4.5 Public Services & Utilities

This section analyzes the potential impacts to public services and utilities from the Land Use Code changes under each alternative of the proposed action. The analysis of the potential impacts to public services and utilities in the EIS for the Seattle 2035 Comprehensive Plan (Seattle 2015 and Seattle 2016) is incorporated by reference into this EIS. The Comprehensive Plan EIS and this EIS both consider the same question: How does projected growth in the city affect the ability of public services and utilities to provide adequate service? The Comprehensive Plan EIS thoroughly analyzed the potential impacts to public services and utilities from a projected growth of 70,000 households in the city through 2035, including approximately 8,400 households in areas outside designated urban villages. Since the study area, potentially affected resources, and timeframe for this EIS all fall within what was considered in the Comprehensive Plan EIS, we considered the estimated increase in households from the proposed Land Use Code changes and evaluated the impacts in the context of the changes analyzed in the Comprehensive Plan EIS

4.5.1 Affected Environment

The Comprehensive Plan EIS describes the existing service providers and service levels for police, fire and emergency medical, public schools, water, sewer, stormwater, and electricity in Seattle. Because the proposed Land Use Code changes evaluated in this EIS would affect an area included in the study area for the Comprehensive Plan EIS, we incorporate that information by reference in this EIS and summarize the pertinent details below. For details, see Section 3.8 – Public Services and Section 3.9 – Utilities of the Comprehensive Plan EIS.

FIRE AND EMERGENCY MEDICAL SERVICES

Demand for fire and emergency medical services (EMS) is generally estimated to increase proportionally with population growth. The City has an existing network of neighborhood fire stations that serve the current population. The Seattle Fire Department (SFD) has plans in place to accommodate the anticipated growth of 70,000 households outlined in the Comprehensive Plan EIS. See Section 3.8 – Public Services of the Comprehensive Plan EIS for additional details. Exhibit 4.5-1 shows the locations of SFD fire stations throughout Seattle.

POLICE SERVICES

Demand for police service is not based solely on changes in population. Geographic characteristics of the city and the types of service calls received affect the demand for police services, including patrols on foot, on bikes, and in cars. The Seattle Police Department (SPD) has plans in place to accommodate the anticipated growth of 70,000 households outlined in the Comprehensive Plan EIS. See Section 3.8 – Public Services of the Comprehensive Plan EIS for additional details. Exhibit 4.5-2 shows how SPD provides police services to precincts, sectors, and beats

Exhibit 4.5-1 Seattle Fire Department Stations

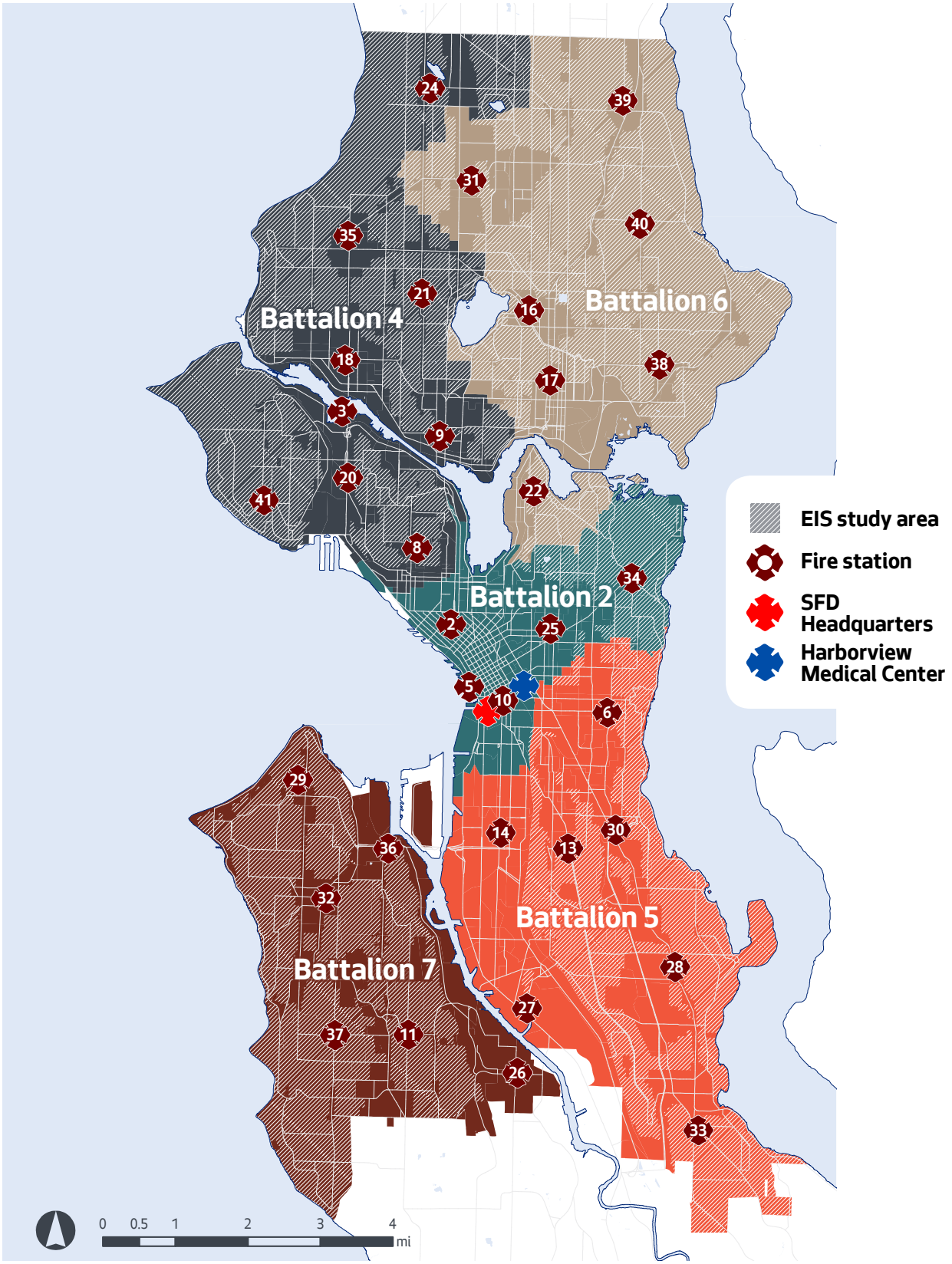
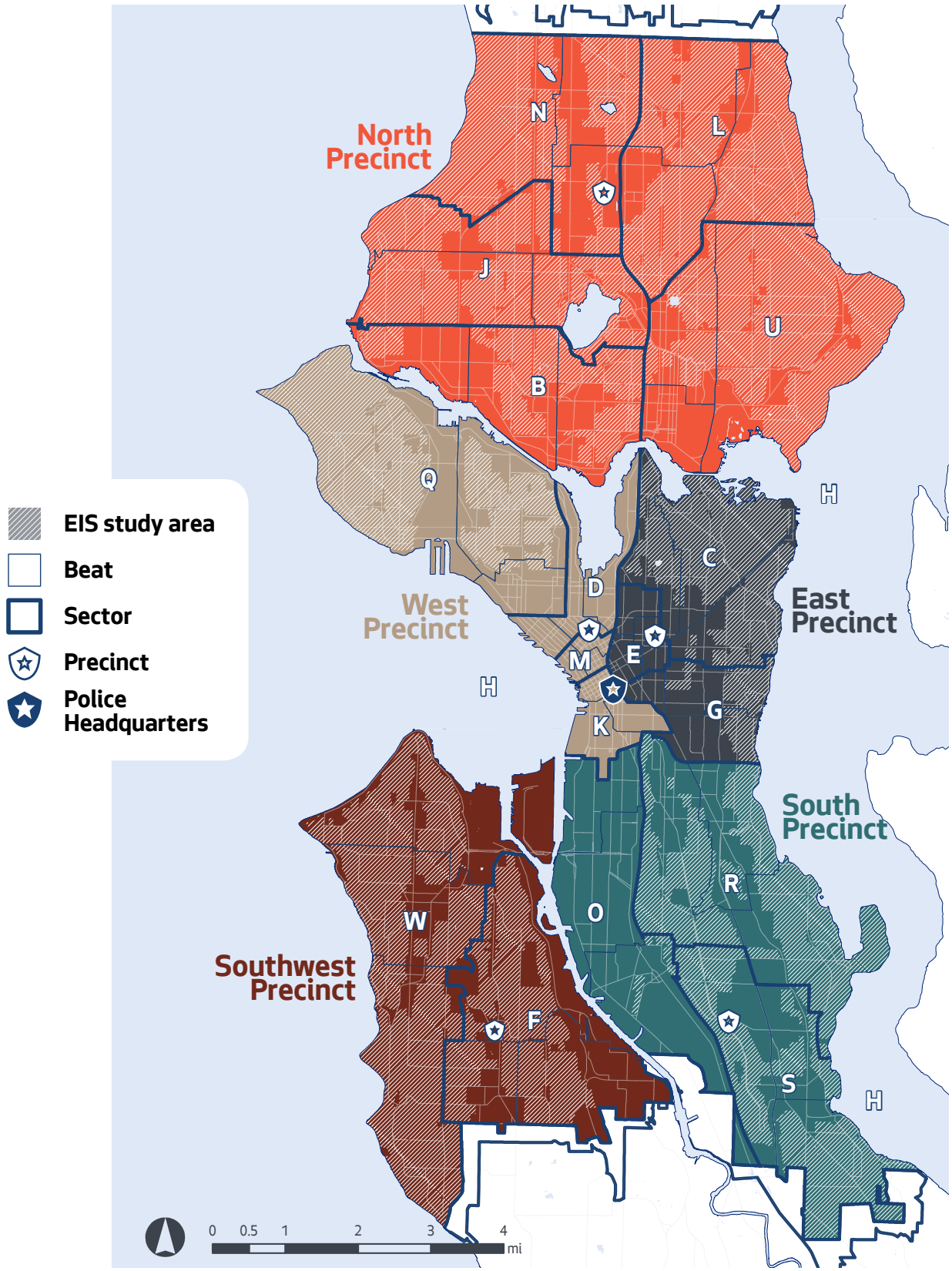


Exhibit 4.5-2 Seattle Police Department Precincts



PUBLIC SCHOOLS

Total student enrollment in Seattle Public Schools (SPS) has steadily increased since 2007 and that trend is expected to continue in the near future. As outlined in the Comprehensive Plan EIS, SPS is continually planning for changes in student enrollment and is actively planning for future growth through their Facilities Master Plan. To plan for future enrollment, SPS uses the cohort survival model, which calculates a "survival rate" for each grade based on the proportion of students who historically continue from one grade to the next. To project kindergarten enrollment, SPS estimates a birth-to-kindergarten ratio based on the proportion of children born in Seattle who historically enroll in Seattle Public Schools five years later. SPS then applies that ratio to the annual number of live births five years prior to a given school year to generate an overall 10-year enrollment projection. SPS updates these projections annually to reflect the latest data on known live births.

SEATTLE PUBLIC UTILITIES — WATER

To plan for Seattle's water supply needs, Seattle Public Utilities (SPU) estimates demand on the current system based on population projections. Despite recent population growth, total water system usage in Seattle is declining. This is partially due to conservation efforts, like encouraging low-flow fixtures for both residential and commercial uses. Generally, SPU maintains, improves, and repairs the water system as needed. SPU uses growth forecasts from the Puget Sound Regional Council (PSRC) and the Washington State Office of Financial Management (OFM) to develop long-range (i.e., at least 20 years) water demand forecasts and to determine if new supplies or additional system capacity are necessary. SPU updates these water demand forecasts, supply analyses, and capacity analyses with each new water system plan or, more frequently, if substantial changes in supply or demand warrant consideration. See Section 3.9 – Utilities of the Comprehensive Plan EIS for additional details.

SEATTLE PUBLIC UTILITIES — SEWER AND STORMWATER

Sanitary sewer demand estimates are based on population density and correlate with water system usage. Over time, redevelopment can reduce per-capita sewer demand, as newer, low- or no-flow plumbing fixtures and equipment replace older, less efficient installations. As described above for the water system, these conservation practices have reduced the overall demand on the wastewater system.

Stormwater runoff calculations are based on rainfall intensity and land use surface types. SPU plans stormwater drainage needs based on zoning standards, including the maximum lot coverage limit for development in single-family zones.

KING COUNTY WASTEWATER TREATMENT DIVISION AND SEATTLE PUBLIC UTILITIES — COMBINED SEWER SYSTEM

King County Wastewater Treatment Division (KC) and SPU own and operate combined sewer systems that serve about one-third of the city. Each combined sewer system is a piped network carrying both sanitary wastewater and stormwater runoff to a King County wastewater treatment plant (WWTP). Some portions of the drainage system have been identified as capacity constrained. In these areas development is required to limit the peak discharges of stormwater. Any area that discharges to an informal ditch and culvert system is considered capacity constrained.

SEATTLE CITY LIGHT — ELECTRIC POWER

To estimate demand for electricity, Seattle City Light (SCL) considers growth projections and land use patterns (e.g., residential vs. manufacturing). Despite recent population and economic growth, SCL's load is relatively stable because its service territory is well established and SCL has administered an aggressive energy conservation program for nearly 40 years.

4.5.2 Impacts

METHODOLOGY

Our methodology for evaluating potential impacts to public services and utilities considered the overall changes in population anticipated under each alternative relative to the existing service levels for each public service and utility. For stormwater impacts, the analysis considers the potential change in lot coverage as increased lot coverage is correlated with increased stormwater runoff. Generally, we anticipate an impact if a public service or utility would not be able to accommodate an increase in demand. Specifically, in this analysis we considered the number of ADUs created under each alternative, the resulting change in population, and whether that change would result in adverse impacts on public services

or utilities. We determined impacts by comparing expected population changes relative to those considered in the Comprehensive Plan EIS and the resulting impacts.

While other sections of this EIS have referred to estimates of households that would occupy new ADUs, in this analysis we focused on the populations living in ADUs as demand for public services and utilities tends to increase in proportion to the number of people living and working in an area.

RESULTS

New ADUs

As described in Section 4.1, Housing and Socioeconomics, we expect all three alternatives to result in more ADUs constructed in Seattle. Exhibit 4.5-3 shows the estimated number of new ADUs that could be created between 2018 and 2027 under each alternative.

Exhibit 4.5-3 ADUs Produced by Alternative and Type

	Alternative 1 (No Action)	Alternative 2	Alternative 3
Estimated number of parcels that build exactly one AADU	900	630	650
Estimated number of parcels that build exactly one DADU	990	940	960
Estimated number of parcels that build two ADUs	—	880	745
Total ADUs	**1,890**	**3,330**	**3,090**
Additional ADUs compared to Alternative 1 (No Action)	—	1,440	1,210

Population Change

In single-family zones, household size is defined as the sum of the people living in the main house and any ADUs on the lot. For example, a main house with two people and an ADU with two people yields a household size of four. In 2016, the average household size in Seattle was 2.12

people (U.S. Census Bureau 2016). American Community Survey data from 2016 reports an average size of 2.74 people for households in one-unit structures (detached or attached). Currently, the Land Use Code defines a household as any number of related people, or up to eight unrelated people, and establishes that only one household can live on a lot in a single-family zone.

The maximum household size limit varies across the alternatives. Under Alternatives 1 and 3, the maximum household size would remain at eight unrelated people, including occupants of any ADUs on the lot. Under Alternative 2, the maximum household size would be eight unrelated people for lots with up to one ADU and 12 unrelated people for lots with an AADU and a DADU.

While the Land Use Code specifies the maximum number of people who can live on a lot, potential impacts on public services and utilities depend specifically on the additional people who would occupy new ADUs under each alternative. We anticipate the average number of people living in an ADU would be lower than the overall average household size in Seattle's single-family zones because ADUs tend to be smaller than single-family houses. As data was not available for the average number of people living in an ADU in Seattle, we used available data from Portland, Oregon, as a proxy (Horn et al 2013). The Portland data showed that an average of 1.36 people were living in each ADU. For purposes of this analysis, we rounded up that number to assume an average of 1.5 people per ADU.

We then analyzed the population change that would result from increased ADU production based on this assumption of average occupants per ADU. For all alternatives, we assumed an average household size for lots with one ADU of 3.5 people; in Alternatives 2 and 3, on lots with two ADUs, we assumed an average household size of 5.0 people. In considering potential impacts, we excluded the population living in the main house because we expect that, across all alternatives, any increase in the number of people living on a lot would result from adding one or two ADUs, not from a change to the number of people living in the main house. Exhibit 4.5-4 summarizes our household size assumptions.

We also considered a scenario where every lot reaches the maximum household size. In this case, we assumed that half of a lot's residents would occupy the main house and the other half would occupy the ADUs. For Alternatives 1 and 2, this would result in four people per ADU; for Alternative 3, we assumed four people per ADU on a lot with one ADU and two people per ADU on a lot with two ADUs. presents the changes in household size resulting from ADU production based on the average

number of people anticipated in each ADU. Exhibit 4.5-6 presents the anticipated changes based on the maximum household size.

Exhibit 4.5-4 Average and Maximum Household Size Assumptions

		Alternative 1 (No Action)			Alternative 2			Alternative 3		
		House	ADUs	Total	House	ADUs	Total	House	ADUs	Total
Average household size assumptions	**Lots with one AADU**	2	1.5	3.5	2	1.5	3.5	2	1.5	3.5
	Lots with one DADU	2	1.5	3.5	2	1.5	3.5	2	1.5	3.5
	Lots with two ADUs	—	—	—	2	3	5	2	3	5
Maximum household size assumptions	**Lots with one AADU**	4	4	8	4	4	8	4	4	8
	Lots with one DADU	4	4	8	4	4	8	4	4	8
	Lots with two ADUs	—	—	—	4	8	12	4	4	8

Exhibit 4.5-5 Anticipated Population Based on Average Household Size

	Alternative 1 (No Action)	Alternative 2	Alternative 3
ADU population on lots with one AADU	1,350	945	975
ADU population on lots with one DADU	1,485	1,410	1,440
ADU population on lots with two ADUs	—	2,640	2,235
Total ADU population	**2,835**	**4,995**	**4,650**
Additional population compared to Alternative 1 (No Action)	—	2,160	1,815

Exhibit 4.5-6 Anticipated Population Based on Maximum Household Size

	Alternative 1 (No Action)	Alternative 2	Alternative 3
ADU population on lots with one AADU	3,600	2,520	2,600
ADU population on lots with one DADU	3,960	3,760	3,840
ADU population on lots with two ADUs	—	7,040	2,980
Total ADU population	**7,560**	**13,320**	**9,420**
Additional population compared to Alternative 1 (No Action)	—	5,760	1,860

Lot Coverage

In all alternatives, the maximum lot coverage limit would remain the same as under the current Land Use Code. On lots greater than 5,000 square feet, 35 percent of the lot area could be covered; on lots less than 5,000 square feet, 15 percent of the lot area plus 1,000 square feet could be covered.

IMPACTS OF ALTERNATIVE 1 (NO ACTION)

Under Alternative 1 (No Action), current Land Use Code regulations for development in single-family zones would remain unchanged. We anticipate the current rate of ADU production would continue. We do not expect this trend to result in impacts to public services and utilities. Overall demand for public services and utilities would continue to increase with population growth; however, Seattle Public Utilities, Seattle City Light, Seattle Public Schools, Seattle Police Department, and Seattle Fire Department, anticipate and continue to plan for this growth.

IMPACTS OF ALTERNATIVE 2

Alternative 2 could result in about 1,440 additional ADUs between 2018 and 2027 compared to Alternative 1 (No Action). We anticipate that the increase in ADU production could result in about 2,160 additional residents (and a theoretical maximum of 5,760 additional residents) on lots with ADUs in single-family zones compared to Alternative 1 (No Action). Any population change associated with ADU production under Alternative 2 would fall within the growth considered in the Comprehensive Plan EIS. The Comprehensive Plan EIS considered the potential impacts of 8,400 new households by 2035 in areas outside urban villages, or 16,800 new residents based on an average household size of two, and concluded that there would be no impacts to public services or utilities. The conclusions drawn in this EIS concur with that analysis. Even if ADU production under Alternative 2 resulted in about 2,160 new residents (or a maximum of 5,760 new residents) in Seattle, we do not anticipate impacts on the ability of Seattle Public Utilities, Seattle City Light, Seattle Public Schools, Seattle Police Department, or Seattle Fire Department to provide service.

Since 2015, Seattle's population has risen an average of 25,650 per year. The Comprehensive Plan anticipates that Seattle will need to accommodate 120,000 new residents by 2035. If Alternative 2 results in 2,160 additional ADU residents over 10 years compared to Alternative

1 (No Action), about four percent of citywide population growth would occur across about two-thirds of the city's land area. It is likely that, absent additional ADU production expected under Alternative 2, some of these residents would otherwise live elsewhere in Seattle.

Fire and EMS

The City's existing network of neighborhood fire stations serves the current population. Compared to overall population growth in Seattle, the additional demand associated with new ADU development would be well within the Seattle Fire Department's ability to respond to and anticipate the changing needs of the city.

Police Services

Under Alternative 2, we do not anticipate that the addition of at most 5,760 residents between 2018 and 2027 would have an adverse impact on SPD's ability to anticipate and respond to changing needs in the city. Population growth does not directly correlate to an increased demand for police services. Therefore, Alternative 2 would not necessarily result in proportional increases in call volumes or the frequency of major crimes. Nevertheless, SPD will continue to analyze where best to focus its resources to respond to changes in demand.

Public Schools

Under Alternative 2, we do not anticipate that the addition of up to 5,760 residents between 2018 and 2027 would have an adverse impact on the enrollment capacity of SPS. As described above, SPS plans for student population changes in their facility planning and is actively planning for future growth. If student enrollment did exceed capacity, SPS would typically respond by using one or a combination of the approaches listed below:

- Adjusting school boundaries to address capacity needs
- Adjusting geographic zones for option schools
- Adding or removing portables
- Adding or renovating buildings
- Opening closed buildings or schools
- Pursuing future capital programs

These typical responses to changes in enrollment would ensure that any localized changes in capacity associated with the proposed Land Use Code changes would not impact SPS.

Seattle Public Utilities — Water

As described above, total water system usage in Seattle has declined in recent years. As a result, the City's water system currently has excess capacity. As outlined in the Comprehensive Plan EIS, new development, such as increased ADU production under Alternative 2, could increase demand on localized areas of the water supply and distribution systems. However, the water supply and distribution systems have sufficient excess capacity to handle any changes.

Seattle Public Utilities — Sewer and Stormwater

Under Alternative 2, increased ADU production could increase demands on the local sewer collection system, downstream conveyance, and treatment facilities. Increased sewer flow is a product of increased water consumption. Greater population in the study area could increase the overall need for sewage capacity, but we do not anticipate any significant adverse location-specific impacts.

None of the alternatives contemplates a change to the existing maximum lot coverage limit, which is currently 35 percent for lots 5,000 square feet and larger, and 1,000 square feet plus 15 percent for lots under 5,000 square feet. Drainage review would be required for any project that would propose to disturb more than 750 square feet of land or to add or replace 750 square feet of building footprint. The Seattle Stormwater Code (SMC Chapters 22.800-22.808) and 2016 Seattle Stormwater Manual have both adopted best management practices to address potential impacts. During the scoping period, SPU reported that the proposed Land Use Code changes would not likely lead to increased amounts of impervious surfaces beyond what is currently allowed and, therefore, would not have a measurable impact on the drainage system.

King County Wastewater Treatment Division and SPU — Combined Sewer System

The impacts to the Combined Sewer System would be the same as described under SPU – Sewer and Stormwater.

Seattle City Light — Electric Power

Despite population growth, SCL's overall electrical load has been stable over the last 40 years because of successful energy conservation efforts and implementation of energy use requirements outlined in the Land Use Code. The increase in population anticipated under Alternative 2 would not impact the ability of SCL to meet changes in demand.

IMPACTS OF ALTERNATIVE 3

Alternative 3 could result in about 1,210 additional ADUs compared to Alternative 1 (No Action). We anticipate that the increase in ADU production could result in about 1,815 additional residents (and a theoretical maximum of 1,860 additional residents) on lots with ADUs in single-family zones compared to Alternative 1 As described for Alternative 2, even if this resulted in a corresponding increase in 1,860 additional residents in Seattle, we do not anticipate impacts on the ability of Seattle Public Utilities, Seattle City Light, Seattle Public Schools, Seattle Police Department, or Seattle Fire Department to provide service

4.5.3 Mitigation Measures

No significant adverse impacts are anticipated to public services and utilities; therefore, no mitigation measures are proposed.

4.5.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts are anticipated to public services and utilities from any of the alternatives considered in this EIS.

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