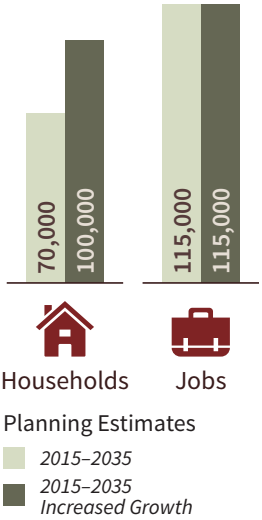
3.1 Additional Analysis

Section 3.1 describes the impacts of the Preferred Alternative for the same elements of the environment discussed in the May 4, 2015 Draft EIS. Consistent with the analysis conducted in the Draft EIS, this analysis is programmatic and, unless noted differently, follows the same methodologies described in the Draft EIS. This section of the Final EIS should be read in the context of the Draft EIS because the affected environment section is not repeated. The Preferred Alternative is described in Chapter 2 of this Final EIS.

Consistent with the Draft EIS assumptions, the growth assumptions for the Preferred Alternative are 70,000 housing units and 115,000 jobs. Section 3.1.2 also includes analysis of a hypothetically increased growth scenario that is intended to provide a sensitivity analysis of impacts for residential growth higher than the growth assumptions of the Preferred Alternative and Draft EIS alternatives defined for the Comprehensive Plan Update (see Section 3.1.2, Sensitivity Analysis on page 3.1–29).



3.1.1 Preferred Alternative

Earth and Water Quality

The analysis for this Preferred Alternative notes that growth will occur under alternatives in all urban centers and villages, and outside these areas. All areas subject to growth could potentially experience adverse impacts generated by future construction activity, and by increased density of urban uses and activities after construction. Disturbance of Environmentally Critical Areas (ECAs), deposition of disturbed soils, other pollutant washoff, erosion and adverse effects on water quality could occur, even though City-required protective measures would be required.

ECA:
Environmentally Critical Area

The greatest potential for such impacts could occur if construction is near or in identified ECAs, with a somewhat lesser potential if development occurs within the hearts of neighborhoods, most of which are long-established in their topography, street patterns, groundcover, and levels of building coverage. These are places where infill development would in many cases avoid ECAs entirely, or would modify ECAs that were already previously modified such as by use of concrete retaining walls. Assessment of development proposals on urbanized sites that have mapped ECAs would enable the City to assess potential for impacts on a site-by-site basis and allow modification of ECAs (such as in places where slope

modifications are already in place), or require that ECAs be avoided per rules such as those addressing protection of wetlands and streams.

Comparison of growth expectations among the urban centers and villages allows for an interpretation of relative impact potential differences among the alternatives. The Preferred Alternative in many places would be comparable in levels of growth expected to alternatives 3 and 4, which were the alternatives with the greatest transit-orientation of future growth. This leads to general findings that the Preferred Alternative would have an earth/water quality impact potential that is comparable to Alternative 3 and 4 in most areas.

However, the Preferred Alternative expects lower levels of growth than alternatives 3 and 4 in several urban villages in the southern half of the city, which would proportionally reduce the potential for impacts on earth and water resources in those areas (including Columbia City, Rainier Beach, and Mount Baker/North Rainier). For the latter two neighborhoods, the lower growth expectations would reduce potential for worst-case earthquake damage levels, given the presence of seismically sensitive soils.

Compared to Alternative 1 (the No Action Alternative), the Preferred Alternative in most of the potentially sensitive places would expect more growth and thus the worst-case impact potential on earth/water quality resources would generally be higher than Alternative 1.

The information in Table 3.1–1 summarizes potential critical area disturbance impact comparisons of the Preferred Alternative to other alternatives, similar to the content of Draft EIS Table 3.1-2.

The Preferred Alternative includes areas where urban villages are recommended to expand that are the same as identified for Alternative 4 (except for the omission of expansion in Fremont). These are areas where changes with future development could generate additional potential for disturbance of earth and water resources, more so than would otherwise occur under alternatives 1 or 2. However, as with other areas, the City's rules would require protective measures such as erosion controls, and buffers from resources as appropriate, that would reduce the potential for this type of adverse impact.

With respect to the possible use of SEPA infill exemption provisions (with higher thresholds for SEPA environmental review), a possible outcome of the Preferred Alternative could be the encouragement of development in urban centers and urban villages in ways that would promote the accomplishment of the City's preferred urban village strategy. Although future construction forms and trends are difficult to predict, future growth patterns emphasizing urban centers and villages could aid in reducing potential for development in more peripheral vicinities of the city that tend to be closer to sensitive earth and water resources.

MITIGATION MEASURES

None of the impacts identified for the Preferred Alternative are concluded to be significant adverse impacts and so no mitigation measures are required. The continued application

Table 3.1–1 Potential critical area disturbance impacts of the Preferred Alternative compared to other alternatives

Resource Type	Preferred Alternative (Alternative 5)
Steep Slopes/Landslide Hazards	**First/Capitol Hill:** Low potential for disturbance; same as alternatives 3 and 4 **South Lake Union:** Potential for disturbance is similar to alternatives 3 and 4; greater than Alternative 1 **Uptown:** Same as alternatives 3 and 4, and lower potential than Alternative 1 for disturbance **Eastlake:** Higher potential for disturbance than alternatives 3 or 4; same potential as Alternative 1
Peat/Settlement-Prone Soils	**Northgate:** Potential for disturbance is approximately the same as for alternatives 3 and 4, and greater than Alternative 1 **Mount Baker:** Potential for disturbance or damage reduced by approximately one-half compared to alternatives 3 and 4; but greater potential than Alternative 1 **Rainier Beach:** Potential for disturbance or damage reduced by more than one-half compared to alternatives 3 and 4; but greater potential than Alternative 1
Nearby Streams or Wetland ECAs	**Northgate:** Potential for disturbance is approximately the same as for alternatives 3 and 4, and greater than Alternative 1 **Lake City:** Potential for disturbance is similar to alternatives 3 and 4; and less than Alternative 1 **Columbia City:** Potential for disturbance or damage reduced by more than one-half compared to alternatives 3 and 4; and also a lesser potential than Alternative 1 **Morgan Junction:** Potential for disturbance slightly elevated compared to other alternatives **Westwood/Highland Park:** Potential for disturbance is similar to or slightly higher than alternatives 3 and 4.

Source: Seattle Dept. of Construction and Inspections, 2016.

of the City's existing policies, review practices, and regulations, including the operational practices of Seattle Public Utilities, would help to avoid and minimize the potential for significant adverse impacts to critical areas discussed in this section.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

None are expected for the Preferred Alternative.

Air Quality and Greenhouse Gas Emissions

AIR QUALITY

Construction-related Emissions

Future growth under any alternative would result in development of new residential, retail, light industrial, office and community/art space. Construction to support anticipated growth under the Preferred Alternative would carry with it the same types of construction related impacts described in the Draft EIS for alternatives 1–4. As described in the Draft EIS, off-road equipment and on-road trucks used to construct all new development would comply with the noted PSCAA and U.S. EPA regulations. In addition, because regulatory improvements requiring cleaner off-road equipment emissions are to be phased in over the next several years and construction related impacts are transient in nature, only minor adverse air quality impacts from construction sources are anticipated.

Land Use Compatibility and Transportation Air Quality Emissions

Under the Draft EIS alternatives and Preferred Alternative, future growth and development patterns would be influenced by Comprehensive Plan growth strategies in ways that would affect future residences' (or other "sensitive receptors") relationships to mobile and stationary sources of air toxics and particulate matter $PM_{2.5}$. The degree of potential for adverse impacts on new sensitive receptors would depend on proximity to sources, emissions from these sources and the density of future sensitive development.

The Draft EIS identifies areas of the City, including urban centers and villages, where residential development could expose residents to higher cancer risk from roadways or stationary sources. Similar to Alternative 4, the Preferred Alternative would place the emphasis for growth near transit centers, many of which have portions within 200 meters of a major highway, rail line or port terminal, particularly those in the northern portions of the city. However, because these are only limited portions of each center or villages, a majority of expected future growth in population and employment is still likely to occur outside of the area most affected by these pollution sources. Conclusions would be similar even when considering the possible use of SEPA infill exemption provisions with higher thresholds for SEPA environmental review.

Transportation Air Quality Emissions

Regional road transportation pollutant emissions under alternatives 1–4 would be substantially less than under existing background conditions (see corrected Draft EIS Figure 3.2–6 in Final EIS Section 3.2). This is because the projected improvement in fuel economy, emission controls and fuel composition will outweigh the projected increase in VMT. This would result in a beneficial future air quality outcome. It is anticipated that emissions reductions under the Preferred Alternative would be similar to those shown in the Draft EIS for Alternative 4 (see Table 3.1–2).

GREENHOUSE GAS EMISSIONS

Greenhouse gases (GHGs) would be emitted during construction activities. These emissions, while not individually altering GHG emissions significantly, would cumulatively, over 20 years, be more than a negligible contributor to GHG emissions within the city. The City's *Climate Action Plan* (City of Seattle 2013b) recognizes the relevance of construction related GHG emissions and has included actions to be implemented by 2030 to address them. These measures would address construction as well. Consequently, although construction related emissions would not be negligible, the combination of regulatory improvements and *Climate Action Plan* actions under way would lead to the construction-related GHG emissions being considered a minor adverse air quality impact. This conclusion would apply to all of the Draft EIS Alternatives and the Preferred Alternative, and if SEPA infill exemption provisions are used.

Similar to alternatives 2–4, the Preferred Alternative would have total transportation GHG emissions lower than the No Action Alternative. Similar to the Draft EIS alternatives,

Table 3.1–2 Road transportation emissions (2035)

	GHG Emissions in $MTCO_2e$						
Type of Vehicle	**2015 Existing**	**2035 Alt. 1**	**2035 Alt. 2**	**2035 Alt. 3**	**2035 Alt. 4**	**2035 Preferred Alt. 5**	**2035 Sensitivity Analysis**
Cars and Light Trucks	1,603,000	1,379,000	1,369,000	1,375,000	1,379,000	1,376,000	1,402,000
Heavy Trucks	720,000	990,000	990,000	989,000	989,000	989,000	989,000
Buses	64,000	42,000	42,000	42,000	42,000	42,000	42,000
Vanpools	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Total	2,389,000	**2,413,000**	**2,403,000**	**2,408,000**	**2,412,000**	**2,409,000**	**2,435,000**

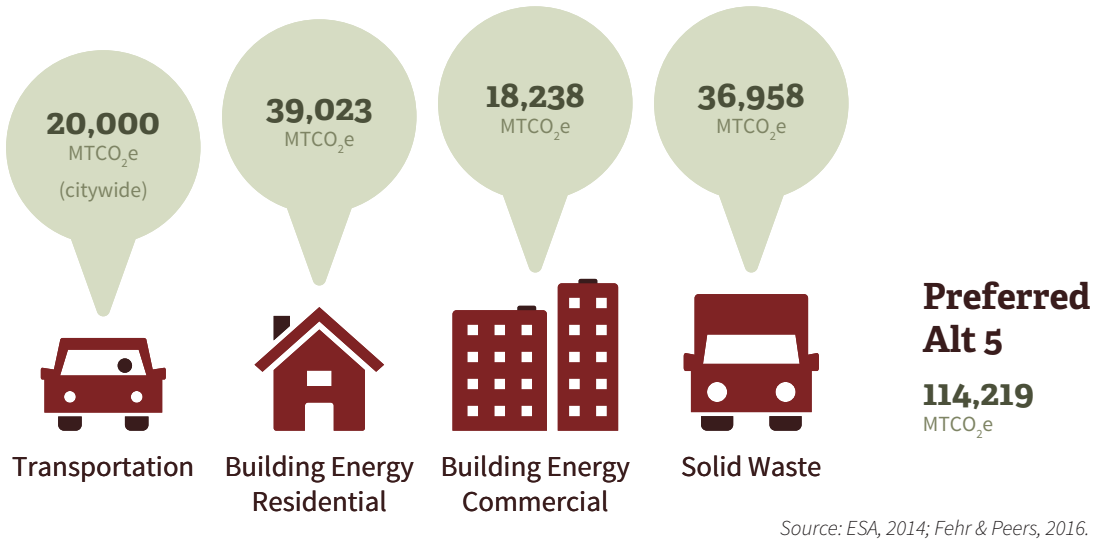
Source: Fehr & Peers, 2016.

the Preferred Alternative is expected to generate slightly higher GHG emissions than in 2015. This is due to a combination of factors: projected fuel economy would be slightly outweighed by the overall increase in VMT and change in congestion levels (i.e., travel speeds) by 2035. As the Preferred Alternative is expected to generate lower GHG emissions than the No Action Alternative, no adverse impacts are identified.

Total operational GHG emissions from the Preferred Alternative are presented in Figure 3.1–1 and Appendix B.1.[1] GHG emissions under the Preferred Alternative are likely to be similar to those under Alternative 4 and less than those of the No Action alternative. No significant adverse impacts were identified with respect to these GHG emissions. Conclusions would be similar even when considering the possible use of SEPA infill exemption provisions with higher thresholds for SEPA environmental review, which could aid in promoting the accomplishment of the City's preferred urban village strategy.

See revised GHG emissions for Draft EIS alternatives 1–4 in Final EIS Section 3.2, page 3.2–6.

Figure 3.1–1 Operational GHG emissions of the Preferred Alternative



Source: ESA, 2014; Fehr & Peers, 2016.

1 Revised transportation GHG estimate prepared by Fehr & Peers, energy and solid waste GHG estimates assumed to be the same as Alternative 4.

MITIGATION MEASURES

No mitigation strategies beyond those described in Draft EIS Section 3.2, Air Quality and Greenhouse Gas Emissions, are recommended for the Preferred Alternative.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

No significant unavoidable adverse impacts to air quality and greenhouse gas emissions are anticipated for the Preferred Alternative. This conclusion is also accurate for the scenario if SEPA infill exemption provisions are used.

Noise

CONSTRUCTION NOISE AND VIBRATION IMPACTS

As with Draft EIS alternatives 1–4, the Preferred Alternative envisions future residential and job growth primarily within areas where transit infrastructure either exists or is planned. Implementation would result in a concentration of development within existing developed and developing areas. Resulting construction activities would have the potential to temporarily affect nearby sensitive receivers such as existing residences, schools, and nursing homes. As noted in the Draft EIS, temporary construction noise and vibration within these infill development areas, where ambient noise levels are already affected by roadway traffic and other transportation noise sources, would be less noticeable to receivers.

The Draft EIS also states that development of larger and/or higher buildings are typically the construction activities with the greatest potential for adverse construction-related noise or vibration impacts because they can involve pile driving or other similar impact-related foundation work. The Preferred Alternative guides more employment growth to the Downtown and South Lake Union urban centers than other alternatives. Development in these areas would likely be larger buildings that could require pile driving, but they are also the areas with the highest existing ambient noise levels. The City's existing controls and the mitigation identified in the Draft EIS would likely keep these impacts from being considered significant and adverse.

NOISE AND LAND USE COMPATIBILITY

As described in the Draft EIS, noise levels are typically highest close to freeways, highways and other transportation infrastructure. However, the Preferred Alternative strives, at least in part, to locate residential and employment uses near to transit to reduce vehicle miles traveled within the City. Consequently, if newly developed residences or other sensitive receptors, in the worst care, are located too close to major roadway or noisy industrial operations, additional insulation or window treatments could be warranted to avoid adverse noise impacts on residents by reducing interior noise levels to generally acceptable levels.

Comparing total expected growth distributions with alternatives 3 and 4 (the most comparable alternatives), the Preferred Alternative would have somewhat less potential for this kind of proximity-related noise impact than either alternative 3 or 4 in urban villages.

For Draft EIS alternatives 1–4 and the Preferred Alternative, roadside noise levels would increase by less than 0.5 dBA at all locations. As discussed in the Draft EIS, outside of the laboratory, a 3 dBA change is considered a just-perceivable difference. Consequently, an increase of less than 0.5 dBA would be considered a minor impact on environmental noise. However, while considered a minor impact when examined city-wide, more development could increase noise levels in some areas.

The conclusions reached above on adverse impact potential would also apply if the Preferred Alternative also included the use of SEPA infill exemption provisions with higher thresholds for SEPA environmental review. This could lead to growth in patterns that would promote accomplishment of the City's preferred urban village strategy, which could lead to denser growth patterns with a potential for adverse noise effects from nearby transportation facilities.

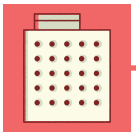
MITIGATION MEASURES

No mitigation strategies beyond those described in Draft EIS Section 3.3, Noise, are recommended for the Preferred Alternative.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

No significant unavoidable adverse impacts to noise levels are anticipated for the Preferred Alternative.

Land Use Patterns, Compatibility, Height, Bulk and Scale



LAND USE PATTERNS

Similar to Alternative 4, the Preferred Alternative guides growth toward urban villages near transit. As with Alternative 4, the Preferred Alternative identifies the greatest number of transit-oriented places—served by either bus or rail—as preferred for growth. The number of urban villages that would be subject to growth and possible boundary changes would be similar to Alternative 4 (except with omission of the Fremont expansion area; see Figure 2–14, Figure 2–15 and Figure 2–16). Similar to alternatives 3 and 4, a new residential urban village could be created around the potential future NE 130th Street transit station.

Compared to Alternative 4, the Preferred Alternative could lead to less residential growth to the hub and residential urban villages, with the greatest reductions focused in several urban villages. Estimated residential growth in urban centers would remain the same under the Preferred Alternative as Alternative 4, except in Uptown which assumes 1,000 more households under the Preferred Alternative than Alternative 4.

The following urban villages are each estimated to have at least 500 fewer housing units when compared to the Alternative 4 housing estimates: Mount Baker, West Seattle Junction, Columbia City, Crown Hill, North Beacon Hill, Othello, Rainier Beach and Roosevelt. Conversely, the following urban centers and villages are estimated to have at least 500 additional housing units when compared to the Alternative 4 housing estimates: Uptown, 23rd & Union-Jackson and Eastlake (see Table 2–3 and Figure 3.1–2).

Probable changes to residential land use patterns under the Preferred Alternative would be generally similar to Alternative 4, except that the Preferred Alternative would distribute a lower amount of future housing growth (88 percent of total growth) to the same number of villages and centers. Of that amount, 50 percent is projected to be in urban centers, 15 percent in hub urban villages and 23 percent in residential urban villages (see Figure 3.1–14 on page 3.1–18 of this Final EIS).

Compared to Alternative 4, the Preferred Alternative would guide more employment growth to the urban centers, with a net estimated increase of 7,500 jobs in the urban centers (including an increase of 5,000 jobs in the Downtown Urban Center). In contrast, several urban villages—including Ballard, Mount Baker, Othello and Roosevelt—are each estimated to have a reduction in employment growth of 1,000 jobs or more, compared to Alternative 4 (see Table 2–4 and Figure 3.1–3). Compared to Alternative 4, this represents a higher concentration of employment growth in the urban centers (59 percent) and a lower combined concentration of future employment growth in hub and residential urban villages (14 percent; see Figure 3.1–17 on page 3.1–20 of this Final EIS). Overall, the share of employment growth in areas outside urban villages and centers under the Preferred Alternative (19%) is similar to Alternative 4.

The resulting citywide land use pattern, comparable to Alternative 4, would consist of a relatively large number of moderately-developed residential and commercial/mixed-use nodes with access either to light rail or frequent bus service. This is likely to lead to the construction of more moderate-density, moderate-height development types with a combination of multi-family, mixed-use and commercial uses over time. This would contrast with a more centralized and higher-density land use pattern with Alternative 2. Compared to Alternative 1, the Preferred Alternative would produce slightly lower concentrations of growth in certain urban villages (such as Columbia City and Othello) while resulting in higher concentrations in a majority of the urban centers.

Similar to Alternative 4, the possible creation of a new residential urban village at NE 130th Street, if it occurs and is followed by rezones, would likely result in gradual conversion of existing single-family residential and limited low-intensity commercial uses to multifamily or mixed-use land use patterns over time.

Figure 3.1–2 Preferred Alternative change in housing unit growth compared to Alternative 4

*Urban center housing unit growth assumptions are the same for Alternative 4 and the Preferred Alternative except in **Uptown**, which assumes 1,000 more households under the Preferred Alternative than Alternative 4 .*

Figure 3.1–3 Preferred Alternative change in job growth compared to Alternative 4

LAND USE COMPATIBILITY

Impacts to land use compatibility under the Preferred Alternative would be similar to those under Alternative 4. The impacts would be similarly geographically widespread due to the expansion of urban villages and the potential creation of a new village at NE 130th Street. Similar to Alternative 4, this would create a potential for localized adverse, but relatively minor, compatibility issues as existing, lower intensity uses in these urban villages transition to higher-density development forms. For example, existing single-family areas located near a major transit station would likely be rezoned to accommodate low-rise multifamily and possibly local-service commercial uses.

In areas where the urban villages would be expanded, or where new urban villages would be created, the predominantly single-family residential character of neighboring uses may make them relatively more sensitive to changes in development intensity and scale. These areas, for example, may experience more occurrences of sharper transitions in urban form as new, more intensive forms—such as townhomes and multi-family apartments—could be built alongside existing single family homes and properties. This is tempered somewhat by understanding that the Draft Comprehensive Plan in policy LU1.6 seeks to provide "harmonious transition" in such areas.

HEIGHT, BULK AND SCALE

Potential adverse impacts of height, bulk and scale under the Preferred Alternative would be similar to those under Alternative 4. Growth in the urban centers would likely be a mix of mid- and high-rise development while growth in transit-oriented development nodes would likely be up to mid-rise in scale. Growth in the hub urban villages would likely be up to mid-rise and in the residential urban villages a mix of low- and mid-rise.

Impacts of the Preferred Alternative would also occur in the urban villages identified for expansion of village boundaries (same as Alternative 4 except Fremont expansion is omitted. Zoning in the expansion areas would similarly likely be rezoned from low intensity, single-family residential uses to accommodate low-rise multifamily and possibly local-service commercial uses. Figure 3.1–4 through Figure 3.1–12 illustrate the current maximum allowed height in each of the potential urban village expansion areas. As these figures show, the areas to be added to the existing urban villages are characterized by relatively low building heights and low FAR limits. Over time, height and bulk in these areas would increase with additional development, and localized adverse bulk and scale contrasts could occur as the area transitions to a more intense development pattern.

In areas outside of the urban villages and outside of the urban village expansion areas, the overall development character and pattern would likely remain more comparable to existing bulk and scale patterns.

Figure 3.1–4 Height limits—Ballard expansion area

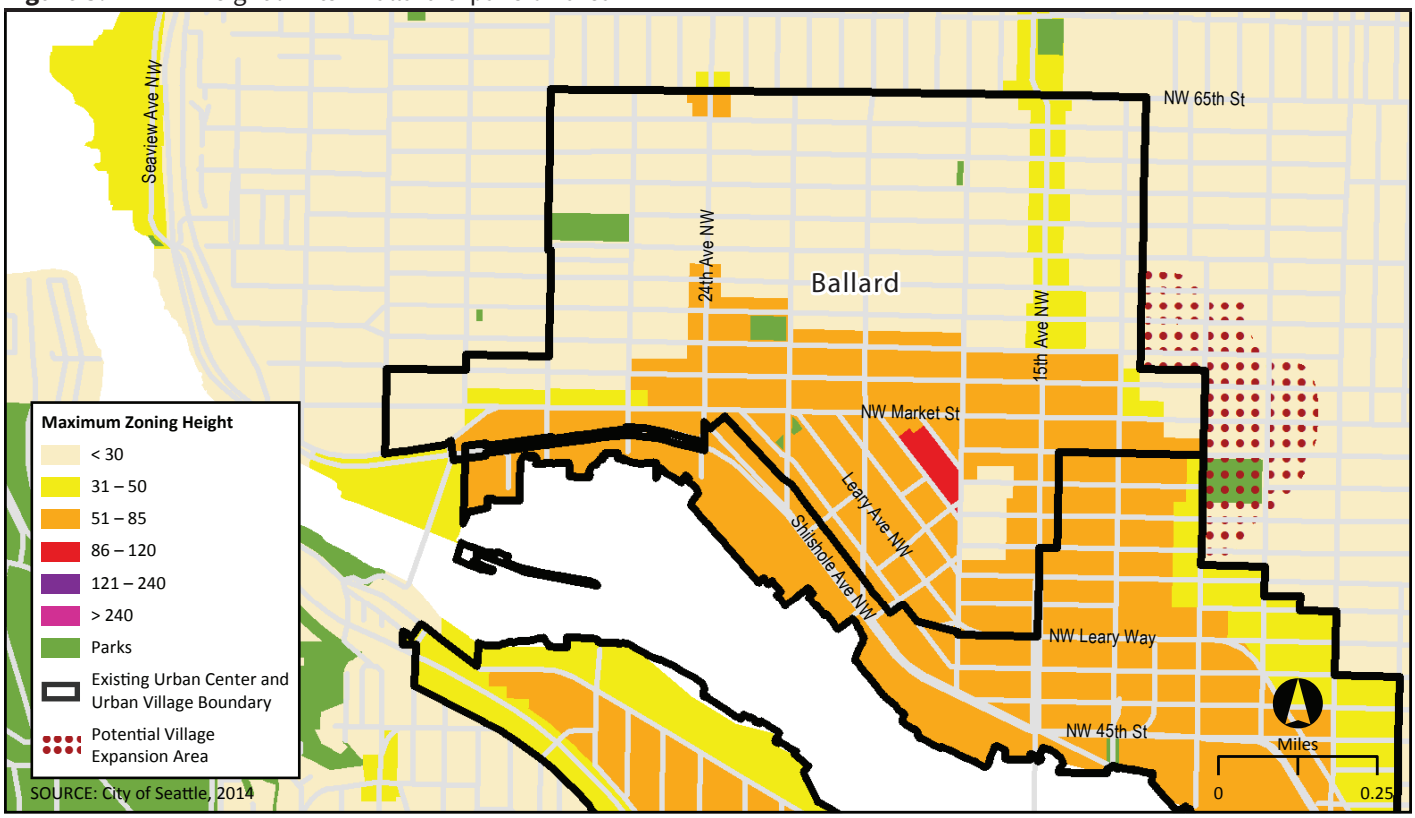


Figure 3.1–5 Height limits—West Seattle Junction expansion area

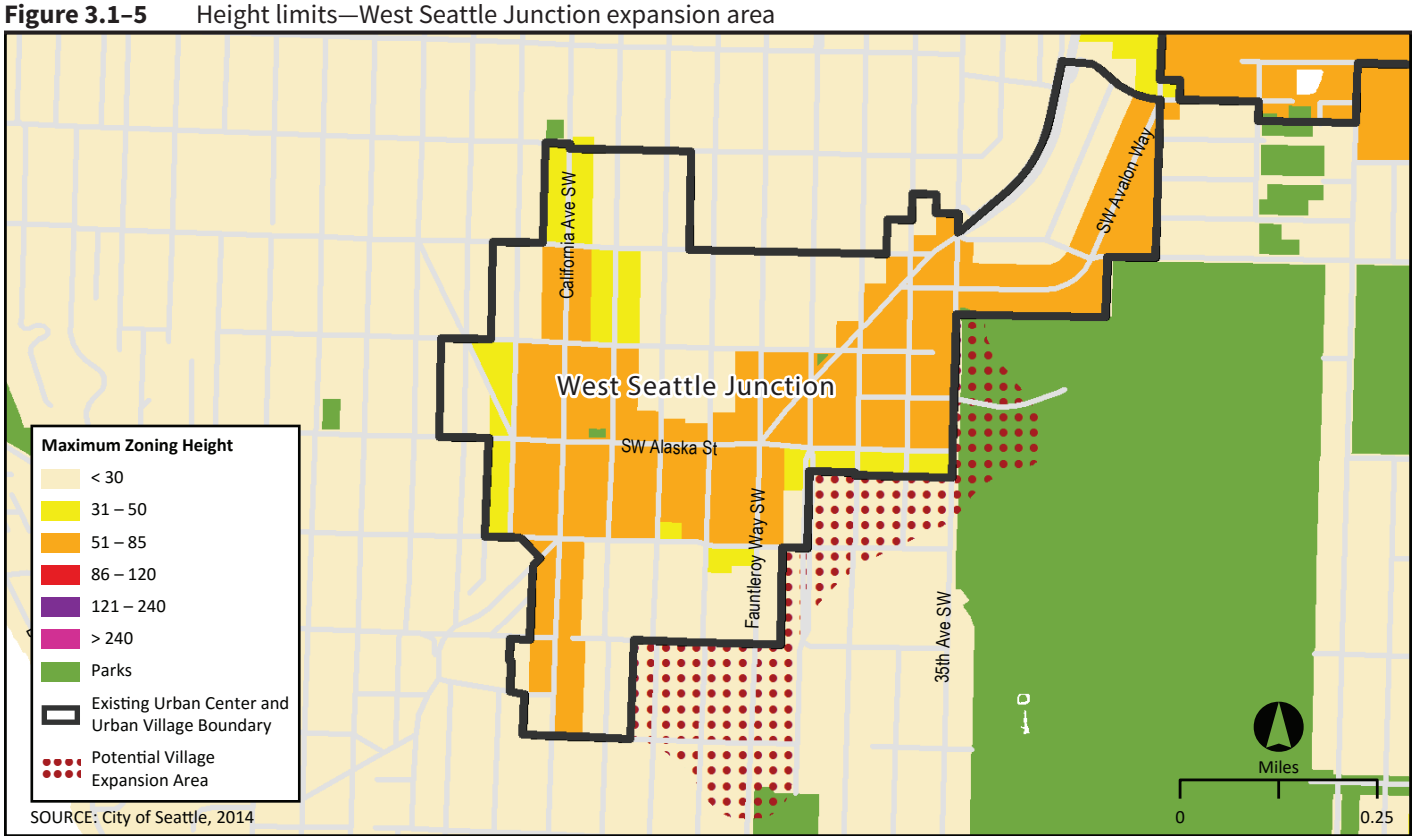


Figure 3.1–6 Height limits—Crown Hill expansion area

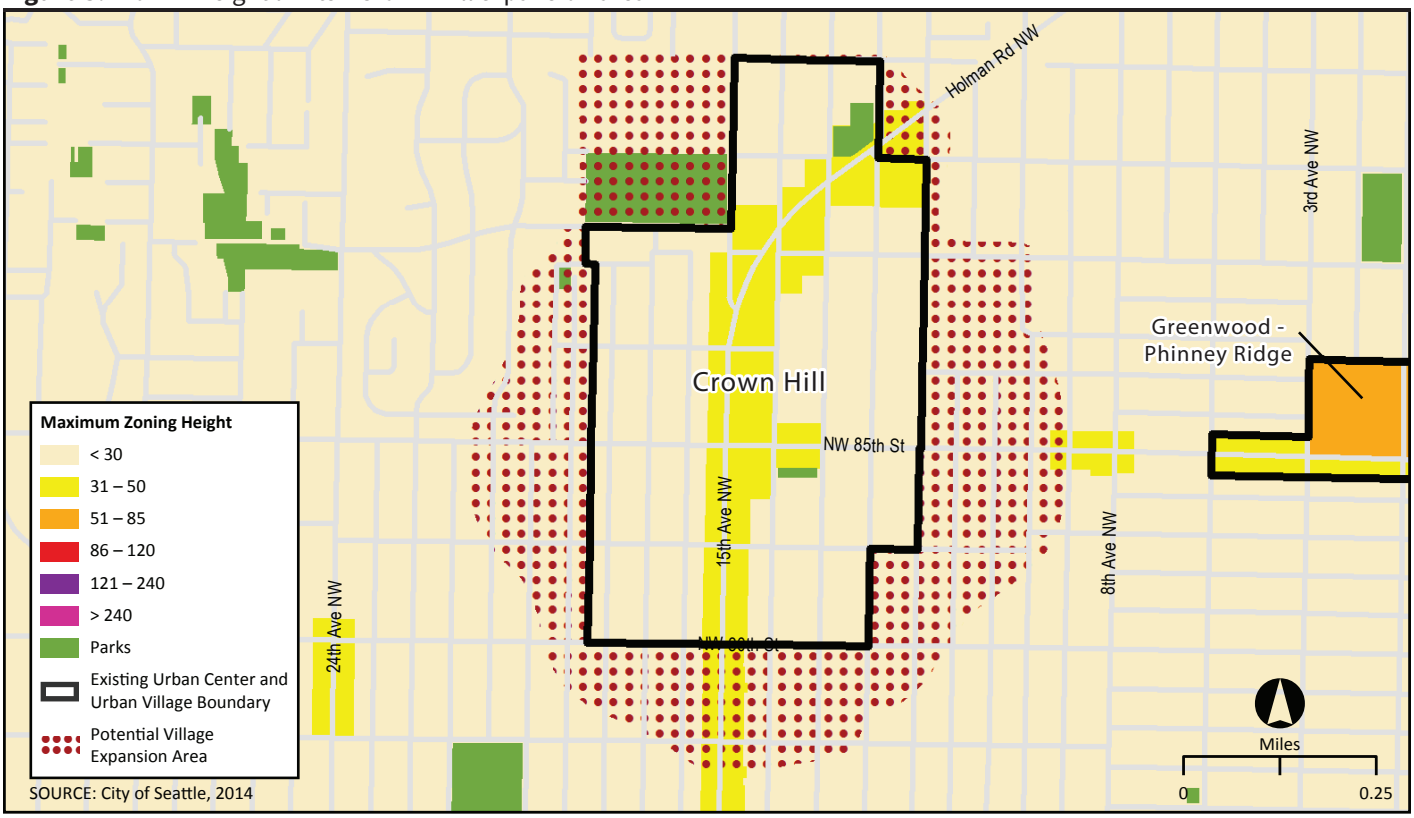


Figure 3.1–7 Height limits—North Beacon Hill expansion area

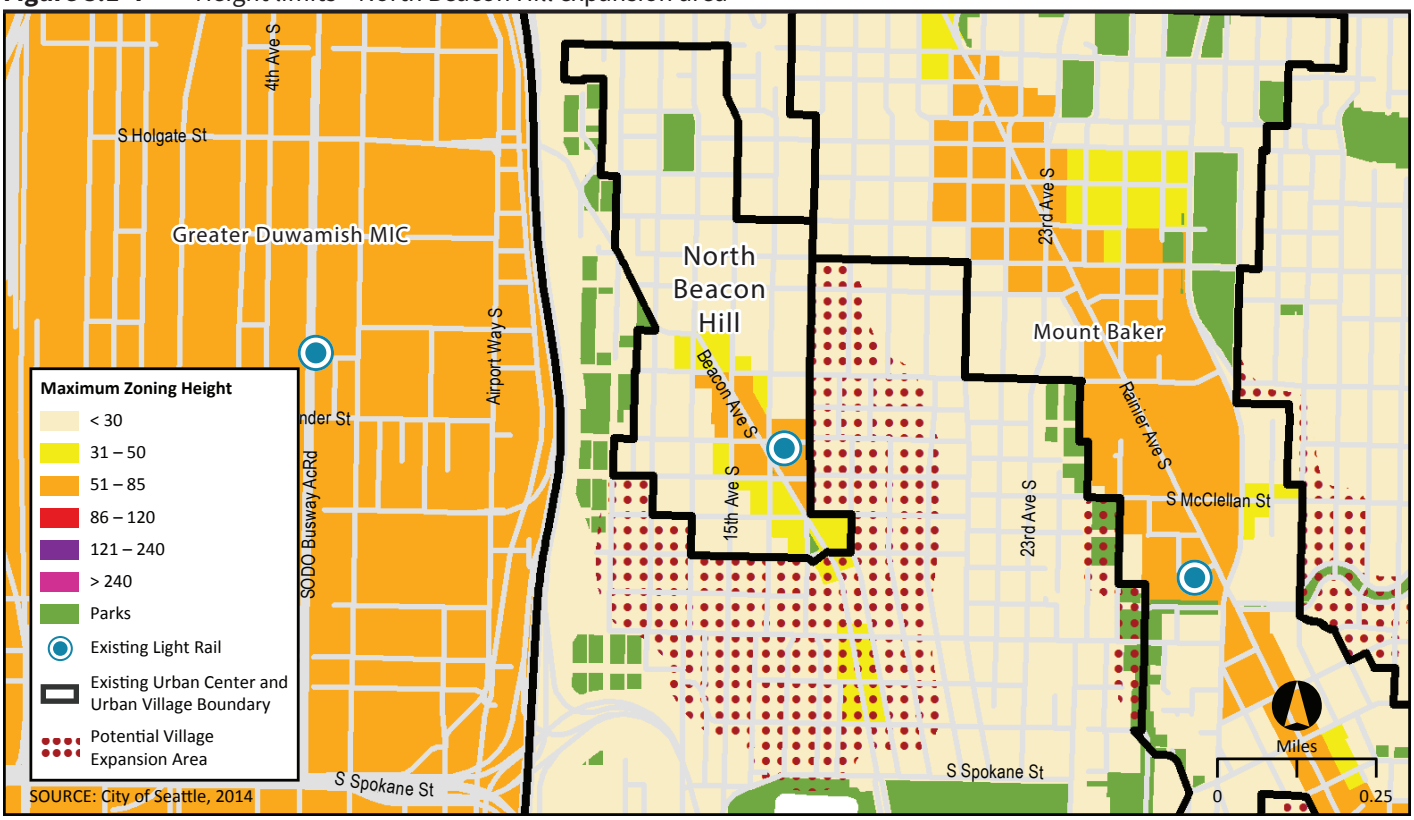


Figure 3.1–8 Height limits—Othello expansion area

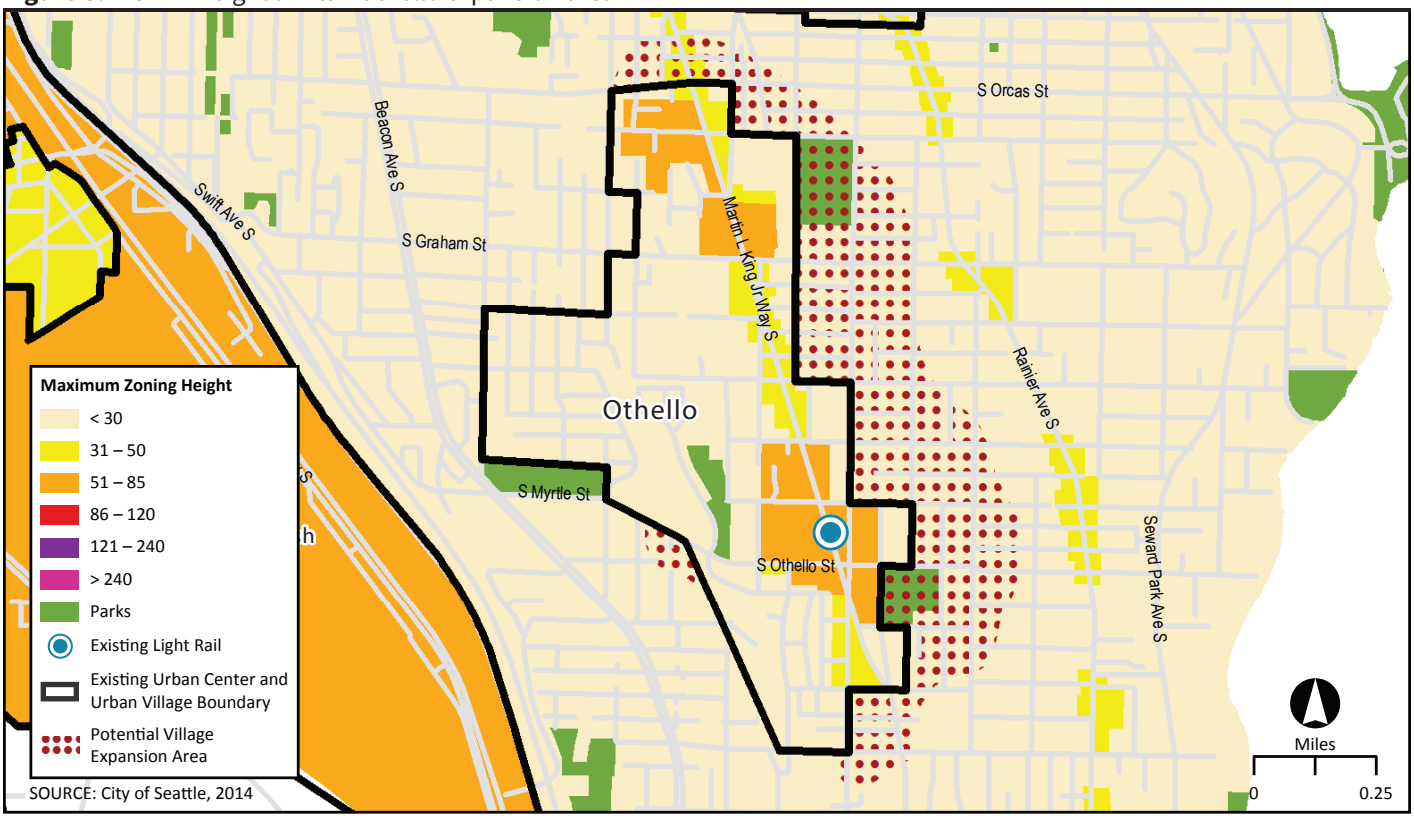


Figure 3.1–9 Height limits—Rainier Beach expansion area

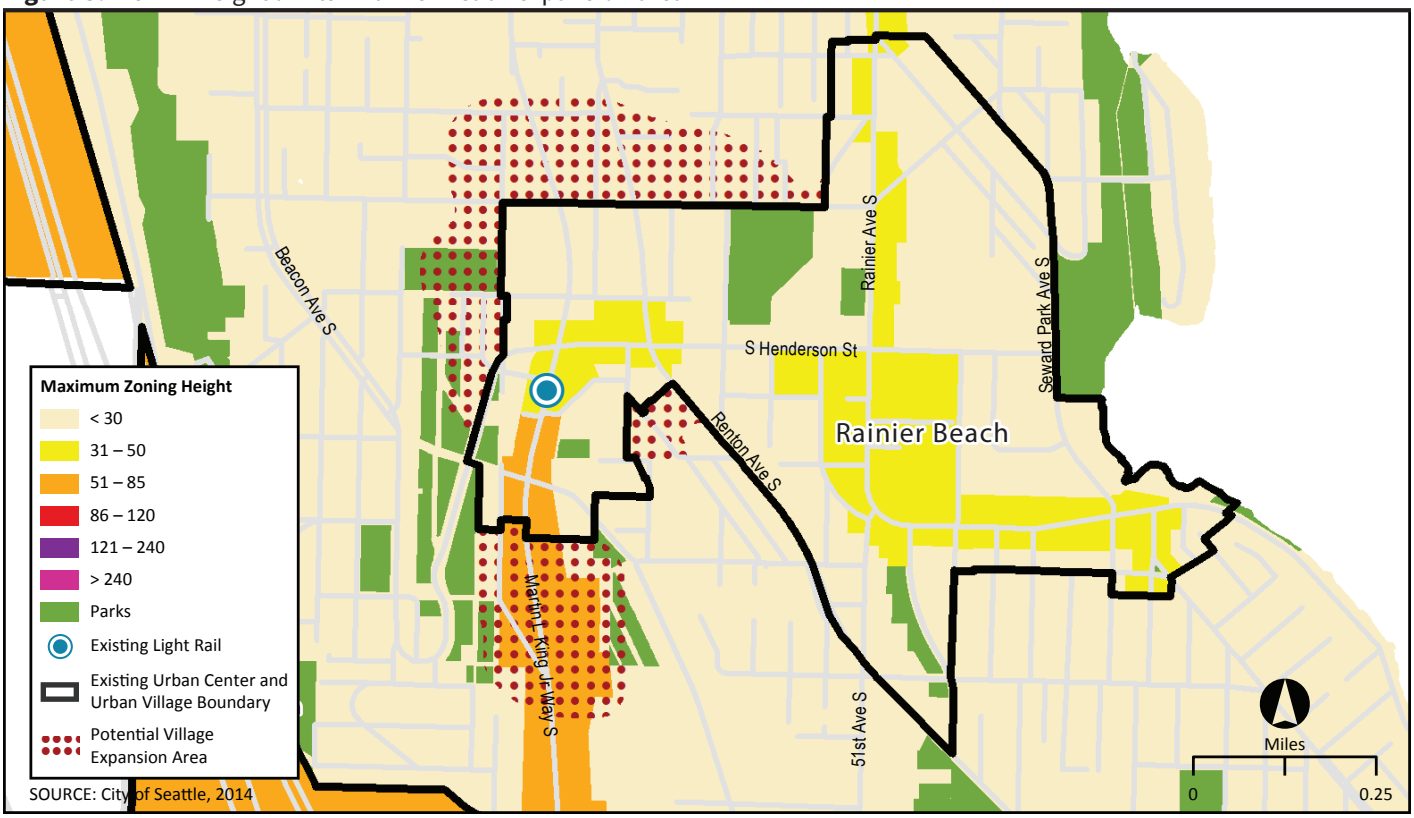


Figure 3.1–10 Height limits—Roosevelt expansion area

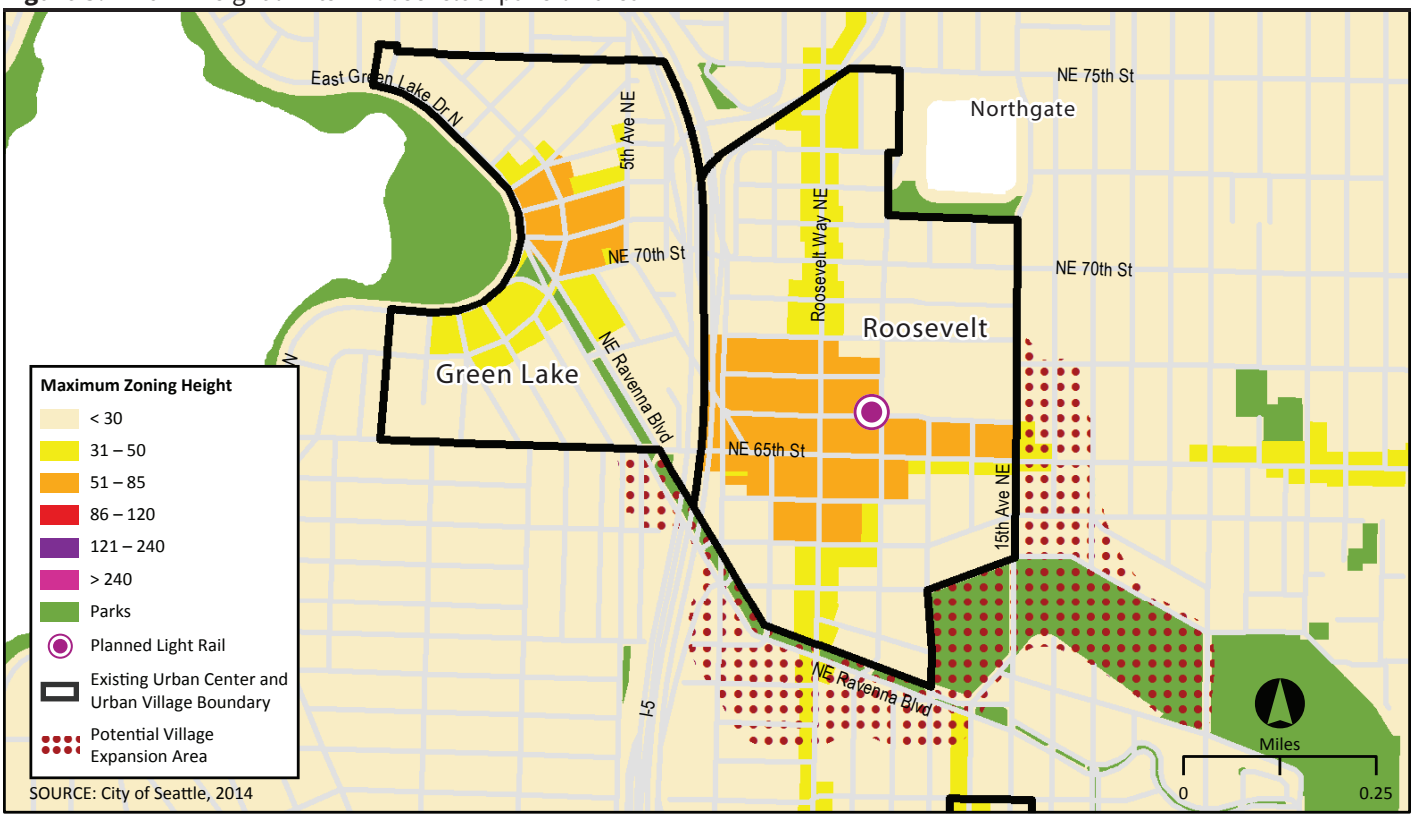


Figure 3.1–11 Height limits—NE 130th Street new urban village

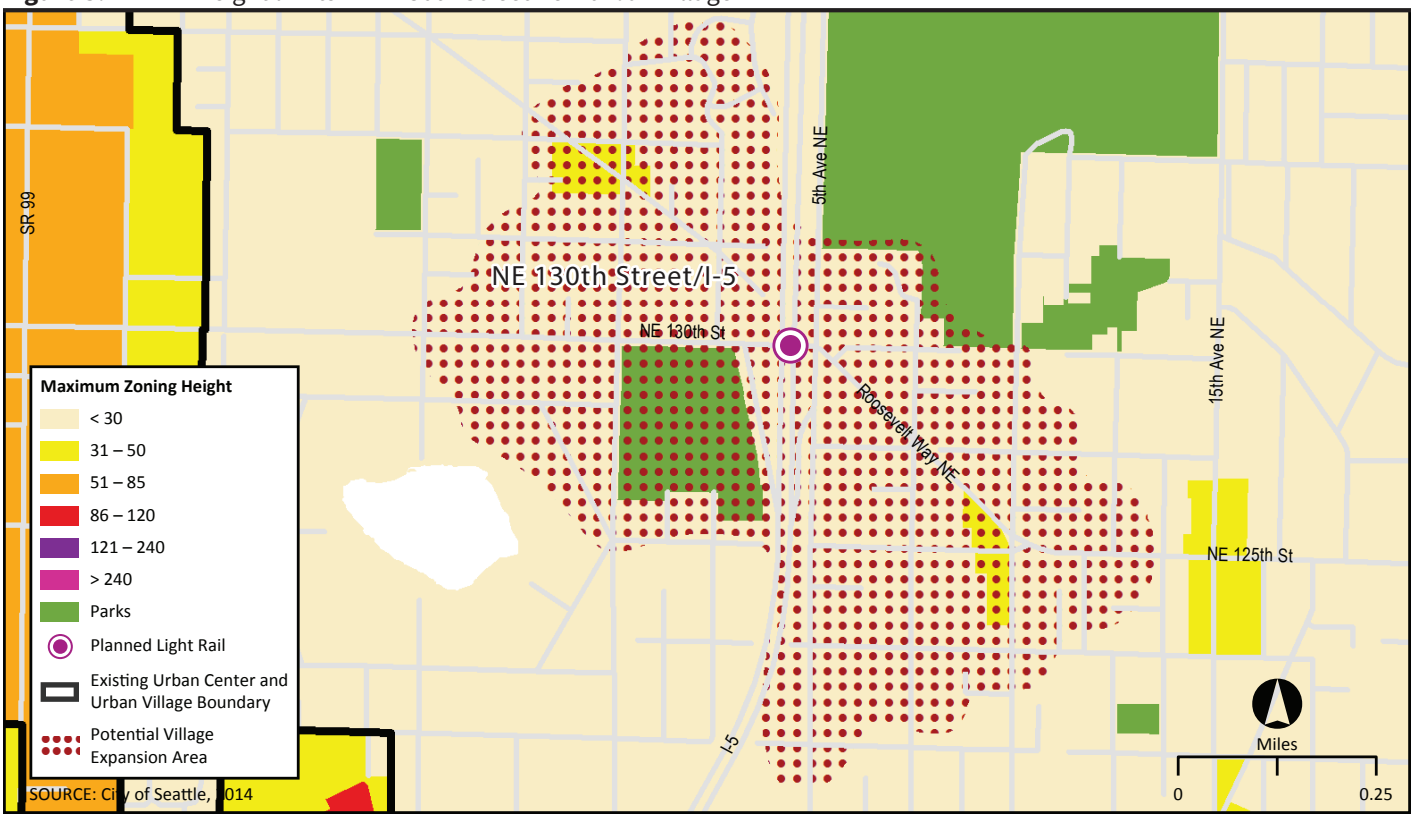
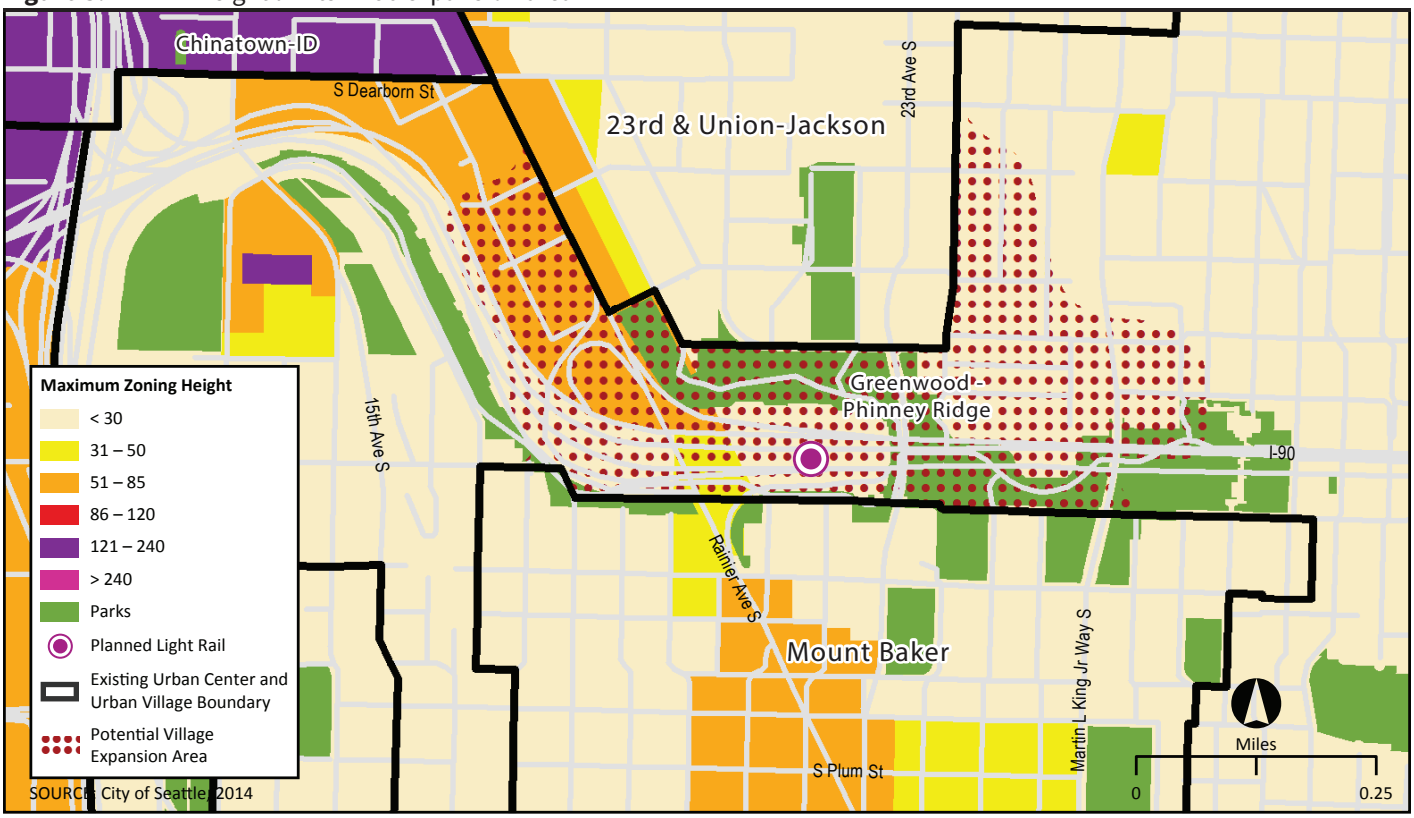


Figure 3.1–12 Height limits—I-90 expansion area



VIEWS

Impacts to views under the Preferred Alternative would be similar to those described under Alternative 4. As future development creates additional building height and bulk in urban centers and villages, there is a minor but recognized potential for localized disruption of protected views, in the worst case. The precise nature and degree of potential future view disruptions along scenic routes or from particular SEPA-protected public viewpoints would depend upon specific locational qualities and individual project designs. As applicable, individual project-level review could include detailed evaluation of potential view impacts along with opportunities to define mitigation during future land use permit application and design review processes.

EFFECTS OF OTHER POLICY CHANGES

The combination of proposed urban village expansion areas, deletion of existing policies LU59 and LU60 and changes in Future Land Use Map (FLUM) mapping practices would have similar impacts as with Alternative 4 (see discussion in Final EIS Section 3.2, page 3.2–8). Preferred Alternative expansion areas are the same as defined for Alternative 4, except with the omission of the Fremont expansion area. The potential range of adverse compatibility and height/bulk/scale impacts would be similar to those disclosed in the Draft EIS for Alternative 4.

It is also noted here that findings made as "impacts common to all alternatives" (see Final EIS Section 3.2—revisions and clarifications) with respect to the proposed method of defining growth estimates for urban villages, also apply to the Preferred Alternative.

OVERVIEW COMMENT ON LAND USE EFFECTS OF POSSIBLE USE OF SEPA INFILL PROVISIONS

Similar to conclusions reached on Draft EIS page 3.4-20, the use of SEPA infill provisions to set higher categorical exemption levels is likely to encourage future growth and development patterns consistent with the City's comprehensive plan. This means that higher exemption levels would be likely to attract new development in patterns promoting accomplishment of the preferred urban village strategy. In terms of this Preferred Alternative, this would mean encouraging growth across the spectrum of urban centers and urban villages, some of which are assumed to be expanded. This alternative also includes proposed methods of defining urban village growth estimates that would provide a means of measuring whether a preferred housing density and employment intensity has been reached. This is one of the requirements in State law that must be met in order to use the SEPA infill provisions.

The conclusions described above about land use patterns, compatibility, height/bulk/scale and view effects of the Preferred Alternative also apply if SEPA infill provisions are used.

MITIGATION MEASURES

The mitigation identified in Draft EIS Section 3.4, Land Use Patterns, Compatibility, Height, Bulk and Scale, is adequate to mitigate potential impacts to the Preferred Alternative. No new mitigation is proposed.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

The Preferred Alternative is not expected to result in significant unavoidable adverse impacts beyond those described in the Draft EIS Section 3.4, Land Use Patterns, Compatibility, Height, Bulk and Scale.

Relationship to Plans, Policies and Regulations

The Preferred Alternative's relationship to plans, policies and regulations is generally consistent with what was discussed in the Draft EIS, but as also modified in this Final EIS, Section 3.2 with more overview description and discussion of the Elements contained in the Draft Comprehensive Plan from July 2015. This expanded discussion is applicable to the Draft EIS alternatives and the Preferred Alternative. The Draft EIS section discussed differences among the alternatives in a limited fashion. Given its resemblance in many respects to Alternative 4, the Preferred Alternative's relationships to plans, policies and regulations is most closely similar to Alternative 4, except in its different growth distributions that seek in part to support equitable growth patterns as the city grows over the next twenty years.

Population, Employment and Housing

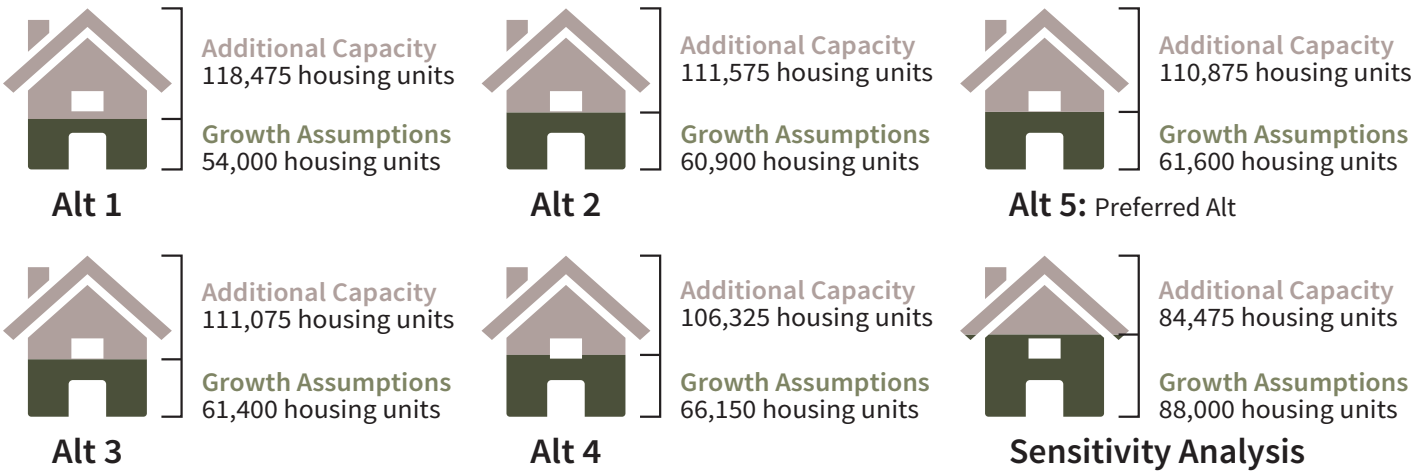
POPULATION AND HOUSING

The Preferred Alternative plans for 70,000 new housing units by 2035, which is consistent with the growth analyzed in the Draft EIS. The impacts of this increase in population will be largely the same as those impacts already discussed for Alternative 4, which guides growth to urban villages near rail and bus transit. In the Preferred Alternative, as with the four alternatives analyzed, no part of the city will exceed existing capacity for housing units (see Figure 3.1–13).

The Preferred Alternative anticipates 88 percent of growth in housing units to occur inside urban villages and centers, with 12 percent of housing unit growth outside of centers and villages. The Preferred Alternative prioritizes growth where there is frequent and reliable bus service or rail transit, and also would guide lesser growth than Alternative 4 to areas where the equity analysis showed a high risk of displacement and a low access to opportunity. This should lead to a somewhat reduced risk for adverse displacement-related housing impacts to occur in the neighborhoods most sensitive to these impacts, compared to Alternative 4. However, implementation of mitigation strategies related to such impacts should still be considered, as appropriate.

Table 3.1–3 on the following page shows the housing growth for the Preferred Alternative and the change in growth from Alternative 4. Figure 3.1–14 shows the distribution of growth by village/center type for the Preferred Alternative.

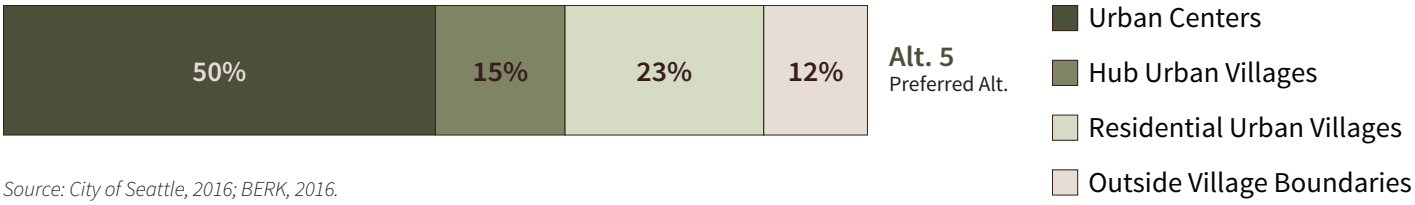
Figure 3.1–13 Urban village housing capacity and growth assumptions*



* Existing capacity within urban villages is 172,475 housing units (same for all alternatives).

Source: City of Seattle, Office of Planning and Community Development, 2016.

Figure 3.1–14 Distribution of housing growth by village/center type under the Preferred Alternative



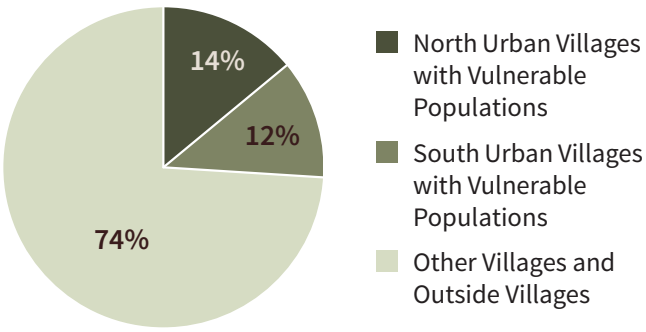
Source: City of Seattle, 2016; BERK, 2016.

Table 3.1–3 Preferred Alternative housing growth and growth shares

	Preferred Alt. Housing Unit Growth	Housing Unit Change from Alt. 4
Urban Centers	35,000	1,000
Hub Urban Villages	10,400	(2,400)
Residential Urban Villages	16,200	(3,150)
Existing	*14,700*	*(3,150)*
New (130th/I-5)	*1,500*	*0*
Outside Centers and Villages	8,400	4,550
Total	**70,000**	**0**

Source: City of Seattle, 2016; BERK, 2016.

Figure 3.1–15 Projected residential growth in areas with vulnerable populations, Preferred Alternative



Alternative 5
Preferred Alternative

Source: City of Seattle, Office of Planning and Community Development, 2016.

Compared to growth analyzed in Alternative 4, the Preferred Alternative anticipates a change in the distribution of expected housing growth in the Uptown Urban Center and in some of the hub and residential urban villages. The Bitter Lake Hub Urban Village would receive more housing than in Alternative 4, while Mount Baker and West Seattle Junction would receive less. All residential urban villages anticipate a change in growth as compared to Alternative 4. This includes reduced growth estimates for Columbia City, Crown Hill, Greenwood-Phinney Ridge, North Beacon Hill, Othello, Rainier Beach and Roosevelt, compared to Alternative 4 (see Table 2–3 and Figure 3.1–2 on page 3.1–9).

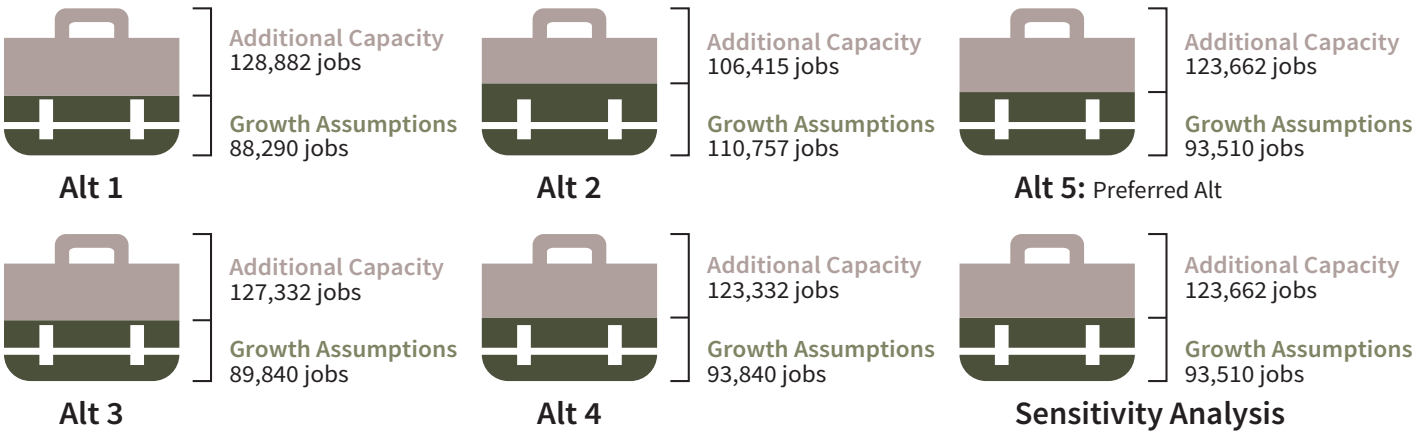
In comparison to Alternative 4's measures of growth in areas with vulnerable populations as shown in Draft EIS Figure 3.6-21, the Preferred Alternative (with or without SEPA infill exemption provisions) would lead to increased amounts and proportions of housing growth in the North End neighborhoods with vulnerable populations, and reduced amounts and proportions of growth in the South Seattle neighborhoods with vulnerable populations (see Figure 3.1–15). This is due to increased growth distributions to Bitter Lake and Aurora-Licton urban villages, with other North End villages of this kind held steady. It also represents a product of the intent of the Preferred Alternative to reduce intended growth levels in South End neighborhoods where there would be higher risk of adverse displacement impacts. However, it is worth noting that the growth distributed to the 23rd-Union Jackson Urban Village would increase from 1,750 dwelling units (Alternative 4) to 2,700 dwelling units under the Preferred Alternative.

EMPLOYMENT

The Preferred Alternative anticipates 115,000 new jobs in Seattle by 2035, consistent with the assumption for the Draft EIS alternatives. The impacts of this increase in employment would be largely the same as those impacts already discussed in Alternative 4, which guides growth to urban villages near rail and bus transit. The Preferred Alternative, however, assumes that more employment growth will occur inside the urban centers and less employment growth will occur in the urban villages than under Alternative 4. However, there would be less growth concentrated inside the urban centers than was analyzed in Alternative 2. In the Preferred Alternative, as with the four alternatives analyzed, no part of the city will exceed existing capacity for employment (see Figure 3.1–16).

The Preferred Alternative anticipates 81 percent of job growth would occur inside urban villages and centers, with 19 percent of job growth outside of centers and villages. The Preferred Alternative assumes more employment growth in the urban centers than in Alternative 4 (7,500 more jobs, with 5,000 of these jobs locating Downtown). The share of jobs in urban centers would be 59 percent, as compared to the 53 percent analyzed in Alternative 4. The Ballard, Mount Baker, Othello and Roosevelt urban villages would see a notably lesser level of employment growth compared to Alternative 4, as would certain other urban villages such as Aurora-Licton Springs and Columbia City. Employment growth in the Manufacturing/Industrial Centers under the Preferred Alternative and Alternative 4 would be comparable.

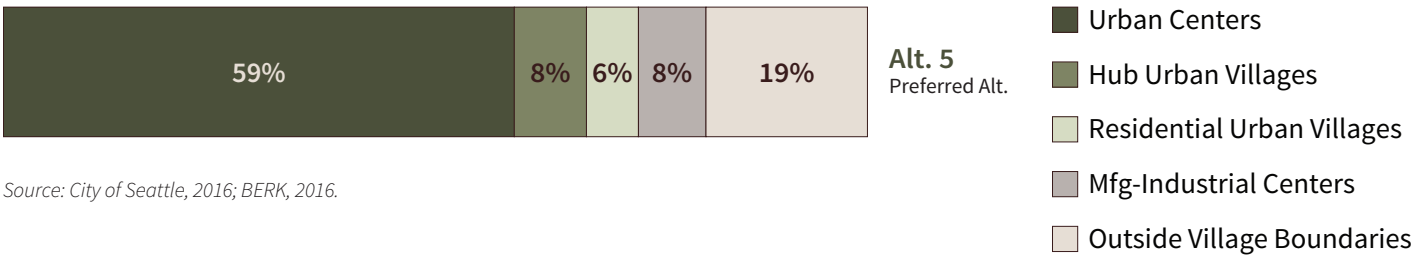
Figure 3.1–16 Urban village employment capacity and growth assumptions*



* Existing capacity within urban villages is 217,172 jobs (same for all alternatives).

Source: City of Seattle, Office of Planning and Community Development, 2016.

Figure 3.1–17 Distribution of employment growth by village/center type under the Preferred Alternative



Source: City of Seattle, 2016; BERK, 2016.

Table 3.1–4 Preferred Alternative employment growth and growth shares

	Preferred Alt. Employment Growth	Change in Employment from Alt. 4
Urban Centers	68,000	7,500
Hub Urban Villages	9,600	(3,700)
Residential Urban Villages	6,910	(4,130)
Existing	*6,510*	*(4,130)*
New (130th/I-5)	*400*	*0*
Manufacturing/Industrial Centers	9,000	0
Outside Centers and Villages	21,490	330
Total	**115,000**	**0**

Source: City of Seattle, 2016; BERK, 2016.

Table 3.1–4 shows the employment growth assumptions for the Preferred Alternative and the change in growth from Alternative 4. Figure 3.1–17 shows the distribution of employment growth by village/center type.

Impacts of job growth in the Preferred Alternative are expected to be largely the same as those analyzed in Alternative 4 of the Draft EIS. A greater concentration of jobs in urban centers is likely to contribute to added pressures on transit and could influence future transit investments as well as commuting trends. Conclusions would remain similar with or without the use of SEPA infill provisions.

MITIGATION MEASURES

Seattle currently has the land capacity and regulations in place to absorb projected future growth for housing and employment by 2035 for the growth assumptions of the Preferred Alternative. Applicable mitigation measures for the Preferred Alternative are the same as analyzed in the Draft EIS. This reflects similar conclusions and rationales discussed in the Draft EIS to define several mitigation strategies to address housing affordability and displacement, combining public and private efforts. This includes ongoing City efforts, as well as other strategies relating to the Housing Affordability and Livability Agenda (HALA) as explained in the Draft EIS Section 3.6.3.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

Under the Preferred Alternative, conclusions for Significant Unavoidable Adverse Impacts regarding housing affordability would remain the same as concluded in the Draft EIS, although a differing growth distribution could contribute to a slightly reduced potential for displacement-related impacts in neighborhoods rated as having high risk of displacement and low access to opportunity.

Transportation

The travel demand model was run for the Preferred Alternative land use pattern. For this analysis, the 2035 No Action Alternative (Alternative 1) still acts as the baseline for identifying transportation impacts. In the Draft EIS, the metric used to identify impacts was the projected screenline v/c ratios. An impact was identified if a forecasted v/c ratio did not meet the LOS standards. However, the City is proposing to change the LOS standards from screenline v/c ratios to a mode share standard, as discussed in Final EIS Section 3.2, Plans and Policies. For the purposes of this analysis, both the screenline and mode shares were evaluated so that the Preferred Alternative can be compared to the alternatives evaluated in the Draft EIS.

SCREENLINES

*A **screenline** is an imaginary line across which the number of passing vehicles is counted.*

While there is a different distribution of future growth that would affect future land use patterns under the Preferred Alternative, all the screenline volume-to-capacity (v/c) ratios are expected to meet the existing LOS standards. Similar to alternatives 1 through 4, Screenline 1.11 (North City Limit—3rd Avenue NW to Aurora Avenue NW), Screenline 5.11 (Ballard Bridge), and Screenline 5.16 (University & Montlake Bridges) are projected to have v/c ratios over 1.0. However, the LOS threshold is 1.2 for these screenlines, so no significant adverse LOS impacts are identified.

The Preferred Alternative is forecasted to have lower auto volumes across screenlines in south Seattle compared to Alternative 4 because there would be lesser household and employment growth. Small increases in the v/c ratios across the Ship Canal are expected compared to Alternative 4, as increased levels of household and employment growth are assumed in north Seattle. While there is some variation in travel patterns across all alternatives, the differences in v/c ratios are minor, with no larger than a 0.06 change in v/c ratio for any one screenline in any one direction compared to alternatives 1–4 (see Table 3.1–5).

Because all screenlines are projected to meet the LOS standards under the Preferred Alternative, no significant adverse auto, freight or transit impacts are identified under the Preferred Alternative.

STATE FACILITIES

In addition to the screenline locations, auto volumes on the state facilities studied in the Draft EIS were examined under the Preferred Alternative. The Preferred Alternative is expected to have roughly equivalent auto traffic on all of the segments studied. All but one of the volume-to-LOS D capacity ratios fall within the ranges forecasted for alternatives 1–4. The one exception is SR 509 between S 112th Street and Cloverdale Street, which is expected to have a ratio 0.01 higher than the Draft EIS alternatives. Daily traffic fluctuations tend to be of that magnitude or larger and the difference may not be noticed by drivers. Moreover, the ratio would still be well under 1.0, meaning the facility would still meet WSDOT's LOS D standard. Therefore, the overall findings regarding state facilities remain the same as stated in the Draft EIS (see Appendix B.2)

Table 3.1–5 2035 PM peak hour screenline volume-to-capacity

			Alt. 1		Alt. 2		Alt. 3		Alt. 4		Preferred Alt. 5		Sensitivity Analysis	
No.	**Screenline Location**	**LOS Std.**	**NB/EB**	**SB/WB**	**NB/EB**	**SB/WB**	**NB/EB**	**SB/WB**	**NB/EB**	**SB/WB**	**NB/EB**	**SB/WB**	**NB/EB**	**SB/WB**
1.11	North City Limit—3rd Ave NW to Aurora Ave N	1.20	1.03	0.80	1.03	0.79	1.02	0.78	1.03	0.79	1.04	0.80	1.04	0.82
1.12	North City Limit—Meridian Ave N to 15th Ave NE	1.20	0.76	0.61	0.76	0.61	0.76	0.62	0.77	0.62	0.77	0.64	0.78	0.67
1.13	North City Limit—30th Ave NE to Lake City Way NE	1.20	0.96	0.83	0.98	0.82	0.96	0.83	0.96	0.83	0.97	0.84	0.97	0.84
2	Magnolia	1.00	0.56	0.57	0.55	0.56	0.56	0.56	0.56	0.55	0.56	0.56	0.58	0.56
3.11	Duwamish River—West Seattle Bridge & Spokane St	1.20	0.69	1.15	0.68	1.15	0.70	1.14	0.70	1.15	0.69	1.15	0.71	1.16
3.12	Duwamish River—1st Ave S & 16th Ave S	1.20	0.38	0.55	0.38	0.55	0.39	0.55	0.38	0.55	0.38	0.55	0.38	0.55
4.11	South City Limit—Martin Luther King Jr Way to Rainier Ave. S	1.00	0.57	0.98	0.56	0.93	0.58	0.94	0.57	0.93	0.56	0.93	0.57	0.93
4.12	South City Limit—Marine Dr SW to Meyers Way S	1.00	0.56	0.72	0.55	0.72	0.56	0.72	0.56	0.73	0.56	0.72	0.57	0.72
4.13	South City Limit—SR 99 to Airport Way S	1.00	0.58	0.74	0.58	0.75	0.59	0.76	0.58	0.75	0.58	0.74	0.59	0.74
5.11	Ship Canal—Ballard Bridge	1.20	1.19	0.72	1.15	0.69	1.16	0.70	1.17	0.73	1.18	0.72	1.21	0.75
5.12	Ship Canal—Fremont Bridge	1.20	0.79	0.71	0.78	0.70	0.78	0.70	0.77	0.71	0.79	0.71	0.80	0.73
5.13	Ship Canal—Aurora Bridge	1.20	0.94	0.82	0.92	0.82	0.91	0.82	0.91	0.83	0.92	0.82	0.94	0.84
5.16	Ship Canal—University & Montlake Bridges	1.20	0.96	1.06	0.96	1.06	0.95	1.05	0.94	1.05	0.95	1.05	0.97	1.08
6.11	South of NW 80th St—Seaview Ave NW to 15th Ave NW	1.00	0.52	0.50	0.51	0.48	0.51	0.48	0.53	0.50	0.53	0.50	0.53	0.51
6.12	South of N(W) 80th St—8th Ave NW to Greenwood Ave N	1.00	0.88	0.77	0.85	0.75	0.86	0.76	0.87	0.78	0.87	0.78	0.89	0.80
6.13	South of N(E) 80th St—Linden Ave N to 1st Ave NE	1.00	0.55	0.41	0.54	0.41	0.53	0.41	0.53	0.42	0.54	0.41	0.56	0.43
6.14	South of NE 80th St—5th Ave NE to 15th Ave NE	1.00	0.76	0.67	0.74	0.65	0.74	0.67	0.73	0.67	0.74	0.67	0.74	0.68
6.15	South of NE 80th St.—20th Ave NE to Sand Point Way NE	1.00	0.64	0.58	0.63	0.57	0.62	0.58	0.61	0.58	0.63	0.58	0.64	0.60
7.11	West of Aurora Ave—Fremont Pl N to N 65th St	1.00	0.55	0.66	0.54	0.64	0.55	0.64	0.57	0.65	0.56	0.65	0.58	0.67
7.12	West of Aurora Ave—N 80th St to N 145th St	1.00	0.56	0.66	0.55	0.65	0.56	0.65	0.56	0.66	0.57	0.67	0.58	0.68
8	South of Lake Union	1.20	0.92	0.83	0.93	0.83	0.90	0.83	0.90	0.82	0.91	0.82	0.92	0.84
9.11	South of Spokane St—Beach Dr SW to W Marginal Way SW	1.00	0.59	0.71	0.57	0.70	0.59	0.71	0.60	0.72	0.59	0.72	0.60	0.73
9.12	South of Spokane St—E Marginal Way S to Airport Way S	1.00	0.60	0.71	0.60	0.71	0.61	0.71	0.60	0.71	0.60	0.70	0.61	0.71
9.13	South of Spokane St—15th Ave S to Rainier Ave S	1.00	0.66	0.89	0.65	0.89	0.67	0.91	0.67	0.91	0.66	0.89	0.67	0.90
10.11	South of S Jackson St—Alaskan Way S to 4th Ave S	1.00	0.64	0.84	0.64	0.85	0.64	0.83	0.64	0.84	0.64	0.84	0.65	0.84
10.12	South of S Jackson St—12th Ave S to Lakeside Ave S	1.00	0.74	0.91	0.74	0.92	0.76	0.91	0.75	0.92	0.75	0.91	0.77	0.92
12.12	East of CBD	1.20	0.39	0.52	0.39	0.53	0.39	0.52	0.39	0.52	0.39	0.52	0.40	0.53
13.11	East of I-5—NE Northgate Way to NE 145th St	1.00	0.84	0.78	0.88	0.79	0.85	0.79	0.84	0.79	0.86	0.79	0.88	0.80
13.12	East of I-5—NE 65th St to NE 80th St	1.00	0.50	0.53	0.50	0.51	0.50	0.54	0.49	0.54	0.51	0.53	0.51	0.55
13.13	East of I-5—NE Pacific St to NE Ravenna Blvd	1.00	0.62	0.67	0.62	0.67	0.63	0.65	0.63	0.65	0.63	0.65	0.64	0.67

Source: Seattle's Comprehensive Plan, Toward a Sustainable Seattle, 2008; Fehr & Peers, 2016.

MODE SHARE

The existing mode share estimates have been updated with new travel survey data collected as part of the PSRC 2014 Household Survey. Therefore, the forecasted mode shares for all alternatives have been updated to reflect the revised existing mode shares (see Figure 3.1–18 on the following page).

All alternatives are forecasted to have similar mode shares by sector. The auto mode share (SOV and HOV) is forecasted to decrease between one and six percentage points from existing conditions. Transit, walk and bike mode shares are expected to increase between one and six percentage points across all alternatives. In general, the forecasted share by mode differs by no more than one percentage point between all 2035 alternatives.

IMPACT SUMMARY

The Draft EIS discussion of impacts common to all alternatives is also applicable to the Preferred Alternative, namely with respect to localized probable significant adverse parking impacts but no significant adverse pedestrian, bicycle or safety impacts. No auto, freight or transit impacts are identified for the Preferred Alternative. Also, conclusions are similar with or without use of the SEPA infill provisions.

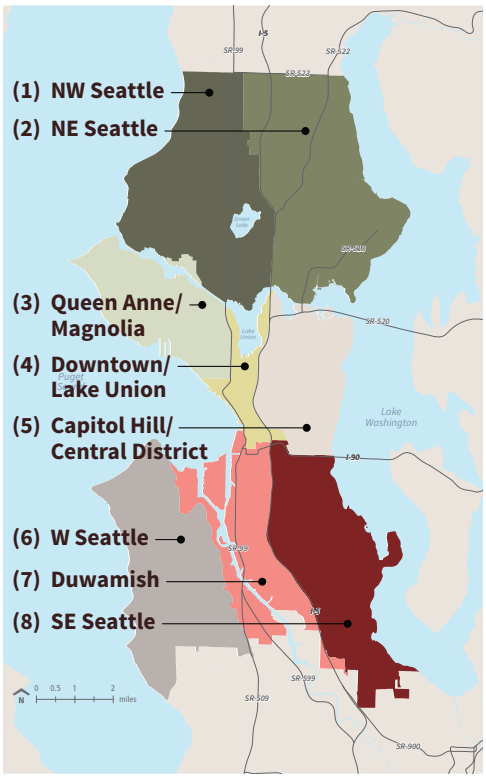
MITIGATION MEASURES

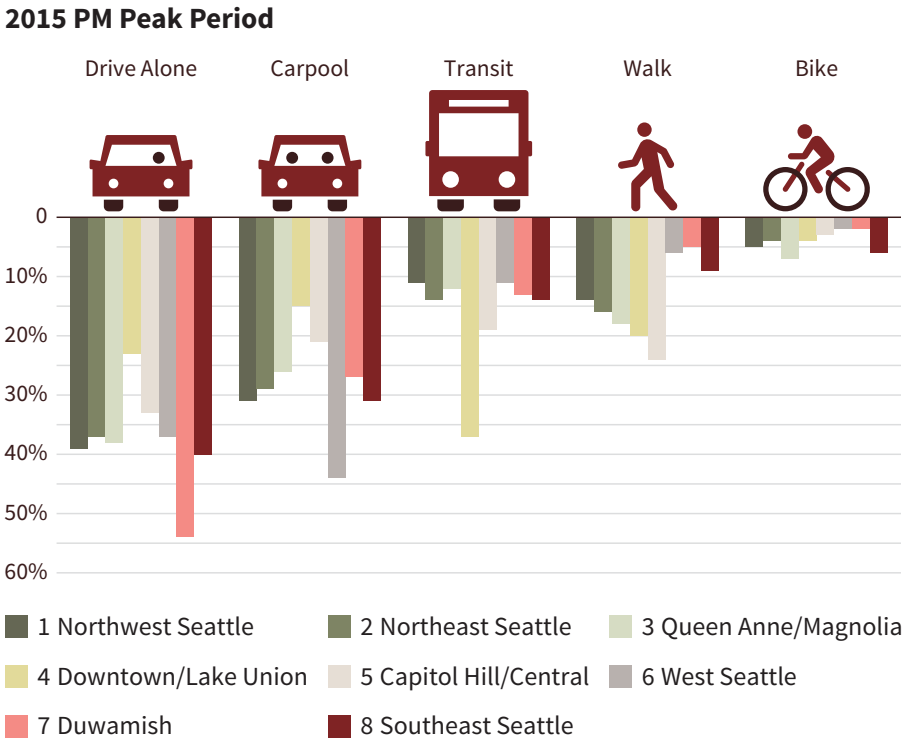
The mitigation identified in Draft EIS Section 3.7, Transportation, is relevant and adequate to mitigate potential impacts to the Preferred Alternative. No new mitigation is proposed.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

The Preferred Alternative is not expected to result in significant unavoidable adverse impacts beyond those described for other alternatives in the Draft EIS Section 3.7, Transportation.

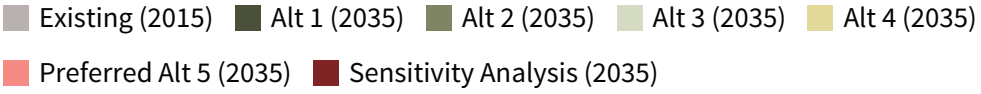
Figure 3.1–18 2015 and 2035 PM peak period mode share by sector



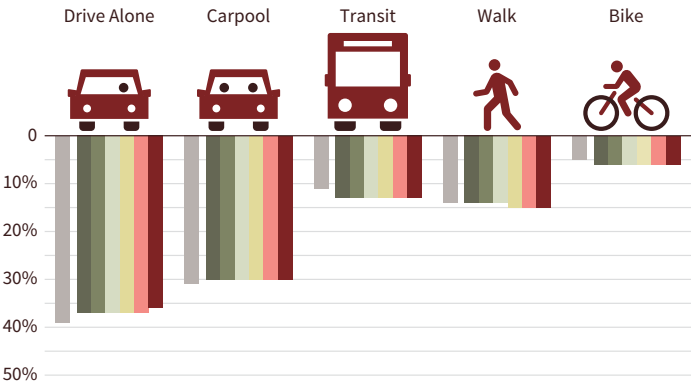


Note: Shares may not add to 100% due to rounding

Source: Project travel demand model, 2016.



2035: Northwest Seattle Sector



2035: Northeast Seattle Sector

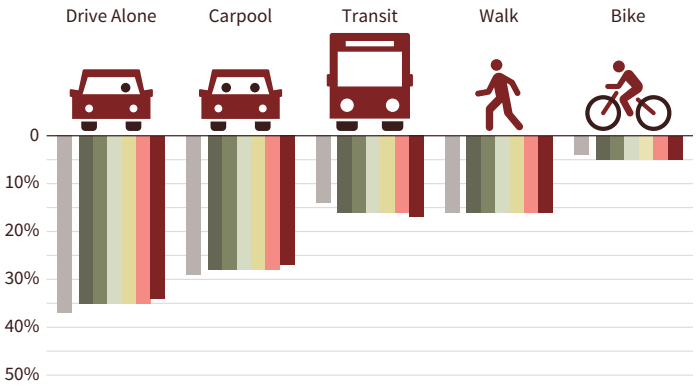
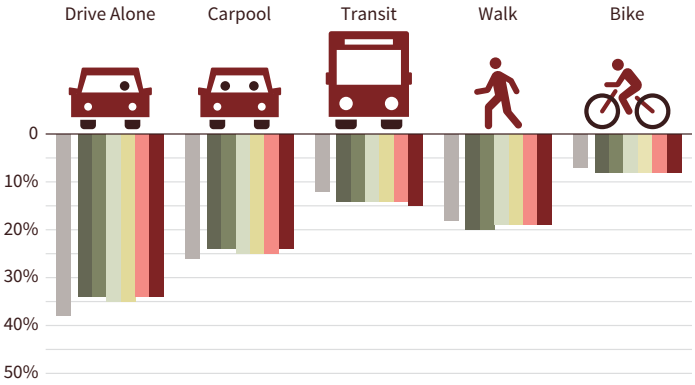
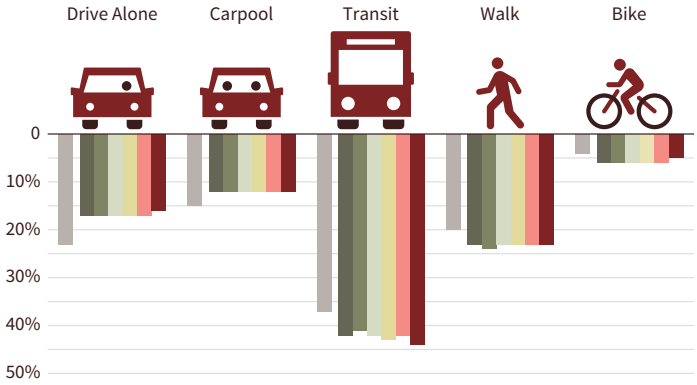


Figure 3.1–17 2015 and 2035 PM peak period mode share by sector (cont.)

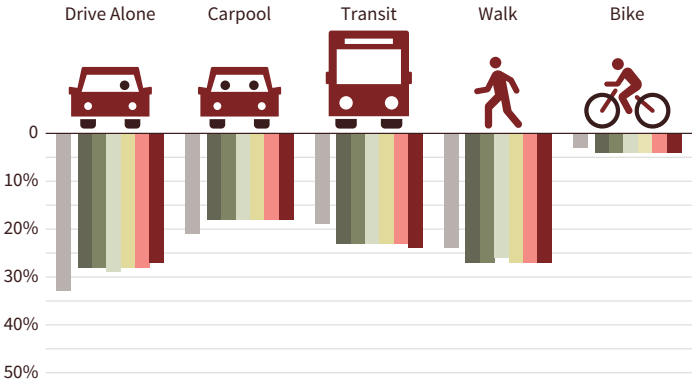
2035: Queen Anne/Magnolia Sector



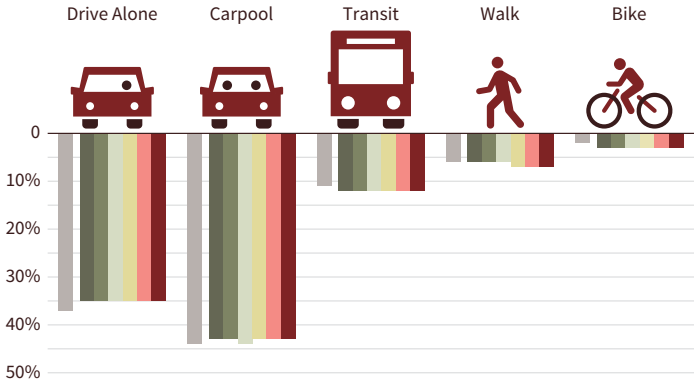
2035: Downtown/Lake Union Sector



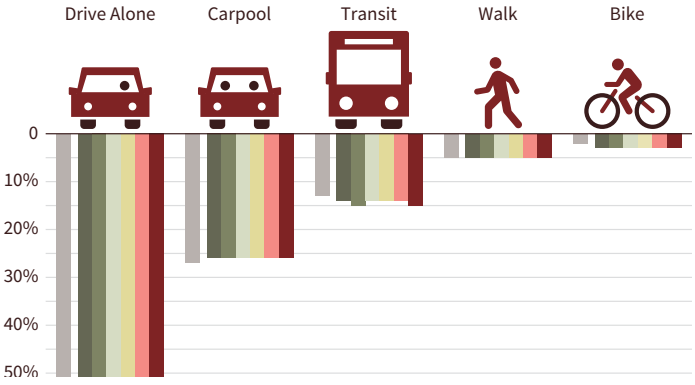
2035: Capitol Hill/Central Sector



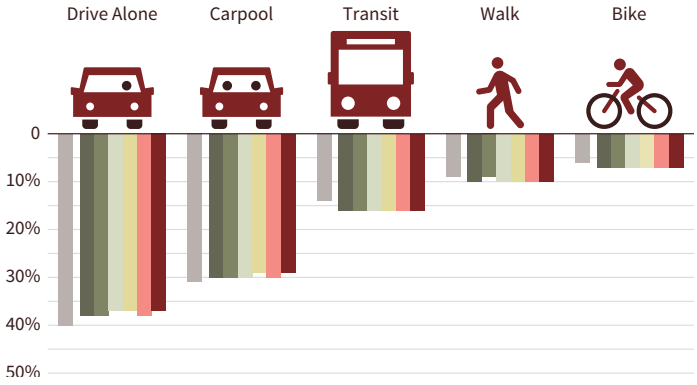
2035: West Seattle Sector



2035: Duwamish Sector



2035: Southeast Seattle Sector



Public Services

POLICE SERVICE

As noted in the Draft EIS, population and employment growth do not directly correlate to an increased demand for police services. It is not anticipated that the Draft EIS alternatives or the Preferred Alternative would necessarily result in proportional increases in call volumes or incidence of major crimes. An increase in the number of crimes may occur as the City grows over the next twenty years, though the magnitude of change in number of crimes is not known. The Draft EIS does identify a probable adverse impact to the South Precinct police facilities under alternatives 1–4. The Preferred Alternative guides less residential growth to some of the south Seattle urban centers and villages, which could reduce some of the growth pressure and related impact potential on the South Precinct police facilities relative to the other alternatives.

There are no other findings of direct adverse impacts regarding growth in service call volumes. As with the Draft EIS alternatives, the need for additional police officer staffing is likely. While it is difficult to make conclusions that the distribution of growth under the Preferred Alternative would generate different impact levels from other alternatives, planning and management of police services would be similar to all other alternatives. The Seattle Police Department would continue to respond to call volumes received, and would actively manage its efforts to address trends in call service types and locations over time. With such planning and management, no significant impacts are anticipated. Conclusions are similar with or without use of the SEPA infill provisions.

FIRE AND EMS

Similar to findings in the Draft EIS, the impacts of additional growth under the Preferred Alternative over the next twenty years would be gradual, distributing increased call volumes across many fire station coverage areas. The number of calls would likely increase the most in urban centers and villages where the greatest levels of employment and residential growth would occur. Under the Preferred Alternative, these areas would include Downtown and South Lake Union.

The Preferred Alternative, similar to Alternative 4, would distribute housing growth across the most number of places of any alternative. This means a wider array of fire stations experiencing increased call volumes and potential equipment or operational challenges possibly requiring the Fire Department to make a greater number of management decisions on how it distributes its operations to serve and respond to call volumes across the city. The identified potential citywide adverse impacts on fire and emergency services are therefore expected to be greater than for alternatives 1, 2 or 3. The Fire Department is anticipated to address additional needs by making adjustments through system-wide evaluations conducted regularly to identify trends, and by planning for new fire stations, subject to funding availability. Overall, impacts would not be expected to be more adverse than those identi-

fied for Alternative 4, and no significant adverse impacts are anticipated. Conclusions are similar with or without use of the SEPA infill provisions.

PARKS AND RECREATION

Park and recreation impacts under the Preferred Alternative are expected to be similar to Alternative 4. In contrast to Alternative 4, the Preferred Alternative would guide less housing growth to the south Seattle urban villages of Mount Baker, Columbia City, North Beacon Hill, Othello and Rainer Beach; the goal of providing additional open space would thus be proportionately reduced in these neighborhoods relative to the other alternatives. In contrast, certain other urban villages—such as 23rd & Union-Jackson, Aurora-Licton Springs and Wallingford— would see higher residential growth distributions than under Alternative 4 that would proportionately increase the desire for certain parks and open spaces closer to these areas.

Similar to Draft EIS alternatives 1–4, per the current parks/open space goals, acquisition of an additional 1,400 acres of breathing room open space would be required to satisfy the Seattle Parks and Recreation (SPR) Department's current goal of 1 acre per 100 residents. As described in the Draft EIS, currently unmet distribution goals could continue to be unmet unless SPR purchases and develops property in or near the urban villages with "gaps." SPR's current goals are aspirational, establishing an overarching policy direction for the future. And, it is also noted that the proposed Comprehensive Plan implies that such goals will be revised through the *Park Development Plan*. SPR is committed to an ongoing effort to acquire and improve open space. With continued SPR planning and implementation of the mitigation measures in the Draft EIS, the increased growth anticipated under the Preferred Alternative can be served through existing and future park and open space resources, even though gaps in geographic availability, or similar shortfalls from optimal location, size or number of parks could remain over the long-term. Similar to the findings made for Draft EIS alternatives 1–4, this outcome is interpreted to result in adverse impacts but not significant adverse impacts. While proposed mitigation strategies are not required, other possible mitigation strategies are defined on Draft EIS pages 3.8-34 to 35 (see revisions and clarifications made to this section in Section 3.2 of this Final EIS). SPR will continue to strive through the 20-year planning period to implement improvements by continuing to leverage funds allocated in the Parks District to match state funding grants. Conclusions about impacts are similar with or without use of the SEPA infill provisions.

PUBLIC SCHOOLS

Population growth and overall potential for impacts under the Preferred Alternative would be similar to that described for Alternative 4. However, compared to Alternative 4, urban villages such as Bitter Lake, 23rd & Union-Jackson, Aurora-Licton Springs, Upper Queen Anne and Wallingford would experience relatively higher growth. Also, similar to Alternative 4, the wider-spread geographic distribution of growth under the Preferred Alternative could potentially require SPS to make a greater number of management decisions on how it

distributes its operations to serve future growth. However, growth in the number of housing units may not indicate a proportionally similar growth in school-aged population. This is because most new housing units will be in multi-family structures, and units in these types of structures tend to have lower numbers of children. Given projected future residential growth trends and probable student enrollment growth, SPS will continue to actively engage in facilities planning and facilities improvements toward meeting future needs.

No significant adverse impacts to public schools are expected under the Preferred Alternative's pattern of growth for any part of the city. The Preferred Alternative's level of overall potential impacts would be similar to Alternative 4. Conclusions are similar with or without use of the SEPA infill provisions.

MITIGATION MEASURES

The mitigation identified in Draft EIS Section 3.8, Public Services, is adequate to mitigate potential impacts under the Preferred Alternative. No new mitigation is proposed.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

The Preferred Alternative is not expected to result in significant unavoidable adverse impacts beyond those described in the Draft EIS Section 3.8, Public Services.

Utilities

Under the Preferred Alternative, residential development would be similar to the growth patterns anticipated under Draft EIS Alternative 4. Residential densities could be comparatively less in some urban villages, particularly those in south Seattle, and are not projected to significantly exceed the urban village growth estimates considered in the Draft EIS. For these reasons, impacts to utilities are expected to be relatively comparable to those described in Draft EIS Section 3.9, Utilities. No additional types of adverse utility impacts resulting from the Preferred Alternative are identified. Conclusions are similar with or without use of the SEPA infill provisions.

MITIGATION MEASURES

The mitigation identified in Draft EIS Section 3.9, Utilities, is adequate to mitigate potential impacts to the Preferred Alternative. No new mitigation is proposed.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

The Preferred Alternative is not expected to result in significant unavoidable adverse impacts beyond those described in the Draft EIS Section 3.9, Utilities.

3.1.2 Sensitivity Analysis

Introduction

This analysis has been added to the Final EIS as an optional illustrative exercise. It considers the sensitivity of impact findings in a scenario with hypothetically increased residential growth levels beyond the Comprehensive Plan's assumed growth target of 70,000 households. The sensitivity analysis assumes 100,000 housing units, or 30,000 more units than assumed in the Draft EIS and Final EIS Section 3.1.1. No change is assumed for employment from the Preferred Alternative's 115,000 jobs target. At an approximate 43 percent increase over the other alternatives' residential growth assumption, the magnitude of this difference is considered large enough to illustrate hypothetical added degrees of impacts related to increased residential growth. The findings in this section should be understood as distinctly separate from the impact analysis findings made for the EIS alternatives, including the Preferred Alternative.

The discussion below is based on the urban village distribution assumptions similar to the Preferred Alternative, but with distribution of the estimated increases in residential growth made proportionately to the Preferred Alternative's distribution, in all urban centers and villages and outside the urban centers and villages to achieve 100,000 housing units. Table 3.1–6 shows the housing growth assumptions for all urban centers and villages under this scenario. No other changes compared to the Preferred Alternative are assumed.

This section of the Final EIS should be read in the context of the Draft EIS because the affected environment section for each element of the environment is not repeated.

Table 3.1–6 Sensitivity analysis housing growth assumption

	Sensitivity Analysis
Urban Centers	
Downtown	17,143
First/Capitol Hill	8,571
University District	5,000
Northgate	4,286
South Lake Union	10,714
Uptown	4,286
Total	**50,000 (50%)**
Hub Urban Villages	
Ballard	4,286
Bitter Lake	1,857
Fremont	1,857
Lake City	1,429
Mount Baker	2,143
West Seattle Junction	3,286
Total	**14,857 (15%)**

	Sensitivity Analysis		Sensitivity Analysis
Residential Urban Villages			
23rd & Union-Jackson	3,857	Morgan Junction	571
Admiral	500	North Beacon Hill	1,071
Aurora-Licton Springs	1,429	Othello	1,214
Columbia City	1,857	Upper Queen Anne	714
Crown Hill	929	Rainier Beach	643
Eastlake	1,143	Roosevelt	1,143
Green Lake	1,143	South Park	571
Greenwood-Phinney Ridge	714	Wallingford	1,357
Madison-Miller	1,214	Westwood-Highland Park	929
		Total	**21,000 (21%)**

	Sensitivity Analysis
New Residential Urban Villages	
130th/I-5	2,143

Source: City of Seattle, Office of Planning and Community Development, 2016.

Earth and Water Quality

With an anticipated 43 percent increase in residential growth both inside and outside of urban centers and villages, it is relatively more likely that many current sites with environmentally critical areas (ECAs) within urban centers and urban villages, and many other sites outside of those designated areas, would be subject to development. In the worst-case, during and after construction this added growth pressure could increase the incidence of situations where ECA resources experience adverse impacts. This might range from increased numbers of landslide events or local instability, to increasing cases of erosion events that could lead to soils and pollutants entering drainage courses or wetlands and affecting water quality. Increased washoff of pollutants from roads could also occur with future growth.

MITIGATION MEASURES

Given the City's adopted rules, policies and strategies for addressing and minimizing these kinds of adverse impacts, and their likelihood to continue to be functional and effective methods, the preferred mitigation strategy even for the identified level of growth would be to continue to implement development project-level reviews, continue to protect ECAs, and continue to engage in the range of planning undertaken by City departments. The combined effect would be likely to avoid or minimize most adverse impacts upon earth resources, ECAs and water quality even if growth occurred faster and more extensively than anticipated for the 20-year Comprehensive Plan period.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

Although acknowledging the potential for increased incidence of adverse impacts, the findings above indicate a conclusion of no significant unavoidable adverse impacts to earth and water quality.

Air Quality and Greenhouse Gas Emissions

AIR QUALITY

Construction-related Emissions

Future growth under any alternative would result in development of new residential, retail, light industrial, office and community/art space. The sensitivity analysis assumes a greater level of residential development both inside and outside the urban centers and villages. Construction of these additional units would carry with it the same types of construction related impacts described in the Draft EIS. Off-road equipment and on-road trucks used to construct all new development would be required to comply with the noted PSCAA and U.S. EPA regulations. Even with the increase in residential development over the Draft EIS alternatives and the Preferred Alternative, the transient nature of construction-related emis-

sions and likely future regulatory improvements would likely mean that potential adverse air quality impacts from construction sources would be minor.

Land Use Compatibility and Transportation Air Quality Emissions

Under any of the alternatives, including the Preferred Alternative, future growth and development patterns would be influenced by Comprehensive Plan growth strategies in ways that would affect future residences' (or other "sensitive receptors") relationships to mobile and stationary sources of air toxics and particulate matter $PM_{2.5}$. The degree of potential for adverse impacts on new sensitive receptors would depend on proximity to sources, emissions from these sources and the density of future sensitive development. The Draft EIS identifies areas of the City, including urban centers and villages, where residential development could expose residents to higher cancer risk from roadways or stationary sources. An increased number of new housing units would proportionally increase the probability that of development would occur in areas where air pollutants are concentrated, especially major highways, railyards and port terminals.

Transportation Air Quality Emissions

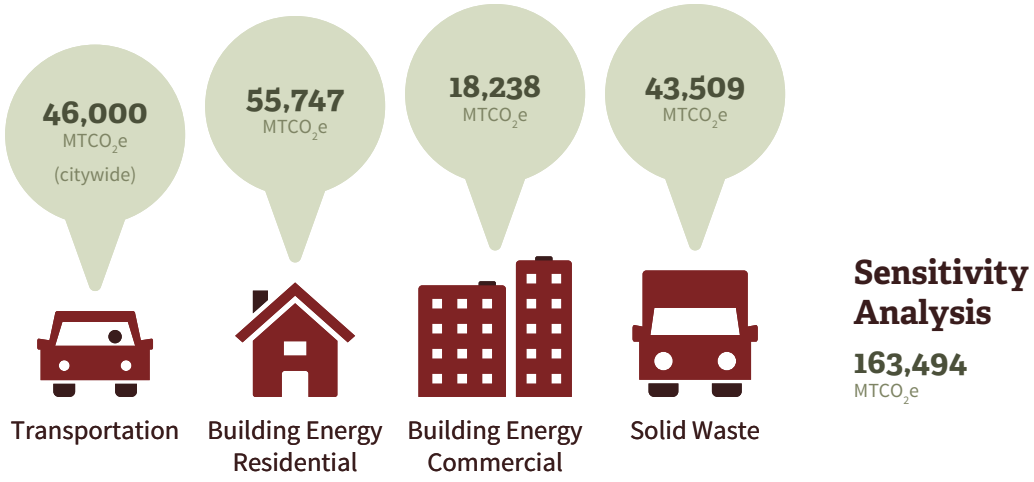
The sensitivity analysis scenario would mean more residential development and additional emissions associated with the approximately 1–3 percent more vehicle miles traveled compared to the other alternatives. However, regional pollutant emissions would still be less than under existing background conditions. This is because the projected improvement in fuel economy, emission controls and fuel composition will outweigh the projected increase in VMT. This would result in a beneficial future air quality outcome, but not to the same degree as the alternatives considered in the Draft EIS or the Preferred Alternative.

GREENHOUSE GAS EMISSIONS

The scale of global climate change is so large that one action's impacts can only be considered on a cumulative scale. It is not anticipated that a single development project or programmatic action, even on the citywide scale of the sensitivity analysis scenario, would have an individually discernible impact on global climate change. It is more appropriate to conclude that GHG emissions from future development in Seattle would combine with emissions across the state, country and planet to cumulatively contribute to global climate change.

Total operational GHG emissions from the Preferred Alternative are presented in Figure 3.1–19 on the following page and Appendix B.1. The overall GHG emissions growth in the city under the sensitivity analysis scenario is expected to be approximately 39 percent greater than the No Action Alternative due largely to increases in residential building energy consumption and solid waste generation associated with accommodating an additional 30,000 residential units compared to the other alternatives. This would represent a significant adverse impact of the sensitivity analysis scenario.

Figure 3.1–19 Operational GHG emissions of the sensitivity analysis



Source: ESA, 2014; Fehr & Peers, 2016.

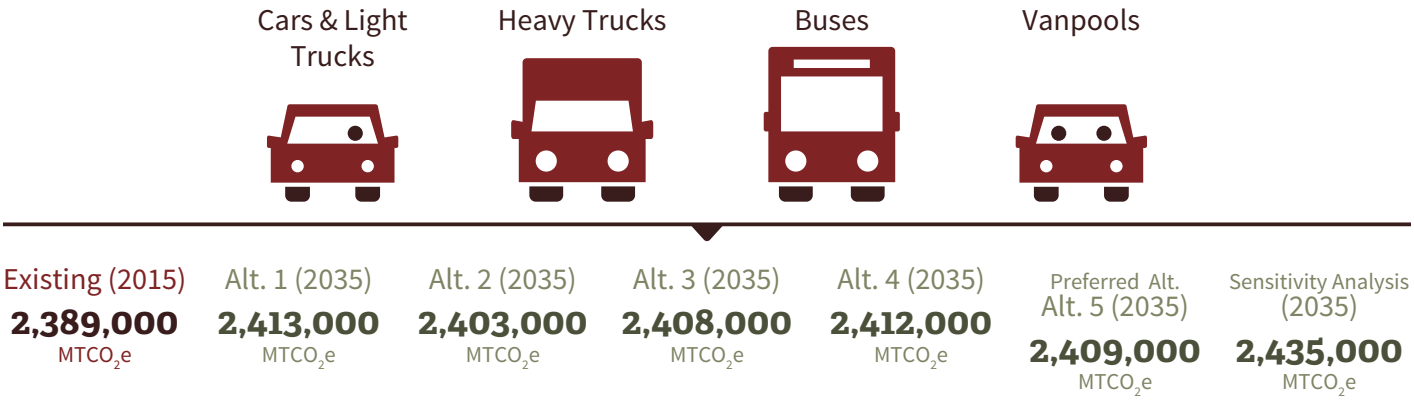
Construction-related Greenhouse Gas Emissions

Greenhouse gases (GHGs) would be emitted during construction activities. These emissions, while not individually altering GHG emissions significantly, would cumulatively, over 20 years, be more than a negligible contributor to GHG emissions within the city. With 30,000 additional housing units, proportionately more construction related GHG would be contributed. The City's *Climate Action Plan* (City of Seattle 2013b) recognizes the relevance of construction related GHG emissions and has included actions to be implemented by 2030 to address them. These measures would address additional construction as well. Consequently, although construction related emissions would not be negligible, the combination of regulatory improvements and *Climate Action Plan* actions under way would likely lead to the construction related GHG emissions being considered a minor adverse air quality impact.

TRANSPORTATION

Expected transportation GHG emissions for the sensitivity analysis scenario are shown in Table 3.1–2 on page 3.1–5. The overall GHG emissions are expected to be higher compared to the No Action Alternative by less than one percent (see Figure 3.1–20). This is due to the larger growth in households compared to the No Action Alternative. The average VMT per capita is expected to decrease from 2.9 in the Preferred Alternative to 2.8. However, the overall land use and population growth would result in higher total GHG emissions than all other alternatives, including the No Action Alternative. Therefore, the assumed higher residential growth in the sensitivity analysis scenario would result in an adverse impact. The City also has GHG emissions goals in the 2013 Seattle *Climate Action Plan* (CAP). This Final EIS sensitivity analysis indicates that absent an aggressive suite of strategies and technological advancements, the City would not meet its GHG emissions goal by 2035—this is consistent with the "business-as-usual" finding in the CAP. However, no significant adverse impacts are identified because the Action Alternatives are measured against the No Action

Figure 3.1–20 Road transportation GHG emissions of all alternatives



Source: Fehr & Peers, 2016.

Alternative. Although no significant impacts are identified from a SEPA perspective, the City will continue to pursue the strategies outlined in the CAP to make progress toward its carbon neutrality goal regardless of the alternative selected.

MITIGATION MEASURES

Available mitigation to address GHG emissions increases of the sensitivity analysis scenario would consist of measures identified in the City of Seattle Climate Action Plan. Additionally, the existing City of Seattle Comprehensive Plan contains climate change-related goals and policies within its Environmental Element. These are listed in Appendix A.1 of the Draft EIS. Goals to reduce city-wide VMT by 20 percent and reduce residential building energy use by 20 percent would help to limit the magnitude of this potential GHG emission increase compared to the No Action Alternative.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

Measures contained in both the City of Seattle *Climate Action Plan* and the City of Seattle Comprehensive Plan would help to limit the magnitude of this potential GHG emissions increases compared to the No Action Alternative. However, under the sensitivity analysis scenario, such reductions would not be likely to reduce these emissions increases to a less than significant level and this impact of the sensitivity analysis scenario would be significant and unavoidable.

Noise

CONSTRUCTION NOISE AND VIBRATION IMPACTS

The Draft EIS alternatives and the Preferred Alternative envision future residential and job growth primarily within areas where transit infrastructure either exists or is planned. The sensitivity analysis scenario assumes even more growth in these urban centers and villages. Implementation of this scenario would result in a concentration of development within existing developed and developing areas. Resulting construction activities would have the potential to temporarily affect nearby sensitive receivers such as existing residences, schools and nursing homes. As noted in the Draft EIS, temporary construction noise and vibration within these infill development areas, where ambient noise levels are already affected by roadway traffic and other transportation sources, would be less noticeable to receivers than in less intensively developed areas.

The Draft EIS also states that development of larger and/or higher buildings are typically the construction activities with the greatest potential for adverse construction-related noise or vibration impacts because they can involve pile driving or other similar impact-related foundation work. With more development being focused in the urban centers and villages, these noisier activities would be likely to increase. Construction in urban centers and villages would also be likely to involve these activities adjacent (closer than 50 feet) to other buildings that may be occupied by residents or other sensitive receptors. Construction noise impacts in excess of 90 dBA within these areas are identified as a potential moderate noise impact. While the impacts from any individual project would not increase, these moderate noise impacts would be more frequent. The City's existing controls, along with the mitigation identified in the Draft EIS, are generally expected to keep these impacts from being significant, but cumulative impacts could be significant if there is a high enough concentration of construction over a sustained period.

NOISE AND LAND USE COMPATIBILITY

As described in the Draft EIS, noise levels are typically highest close to freeways, highways and other transportation infrastructure. However, all alternatives strive, at least in part, to locate residential uses near to transit to reduce vehicle miles traveled within the City. Consequently, if residences or other sensitive receptors are located too close to major roadway or noisy industrial operations, additional insulation or window treatments may be warranted to reduce interior noise levels to generally acceptable levels.

For all alternatives roadside noise levels would increase by less than 0.5 dBA at all locations. As discussed in the Draft EIS, outside of the laboratory, a 3 dBA change is considered a just-perceivable difference. Consequently, an increase of less than 0.5 dBA would be considered a minor impact on environmental noise. However, while considered a minor impact when examined city-wide, more development would likely increase noise levels in some areas. With 30,000 additional housing units, noise levels could be further increased and

more residents could be potentially living in relatively close proximity to high noise sources. To the extent this occurs, it could result in noise levels above those considered acceptable for residential and other sensitive uses built of normal construction materials.

MITIGATION MEASURES

Similar to the Preferred Alternative, the sensitivity analysis scenario impacts are not identified as probable significant adverse impacts, meaning no mitigation strategies would need to be implemented. The mitigation identified in Draft EIS Section 3.3, Noise, is sufficient to describe a range of possible noise mitigation strategies that could be pursued to address adverse noise impacts such as those identified for the EIS alternatives and in this sensitivity analysis.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

Similar to the findings outlined under the Preferred Alternative, no significant unavoidable adverse impacts to noise levels are anticipated for the sensitivity analysis scenario.

Land Use Patterns, Compatibility, Height, Bulk and Scale

LAND USE PATTERNS

The sensitivity analysis scenario not only distributes residential growth to a greater number of locations than any other alternative (comparable to Alternative 4), it also distributes a higher number of housing units throughout the City. This is likely to result in a citywide land use pattern focused on more concentrated residential and commercial/mixed-use nodes that have convenient access to either light rail or frequent, reliable bus service. The concentration of higher levels of more housing units centered near transportation nodes is likely to result in the construction of a greater extent of more moderate-density, moderate-height development types with more combinations of multi-family, mixed-use and commercial uses over time. Although there would be an increase in the number of housing units designated for areas outside of urban villages, the overall development and character in these areas would likely resemble their current patterns and configurations, reflecting each area's zoning patterns and intensities. It should also be noted, however, that the Draft Comprehensive Plan also encourages greater diversity of housing possibilities and land use arrangements in low-density areas, which could address smaller lot sizes, and more accessory housing possibilities, for example. Overall, with the increased number of housing units to be built across the city—43 percent more than the Preferred Alternative—the conversion rate from existing single-family residential and limited low-intensity commercial uses to higher-intensity multifamily or mixed-uses would likely be higher under this sensitivity analysis scenario than under any EIS alternative.

LAND USE COMPATIBILITY

Given the larger number of estimated future housing units under the sensitivity analysis scenario, a relatively higher number of localized adverse, but relatively minor, compatibility issues could be expected as existing, lower intensity uses transition to higher-density development forms. Land use incompatibilities resulting from this type of transition would be less of an impact in many of the urban village cores if they already contain a mix of uses at various intensities. However, in contrast, urban village expansion areas or new urban villages with a predominantly single-family residential character could be relatively more sensitive to the anticipated changes in development intensity and scale. Under this sensitivity analysis scenario, these areas would likely experience more frequent occurrences of slightly sharper transitions in urban form as new, more intensive forms—such as townhomes and multi-family apartments—could be built alongside existing single family homes and properties.

HEIGHT, BULK AND SCALE

Potential adverse impacts of height, bulk and scale under the sensitivity analysis scenario would be similar to those described for the Preferred Alternative. However, given the larger number of housing units added under this scenario, the impacts to height, bulk and scale would be more likely to occur more frequently and across more locations than under the Preferred Alternative. Growth in the urban centers would likely be a mix of mid- and high-rise development while growth in transit-oriented development nodes would likely be mid-rise. Growth in the hub urban villages would likely be mid-rise and in the residential urban villages a mix of low- and mid-rise. Identified urban village expansion areas are characterized by relatively low building heights and low FAR limits. Over time, height and bulk in these areas would increase with additional development, and, under this scenario, localized adverse bulk and scale contrasts would likely occur more frequently as these areas transition to a more intense development pattern. In areas outside of the urban villages, the overall development character and pattern would likely be more comparable to existing bulk and scale patterns.

VIEWS

Impacts to views under the sensitivity analysis scenario would be similar to those described under the Preferred Alternative, and would occur across a similar geographic area, but in the worst case might lead to an increase in the number of potential view conflicts. As applicable, individual project-level review would include detailed evaluation of potential view impacts along with opportunities to define mitigation during future land use permit application and design review processes.

MITIGATION MEASURES

The analysis in this section identifies a range of adverse land use impacts related to the sensitivity analysis scenario. Similar to the Preferred Alternative, no impacts are identified as probable significant adverse impacts, meaning no mitigation strategies need to be defined. The City would continue to rely upon use of regulations in its municipal code, includ-

ing Land Use Code (Title 23), SEPA rules and policies (Title 25), the design review program (SMC 23.41 and related guidelines), and documents such as Urban Design Frameworks that address design intent in various subareas. The mitigation identified in Draft EIS Section 3.4, Land Use Patterns, Compatibility, Height, Bulk and Scale, is adequate to mitigate potential land use impacts. No additional mitigation is proposed.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

Similar to the findings outlined under the Preferred Alternative—although a greater amount and extent of change to land use, height/bulk/scale patterns and potential effect on views is identified due to greater potential levels of development over twenty years—no significant unavoidable adverse impacts to land use are anticipated under this sensitivity analysis.

Relationship to Plans, Policies and Regulations

Because the proposed comprehensive plan policy guidance would be the same as those assumed for the Draft EIS alternatives, consistency with plans and policies would generally be the same as discussed in the Draft EIS. As discussed in Population, Employment and Housing below, the sensitivity analysis scenario assumes full use of development capacity, and even the possibility of excess demand, in some urban centers and villages. This is partly a product of how the sensitivity analysis assumptions about growth distribution were made. Draft Comprehensive Plan policies in the Growth Strategy Element address distribution of growth (see draft Goal GSG3 and supporting policies) and provide guidance for considering capacity, available services and other factors in allocating growth. These policies could provide guidance for how to effectively manage and direct growth if the City faced the scenario of addressing high growth levels and/or excess housing demand levels in particular areas.

Please see the expanded discussion of draft comprehensive plan policy guidance in this Final EIS Section 3.2. This expanded discussion is applicable to both the Draft EIS alternatives and the Preferred Alternative, and the sensitivity analysis scenario.

Population, Employment and Housing

POPULATION AND HOUSING

The additional 30,000 housing units assumed would impact some urban villages if growth would reach development capacity, if growth distributions would occur as projected in the hypothetical growth scenario for the sensitivity analysis. Table 3.1–7 shows the increased growth assumptions by village type, as well as how this growth scenario would relate to development capacity as currently defined across the City.

In addition to the 88,000 housing units assumed to be added in centers and villages, there would be another 12,000 housing units added outside of villages, according to the sensitivity analysis scenario.

Table 3.1–7 Housing growth and capacity for 100,000 new units in urban centers and villages

	Growth Assumption	2035 Remaining Capacity	Growth as % of Total Urban Village and Center Capacity
Urban Centers	50,000	46,862	52%
Hub Urban Villages	14,857	21,370	41%
Residential Urban Villages	23,143	20,624	53%
Existing	*21,000*	*18,386*	*53%*
New (130th/I-5)	*2,143*	*2,238*	*49%*
Total (Centers & Villages)	**88,000**	**88,856**	**50%**

Although there is additional housing capacity city-wide to accommodate overall assumed growth in this scenario through 2035, specific urban villages could experience growth levels that would fully use today's development capacity, and with theoretical levels of excess growth pressures. The urban centers and villages where this might occur, according to the terms of the sensitivity analysis assumptions, are identified in Table 3.1–8. In addition, other urban villages that would be nearing full use of today's development capacity include Ballard, 23rd & Union-Jackson and Upper Queen Anne.[2]

Table 3.1–8 Urban villages over capacity by 2035, per sensitivity analysis growth scenario

Urban Centers & Villages	Percent of capacity in 2035
Urban Centers	
Uptown	103%
Hub Urban Villages	
Fremont	111%
Residential Urban Villages	
Eastlake	104%
Green Lake	111%
North Beacon Hill	110%

As with the alternatives analyzed in the Draft EIS, socioeconomic and racial inequalities would still pose a challenge. It would be important to identify those populations that are vulnerable and focus on potential mitigation strategies for addressing unintended impacts of growth. Those villages where there is overlap between concentrations of vulnerable populations and housing unit growth above capacity would be the most sensitive to the impacts of this growth. The villages that would feel the greatest displacement pressures due to their vulnerable population and the strained capacity include 23rd & Union-Jackson and North Beacon Hill.

2 Urban villages with projected growth at 80% or above development capacity are categorized by current Seattle planning methodologies as nearing capacity.

EMPLOYMENT

The sensitivity analysis scenario where 100,000 housing units are added to Seattle by 2035 does not anticipate any changes to the employment assumptions, and would not result in any additional or new impacts to employment beyond those discussed in the Draft EIS and in the Preferred Alternative. In the past two decades at least, employment levels have fluctuated up and down considerably given local and national economic trends and pressures. This has meant that much employment growth can be accommodated within existing buildings that fluctuate in their vacancy levels over time. This is one factor that supports the choice of this sensitivity analysis to not analyze the hypothetical effects of potential higher-than-expected employment growth through 2035.

MITIGATION MEASURES

The sensitivity analysis scenario where 100,000 housing units are added to Seattle by 2035 would have similar impacts as those discussed in the Draft EIS. However, the impacts may be greater in some areas, or may occur in additional areas where the 30,000 additional units could locate, which could include areas within as well as outside urban centers and villages.

The mitigation identified in Draft EIS Section 3.6, Population, Employment and Housing, is adequate to mitigate most potential impacts of the sensitivity analysis scenario. In particular, programs and regulatory changes that the City could implement are identified to address housing affordability and displacement challenges in the City.

In addition, for this hypothetical sensitivity analysis scenario, other mitigation strategies could be pursued to address potential shortfalls in capacity in urban villages. These could include actions such as rezones that would either increase development capacity in the affected urban centers and villages, or in other places where growth would be most preferred.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

Significant unavoidable adverse impacts in the sensitivity analysis scenario where 100,000 housing units are added to Seattle by 2035 are of the same type as those discussed in Draft EIS Section 3.6, Population, Employment and Housing, and under the Preferred Alternative. These impacts include probable challenges in housing affordability and displacement as a result of an increasing demand for housing in response to growth in households and the changing dynamics of household economic makeup in Seattle.

Transportation

A new traffic assessment was completed using the increased auto volumes projected for the sensitivity analysis scenario. Screenline and mode share findings are described below.

SCREENLINES

The screenline results are shown in Table 3.1–5 on page 3.1–22. The volume to capacity (v/c) ratio across the Ballard Bridge (Screenline 5.11) in this scenario is expected to reach 1.21, which exceeds the current 1.20 Level of Service (LOS) standard. All other screenlines would meet the LOS standards. Since household growth is assumed throughout the City, most screenline ratios would increase compared to the Preferred Alternative. Generally, the screenline's v/c ratio results are not expected to increase by more than 0.03 compared to the baseline Preferred Alternative.

Because of the identified screenline exceedance of the LOS threshold for the Ballard Bridge (Screenline 5.11) the growth scenario for the sensitivity analysis is expected to result in a significant adverse impact for autos, freight and transit.

STATE FACILITIES

In addition to the screenline locations, auto volumes on the state facilities studied in the Draft EIS were examined for the sensitivity analysis. Auto volumes on the state facility study segments are expected to be slightly higher under the sensitivity analysis, with volume-to-LOS D capacity ratios up to 0.04 higher than the Preferred and Draft EIS alternatives. However, these differences are not expected to materially change the LOS findings. In other words, no facilities that are expected to meet the LOS D standard under the Preferred and Draft EIS alternatives are forecasted to fall below the standard as a result of the increased growth tested in the sensitivity analysis (see Appendix B.2).

MODE SHARE

Because the sensitivity analysis assumes the same land use distributions as the Preferred Alternative, the forecasted mode share results would be similar. Comparatively, the sensitivity analysis scenario could result in up to a one percentage point decrease in SOV mode share and a slight increase in transit, walk or bike mode share. Overall, these mode share trends are similar to the Preferred Alternative and alternatives 1–4.

IMPACT SUMMARY

The Draft EIS included a section describing the impacts common to all alternatives. Comparable findings are made here for the sensitivity analysis scenario.

Pedestrian and Bicycle Network

As stated in the Draft EIS, the City will move forward with its Pedestrian and Bicycle Master Plans regardless of the land use alternative selected. The hypothetical 30,000 dwelling unit increase in household growth would not be expected to meaningfully change the scale of improvements needed, although the prioritization and/or phasing of improvement projects could vary. Given that the pedestrian and bicycle environment is expected to become more

robust regardless of alternative, no significant impacts are expected to the pedestrian and bicycle system.

Safety

The sensitivity analysis scenario would result in a higher number of vehicle trips than the Draft EIS alternatives and the Preferred Alternative; however, the increase would be relatively small at three percent. While collision rates would not be expected to meaningfully change based on the increase in growth, the total number of collisions would likely be higher due to the small increase in vehicle trips. Therefore, the sensitivity analysis scenario is expected to result in an adverse impact. However, given that the difference in vehicle trips is less than three percent and that the collision rates are not expected to increase, this adverse impact would not be considered as a significant adverse impact. The City will pursue its traffic safety policies and the strategies supporting it regardless of the land use alternative selected.

Parking

The Draft EIS identified a probable significant adverse parking impact for all alternatives. If a higher growth level were to occur, those potential parking impacts would be expected to be more substantial than was described for the other alternatives. The degree of the parking impacts experienced in any given neighborhood would depend on a variety of factors, such as how much off-street parking is provided by future development projects, as well as varying conditions related to car ownership and on-street parking patterns within each unique neighborhood.

Auto, Freight and Transit

The screenline analysis for the sensitivity analysis scenario identifies a probable significant adverse impact for the Ballard Bridge (Screenline 5.11). The v/c ratio across that screenline is forecasted to be 1.21 in the northbound direction, which equates to approximately 30 vehicles over the acceptable LOS threshold (as currently defined by the LOS screenline-based standard) in the PM peak hour.

MITIGATION MEASURES

Auto traffic on the Ballard Bridge could be reduced by implementing Sound Transit's Ballard to Downtown light rail project (via 15th Avenue NW) to enhance transit service along the corridor. This project is identified as a candidate project in the Sound Transit 3 package. While a Ballard to Downtown Seattle rail project was assumed in the Comprehensive Plan modeling, it followed the streetcar alignment through Fremont that was published in the City's 2012 *Transit Master Plan*. The Ballard to Downtown Seattle Transit Expansion Study has since evaluated multiple alternatives in more detail. According to that study, other alternatives that travel along 15th Avenue NW with an elevated bridge or tunnel would result in a projected 4,000 to 12,000 additional daily riders compared to the streetcar alignment initially assumed from the *Transit Master Plan*. Given the magnitude of the expected in-

crease in transit ridership, it is reasonable to assume a shift of at least 30 vehicle trips to the Sound Transit project would be possible and likely to occur during the PM peak hour. If this rail project is implemented with a 15th Avenue NW alignment, it would likely be sufficient to mitigate the identified significant adverse impact at the Ballard Bridge.

Transportation demand management *strategies seek to reduce auto trips through improved transportation options, incentives to use alternative modes and reducing driving and parking management.*

In addition to enhanced transit operations between Downtown Seattle and Ballard, auto trips could be reduced with enhanced pedestrian and bicycle facilities across the bridge and more extensive transportation demand management (TDM) strategies for the areas served by the Ballard Bridge. With one or more of these strategies in place, it is expected that a decrease in auto traffic could be achieved such that the level of service (e.g., level of congestion) experienced in 2035 would not exceed the 1.20 LOS standard that currently applies.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

As stated in the Draft EIS, 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 Section 3.7.3 of the Draft EIS. While there may be short-term impacts as individual developments are completed, it is expected that over the long term, parking demand/supply would reach a new equilibrium as some people shift to other transportation options.

The mitigation strategies identified for the Ballard Bridge screenline impact in this sensitivity analysis scenario would be expected to reduce auto volumes such that level of services standards would be met. Therefore, no significant unavoidable adverse impacts to transportation and parking would be expected for the sensitivity analysis scenario.

Public Services

POLICE SERVICE

As noted in the Draft EIS, population and employment growth do not directly correlate to an increased demand for police services. It is not anticipated that the Draft EIS alternatives or the Preferred Alternative would necessarily result in proportional increases in call volumes or incidence of major crimes. An increase in the number of crimes may occur as the City grows over the next twenty years, though the magnitude of change in number of crimes is not known. Under the sensitivity analysis scenario, the Seattle Police Department (SPD) would continue to add staff as trends in calls for service change. As with the Draft EIS alternatives, SPD would continue to analyze where best to focus its resources to respond to changes in demand for police services. Because growth would be gradual and allow time to respond and anticipate needs, no significant adverse impact on police service is expected, even with this higher rate of growth.

FIRE AND EMS

Under the sensitivity analysis scenario, a 43 percent increase in housing units (the change from 70,000 dwelling units up to a higher estimate of 100,000 housing units over twenty

years) would be expected to lead to a proportional increase in resident-based fire/emergency calls. This would add to the findings of the Draft EIS and the Preferred Alternative, which identified a similar proportional growth in call volume for an increase in the number of households over the next twenty years. These impacts would be gradual, distributing increased call volumes across many fire station coverage areas. All of the alternatives anticipate increased call concentration in urban centers and villages, and the sensitivity analysis would also expect a notable proportion of growth to occur in areas outside urban centers and villages. Taken together, the total amount of increase in demand for fire/emergency services would represent a probable significant adverse impact under this sensitivity analysis scenario.

The Draft EIS states that over the next several years, a probable continuation of recent growth trends is likely to lead to increased service demand in places where the Seattle Fire Department is monitoring the need for additional facilities and equipment. Under the increased housing scenario for this sensitivity analysis, these needs would likely accelerate and may arise sooner. The Fire Department would need to address these additional and more urgent needs by making adjustments through system-wide evaluations conducted regularly to identify trends, and by planning for new fire stations, subject to funding availability. Because the growth would be gradual, there is no indication that services could not be increased to meet the additional demand.

PARKS AND RECREATION

As with the Draft EIS alternatives and Preferred Alternative, population and job growth over the 20-year planning horizon would generate more demand for parks, recreation facilities and open space across the city. With an additional 30,000 housing units in the urban centers and villages, demand would be proportionately higher.

Under the Draft EIS alternatives, acquisition of an additional 1,400 acres of breathing room open space would be required to satisfy the Seattle Parks and Recreation (SPR) Department's aspirational goal of 1 acre per 100 residents. With 30,000 additional housing units, approximately 600 acres of additional land acquisition would be required to meet the goal. Because this scenario assumes that the majority of additional housing would be located in the existing urban centers and villages, meeting the goal through land acquisition could be challenging due to land scarcity and associated high costs; this would be particularly notable in the Downtown Urban Center, which, for example, could need as much as five acres of usable open space—or approximately five city blocks—to meet the household-based goal. Distribution goals that are currently not met would continue to be unmet, unless SPR purchases and develops new property in identified areas with gaps in service.

SPR's goals are aspirational, establishing an overarching policy direction for the future. SPR is committed to an ongoing effort to acquire and improve open space. Adding an additional 30,000 new housing units would make achieving the current goal more challenging (although that set of quantitative goals is proposed to be discontinued in the proposed

Comprehensive Plan). With continued SPR planning and implementation, the increased levels of housing growth assumed in this sensitivity analysis would result in a higher level of identified adverse impacts than the Preferred Alternative, but would not necessarily result in a finding of significant adverse impacts. Future performance would relate to how well SPR is able to obtain additional locations and provide additional parks, recreation, and open space facilities within the extent of resources that will be available to them.

PUBLIC SCHOOLS

Student enrollment is likely to continue to grow as population increases in Seattle, affecting school capacity in the long run. With an additional 30,000 housing units citywide assumed for the sensitivity analysis scenario, student enrollment would likely exceed available school facility capacity sooner and to a greater extent than under the Preferred Alternative. As noted in the Draft EIS, student population does not increase directly in proportion to overall population, but depends on other demographic and socioeconomic factors as well. Given projected future residential growth trends and probable student enrollment growth, SPS will continue to actively engage in facilities planning and facilities improvements toward meeting future needs.

The Draft EIS also states that 30 percent of schools, or 34 of 117, are located in urban villages where the additional 30,000 housing units would locate. Therefore, demand for SPS transportation services to transport students would likely increase. The sensitivity analysis scenario would place additional demands on school facilities and student transportation needs, but these would grow gradually and allow time for SPS to make adjustments to its programs to accommodate the changes. With improvements and implementation of the mitigation measures noted in the Draft EIS, no additional significant impacts are expected.

MITIGATION MEASURES

The mitigation identified in Draft EIS Section 3.8, Public Services, is adequate to mitigate potential impacts identified by the sensitivity analysis scenario. No new types of mitigation are proposed.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

The sensitivity analysis scenario is not expected to result in significant unavoidable adverse impacts beyond those described in the Draft EIS Section 3.8, Public Services.

Utilities

For the sensitivity analysis scenario, the change in anticipated residential growth would not be likely to generate significantly adverse impacts on the City's water, wastewater and electrical utility systems. Each utility prepares a long range planning document that looks at level of service and capacity in similar time frames as the 20-year planning horizon of this Comprehensive Plan. Also, these forecasts are additionally updated at more frequent intervals than the Comprehensive Plan to allow for the utilities to adjust their provision of resources and system improvements in anticipation of growth. On a system wide level, each utility uses up-to-date population forecasts that are independent of the Comprehensive Plan to ensure sufficient overall reservoir, power generation and treatment plant capacity. On the network level, each utility uses the building permit process to assess localized impacts that could arise due to development projects, and requires individual developments through permitting processes to make specific utility improvements, depending on the land use. Population growth through new development in Seattle is also known to have a lower overall potential for impacts on utility system capabilities because Seattle development codes require quality and quantity controls for stormwater that often accomplish better outcomes than existing conditions, as well as improved energy efficiency and water conservation through the efficiencies of using new fixtures and meeting City codes.

Given the findings above, no additional conclusions are made with respect to mitigation measures or significant unavoidable adverse impacts on utilities under the sensitivity analysis scenario.

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