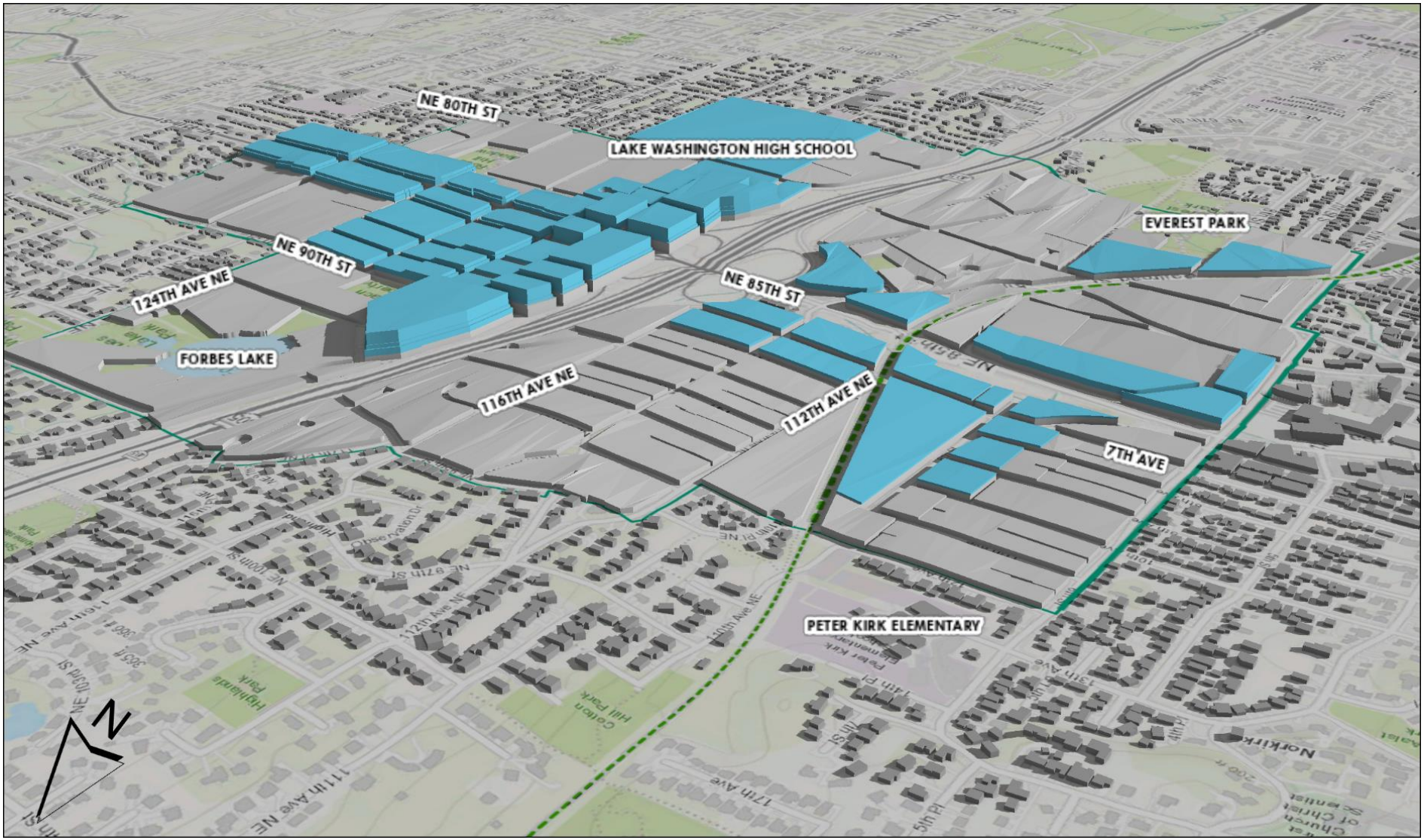
Exhibit 3-42 through Exhibit 3-44 illustrate projected shading conditions in the Study Area related to existing and future development under Alternative 2.

Exhibit 3-42. Southeast-Facing Fall Morning (10:00 am) Shading Conditions – Alternative 2



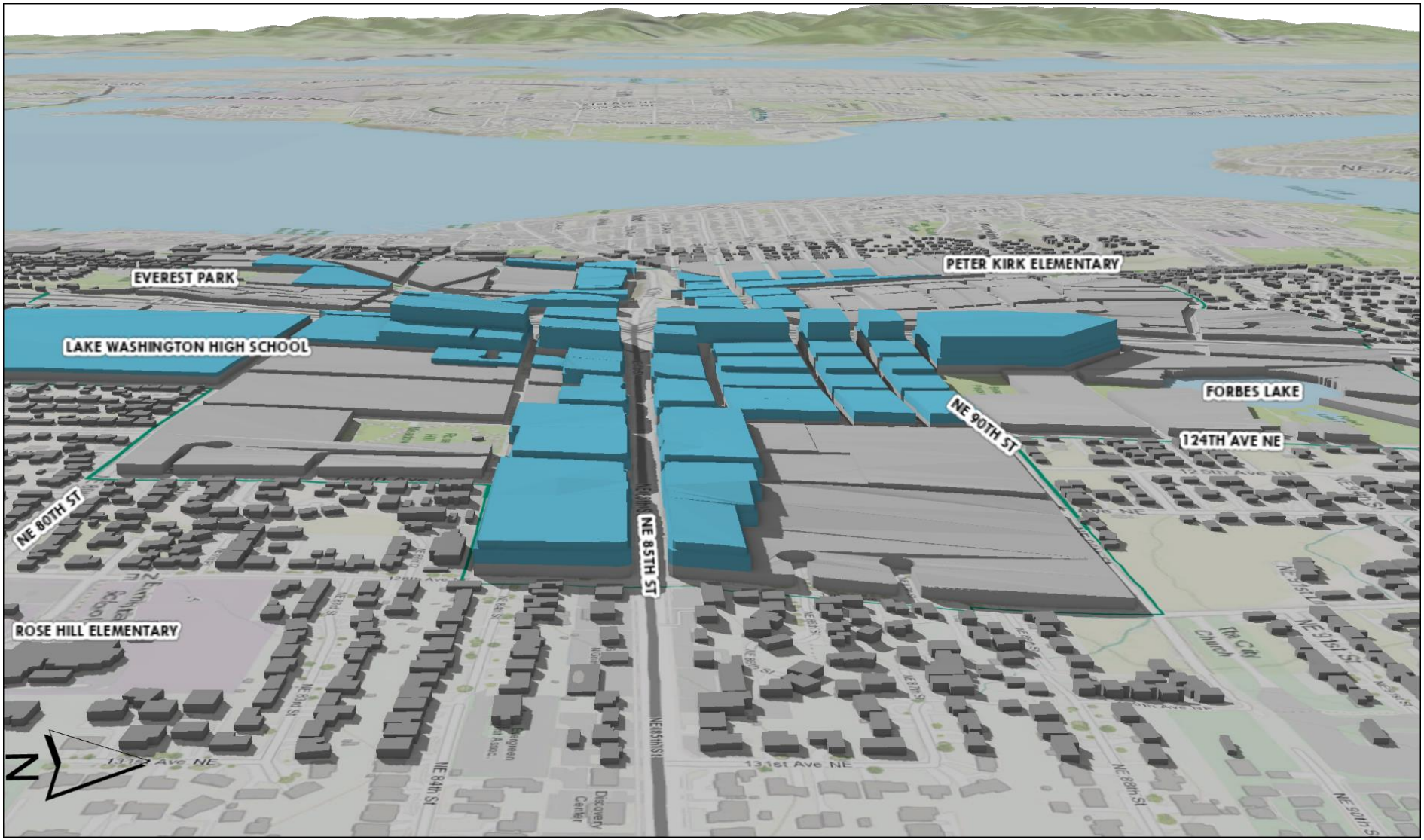
Sources: City of Kirkland, 2020; Mithun, 2020; BERK, 2020.

Exhibit 3-43. Southeast-Facing Fall Afternoon (3:00 pm) Shading Conditions – Alternative 2



Sources: City of Kirkland, 2020; Mithun, 2020; BERK, 2020.

Exhibit 3-44. West-Facing Fall Afternoon (3:00 pm) Shading Conditions – Alternative 2



Sources: City of Kirkland, 2020; Mithun, 2020; BERK, 2020.

To limit the effects of shading in spaces between buildings, the Form-Based Code would include building design standards that promote the preservation of solar access through upper-story setbacks and controls on building massing. Specific measures recommended for inclusion in the Form-Based Code are described in Section 3.5.3 – Mitigation Measures.

Light and Glare

Development under Alternative 2 would result in an increased level of ambient light and glare in the Study Area associated with additional exterior building illumination and vehicular traffic, though it is possible that light and glare associated with vehicular traffic may plateau or decrease over time as transit usage becomes more common in the future. These increases in ambient light would primarily occur in the Rose Hill commercial areas, which already contain extensive streetlights and building illumination. Infill areas would experience minimal increases in light and glare. As properties in the Rose Hill Business District gradually convert to mixed-use development, ambient light and glare will increase as more businesses stay open into the evening hours and building illumination and signage lighting become more extensive.

Alternative 3

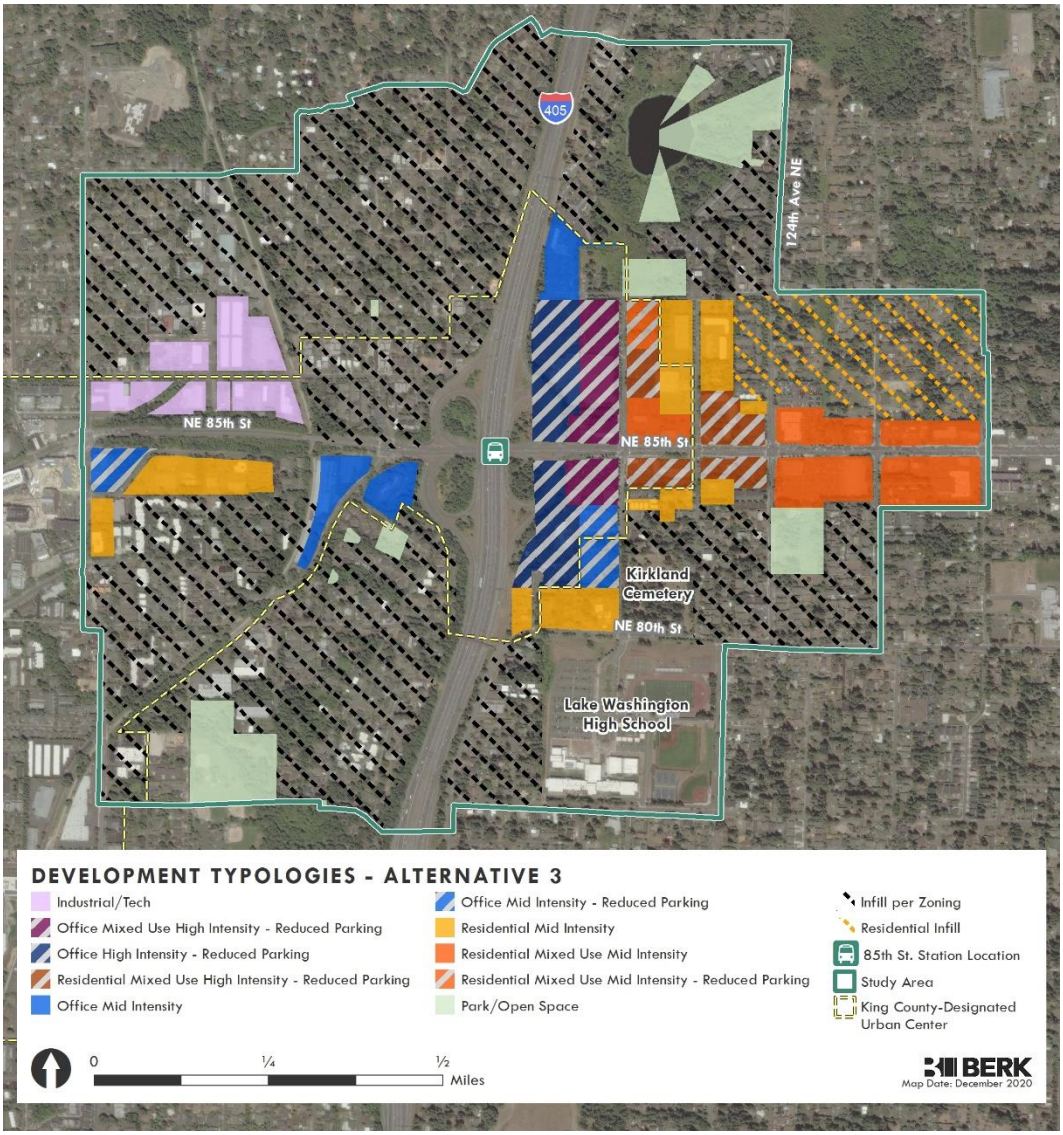
As described in Chapter 2, Alternative 3 adheres to the same general land use concept as Alternative 2 and focuses growth in generally the same areas, though the overall intensity of future development would be greater, particularly in the western portion of the Rose Hill Business District near the I-405 interchange. Aesthetics impacts associated with Alternative 3 would therefore be similar in nature to those identified for Alternative 2, though generally greater in magnitude, as described in the following sections.

Visual Character

Under Alternative 3, the Study Area would experience the highest level of residential and employment growth of the three alternatives, resulting in new development at greater densities and intensities than allowed under the No Action or Alternative 2. As shown in Exhibit 3-45 and Exhibit 3-46, the greatest development intensity would be concentrated on the east side of the I-405 interchange along NE 85th Street. This area would allow building heights up to 300 feet, and the remainder of the NE 85th Street corridor eastward would increase allowed heights to 150 feet west of 124th Avenue NE and 85 feet to the east of 124th Avenue NE. Allowed heights in Rose Hill residential areas north of NE 85th Street would increase to 85 feet on blocks adjacent to the commercial/office

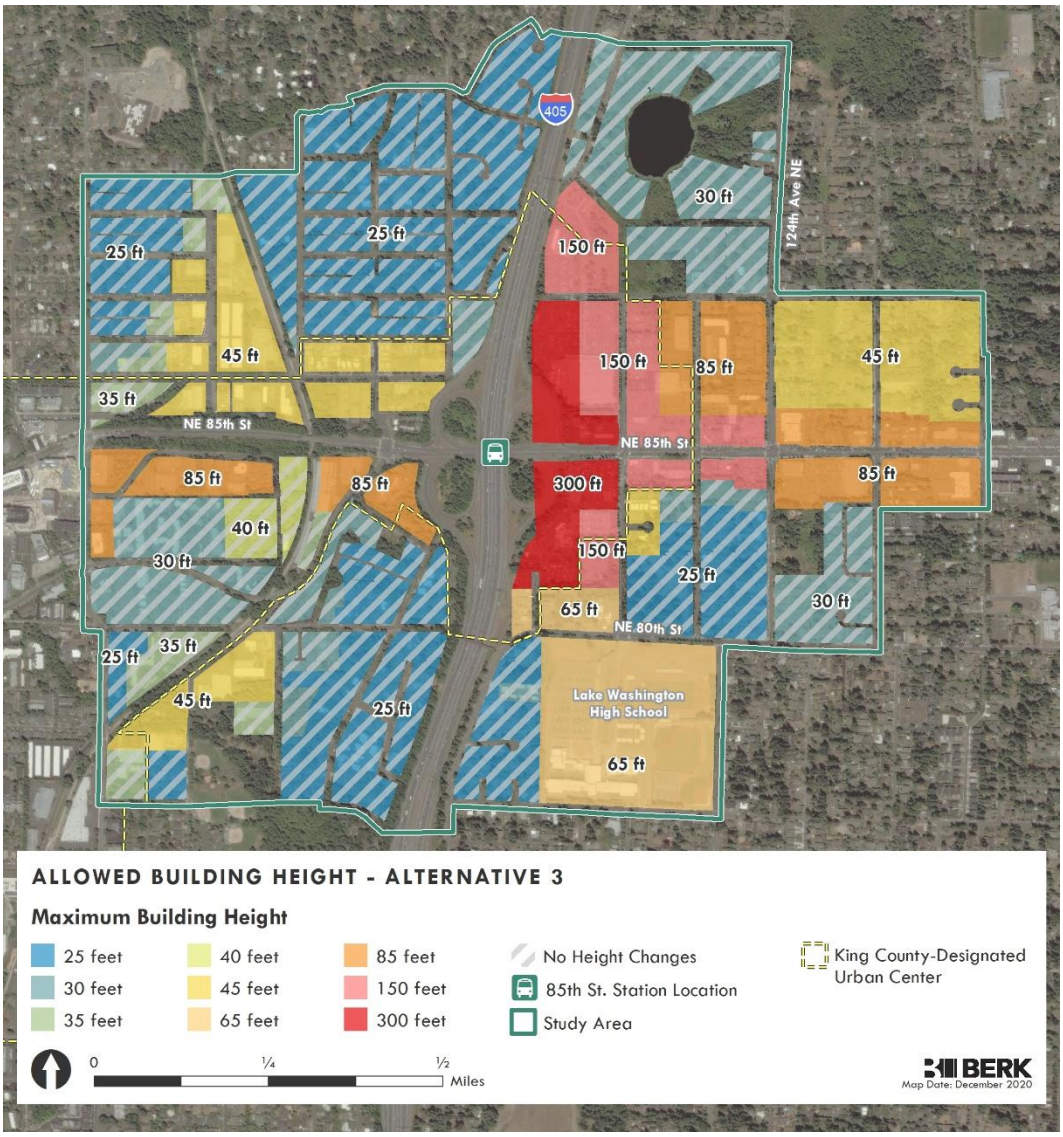
core near the freeway interchange, and up to 45 feet near the eastern end of the Study Area. Areas west of I-405 would experience less pronounced height increases. As shown in Exhibit 3-46, office and mixed-use blocks would increase heights from 30-35 feet to 85 feet, and industrial blocks in Norkirk would increase heights from 35 feet to 45 feet.

Exhibit 3-45. Land Use Change Areas – Alternative 3



Sources: City of Kirkland, 2020; Mithun, 2020; BERK, 2020.

Exhibit 3-46. Allowed Building Heights – Alternative 3



Sources: City of Kirkland, 2020; Mithun, 2020; BERK, 2020.

Similar to Alternative 2, these height increases have the potential to introduce new building typologies that are taller and more visually massive than existing buildings and what is currently allowed by existing development regulations. The associated changes to architectural character and the scale of development would be similar in nature to those experienced under Alternative 2, but greater in magnitude.

Examples of building typologies anticipated to develop under the Action Alternatives are shown in Exhibit 3-47.

Exhibit 3-47. Development Typology Examples – Alternative 3

Industrial/Tech

Office Mixed Use High Intensity

Office High Intensity

Office Mid Intensity

Residential Mid Intensity

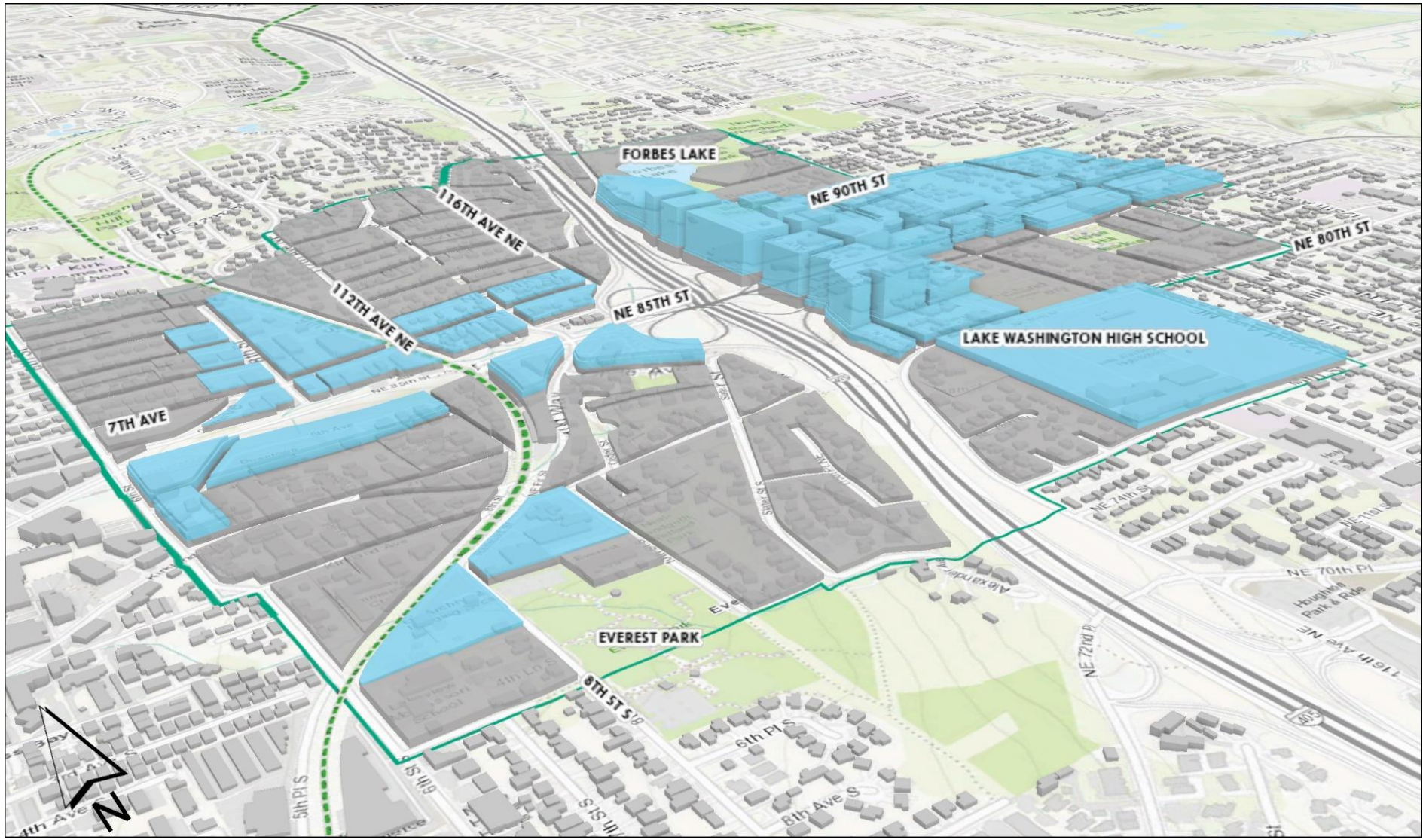
Residential Mixed-Use High Intensity

Residential Mixed-Use Mid Intensity

Source: Mithun, 2020.

The following figures illustrate the maximum development envelopes for each block allowed under Alternative 3. Gray-shaded envelopes represent maximum heights for each block allowed under current development regulations (No Action), and blue shaded envelopes represent additional height allowed for each block under Alternative 3. As described in Chapter 2both Action Alternatives would include the adoption of a Station Area Plan and associated Form-Based Code that would include development regulations and design standards governing future development in the Study Area. The design standards in the Form-Based Code will incorporate mass-reduction features, such as upper-story setbacks, open space requirements, and limits on maximum building floorplate sizes. The modeling represented in the following figures assumes a 10-foot upper-story setback above 65 feet and an additional 5-foot setback above 85 feet. The modeling is not intended to represent actual building forms or building floorplates. Rather, it is intended to illustrate various heights alternatives in broad context.

Exhibit 3-48. Maximum Development Envelope – Alternative 3 (Southwest View)

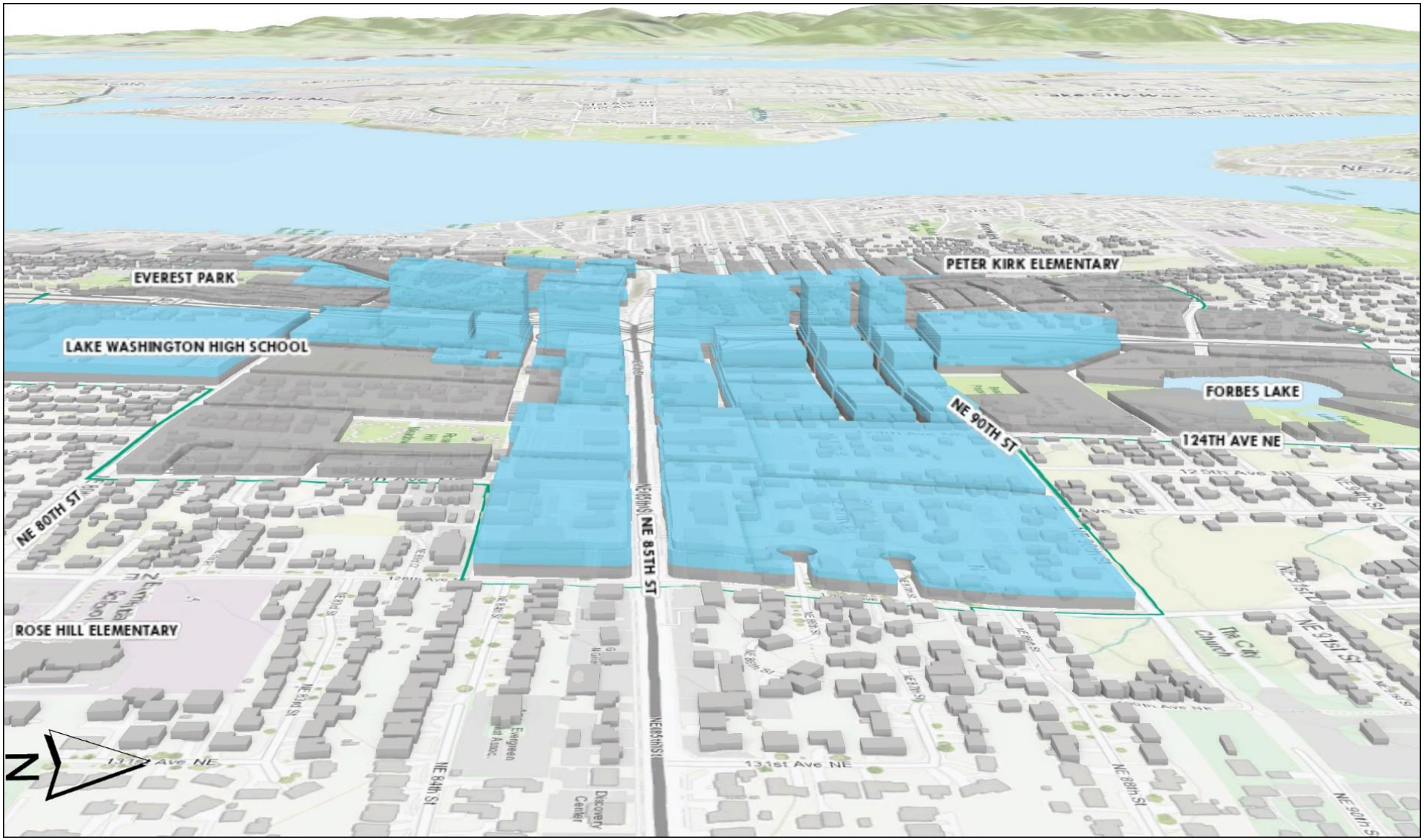


Sources: City of Kirkland, 2020; Mithun, 2020; BERK, 2020.

Exhibit 3-49. Maximum Development Envelope – Alternative 3 (Northwest View)

Sources: City of Kirkland, 2020; Mithun, 2020; BERK, 2020.

Exhibit 3-50. Maximum Development Envelope – Alternative 3 (NE 85th Street Corridor View)



Sources: City of Kirkland, 2020; Mithun, 2020; BERK, 2020.

Similar to Alternative 2, Alternative 3 would substantially increase building heights and development intensity in the Study Area. Alternative 3 would shift the overall character of the area from low-intensity, auto-oriented commercial to a higher-intensity, mixed-use district, though Alternative 3 would represent a greater increase in building heights and development intensity beyond Alternative 2, and development would be characterized by office towers and high-density, mixed-use residential development. Like Alternative 2, emphasis on auto-oriented uses would be reduced, with more extensive use of transit and non-motorized transportation. Increased building height and development intensity, particularly near the I-405 interchange, would be visible from nearby neighborhoods outside the Study Area.

While development under Alternative 3 represents a significant change to the existing visual character of the Study Area, implementation of the planned Form-Based Code would provide measures to minimize the adverse effects of increased height and mass, as well as gradually providing a greater degree of architectural unity to the Study Area. Specific measures recommended for inclusion in the Form-Based Code are described in Section 3.5.3 – Mitigation Measures.

Development Scale and Pedestrian Environment

Similar to Alternative 2, the substantial increases in building heights under Alternative 3 would be inconsistent with the scale of existing development, which could adversely affect the experience of pedestrians at ground level. However, Alternative 3 would include implementation of both a Form-Based Code and a program of streetscape improvements and bicycle/pedestrian connections through the Study Area. Streetscape improvements and non-motorized connections in the Rose Hill portion of the Study Area would be more extensive than under Alternative 2 and would serve to break up large development blocks. Additionally, the Form-Based Code would include design standards regarding street-level building façades and required streetscape improvements to minimize impacts to the pedestrian environment. Due to the taller building heights and greater development intensity anticipated under Alternative 3, additional standards and streetscape improvements would be necessary beyond those for Alternative 2. Specific measures recommended for inclusion in the Form-Based Code are described in Section 3.5.3 – Mitigation Measures.

Views

Similar to Alternative 2, Alternative 3 concentrates the tallest building heights and most intense development east of I-405, where the potential to disrupt protected views is low. Alternative 3 would implement greater height increases on properties

in the western Study Area than Alternative 2, leading to greater potential for obstructing views. However, steep topography and extensive vegetation would continue to screen the primary view corridor of NE 85th Street from obstruction by adjacent development, and height changes along other view corridors in infill areas are likely to be minimal.

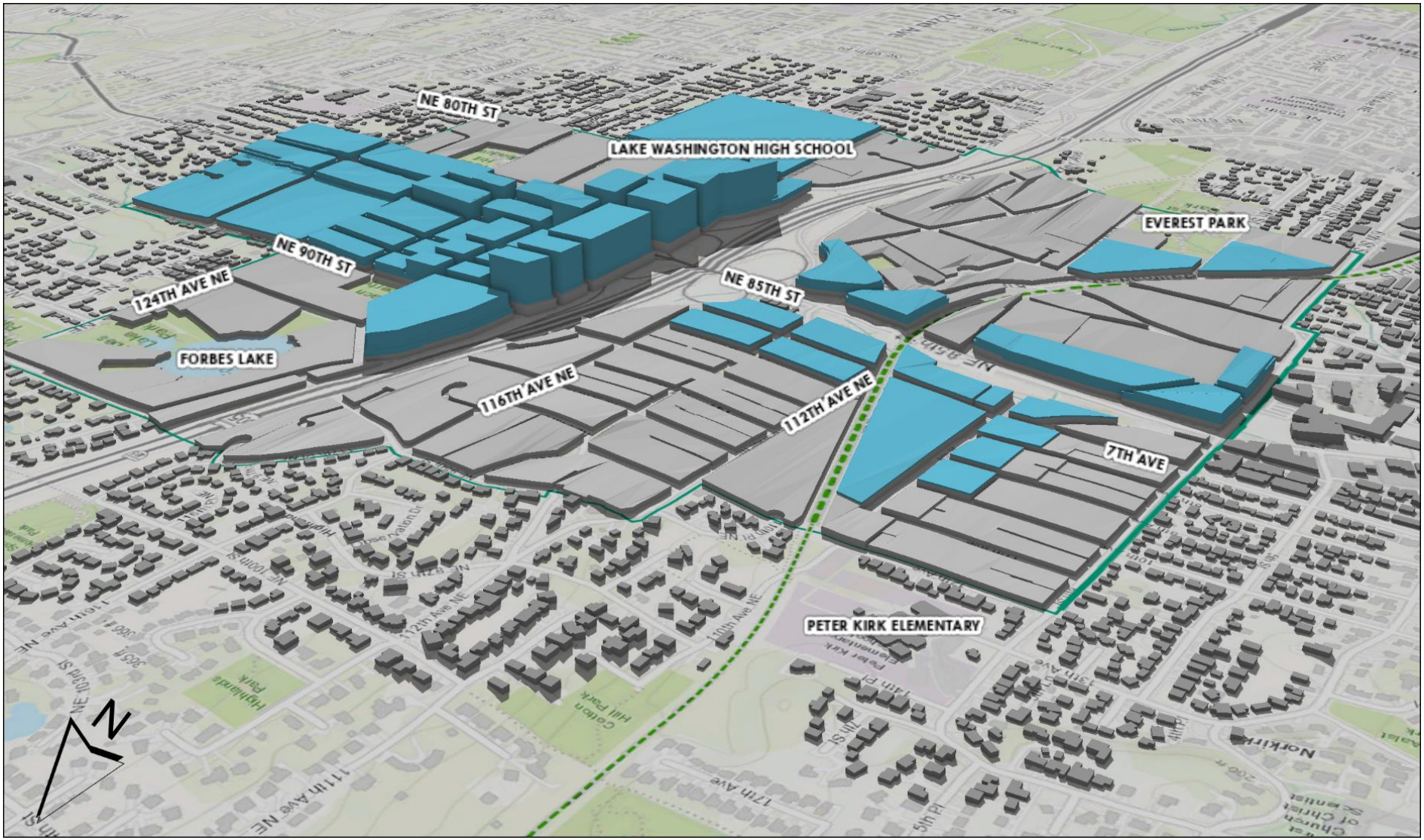
Shading Conditions

Similar to Alternative 2, additional building height under Alternative 3 would have the potential to increase shading conditions in the Study Area, as well as on surrounding properties. Shading impacts under Alternative 3 would generally be more pronounced than under Alternative 2, owing to additional increases in building height, particularly in the western portion of the Rose Hill Business District, where building heights could reach up to 300 feet. Similar to Alternative 2, this could cast mid-afternoon shadows on nearby development outside the Study Area (across NE 90th Street) and morning shadows on portions of the Cross Kirkland Corridor.

Similar to Alternative 2, NE 85th Street would also experience substantial shading during spring and fall morning and afternoon hours under Alternative 3, as would internal streets and bicycle/pedestrian connections adjacent to areas of increased building height. Shading conditions on NE 85th Street in Rose Hill would be similar to Alternative near the eastern end of the corridor but would be more intense closer to I-405, where building heights would be greater. These shading effects would be transitory throughout the day and would be less intense during summer months.

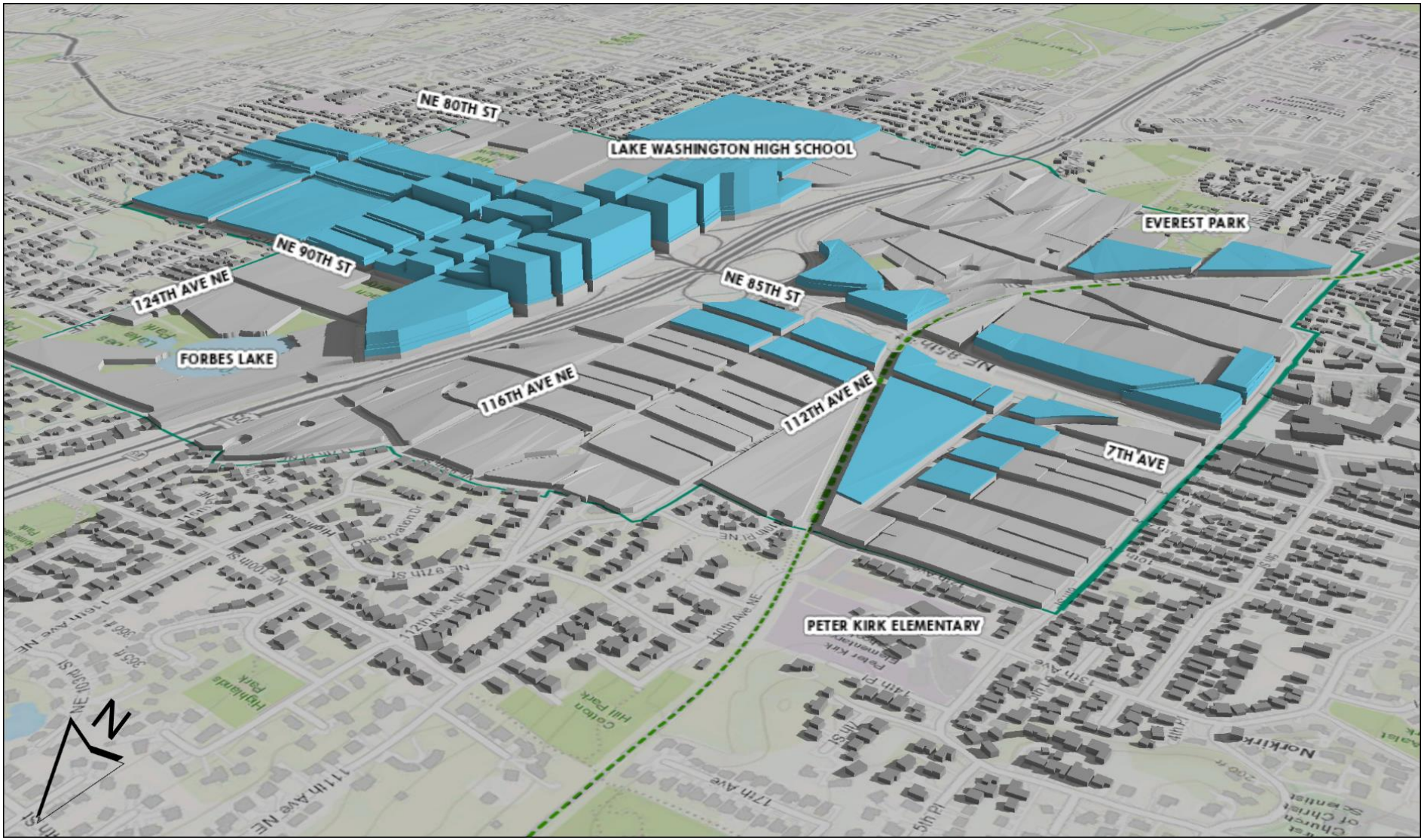
Exhibit 3-51 through Exhibit 3-53 illustrate projected shading conditions from existing and future development in the Study Area under Alternative 3.

Exhibit 3-51. Southeast-Facing Fall Morning (10:00 am) Shading Conditions – Alternative 3



Sources: City of Kirkland, 2020; Mithun, 2020; BERK, 2020.

Exhibit 3-52. Southeast-Facing Fall Afternoon (3:00 pm) Shading Conditions – Alternative 3



Sources: City of Kirkland, 2020; Mithun, 2020; BERK, 2020.

Exhibit 3-53. West-Facing Fall Afternoon (3:00 pm) Shading Conditions – Alternative 3

Sources: City of Kirkland, 2020; Mithun, 2020; BERK, 2020.

To limit the effects of shading in spaces between buildings, the Form-Based Code would include building design standards that promote the preservation of solar access through upper-story setbacks and controls on building massing. Specific measures recommended for inclusion in the Form-Based Code are described in Section 3.5.3 – Mitigation Measures.

Light and Glare

Similar to Alternative 2, ambient light and glare in the Study Area would increase under Alternative 3 as new development occurs. Alternative 3 would result in the highest level of residential and commercial development of the three alternatives, further increasing level of exterior building lighting, illuminated signage, and vehicular traffic in the Study Area. Similar to Alternative 2, most of this additional illumination would occur in the Rose Hill commercial areas, which already contain extensive streetlights and building illumination. Infill areas would experience minimal increases in light and glare. As properties in the Rose Hill Business District gradually convert to mixed-use development, ambient light and glare will increase as more businesses stay open into the evening hours and building illumination and signage lighting become more extensive.

3.5.3 Mitigation Measures

Incorporated Plan Features

Implementation of Alternative 2 and Alternative 3 would include adoption of a Station Area Plan and Form-Based Code to regulate development. The plan and Form-Based Code would establish measures to minimize and mitigate potential aesthetic impacts, including the following:

- The Station Area Plan would establish a land use pattern that places the most intense development and tallest buildings (up to 10 stories under Alternative 2 and 20 stories under Alternative 3) near the I-405 interchange, with lower intensity and building height areas arranged around this core area. Lower intensity areas bordering the station area are generally buffered from high-intensity development by areas designated for incremental infill.
- The proposed Form-Based Code would provide a consistent design framework for future development in the station area and provide a greater sense of architectural design cohesion over time.
- Alternatives 2 and 3 would implement a series of mobility improvements in the station area, including new pedestrian and bicycle infrastructure along streets in the Study Area and new pedestrian and bicycle paths that would serve as mid-block connections. These non-motorized connections would break up

large blocks to reduce visual mass and improve walkability.

- The Form-Based Code would include design standards to address potential impacts associated with increased building visual mass, such as upper-story stepbacks, landscaping buffers, and maximum site coverage requirements. While the final Form-Based Code may include different stepback sizes or thresholds, or incorporate additional techniques, such as stepback averaging, the visual modeling in this SEIS analysis assumed the following preliminary upper-story stepback requirements:
  - A stepback of 10 feet is required above a height of 65 feet; and
  - An additional stepback of 5 feet is required above a height of 85 feet.

Regulations and Commitments

- All development in the station area would be required to follow the City's established permit application and review process to ensure compliance with design standards and development regulations.
- Kirkland Zoning Code (KZC) Chapter 142 establishes Design Review procedures for development projects meeting established criteria. KZC 142.15 requires Design Review Board approval for new buildings taller than one story or greater than 10,000 gross square feet, and all other development is required to undergo Administrative Design Review to ensure compliance with any applicable design standards:
  - Developments in the Rose Hill Business District are subject to the provisions of the *Design Guidelines for Rose Hill Business District*, adopted in 2006 (KMC 3.30.040(2)).
  - Future development in the portion of the station area zoned PLA 5C would be subject to the provisions of the *Design Guidelines for Pedestrian Oriented Business Districts*, adopted in 2004 and updated in 2018 (KMC 3.30.040(1)).
  - Both single-family and multifamily residential development in the NE 85th Street Subarea and the PLA 5C zone would be subject to the provisions of the *Design Guidelines for Residential Development*, adopted in 2015 (KMC 3.30.040(6)).
- Kirkland Zoning Code Chapter 95 regulates tree retention standards for development, as well as minimum planting requirements and supplemental tree planting densities.

Other Proposed Mitigation Measures

The City may wish to consider incorporating the following additional measures as part of the Form-Based Code to address potential aesthetic impacts associated with the Action Alternatives:

- Additional ground-level setback, upper-story stepback, or building height transition standards for sites abutting low-density residential properties;
- Encouragement of building designs that break up building massing to avoid monolithic forms, particularly for tower-style developments;
- Limits on the footprint of tower-style development to regulate relationship of building massing to site open space;
- Transitional bulk, height, orientation, or landscaping standards at boundaries of higher and lower intensity typologies;
- Privacy standards to address window placement and additional setbacks for mixed-use and commercial buildings with windows that face side or rear lot lines, particularly where the property borders a lower-density residential use;
- Prioritization of streetscape improvements and amenities to create an attractive environment for pedestrians; and
- Design of exterior building illumination to reduce light pollution and spillover into adjacent, lower-density neighborhoods outside the station area, including the use of shielded lighting, ground-level fixtures, or other screening techniques.

3.5.4 Significant Unavoidable Adverse Impacts

Under all Alternatives, additional growth and infill development would occur in the station area, gradually increasing the level of development intensity and altering the existing architectural and visual character. These changes would occur under all alternatives, though the changes would be most pronounced under Alternative 3. With implementation of the mitigation measures described above, including adoption of the proposed Form-Based Code, the visual character of the station may experience positive effects, and no significant unavoidable adverse aesthetic impacts are anticipated.

3.6 Transportation

This section presents a multimodal transportation analysis evaluating the potential impacts from enacting proposed zoning and transportation network changes in the NE 85th Street Station Study Area. Existing transportation conditions are documented throughout the Study Area. Future transportation conditions are evaluated under three alternatives: Alternative 1 No Action that represents the condition if zoning remains the same and the two Action Alternatives – Alternative 2 and Alternative 3. The evaluation considers significant impacts that could occur for the following modes: auto, freight, transit, pedestrian, and bicycle. Safety and parking impacts are also considered. Potential capital and programmatic mitigation measures are identified for Alternatives 2 and 3.

The transportation analysis provides a conservatively high estimate of the growth in traffic volumes within the Study Area. Due to the forecasted increase in delay and queuing along NE 85th Street, it is likely that a portion of drivers who are not stopping within the Study Area would choose alternate routes to avoid congestion. This could include trips within the City of Kirkland or trips for travelers from other areas that are entering and exiting I-405 via the NE 85th Street interchange. Moreover, as described later in this chapter, this study tests the alternatives using the City's 2035 travel demand model, but includes Study Area land use growth that could occur out to 2044—again, a conservative evaluation.

3.6.1 Affected Environment

Kirkland is approximately 10 miles east of Downtown Seattle, or roughly a 25 to 60-minute drive during peak travel times, and approximately five miles north of Downtown Bellevue, or roughly a 15 to 30-minute drive during peak travel times. Many people commute between Kirkland, Seattle, and Bellevue.

In November 2016, Washington voters approved the Sound Transit 3 initiative, which will provide Bus Rapid Transit (BRT) bus service on Interstate 405 (I-405). This fast, frequent, and reliable service will connect communities from Lynnwood to Burien, including the NE 85th Street Station in Kirkland at the intersection of NE 85th Street & I-405. This project is scheduled to be complete, and new "Stride" BRT service operational, by 2025. The proposed BRT service will arrive every 10 minutes at peak times, connecting riders to future Link light rail stops in Lynnwood, Bellevue, and Tukwila and to other transit service routes in the region. The I-405 Stride BRT builds upon the Washington State Department of Transportation's I-405 Master Plan with roadway improvements for faster travel.

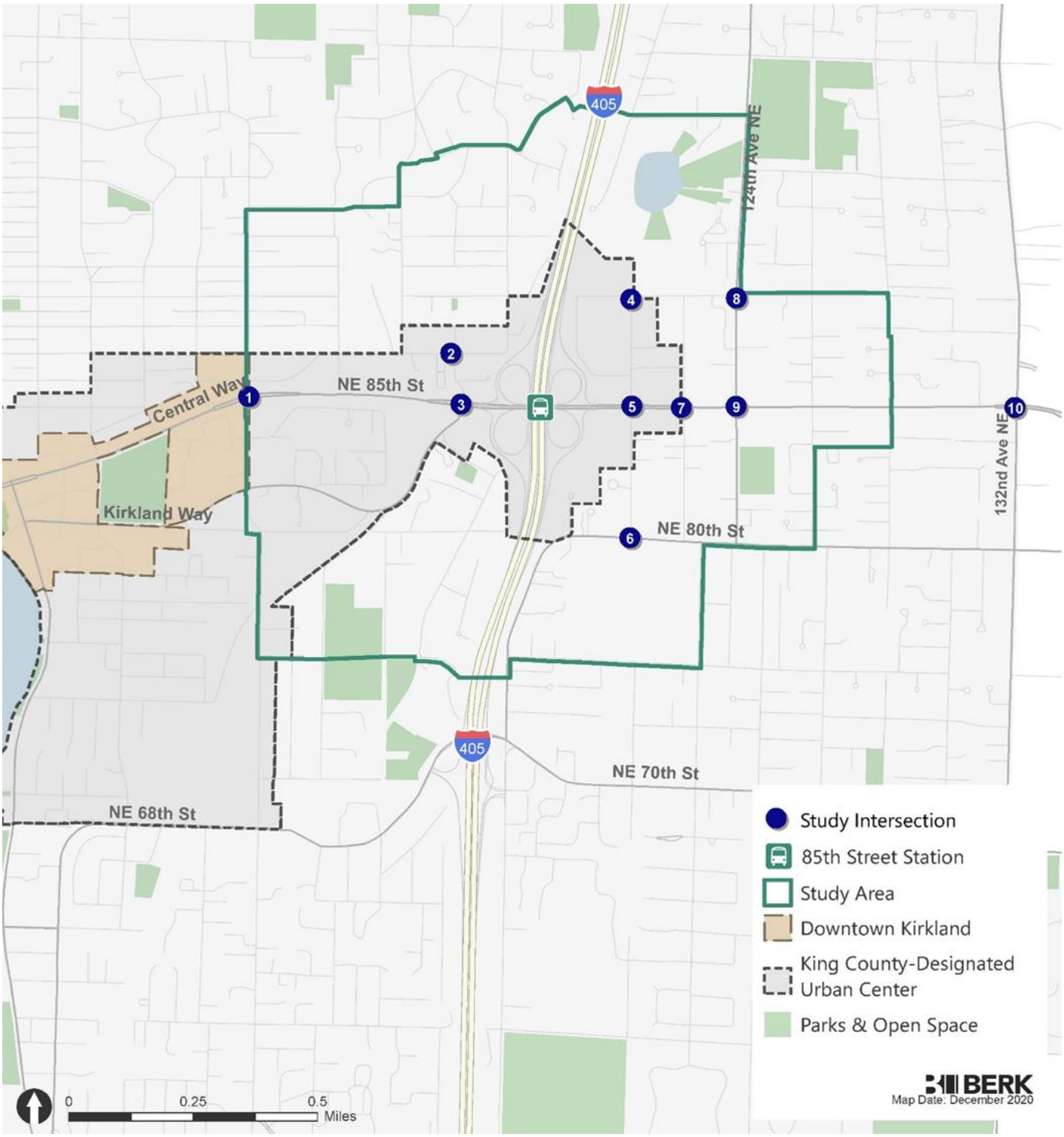
The Study Area is located east of Downtown Kirkland and a half-mile radius from the planned BRT station. Regional connections to the Study Area are provided by

I-405 and King County Metro transit service. The roadway network includes facilities for pedestrians, bicycles, vehicles, and transit. This section describes the existing types and locations of those transportation facilities. In addition, 10 intersections were analyzed to evaluate existing traffic operations, which include:

1. NE 85th St & 6th St
2. NE 87th St & 114th Ave NE
3. NE 85th St & Kirkland Way/114th Ave NE
4. NE 90th St & 120th Ave NE
5. NE 85th St & 120th Ave NE
6. NE 80th St & 120th Ave NE
7. NE 85th St & 122nd Ave NE
8. NE 90th St & 124th Ave NE
9. NE 85th St & 124th Ave NE
10. NE 85th St & 132nd Ave NE

Exhibit 3-54 shows boundaries of the Study Area as well as the study intersections. This section also includes results of a traffic safety analysis, shown in Exhibit 3-54.

Exhibit 3-54. Study Area and Transportation Intersections



Sources: Fehr & Peers, 2020; BERK, 2020.

Active Transportation Connectivity

Pedestrian Network

The roadway network east of I-405 generally provides better connected sidewalks than those west of I-405. Most roadway segments east of I-405 have sidewalks on at least one side of the street within the Study Area, but some segments have no pedestrian facilities, as shown in Exhibit 3-55. West of I-405, there are many gaps in the sidewalk network. In general, areas that are more likely to have higher volumes of pedestrian activity, such as the commercial land uses off NE 85th Street and the area adjacent to Lake Washington High School, have more complete sidewalks. Sidewalk gaps and sidewalks on one side of the street are more prevalent in residential settings. The Study Area also includes a multi-use trail – the Cross Kirkland Corridor (CKC) – which is a 10-foot wide, 5.75-mile crushed gravel interim trail that extends north-south, connecting the South Kirkland Park & Ride to the Totem Lake Business District. The CKC is part of the Eastrail multi-use corridor, which is a vital regional transportation corridor. When completed by adjacent jurisdictions, it will provide an uninterrupted 42-mile trail network connecting Renton, Bellevue, Kirkland, Woodinville, Snohomish, and Redmond, as well as vital transit connectivity serving various centers on the Eastside.

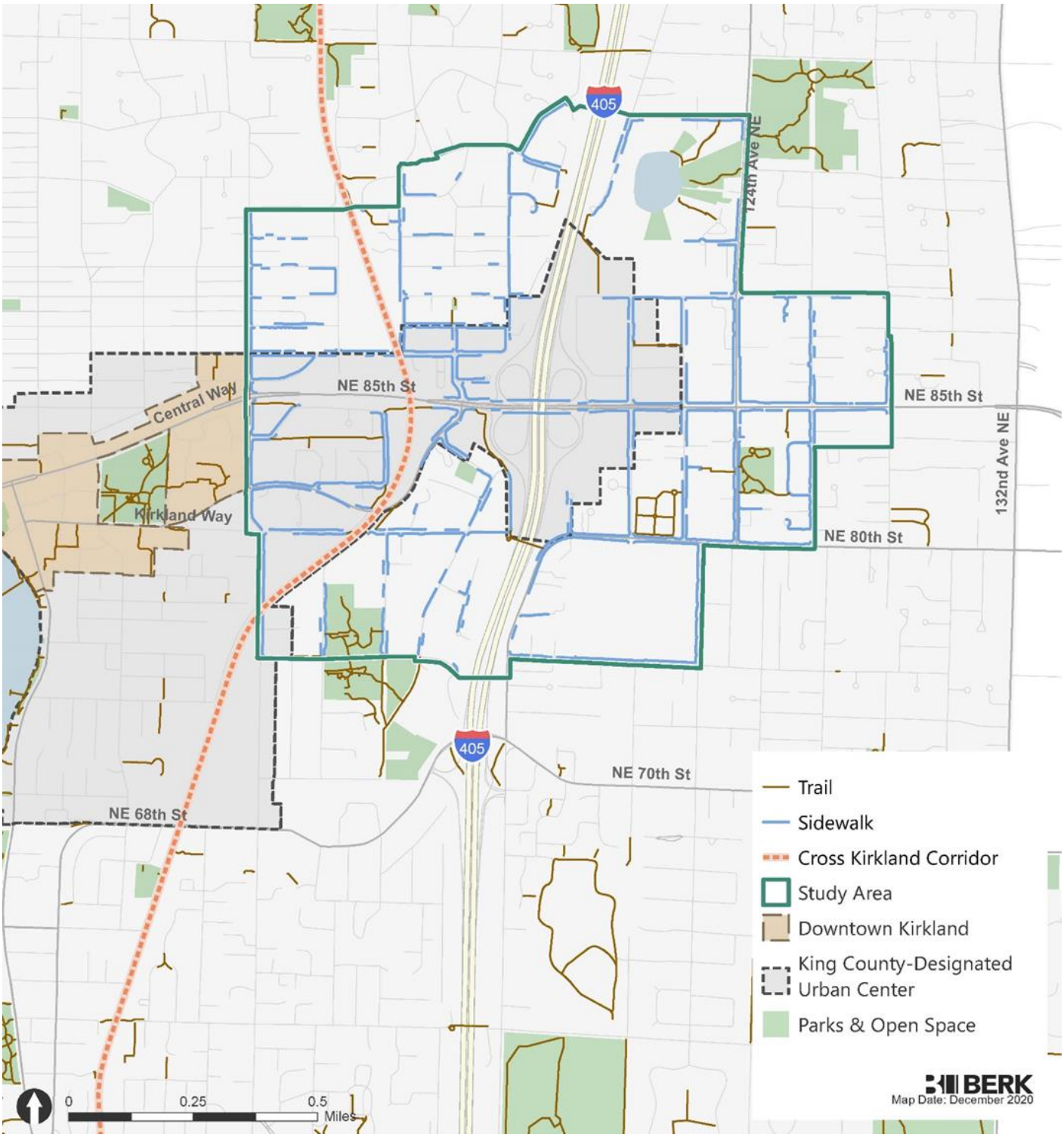
Existing sidewalks are on average five-feet wide in the Study Area, and while most are directly adjacent to vehicle traffic, some have landscape buffers to create a more comfortable environment for people walking, such as along NE 85th Street east of I-405. Wider sidewalks exist near marked crosswalks and along NE 85th Street when sidewalks are present. Kirkland's existing code calls for sidewalks on both sides of almost all streets, indicating that the City intends to provide pedestrian infrastructure along those corridors in the long term, typically in conjunction with private development. New sidewalks constructed as City capital projects are prioritized based on safety, land use, school walk routes, connection to the Cross Kirkland Corridor trail, other sidewalks and transit, community input, cost, and grant eligibility.[17]

Every intersection on NE 85th Street within the Study Area, with the exception of 126th Ave NE, has a signalized crossing. There are also three Rectangular Rapid Flashing Beacon (RRFB) crossings in the Study Area – one on 120th Avenue NE between NE 85th Street and NE 90th Street, one on 7th Avenue at the Cross Kirkland Corridor crossing, and one on 124th Avenue NE at NE 95th Street. There are some opportunities to enhance marked crosswalks within the Station Area, such as at NE 87th Street & 114th Avenue NE.

[17] City of Kirkland Transportation Master Plan, 2015

Because the I-405 freeway bisects the Study Area, a key challenge is a lack of east/west connectivity for pedestrians, exacerbated by the sidewalk gaps and the need to cross freeway ramp termini along NE 85th Street. However, there is a non-motorized bridge crossing over I-405 south of NE 85th Street at NE 80th Street. Another non-motorized bridge over I-405 is located at NE 100th Street, just north of the Study Area limits. Another challenge for pedestrian travel is topography. While the eastern half of the Study Area is on a plateau, people walking in the west half of the Study Area need to contend with the hills that slope down to Lake Washington and downtown Kirkland.

Exhibit 3-55. Existing Pedestrian Facilities



Sources: City of Kirkland, 2020; Fehr & Peers, 2020; BERK, 2020.

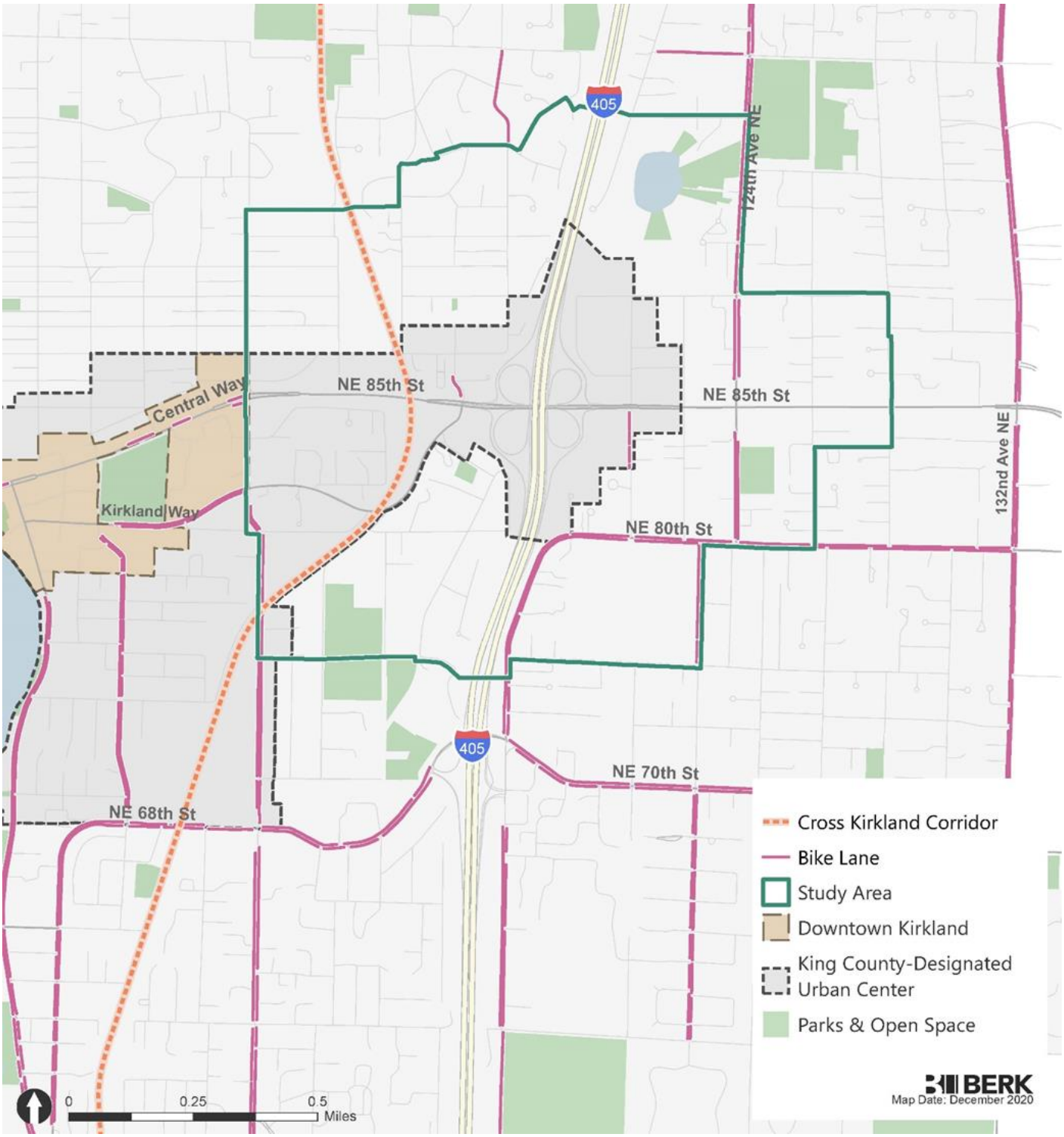
Bicycle Network

Bicycle infrastructure is limited within the Study Area, as shown in Exhibit 3-56. There are currently bicycle lanes on 116th Avenue NE/NE 80th Street, 124th Avenue NE except at the NE 85th Street intersection, and short segments of bicycle lanes on 114th Avenue NE, 120th Avenue NE, and 122nd Avenue NE. The CCKC also provides a north-south bicycle connection on the west side of the Study Area, and trail users can access the Study Area from trail access points just south of Kirkland Way and on NE 87th Street.

The City of Kirkland's 2015 Transportation Master Plan recommends installing a neighborhood greenway along NE 87th Street, 128th Avenue NE, NE 80th Street, 116th Avenue NE, and Kirkland Avenue and a bike lane along Kirkland Way. The neighborhood greenways on NE 87th Street and 128th Avenue NE are currently being implemented by the City. The City of Kirkland is currently updating its 2009 Active Transportation Plan to further address cycling in the area.

Kirkland has limited east-west bicycle connections between downtown and the area east of I-405, and there are steep grades west of I-405. Kirkland's challenging terrain means that special treatments for bicycles like runnels (a narrow ramp along the edge of stairs which allows people to push a bike up or down) should be considered at stairways and steep grades to help cyclists get up and down elevation changes. In addition, connecting the bicycle network gaps with improvements that are comfortable for all ages and cycling abilities would improve the comfort and connectivity of cycling in the Study Area.

Exhibit 3-56. Existing Bicycle Facilities



Sources: City of Kirkland, 2020; Fehr & Peers, 2020; BERK, 2020.

Transit Network

King County Metro provides six primary public transit routes in the vicinity of the Study Area (See Exhibit 3-57 and Exhibit 3-58). Other routes travel along I-405 but do not currently stop in the Study Area. Most of the transit routes in the Study Area use NE 85th Street, connecting the east and west sides of the I-405/NE 85th Street interchange, as well as 124th Avenue NE and 6th Street. Routes 893 and 895 shown on Exhibit 3-58 are custom buses provided by King County Metro and funded by the Lake Washington School District; they each provide one inbound trip in the morning and one outbound trip in the afternoon to Lake Washington High School.

Bus stops along NE 85th Street generally have sidewalks in the immediate vicinity. East of I-405 there is pedestrian scale lighting at bus stops, but not west of I-405. About half of the stops along NE 85th Street have bus shelters. There are no bus shelters for routes that travel on 124th Avenue NE, NE 80th Street/116th Avenue NE, 122nd Avenue NE, and NE 87th Street.[18] It currently takes roughly 20 minutes to reach Redmond and 45 minutes to reach Bellevue by transit during the PM peak hour from the center of the Study Area. Lack of high quality/continuous pedestrian or bicycle connections to transit stops, comfortable stops to wait for transit, and transit frequency and reliability in the Study Area are all general challenges for increasing the attractiveness of transit as a transportation mode.

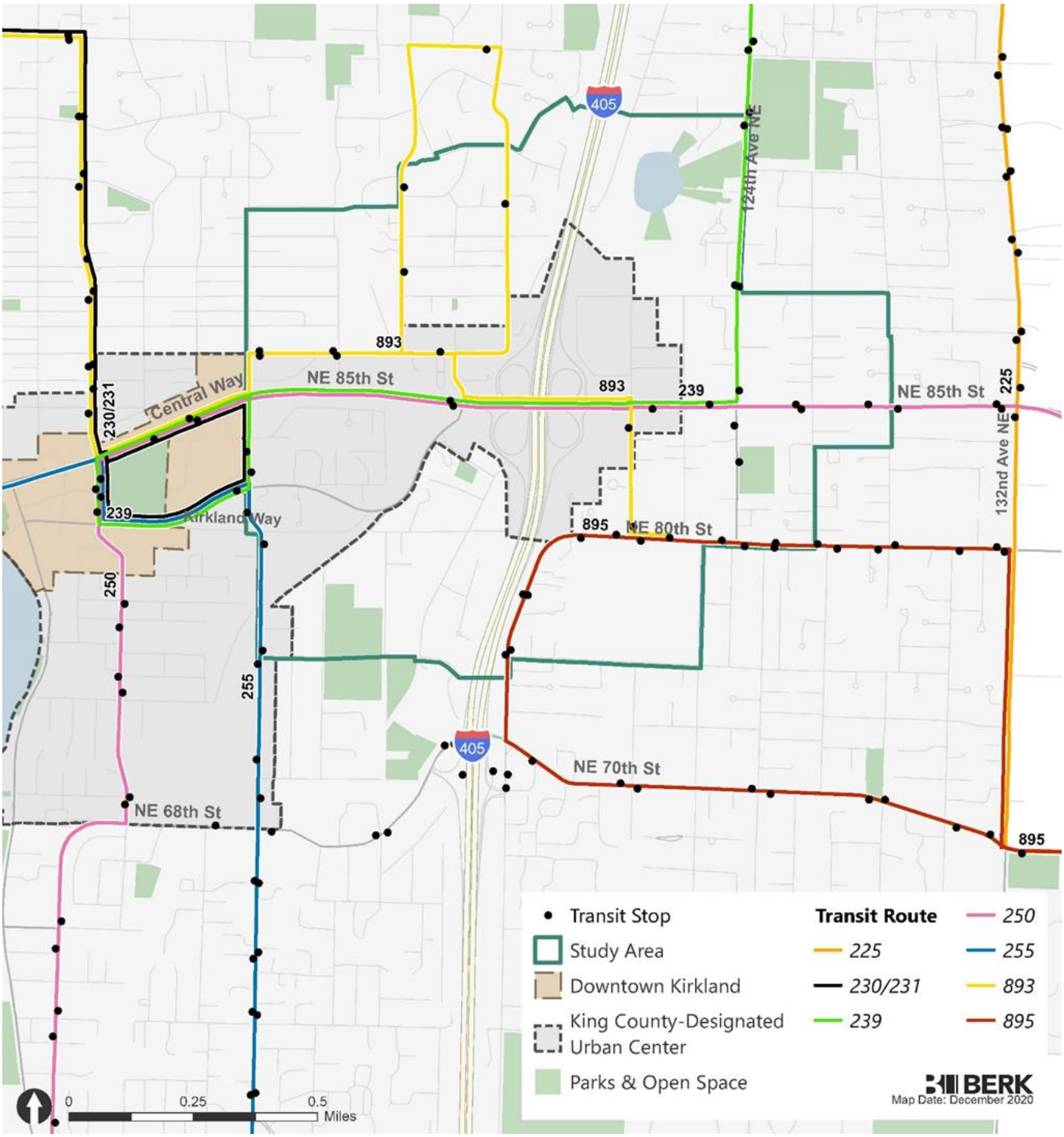
Exhibit 3-57. Existing Bus Routes

Route	Destinations	Peak Headway (min)	Off-Peak Headway (min)	Corridors Served
KCM 225	Kenmore – Totem Lake – Redmond Technology Station	30 minutes	60 minutes	132nd Ave NE
KCM 230/231	North Creek – Juanita - Kirkland	30 minutes	60 minutes	Central Way, Kirkland Way, 3rd St, Market St. 100th Ave NE
KCM 239	Kirkland – UW Bothell	30 minutes	30 minutes	Central Way, NE 85th St, 124th Ave NE
KCM 245	Kirkland TC – Crossroads - Factoria	12 minutes	30 minutes	NE 70th St, 6th St, Kirkland Way, Central Way, 3rd St
KCM 250	Avondale – Redmond – Kirkland – Bellevue	15 minutes	30 minutes	State St, 3rd St, Central Way, NE 85th St
KCM 255	Totem Lake – Kirkland – U District	6 minutes	15 minutes	6th St, Kirkland Way, Central Way, Market St

Source: King County Metro, March 2020.

[18] King County Metro recommends bus shelters and benches for stops with 25 weekday boardings along non-RapidRide routes. http://metro.kingcounty.gov/planning/pdf/2011-21/2015/metro-service-guidelines-042816.pdf

Exhibit 3-58. Existing Transit Facilities



Sources: King County Metro, 2020; Fehr & Peers, March 2020; BERK, 2020.

Street Network

Functional Classification of Streets

Within the Study Area, the transportation network is dominated by I-405, which provides a vital north-south connection of regional and statewide significance. The main north-south roadways in the Study Area are 114th Avenue NE, 120th Avenue NE, 122nd Avenue NE, 124th Avenue NE, 132nd Avenue NE, and 6th Street. East-west connectivity is provided by NE 85th Street, NE 87th Street, NE 90th Street, and NE 80th Street. Speed limits along the roadways range from 25 miles per hour (mph) to 35 mph with the exception of I-405, which has a speed limit of 60 mph within the study boundary.

North-South Corridors

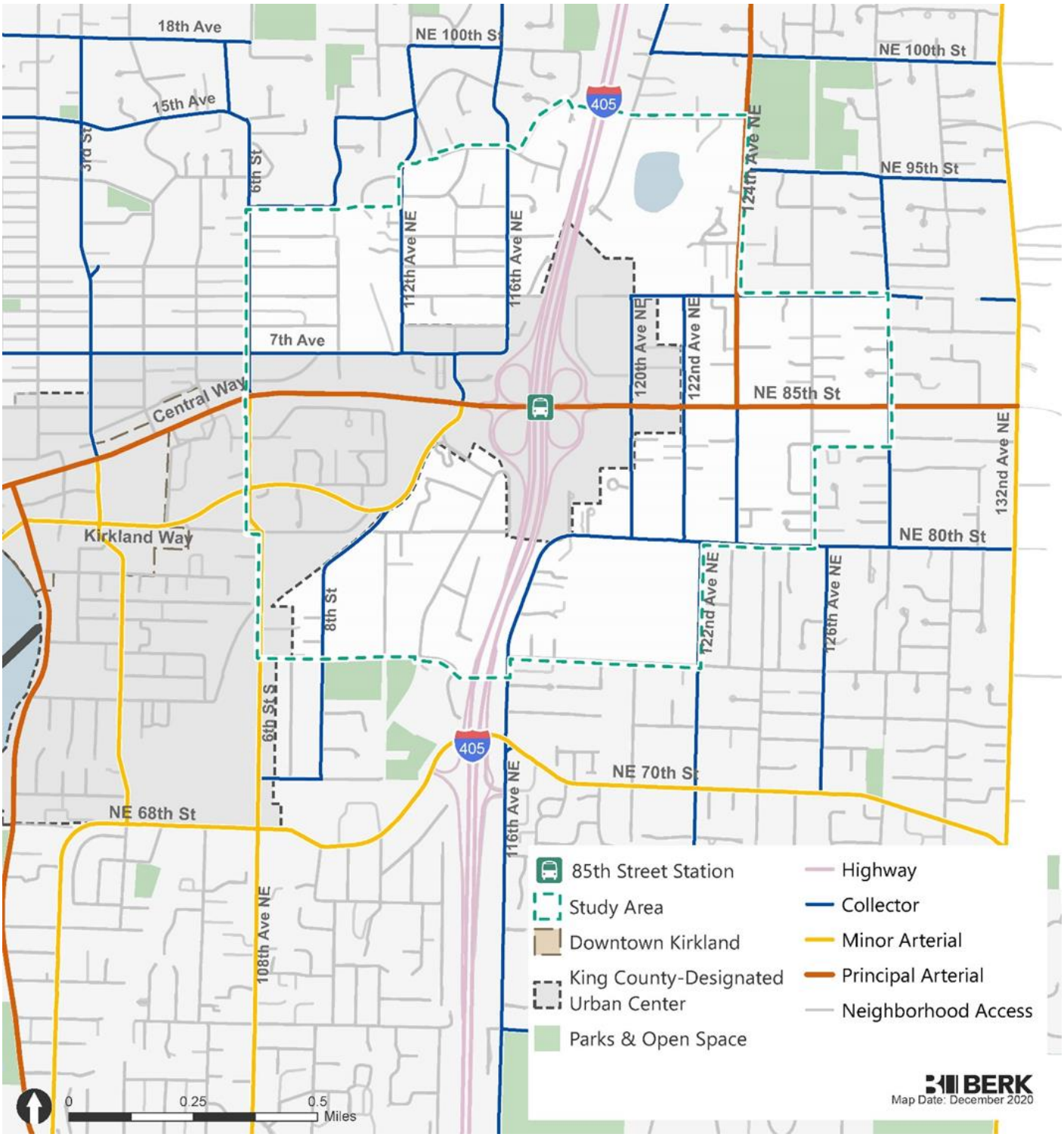
- **Interstate 405** is a state highway providing regional access to communities throughout the Eastside. It has five lanes, three general purpose lanes and two express toll lanes, in each direction and is one of two major north-south highways through the Puget Sound.
- **6th Street** is a collector north of NE 85th Street and a minor arterial south of NE 85th Street. It has one travel lane in each direction with turn lanes. The land uses along the corridor are predominantly residential north of NE 85th Street and a combination of commercial and residential uses south of NE 85th Street.
- **114th Avenue NE/Kirkland Way** is a collector north of NE 85th Street and a minor arterial south of NE 85th Street. It has one travel lane in each direction with two dedicated southbound left turn lanes that connect to NE 85th Street. The land uses along the corridor are predominantly residential.
- **120th Avenue NE** is a collector that has one travel lane in each direction with turn lanes. The land uses along the corridor are predominantly commercial, including Costco and the Lee Johnson auto dealership.
- **122nd Avenue NE** is a collector that has one travel lane in each direction with turn lanes. The land uses along the corridor are split between residential and commercial, with commercial uses generally found north of NE 85th Street.
- **124th Avenue NE** is a principal arterial north of NE 85th Street and a collector south of NE 85th Street. It has one travel lane in each direction with turn lanes and bike lanes in both directions. The land uses along the corridor are predominantly residential, though there is a shopping center near the NE 85th Street & 124th Avenue NE intersection.
- **132nd Avenue NE** is a minor arterial that has one travel lane in each direction with bicycle lanes on either side of the roadway and dedicated turn lanes. The land uses along the corridor are predominantly residential.

East-West Corridors

- **NE 85th Street** is a principal arterial that connects the east and west side of the future bus rapid transit (BRT) station. It is generally characterized by two travel lanes in each direction and an additional two-way left-turn lane east of I-405.
- **NE 90th Street** is a collector east of I-405 that has one travel lane in each direction with turn lanes. The land uses along the corridor are predominantly residential, though the western terminus is commercial.
- **NE 87th Street** is a collector west of I-405 that has one travel lane in each direction with turn lanes. The land uses along the corridor are predominantly residential.
- **NE 80th Street** is a collector that has one travel lane in each direction with bike lanes on both sides of the roadway. The land uses along the corridor are a mix of residential and civic uses, including Lake Washington High School.

Exhibit 3-59 shows the street functional classification map for the Study Area.

Exhibit 3-59. Functional Classification



Sources: City of Kirkland, 2020; Fehr & Peers, 2020; BERK, 2020.

Study Intersections

Traffic operations could be affected by land use changes in the Study Area. The intersections most likely to be affected were selected for analysis, as shown in Exhibit 3-54. These locations were analyzed during the weekday PM peak hour, which typically represents the most congested traffic conditions. All study intersections are signalized except for NE 87th Street & 114th Avenue NE and NE 90th Street & 120th Avenue NE.

The study intersections are:

1. NE 85th St & 6th St
2. NE 87th St & 114th Ave NE
3. NE 85th St & Kirkland Way/114th Ave NE
4. NE 90th St & 120th Ave NE
5. NE 85th St & 120th Ave NE
6. NE 80th St & 120th Ave NE
7. NE 85th St & 122nd Ave NE
8. NE 90th St & 124th Ave NE
9. NE 85th St & 124th Ave NE
10. NE 85th St & 132nd Ave NE

Intersection level of service (LOS) is a concept used to describe traffic operations from the driver's perspective. LOS is defined by intersection delay in seconds and ranges from LOS A with no congestion and little delay to LOS F with substantial congestion and delay. This study uses PM peak hour average vehicle delay to evaluate LOS at each study intersection because this time period usually sees higher delays than other periods.

Traffic operations were analyzed using the Synchro 10 software package and Highway Capacity Manual (HCM) 6th Edition methodology. The Synchro network reflects the existing roadway network including segment and intersection geometry, and signal timings. The network also includes existing traffic volumes, including passenger vehicles, heavy vehicles, and pedestrian and bicycle counts which were collected in 2019 and February 2020, pre-pandemic. For signalized and all-way stop controlled intersections, LOS is based on the average delay of all movements. For side street stop-controlled intersections, LOS is based on the movement with the highest delay. Exhibit 3-60 summarizes the LOS and delay thresholds specified in the Highway Capacity Manual, which is a standard methodology for measuring intersection performance.

Exhibit 3-60. LOS and Delay Thresholds for Signalized and Unsignalized Intersections

LOS	Signalized Intersections (Delay in Seconds)	Unsignalized Intersections (Delay in Seconds)
A	≤ 10	≤ 10
B	> 10 to 20	> 10 to 15
C	> 20 to 35	> 15 to 25
D	> 35 to 55	> 25 to 35
E	> 55 to 80	> 35 to 50
F	> 80	> 50

Source: Highway Capacity Manual (Transportation Research Board), 2016.

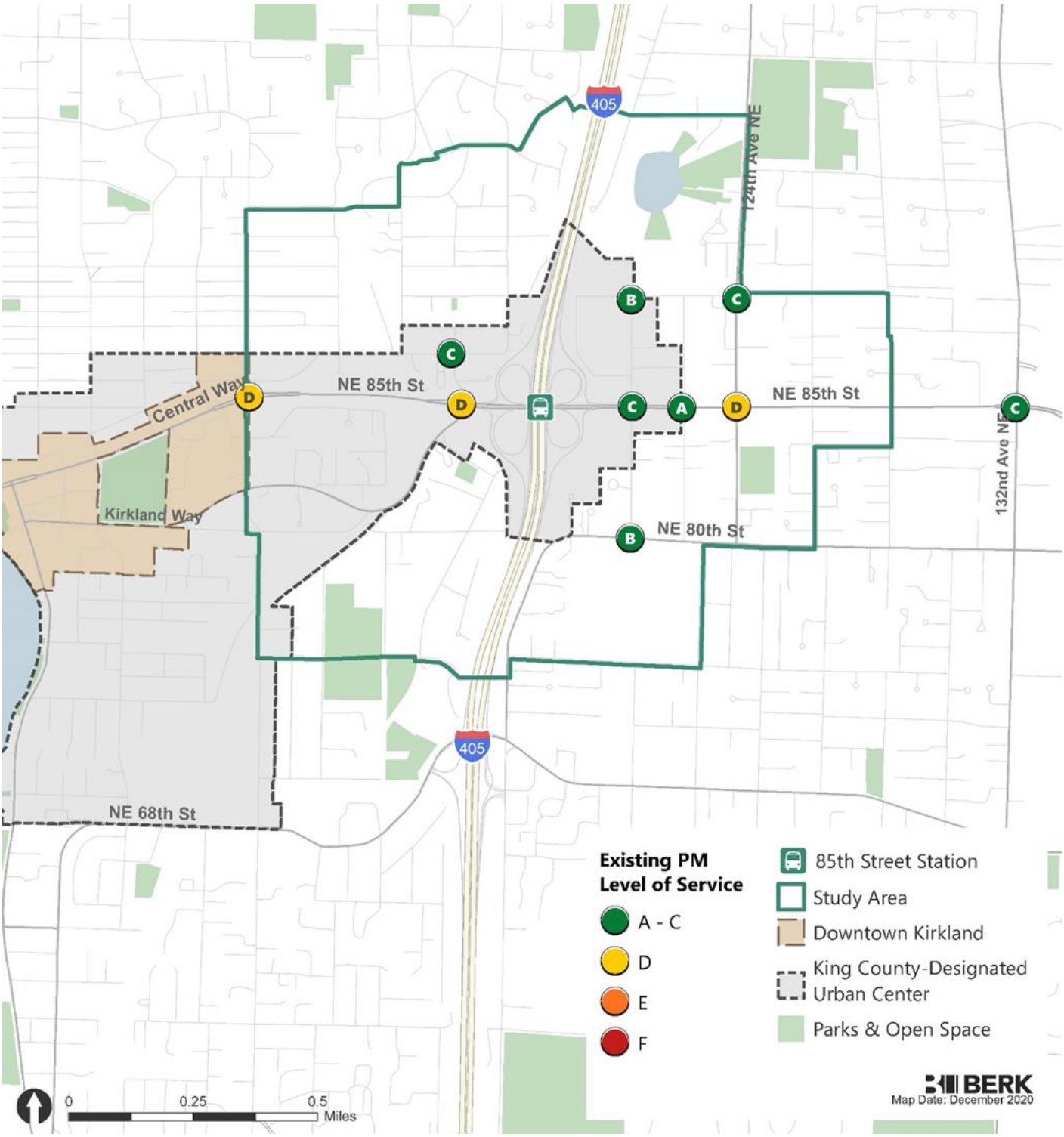
Exhibit 3-61 and Exhibit 3-62 summarize the existing intersection LOS at the study intersections. Three study intersections along the NE 85th St corridor operate at LOS D; all of the remaining study intersections operate at LOS C or better. All of the analyzed intersections are operating at an acceptable LOS.

Exhibit 3-61. Existing PM Peak Hour Intersection Level of Service and Delay

ID	Intersection	Traffic Control	LOS/Delay in seconds (Side street approach with highest delay)
1	NE 85th St & 6th St	Signal	D / 49
2	NE 87th St & 114th Ave NE	Side-street stop	C / 21
3	NE 85th St & Kirkland Way/114th Ave NE	Signal	D / 45
4	NE 90th St & 120th Ave NE	All-way stop	B / 11
5	NE 85th St & 120th Ave NE	Signal	C / 22
6	NE 80th St & 120th Ave NE	Signal	B / 11
7	NE 85th St & 122nd Ave NE	Signal	A / 7
8	NE 90th St & 124th Ave NE	Signal	C / 21
9	NE 85th St & 124th Ave NE	Signal	D / 35
10	NE 85th St & 132nd Ave NE	Signal	C / 28

Source: Fehr & Peers, 2020.

Exhibit 3-62. Existing PM Peak Hour Intersection Level of Service



Sources: Fehr & Peers, 2020; BERK, 2020.

Parking

Most of the parking spaces in the Study Area are located in private, off-street surface parking lots for the associated businesses or residences. These are predominantly located east of I-405. This land use pattern results in large areas of parking separating adjacent land uses. Locations with on-street parking use are not currently subject to parking fees or time limitations. On-street parking in Downtown Kirkland, west of the Study Area, is free with some locations including time limits.

The City's parking requirements for development are established in the Kirkland Zoning Code (KZC) Chapter 105, Chapter 15, Chapter 20, Chapter 25, Chapter 30, Chapter 35, and Chapter 40. The required parking spaces in Kirkland include:

- 2 spaces per dwelling unit for detached dwelling units. In most zones, multi-family dwelling units have a variable parking rate based on bedroom-count;
- 1 space per 300 square feet of retail;
- 1 space per 300 square feet of office;
- 1 space per 100 square feet of restaurant;
- 1 space per 200 square feet of medical offices
- 1 space per 1,000 square feet of industrial; and
- 1 space per each bed in a nursing home.
- Bicycle parking spaces shall be provided in all new development required to provide six (6) or more motor vehicle parking spaces. Exception: single-family and duplex development are exempt from this section.
- Bicycle parking spaces shall be provided at a ratio of one (1) bicycle space for each 12 required motor vehicle parking spaces.

If the code does not specify a parking space requirement for a particular use in a particular zone, the Planning Official shall establish a parking requirement on a case-by-case basis based on demand.

Safety

Crash data for the past five years (January 2015 through December 2019) were 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 with the study intersections in the Study Area and collision rates were determined. Collision rates at all study intersections are shown in Exhibit 3-63**.** Collision rates normalize the number of crashes based on the traffic volumes using each facility. Rates at intersections are provided per the number of million entering vehicles (MEV).

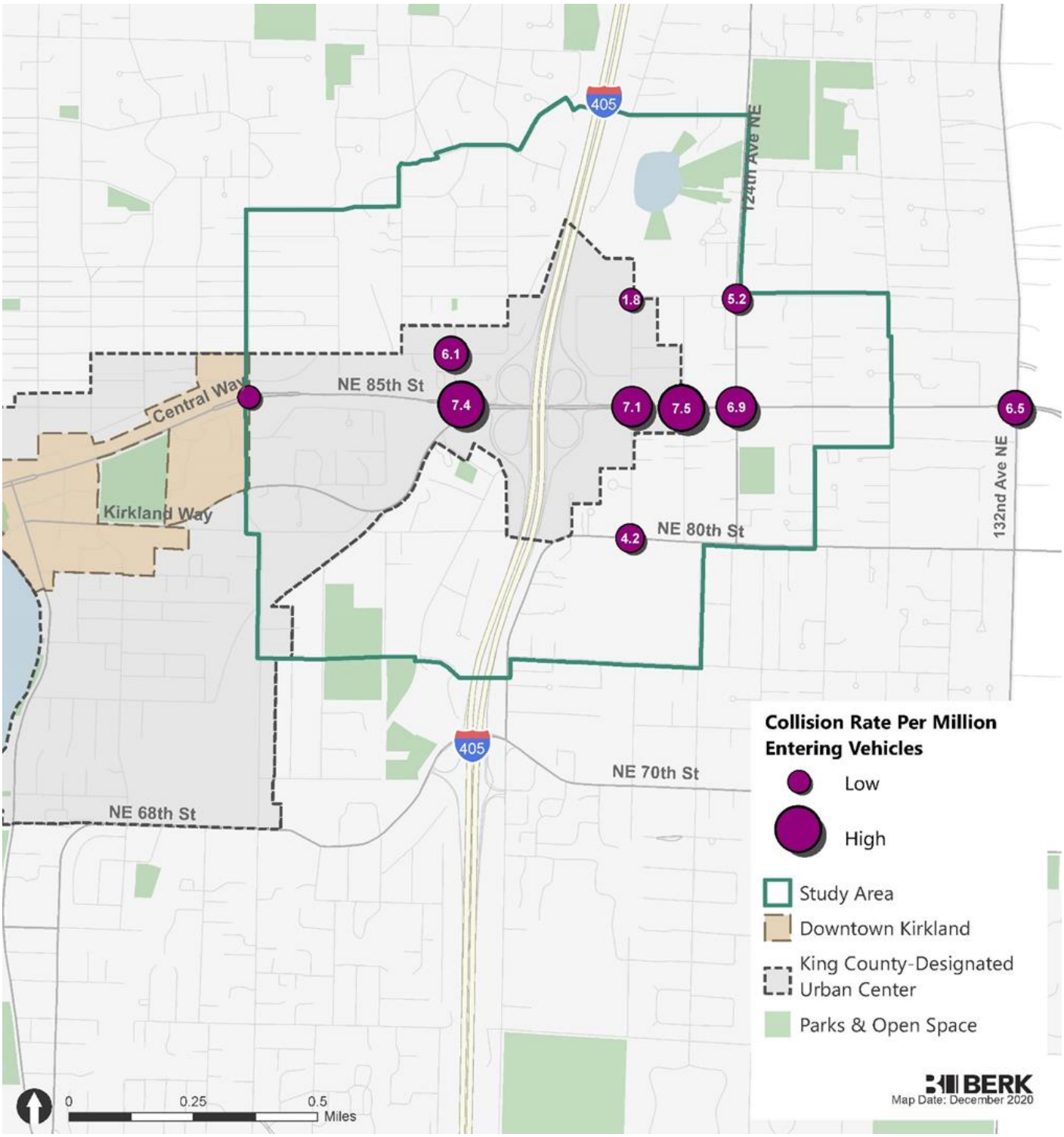
Of the 10 study intersections, NE 85th Street & 120th Avenue NE had the highest number of crashes (40 over five years) and the third highest crash rate at 7.1 crashes per million entering vehicles. The intersections with the highest crash rates were NE 85th Street & 122nd Avenue NE and NE 85th Street & Kirkland Way/114th Avenue NE, at 7.5 and 7.4 crashes per million entering vehicles, respectively.

There were four serious injury collisions in the Study Area during the analysis period. One serious injury collision involved a vehicle hitting a cyclist on 124th Avenue NE between NE 85th Street and NE 80th Street. Three serious injury collisions involved vehicles hitting a pedestrian:

- One occurred on NE 80th Street midblock between 120th Avenue NE and 122nd Avenue NE due to pedestrian inattention when crossing the street;
- One occurred at the intersection of NE 85th Street & 120th Avenue NE due to vehicle inattention when turning right; and
- One occurred at the intersection of NE 87th Street & 114th Avenue NE due to vehicle inattention when turning left.

Collisions on I-405 were not considered as part of this analysis because the freeway mainline is not affected by the Study Area.

Exhibit 3-63. Collision History (January 2015 – December 2019)



Sources: Fehr & Peers, 2020; BERK, 2020.

Existing Policies and Regulations

The state Growth Management Act (GMA), enacted in 1990, requires that all cities and counties of a minimum size prepare comprehensive plans and update those plans at certain intervals. GMA's goals include reducing sprawl and directing growth to areas that already have urban services. Comprehensive plans must show that each city has enough land in appropriate zoning categories to absorb the expected level of growth for 20 years into the future, along with transportation facilities to serve that growth.

Washington State Greenhouse Gas Emissions Limits

In 2008, the Washington State Legislature passed a law requiring that statewide emissions of greenhouse gases be reduced to 1990 levels by 2020 and to 25% below 1990 levels by 2035 (RCW 70.235.020). The State prepares an inventory every two years tracking statewide emissions against the 1990 baseline.

PSRC Vision 2040 and Vision 2050

The Puget Sound Regional Council (PSRC) is the regional metropolitan planning organization covering King, Snohomish, Pierce, and Kitsap counties. It is governed by elected officials from across the region, and together they have adopted a regional growth strategy called Vision 2040. PSRC extended the region's growth strategy to 2050, and the updated Vision 2050 was adopted in October 2020. It calls for concentrating population and job growth in designated centers and for using multimodal transit options to connect these centers. Vision 2040 and Vision 2050 also assume a distribution of growth across the Puget Sound region, with especially large shares of growth going to the cities of Seattle, Bellevue, Everett, Tacoma, and Bremerton. Kirkland is one of 13 cities with regionally designated growth centers that are intended to accommodate a substantial share of future growth. These cities are called Core Cities and contain key hubs for the region's long-range multimodal transportation system, and are major civic, cultural, and employment centers within their counties.

City of Kirkland 2015 Comprehensive Plan – Transportation Element

The City of Kirkland's Comprehensive Plan Transportation Element was last updated in 2015 and outlines the policies, projects, and programs necessary to implement the City's vision of future mobility over the next 20 years. The Transportation Element references Kirkland's Transportation Master Plan, which develops a vision for the transportation network and land use based on realistic transportation expectations. To achieve a multimodal community where all residents can travel easily, the Transportation Element is guided by nine goals,

which are consistent with the regional and countywide goals and policies:

- Goal 0. By 2035 eliminate all transportation related fatal and serious injury crashes in Kirkland.
- Goal 1. Complete a safe network of sidewalks, trails, and crosswalks where walking is comfortable and the first choice for many trips.
- Goal 2. Interconnect bicycle facilities that are safe, nearby, easy to use, and popular with people of all ages and abilities.
- Goal 3. Support and promote a transit system that is recognized as a high value option for many trips.
- Goal 4. Provide for efficient and safe vehicular circulation recognizing congestion is present during parts of most days.
- Goal 5. Create a transportation system that is united with Kirkland's land use plan.
- Goal 6. As the transportation system is planned, designed, built, maintained and operated, provide mobility for all using reasonably assured revenue sources while minimizing environmental impacts.
- Goal 7. Coordinate with a broad range of groups, public and private, to help meet Kirkland's transportation goals.
- Goal 8. Measure and report on progress toward achieving goals and completing actions.

City of Kirkland 2015 Comprehensive Plan – Environment Element

Developing a green, sustainable, and livable community were aspirations expressed during Kirkland's Comprehensive Plan vision process. The City's policies are guided by six environmental goals, two of which are relevant to greenhouse gas emissions:

- Goal E-4. Manage the built environment to reduce waste, prevent pollution, conserve resources, and increase energy efficiency.
- Goal E-5. Target carbon neutrality by 2050 to greatly reduce the impacts of climate change.

The City of Kirkland is currently developing a Sustainability Master Plan to coordinate all the City's efforts in environmental, economic, and social responsibility.

City of Kirkland 2015 Transportation Master Plan

This multi-modal plan set forth a new 20-year transportation policy for the City of Kirkland, with its goals and policies serving as the basis for the City's Transportation Element of the Comprehensive Plan. The Transportation Master Plan (TMP) gives context, detail, and background to these goals and policies (see the

Transportation Element section above for the complete list of goals). The project list in the TMP contains multimodal transportation projects that are added to the City's Capital Improvement Program (CIP) annually. With the expressed purpose of moving people, goods, and services, the City's transportation decisions will reflect the following hierarchy of modes:

1. Walking
2. Biking
3. Transit
4. Motor vehicles

Cross Kirkland Corridor Master Plan

The 2014 Cross Kirkland Corridor Master Plan outlines the community's vision for the trail and is actively being used to guide the development of the multi-use corridor. The master plan has four goals:

1. Connect Kirkland
2. Foster a greener Kirkland
3. Shape a place unique to Kirkland
4. Activate Kirkland and evolve over time

City of Kirkland 2019 Transit Implementation Plan

In response to increased population and employment growth, the City of Kirkland developed the Kirkland Transit Implementation Plan to improve transit service, speed, and reliability within the City. The Transit Implementation Plan builds upon the goals in the Transportation Master Plan and recommends transit projects based on existing conditions, transit travel demand, and community outreach feedback. The only project recommendation within the Study Area is a queue jump and signal priority investments on NE 85th Street at 6th Street. The ST3 funding package originally planned for bus only lanes on NE 85th Street between I-405 and 6th Street, but has evolved into more focused transit priority investments like the queue jump at 6th Street, which will achieve similar transit benefits.

City of Kirkland 2009 Active Transportation Plan

Kirkland's 2009 Active Transportation Plan's goals and policies were incorporated into the City's Transportation Element and Transportation Master Plan. The 2009 plan was focused around eight goals, including:

1. Develop the Cross Kirkland Trail.
2. Reduce crash rates.
3. Add facilities for pedestrians.

4. Increase the number of children who use active transportation to travel to and from school.
5. Improve safety for people crossing streets.
6. Remove physical barriers to walking.
7. Improve on-street bicycle facilities.
8. Make bicycle more convenient.

The City is currently updating its Active Transportation based on the goals and policies from previous plans:

- **T-0 Safety:** By 2035 eliminate all transportation related fatal and serious injury crashes in Kirkland.
- **T-1 Walking:** Complete a safe network of sidewalks, trails, and crosswalks where walking is comfortable and the first choice for many trips.
- **T-2 Biking:** Interconnect bicycle facilities that are safe, nearby, easy to use, and popular with people of all ages and abilities.

Kirkland Capital Improvement Program

The Capital Improvement Program (CIP) is a multi-year plan with a comprehensive list of capital projects that the City intends to implement over the next six years, including transportation projects. The CIP helps the City fulfill its GMA requirements by implementing the transportation projects needed to support growth. Six projects on the 2021-2026 CIP fall within the Study Area including:

1. **Central Way Street Preservation**: This project provides a grind, patch, modification of wheelchair ramps, and overlay on Central Way/NE 85th Street from Market Street to 114th Avenue NE.
2. **NE 85th Street Pedestrian/Bike Connection 114th Avenue NE to 6th Street**: This project provides a shared-use path on the south side of NE 85th Street.
3. **NE 85th Street and 6th Street Westbound Transit Queue Jump**: This project adds a queue jump for westbound transit.
4. **NE 85th Street Eastbound Third Lane 120th Avenue NE to 122nd Avenue NE**: This project adds a third eastbound lane between 120th Avenue NE and 122nd Avenue NE.
5. **85th Street/132nd Avenue NE Dual Left Turn Lanes – Design**: This project adds a second southbound left turn lane.
6. **NE 75th / NE 128th Street Greenway**: This project designs and constructs greenway network in the area of NE 75th Street, including Kirkland Avenue from Lake Street to NE 80th Street east of I-405, 116th Avenue NE from NE 80th Street to NE 75th Street, and NE 75th Street from 116th Avenue NE to 130th

Avenue NE. Greenway features vary according to location but may include items such as marking, signing of various types, lighting, crossing treatments (which may include signing, islands, beacons, improvements to or new traffic signals), traffic calming, drainage improvements, sidewalks or other walkway improvements, and minor property acquisition. Construction is anticipated between Fall 2020 and Fall 2021.

7. **School and Transit Connector**: This project will design and construct a pathway along the east side of 120th Avenue NE between NE 80th Street and the vicinity of NE 83rd Street where the current sidewalk ends, in order to better connect Lake Washington High School to available transit service on NE 85th Street.

3.6.2 Impacts

Methods

Analysis Methodology – Planning Scenarios Evaluated

This section describes the planning scenarios that are evaluated as well as the methodology and assumptions used to analyze the alternatives. Three alternatives are evaluated under future year conditions: Alternative 1 No Action, Alternative 2, and Alternative 3. Alternative 1 No Action maintains the Study Area's existing zoning and includes only reasonably foreseeable projects identified in the City's adopted plans (see section 3.3.1). Alternative 2 would allow for more moderate growth throughout the district, primarily focused on existing commercial areas such as Rose Hill. Alternative 3 would also be primarily focused on existing commercial areas but would allow for the most growth throughout the district. For this analysis, the Study Area was segmented into quadrants divided by I-405 and NE 85th Street. A full description of the land use assumptions is in Chapter 2

All future year alternatives reflect the same transportation network assumptions pertaining to traffic operations, as shown in Exhibit 3-64. These include:

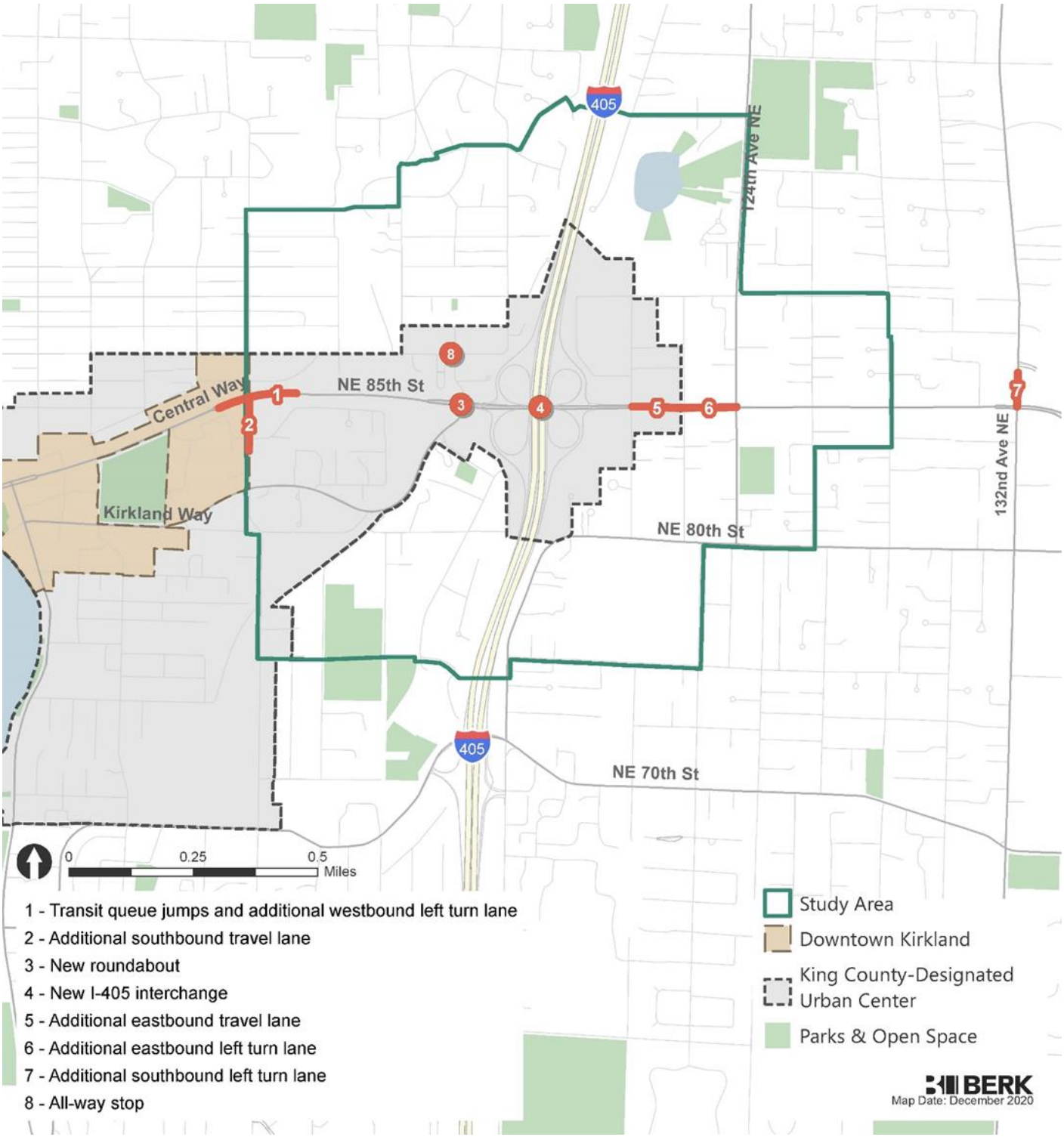
- Transit queue jumps and an additional westbound left turn lane at NE 85th Street & 6th Street
- An additional southbound travel lane between NE 85th Street and 4th Avenue
- A roundabout at NE 85th Street & Kirkland Way/114th Avenue NE
- Redesigned I-405 interchange on NE 85th Street
- An additional eastbound travel lane on NE 85th Street between 120th Avenue

NE and 122nd Avenue NE

- An additional eastbound left turn lane on NE 85th Street between 122nd Avenue NE and 124th Avenue NE (implemented in 2020)
- An additional southbound left turn lane on 132nd Avenue NE at NE 85th Street
- A four-way stop (all-way stop) at 114th Avenue NE & NE 87th Street (implemented in 2020)

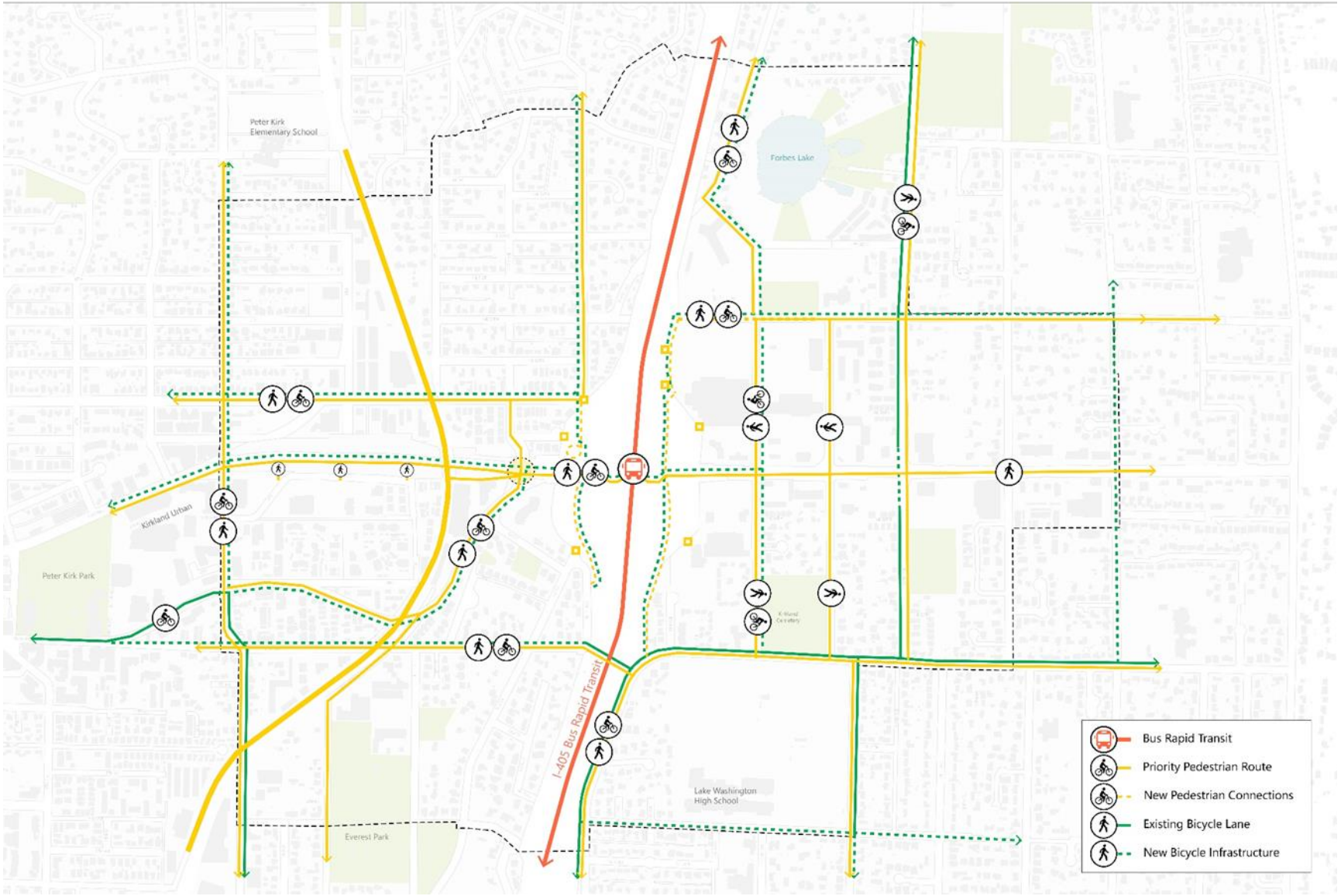
There are different transportation network assumptions for the future year alternatives related to bicycles, pedestrians, and parking, as shown in Exhibit 3-65, Exhibit 3-66, and Exhibit 3-67. The pick-up/drop-off lot that is proposed as part of the Sound Transit 85th Street Station in the northwest quadrant of the interchange is assumed under all three future year alternatives.

Exhibit 3-64. Traffic Operations Transportation Network Assumptions, Alternatives 1-3



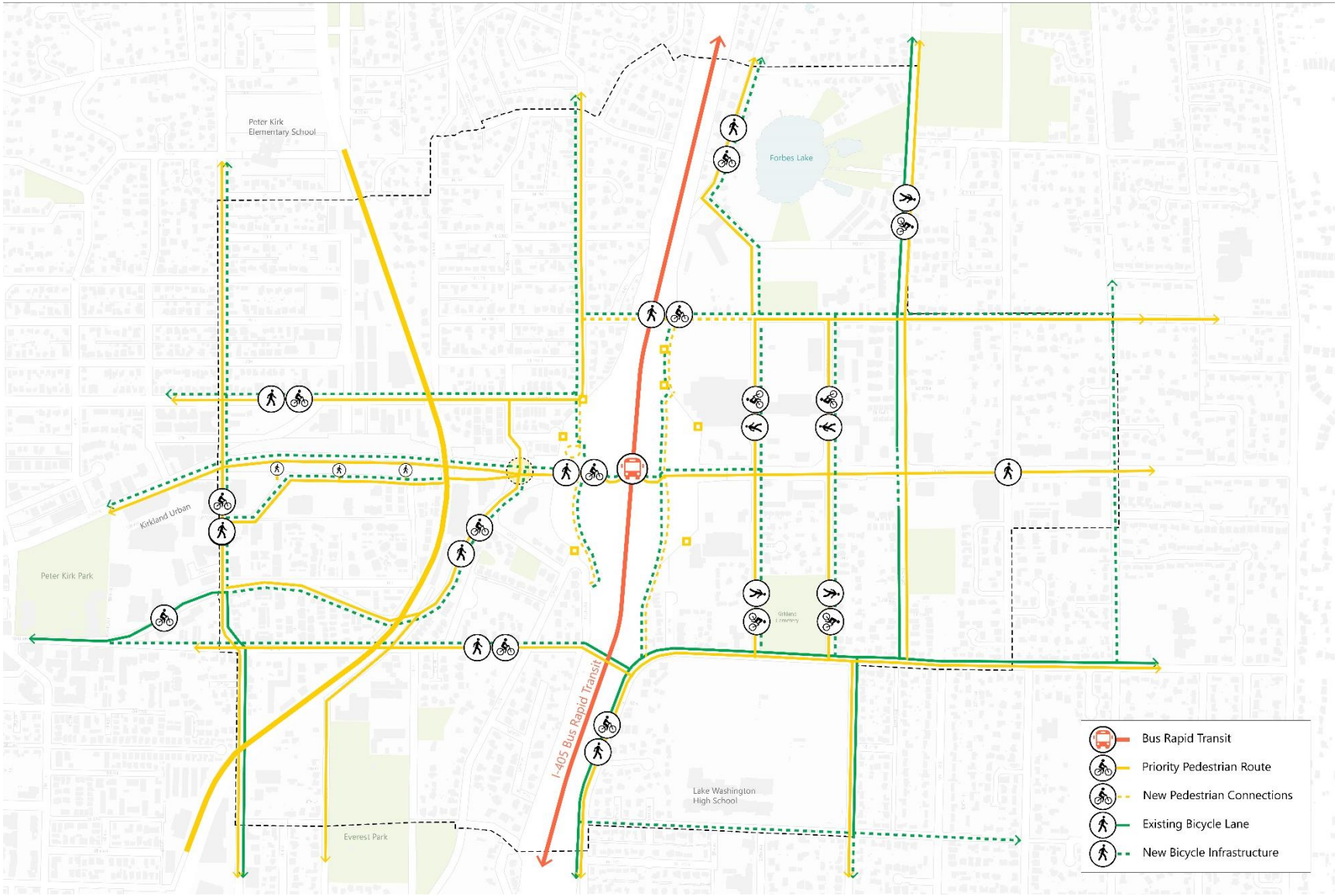
Sources: Fehr & Peers, 2020; BERK, 2020.

Exhibit 3-65. Multimodal Transportation Network Assumptions, Alternative 1 No Action



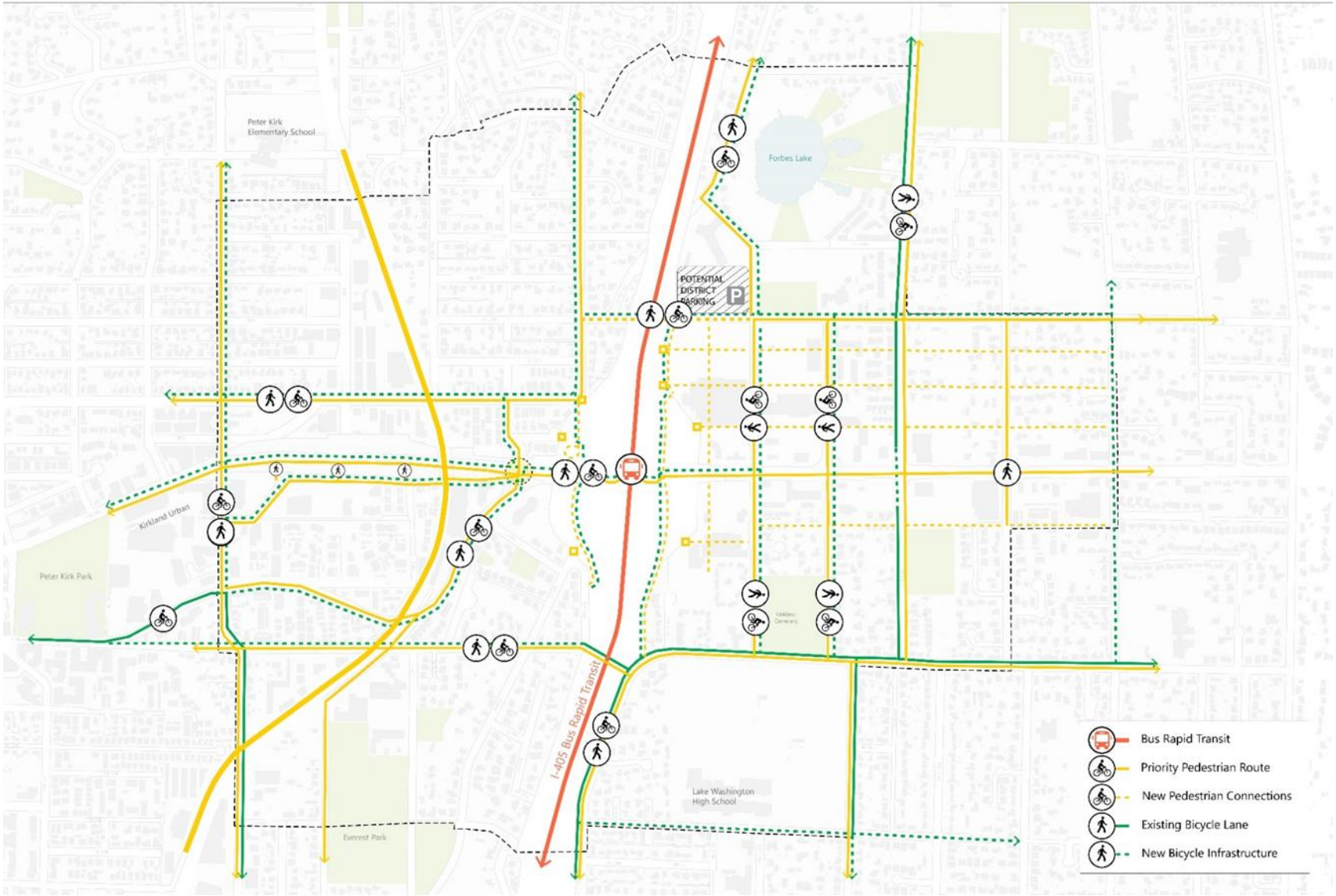
Sources: Mithun, 2020; Fehr & Peers, 2020.

Exhibit 3-66. Transportation Network Assumptions, Alternative 2



Sources: Mithun, 2020; Fehr & Peers, 2020.

Exhibit 3-67. Transportation Network Assumptions, Alternative 3



Sources: Mithun, 2020; Fehr & Peers, 2020.

Trip Generation

The Bellevue-Kirkland-Redmond (BKR) travel demand model was used to develop 2035 traffic volume forecasts for Alternative 1 No Action; they are based on the land use forecast and transportation infrastructures adopted in the 2035 Comprehensive Plan. These forecasts account for the current zoning of the Study Area and the background growth assumed for the rest of the city and region, consistent with adopted local and regional plans. MXD+, a trip generation tool that accounts for the variation in land use type and density, was applied to estimate the vehicle trips that would occur under Alternatives 2 and 3. Alternatives 2 and 3 are tested on a 2035 regional transportation network (since the travel demand model only provides a forecast out to 2035 Comprehensive Plan date) while the land use and transportation network in the Study Area reflects growth that could occur through the 2044 horizon year, making it a conservative transportation analysis for the subarea because it compresses growth trends into a shorter timeframe than anticipated.

Exhibit 3-68 summarizes the forecasted increase in vehicle trips for the PM peak hour. MXD+ estimated that Alternative 2 would result in 7,286 more vehicle trips than Alternative 1 No Action during the PM peak hour. Alternative 3 would result in 9,158 more vehicle trips than Alternative 1 No Action during the PM peak hour. The increase in trips for both Action Alternatives is attributed to the net increase in both jobs and households.

Exhibit 3-68. PM Peak Hour Vehicle Trips Generated, All Alternatives

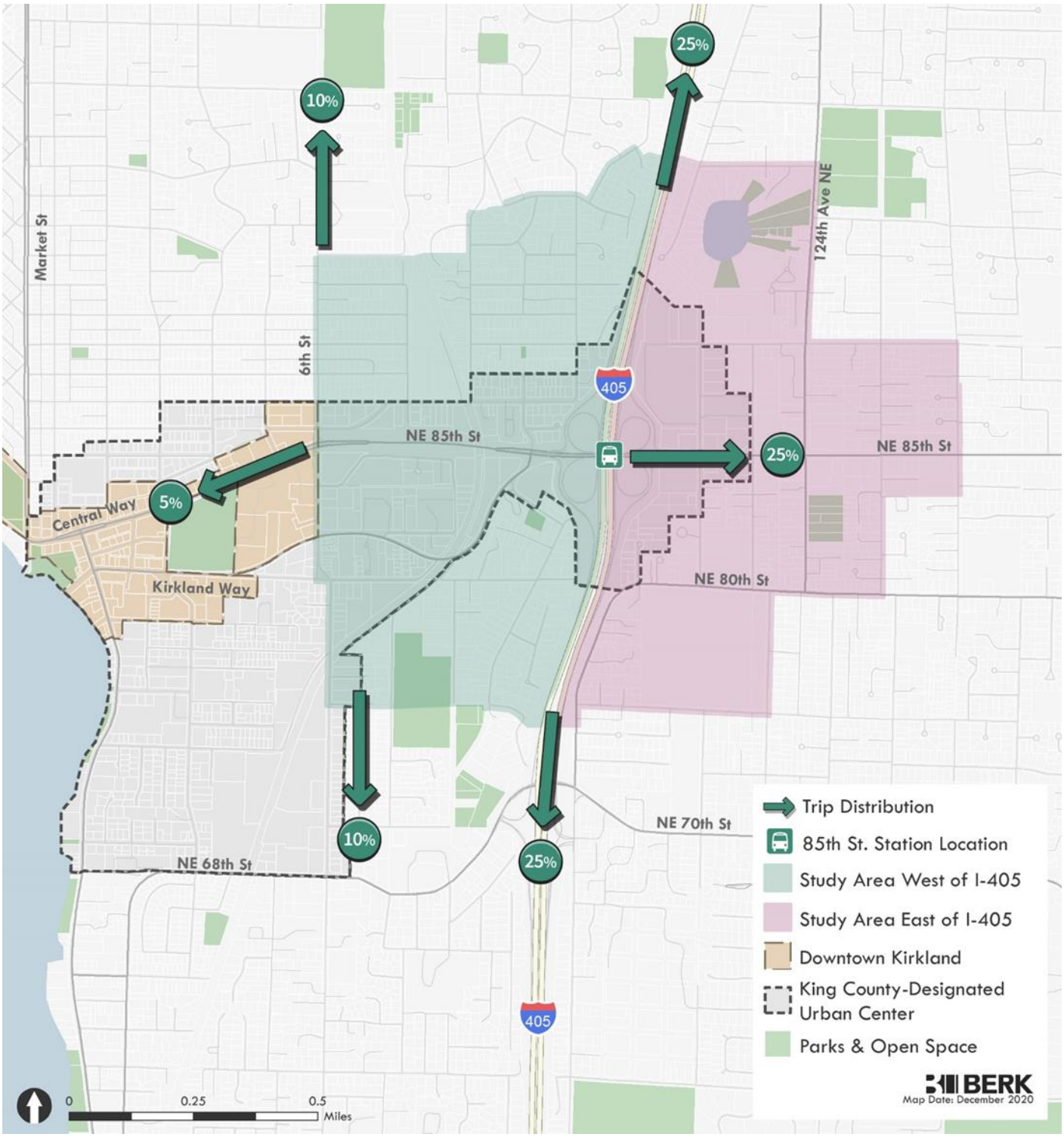
Alternative	PM Peak Hour Vehicle Trips	Net Change in Trip Generation Compared to No Action Alternative
Existing	4,559	-
No Action (2035 land use)	10,315	-
Alternative 2 (2044 land use)	17,601	7,286
Alternative 3 (2044 land use)	19,473	9,158

Source: Fehr & Peers, 2020.

Trip Distribution

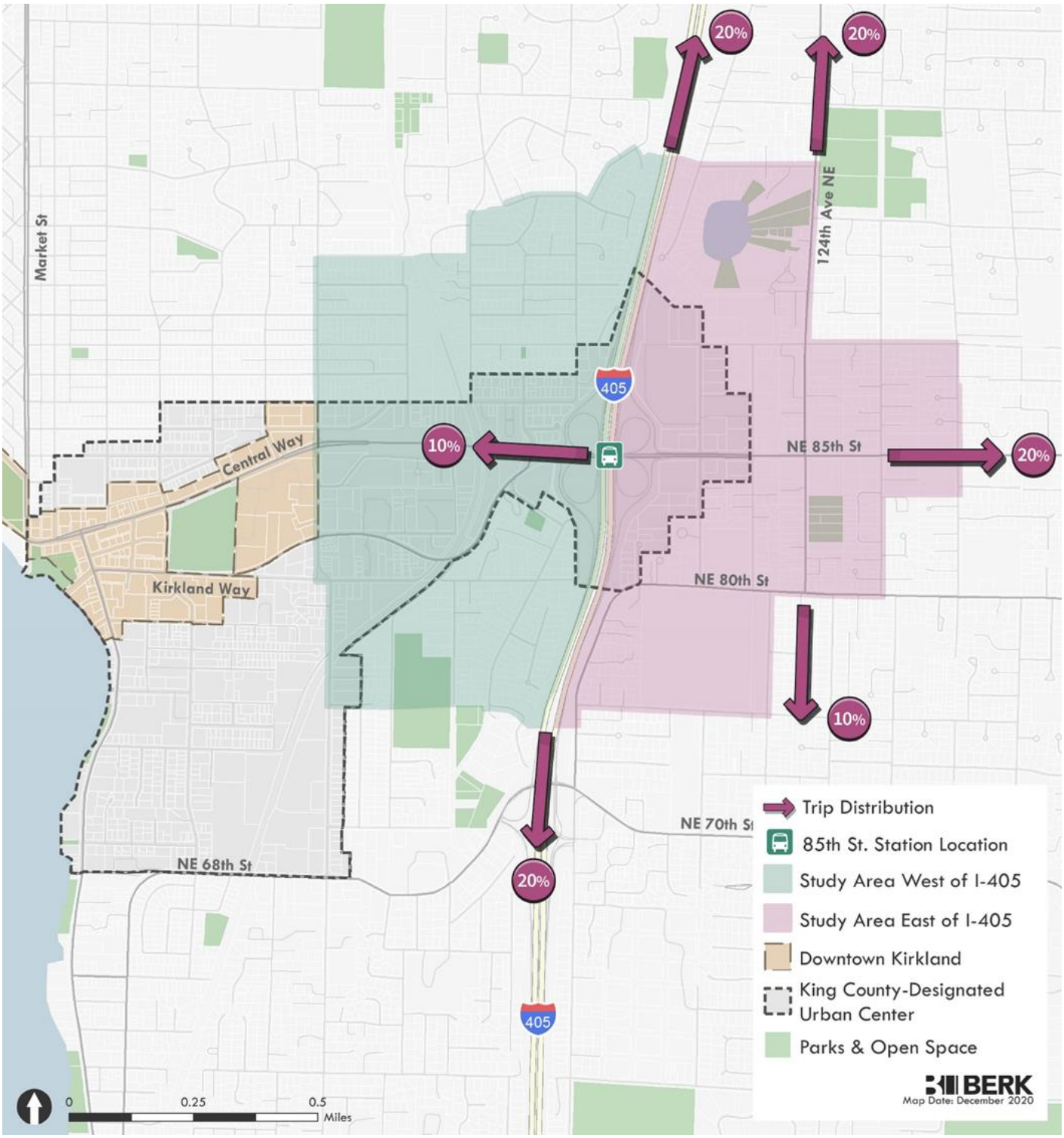
The BKR travel demand model was used to estimate the trip distribution of vehicle trips generated within the Study Area during the PM peak period in 2035, as shown in Exhibit 3-69 and Exhibit 3-70 . These trips were assigned to the transportation network as turning movement volumes at each of the study intersections using PTV Vistro software and then analyzed in the traffic operations model.

Exhibit 3-69. Trip Distribution West of I-405



Sources: Fehr & Peers, 2020; BERK, 2020.

Exhibit 3-70. Trip Distribution East of I-405



Sources: Fehr & Peers, 2020; BERK, 2020.

Traffic Operations Analysis

Traffic operations were analyzed using Synchro 10 software. The existing Synchro network was updated to reflect roadway modifications planned to be in place by 2035 as well as the forecasted vehicle volumes under each alternative. Signal timings for 2035 (phase splits and offsets for coordinated signals) were optimized to maximize the efficiency of the system based on the projected future year vehicle volumes. The signal timings were kept consistent between Alternative 1 No Action and both Action Alternatives. The roundabout at NE 85th Street & Kirkland Way/114th Ave NE was analyzed using SIDRA software following WSDOT's analysis protocol.

Thresholds of Significance

The following conditions would be considered to result in significant impacts for the two Action Alternatives:

Auto and Freight

- Vehicle LOS operates at LOS E or below at a study intersection that operated acceptably under Alternative 1 No Action or has a substantial increase in delay at a study intersection already expected to operate at or below LOS E under Alternative 1 No Action.[19]
- Queues from a downstream intersection expected to spill back to a study intersection that would not experience queues under Alternative 1 No Action or long queues not anticipated under Alternative 1 No Action that would require waiting at an intersection for several cycles before proceeding.

Transit

- Projected transit ridership would result in passenger loads exceeding King County Metro/Sound Transit guidelines on a route serving the Study Area that would operate acceptably under Alternative 1 No Action or increases the passenger load by at least 5% on a route that already exceeds the guidelines.
- Action Alternatives would preclude the transit upgrades identified in the Transit Implementation Plan.

Bike/Pedestrian

- Add bicycle or pedestrian demand to locations that lack facilities meeting City standards beyond the level anticipated under Alternative 1 No Action.

[19] Per the City's TIA Guidelines, which are intended for individual developments, intersections operating at LOS E or F may be defined as impacts depending on the project's proportional share of traffic. Because the scale of the action alternatives is much larger than an individual development, as shown in Exhibit 3-21, the action alternatives would exceed the 5% and 15% proportional share thresholds found in the TIA Guidelines. Therefore, the applicable threshold for significance for this EIS is LOS E.

Parking

– Result in on-street parking demand exceeding supply beyond the level anticipated under Alternative 1 No Action.

Safety

– Increases the collision rate at a study intersection compared to Alternative 1 No Action.

Impacts Common to All Alternatives

Exhibit 3-71 summarizes the significant impacts for each alternative, with auto and freight, transit, parking, and safety impacts expected under all three alternatives. These impacts are described in detail in the following sections.

Exhibit 3-71. Summary of Impacts: All Alternatives

Type of Impact	Alternative 1 No Action	Alternative 2	Alternative 3
Auto and Freight	LOS impacts at 2 intersections and queuing impacts	LOS impacts at 7 intersections and queuing impacts	LOS impacts at 8 intersections and queuing impacts
Transit	Study Area Impact for I-405 BRT North	Study Area Impact for Route 250 and I-405 BRT North	Study Area Impact for Route 250 and I-405 BRT North
Pedestrian & Bicycle	None	None	None
Parking	None	Study Area Impact	Study Area Impact
Safety	Study Area Impact	Study Area Impact	Study Area Impact

Source: Fehr & Peers, 2020.

No Action Alternative 1

Alternative 1 No Action serves as the baseline for the impact analysis of the Action Alternatives. It represents the operation of the transportation system if no zoning or network changes were made within the Study Area. However, growth would continue to occur under Alternative 1 No Action consistent with the existing zoning.

This section summarizes analysis results and environmental impacts of Alternative 1 No Action. Specifically, the following definitions are used to identify auto and freight impacts under Alternative 1 No Action:

– Vehicle LOS operates at LOS E or below at a study intersection.

– Queues from a downstream intersection expected to spill back to a study intersection.

An impact for transit is identified if the transit ridership projected under Alternative 1 No Action would result in passenger loads exceeding King County Metro/Sound Transit guidelines. An impact for pedestrians and bicycles is identified if Alternative 1 No Action would add bicycle and pedestrian demand to arterial and collector streets on school walk routes and on the highest scoring 10-minute neighborhood routes (as defined in the TMP) that do not have a sidewalk on at least one side of the street. Parking and safety impacts are discussed qualitatively.

Traffic Operations – Auto and Freight

Exhibit 3-72 and Exhibit 3-73 summarize the average vehicle delay for each study intersection. By 2035, traffic volumes would increase due to the land use growth that would occur within the Study Area and other parts of the city as well as regional growth. Therefore, delay at most intersections is expected to increase to some degree. Of the 10 study intersections, five are expected to drop by at least one LOS letter grade compared to existing conditions. Additionally, two of the study intersections are expected to operate at LOS E or F, which constitutes an impact. These include NE 85th St & 6th St (intersection 1) and NE 90th St & 124th Ave NE (intersection 8). The assumed transportation network changes that include currently planned and funded projects (i.e. transit queue jumps) are the main reason for the increase in delay at intersection 1 rather than land use growth.

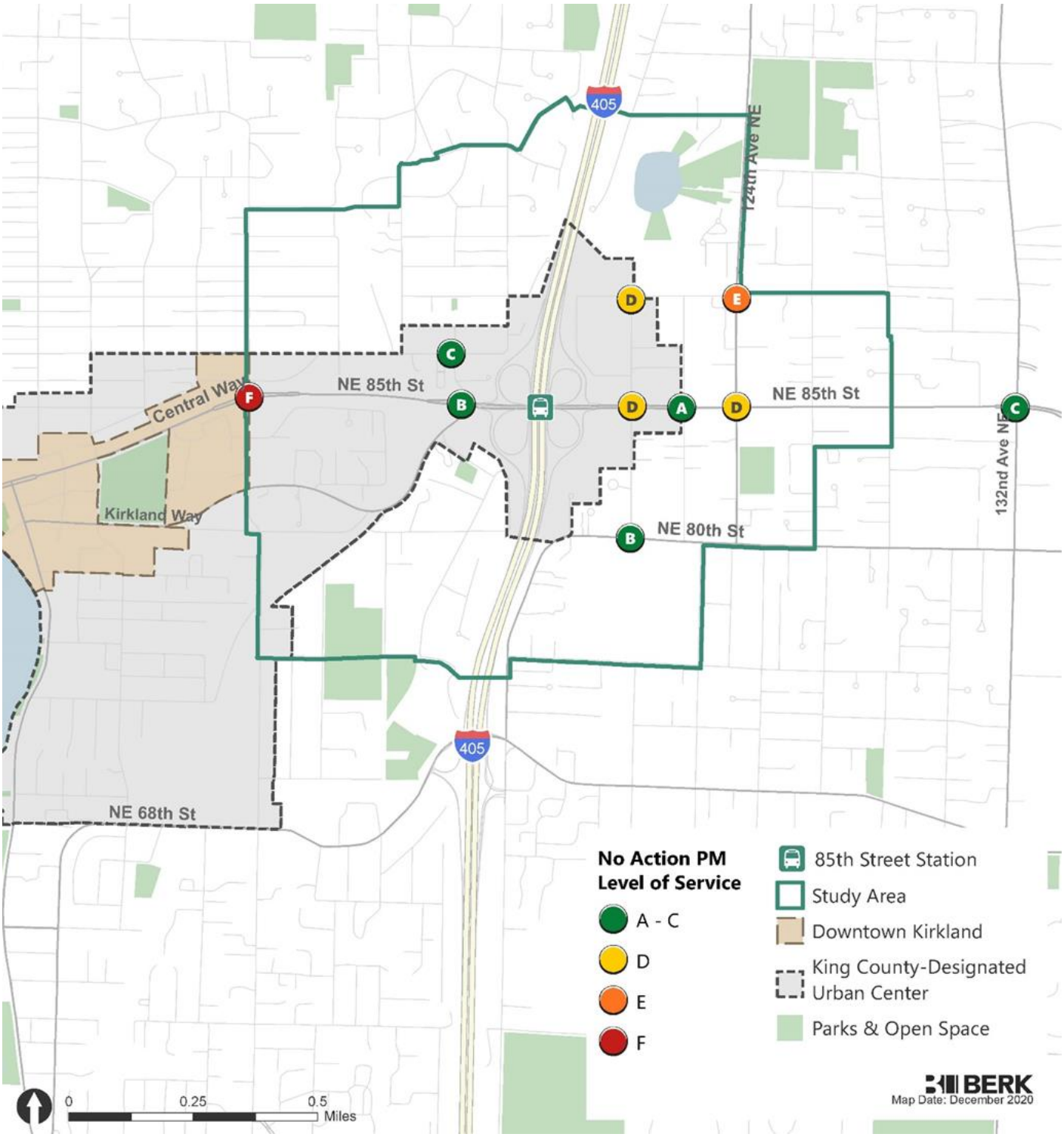
The 95th percentile queue at study intersections (as reported by the Synchro software) was reviewed to identify any potential queue spillback issues between study intersections. Given the amount of land use growth that would occur, queues are expected to exceed storage at all but two signalized study intersections (NE 80th St & 120th Ave NE and NE 85th St & 122nd Ave NE) and impact traffic throughout the Study Area, both on NE 85th Street and on minor streets. At the affected intersections, one or two movement types are affected (e.g. eastbound through movements or northbound left movements). Therefore, queuing impacts are expected under Alternative 1 No Action.

Exhibit 3-72. 2035 PM Peak Hour Intersection LOS and Delay, Alternative 1 No Action

ID	Intersection	Traffic Control	Existing LOS/Delay in seconds	Alternative 1 No Action LOS/Delay in seconds
1	NE 85th St & 6th St	Signal	D / 49	**F / 86***
2	NE 87th St & 114th Ave NE	All-way stop**	C / 21	C / 16^
3	NE 85th St & Kirkland Way/114th Ave NE	Roundabout***	D / 45	B / 12^
4	NE 90th St & 120th Ave NE	All-way stop	B / 11	D / 30
5	NE 85th St & 120th Ave NE	Signal	C / 22	D / 46
6	NE 80th St & 120th Ave NE	Signal	B / 11	B / 14
7	NE 85th St & 122nd Ave NE	Signal	A / 7	A / 6^^
8	NE 90th St & 124th Ave NE	Signal	C / 21	**E / 58**
9	NE 85th St & 124th Ave NE	Signal	D / 35	D / 42
10	NE 85th St & 132nd Ave NE	Signal	C / 28	C / 31

* Assumes a weighted average for the best-case operations scenario (no bus is in the queue jump) and the worst case operations scenario (bus is in queue jump blocking cars from making a right turn).
** Existing traffic control was a two-way stop control.
*** Existing traffic control was a signal and analysis was completed in Synchro. Roundabout analysis completed in SIDRA. WSDOT does not recommend the use of LOS as a comparative tool for SIDRA roundabout analysis but rather volume-to-capacity ratio. None of the approaches exceed WSDOT volume-to-capacity ratio threshold of 0.85.
^ Delay improves under Alternative 1 No Action because of the change to stop control type, as shown in Exhibit 3-3-9.
^^ Delay improves under Alternative 1 No Action because of the new eastbound through lane, as shown in Exhibit 3-3-9.
Source: Fehr & Peers, 2020.

Exhibit 3-73. Alternative 1 No Action: Intersection Level of Service



Sources: Fehr & Peers, 2020; BERK, 2020.

Transit

Several routes are expected to provide transit service to riders in the Study Area under Alternative 1 No Action including the Bus Rapid Transit that will run along I-405 and frequent transit service on NE 85th Street. An impact is identified under Alternative 1 No Action, as transit ridership on the I-405 BRT North is expected to result in passenger loads exceeding King County Metro/Sound Transit guidelines. The PM peak northbound transit load for the I-405 BRT is expected at the Bellevue Transit Center, and buses would be crowded (with a ratio of passengers to crowding threshold of 1.27) before reaching the 85th Street station. The transit analysis estimates that approximately one-third of northbound transit trips from the Study Area would use the I-405 BRT. Under Alternative 1 No Action, roughly 10 riders per bus trip would board at the 85th Station during the peak hour, contributing to an already crowded bus and increasing the crowding ratio to 1.44. To avoid crowded buses, some riders may shift their commute time slightly to avoid the peak period. Transit agencies also regularly monitor the passenger load factor and adjust scheduling to best accommodate ridership demand.

Pedestrian and Bicycle

Several planned improvements to the pedestrian and bicycle network in the Study Area are anticipated under Alternative 1 No Action, as illustrated in Exhibit 3-65. Some of the key projects identified under this alternative include but are not limited to:

- A shared-use path on the south side of NE 85th Street from downtown Kirkland to the NE 85th Street station
- New bicycle and pedestrian connections in the WSDOT right-of-way at I-405, such as a bicycle and pedestrian path connecting the station pick up/drop off lot to NE 85th Street
- Bicycle greenways along 128th Avenue NE and Kirkland Avenue/116th Avenue NE/NE 75th Street/130th Avenue NE
- Bicycle infrastructure along Kirkland Way between 6th Street and NE 85th Street
- Formalized pedestrian infrastructure connecting the Cross Kirkland Corridor to the intersection of NE 85th Street & Kirkland Way

Alternative 1 No Action adds bicycle and pedestrian demand throughout the Study Area. There are some school walk routes and streets with high 10-minute walkability scores that are arterials or collectors and lack sidewalks on at least on side of the street. These include:

- Portions of 120th Avenue NE between NE 80th Street and NE 90th Street
- Portions of 122nd Avenue NE between NE 80th Street and NE 90th Street
- Portions of NE 90th Street east of 124th Avenue NE have incomplete or no sidewalks

However, Alternative 1 No Action is anticipated to result in an improved pedestrian and bicycle traveling experience on these roadways. Because the infrastructure under this Alternative is expected to facilitate the additional bicycle and pedestrian demand, no significant adverse impacts to pedestrians or bicycles are identified under Alternative 1 No Action.

Parking

Some areas of current parking supply could be redeveloped under Alternative 1 No Action. However, it is anticipated that developers would maintain or build adequate supply for their new needs and comply with City parking requirements. Because it is expected that developers will continue to provide parking supply as dictated by market need, no significant adverse parking impacts are expected under Alternative 1 No Action.

Safety

Traffic volumes within the Study Area are projected to increase by 2035. Given the extent of land use growth, traffic volume increases, and queueing that is expected under Alternative 1 No Action, there is potential for an increased number of collisions and increased collision rates within the Study Area. More stop and go traffic may increase rear end collisions, though these would likely occur at slow speeds, minimizing increases in serious injury and fatal collisions. Planned improvements to the pedestrian and bicycle network as described above would provide some safety benefits, but may not offset new safety challenges. Therefore, safety impacts are identified under Alternative 1 No Action.

Alternative 2

This section summarizes analysis results and impacts of Alternative 2.

Traffic Operations – Auto and Freight

Exhibit 3-74 and Exhibit 3-75 summarize the average vehicle delay for each study intersection compared to Alternative 1 No Action. Alternative 2's land use growth would result in large increases in vehicle volumes compared to Alternative 1 No Action. This alternative would have the same fundamental vehicular transportation network as Alternative 1 No Action.

As defined above, impacts are evaluated in comparison to Alternative 1 No Action. Of the 10 study intersections, seven are expected to operate at LOS E or F under Alternative 2, which constitutes an impact. Additionally, while the

roundabout at NE 85th St & Kirkland Way/114th Ave NE (intersection 3) is expected to operate at LOS B, two of the four approaches exceed WSDOT's volume-to-capacity ratio threshold of 0.85, but none are overcapacity (v/c>1).

The 95th percentile queue at study intersections (as reported by the Synchro software) was reviewed to identify any potential queue spillback issues between study intersections. Given the amount of land use growth that would occur, queues are expected to exceed storage and impact traffic throughout the Study Area. Unlike Alternative 1 No Action, the queues affect most movement types with high volumes.

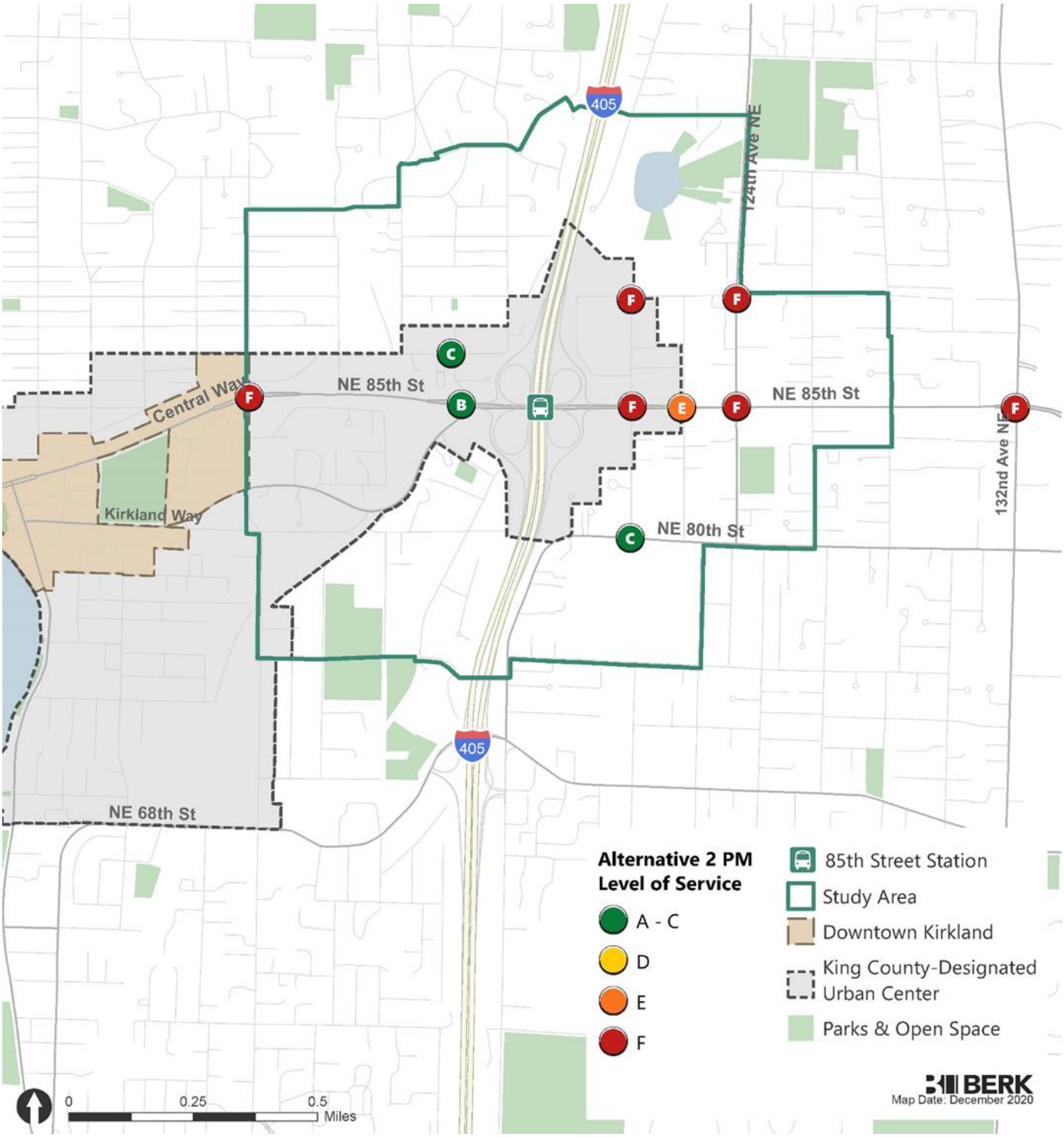
The increased congestion on NE 85th Street would likely impact traffic operations at the redesigned interchange with I-405. The vehicular queuing along NE 85th Street is anticipated to extend through the proposed interchange roundabout and cause substantial queuing on the freeway off-ramps, with the potential for those queues to spill back onto the freeway mainline.

Exhibit 3-74. 2044 PM Peak Hour Intersection LOS and Delay, Alternative 2

ID	Intersection	Traffic Control	Alternative 1 No Action LOS/Delay in seconds^^	Alternative 2 LOS/Delay in seconds^^
1	NE 85th St & 6th St	Signal	F / 86^	**F / 119^**
2	NE 87th St & 114th Ave NE	All-way stop	C / 16	C / 18
3	NE 85th St & Kirkland Way/114th Ave NE	Roundabout*	B / 12	B / 15*
4	NE 90th St & 120th Ave NE	All-way stop	D / 30	**F / >150**
5	NE 85th St & 120th Ave NE	Signal	D / 46	**F / 114**
6	NE 80th St & 120th Ave NE	Signal	B / 14	C / 32
7	NE 85th St & 122nd Ave NE	Signal	A / 6	**E / 61**
8	NE 90th St & 124th Ave NE	Signal	E / 58	**F / >150**
9	NE 85th St & 124th Ave NE	Signal	D / 42	**F / >150**
10	NE 85th St & 132nd Ave NE	Signal	C / 31	**F / 127**

*Roundabout analysis completed in SIDRA. WSDOT does not recommend the use of LOS as a comparative tool for SIDRA roundabout analysis. Two of the four approaches exceed WSDOT volume-to-capacity ratio threshold of 0.85, but none are overcapacity (v/c>1).
^ Assumes a weighted average for the best-case operations scenario (no bus is in the queue jump) and the worst-case operations scenario (bus is in queue jump blocking cars from making a right turn).
^^ Delays greater than 150 seconds (two and a half minutes) are not shown, as drivers are likely to seek out alternate routes instead of waiting at an intersection with extremely long delays.

Source: Fehr & Peers, 2020.Exhibit 3-75. Alternative 2: Intersection Level of Service



Sources: Fehr & Peers, 2020; BERK, 2020.

Transit

Alternative 1 No Action and Alternative 2 are assumed to have the same public transit service current and planned transit service. While Alternative 2 would not preclude the transit upgrades identified in Kirkland's Transit Implementation Plan, adverse passenger load impacts are identified for Route 250[20] and I-405 BRT North. Alternative 2 is expected to increase northbound passenger loads by at least 5% on I-405 BRT North, which would already have high passenger loads under Alternative 1 No Action. Roughly 21 riders per bus trip would board at the 85th Station during the peak hour, contributing to an already crowded bus and increasing the passenger to crowding threshold ratio to 1.60. Route 250 is expected to operate with acceptable passenger loads under Alternative 1 No Action, but would result in eastbound passenger loads exceeding King County Metro/Sound Transit guidelines under Alternative 2. To avoid crowded buses, some riders may shift their commute time slightly to avoid the peak period. Transit agencies also regularly monitor the passenger load factor and adjust scheduling to best accommodate ridership demand.

Pedestrian and Bicycle

Alternative 2 would include the pedestrian and bicycle projects identified for Alternative 1 No Action, as well as additional improvements along 122nd Avenue NE and 4th Avenue/5th Avenue as shown in Exhibit 3-76. This alternative would also include a bicycle and pedestrian bridge over I-405 at NE 90th Street. Therefore, rather than preclude any pedestrian or bicycle improvements, Alternative 2 is expected to provide additional benefits. Because future development is expected to facilitate additional demand and meet the City design standards related to bicycle and pedestrian facility accommodations, no significant adverse impacts to pedestrian or bicycle travel are identified under Alternative 2.

Parking

Alternative 2 assumes revised City parking code to mandate reduced parking supply for new developments (as described in Exhibit 2-10). This would help discourage vehicle travel and make carpooling, vanpooling, transit, walking, biking, and teleworking more attractive options for accessing the Study Area. While it is anticipated that developers would build adequate supply for their new needs and comply with City parking requirements, with the increase in development expected under this Alternative, parking demand would still be substantially higher than Alternative 1 No Action, with people driving to access

[20] This analysis used the data in the 2042 Sound Transit Model for Route 248, as the model does not reflect recent route numbering changes.

new offices, retail, residential, and Bus Rapid Transit. This would likely result in people circling while looking for parking within the new development buildings, on street, and in the surrounding neighborhoods on congested streets. Therefore, significant adverse parking impacts are expected under Alternative 2.

Some of the impacts may be short-term while individual developments are completed (causing on-street parking demand to exceed supply). It is expected that some of the demand for parking may ease over time; as people experience congestion and limited parking, some will change their travel behavior and shift to non-auto modes. However, it is unlikely that this mode shift would fully address the parking deficiency given the magnitude of trips anticipated under Alternative 2.

Safety

Traffic volumes within the Study Area are expected to increase under Alternative 2 compared to Alternative 1 No Action, resulting in intersections experiencing higher volumes and queuing due to increase in land use. With higher volumes, there is potential for an increased number of collisions and increased collision rates within the Study Area. More stop and go traffic may increase rear end collisions, though these would likely occur at slow speeds minimizing increases in serious injury and fatal collisions. Planned improvements to the pedestrian and bicycle network as described above would provide some safety benefits, but may not offset new safety challenges. Therefore, safety impacts are identified under Alternative 2.

Alternative 3

This section summarizes analysis results and impacts of Alternative 3.

Traffic Operations – Auto and Freight

Exhibit 3-76 and Exhibit 3-77 summarize the average vehicle delay for each study intersection compared to Alternative 1 No Action. Alternative 3's land use growth would result in even larger increases in vehicle volumes compared to Alternative 2. This alternative would have the same fundamental vehicular transportation network as Alternative 1 No Action and Alternative 2.

As defined above, impacts are evaluated in comparison to Alternative 1 No Action. Of the 10 study intersections, eight are expected to operate at LOS E or F under Alternative 3, which constitutes an impact. Additionally, while the roundabout at NE 85th St & Kirkland Way/114th Ave NE (intersection 3) is expected to operate at LOS D, three of the four approaches exceed WSDOT volume-to-capacity ratio threshold of 0.85 and two of these are overcapacity (v/c>1).

The 95th percentile queue at study intersections (as reported by the Synchro software) was reviewed to identify any potential queue spillback issues between study intersections. Given the amount of land use growth that would occur, queues exceed storage and impact traffic throughout the Study Area. Unlike Alternative 1 No Action, the queues affect most movement types given high volumes. In comparison with Alternative 2, which is estimated to see significant queuing impacts throughout the entire Study Area, this alternative would generate an additional 2,000 vehicle trips during the peak hour, which would add to already significant queues.

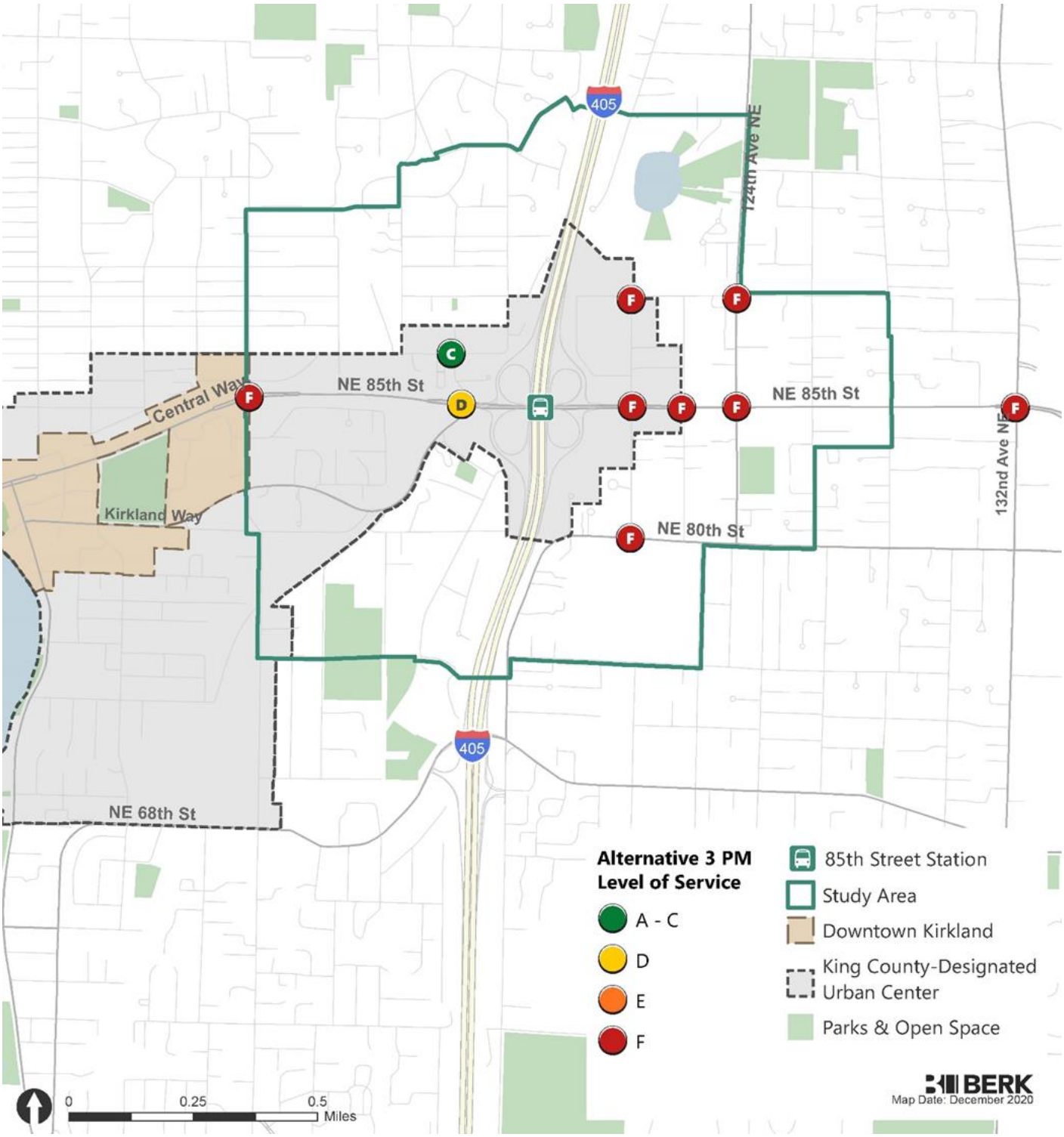
The increased congestion on NE 85th Street would likely impact traffic operations at the redesigned interchange with I-405. The vehicular queuing along NE 85th Street is anticipated to extend through the proposed interchange roundabout and cause substantial queuing on the freeway off-ramps, with the potential for those queues to spill back onto the freeway mainline.

Exhibit 3-76. 2044 PM Peak Hour Intersection LOS and Delay, Alternative 3

ID	Intersection	Traffic Control	Alternative 1 No Action LOS/Delay in seconds ^^	Alternative 3 LOS/Delay in seconds ^^
1	NE 85th St & 6th St	Signal	F / 86^	**F / 138^**
2	NE 87th St & 114th Ave NE	All-way stop	C / 16	C / 18
3	NE 85th St & Kirkland Way/114th Ave NE	Roundabout*	B / 12	D / 38*
4	NE 90th St & 120th Ave NE	All-way stop	D / 30	**F / >150**
5	NE 85th St & 120th Ave NE	Signal	D / 46	**F / >150**
6	NE 80th St & 120th Ave NE	Signal	B / 14	**F / 95**
7	NE 85th St & 122nd Ave NE	Signal	A / 6	**F / 102**
8	NE 90th St & 124th Ave NE	Signal	E / 58	**F / >150**
9	NE 85th St & 124th Ave NE	Signal	D / 42	**F / >150**
10	NE 85th St & 132nd Ave NE	Signal	C / 31	**F / >150**

Source: Fehr & Peers, 2020.
*Roundabout analysis completed in SIDRA. WSDOT does not recommend the use of LOS as a comparative tool for SIDRA roundabout analysis. Three of the four approaches exceed WSDOT volume-to-capacity ratio threshold of 0.85 and two of these are overcapacity (v/c>1).
^ Assumes a weighted average for the best-case operations scenario (no bus is in the queue jump) and the worst-case operations scenario (bus is in queue jump blocking cars from making a right turn).
^^ Delays greater than 150 seconds (two and a half minutes) are not shown, as drivers are likely to seek out alternate routes instead of waiting at an intersection with extremely long delays.

Exhibit 3-77. Alternative 3: Intersection Level of Service



Sources: Fehr & Peers, 2020; BERK, 2020.

Transit

Alternative 1 No Action and Alternative 3 are assumed to have the same public transit service. While Alternative 3 would not preclude the transit upgrades identified in Kirkland's Transit Implementation Plan, adverse passenger load impacts are identified for Route 250 and I-405 BRT North. Alternative 3 is expected to increase both northbound and southbound passenger loads by at least 5% on I-405 BRT North, which would already have high passenger loads under Alternative 1 No Action. Roughly 23 riders per bus trip would board at the 85th Station in the northbound direction during the peak hour, contributing to an already crowded bus and increasing the passenger to crowding threshold ratio to 1.63. Approximately 30 southbound riders would board at the 85th Station, increasing the passenger to crowding threshold ratio to 1.05. Route 250 is expected to operate acceptably under Alternative 1 No Action, but will result in eastbound passenger loads exceeding King County Metro/Sound Transit guidelines under Alternative 3. To avoid crowded buses, some riders may shift their commute time slightly to avoid the peak period. Transit agencies also regularly monitor the passenger load factor and adjust scheduling to best accommodate ridership demand.

Pedestrian and Bicycle

In addition to the pedestrian and bicycle projects identified for Alternative 1 No Action and Alternative 2, Alternative 3 would include new east/west street connections east of I-405 and formalized bicycle infrastructure connecting the Cross Kirkland Corridor to the intersection of NE 85th Street & Kirkland Way, as shown in Exhibit 3-67. Therefore, rather than preclude any pedestrian or bicycle improvements, Alternative 3 is expected to provide additional benefits. Because future development is expected to facilitate additional demand and meet the City design standards related to bicycle and pedestrian facility accommodations, no significant adverse impacts to pedestrian or bicycle travel are identified under Alternative 3.

Parking

Alternative 3 assumes the same parking management strategies as Alternative 2, though it also assumes a parking structure in the northeast quadrant of the Study Area for office, retail, and potentially transit use, as shown in Exhibit 3-67. While it is anticipated that developers would build adequate supply for their new needs and comply with City parking requirements, with the increase in development expected under this Alternative, parking demand would still be substantially higher than Alternative 1 No Action, with people driving to access new offices, retail, residential, and Bus Rapid Transit. This would likely result in people circling while looking for parking within the new development buildings, on street, and in

the surrounding neighborhoods on congested streets. Therefore, significant adverse parking impacts are expected under Alternative 3.

Some of the impacts may be short-term while individual developments are completed (causing on-street parking demand to exceed supply). It is expected that some of the demand for parking may ease over time; as people experience congestion and limited parking, some will change their travel behavior and shift to non-auto modes. However, it is unlikely that this mode shift would fully address the parking deficiency given the magnitude of trips anticipated under Alternative 3.

Safety

Traffic volumes within the Study Area are expected to increase under Alternative 3 compared to Alternative 1 No Action, resulting in intersections experiencing higher volumes and queuing due to increase in land use. With higher volumes, there is potential for an increased number of collisions and increased collision rates within the Study Area. More stop and go traffic may increase rear end collisions, though these would likely occur at slow speeds minimizing increases in serious injury and fatal collisions. Planned improvements to the pedestrian and bicycle network as described above would provide some safety benefits, but may not offset new safety challenges. Therefore, safety impacts are identified under Alternative 3.

3.6.3 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 2 and 3 in the previous section. These include significant impacts for auto and freight, transit, parking, and safety.

Incorporated Plan Features

Managing demand for auto travel is an important part of mitigating the traffic congestion impacts identified in this SEIS. The City of Kirkland currently incorporates a number of Transportation Demand Management (TDM) programs and strategies to encourage reduced vehicle travel by carpooling, vanpooling, transit, walking, biking, and teleworking. Policy T-3.4 and Policy T-3.5 in Kirkland's Comprehensive Plan outline specifics on the City's Commute Trip Reduction program and Transportation Management Plan requirements for developers and property owners. These strategies are discussed further under "Regulations and Commitments." The City has also utilized the following TDM strategies and programs: transit subsidies requirement for developers/property owners, Orca

business passport program, vehicle ownership limitations through parking agreements and management for multifamily development, and guaranteed ride home. These strategies could be utilized more holistically with transit-oriented development in the Station Area.

Also, the Action Alternatives assume a few changes that would encourage reduced vehicle travel in the Study Area, including:

- Improvements to the bicycle and pedestrian networks through new and/or wider sidewalks, bike lanes, cycle tracks, trails, and street connections.
- Revised parking code that reduces the amount of parking new developments must provide and requires parking monitoring.

Regulations and Commitments

The City of Kirkland has requirements on TDM programs and strategies:

- 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. As more businesses subject to CTR locate in the Study Area, it is expected that decreases in single-occupancy vehicle (SOV) commute rates would result.
- Transportation Management Plans (TMPs) are required for property owners of newly constructed commercial buildings at the direction of the City. TMPs are designed to reduce automobile trips and their traffic impacts on city facilities. TMP programs are generally geared toward large developments; however, they could apply to smaller developments and residential buildings as well. For instance, TMPs are required at adjacent sites owned and developed separately where there may be several employers, none of which by themselves are affected by the CTR law or the City TMP requirements, but together constitute a sizeable population of employees. However, the TMP program is under funded and needs a funding mechanism to be able to effectively manage future TMPs.

The TDM programs discussed here would be implemented regardless of which land use alternative is selected and 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 SEIS.

Other Proposed Mitigation Measures

The City could consider mitigating the expected transportation impacts in a variety of ways including changes to city policies, physical improvements, and programmatic measures. These approaches could be pursued individually or in combination with one another. However, the NE 85th Street Corridor would likely require all three measures due to the extent of the impacts along that corridor.

Level of Service Policy

The City could approach mitigation through revision of its LOS policy—in particular, creating a separate LOS standard that would apply at designated intersections in the Study Area (and potentially other areas of the City outside the Study Area) to be consistent with the transportation characteristics of urban areas. Multiple cities in the Puget Sound designate varying LOS standards based on neighborhood or corridor context.

Intersection-Specific Improvements

Another potential approach to reduce the auto and freight 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 study intersections that are operating at or below LOS E under Alternatives 2 and 3:

- Add an additional eastbound through lane on NE 85th Street east of 122nd Avenue NE.
- Adjust signal settings by optimizing cycle lengths and/or splits and using protected left turns at locations with high volumes.
- Extend the length of turn pockets where feasible to help reduce spillback into the through lanes.
- At NE 90th Street & 120th Avenue NE (intersection 4), add a traffic signal and a westbound left turn lane.
- At NE 80th Street & 120th Avenue NE (intersection 6), add a southbound left turn lane.
- At NE 90th Street & 124th Avenue NE (intersection 8), add a northbound and southbound lane on 124th Avenue NE, restripe the eastbound lanes to be an eastbound through/left lane and a right turn pocket, and change the signal settings to a split phase.
- At NE 85th Street & 124th Avenue NE (intersection 9), add a southbound left turn lane.

Exhibit 3-78 shows how much these improvements help to reduce delay under Alternatives 2 and 3. However, these intersections would still have substantially more delay than Alternative 1 No Action, so other programmatic or policy

measures would be required to fully mitigate the impacts. The improvements were tested from a traffic operations perspective, but additional analysis would be necessary to refine the details of these improvements, including design feasibility and necessary right-of-way.

Another measure the City could consider implementing is additional intelligent transportation systems (ITS) elements into the corridor beyond the currently interconnected signal system that functions based on a traffic responsive timing pattern. Additional treatments could include implementing performance monitoring software and a more advanced adaptive traffic signal timing system.

Additionally, it is worth noting that the analysis in the SEIS provides a conservative estimate of the growth in traffic volumes within the Study Area. Due to the forecasted increase in delay and queuing along NE 85th Street, it is likely that drivers who are not stopping within the Study Area would choose alternate routes. This could include trips within the City of Kirkland or trips for travelers from other areas that are entering and exiting I-405 via the NE 85th Street interchange.

The lack of east-west travel routes across I-405 also causes vehicle trips to be concentrated along NE 85th Street. This means that local trips within the City of Kirkland mix with a significant amount of regional traffic that is accessing I-405. Creating additional east-west vehicle connections across the freeway (not proposed or recommended) and increasing the network density would spread out the trips and reduce the congestion along NE 85th Street.

Exhibit 3-78. Alternative 2 and 3: 2044 PM Peak Hour LOS and Delay, With and Without Mitigations

				Alternative 2 LOS/Delay in seconds^		Alternative 3 LOS/Delay in seconds^	
ID	Intersection	Traffic Control	Alternative 1 No Action	No Mitigation	With Intersection Improvements	No Mitigation	With Intersection Improvements
1	NE 85th St & 6th St	Signal	**F / 86***	**F / 119^**	n/a	**F / 138^**	n/a
2	NE 87th St & 114th Ave NE	All-way stop	C / 16^	C / 18	n/a	C / 18	n/a
3	NE 85th St & Kirkland Way / 114th Ave NE	Roundabout*	B / 12^	B / 15*	n/a	D / 38*	n/a
4	NE 90th St & 120th Ave NE	All-way stop	D / 30	**F / >150**	**F / 122**	**F / >150**	**F / >150**
5	NE 85th St & 120th Ave NE	Signal	D / 46	**F / 114**	n/a	**F / >150**	n/a
6	NE 80th St & 120th Ave NE	Signal	B / 14	C / 32	C / 21	**F / 95**	C / 33
7	NE 85th St & 122nd Ave NE	Signal	A / 6^^	**E / 61**	n/a	**F / 102**	n/a
8	NE 90th St & 124th Ave NE	Signal	**E / 58**	**F / >150**	**F / 83**	**F / >150**	**E / 73**
9	NE 85th St & 124th Ave NE	Signal	D / 42	**F / >150**	**F / >150**	**F / >150**	**F / >150**
10	NE 85th St & 132nd Ave NE	Signal	C / 31	**F / 127**	**E / 65**	**F / >150**	**F / 150**

n/a = no intersection improvements
^ Delays greater than 150 seconds (two and a half minutes) are not shown, as drivers are likely to seek out alternate routes instead of waiting at an intersection with extremely long delays.
* Roundabout analysis completed in SIDRA. WSDOT does not recommend the use of LOS as a comparative tool for SIDRA roundabout analysis. Three of the four approaches exceed WSDOT volume-to-capacity ratio threshold of 0.85 and two of these are overcapacity (v/c>1).
Source: Fehr & Peers, 2020

Travel Demand Management (TDM) and Parking Strategies

Research by the California Air Pollution Control Officers Association (CAPCOA), which is composed of air quality management districts in that state, has shown that implementation of TDM programs can substantially reduce vehicle trip generation, which in turn reduces congestion for transit, freight, and autos. The specific measures described below are all potential projects that the City could consider to modify or expand current strategies:

- Unbundle parking to separate parking costs from total property cost, allowing buyers or tenants to forgo buying or leasing parking spaces if they do not park a car.
- Revise parking code to reduce the amount of parking new developments must provide, or implement parking maximums to further reduce the amount of parking supply in the Study Area beyond what is assumed under Alternatives 2 and 3. This would limit the number of parking spaces which can be built with new development.
- Implement managed on-street parking strategies (e.g. designate special use zone for activities such as loading/unloading or emergencies, implement time restricted parking, and charge for parking).

- Provide shared off-street parking with new developments.
- Charge for parking off-street.
- Implement requirements for robust monitoring and management of parking and the TDM measures in the Study Area to ensure that people are not parking in the surrounding neighborhood to avoid these parking management measures.
- Provide private shuttle service as a first mile/last mile solution to make the 85th Street Station more accessible from Downtown Kirkland, the Google campus, Kirkland Urban, and other destinations, and to provide an attractive transportation alternative for locations that are less served by fixed-route transit. Two shuttle routes should be explored – one to Downtown Kirkland and Kirkland Urban using NE 87th Street/7th Avenue and 5th Street, and one that goes to the Google Campus and shopping center at 108th Avenue NE & NE 68th Street using the Cross Kirkland Corridor. This could start as a pilot program in partnership with Uber or Lyft to provide subsidized rides to gauge demand for a shuttle.
- Encourage or require transit pass subsidies from developers/property owners.
- Encourage or require transit pass provision programs for residents— King County Metro has a Passport program for multifamily housing that is similar to its employer-based Passport program. The program discounts transit passes purchased in bulk for residences of multifamily properties.
- Expand upon Kirkland's Green Trip program to utilize commute marketing programs to advertise different commuting options and encourage walking, biking, transit use, carpooling, vanpooling, or other means of travel.
- Utilize an Emergency Ride Home program to provide a taxi voucher or other way for employees to travel home if an emergency or unexpected late work makes them miss their normal transit, carpool, or bike ride home.
- Partner with Transportation Network Companies (TNCs) such as Uber or Lyft to provide pooled ridesharing options, ideally as a last-mile connection to transit or as an aspect of an Emergency Ride Home program.
- Accommodate bicyclists by providing secure, covered and convenient bicycle parking at office and residential buildings; showers and lockers at offices; and public repair stations.
- Launch a bikeshare or other micromobility system in Kirkland.
- Utilize a Ridematch Program to assist potential carpoolers in finding other individuals with similar travel routes. These may be open or closed systems, but generally a larger population will have more potential matches.

Should the City of Kirkland move forward with all the strategies outlined above, Fehr & Peers' TDM+ tool estimates that office trips in the Study Area would decrease by 14 to 21%, residential trips by 19 to 23%, and retail trips by 11 to 17%, as shown in

Exhibit 3-79. The parking pricing and supply strategies contribute the most to these reductions. It was assumed that parking supply would be reduced by 20% as a result of implementing parking maximums.[21]

Exhibit 3-79. Trip Reduction from Transportation Demand Management Strategies

TDM Strategy	Office	Residential	Retail
Parking			
▪ Parking pricing	6 – 11%	6 – 11%	6 – 11%
▪ Unbundled parking	---	Up to 8%	---
▪ Reduced supply	Up to 9%	Up to 9%	Up to 9%
Transit			
▪ Transit subsidies for employees and residents	Up to 5%	Up to 5%	---
▪ Last mile private shuttles	1 – 7%	Up to 9%	Up to 1%
Commute			
▪ Marketing campaigns	2 – 16%	3 – 21%	Up to 3%
▪ Emergency Ride Home Program	Up to 1%	---	---
▪ TNC partnerships	Up to 3%	---	Up to 1%
Bike/Walk	Up to 1%	Up to 1%	Up to 1%
▪ Secure parking			
▪ Showers & lockers			
▪ Public repair stations			
▪ Bikeshare system			
Rideshare	Up to 6%	Up to 6%	Up to 6%
▪ Ridematch Program			
Total of all Measures	**14 - 21%***	**19 - 23%***	**11 - 17%***

* Total trip reduction is not a simple sum of all the strategies since many of the strategies are complementary.
Source: Fehr & Peers, 2020.

Implementing the TDM strategies described above in addition to the intersection-specific improvements would help further reduce trips, as shown in Exhibit 3-79, but a separate LOS standard for the Study Area would likely still be necessary to fully mitigate the impacts at all the study intersections.

Transit Improvements

Significant impacts to transit were identified in the Study Area for Route 250 and the I-405 Stride BRT North under both Alternatives 2 and 3. These impacts are due to forecasted ridership exceeding load factors established by King County Metro and Sound Transit. To address this impact, the City of Kirkland could coordinate

[21] One study found that at five Transit Oriented Development sites, parking supply is 15-35% higher than peak parking demand, so a 20% reduction is a conservative estimate.

with King County Metro and Sound Transit to adjust their service levels through their regular service revisions as transit demand increases in the Study Area.

The City of Kirkland could also require that all new transit stops are designed to minimize delay and maximize comfort by providing convenient loading and access at all bus doors and necessary sidewalk width to accommodate future stop amenities such as benches, transit shelters and trash receptacles.

Safety Improvements

Significant impacts to safety were identified in the Study Area due to higher vehicle volumes and the resulting queueing throughout the Study Area and on the I-405 off ramps. The Intersection-Specific Improvements and TDM strategies described above will help reduce delays, which would help improve safety.

- Provide continuous pedestrian scale streetlighting along corridors within transit-oriented development areas.
- Design streets to promote slower vehicle travel speeds and awareness for the most vulnerable users of the street system, pedestrians and cyclists, during all times of the day by implementing treatments, such as those identified in the *NACTO Urban Street Design Guide*.
- Ensure all new uncontrolled crosswalks are constructed with treatments that bring awareness to drivers regarding yielding to cross pedestrians, including applying the *USDOT FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations*.

The City should also monitor safety through its crash reporting system and Vision Zero program and consider additional improvements at the study intersections as needed.

Land Use Mix and Amount

The City could create a Preferred Alternative with a different amount and mix of the studied office, retail, and residential land uses. In combination with TDM and capital improvements, an alternative land use mix and level could help realize City transportation LOS standards. For example, the City could start with Alternative 2 but reduce office growth levels and consider its desired balance with residential and retail uses. Bringing office growth lower and closer in balance with residential uses could increase the internal capture of trips and reduce the net increase in trips on the system.

3.6.4 Significant Unavoidable Adverse Impacts

This section identifies significant adverse impacts for auto and freight, transit, parking, and safety under both Action Alternatives.

The auto, freight, and safety impacts are anticipated to be reduced by implementing a range of possible mitigation strategies such as those discussed in 3.3.3 Mitigation Measures. In addition to geometric transportation capacity improvements, the City could manage demand using policies, programs, and investments aimed at shifting travel to non-SOV modes. However, even with some combination of these potential mitigation measures, queueing would likely still be an issue throughout the Study Area and on the I-405 off ramps, which would also influence safety. Therefore, significant unavoidable adverse impacts are expected for auto, freight, and safety.

With some combination of the potential mitigation measures outlined in the previous chapter, the magnitude of the transit impacts could be mitigated to a less-than-significant level. Therefore, no significant and unavoidable adverse impacts to transit are expected.

The parking impacts are anticipated to be brought to a less-than-significant level by implementing a range of possible mitigation strategies such as those discussed in 3.6.3 Mitigation Measures. While there may be short-term impacts as travelers initially rely predominantly on auto travel (causing on-street parking demand to exceed supply), it is expected that over the long term with these mitigation strategies and continued expansion of non-auto travel options, travel behavior would change such that the on-street parking situation would reach a new equilibrium. Therefore, no significant unavoidable adverse impacts to parking are expected.

3.7 Public Services

This section addresses police services, fire and emergency medical services, schools, and parks and recreation. Following a description of current services in the Study Area and level of service (LOS) standards, an impact analysis is presented for each alternative. Mitigation measures are proposed to address impacts to services.

3.7.1 Affected Environment

Police

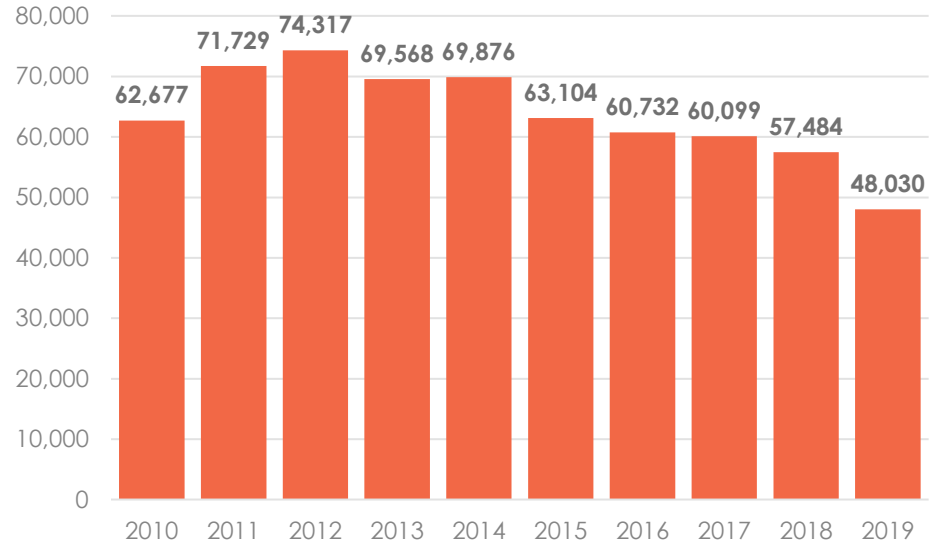
Existing Conditions

The Kirkland Police Department (KPD) provides law enforcement and public safety services to the City of Kirkland, including the Study Area. Currently, KPD employs 153.5 full-time equivalent employees (109 commissioned officers and 44.5 non-commissioned support personnel). KPD is organized into the following divisions:

- **Administration Division:** The Administration Division provides support to other divisions and units within the Department. This Division includes the Records Unit, the Evidence/Property Unit, the Corrections Unit, and the Quartermaster.
- **Operations Division:** The Operations Division is the largest and most public-facing section within the Department and includes the Patrol Unit, Traffic Unit, K-9 team, Public Information Officers, and SWAT.
- **Professional Standards Division:** The Professional Standards Division provides critical and specialized services to help support the Department's mission as well as ensure effective operations within the Department. This Division includes the Investigations Unit, the Firearms Training Unit, the Less Lethal Training Unit, the Emergency Vehicle Operation and Control Cadre, and the Police Training Unit among other sections and services.
- The Department also provides one full time **Animal Control** Officer as part of the City of Kirkland Animal Services program that includes animal licensing, sheltering and enforcement.

Exhibit 3-80 below shows the number of calls for service received by KPD from 2010 to 2019. Since a peak of 74,317 calls in 2012, the annual number of calls for service has been steadily decreasing with 48,030 reported in 2019.

Exhibit 3-80. Police Calls for Service, Kirkland, 2010-2019



Source: City of Kirkland, 2019; BERK, 2020.

The Kirkland Justice Center, located at 11750 NE 118th Street, serves as the primary facility for police, municipal courts, and corrections in Kirkland. The Justice Center houses the Kirkland Municipal Court and the Kirkland Police Department.

The Kirkland Municipal Court includes two courtrooms, a small courtroom, and a spacious lobby. The KPD includes a tactical area, booking center, firing range, forensic lab, administrative offices, and a 72-bed jail.

The Kirkland Justice Center is located about 2.5 miles drive north from the center of the Study Area.

Level of Service

KPD has not adopted a LOS standard for police protection and public safety services under the City's Comprehensive Plan. The Public Services chapter of the City of Kirkland Comprehensive Plan provides the following information regarding police services.

> *Policy PS-1.1: Provide fire and emergency services and police services to the public which maintain accepted standards as new development and annexations occur.*
>
> *Basic public safety service should keep pace with growth. Kirkland should anticipate new growth to avoid deficiencies in accepted levels of service.*

However, KPD and the City have taken steps in recent years to implement several recommendations on staffing models that were outlined in the Department's

2016 Strategic Plan.[22] These actions include the implementation of a dedicated proactive police unit to focus on proactive enforcement rather than call response. Another recommendation from the 2016 Strategic Plan includes reevaluating staffing needs to regularly adapt to City development and population growth.

Exhibit 3-81 outlines KPD's current service levels compared with citywide population.

Exhibit 3-81. KPD Service Levels, 2019

Measure	Number
Kirkland Resident Population (2019)	88,940
Kirkland Total Population (2019)	133,698
Police Officers (2019)	109
Police Calls for Service (2019)	48,030
Officers per 1,000 Residents	**1.23**
Calls for Service per Resident	**0.54**
Officers per 1,000 Capita (Total Population)	**0.82**
Calls for Service per Capita (Total Population)	**0.36**
Patrol Officers per 10 Hour Shift	**10**

Note: Kirkland Total Population includes 88,940 residents and 44,758 non-residents who work in the city but live outside city limits.
Sources: City of Kirkland, 2019; PSRC, 2019; U.S. Census OnTheMap, 2017; BERK, 2020.

Based on a citywide 2019 population of 88,940 and 109 commissioned police officers, KPD currently has approximately 1.23 officers per 1,000 residents. Based on calls for service, KPD currently approximately responds to 0.54 calls for service per resident. KPD also is currently staffed to an average of 10 patrol officers for every 10-hour shift. It should be noted that staffing is variable between shifts, there are more patrol officers on day shifts and less officers on night shifts to align with call volume.

In addition to Kirkland residents, KPD also is responsible for providing services to non-residents who work in the community. According to PSRC covered employment estimates, Kirkland employment was 50,574 in 2019. The US Census Bureau OnTheMap data on commuter-adjusted daytime population and journey to work characteristics indicates that approximately 11.5% of employees working in Kirkland also reside in the city. The total population served by Kirkland Police is estimated to be 133,698, which includes the following:

- 88,940 residents; and
- 44,758 employees who do not live in the city (discounted 11.5% from total Kirkland jobs of 50,574).

[22] 2016 Police Strategic Plan. Kirkland Police Department, www.kirklandwa.gov/Assets/Police/Police+PDFs/Police+Strategic+Planning+Consultant+Report.pdf.

Based on this total population, KPD currently has approximately 0.82 officers per 1,000 capita of Kirkland's total population. KPD also currently responds to 0.36 calls per capita of Kirkland's total population.

Fire and Emergency Services

Existing Conditions

The City of Kirkland Fire Department (KFD) provides fire, rescue and emergency services to the City of Kirkland, including the Study Area, serving an area of approximately 18.25 square miles. The KFD is staffed by 113 full-time equivalent employees, who cover five full-time city-owned fire stations located throughout the city. KFD employs 95 emergency response personnel including firefighters as well as nine administrative personnel, three training personnel, and six prevention personnel.

Fire Stations 22 and 26 are the closest KFD fire stations to the Kirkland 85th St. Station Study Area. Station 22 is about 1.5 miles drive to the southwest of the center of the Study Area while Station 26 is about 1.7 miles drive to the northeast of the center of the Study Area. Given the potential for greater building heights in the proposed alternatives, it should also be noted that the City's only ladder truck is located in Station 27 is about 3.0 miles drive directly north of the Study Area.

KFD has a minimum on-duty staffing of 20 fire fighters, 24-hours per day. This allows for 3 or 4 firefighters/EMTs on each the City's five fire engines and the City's ladder truck along with 1 Battalion Chief on duty 24 hours a day. Emergency response staffing is done on a three-shift platoon rotation. The schedule entails that employees be on-duty for 48 hours, then rotate off-duty for 96 hours, for a 48-hour work week. Exhibit 3-82 outlines the apparatus per fire station for KFD.

Exhibit 3-82. Apparatus Per Fire Station, 2018

Station/Apparatus	Year Built
Station 21 – Forbes Creek	1997 (8,541 sq. ft.)
Aid 121	2010
Engine 121	2005
Engine 129 (Reserve)	1999
Station 22 - Houghton	1980 (9,071 sq. ft.)
Aid 122	2014
Engine 122	2015
Air Unit 121	2006

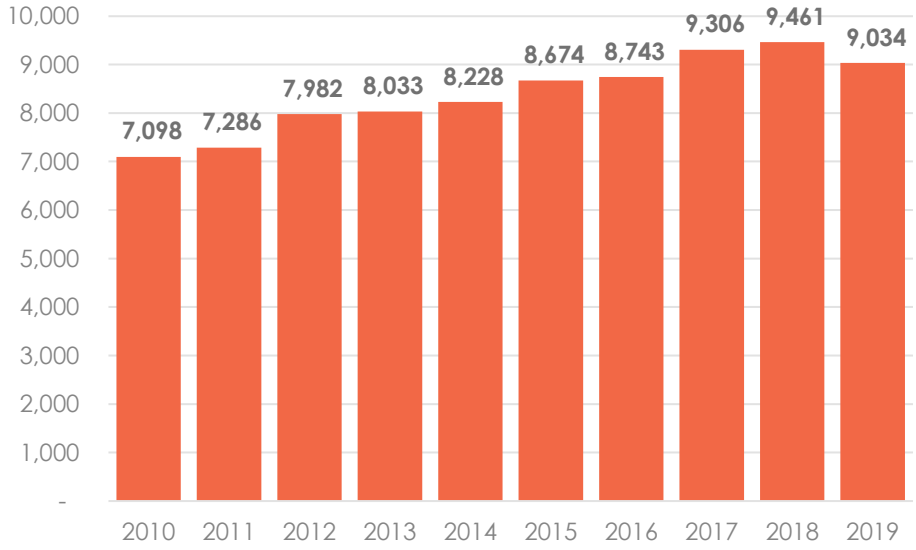
Station/Apparatus	Year Built
Engine 128 (Reserve)	2003
American LaFrance Pumper (Antique)	1926
Station 25 – Finn Hill	2018 (7,382 sq. ft.)
Aid 125	2016
Engine 125	2003
Station 26 – North Rose Hill	1994 (9,795 sq. ft.)
Aid 126	2014
Engine 126	2013
Battalion 121	2008
Aid 128 (Reserve)	2008
2000 Aid (Reserve)	2000
Station 27 – Totem Lake	1974 (8,159 sq. ft.)
Aid 127	2016
Aid 129	2012
Engine 127	2010
Ladder 127	2016

Sources: Kirkland Fire Department Annual Report, 2018; BERK, 2020.

KFD maintains automatic and mutual aid agreements with all neighboring agencies, such as Bothell, Redmond, Bellevue, Northshore, Woodinville, and Eastside Fire and Rescue. The North East King County Regional Public Safety Communication Agency (NORCOM) provides emergency dispatch and 911 services to the City.

In 2019, KFD responded to 9,034 calls for medical aid or fire service. Most calls are typically for medical aid. Based on KFD calls for service for the five-year period from 2014-2018, aid calls for service averaged 72% of all KFD calls for service. Exhibit 3-83 outlines annual calls for service received by KFD from 2010 to 2019.

Exhibit 3-83. KFD Calls for Service, 2010-2019



Sources: City of Kirkland, 2019; BERK, 2020.

Level of Service

The KFD has adopted response performance goals as its LOS standard, which is noted in Policy PS-1.2 of the draft 2015 City of Kirkland Comprehensive Plan Public Services Element.

> *i. Emergency medical: response time of five minutes to 90 percent of emergency incidents.*
>
> *ii. Fire suppression: response time of 5.5* minutes to 90 percent of all fire incidents.

In 2018, the KFD met the emergency medical response time standard for 57% of all emergency incidents. For fire suppression, the KFD met the response time standard for 46% of all fire incidents. Over the last several years, KFD has not met its response time goals. Exhibit 3-84 outlines the KFD's performance for these performance goals.

Exhibit 3-84. Emergency Response Performance, 2015-2018

	Fire Calls		EMS Calls	
Year	% Meeting Adopted Objective	Actual 90% Response Time	% Meeting Adopted Objective	Actual 90% Response Time
2015	48%	7:49 Minutes	49%	7:40 Minutes
2016	35%	8:12 Minutes	49%	7:48 Minutes
2017	33%	8:59 Minutes	54%	7:31 Minutes
2018	46%	9:56 Minutes	57%	7:56 Minutes

Sources: Kirkland Fire Department Annual Reports, 2015-2018; BERK, 2020.

The KFD has not adopted a Level of Service Standard for staffing. However, based on a 2019 population estimate of 88,940 and 95 firefighters, the KFD currently has approximately 1.07 firefighters per 1,000 residents. Based on a total population of 133,698, which includes residents and non-residents who work in the city, KFD currently has 0.71 firefighters per 1,000 capita of total population.

Schools

Existing Conditions

The Lake Washington School District provides public school services to the entire Study Area, as well as Kirkland, Redmond, and portions of the cities of Sammamish, Bothell, and Woodinville. Lake Washington School District operates the following schools:

- 29 traditional and 4 choice elementary schools;
- 8 traditional and 6 choice middle schools; and
- 4 traditional and 5 choice high schools.

Students may attend one of the district's choice schools no matter where they live. Choice schools are optional schooling alternatives that are open to all students in the district. Students must apply to be considered for enrollment, and each school has its own application and enrollment process.

Summary data about the Lake Washington School District is shown in Exhibit 3-85.

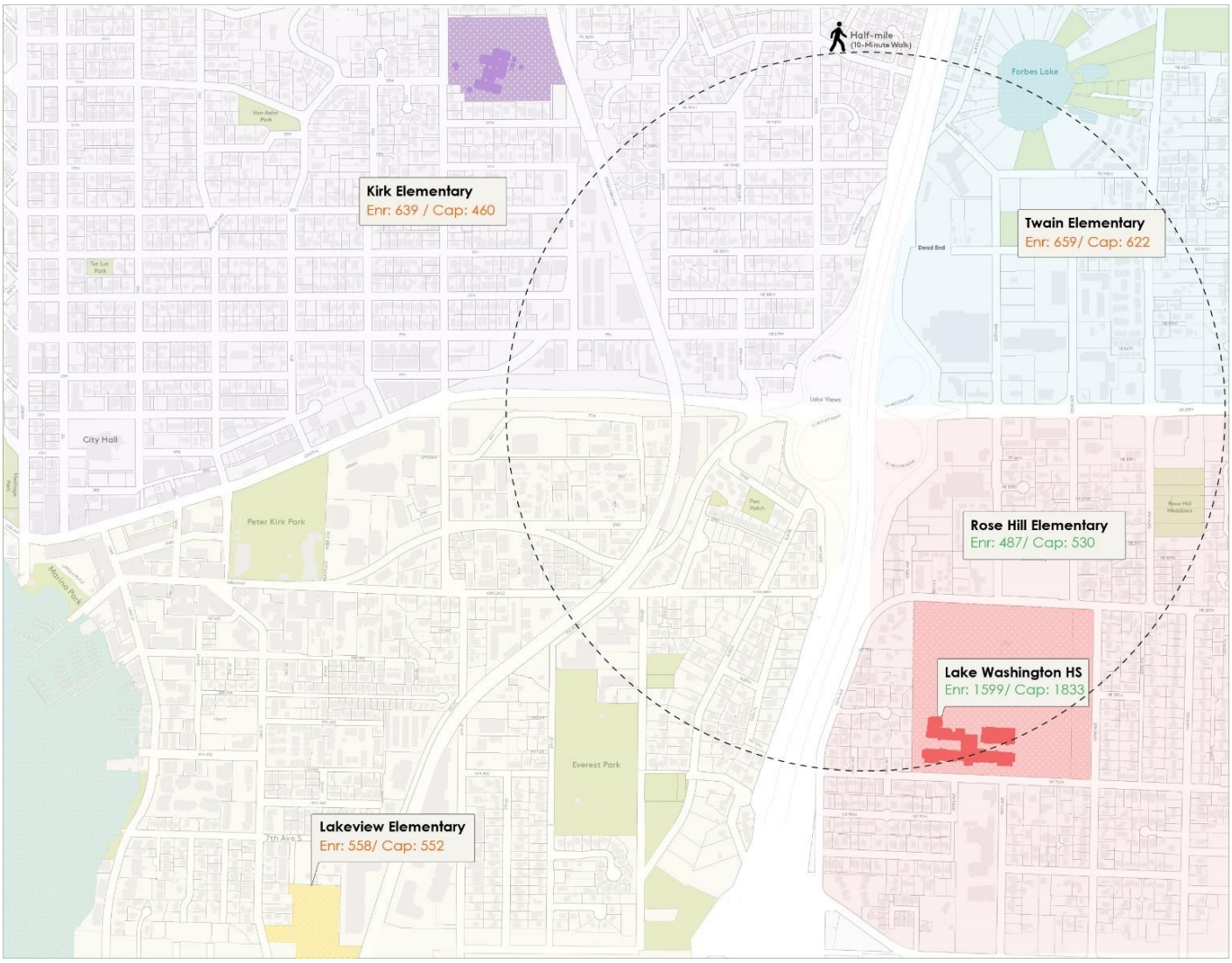
Exhibit 3-85. School District Summary Data, SY 2019-20

Characteristic	Number
Lake Washington School District Population	202,123
Lake Washington School District Enrolled Students	32,050
Number of Teachers	1,852
Student to Teacher Ratio	16.8

Sources: WA State Office of Superintendent of Public Instruction, 2020; WA Office of Financial Management, 2019; BERK, 2020.

The schools closest to the Study Area are mapped in Exhibit 3-86.

Exhibit 3-86. Lake Washington School District Schools Near the Study Area



Source: Mithun, 2020.

Along with the schools mapped above, there are several other schools that serve the Study Area. An inventory of all the schools that serve the Study Area can be seen in Exhibit 3-87. The main measure of school district facility inventory is permanent seating capacity. School districts can measure their instruction inventory to ensure they have enough permanent capacity for student seats by grade level as well as by instruction space, as measured by the number of teaching stations. Four out of the seven schools near the Study Area have a deficit in permanent student capacity. Rose Hill Elementary, Kirk Elementary and Kirkland Middle School have surplus permanent student capacity. Relocatable facilities will be and are being currently used to address capacity needs that cannot be immediately served by permanent capacity.

Exhibit 3-87. Lake Washington Public Schools Serving the Study Area Summary Data, SY 2019-20

School	Permanent Student Capacity	Student Enrollment 2019-20	Surplus/Deficit Capacity
Twain Elementary	598	658	-60
Rose Hill Elementary	552	485	67
Lakeview Elementary	506	550	-44
Kirk Elementary	782	614	168
Kirkland Middle School	697	616	81
Rose Hill Middle School	1,021	1,024	-3
Lake Washington High School	1,567	1,768	-201

Sources: WA State Office of Superintendent of Public Instruction, 2020; Lake Washington School District Capital Facilities Plan, 2020; BERK, 2020.

Permanent student capacity is expected to be added for the schools outlined in Exhibit 3-88. These projects are to be funded through bond measures approved by voters in April 2016 and April 2019.

Exhibit 3-88. Lake Washington Public Schools Serving the Study Area Permanent Capacity Additions

School	Permanent Capacity Added	Year to be Completed
Rose Hill Elementary	184	2021
Twain Elementary	92	2021
Lake Washington High School	500	2020

Sources: Lake Washington School District Capital Facilities Plan, 2020; BERK, 2020.

Lake Washington School District is the fastest growing school district in King County. Enrollment growth is expected to continue and result in overcrowding in many schools across the district, even in lieu of the new capacity added by the new bond measures.

According to LWSD projections, which include both permanent and portable capacity, Twain and Lakeview Elementary are expected to be at 108% and 112% capacity, respectively, by 2029. Kirkland and Rose Hill Middle School are expected to be at 108% and 120% capacity, respectively, by 2029. Lake Washington High School is expected to be at 125% capacity by 2029.[23]

[23] "LWSD Facilities Advisory Committee Project Recommendations." Lake Washington School District Facilities Advisory Committee, lwsdgrowth.participate.online/.

Future capital planning beyond the year 2025 is underway. LWSD's Facility Advisory Committee have proposed recommendations for future facility planning which include building an 800-student capacity addition to the Kirkland Middle School, re-drawing the boundary between Rose Hill Middle School and Kirkland Middle School, building a new choice high school in the Lake Washington Learning Area to address lack of capacity at Lake Washington High School, and building a new elementary school in the Lake Washington learning community.

Level of Service

The Lake Washington School District has adopted a Level of Service Standard, shown in Exhibit 3-89, which establishes a target teacher-student ratio for each grade level.

Exhibit 3-89. Lake Washington School District Level of Service Standard

Grade Level	Target # of Students Per Teacher
K-1	20
2-3	23
4-5	27
6-8	30
9-12	32

Sources: Lake Washington School District Capital Facilities Plan, 2020; BERK, 2020.

The elementary standard of service includes spaces to accommodate:

- Special Education for students with disabilities which may be served in a self-contained classroom
- Music instruction provided in a separate classroom
- Art/Science room in modernized schools
- Resource rooms to serve students in:
  - Safety Net / Remedial programs
  - Special Education programs
  - English Language Learners (EL)
- Gifted education (pull-out Quest programs)
- Special Education, Head Start and Ready Start Preschool

The secondary school LOS model includes:

- Special Education for students with disabilities may be provided in a self-contained classroom
- Identified students will also be provided other special educational opportunities in classrooms designated as follows:

- Resource rooms
- English Language Learners (ELL)

For reference, Exhibit 3-90 shows the current student to teacher ratio for the schools serving the Study area.

Exhibit 3-90. Lake Washington Public Schools Serving the Study Area, Student to Teacher Ratio

School	Student to Teacher Ratio
Twain Elementary	13.5
Rose Hill Elementary	14.4
Lakeview Elementary	14.0
Kirk Elementary	15.4
Kirkland Middle School	16.9
Rose Hill Middle School	18.9
Lake Washington High School	17.5

Sources: WA State Office of Superintendent of Public Instruction, 2020; Lake Washington School District Capital Facilities Plan, 2019; BERK, 2020.

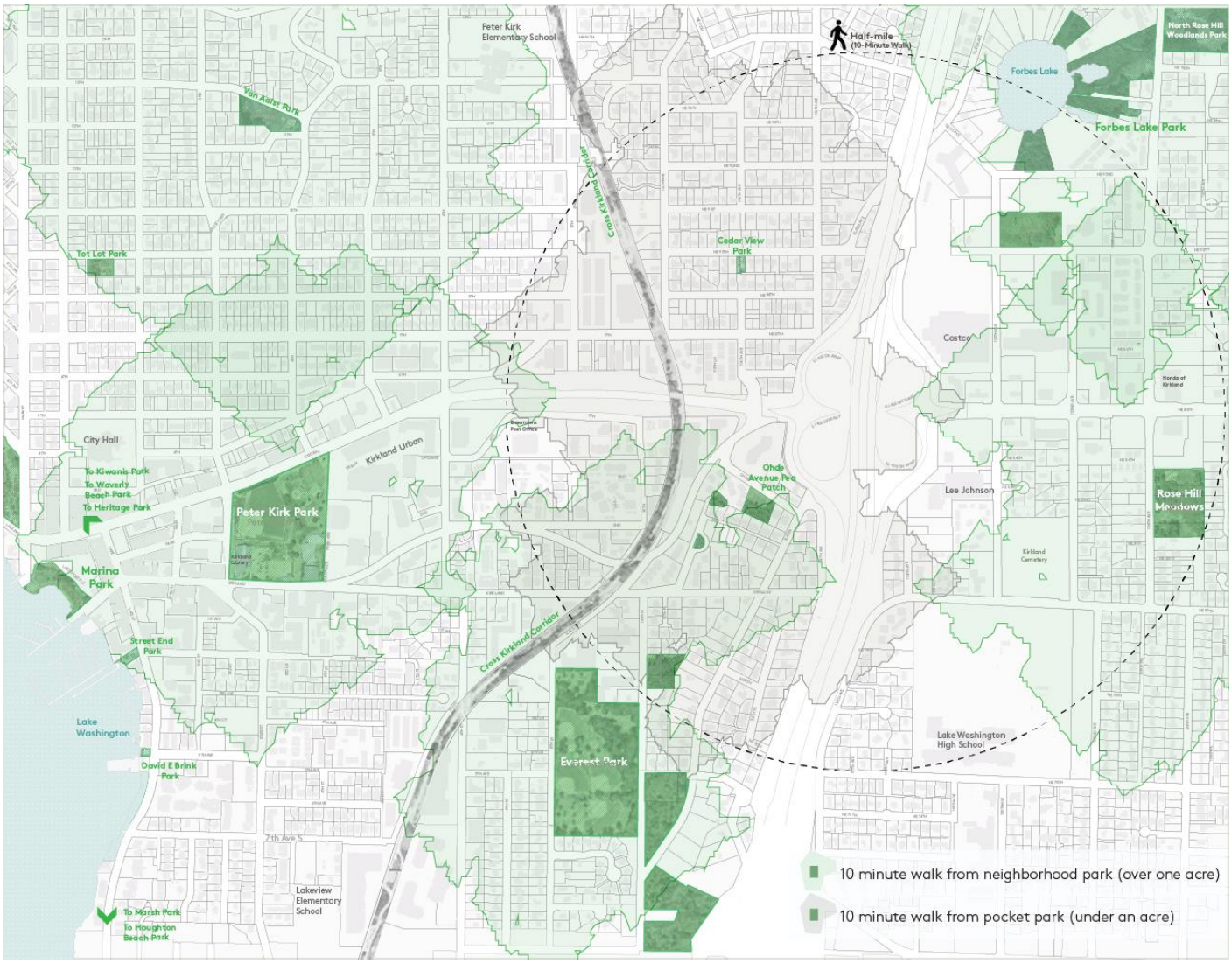
Parks

Existing Conditions

The City of Kirkland provides parks and recreation services to the Study Area. The primary parks within the Study Area consist of pocket parks (Cedar View Park, Ohde Avenue Pea Patch) that provide small play areas and community gardening, respectively, as well as Rose Hill Meadows, a neighborhood park which includes playground equipment and natural areas. Abutting the Study Area are several larger parks with more amenities including Everest Park to the southwest, Peter Kirk Park to the west, and Forbes Lake Park to the northeast.

Parks and open spaces closest to the Study Area are mapped in Exhibit 3-91. As shown, the Study Area has gaps, as measured by 10-minute walksheds, particularly in the south central portion of the Study Area near Lake Washington High School and the north central portion of the Study Area, in the provision of parks and open space.

Exhibit 3-91. Study Area Parks and Open Space Map



Source: Mithun, 2020.

Exhibit 3-92 provides an inventory of the parks within the Study Area as well as the parks immediately abutting the Study Area.

Exhibit 3-92. Study Area Parks Inventory

Park	Park Classification	Acreage
Within the Study Area		**5.19**
Rose Hill Meadows	Neighborhood Park	4.10
Ohde Avenue Pea Patch	Neighborhood Park	0.89
Cedar View Park	Neighborhood Park	0.20
Abutting the Study Area		**44.46**
Forbes Lake Park	Waterfront Park	8.81
Peter Kirk Park	Community Park	12.48
Everest Park	Community Park	23.17

Sources: City of Kirkland PROS Plan, 2015; BERK, 2020.

Level of Service

The City of Kirkland has the following guidelines for the City's park system:

- **Community Parks:** The City has an acreage guideline for community parks of 2.25 acres per 1,000 people to emphasize the relative importance of community parks within the park system.
- **Neighborhood Parks:** The City has an acreage guideline for neighborhood parks of 1.5 acres per 1,000 people.

The City has also adopted a LOS standard based on an "Investment per Person" methodology. This standard ensures that each person receives access to a constant amount of parks and recreational facilities as the community grows and allows the City flexibility in determining the precise mix of facilities that the City builds to meet the needs of its current and future residents. The Investment per Person LOS standard for Kirkland is established as $4,094.

The City's 2015 Parks, Recreation, & Open Space (PROS) plan identifies a gap in access based on ¼ mile walksheds in the western portion of the South Rose Hill neighborhood, which aligns with the edge of the southeast quadrant of the Study Area. The PROS plan recommends an acquisition of neighborhood parkland in the western portion of the South Rose Hill neighborhood. The Capital Facilities Plan associated with the plan budgeted $600,000 beyond 2021 towards the acquisition of this parkland.

3.7.2 Impacts

Thresholds of Significance

Impacts on public services and utilities would be considered to result in significant impacts under one or more of the following conditions:

- Negatively affect the response times for police and/or fire and emergency medical services.
- Increase demand for special emergency services beyond current operational capabilities of service providers.
- Reduce access to park and open space facilities.
- Result in increases in students and lack of facilities.

Impacts Common to All Alternatives

All studied alternatives are anticipated to increase both housing and employment within the Study Area. Exhibit 3-93 outlines the distribution of anticipated growth in housing and employment within the Study Area from existing conditions by alternative through the planning period. Much of the growth in both housing and employment is anticipated to occur within the northeast and southeast quadrants of the Study Area. The northwest and southwest quadrants are also anticipated to see housing and employment growth, though not to the extent of the eastern portion of the Study Area.

Exhibit 3-93. Housing and Employment Growth Distribution by Alternative

Quadrant	No Action		Alternative 2		Alternative 3	
	Housing	*Emp.*	*Housing*	*Emp.*	*Housing*	*Emp.*
NW	+ 31	+ 266	+ 49	+ 460	+ 53	+ 247
NE	+ 504	+ 2,346	+ 2,743	+ 18,792	+ 4,106	+ 22,855
SW	+ 43	+ 1,517	+ 477	+ 393	+ 1,034	+ 1,018
SE	+ 295	+ 1,744	+ 3,331	+ 4,056	+ 3,807	+ 5,881
Total	**+ 873**	**+ 5,872**	**+ 6,600**	**+ 23,701**	**+ 9,000**	**+ 30,001**

Sources: Mithun, 2019; BERK, 2020.

Given that the City's LOS standards are population based, all studied alternatives would increase demand for emergency services, schools, and parks with all alternatives increasing in housing units and population. Exhibit 3-94 outlines the estimated resident population growth associated with each alternative through the planning period based on 2015 average multifamily household size in the City.

Non-resident working population growth is estimated utilizing US Census Bureau OnTheMap data on commuter-adjusted daytime population and journey to work characteristics which indicate that approximately 88.5% of employees working in Kirkland reside outside the city.

Exhibit 3-94. Study Area Estimated Resident and Total Population Generated by Housing Units

Population Measure		Population Generated		
		No Action	Alternative 2	Alternative 3
Resident Population	Avg. MF HH Size: 1.83	1,598	12,078	16,470
Non-Resident Working Popualtion	% of Employment: 88.5%	5,197	20,975	26,551
Total Population		**6,794**	**33,053**	**43,021**

Note: Employment estimates are adjusted in each alternative by 2017 US Census OnTheMap estimates of the share of employees who commute into Kirkland to work (88.5%).
Sources: American Community Survey 1-Year Estimates, 2019; US Census OnTheMap, 2017; OFM, 2015; BERK, 2020.

Alternative 3 sees the largest increase in housing, population, and employment, followed by Alternative 2, with the least growth associated with the No Action Alternative.

Police

Each alternative would increase residential and total population, and if applying current or policy-based levels of service, additional officers may be needed to serve the new growth with the least associated with the No Action alternative and the most with the Alternative 3. See Exhibit 3-95.

Exhibit 3-95. Potential New Officers per 1,000 Population by Alternative

Current Officers per 1,000 Pop.	No Action	Alternative 2	Alternative 3
Net Resident Population Increase	1,598	12,078	16,470
1.23 Officers per 1,000 Residents	1.97	14.86	20.26
Net Total Population Increase	6,794	33,053	43,021
0.82 Officers per 1,000 Total Pop.	5.57	27.10	35.28

Sources: City of Kirkland, 2019; BERK, 2020.

Fire and Emergency Services

The City's fire and emergency services LOS standards are based on response times measured citywide.

Another means of measuring the demand on services is firefighters per 1,000 population. See Exhibit 3-96.

Exhibit 3-96. Potential New Firefighters per 1,000 Population by Alternative

Current Firefighters per 1,000 Pop.	No Action	Alternative 2	Alternative 3
Net Resident Population Increase	1,598	12,078	16,470
0.83 Firefighters per 1,000 Residents	1.33	10.02	13.67
Net Total Population Increase	6,794	33,053	43,021
0.55 Firefighters per 1,000 Total Pop.	3.74	18.18	23.66

Sources: City of Kirkland, 2019; BERK, 2020.

The estimates presented above are for total firefighters to be hired, not for firefighter positions. This is an important distinction as an additional firefighter position requires the addition of five new personnel since firefighter positions must be filled 24 hours per day, 365 days per year. An analysis around the number of firefighter positions to be added based on growth would need to consider KFD's staffing models and KFD's requirements for response times. As such, to meet response time requirements as growth occurs, the fire department may need to re-evaluate staffing levels and equipment at specific fire stations located closest to areas planned for high levels of growth.

All alternatives might result in greater building heights than current conditions, which might potentially require the use of a ladder truck to respond to fires in the Study Area. The City's ladder truck can serve buildings up to 100 feet in height, which would not be sufficient to serve certain developments in Alternative 2 and Alternative 3, which are discussed further below. As mentioned earlier, the City's only fire truck is currently housed in Station 27 which is 3.0 miles drive north from the center of the Study Area.

Schools

Each alternative would generate new students in housing units, with Alternative 3 generating the most and the No Action alternative generating the least. Multifamily student generation rates are used to determine how many students will be generated through the planning period. See Exhibit 3-97.

Exhibit 3-97. Student Generation by Alternative

Student Generation Rate	No Action	Alternative 2	Alternative 3
Housing Units	873	6,600	9,000
Elementary School = 0.082	72	542	738
Middle School = 0.032	28	212	288
High School = 0.025	22	165	225
Total Students	**122**	**919**	**1,251**

Sources: City of Kirkland, 2019; BERK, 2020.

Under all alternatives, the additional growth in this area would increase the number of students at the following schools: Twain Elementary, Rose Hill Elementary, Lakeview Elementary, Kirk Elementary, Kirkland Middle School, Rose Hill Middle School, and Lake Washington High School.

Parks

Population growth in the Study Area would increase the need for parks and recreation facilities and programs. The City of Kirkland does not maintain a Level of Service standard for non-residential uses, but it is likely that additional employees from the projected employment growth would make use of any nearby park facilities before or after work, or during lunch breaks. However, level of usage would likely vary by location, and there is no reliable method for accurately estimating potential usage by employees.

Exhibit 3-98 shows the population generated by each alternative in the Study Area, and the additional park investment dollars needed by each alternative to meet the City of Kirkland LOS standard.

Exhibit 3-98. Park Level of Service Impact by Alternative

	No Action	Alternative 2	Alternative 3
Net Resident Population Increase	1,598	12,078	16,470
$4,094 Investment Per Resident	$6,542,212	$49,447,332	$67,428,180

Sources: City of Kirkland PROS Plan, 2015; BERK, 2020.

Currently, there is a lack of accessible parkland in the western quadrants of the Study Area. There are two neighborhood parks in these quadrants; however, they are both smaller pocket parks. Larger neighborhood and community parks are located either on the outer edges of the Study Area or just beyond the Study Area boundaries. Given that the 2015 PROS plan states that residents should be able to reach a developed park within a ¼ mile, there remains a significant need for parks and open space that directly serves the potential new development near the station itself. See Exhibit 3-91 for reference.

No Action Alternative 1

Police

The No Action Alternative would increase demand for officers if applying the City's current effective LOS. Calls for service would likely increase with the increase in housing and employment. However, this alternative would produce the lowest housing and employment growth and lowest demand for additional police officers among the three alternatives considered.

Fire and Emergency Services

Like police services, the No Action Alternative would increase demand for additional firefighters, though at the lowest level among the three alternatives. The No Action Alternative would likely demand an additional 2 firefighters to keep up with current effective LOS for residents. If applying current effective LOS for total population, the No Action Alternative would likely demand an additional 4 firefighters. Calls for service would likely increase with the increase in housing, population, and employment. Fire stations most likely to experience increased demand under this alternative are Fire Stations 22 and 26.

Schools

The No Action Alternative would produce the fewest additional housing units and lowest student generation among the three alternatives. The No Action Alternative is estimated to generate an additional 122 students through the planning period. The projected capacity of schools serving the Study Area is likely to accommodate the additional students at the elementary school level, however, projected middle and high school capacity is lacking. As noted above, the Lake Washington School District is currently undergoing long-term capital facilities planning to address the lack of projected capacity of school facilities across the District, including the Study Area. Strategies including building new school facilities, building additions to current school facilities, and redrawing school boundaries.

Parks

The No Action Alternative would produce the lowest additional demand for park and open space facilities among the three alternatives. The No Action Alternative would increase the demand for park investment by a little over $6.5 million through the planning period.

Alternative 2

Police

Alternative 2 would produce the second highest demand for additional police officers among the three alternatives. Alternative 2 would be estimated to require the addition of around 15 police officers to keep pace with the City's current effective LOS for residents. If applying current effective LOS for total population, the Alternative 2 would likely demand an additional 28 police officers. Calls for service would also likely increase with the increase in housing, population, and employment.

Fire and Emergency Services

Again, like police services, Alternative 2 would produce the second highest demand for additional firefighters. Alternative 2 would likely demand an additional 11 firefighters to keep up with current effective LOS for residents. If applying current effective LOS for total population, Alternative 2 would likely demand an additional 19 firefighters. Calls for service would likely increase with the increase in housing, population, and employment. Fire stations most likely to experience increased demand under this alternative are Fire Stations 22 and 26.

Building height in Alternative 2 may reach up to 150 feet. The City's current ladder truck can only service buildings up to 100 feet in height. KFD would likely need to add additional equipment to service the mid-rise development proposed in this alternative.

Schools

Alternative 2 would produce the second highest additional housing units and student generation among the three alternatives. Alternative 2 is estimated to generate an additional 919 students through the planning period. The projected long-term capacity of schools serving the Study Area is unlikely to accommodate the additional students at the elementary, middle, and high school level.

The Lake Washington School District is currently undergoing long-term capital

facilities planning to address the lack of projected capacity of school facilities across the District, including the Study Area. Strategies include building new school facilities, building additions to current school facilities, and redrawing school boundaries.

Alternative 2 includes a height increase at the Lake Washington High School, allowing a 45-foot building(s) above the 30-foot height allowed under the No Action Alternative. This could allow additions of on-site space for classrooms. As well, new schools at all grade levels could be allowed in the Office Mid Intensity and Office Mixed Use Mid Intensity designations, with opportunity to add schools in an urban multistory format. See the discussion and examples under Mitigations Measures.

Parks

Alternative 2 would produce the second highest additional demand for park and open space facilities among the three alternatives. Alternative 2 would increase the demand for park investment by over $49 million through the planning period.

Alternative 3

Police

Alternative 3 would produce the highest demand for additional police officers among the three alternatives. Alternative 3 would be estimated to require the addition of around 21 police officers to keep pace with the City's current effective LOS for residents. If applying current effective LOS for total population, Alternative 3 would likely demand an additional 36 police officers. Calls for service would also likely increase with the increase in housing, population, and employment.

Fire and Emergency Services

Alternative 3 would produce the highest demand for additional firefighters. As shown above, Alternative 3 would likely demand an additional 14 firefighters to keep up with current effective LOS for residents. If applying current effective LOS for total population, Alternative 3 would likely demand an additional 24 firefighters. Calls for service would likely increase with the increase in housing, population, and employment. Fire stations most likely to experience increased demand under this alternative are Fire Stations 22 and 26.

Building height in Alternative 3 may reach up to 300 feet. The City's current ladder

truck can only service buildings up to 100 feet in height. KFD would likely need to add additional equipment to service the mid-rise development proposed in this alternative.

Schools

Alternative 3 would produce the highest additional housing units and student generation among the three alternatives. Alternative 3 is estimated to generate an additional 1,251 students through the planning period. The projected long-term capacity of schools serving the Study Area is unlikely to accommodate the additional students at the elementary, middle, and high school level.

The Lake Washington School District is currently undergoing long-term capital facilities planning to address the lack of projected capacity of school facilities across the District, including the Study Area. Strategies include building new school facilities, building additions to current school facilities, and redrawing school boundaries.

Alternative 3 includes a height increase at the Lake Washington High School, allowing a 65-foot building(s) above the 30-foot height allowed under the No Action Alternative. This could allow additions of on-site space for classrooms.

New schools at all grade levels could be allowed in the Office High Intensity and Office Mixed Use High Intensity designations as well as Office Mid Intensity, with opportunity to add schools in an urban multistory format. See examples described under Mitigation Measures.

Parks

Alternative 3 would produce the highest additional demand for park and open space facilities among the three alternatives. Alternative 3 would increase the demand for park investment by over $67 million through the planning period.

3.7.3 Mitigation Measures

Incorporated Plan Features

- Onsite open spaces and community gathering spaces are proposed with each Action Alternative in the Form-Based Code to alleviate demand for and use of local public parks.
- The Action Alternatives include investment in pedestrian and bicycle improvements to connect with trails, parks, and schools within and abutting

the Study Area.

- The adoption of Form-Based Code can accommodate a variety of uses proposed by future development, including civic and school facilities.

Regulations and Commitments

Police

- New development will be required to comply with the provisions of Title 21 of the Kirkland Municipal Code – Buildings and Construction (KMC 21). Provisions include that all new buildings with either more than five stories above grade plane, a total building area of 50,000 square feet or more, or a total basement area of 10,000 square feet or more have approved radio coverage for emergency responders (KMC 21.20.065).
- Primary funding sources for public safety services include property taxes, sales taxes, and utility taxes. New development will increase the tax base for each of these funding sources, which will help partially offset additional service costs associated with housing and employment growth. The District will need to review growth in existing homes as well as new growth to determine its revenue sources and ability to respond with capital improvements and operational changes in its six-year capital facility plans.

Fire and Emergency Services

- New development will be required to comply with the provisions of Title 21 of the Kirkland Municipal Code – Buildings and Construction (KMC 21). Provisions include fire extinguishing systems be required for all new buildings with a gross floor area greater than 5,000 square feet (KMC 21.33.040).
- Primary funding sources for public safety services include property taxes, sales taxes, and utility taxes. New development will increase the tax base for each of these funding sources, which will help partially offset additional service costs associated with housing and employment growth.

Schools

- New development is subject to collection of school impact fees under Chapter 27.08 of the Kirkland Municipal Code. School impacts fees would be collected by the City on behalf of Lake Washington School District to partially offset the system improvement costs of educating additional students generated by new development. The LWSD Capital Facilities Plan assumes additional funding for capacity comes from state funds and tax revenue.

Parks

- New development is subject to collection of park impact fees under Chapter 27.06 of the Kirkland Municipal Code. Park impact fees are used to build or acquire new facilities.

Other Proposed Mitigation Measures

All Services

- For all services, the Station Area Plan could promote public/private partnerships to provide facilities in the station area and address potential service needs created by new development.

Police

- The City could adopt a formal, population-based Level of Service Standard for police services to help identify project-specific demand.
- The City could consider the hiring of additional police officers and police department staff to maintain levels of service consistent with growth. This would be considered with the Comprehensive Plan, Capital Facility Plan, and regular budgets and increased revenue and costs from development.
- The City could consider requiring development to provide on-site security services, which may include video surveillance systems, to the Study Area, to reduce the increased need for police response to that area. This reduction is largely dependent on the nature of the incident.

Fire and Emergency Services

- In addition to the existing Level of Service Standards for response time, the City should consider adopting a population-based Level of Service Standard for fire and EMS to help identify project-specific demand. Any plan to address impacts of growth should be initiated before construction build out.
- As development occurs, the Fire Department could reassess future operations plans to ensure that staff and equipment are located close enough to areas of concentrated development to maintain adequate response times according to Department's Standards of Coverage and Deployment Plan. This may entail redistribution of staff or equipment between fire stations or construction of new facilities.
- The City could consider requiring a mitigation agreement at the time a development application is submitted to address additional staffing needs and needed capital investments at stations serving the Study Area (e.g. stations and ladder trucks or other).
- The City could condition Planned Action proposals during development

review to develop protocols for fire aid and emergency medical services in conjunction with the Kirkland Fire Department.

Schools

– The alternatives raise heights at the Lake Washington High School to allow additional school capacity in the future. As well the Form-Based Code could offer incentives for developments to incorporate space for schools in new developments. Example schools integrated into employment or commercial districts include the Innovation Lab High School in the Canyon Park Regional Growth Center, and the Center School in Seattle Center. School districts with limited land are also building multistory schools at all grade levels. For example, Seattle School District has built the three-story Genesee Hill Elementary in 2016. A three-story Kimball Elementary School is planned in the Central District.

Parks

– The City's 2015 Parks, Recreation, & Open Space (PROS) plan identifies a gap in access in the western portion of the South Rose Hill neighborhood, which aligns with the edge of the southeast quadrant of the Study Area and recommends the acquisition of neighborhood parkland in this area. The Capital Facilities Plan associated with the plan budgeted $600,000 beyond 2021 towards the acquisition of this parkland.

– The Station Area Plan could advance parks and open space at a neighborhood scale and at a site scale per the table below.

Exhibit 3-99. Park and Open Space Elements for Station Area

Neighborhood Scale	Site Scale / Code
Acquisition if opportunities arise. This could include a park consistent with the PROS Plan (2015 or as updated), or pocket parks or pea patches identified in the Kirkland Housing Strategy and Kirkland Sustainability Master Plan.	Developments provide onsite green space to provide for gathering space and stormwater treatment: ▪ Seattle Green Factor (Example implementation) ▪ Bellevue Green and Sustainability Factor (Code) ▪ Denver Green Building Ordinance (green roofs/green spaces requirements)
Linear parks along roads Linear parks with green space and recreation elements could be part of green / blue streets associated with Alternatives 2 and 3. Examples: ▪ Seattle examples ▪ Renton example	As part of site-level requirements for **plazas and common space**, allow recreation space **at ground level or at upper levels**. Examples include: ▪ Pike Place Urban Garden. ▪ San Francisco, requirement to provide publicly accessible open space with new office space.

3.7.4 Significant Unavoidable Adverse Impacts

Future population and employment growth will increase the demand for public services including police, fire, schools, and parks. This growth would occur incrementally over the 20-year planning period through 2044 and would be addressed in regular capital planning. Each service provider in conjunction with the City could evaluate levels of service and funding sources to balance with expected growth; if funding falls short, there may need to be an adjustment to levels of service or growth as part of regular planning under the Growth Management Act. With implementation of mitigation measures and regular periodic review of plans, no significant unavoidable adverse impacts to public services are anticipated.

3.8 Utilities

This section documents existing water and sewer utility systems in the City of Kirkland, reviews existing levels of service, estimated needs and demand for service, and projected levels of service under each alternative. The March 2015 City of Kirkland Comprehensive Water System Plan and the July 2019 City of Kirkland General Sewer Plan identify and schedule the necessary improvements to correct existing deficiencies and ensure the systems have the capacity to meet the needs of current and future customers.

3.8.1 Affected Environment

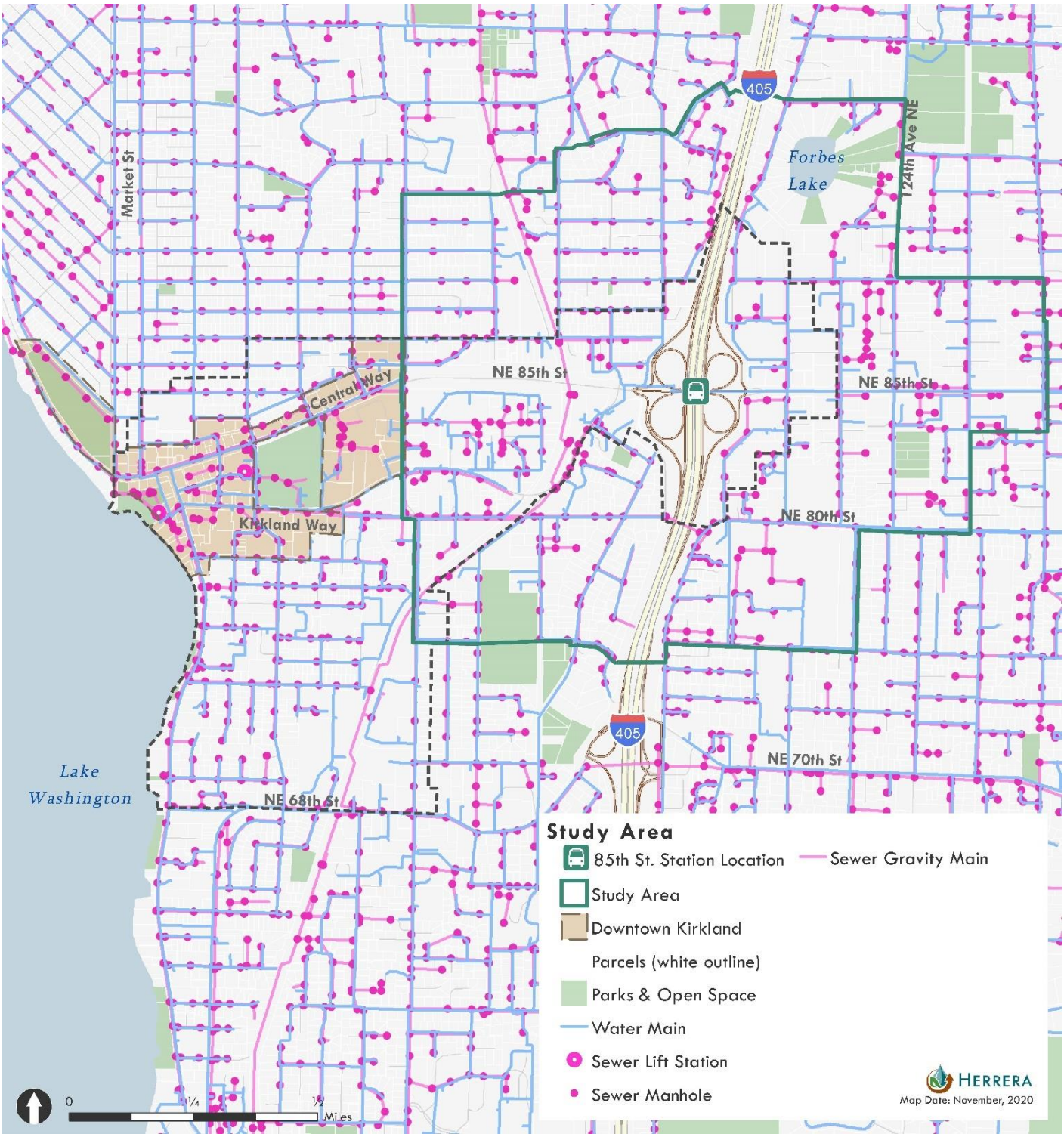
Sewer

Sewer service in the Study Area is provided by the City of Kirkland Wastewater Division, which handles operation maintenance for City sewer mains, holes, and pump stations. All the City's wastewater discharges to the King County Department of Natural Resources and Parks, Wastewater Treatment Division (KCWTD). King County accepts up to 100 gallons per day per capita from Kirkland under the terms of an intergovernmental agreement.

Water

Potable water in the Study Area is provided by the City of Kirkland Water Utility supplied by Seattle Public Utilities (SPU) through the Cascade Water Alliance (Cascade). Cascade is an association of five cities and two water and sewer districts in Puget Sound that have partnered to supply water to over 380,000 residences and local businesses. In addition to domestic potable water supply, the City of Kirkland Water Utility also provides the water storage and conveyance capacity to meet the needs for fire flow.

Exhibit 3-100. Utilities



Note: the dashed line represents the King County-Designated Urban Center.
Source: City of Kirkland, 2020; Herrera, 2020.

3.8.2 Impacts

Thresholds of Significance

Water and Sewer impacts would be considered to rise to the level of significance when the project's water or sewer demand exceed the capacity of the utility to supply and the LOS is decreased.

Impacts Common to All Alternatives

The Water and Sewer demand calculations below assume 1.83 persons per household in multifamily units and 2.73 per persons per household in single family units per the 2015 Comprehensive Plan EIS. Existing residential units in the Study Area are assumed to be 56% multifamily (apartment and condominium) and 44% single family homes based on parcel records and transportation model baseline information.

Sewer

Demand for sewer service would increase under all alternatives, as increased population and growth would add to sewer flows. Sewer system improvements to meet future growth, as identified in the City's 2018 General Sewer Plan, must be provided under all alternatives. Estimated sanitary flows were derived by multiplying the assumed rates of flow for population by the estimated planning area population. To estimate the increase in sanitary sewer flows, 76 gallons per capita per day (gpcd) was used for each new resident and 20 gpcd for each new employee. These values were taken per the City's 2018 General Sewer Plan.

The majority of the proposed sanitary pipeline replacement projects listed in the City's 2018 General Sewer Plan (RH2 2018) are located within the Kirkland basin (the basin to the west of the I-405 Interchange). The project list is based on the City's assessment of existing deficiencies, safety concerns, maintenance requirements, and capacity requirements. Under all alternatives these deficiencies will be exacerbated.

Water

Demand for water service would increase under any of the alternatives, decreasing supply capacity. Water distribution improvements for system deficiencies as identified in the City's Comprehensive Water System Plan must be provided and fire flow requirements must be met by the City under all alternatives. Estimated water service demand for each of the alternatives was

derived by multiplying the average demand per capita in Kirkland for years 2011-2013 as shown in the 2015 Comprehensive Plan EIS by the estimated population for the Study Area.

To estimate the increase in potable water demand, 103 gallons per capita per day (gpcd) was used for each new resident per the 2015 Comprehensive Plan EIS. There is no value provided for the water demand for each new employee within the City of Kirkland water utility in either the 2015 Comprehensive Plan EIS or the City's 2015 Comprehensive Water System Plan. A portion of the City is served by the Northshore Utility District and in its 2009 Water System Plan it reports the Average Daily Consumption per employee to be 36.7 gpcd and this this is the value used in this analysis.

Within the Study Area, the 510 pressure zone experiences high water velocities due to the undersized water main and represents a vulnerability due to decreased available fire flow. Operating the system at high velocities is more likely to damage the system with high pressure surges. The replacement of the undersized main serving the 510 pressure zone has been identified by the City as a recommended capital improvement project.

Some areas of the City's system are over 40 years old, and water mains are expected to have a life expectancy of only 50 years (RH2 2015). Portions of the system, particularly in the older parts of the city, may need to be replaced within the next ten years. Under all alternatives these deficiencies will be exacerbated.

No Action Alternative

Under the No Action Alternative 100% of the new residential units are assumed to be multi-family.

Sewer

Under the No Action Alternative, the sewer flows in the Study Area are expected to increase approximately 57% from approximately 423,000 gpd to approximately 662,000 gpd. This level of growth is consistent with the utility planning described in the 2018 City of Kirkland General Sewer Plan and would be mitigated by implementation of the planned capital facility upgrades.

Water

Under the No Action Alternative, the demand in the Study Area are expected to increase approximately 61% from approximately 620,800 gpd to approximately 1,001,000 gpd. This level of growth is consistent with the utility planning described

in the 2014 City of Kirkland Comprehensive Water Plan and would be mitigated by implementation of the planned capital facility upgrades.

Action Alternative 2

Under both Action Alternatives, 100% of the new residential units are assumed to be multi-family.

Sewer

Under Action Alternative 2, the sewer flows in the Study Area are expected to increase approximately 329% from approximately 423,000 gpd to approximately 1,815,000 gpd. This level of growth appears to exceed the overall 20-year planned system capacity described in the 2018 City of Kirkland General Sewer Plan. Therefore, the sewer system plan should be updated, and capital facilities planned to mitigate these impacts and provide the necessary sewer service.

Water

Under Action Alternative 2, the demand in the Study Area is expected to increase approximately 341% from approximately 620,800 gpd to approximately 2,735,000 gpd. This level of growth appears to exceed the overall 20-year planned system capacity described in the 2014 City of Kirkland Comprehensive Water Plan. Therefore, the water system plan should be updated, and capitol facilities planned to mitigate these impacts and provide the necessary domestic supply and fire flow.

Action Alternative 3

Under both Action Alternatives, 100% of the new residential units are assumed to be multi-family.

Sewer

Under Action Alternative 3, the sewer flows in the Study Area are expected to increase approximately 438% from approximately 423,000 gpd to approximately 2,274,000 gpd. This level of growth appears to exceed the overall 20-year planned system capacity described in the 2018 City of Kirkland General Sewer Plan. Therefore, the sewer system plan should be updated, and capitol facilities planned to mitigate these impacts and provide the necessary sewer service.

Water

Under Action Alternative 2, the demand in the Study Area is expected to increase approximately 451% from approximately 620,800 gpd to approximately 3,418,200 gpd. This level of growth appears to exceed the overall 20-year planned system capacity described in the 2014 City of Kirkland Comprehensive Water Plan. Therefore, the water system plan will need to be updated and capitol facilities planned to mitigate these impacts and provide the necessary domestic supply and fire flow.

3.8.3 Mitigation Measures

Incorporated Plan Features

No additional plan features are proposed for water or sewer.

Regulations and Commitments

RCW 19.27.097 provides that an applicant for a building permit must provide evidence of an adequate supply of potable water. The authority to make this determination is the local agency that issues building permits (i.e. The City of Kirkland).

Requirements for adequate connections include:

- Sewer Service Installation KMC Chapter 15.12
- Water service installation and fees KMC 15.14

The means by which utilities can be extended to address area-specific needs and potentially distribute the costs include:

- Local Improvement Districts KMC 18.08
- Sewer Extension Charges KMC 15.38.030 to collect sewer extension charges from owners of properties which individually benefit from publicly built sewer extension facilities.
- Latecomers agreements per RCW 35.91. The City has allowed for such agreements where the City agrees to collect funding from benefited properties where a developer agrees to install public infrastructure that is of a greater capacity or a longer distance than is needed for that developer's project alone

Other Proposed Mitigation Measures

As mitigation for sewer, the City should update the General Sewer Plan including the capital facilities plan. In addition, the City should finance and build the necessary capital facilities to mitigate these additional flows to provide the necessary sewer service.

As mitigation for water, the City should update The Comprehensive Water Plan including the capital facilities plan. In addition, the City should finance and build the necessary capital facilities to mitigate the additional domestic demand and fire flow, which may result in appropriate general facility charges for new development.

In order to estimate the costs associated with the proposed changes, both a downstream analysis of the wastewater system, and hydraulic model analysis would need to be undertaken. The required fire flows and potable water will not support the anticipated growth. Until such time as the study is completed, the City may condition individual developments to provide analysis of their contribution to projected flows that are anticipated and require development to provide infrastructure to remedy increased demand or rectify deficiencies.

3.8.4 Significant Unavoidable Adverse Impacts

Under all the alternatives the population served by the utilities will increase. This will result in increased consumption of water from the regional supply and increased sewage production requiring treatment and discharge into local waters. With the mitigation identified, no significant unavoidable adverse impacts are expected for water or sewer.