CHAPTER 8 Air Quality

8.1 Introduction

This chapter examines the air quality and greenhouse gas (GHG) impacts of the City of Bellevue Comprehensive Plan Periodic Update on the city as whole, and in the Wilburton study area. The analysis indicates that the Comprehensive Plan Periodic Update could potentially cause a significant adverse impact related to air quality and greenhouse gas emissions. This potential impact arises from the Action Alternatives exceeding one or more of the thresholds of significance described below. Some future impacts are expected to be addressed under the State Environmental Policy Act (SEPA) on a project-to-project basis to determine their significance. There is also a potential for increases in greenhouse gas emissions in comparison to local or regional goals or targets for greenhouse gas reductions. However, per capita vehicle travel, and associated emissions, are expected to decline for any Action Alternative, in contrast to the No Action Alternative. The analysis identifies mitigation that, if implemented and tracked, will reduce impacts to a less-than-significant level.

The alternatives for the Comprehensive Plan Periodic Update are described in detail in Chapter 2, *Alternatives*. Briefly, the alternatives include a No Action Alternative, which continues the current Comprehensive Plan where growth is focused in the Downtown, BelRed, and East Main Mixed Use Centers. The No Action Alternative has capacity for 41,000 additional housing units and space for an additional 124,000 jobs. For the No Action Alternative and the Action Alternatives, the overall citywide growth targets of 35,000 new

housing units and 70,000 new jobs by 2044 are the same. The Action Alternatives expand capacity to allow space for additional jobs, primarily in Mixed Use Centers, and capacity for a greater diversity of housing types and locations. Alternative 1 would increase opportunities for families citywide by providing capacity for an additional 59,000 units and space for an additional 179,000 jobs. Alternative 2 optimizes for residential growth in the Mixed Use Centers by providing capacity for an additional 77,000 housing units and space for an additional 177,000 jobs. Finally, Alternative 3 would open citywide growth opportunities, combining the first two alternatives and providing capacity for an additional 95,000 housing units and space for an additional 200,000 jobs.

The alternatives being studied include the Wilburton study area. The No Action Alternative includes housing capacity in the Wilburton study area that is less than 1 percent of the citywide total capacity. The Action Alternatives would increase the capacity for housing units in the Wilburton study area as a fraction of citywide capacity increases by 8 percent, 10 percent, and 9 percent, respectively, for Alternatives 1, 2, and 3. Similarly, jobs currently represent less than 7 percent of the city wide capacity total, but will be increased in the Wilburton study area relative to citywide capacity by 17 percent, 15 percent, and 16 percent for Alternatives 1, 2, and 3 respectively.

8.2 Affected Environment

8.2.1 Air Quality

REGULATORY ENVIRONMENT

This section describes the relevant regional, state, and federal regulations and regulatory agencies that guide air emissions within the Bellevue region. These include the U.S. Clean Air Act and Washington Clean Air Act, Ecology, the Puget Sound Clean Air Agency (PSCAA), and other relevant policies.

As required by the 1970 Clean Air Act, the EPA (United States Environmental Protection Agency) initially identified seven criteria air pollutants for which state and federal health-based ambient air quality standards have been established. EPA calls these “criteria air pollutants” because the agency has regulated them by developing specific public health- and welfare-based criteria as the basis for setting permissible levels. Ozone, carbon monoxide (CO), particulate matter (PM), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead are

the six criteria air pollutants originally identified by the EPA. Since then, subsets of PM have been identified for which permissible levels have been established. These include particulate matter that is less than or equal to 10 microns in aerodynamic diameter (PM_{10}) and particulate matter that is less than or equal to 2.5 microns in aerodynamic diameter ($PM_{2.5}$).

The Clean Air Act established the National Ambient Air Quality Standards (NAAQS), with primary and secondary standards, to protect the public health and welfare from air pollution. Areas of the U.S. that do not meet the NAAQS for any criteria pollutant are designated by the EPA as nonattainment areas. Areas that were once designated nonattainment but are now achieving the NAAQS are termed maintenance areas. Areas that have air pollution levels that meet the NAAQS or are cleaner are termed attainment areas. In nonattainment areas, states must develop plans to reduce emissions and bring the area back into attainment of the NAAQS.

An area remains a nonattainment area for that pollutant until concentrations are in compliance with the NAAQS. Only after measured concentration design values (EPA's multi-year, per-pollutant metrics that are used for comparisons to the NAAQS) have fallen below the NAAQS can the state apply for re-designation to attainment, and it must then submit a 20-year plan for continuing to meet and maintain air quality standards. During this 20-year period, the area implements a NAAQS maintenance plan.

Table 8-1 identifies the primary NAAQS for the seven criteria pollutants. Ecology and the PSCAA have authority to adopt more stringent standards, and in 1999, the PSCAA Board of Directors adopted a more stringent health goal for 24-hour $PM_{2.5}$ of 25 micrograms per cubic meter ($\mu g/m^3$), based on recommendations from the PSCAA Particulate Matter Health Committee.

Nationally, criteria pollutants are generally showing a reduction in ambient concentrations over time, largely as a function of increasing regulations that apply to stationary sources, off-road equipment (e.g., construction equipment), diesel trucks, and automobiles, among other sources. A graphic of these trends is shown in **Figure 8-1**, where each line is a criteria pollutant's average concentration percentage relative to the respective NAAQS, by year.

TABLE 8-1 **Air Quality Standards**

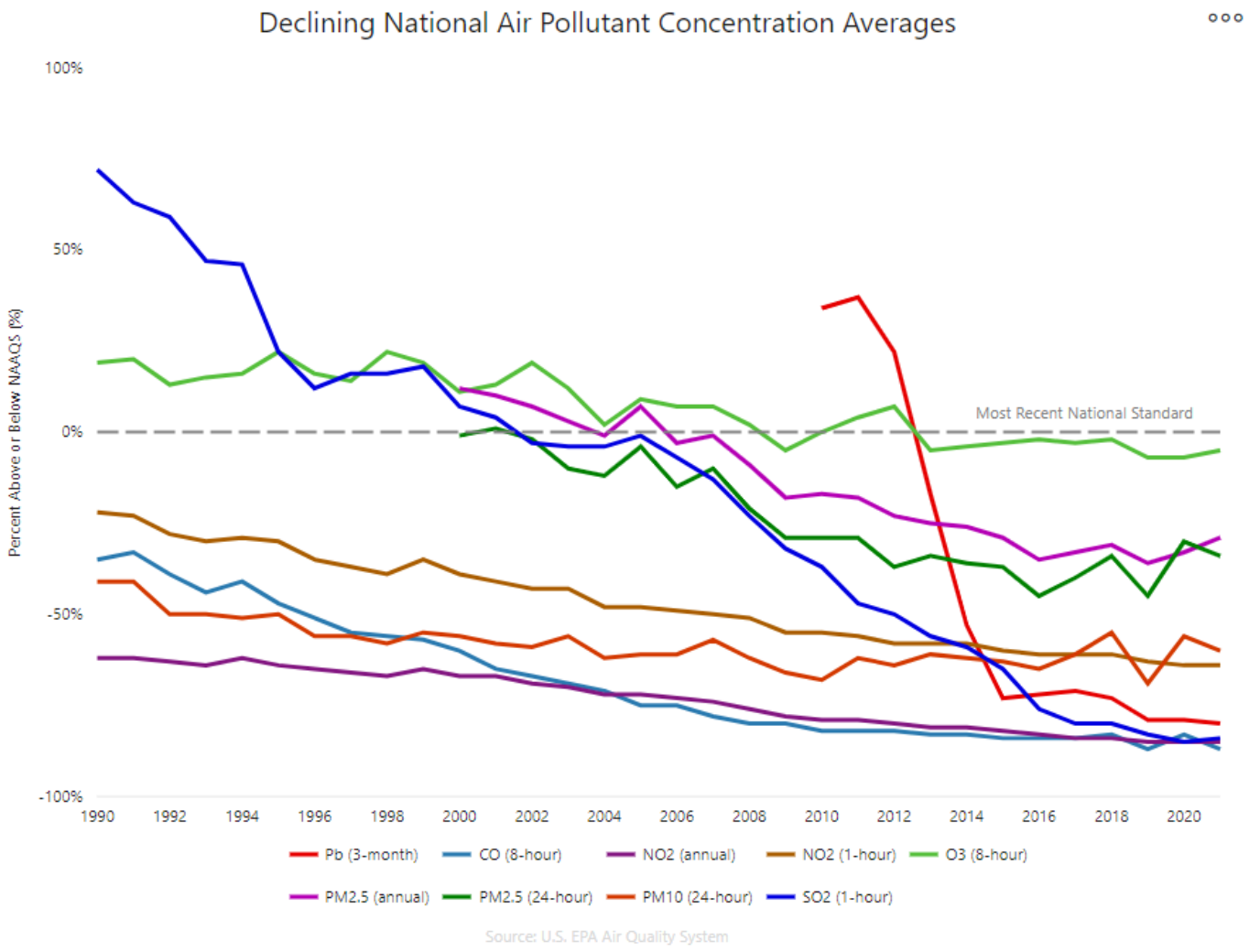
Pollutant	Averaging Time	Primary Federal Standard	State of Washington Standard	Form of the Standard
Ozone (O_3)	8-hour	0.070 ppm	0.070 ppm	(1)
Carbon monoxide (CO)	1-hour	35 ppm	35 ppm	(2)
	8-hour	9 ppm	9 ppm	(2)
Nitrogen dioxide (NO_2)	1-hour	0.100 ppm	0.100 ppm	(3)
	Annual	0.053 ppm	0.053 ppm	(4)
Sulfur dioxide (SO_2)	5-minute			(11)
	1-hour	0.075 ppm(5)	0.075 ppm(5)	See Standard
	3-hour	0.5 ppm	0.5 ppm	(2)
	24-hour		0.14 ppm(2)	(2)
	Annual		0.02 ppm(6)	See Standard
Particulate matter (PM_{10})	24-hour	150 µg/m^3	150 µg/m^3	(7)
Fine particulate matter ($PM_{2.5}$)	24-hour	35 µg/m^3	35 µg/m^3	(8)
	Annual	12 µg/m^3	12 µg/m^3	(9)
Lead	Rolling 3-month average	0.15 µg/m^3	0.15 µg/m^3	(10)

SOURCE: 40 CFR part 50, WAC 173-476-900, Puyallup Tribal Codes 10.12.400

NOTES: ppm: parts per million; µg/m^3: micrograms per cubic meter

(1) Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years.
(2) Not to be exceeded more than once per year.
(3) 98th percentile of 1-hour daily maximum concentrations averaged over 3 years.
(4) Annual Mean.
(5) 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years.
(6) Not to be exceeded in a calendar year.
(7) Not to be exceeded more than once per year, averaged over 3 years.
(8) 98th percentile, averaged over 3 years.
(9) Annual mean, averaged over 3 years.
(10) Not to be exceeded.
(11) Once in any 8 consecutive hours.

At the regional level, the Puget Sound Regional Council (PSRC) has developed VISON 2050, a regional long-range plan that provides growth planning perspectives and assessment of the potential for environmental implications as part of that planning. VISION 2050 identifies policies for air quality and climate change (PSRC 2022). On the air quality side there are goals to reduce impacts to those disproportionately affected, to meet all federal and state air quality standards, and to continue reducing transportation-related air pollution.



SOURCE: EPA 2022a; EPA 2022b

FIGURE 8-1 **National Ambient Concentration Averages Relative to Their Respective NAAQS**

AIR QUALITY IN PUGET SOUND

The Puget Sound region has a relatively mild, marine climate with cool summers and mild, wet, and cloudy winters. Regionally, weather conditions such as temperature, fog, rain, and snowfall can vary within short distances, influenced by such factors as the distance from Puget Sound, the rolling terrain, and air from the ocean moving inland; within Bellevue, the major influence on weather is topography and associated influences from Lakes Washington and Sammamish. Although the Puget Sound region is one of the most densely populated and industrialized areas in Washington, a well-

mixed and ventilated atmosphere allows for pollutants to be readily dispersed downwind through much of the year.

Air pollution is usually most noticeable in the late fall and winter, under conditions of clear skies, light wind, and a sharp temperature inversion. Temperature inversions occur when cold air is trapped under warm air, preventing vertical mixing in the atmosphere. Inversions can last several days and can prevent pollutants from being dispersed by the wind. Inversions are most likely to occur during the months of January, February, October, November, and December.

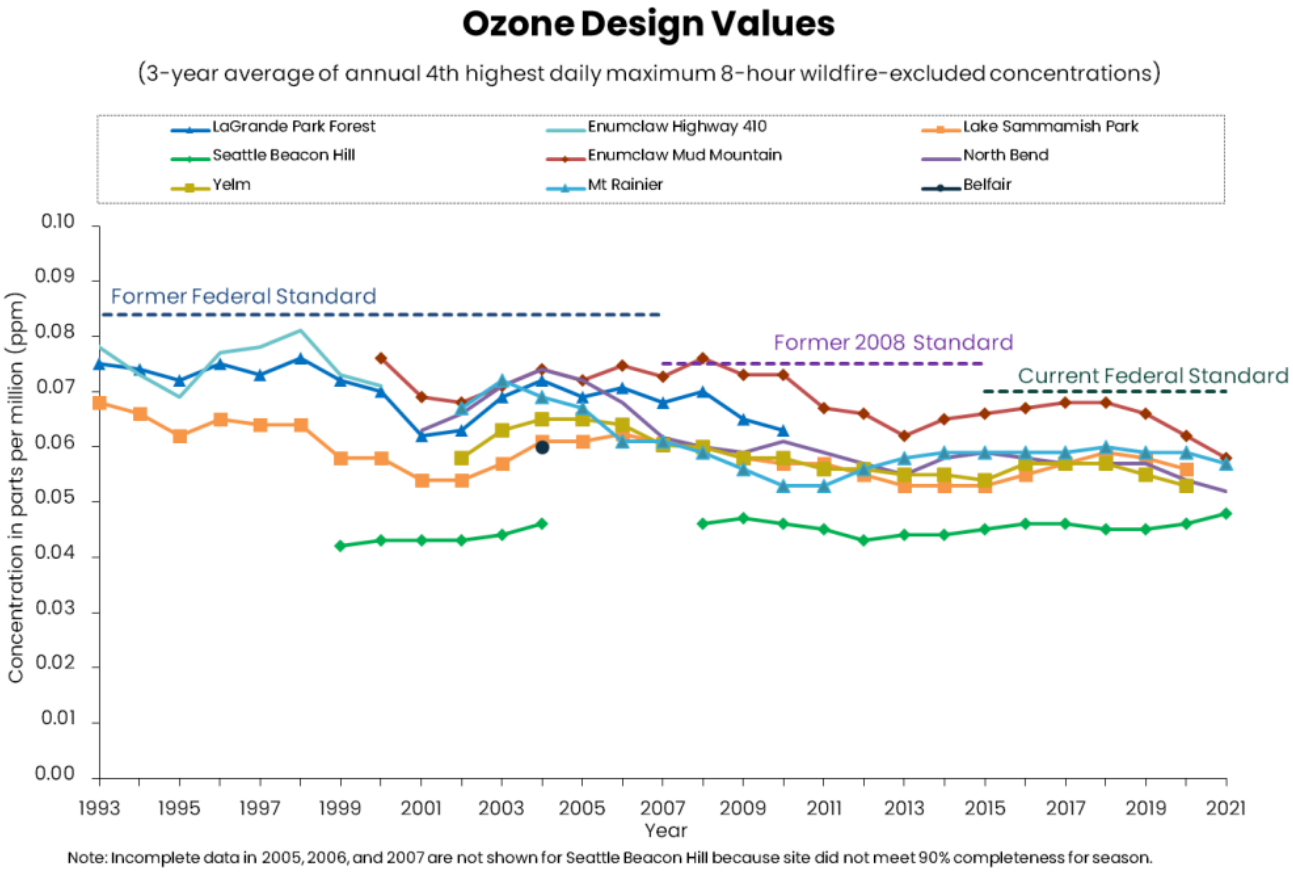
Recent years have shown that the intersection of these inversion events with regional wildfires can result in significantly degraded air quality. If poor dispersion persists for more than 24 hours, the PSCAA can declare an "air pollution episode" or local "impaired air quality." Both Ecology and PSCAA operate ambient air quality monitoring stations to assess the levels of regulated pollutants and to verify continued compliance with the NAAQS.

In the Puget Sound airshed, the primary criteria air pollutants that have historically been of concern are CO, ozone, PM_{10}, $PM_{2.5}$, and ozone precursors (volatile organic compounds [VOCs] and oxides of nitrogen [NOx]). Although urban portions of the Puget Sound region have historically violated the CO standard, CO levels have decreased significantly, primarily due to emissions controls on car engines. EPA designated the Puget Sound region, including Bellevue, as a CO attainment area in 1996 (Federal Register 1996), and its maintenance period expired in October 2016.

With respect to the city's status relative to monitored concentration trends of ozone, Bellevue currently meets the federal 8-hour standard for ozone. Like CO, the region was redesignated as attaining the ozone NAAQS in 1996, and the corresponding maintenance period expired in 2016. However, monitors in King, Kitsap, Pierce, and Snohomish counties exceeded the local PSCAA health goal of 25 $\mu g/m^3$ on 22 days, which were during winter months in 2019 (PSCAA 2020). Measured concentrations of NOx have demonstrated attainment with the NAAQS within the region but are a prominent emissions source from high-volume roadways (e.g., I-405, I-90, SR 520). High -volume roadways are those which have more than 100,000 annual average trips per day – a level of traffic known to produce air concentrations that can be harmful to people's health.

Ozone concentrations have remained generally stable, with some influence from wildfire emissions. However, the urban region near Bellevue and Seattle has remained within the NAAQS regardless of

whether wildfire event days are included or excluded from the analysis. Within the Puget Sound region, only Enumclaw demonstrated some compliance issues with the 8-hour ozone standard due to wildfire influences. **Figure 8-2** provides the 8-hour ozone concentration trends for the Puget Sound region, with the wildfire event days removed from the dataset.



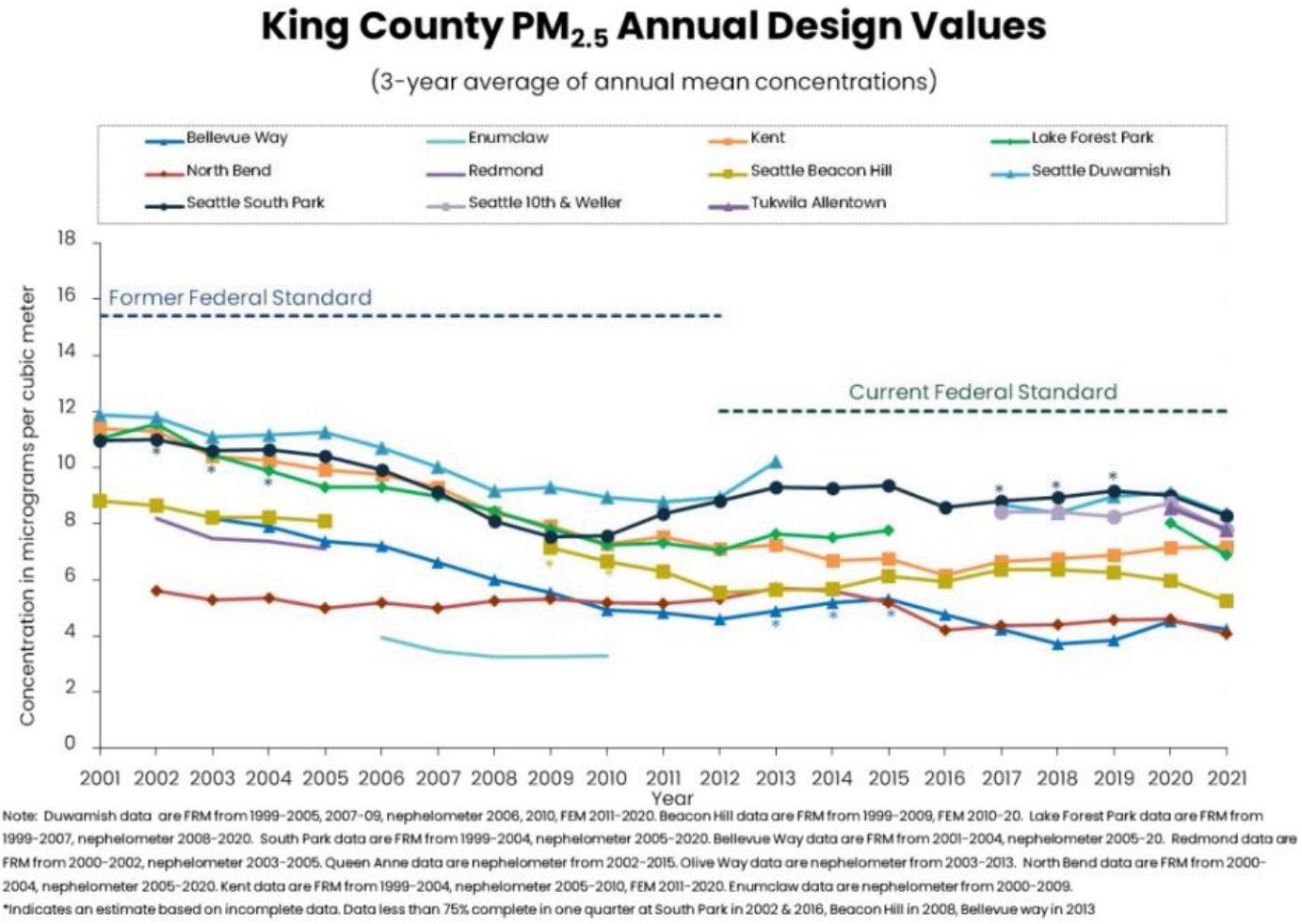
SOURCE: PSCAA 2022

FIGURE 8-2 **Puget Sound Region 8-Hour Ozone Design Value Trends**

On-road emissions contribute to both the GHG footprint and the air quality (primarily for $PM_{2.5}$) footprint of the city to such a large extent, so they are the source of highest concern for this planning process.

Consistent with the air quality trends observed at the national level, the King County air quality trends for $PM_{2.5}$ have generally declined and been within the NAAQS. An air quality trend report produced by PSCAA (2021) demonstrates this trend, as shown in **Figure 8-3**. The figure shows the concentrations including wildfire impacts. The PSCAA also provides figures that remove wildfire impacted days, but

such a change only marginally reduces the design value concentrations in comparison to those with wildfire days. Notably, revised $PM_{2.5}$ standards have been proposed by the federal government, and some regional sites may exceed that standard if it becomes law. While PM_{10} is not routinely measured, it has been estimated by PSCAA by scaling from $PM_{2.5}$ concentrations. The results indicate that if wildfire impacts are removed, the concentrations are well within the NAAQS. However, PM_{10} would be expected to exceed the NAAQS if wildfire events are included.



SOURCE: PSCAA 2022

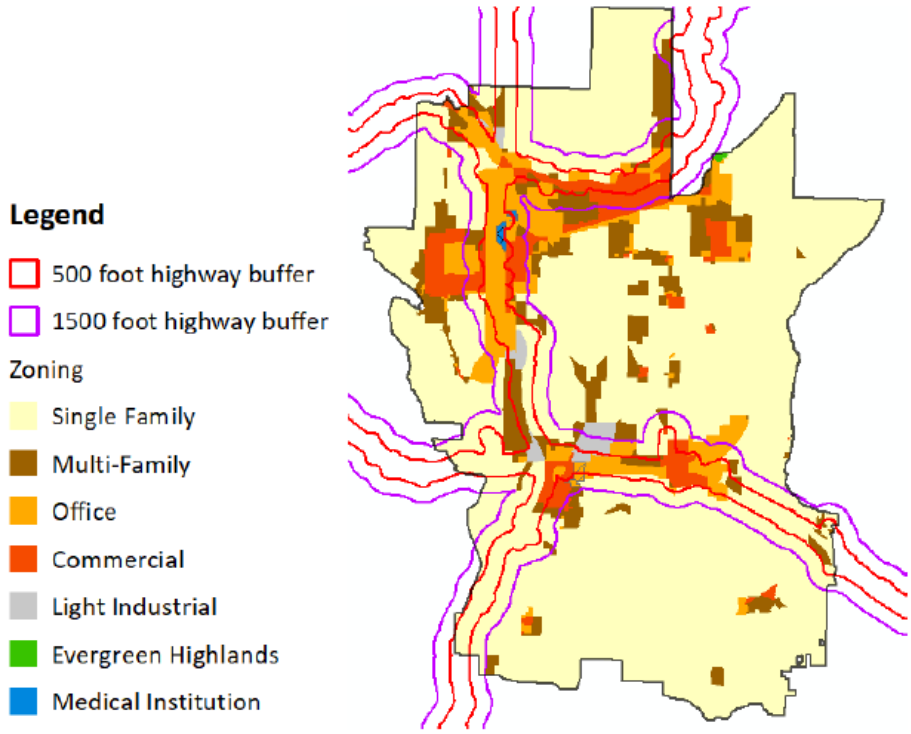
FIGURE 8-3 **King County $PM_{2.5}$ Annual Design Value Trends**

According to the Puget Sound Clean Air Agency 2014 report on Highly Impacted Communities (PSCAA 2014), the Wilburton study area falls within the top 20 air quality impacted communities in King County, along with other nearby communities such as Factoria. The primary

contributor to this designation is the proximity to freeways for these communities. The impact scores for the study were developed using diesel pollution, household income, health sensitivity, industrial density, race, English proficiency, and wood burning household counts as factors.

In addition to criteria pollutants, air toxics can also impact human health. The list of air toxics in Washington includes over 400 pollutants, including diesel particulate matter. Air toxics are measured in strategic locations and often for specific studies. Nationally, the trend has been consistent with the findings of the criteria air pollutants – a general downward trend in concentrations. Currently the PSCAA is undertaking a study of air toxics for the period of 2021–2022. However, the study is focused on specific highly impacted regions (e.g., Georgetown, South Park) and is not region-wide. For the Bellevue area, the primary source of air toxics that residents are exposed to is diesel particulate matter (DPM) from traffic. Approximately 13 percent of the city's land area is within 500 feet of a high-volume roadway. Near-road concentration measurements and trends in the Bellevue area are not readily available. Notably, air modeling tools, such as the Community-LINE Source Model, have been applied to understand the extent of impacts from roadways. These models have indicated that the largest influences are with 300 to 1,500 feet of high-volume roadways.

Most recently, the City of Bellevue produced *Air Quality and Land Use Planning* (City of Bellevue 2023), a document designed to provide a literature review of high-volume roadways, their potential air quality health effects, and mitigation strategies to reduce those effects. The Air Quality and Land Use Planning document is provided in Appendix J. The purpose of the document is to provide information for the city to consider, along with other factors, when making long-range planning decisions to increase development capacity. The document also provides useful information on high-volume roadways within Bellevue, the land uses that exist near them, and mitigation strategies that may be implemented to reduce exposures to elevated air pollution levels in areas located adjacent to high-volume roadways. A depiction of the current generalized zoning districts in Bellevue and high-volume roadways (those exceeding 100,000 annual average trips per day) buffers at both 500 feet and 1,500 feet is shown in **Figure 8-4**.



SOURCE: City of Bellevue 2023

FIGURE 8-4 **Air Quality Highway Buffers in Study Area**

8.2.2 Greenhouse Gases

REGULATORY ENVIRONMENT

A variety of policies at the regional, state, and federal levels will contribute to reducing GHG emissions in the Puget Sound region. Federal and state vehicle emissions standards will contribute to a reduction in on-road emissions, while regionally, reductions in vehicle miles traveled (VMT) are built in to the PSRC's Regional Transportation Plan. At the state level, a variety of policies and programs will contribute to emissions reductions, including Washington's:

- Clean Buildings Act
- Clean Energy Transformation Act
- Clean Fuel Standard
- Climate Commitment Act
- Energy Code

- Hydrofluorocarbon Policies
- Internal Combustion Engine Ban

Of note, the Bellevue 2021–2025 Environmental Stewardship Plan (City of Bellevue 2020) lays out targets for reducing GHG emissions from a 2011 baseline at a rate of:

- 50 percent reduction by 2030
- 80 percent reduction by 2050

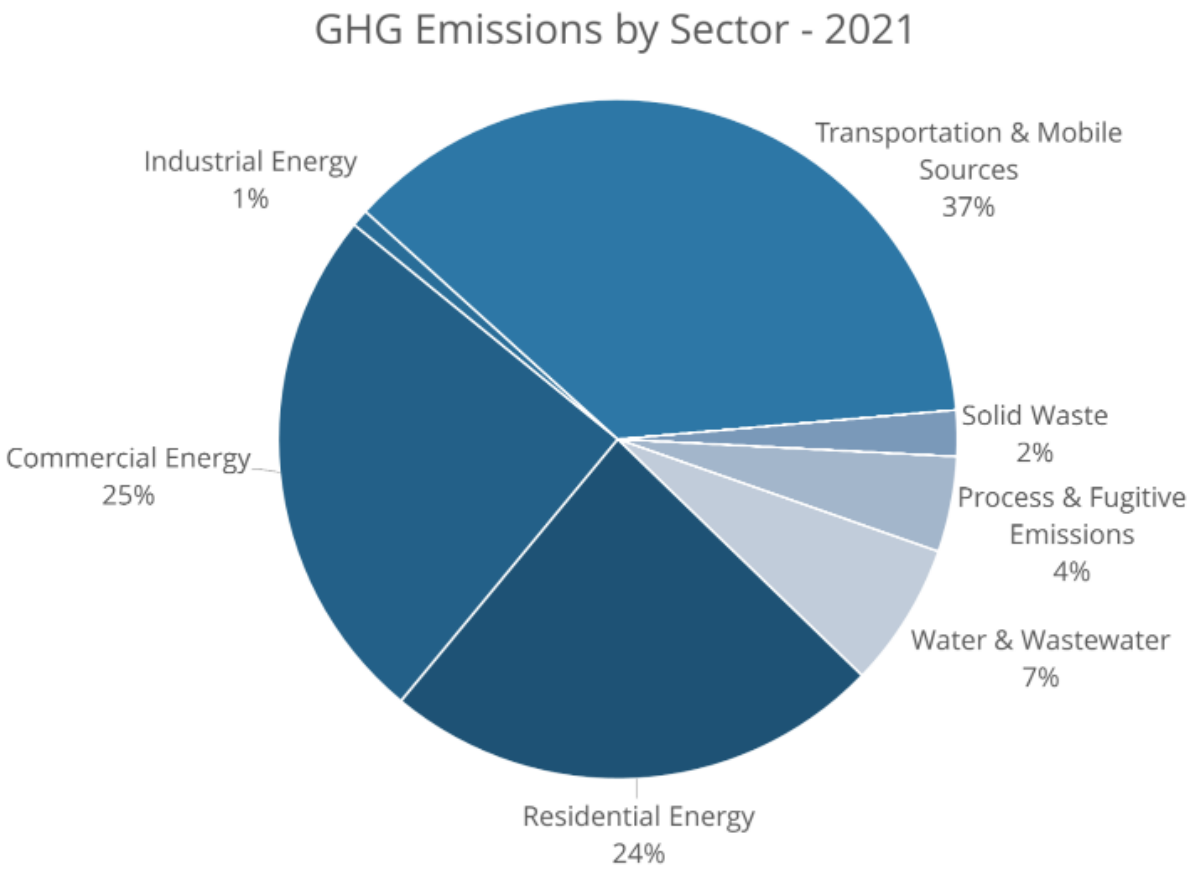
In contrast, the state has targets from a 1990 baseline that propose following the following schedule (see table 3, Ecology 2022):

- 50 percent reduction by 2030
- 70 percent reduction by 2040
- 95 percent reduction by 2050

GREENHOUSE GASES IN THE PUGET SOUND REGION

While the state produced a GHG emissions inventory in 2022 (for calendar years through 2019), more pertinent GHG emissions inventories were developed for King County (King County 2022b) and Bellevue (City of Bellevue 2021). The county emissions inventory included GHG emissions at the city-level where available. For Bellevue, the most recent geographic emissions inventory was provided for the calendar year 20121. In 2021, Bellevue was responsible for 1,386,502 metric tons of carbon dioxide equivalents ($MTCO_2e$), and the breakdown of those emissions by sector is provided in **Figure 8-5**.

While the King County tool provides the ability to evaluate trends over time, the Bellevue-specific data in the tool are only populated for 2019. Looking across the time span available in the Bellevue emissions inventory, a general downward trend is present. These reductions are likely the result of Covid-19, changes in vehicle fleets, and energy mix changes, among other aspects. An uptick in 2021 is likely the result of activity changes with fewer Covid-related restrictions. Looking at the emissions on a per capita basis, a decreasing GHG trend is also prominent for Bellevue–indicating a possible decreased reliance on single occupancy vehicles and an increased use in low-emitting or electric vehicles. The emissions per capita in Bellevue are presented in **Figure 8-6**.

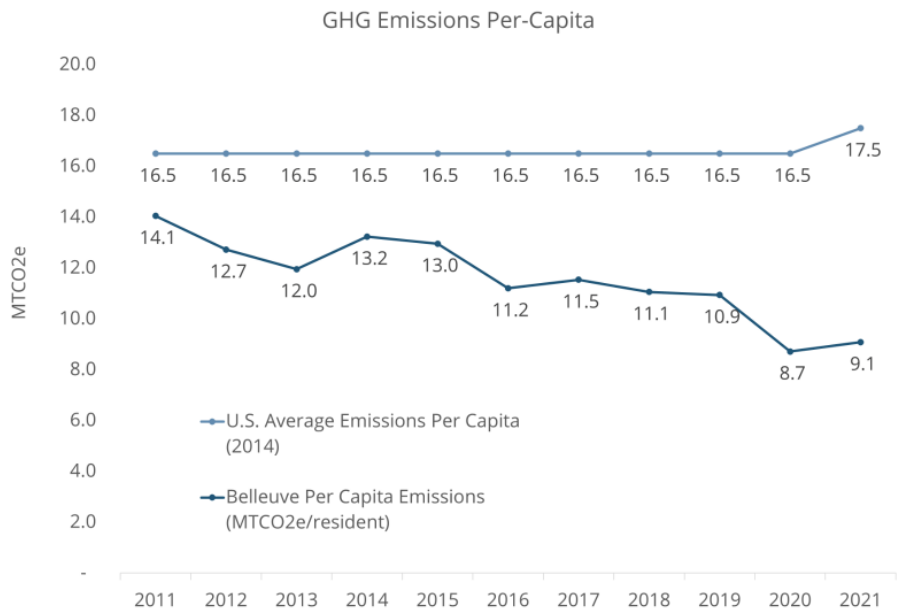


SOURCE: City of Bellevue 2022

FIGURE 8-5 **2021 Bellevue GHG Emissions by Sector**

Overall, the primary contributors to Bellevue's GHG footprint are from electricity use in the built environment and on-road fossil fuel combustion in the transportation sector. Reductions in GHGs as a function of federal, state, regional, and local regulations will also have a related benefit of reducing air quality pollutants, whether those are criteria pollutants or air toxics.

As part of the development of the Strategic Climate Action Plan, a geographic wedge planning tool was produced (King County 2022a). Using this tool and applying it specifically for Bellevue allows a GHG emissions rate per VMT in Bellevue to be calculated for different calendar years assuming all existing national, state, regional, and local policies proceed unimpeded. The emissions rate across the vehicle fleet in Bellevue for 2019 is 741.8 grams of carbon dioxide equivalents (CO_2e) per VMT.



SOURCE: City of Bellevue 2022

FIGURE 8-6 **2021 Bellevue per Capita GHG Emissions by Year**

8.3 Potential Impacts

The potential impacts identified for the No Action Alternative and Action Alternatives include analysis of the "build-out" housing unit capacity and job capacity associated with each alternative. For the No Action Alternative and the Action Alternatives, these capacities for growth are higher than overall citywide growth targets of 35,000 new housing units and 70,000 new jobs by 2044. It is not expected that the "build-out" housing and job capacities would all occur by 2044, but the EIS nonetheless assumes this growth when evaluating potential environmental impacts associated with the alternatives.

Impacts on air quality from each alternative were determined by reviewing potential construction and post-construction changes to the existing conditions based on the development capacities being analyzed. Construction is considered a temporary activity; therefore, a qualitative analysis of construction impacts common to all alternatives is presented below.

For long-term impacts, the alternatives would increase populations in the study area in the horizon year (2044) compared to the baseline year (2019). The projected citywide increases in VMT were used as a basis for comparison of the alternatives to the base year and No

Action Alternative. The changes in VMT were also examined in the context of the proposed land use changes and potential for increased development proximate to high-volume roadways for each alternative.

8.3.1 Thresholds of Significance

The following categories were applied to characterize the potential for adverse air quality and GHG impacts to the city:

- Increased capacity for development, including residential uses, proximate to high-volume roadways.
- Potential for exceeding the Department of Ecology's Small Quantity Emission Rate (SQER) for DPM of 0.52 pounds per year relative to the No Action Alternative (WAC 173-460-150)
- Change in GHG emissions relative to the No Action Alternative, as compared to Ecology's draft SEPA GHG reporting threshold of 10,000 $MTCO_2e$ (Chapter 173-445 WAC Rulemaking)

Ecology's SQER is a screening metric typically applied to air facilities that require an air permit. Two levels of emissions screening are available: an air toxics de minimis threshold (0.027 pounds per year), and the SQER (0.52 pounds per year). Typically, with permitting, if the SQER is exceeded, the facility would be required to conduct dispersion modeling to characterize the potential downwind concentrations. These modeled concentrations are then compared against a third threshold, the acceptable source impact level (ASIL). Without the level of detail in the Comprehensive Plan Periodic Update to conduct such modeling, the SQER was selected as an upper bound significance threshold.

Criteria for GHGs rely on Ecology's proposed SEPA threshold for certain industrial facilities of 10,000 $MTCO_2e$ per year. The Comprehensive Plan Periodic Update is not applicable to the proposed threshold, but Ecology does not provide other screening metrics, so 10,000 $MTCO_2e$ is the best available threshold and has been applied here.

8.3.2 Short-Term Construction Impacts

During construction, soil-disturbing activities, operations of heavy-duty equipment, commuting workers, and the laying of asphalt may generate emissions that would temporarily affect air quality. The total emissions and their timing would vary depending on the

phasing of the project and options chosen for the project. Typical sources of emissions during construction projects include:

- Fugitive dust generated during excavation, grading, and loading and unloading activities.
- Dust generated during demolition of structures and pavement.
- Engine exhaust emissions from construction vehicles, worker vehicles, and diesel fuel-fired construction equipment.
- Increased motor vehicle emissions associated with increased traffic congestion during construction.
- Ozone precursors (nitrogen oxides and volatile organic compounds) emitted during asphalt paving and painting.

The regulated pollutants of concern for the first two source types (dust) are $PM_{2.5}$ and PM_{10}. Engine and motor vehicle exhaust would result in emissions of ozone precursors, $PM_{2.5}$, PM_{10}, air toxics (e.g., DPM), and GHGs. Given that these emissions are temporary and cannot be easily quantified at the long-range planning level, the temporary influence of the emissions on ambient concentrations is not assessed as part of this analysis. However, federal and state regulations will contribute to reducing the emissions of these construction activities relative to today based on projected fleet turnover, use of alternative fuel technologies, engine regulations, and the influence of pending state regulations.

ALTERNATIVE 0 (NO ACTION)

The No Action Alternative includes construction under existing plans and zoning, but would not induce additional construction, as would be required for the Action Alternatives. Therefore, impacts from construction will result in a **less-than-significant impact** on air quality and GHGs.

COMMON TO ALL ACTION ALTERNATIVES

The Action Alternatives each has distinct durations and complexity of construction due to the varied heights and distinctions among the proposed designs. To the extent that the construction activities span long durations, exposures to certain air pollutants, including toxics, could have impacts on human health. Given that potential risk, each of the Action Alternatives has **potentially significant adverse impacts** for air quality and GHGs related to construction.

8.3.3 Long-Term Impacts

ALTERNATIVE 0 (NO ACTION)

The analysis of the housing capacity and job capacity in the No Action Alternative shows daily VMT increasing by 343,957 citywide, when compared against a 2019 baseline. Of this VMT increase, 16,443 of those miles are forecast to be associated with diesel fueled vehicles, as shown in **Table 8-2**. The citywide estimated overall VMT for the baseline year and the No Action Alternative are presented in **Table 8-3**.

TABLE 8-2 **Diesel VMT and DPM Emissions by Alternative**

Alternative	Daily Diesel VMT Increase from Baseline	Annual Diesel VMT Increase from Baseline[a]	DPM2.5 (lb)[b]	Alt. DPM2.5 Increase (lb)[c]
No Action	16,443	5,375,796	122	—
Alternative 1	23,723	7,755,837	175	53.80
Alternative 2	27,817	9,094,281	206	84.05
Alternative 3	34,282	11,207,983	253	131.83

a. Annual VMT based on 326.935 equivalent workdays as calculated during the transportation modeling for this Comprehensive Plan. The diesel-specific VMT was calculated based on the County's geographic GHG forecasting tool (King County 2022a) for 2044.
b. Emissions rate per VMT in 2044 calculated using the California statewide 2044 forecasted emissions from the diesel on-road fleet. The emissions factor (g/VMT) estimates were produced from the Emission FACtor (EMFAC) model, version EMFAC2021 v1.0.2. California fleet turnover to cleaner technology is expected to be more rapid than Washington due to regulations and thus these estimates are somewhat lower than we might see in Washington.
c. Increases relative to the No Action Alternative

The associated fleet mix, emissions reduction, and technology implementation due to fuel economy standards, alternative fuels, and other innovations may offset emissions relative to this increase in VMT, but King County's current wedge analysis indicates that current policies will not meet the county's GHG targets and further policy developments will be necessary. The county's wedge analysis is capturing reductions that would be external to the city's policies. However, with Bellevue's policies in place, the city is expected to meet and exceed their GHG emissions reduction goals by 2050.

TABLE 8-3 **Project VMT and $MTCO_2e$ Emissions by Alternative**

Alternative	Daily VMT Increase from Baseline	Annual VMT Increase from Baseline[a]	$MTCO_2e$[b]	Alt. $MTCO_2$ Increase[c]
No Action	343,957	112,451,582	24,138	--
Alternative 1	496,238	162,237,571	34,825	10,687
Alternative 2	581,875	190,235,303	40,834	16,696
Alternative 3	717,115	234,449,993	50,325	26,187

a. Annual VMT based on 326.935 equivalent workdays as calculated during the transportation modeling for this Comprehensive Plan.
b. Emissions rate per VMT in 2044 calculated for Bellevue using the King County's Geographic GHG Wedge Planning Tool Data, accessed 3/28/2023, https://your.kingcounty.gov/dnrp/climate/documents/2022/puget-sound-regional-emissions-analysis-project-geographic-ghg-wedge-planning-tool-09-2022.xlsx.
c. Increases relative to the No Action Alternative.

Importantly, a small fraction of the increase in housing units (as discussed in Chapter 5, *Population and Employment*, and Chapter 7, *Housing*) is expected within 500 feet of major roadways. Increases in VMT and increases in housing units near high-volume roadways can lead to increased exposure to a variety of air pollutants, including DPM. From the baseline year to 2044, the No Action Alternative is forecast to generate an additional 122 pounds of DPM, as seen in Table 8-2.

Under the No Action Alternative, the near-road land uses in the Wilburton study area would largely remain medical- and office-based and would not see a large change in the number of potential residents in close proximity to roadways and the associated exposure to criteria air pollutants and toxics.

The region is in attainment for pollutants of concern, and concentrations for those pollutants are trending downward. This alternative is not expected to reverse that trend or cause the NAAQS to be exceeded.

For GHGs, No Action Alternative would result in increased vehicle traffic that would cause emissions to increase linearly with the traffic volumes if vehicle emissions rates are held constant. However, with fleet turnover, scrappage, adoption of new technologies, and increasingly stringent regulations, the increase in VMT is likely to result in GHG growth that is less than linear. The current forecast from the county indicates that an additional 24,138 $MTCO_2e$ will be produced under the No Action Alternative, as compared to the baseline year, these results are provided in Table 8-3.

The built environment will also be a contributor to GHGs and, like with vehicles, new energy regulations and technologies will reduce the GHG emissions intensity from residential, commercial, and industrial entities. The King County planning tools indicate that Bellevue, for year 2044, will have reduced emissions by roughly 79 percent from business-as-usual as a result of changes to the state energy code, the Clean Energy Transformation Act, and the Climate Commitment Act (King County 2022b). Bellevue has additional policies in place that will likely further reduce the city's emissions footprint by 2044.

While there may be increases in emissions of both DPM and GHGs from the No Action Alternative, the significance criteria were designed to assess the impacts relative to No Action. Therefore, the No Action Alternative would result in a **less-than-significant impact** on air quality and GHG.

COMMON TO ALL ACTION ALTERNATIVES

The Action Alternatives are expected to continue growth in the Bellevue region that will result in daily VMT increasing. Notably, the Action Alternatives result in lower VMT per capita due to consolidation of populations near employment and high-capacity transit service. However, looking at the overall VMT indicates a general increase in the GHG footprint for the region under the Action Alternatives. The VMT metrics presented in Table 8-3 provide the overall VMT increases associated with each Action Alternative's housing and job capacities and the increases above the No Action Alternative. Based on the increase in housing and job capacities, the VMT increases with each consecutive Action Alternative, with Alternative 3 having the largest VMT increase above the No Action Alternative. The associated fleet mix, emissions reduction, and technology implementation due to fuel economy standards, alternative fuels, and other innovations may offset emissions relative to this increase in VMT if transportation climate policies change significantly in the future. However, current forecasts indicate that GHGs will increase above the No Action Alternative, as shown in Table 8-3. These forecast emissions take into consideration the variety of climate policies that are currently in place.

In comparing each of the Action Alternative's GHG emissions based on housing and job capacity against the GHG significance threshold (10,000 $MTCO_2e$), all Action Alternatives are identified as exceeding the threshold. It is important to remember that the region is in attainment with air quality pollutants of concern, and those

concentrations are trending downward. The Action Alternatives may not reverse that trend or cause the NAAQS to be exceeded at the citywide level. However, the alternatives' increased density of housing units near roadways (discussed further in Chapter 5, *Population and Employment*) may expose more individuals to air pollution. From the context of DPM emissions, the increases in diesel fueled VMT within the city based on housing and job capacities would increase the DPM emissions at a rate that exceeds the air toxics significance threshold.

For the Wilburton study area, many of the near-highway land uses would transition to mixed use, often office-residential. This transition has the potential to expose more individuals to near-road air pollution. As noted, the City of Bellevue's recent air quality study (2023) provides information regarding potential exposure to high-volume roadway air pollution as well as a discussion of potential mitigation strategies. The distances to the roadways, along with building height relative to the roadways, are important factors to consider when evaluating the potential for exposure.

Under all alternatives this EIS takes a conservative approach with respect to analyzing air quality impact associated with "build-out" housing and job capacities. With all Action Alternatives exceeding both the GHG significance threshold and the air quality significance threshold based on these capacities, implementing the Comprehensive Plan Periodic Update would result in a **potentially significant impact** on air quality and GHGs. It is not expected that the "build-out" housing and job capacities would all occur by 2044, but the EIS nonetheless assumes this growth when evaluating potential environmental impacts associated with the alternatives.

8.4 Mitigation Measures

8.4.1 Incorporated Plan Features

No features of the Comprehensive Plan Periodic Update are specific to air quality or GHG impact reductions.

8.4.2 Construction Mitigation Measures

For temporary impacts during construction, construction site owners and/or operators are required to take reasonable precautions to prevent fugitive dust from becoming airborne (Washington State Department of Transportation 2017). Fugitive dust may become

airborne during demolition, material transport, grading, driving of vehicles and machinery on and off the site, and wind events.

Controlling fugitive dust emissions may require some of the following actions:

- Spray exposed soil with water or other suppressant to reduce emissions of PM_{10} and deposition of particulate matter.
- Use phased development to keep disturbed areas to a minimum.
- Use wind fencing to reduce disturbance to soils.
- Minimize dust emissions during transport of fill material or soil by wetting down the load, covering the load, or by ensuring adequate freeboard (space from the top of the material to the top of the truck bed) on trucks.
- Promptly clean up spills of transported material on public roads.
- Schedule work to minimize disruption of the existing vehicle traffic on streets.
- Restrict traffic on-site to reduce soil upheaval and the transport of material to roadways.
- Locate construction equipment and truck staging areas away from sensitive receptors as practical and in consideration of potential impacts on other resources.
- Provide wheel washers to remove particulate matter that would otherwise be carried off-site by vehicles to decrease deposition of particulate matter on area roadways.
- Cover dirt, gravel, and debris piles to reduce dust and wind-blown debris.

Emissions of $PM_{2.5}$, PM_{10}, ozone precursors (e.g., volatile organic compounds and nitrogen oxides), sulfur oxides, and CO would be minimized whenever reasonable and possible. Since these emissions primarily result from construction equipment, machinery engines would be kept in good mechanical condition to minimize exhaust emissions. Additionally, contractors would be encouraged to reduce idling time of equipment and vehicles and to use newer construction equipment or equipment with add-on emissions controls.

8.4.3 Long-Term Mitigation Measures

The City of Bellevue is actively working to address air quality issues in the city, and potential mitigation strategies to address air quality impacts associated with locating development in close proximity to

high-volume roadways are provided in the recent Air Quality and Land Use Planning Report (City of Bellevue 2023). A variety of air and GHG mitigation measures can be implemented to reduce the exposure of residents. The following measures could be applied to any of the alternatives to reduce exposure to air pollutants:

- Reduction in exposure to traffic by implementing mitigation strategies, including reducing vehicle miles traveled (VMT), retrofitting diesel vehicles, electrifying the city's fleet, transit-oriented development, land use buffers, improved urban design, roadside barriers, decking or lids over highways, and building design strategies.
- Reduction in vehicle trips and improving vehicle fuel efficiency.
- Application of transit-oriented development to create more walkable communities.
- The leading measure is to limit the development of residential units with land use buffers (e.g., within 500 feet of major roadways in the city). Land use buffers and project-specific mitigation measures to limit exposures to emissions sources such as high-capacity roadways. Land use buffers could include designating areas near high-impact areas as industrial or other nonresidential zones to ensure distance between these areas and residences. Bellevue could also limit residential uses within a certain distance of freeways.
- Enhance the air monitoring network in Bellevue to enable the community to characterize their exposures more accurately. Prioritize highly burdened regions such as the Wilburton study area.
- Continue to prioritize low emissions transportation modes through the development of additional bike/walk pathways, rideshare programs, and other travel demand strategies.
- Identify opportunities to use roadside barriers to reduce exposure to air pollution and to provide the related benefit of reduced noise.
- Produce air quality-specific policies that promote a uniform approach to reducing exposures to Bellevue's future developments.
- Improved urban design to enhance the use of open space and strategic building placement.

- Deploy roadside barriers to reduce the dispersion of emissions from high-capacity roadways, with the co-benefit of reducing noise.
- Decking and lids over highways may also reduce exposures by consolidating emissions releases to certain locations or limiting releases in certain areas.
- Promote the use of high-efficiency ventilation filters in buildings within 1,500 feet of high-volume roadways. Limit sensitive uses on floors that are at or near roadway level.

As part of Washington's Climate Commitment Act, funds will be allocated to assist highly impacted communities and to support the involvement of cities, community members, and other impacted entities. This program is yet to take form but seems to have a variety of similarities to California's Assembly Bill 617. This program will likely provide additional emphasis and consideration of air-related mitigation measures for the Wilburton study area.

8.5 Significant Unavoidable Adverse Impacts

The Action Alternatives would result in **potentially significant unavoidable adverse impacts** on air quality and GHGs because they exceed one or more of the thresholds of significance.