3.4 AIR QUALITY

Comments received on the Notice of Preparation (NOP) were reviewed during preparation of this SEIR. A comment letter was submitted by the Sacramento Metropolitan Air Quality Management District (SMAQMD) related to mitigation to reduce the Project's emissions of operational ozone precursors. The City reviewed and considered this information during preparation of this section.

3.4.1 ENVIRONMENTAL SETTING

The environmental setting for the proposed Project as it relates to air quality has not changed since the 2019 SOIA EIR was prepared.

Adjacent to the western boundary of the Project site are the Union Pacific Railroad tracks with commercial and industrial uses beyond. Commercial and industrial developments are to the northwest past Grant Line Road; residential development is to the northeast of the Project site east of Mosher Road. Areas to the east are primarily rural residential, with commercial and industrial uses fronting on Grant Line Road and the now-closed Sunset Skyranch Airport grounds beyond. The area to the south is agricultural.

The Project site is within the Sacramento Valley Air Basin (SVAB). The 2019 SOIA EIR describes the most recent criteria air pollutant National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS), as well as air monitoring data for monitoring stations in proximity to the Project site for the years 2014 through 2016. Sacramento County's attainment status for the NAAQS and CAAQS has not changed since the 2019 SOIA EIR was prepared. Sacramento County currently meets NAAQS for all criteria air pollutants except ozone and the 24-hour particulate matter with an aerodynamic diameter less than 2.5 microns ($PM_{2.5}$) standard. Sacramento County meets the CAAQS for all criteria air pollutants except ozone and particulate matter with an aerodynamic diameter less than 10 microns (PM_{10}). The NAAQS and CAAQS are set, and reevaluated on a regular basis, to ensure, with a margin of safety, that ambient air pollutant concentrations are protective of public health.

The following provides a brief description of these criteria air pollutants, including their source types and health effects, along with the most current attainment designations for area surrounding the Project site.

Ozone

Ozone is the primary component of urban smog. It is not emitted directly into the air, but is formed through a series of reactions involving reactive organic gases (ROG) and nitrogen oxides (NO_X) in the presence of sunlight. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. NO_X includes various combinations of nitrogen and oxygen, including nitric oxide, nitrogen dioxide (NO_2), and others, typically resulting from the combustion of fuels.

Emissions of both ROG and NO_X are considered critical to ozone formation. Therefore, either ROG or NO_X can limit the rate of ozone production. When the production rate of NO_X is lower, indicating that NO_X is scarce, the rate of ozone production is NO_X-limited. Under these circumstances, ozone levels could be most effectively reduced by lowering current and future NO_X emissions (from fuel combustion), rather than by lowering ROG emissions. Rural areas tend to be NO_X-limited, while areas with urban populations tend to be ROG-limited. Both ROG and NO_X reductions provide ozone benefits in the region, but the Sacramento Federal Nonattainment Area,

which includes Sacramento County, exhibits a NO_X-limited regime; therefore, NO_X reductions (such as those available through reducing mobile source emissions) are more effective than ROG reductions on a tonnage basis (SMAQMD et al. 2017).

Ozone concentrations reflect an interplay of emissions of ozone precursors, transport, meteorology, and atmospheric chemistry. Meteorology and terrain play a major role in ozone formation. Generally, low wind speeds or stagnant air, coupled with warm temperatures and clear skies provide the optimum conditions for formation. As a result, summer is generally the peak ozone season. Because of the reaction time involved, peak ozone concentrations often occur far downwind of the precursor emissions. Therefore, ozone is a regional pollutant that often affects large areas.

Individuals exercising outdoors, children, and people with lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the most susceptible subgroups for ozone effects. Short-term ozone exposure (lasting for a few hours) can result in changes in breathing patterns, reductions in breathing capacity, increased susceptibility to infections, inflammation of lung tissue, and some immunological changes. In recent years, a correlation has also been reported between elevated ambient ozone levels and increases in daily hospital admission rates and mortality (EPA 2020a). An increased risk of asthma has been found in children who participate in multiple sports and live in communities with high ozone levels.

Emissions of the ozone precursors ROG and NO_X have decreased in the past several years. According to the most recently published edition of ARB's *California Almanac of Emissions and Air Quality*, NO_X and ROG emissions levels in the Sacramento metropolitan area are projected to continue to decrease through 2035, largely because of more stringent motor vehicle standards and cleaner burning fuels, as well as rules for controlling ROG emissions from industrial coating and solvent operations (ARB 2013).

Carbon Monoxide

Carbon monoxide (CO) is produced primarily by the incomplete burning of carbon in fuels, primarily from mobile (transportation) sources. Other emissions sources include fires (both wildfires and prescribed fires), releases from vegetation and soil, wood-burning stoves, incinerators, and industrial sources. Relatively high concentrations are typically found near crowded intersections and along high-volume roadways carrying slow-moving traffic. Even under the most severe meteorological and traffic conditions, high concentrations of CO are limited to locations within a relatively short distance (300–600 feet) of high-volume roadways. Vehicular traffic emissions can cause localized CO impacts, and severe vehicle congestion at major signalized intersections can generate elevated CO levels, called "hot spots," which can be hazardous to human receptors adjacent to the intersections. Overall, CO emissions are decreasing, in part because the Federal Motor Vehicle Control Program has mandated increasingly lower emission levels for vehicles manufactured since 1973.

CO enters the bloodstream through the lungs by combining with hemoglobin, which normally supplies oxygen to the cells. However, CO combines with hemoglobin much more readily than oxygen does, drastically reducing the amount of oxygen available to the cells. Adverse health effects from exposure to high CO concentrations, which typically can occur only indoors or within similarly enclosed spaces, include dizziness, headaches, and fatigue. CO exposure is especially harmful to individuals who suffer from cardiovascular and respiratory diseases (EPA 2020b).

Nitrogen Dioxide

NO_2 is one of a group of highly reactive gases known as oxides of nitrogen, or NO_X. NO_2 is formed when ozone reacts with nitric oxide (i.e., NO) in the atmosphere and is listed as a criteria pollutant because NO_2 is more toxic than nitric oxide. The major human-made sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. The combined emissions of nitric oxide and NO_2 are referred to as NO_X and reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with ozone, the NO_2 concentration in a geographical area may not be representative of local NO_X emission sources. NO_X also reacts with water, oxygen, and other chemicals to form nitric acids, contributing to the formation of acid rain.

Inhalation is the most common route of exposure to NO_2. Breathing air with a high concentration of NO_2 can lead to respiratory illness. Short-term exposure can aggravate respiratory diseases, particularly asthma, resulting in respiratory symptoms (such as coughing, wheezing, or difficulty breathing), hospital admissions, and visits to emergency rooms. Longer exposures to elevated concentrations of NO_2 may contribute to the development of asthma and potentially increase susceptibility to respiratory infections. Larger decreases in lung functions are observed in individuals with asthma or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these subgroups (EPA 2016).

Sulfur Dioxide

Sulfur dioxide (SO_2) is one component of the larger group of gaseous oxides of sulfur (SO_X). SO_2 is used as the indicator for the larger group of SO_X, as it is the component of greatest concern and found in the atmosphere at much higher concentrations than other gaseous SO_X. SO_2 is typically produced by such stationary sources as coal and oil combustion facilities, steel mills, refineries, and pulp and paper mills. The major adverse health effects associated with SO_2 exposure pertain to the upper respiratory tract. On contact with the moist mucous membranes, SO_2 produces sulfurous acid, a direct irritant. Concentration rather than duration of exposure is an important determinant of respiratory effects. Children, the elderly, and those who suffer from asthma are particularly sensitive to effects of SO_2 (EPA 2019).

SO_2 also reacts with water, oxygen, and other chemicals to form sulfuric acids, contributing to the formation of acid rain. SO_2 emissions that lead to high concentrations of SO_2 in the air generally also lead to the formation of other SO_X, which can react with other compounds in the atmosphere to form small particles, contributing to particulate matter pollution, which can have health effects of its own.

Particulate Matter

Particulate matter (PM) is a complex mixture of extremely small particles and liquid droplets made up of several components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. Natural sources of particulates include windblown dust and ocean spray. The major areawide sources of $PM_{2.5}$ and PM_{10} are fugitive dust, especially from roadways, agricultural operations, and construction and demolition. Other sources of PM_{10} include crushing or grinding operations. $PM_{2.5}$ sources also include all types of combustion, including motor vehicles, power plants, residential wood burning, forest fires, agricultural burning, and some industrial processes. Exhaust emissions from mobile sources contribute only a very small portion of directly emitted $PM_{2.5}$ and PM_{10} emissions. However, they are a major source of ROG and NO_X, which undergo reactions

in the atmosphere to form PM, known as secondary particles. These secondary particles make up the majority of PM pollution.

The size of PM is directly linked to its potential for causing health problems. EPA is concerned about particles that are 10 micrometers in diameter or smaller, because these particles generally pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects, even death. The adverse health effects of PM_{10} depend on the specific composition of the particulate matter. For example, health effects may be associated with metals, polycyclic aromatic hydrocarbons, and other toxic substances adsorbed onto fine PM (referred to as the "piggybacking effect"), or with fine dust particles of silica or asbestos. Effects from short- and long-term exposure to elevated concentrations of PM_{10} include respiratory symptoms, aggravation of respiratory and cardiovascular diseases, a weakened immune system, and cancer (WHO 2018). $PM_{2.5}$ poses an increased health risk because these very small particles can be inhaled deep in the lungs and may contain substances that are particularly harmful to human health.

Direct emissions of $PM_{2.5}$ in the Sacramento metropolitan area decreased between 2000 and 2010, but are projected to increase very slightly through 2035. Similarly, emissions of diesel PM (DPM) decreased from 2000 through 2010 because of reduced exhaust emissions from diesel mobile sources. These emissions are anticipated to continue to decline through 2035 (ARB 2013).

Lead

Lead is a highly toxic metal that may cause a range of human health effects. Lead is found naturally in the environment and is used in manufactured products. Previously, the lead used in gasoline anti-knock additives represented a major source of lead emissions to the atmosphere. Soon after its inception, EPA began working to reduce lead emissions, issuing the first reduction standards in 1973. Lead emissions have decreased substantially as a result of the near elimination of leaded gasoline use. Metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers. Although the ambient lead standards are no longer violated, lead emissions from stationary sources still pose "hot spot" problems in some areas. As a result, ARB has identified lead as a toxic air contaminant (TAC).

Fetuses, infants, and children are more sensitive than others to the adverse effects of lead exposure. Exposure to low levels of lead can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotients. In adults, increased lead levels are associated with increased blood pressure. Lead poisoning can cause anemia, lethargy, seizures, and death, although it appears that lead does not directly affect the respiratory system.

Sensitive Receptors

Sensitive receptors are generally considered to include those land uses where exposure to pollutants could result in health-related risks to sensitive individuals. Children, pregnant women, the elderly, those with existing health conditions, and athletes or others who engage in frequent exercise are especially vulnerable to the effects of air pollution. Accordingly, land uses that are typically considered sensitive receptors include schools, daycare centers, parks and playgrounds, and medical facilities.

Residential areas are considered sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to the pollutants present. Recreational land uses are considered moderately sensitive to air pollution. Exercise places a high demand on respiratory functions, which can be impaired by air pollution, even though exposure periods during exercise are generally short. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial and commercial areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, as most of the workers tend to stay indoors most of the time.

The nearest sensitive receptors outside the Project site are residences to the northeast that are approximately 100 feet from the northern border of the Project site. There are three existing homes on large parcels within the Project site. The proposed Project could also include development of sensitive receptors within the "mixed use" area in the eastern portion of the Project site that assumes the potential for a wide range of land uses, including residential development.

3.4.2 REGULATORY FRAMEWORK

Air quality is regulated at the federal level by the EPA and at the state level by the California Air Resources Board (ARB). At the local level, the Sacramento Metropolitan Air Quality Management District (SMAQMD) develops rules, regulations, policies, and/or goals to comply with applicable federal and State legislation. Although EPA regulations may not be superseded, in general, both State and local regulations may be more stringent.

The regulatory framework surrounding criteria air pollutants, toxic air contaminants (TACs), and odor emissions, as it pertains to the proposed Project, is described in the 2019 SOIA EIR. The following highlights relevant changes in the regulatory framework since the preparation of the 2019 SOIA EIR.

FEDERAL

Corporate Average Fuel Economy (CAFE) Standards and the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule

U.S. Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration set CAFE standards for passenger cars and for light trucks (collectively, light-duty vehicles), and separately sets fuel efficiency standards for passenger cars and light trucks (collectively, light-duty vehicles) for model years 2012 through 2025.

The Safer Affordable Fuel Efficient (SAFE) Vehicles Rule, proposed by the United States Department of Transportation and EPA in 2018, would amend the existing CAFE standards and establish new standards for model years 2021 through 2026. The proposed rule would retain the model year 2020 standards through model year 2026.

In response to the proposed SAFE Vehicles Rule, on July 25, 2019, automobile manufactures Ford, Volkswagen, Honda, and BMW entered into a voluntary framework agreement with ARB to set fuel economy and carbon dioxide limits at levels between the existing federal standards and the standards proposed by the SAFE Vehicles Rule. Under this framework, the auto companies' party to the voluntary agreement would only sell cars in the United States that meet these levels.

On September 27, 2019, the EPA and the National Highway Traffic Safety Administration published the "SAFE Vehicles Rule Part One: One National Program" (84 Fed. Reg. 51310). The Part One Rule revokes California's authority to set its own greenhouse gas (GHG) emissions standards and set zero-emission vehicle mandates in California. Part 2 of the regulations, which, if implemented, would address fuel efficiency standards for light-duty vehicles model years 2021 through 2026, have not been drafted as of the writing of this document.

STATE

All relevant State plans, policies, regulations, and laws are summarized in the 2019 SOIA EIR.

LOCAL

City of Elk Grove General Plan

The *Elk Grove General Plan* (City of Elk Grove 2019), which was adopted after the drafting of the 2019 SOIA EIR, contains the following policies related to air quality that are applicable to the Project.

- **Policy LU-1-4:** Land uses in the vicinity of areas designated as Heavy Industry should include transitions in intensity, buffers, or other methods to reduce potential impacts on residential uses. Buffers may include land designated for other uses, such as light industry, commercial, or open spaces.

- **Policy LU-1-6:** Support the development of neighborhood-serving commercial uses adjacent to residential areas that provide quality, convenient, and community-serving retail choices in a manner that does not impact neighborhood character.

- **Policy LU-1-7:** Encourage disclosure of potential land use compatibility issues including but not limited to noise, dust, and odors, in order to provide potential purchasers with complete information to make informed decisions about purchasing property.

- **Policy LU-1-9:** Encourage employee-intensive commercial and industrial uses to locate within walking distance of fixed transit stops. Encourage regional public transit providers to provide or increase coordinated services to areas with high concentrations of residents, workers, or visitors.

- **Policy MOB-1-1:** Achieve State-mandated reductions in VMT by requiring land use and transportation projects to comply with the following metrics and limits. These metrics and limits shall be used as thresholds of significance in evaluating projects subject to CEQA. Projects that do not achieve the daily VMT limits outlined below shall be subject to all feasible mitigation measures necessary to reduce the VMT for, or induced by, the project to the applicable limits. If the VMT for or induced by the project cannot be reduced consistent with the performance metrics outlined below [provided in the 2019 City of Elk Grove General Plan], the City may consider approval of the project, subject to a statement of overriding considerations and mitigation of transportation impacts to the extent feasible, provided some other stated form of public objective including specific economic, legal, social, technological or other considerations is achieved by the project.

- **Policy MOB-3-1:** Implement a balanced transportation system using a layered network approach to building complete streets that ensure the safety and mobility of all users, including pedestrians, cyclists, motorists, children, seniors, and people with disabilities.

- **Policy MOB-3-2:** Support strategies that reduce reliance on single occupancy private vehicles and promote the viability of alternative modes of transport.

    - **Standard MOB-**3-2-a: Require new development to install conduits for future installation of electric vehicle charging equipment.

- **Policy MOB-3-7:** Develop a complete and connected network of sidewalks, crossings, paths, and bike lanes that are convenient and attractive, with a variety of routes in pedestrian-oriented areas.

- **Policy MOB-3-15:** Utilize reduced parking requirements when and where appropriate to promote walkable neighborhoods and districts and to increase the use of transit and bicycles.

- **Policy MOB-3-16:** Ensure new multifamily and commercial developments provide bicycle parking and other bicycle support facilities appropriate for the users of the development.

- **Policy MOB-4-1:** Ensure that community and area plans, specific plans, and development projects promote context-sensitive pedestrian and bicycle movement via direct, safe, and pleasant routes that connect destinations inside and outside the plan or project area. This may include convenient pedestrian and bicycle connections to public transportation.

- **Policy MOB-4-5:** Encourage employers to offer incentives to reduce the use of vehicles for commuting to work and increase commuting by active transportation modes. Incentives may include a cash allowance in lieu of a parking space and on-site facilities and amenities for employees such as bicycle storage, shower rooms, lockers, trees, and shaded seating areas.

- **Policy MOB-5-5:** Promote strong corridor connections to and between activity centers that are safe and attractive for all modes.

- **Policy NR-4-1:** Require all new development projects which have the potential to result in substantial air quality impacts to incorporate design, and/or operational features that result in a reduction in emissions equal to 15 percent compared to an "unmitigated baseline project." An unmitigated baseline project is a development project which is built and/or operated without the implementation of trip reduction, energy conservation, or similar features, including any such features which may be required by the Zoning Code or other applicable codes.

    - **Standard NR-4-1a:** As part of the environmental review of projects that are not exempt, the City shall identify the air quality impacts of development proposals to avoid significant adverse impacts and require appropriate mitigation measures to the extent feasible and appropriate, potentially including—in the case of projects which may conflict with applicable air quality plans—emission reductions in addition to those required by Policy NR-4-1.

- **Policy NR-4-3:** Implement and support programs that reduce mobile source emissions.

- **Policy NR-4-4:** Promote pedestrian/bicycle access and circulation to encourage residents to use alternative modes of transportation in order to minimize direct and indirect emissions of air contaminants.

- **Policy NR-4-5:** Emphasize demand management strategies that seek to reduce single-occupant vehicle use in order to achieve State and federal air quality plan objectives.

- **Policy NR-4-8:** Require that development projects incorporate best management practices during construction activities to reduce emissions of criteria pollutants.

    - **Standard NR-4-8a:** Require all future projects with construction emissions to incorporate the Sacramento Metropolitan Air Quality Management District's (SMAQMD) Basic Construction Emission Control Practices as identified in the most current version of the SMAQMD CEQA Guide in effect at the time of construction.

    - **Standard NR-4-8b:** All projects with construction emissions exceeding the SMAQMD ozone precursors thresholds shall implement enhanced exhaust control practices as identified in the most current version of the SMAQMD CEQA Guide in effect at the time of construction.

        - **Standard NR-4-8c:** All projects with construction emissions exceeding the SMAQMD fugitive particulate matter (PM) thresholds shall implement enhanced fugitive PM dust control practices as identified in the most current version of the SMAQMD CEQA Guide in effect at the time of construction.

    - **Standard NR-4-8d:** For projects exceeding the SMAQMD NO_X and PM construction emissions thresholds that cannot be mitigated to less than significant with implementation of Standards NR-4-8.a, NR- 4-8.b, and NR-4-8.c, the project shall pay a mitigation fee into the SMAQMD's off-site mitigation program.

- **Policy NR-4-9:** Prohibit the future siting of sensitive land uses, such as hospitals, schools, day care facilities, elderly housing, convalescent facilities, and all residential facilities within the distances recommended by the California Air Resources Board and applicable guidance from SMAQMD for air pollutant emission sources, unless adequate mitigation measures are adopted and implemented.

- **Policy NR-4-10:** Require new air pollution point sources, such as industrial, manufacturing, and processing facilities, to be located an adequate distance from residential and other sensitive land uses.

    - **Standard NR-4-10a:** Require the provision of buffers between sensitive land uses and sources of odor and toxic air contaminants. The City shall implement this policy when siting future sensitive land uses within the proximity of existing odor and toxic air contaminant sources or when siting new odor-producing or toxic air contaminant generating land uses within the proximity of existing sensitive land uses.

- **Policy NR-4-12:** Coordinate with the Sacramento Metropolitan Air Quality Management District on the review of proposed development projects, specifically projects that could conflict with any applicable air quality plans and/or the State Implementation Plan.

- **Policy NR-4-13:** Minimize exposure of sensitive land uses to objectionable odors.

    - **Standard NR-4-13a:** Future sensitive land uses, such as hospitals, schools, day care facilities, elderly housing, convalescent facilities, and all residential uses shall not be sited within the distance from odor

sources recommended in the SMAQMD's most current CEQA Guide - Recommended Odor Screening Distance Table unless documentation is provided that the proposed site would not expose a substantial number of people to objectionable odors.

- **Policy NR-6-5:** Promote energy conservation measures in new development to reduce on-site emissions and seek to reduce the energy impacts from new residential and commercial projects through investigation and implementation of energy efficiency measures during all phases of design and development.

- **Policy NR-6-7:** Encourage the use of solar energy systems in homes, commercial businesses, and City facilities as a form of renewable energy.

Sacramento Area Council of Governments

The Sacramento Area Council of Governments (SACOG) serves as the Metropolitan Planning Organization for the Sacramento region, maintaining the regional Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) in coordination with each of the local 28 member cities and counties, including Sacramento County. SACOG plays a central role in transportation infrastructure planning for the region, while also serving as a forum for the study, planning, and resolution of other planning issues facing the local member governments. The most recent MTP/SCS for the SACOG region was adopted in November 2019, after the drafting of the 2019 SOIA EIR. The 2020 MTP/SCS lays out a plan that links land use, air quality, greenhouse gas emissions, and transportation needs.

3.4.3 Environmental Impacts and Mitigation Measures

Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the proposed Project could have a significant impact on air quality if it would:

- conflict with or obstruct implementation of the applicable air quality plan;

- violate any air quality standard or contribute substantially to an existing or projected air quality violation,

- result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable NAAQS or CAAQS (including releasing emissions that exceed quantitative thresholds for ozone precursors);

- expose sensitive receptors to substantial pollutant concentrations; or

- result in other emissions (such as those leading to odors) adversely affecting a substantial number or people.

As stated in Appendix G of the CEQA Guidelines, the significance criteria established by the applicable air quality management district may be relied on to make the above determinations. SMAQMD has established criteria air pollutant and precursor mass emissions thresholds for land use development projects. These thresholds are considered to be the allowable amount of emissions each project can generate without conflicting with or obstructing implementation of the applicable air quality plans developed to maintain and attain the NAAQS and CAAQS for each pollutant. The NAAQS and CAAQS, and therefore the SMAQMD thresholds of significance,

identify levels of air quality necessary to protect the public health with an adequate margin of safety. Thus, pursuant to the SMAQMD-recommended thresholds (SMAQMD 2020a) for evaluating project-related air quality impacts, the proposed project would result in a significant impact if it would:

- generate construction-related criteria air pollutant or ozone precursor emissions that exceed 85 pounds per day for NO_X, or, after implementation of best management practices (BMPs), 80 pounds per day or 14.6 tons per year of PM_{10} and 82 pounds per day or 15 tons per year of $PM_{2.5}$;
- generate long-term regional criteria air pollutant or ozone precursor emissions that 65 pounds per day of ROG or NO_X, 80 pounds per day or 14.6 tons per year of PM_{10} and 82 pounds per day or 15 tons per year of $PM_{2.5}$;
- generate emissions of toxic air contaminants that would cause an excess cancer risk level of more than 10 in in one million or exceed a noncarcinogenic Hazard Index of 1; or
- result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Since there is considerable overlap between the threshold questions, this section has been organized to address the following:

- Short-term, construction-related emissions
- Long-term, operational emissions
- Exposure of sensitive receptors to substantial pollutant concentrations; and
- Exposure to other emissions (such as those leading to odors).

Two of the Appendix G checklist questions address conflicts with an air quality plan and contribution to an air quality violation. The criteria air pollutant significance thresholds serve as a proxy for these impacts, and therefore, the evaluation of potential conflicts with air quality plans and air quality violations is consolidated.

For cumulative impacts, SMAQMD states that, as a result of the District's approach to thresholds of significance, if a project's emissions are not anticipated to exceed the SMAQMD-recommended thresholds, as listed above, the project would not be expected to result in a cumulatively considerable contribution to a significant impact on a cumulative level (SMAQMD 2020a). Chapter 4 of this EIR addresses cumulative impacts in detail.

METHODOLOGY

The proposed Project would result in air pollutant emissions from short-term construction and long-term operational activities. Potential air quality impacts associated with short-term construction and long-term operations were evaluated according to guidance and methods from ARB and SMAQMD. A summary of the data inputs, emissions factors, and calculation methodologies used are provided below for both construction and operational elements of the proposed Project. Detailed project inputs, calculations, and modeling outputs are provided in Appendix E, *Quantification of Criteria Air Pollutant and Greenhouse Gas Emissions, and Energy Use.*

Construction

Future development is assumed to occur over approximately 20 years, but the specific timing of construction activities each year is subject to market conditions and unknown at the time of preparing this analysis. In

accordance with SMAQMD-recommended methodology, it is conservatively assumed that 25 percent of land uses within the Project site could be constructed within a single year, assumed to be 2021 as the first possible year of construction; off-site improvements were assumed to be constructed in their entirety in this same initial year. Not only is this level of construction in a single year a conservative assumption, but modeling all emissions for the year 2021 also results in a conservative estimate of construction-related emissions over the construction period. any construction in future years would more realistically result in fewer emissions for the same level of activity due to fleet turnover over time, in which older equipment and vehicles are replaced by those with new engines meeting more recent and more stringent emission standards

Emissions associated with construction were modeled using the California Emissions Estimator Model (CalEEMod), Version 2016.3.2, which is the most current version of the SMAQMD-recommended model for estimating emissions from land use development projects. CalEEMod includes default assumptions for construction parameters, such as construction equipment, haul trucks, and worker trips, which were used to model the proposed Project's construction-related emissions. Likewise, CalEEMod also allows the user to input project-specific parameters. In this case, Project-specific construction inputs included site acreage for proposed land uses, assumed building square footage, and construction schedule. Where Project-specific information was not available, default parameters provided by the model were used. Default assumptions provided by the model are typically conservative to avoid underestimating emissions. Although it is unlikely that the most intensive days of construction would occur concurrently, to conservatively estimate maximum potential daily emissions, it is assumed that the all construction phases could occur concurrently throughout the Project site for the duration of the year of maximum-potential development. Construction of off-site roadway improvements, as described in the traffic analysis (Section 3.14, "Transportation"), were modeled using the SMAQMD-developed Road Construction Emissions Model, Version 9.0.0, and assumed to occur in 2021.

Operations

Future operational emissions would be generated by area-, energy-, and mobile-sources, as well as potential stationary sources. Operational area- and energy-source air pollutant emissions were modeled in CalEEMod based on the assumed land use acreages and building square footage. In order to account for 2019 Title 24, Part 6 standards, the Title 24 energy intensity factors in CalEEMod were adjusted to account for an estimated 7-percent energy reduction in new-construction nonresidential buildings and 53-percent energy reduction in new-construction residential buildings compared to the 2016 Title 24, Part 6 standards that were in place at the time of the CalEEMod Version 2016.3.2 model release (CEC 2020).

Mobile-source emissions were estimated using the CalEEMod default ITE trip generation rates for each land use category. The CalEEMod default vehicle trip distances and fleet mix were used for the residential and regional commercial land uses, but were adjusted for industrial land uses to reflect the potential for a higher percentage of heavy trucks to serve these land uses and longer trips between the project site and regional ports and distribution areas. All operational emissions were modeled based on a 2022 operational year; this is a conservative estimate because development would occur over an estimated 20-year horizon and emissions per unit of activity would presumably decrease in future years as building energy standards continue to become more stringent, energy sources become more dependent upon renewable sources and vehicle fleets turnover with new vehicles that meet more rigorous emissions control regulations.

IMPACT ANALYSIS

Impact 3.4-1: Generation of temporary, short-term, construction-related emissions of criteria air pollutants and ozone precursors.

Construction activities would generate emissions of criteria air pollutants and ozone precursors from a variety of sources, including off-road construction equipment, on-road vehicles, earthmoving activities, off-gas from paving activities and application of architectural coatings. Construction emissions are described as "short-term" or temporary in duration but have the potential to adversely affect air quality.

Estimated maximum daily construction-related emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ are shown in Table 3.4-1. As noted above in the methodology section, construction-related emissions were estimated based upon a maximum development scenario in which 25 percent of on-site land uses and all off-site improvements would be constructed in a single year, using equipment and fleet mixes for the year 2021 to represent a "worst-case" construction year. Emissions estimate inputs and modeling files are provided in Appendix E.

Table 3.4-1 Summary of Maximum Daily Construction-Related Emissions of Criteria Air Pollutants and Ozone Precursors

Portion of Construction Phase	Maximum Daily Emissions (pounds per day)				Maximum Annual Emissions (tons per year)	
	ROG	NO_X	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions [a]	123	303	79	40	8	4
SMAQMD significance threshold [b]	-	85	0	0	0	0
Exceeds Threshold?	-	Yes	Yes	Yes	Yes	Yes

Notes: NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; $PM_{2.5}$ = respirable particulate matter with an aerodynamic diameter of 2.5 micrometers or less; VOC = volatile organic compounds; SMAQMD = Sacramento Metropolitan Air Quality Management District.

[a] Maximum daily and annual emissions account for a maximum construction year scenario in which 25% of proposed land uses are constructed in a single year, and all off-site improvements are constructed in the same year.

[b] Represents SMAQMD Threshold of Significance without the application of Best Management Practices (BMPs) and Best Available Control Technology (BACT).

Source: Modeled by AECOM in 2020; see Appendix E for detailed modeling assumptions, outputs, and results.

As shown in Table 3.4-1, as with the 2019 SOIA EIR, the daily emissions generated by construction activities would exceed the SMAQMD-recommended threshold of significance for NO_X and, without application of BMPs and Best Available Control Technologies (BACT), would generate daily emissions of PM_{10} and $PM_{2.5}$ in excess of the SMAQMD-recommended thresholds of significance during construction. In addition, as the duration and intensity of specific construction activities associated with future development of the Project site are unknown, emissions generated as a result could exceed SMAQMD thresholds of significance and therefore would violate or contribute substantially to an existing or projected air quality violation. Therefore, emissions associated with construction of the proposed Project could result in a **potentially significant** impact.

Mitigation Measures

Mitigation Measure 3.4-1a: Implement the SMAQMD Basic Construction Emission Control Practices and Enhanced Exhaust Control Practices (2019 SOIA EIR Mitigation Measure 3.4-1a)

Regardless of the significance determination, all construction projects are required to implement the SMAQMD Basic Construction Emission Control Practices for controlling fugitive dust at construction sites. For projects that would generate maximum daily NO_X emissions in exceedance of the SMAQMD threshold of significance, the SMAQMD recommends implementation of the Enhanced On-site Exhaust Control measures for off-road construction equipment. The SMAQMD requires projects that exceed the PM_{10} and $PM_{2.5}$ emissions thresholds after implementation of the Basic Construction Emission Control Practices to implement all feasible and applicable measures of the Enhanced Fugitive PM Dust Control Practices (SMAQMD 2020a).

During construction of off-site improvements, and at the time of submittal of any application for development within the Project site, the City of Elk Grove shall require the implementation of then current SMAQMD Basic Construction Emission Control Practices as a condition of approval. For those projects that exceed the applicable thresholds of significance for emissions of criteria air pollutants or ozone precursors, the City of Elk Grove shall require the implementation of the Enhanced On-site Exhaust Control measures to address exceedances of NO_X emissions thresholds and the implementation of Enhanced Fugitive PM Dust Control Practices to address continued exceedances of PM_{10} and/or $PM_{2.5}$ thresholds of significance.

a. Basic Construction Emission Control Practices identified by the SMAQMD as listed below, or as they may be updated in the future:

   - Control of fugitive dust is required by District Rule 403 and enforced by District staff.

   - Water all exposed surfaces two times daily. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.

   - Cover or maintain at least 2 feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered.

   - Use wet power vacuum street sweepers to remove any visible track out mud or dirt onto adjacent public roads at least once a day. Use of dry powered sweeping is prohibited.

   - Limit vehicle speeds on unpaved roads to 15 miles per hour (mph).

   - All roadways, driveways, sidewalks, parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.

   - Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes [required by California Code of Regulations, Title 13, sections 2449(d)

and 2485]. Provide clear signage that posts this requirement for workers at the entrances to the site.

- Provide current certificate(s) of compliance for ARB's In-Use Off-Road Diesel-Fueled Fleets Regulation [California Code of Regulations, Title 13, sections 2449 and 2449.1].

- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determine to be running in proper condition before it is operated.

b. If, after application of the Basic Construction Emission Control Practices, emissions would still exceed SMAQMD threshold of significance for NO_X, implement the SMAQMD Enhanced On-site Exhaust Control Practices as listed below, or as they may be updated in the future:

- Provide a plan, for approval by SMAQMD, demonstrating that the heavy-duty (50 horsepower [hp] or more) off-road vehicles, including owned, leased, and subcontractor vehicles, to be used 8 hours or more during the construction project will achieve a project wide fleet-average 10 percent NO_X reduction compared to the most current California Air Resources Board (ARB) fleet average that exists at the time of construction. The plan shall have two components: an initial report submitted before construction and a final report submitted at the completion.

    - Submit the initial report at least four (4) business days prior to construction activity.

    - Provide project information and construction company information.

    - Include equipment type, horsepower rating, engine model year, projected hours of use, and the ARB equipment identification number for each piece of equipment in the plan. Incorporate all owned, leased and subcontracted equipment to be used.

    - Submit the final report at the end of the job, phase, or calendar year, as pre-arranged with SMAQMD staff and documented in the approval letter, to demonstrate continued project compliance.

- SMAQMD staff and/or other officials may conduct periodic site inspections to determine compliance. Nothing in the mitigation shall supersede other air district, state or federal rules or regulations.

- The mitigation is applicable until full implementation of ARB In-Use Off-Road Regulation is in place, expected January 1, 2028.

c. If, after application of the Basic Construction Emission Control Practices, emissions would still exceed SMAQMD threshold of significance for PM_{10} and/or $PM_{2.5}$, implement the SMAQMD Enhanced Fugitive PM Dust Control Practices as listed below, or as they may be updated in the future:

- Water exposed soil with adequate frequency for continued moist soil. However, do not overwater to the extent that sediment flows off the site.

- Suspend excavation, grading, and/or demolition activity when wind speeds exceed 20 miles per hour.

- Install wind breaks (e.g., plant trees, solid fencing) on windward side(s) of construction areas.

- Plant vegetative ground cover (fast-germinating native grass seed) in disturbed areas as soon as possible. Water appropriately until vegetation is established.

- Install wheel washers for all existing trucks, or wash off all trucks and equipment leaving the site.

- Treat site accesses to a distance of 100 feet from the paved road with a 6 to 12-inch layer of wood chips, mulch, or gravel to reduce generation of road dust and road dust carryout onto public roads.

- Post a publicly visible sign with telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The phone number of the District shall also be visible to ensure compliance.

Mitigation Measure 3.4-1b: Use Off-Site Mitigation Fee for NOx Emissions Generated by Construction (2019 SOIA EIR Mitigation Measure 3.4-1b)

As projects are proposed, the City will assess the effectiveness of Basic Construction Emission Control Practices and Enhanced On-site Exhaust Control Practices for addressing NO_X emissions relative to SMAQMD threshold of significance. If, after development of project details and scheduling, any project within the Project site would result in NO_X emissions that exceed the SMAQMD threshold of significance, even after implementation of the Basic Construction Emission Control Practices and Enhanced On-site Exhaust Control Practices, the subject project will participate in SMAQMD's off-site mitigation fee program. The mitigation fee will be set at a level that would bring NO_X emissions to a less-than-significant level (i.e., less than the SMAQMD Thresholds of Significance at that time). Whether the fee is needed, and if it is needed, determining the fee amount shall be calculated when the daily construction emissions can be more accurately determined (based on actual equipment use and scheduling). Calculation of fees shall occur in consultation with SMAQMD staff before the approval of grading plans by the City.

Significance after Mitigation

Implementation of Mitigation Measure 3.4-1a, would be considered application of BMPs and BACT and would reduce construction-related emissions of PM_{10}, $PM_{2.5}$, and NO_X to less than the SMAQMD thresholds of significance, as shown in Table 3.4-2. However, due to the unknown duration and intensity of specific construction activities associated with future development of the Project site, the uncertainty with regard to the availability of construction equipment that meet Tier 4 engine emissions standards, and the fact that estimated NO_X emissions are approaching the SMAQMD threshold of 85 pounds per day, in is within the realm of possibility that a given development project within the Project site could exceed the maximum daily emissions threshold for NO_X. In such a case, payment of an off-site mitigation fee to off-set any incremental construction-generated NO_X emissions in exceedance of the SMAQMD threshold of significance, if needed and as required by Mitigation Measure 3.4-1b, would reduce emissions of NO_X associated with future development in the Project

site, to levels that do not exceed SMAQMD's threshold of significance. Implementation of these mitigation measures would also ensure compliance with the City's General Plan Policy NR-4-8 and related standards that require development projects incorporate best management practices during construction activities to reduce emissions of criteria pollutants to levels that do not exceed the SMAQMD thresholds of significance. Thus, as with the 2019 SOIA EIR, this impact would be **less than significant with mitigation**.

Table 3.4-2 Summary of Mitigated Maximum Daily Construction-Related Emissions of Criteria Air Pollutants and Ozone Precursors

Portion of Construction Phase	Maximum Daily Emissions (pounds per day)				Maximum Annual Emissions (tons per year)	
	ROG	NO_X	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions [b]	105	78	43	17	4.4	1.6
SMAQMD significance threshold	-	85	80	82	14.6	15
Exceeds Threshold?	-	No	No	No	No	No

Notes: ROG = Reactive Organic Gases; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; $PM_{2.5}$ = respirable particulate matter with an aerodynamic diameter of 2.5 micrometers or less; VOC = volatile organic compounds; SMAQMD = Sacramento Metropolitan Air Quality Management District.

[a] Mitigation includes use of cleaner engines, represented as equipment that meet Tier 4 Final engine emissions standards; watering exposed areas twice daily; reducing vehicle speed on unpaved roadways to a maximum of 15 miles per hour.

[b] Maximum daily and annual emissions account for a maximum construction year scenario in which 25% of proposed land uses are constructed in a single year, and all off-site improvements are constructed in the same year. Source: Modeled by AECOM in 2020; see Appendix E for detailed modeling assumptions, outputs, and results.

Impact 3.4-2: Generation of long-term operational emissions of criteria air pollutants and ozone precursors.

Development within the Project site would include new buildings, structures, paved areas, roadways, utilities, and other improvements. Land uses that would be developed throughout the Project site would include parks and open spaces, light and heavy industrial uses, regional commercial, and mixed uses that is assumed to include up to 707 single-family residential units. Daily activities associated with the operation of these land uses would generate criteria air pollutant and ozone precursor emissions from mobile, energy, and area sources, as well as potential stationary sources. Mobile sources would involve vehicle trips for residential (e.g., work, shopping, and other trips) and non-residential (e.g., customers, employees, and material delivery trips) activities associated with the future land uses within the Project site. Area sources include, but are not limited to, natural gas combustion for water and space heating, landscape maintenance equipment, and periodic architectural coatings (such as paints). While construction emissions are considered short-term and temporary, operational emissions are considered long-term and occur for the lifetime of the development. Therefore, operational emissions have greater potential to affect the attainment status of an air basin, particularly as a result of increased traffic and energy demands from additional development.

Table 3.4-3 summarizes the maximum daily emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ that would be generated by long-term operations. As explained above in the methodology section, operational emissions were conservatively estimated with the assumption that all proposed uses would be operational in the year 2022. This is a conservative estimate as development is assumed over a 20-year horizon and emissions per unit of activity would decrease in future years as building energy standards continue to become more stringent, energy sources become more dependent upon renewable sources and vehicle fleets turnover with new vehicles that meet more rigorous

emissions control regulations. As shown in Table 3.4-3, the total operational emissions would exceed SMAQMD thresholds for ROG and NO_X, PM_{10}, and $PM_{2.5}$. Refer to Appendix E for emissions estimating inputs and model output files.

Table 3.4-3 Summary of Long-Term Operational Emissions of Criteria Air Pollutants and Precursors[1]

Emissions Source	Daily Emissions (pounds per day)				Annual Emissions (tons per year)	
	VOC	NO_X	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Area	240	0.7	0.3	0.3	0.04	0.04
Energy	5	46	3	3	0.64	0.64
Mobile	119	1170	658	185	92.56	26.03
Total Operational Emissions2	**363**	**1216**	**662**	**189**	**93**	**27**
SMAQMD Thresholds of Significance	**65**	**65**	**80**	**82**	**14.6**	**15**
Exceeds Thresholds?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Notes: ROG = reactive organic gases; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter; SMAQMD = Sacramento Metropolitan Air Quality Management District

[1] Operational emissions were modeled for the year 2022, as the earliest year of construction would occur in 2021, although the majority of construction and therefor the start of additional operations would likely occur in later years.

[2] Total emissions may not add correctly due to rounding.

Source: Modeled by AECOM in 2020; see Appendix E for detailed modeling assumptions, outputs, and results.

In addition to typical emission sources (e.g., mobile, energy, area), future land uses could also involve new stationary sources that generate long-term operational emissions above the emissions shown in Table 3.4-3. These sources could include, but are not limited to, diesel engine or gas turbine generators for emergency power generation; central heating boilers for commercial or large residential buildings; process equipment for light industrial uses; service station equipment; and dry-cleaning equipment. These stationary sources would be required to obtain permits from SMAQMD, which are issued with the intent of reducing air pollution and attaining (or maintaining) the ambient air quality standards. Permitted stationary-source facilities are required to implement BACT, which may include the installation of emissions control equipment or implementation of administrative practices to reduce emissions. Stationary-source facilities may also be required to offset their emissions of criteria air pollutants in order to be permitted. Information on stationary sources that could operate in support of future development is not available at this time. The emissions from these sources would be in addition to the estimated operational emissions described above.

The SMAQMD thresholds of significance are considered the allowable amount of emissions each project can generate without conflicting with or obstructing implementation of the applicable air quality plans, which are developed to maintain and attain ambient air quality standards. Consequently, because operations of future uses within the Project site could generate long-term operational emissions that exceed the SMAQMD thresholds, it could also conflict with or obstruct implementation of the applicable air quality plan. This impact would be **significant**.

Mitigation Measures

Mitigation Measure 3.4-2: Implement Strategies to Reduce Potential Operational Emissions (2019 SOIA EIR Mitigation Measure 3.4-2)

For future developments proposed within the Project site, the City of Elk Grove shall require the implementation of strategies to reduce operational ozone precursors presented in an Air Quality Mitigation Plan, which shall be submitted to SMAQMD for review and approval. The performance standard for the AQMP is to achieve a reduction in, or offset of operational ozone precursor emissions. Reduction strategies can include policies and emissions reduction measures demonstrating compliance with the City of Elk Grove's General Plan, including policies MOB-1-1, MOB-3-1, MOB-3-2, MOB-3-7, MOB-3-15, MOB-3-16, MOB-4-1, MOB-4-5, NR-4-1, NR-4-4, NR-6-5, and NR-6-7 (or equivalent measures as may be amended), in addition to reduction measures recommended by the SMAQMD, which may include the use of offsets once all other feasible measures have been exhausted. Future projects shall demonstrate compliance with the AQMP reduction strategies or equivalent strategies prior to issuance of a building permit.

Significance after Mitigation

Mitigation Measure 3.4-2 would assist in reducing operational air pollutant emissions and is similar to the City's General Plan Policy NR-4-1, which requires an emissions reduction of 15 percent or greater for new development projects.

Several of the Mobility Element policies of the General Plan aim to reduce reliance on single use vehicles and promote alternative forms of transportation to reduce VMT, which oftentimes provides a co-benefit of reducing mobile-source emissions of criteria air pollutants and ozone precursors. For example, Policy MOB-1-1 requires new development to demonstrate conformance with the VMT limit of the relevant General Plan land use designation, which was established to ensure that the total VMT generated by operations throughout the City would achieve State-mandated reductions in VMT. Policy MOB-3-2 and associated standard requires new development to install conduits for future installation of electric vehicle charging equipment. Policy MOB-3-16 requires new multifamily and commercial development provide bicycle parking and other bicycle support facilities. In addition, the planned land uses and siting have been developed with consideration of the regional location to generate an appropriate mix of residential and employment-generating land uses in order to reduce commute distances.

Table 3.4-4 presents the estimated emissions reductions that would be required to attain a reduction in, or offset of operational ozone precursor emissions by at least 15 percent of the total mobile-source emissions. Table 3.4-5 presents estimated mitigated operational emissions with implementation of VMT reduction measures consistent with General Plan land use planning and transportation policies such that the proposed Project would achieve the VMT limits for the respective land uses, consistent with limits established in General Plan Policy MOB-1-1.

Table 3.4-4 Air Quality Management Plans Ozone Precursor Emissions Reduction Requirements		
	Annual Emissions (tons per year)	
	ROG	NO_X
Unmitigated Mobile Emissions	14.87	165.54
15% Reduction	2.23	24.83

Notes: ROG = reactive organic gases; NO_X = oxides of nitrogen

Source: Modeled by AECOM in 2020; see Appendix E for detailed modeling assumptions, outputs, and results.

Table 3.4-5 Summary of Long-Term Mitigated Operational Emissions of Criteria Air Pollutants and Precursors with VMT Reductions Consistent with General Policy MOB-1-1. [1]

Emissions Source	Daily Emissions (pounds per day)				Annual Emissions (tons per year)	
	VOC	NO_X	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Area	240	0.7	0.3	0.3	0.04	0.04
Energy	5	46	3	3	0.64	0.64
Mobile	57.63	547.72	211.28	59.15	37.19	10.45
Total Maximum Daily Operational Emissions with VMT Reduction Measures 2	**302**	**594**	**215**	**63**	**-**	**-**
Total Annual Operational Emissions with VMT Reduction Measures (tons per year)	**57**	**107**	**38**	**11**	**38**	**11**
Mass Reduction from Unmitigated Emissions (tons per year)	**2.84**	**67.26**	**55.33**	**15.55**	**55.33**	**15.55**
Meet Target Reduction of 15%?	**Yes**	**Yes**	**-**	**-**	**-**	**-**

Notes: ROG = reactive organic gases; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter; SMAQMD = Sacramento Metropolitan Air Quality Management District

[1] Operational emissions were modeled for the year 2022, as the earliest year of construction would occur in 2021, although the majority of construction and therefor the start of additional operations would likely occur in later years.

[2] Total emissions may not add correctly due to rounding.

Source: Modeled by AECOM in 2020; see Appendix E for detailed modeling assumptions, outputs, and results.

As shown in Table 3.4-4, reducing mobile emissions as a result of achieving the VMT limits would help to substantially reduce future operational emissions, and operational ozone precursor emissions would be reduced by more than 15 percent of the total mobile-source emissions, exceeding Air Quality Management Plans (AQMP) reduction requirement. However, because the details of future development projects are not currently known, it is not possible to demonstrate at this time that future development within the Project site would be able to meet the performance standard for ozone precursor emissions. Operations of future development could result in air pollutant emissions that still exceed the SMAQMD thresholds. There is no additional feasible mitigation available that would avoid this impact. As with the 2019 SOIA EIR, the impact is **significant and unavoidable**.

Impact 3.4-3: Exposure of sensitive receptors to substantial pollutant concentrations

Certain air pollutants have been recognized to cause notable health problems and consequential damage to the environment either directly or in reaction with other pollutants, due to their presence in elevated concentrations in the atmosphere. The potential health effects, as well as the national and State ambient air quality standards

established to be protective of human health, are outlined in Section 3.2, "Environmental Setting," above, as well as outlined in the 2019 SOIA EIR and have not changed since that time. Negative health effects associated with criteria pollutant emissions are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, the number and character of exposed individuals [e.g., age, gender]). Due to the difference in sources, dispersion, and potential health effects, the following analysis discusses the potential for the exposure of sensitive receptors to criteria air pollutants and precursors, carbon monoxide, and toxic air contaminants (TACs) separately.

Exposure of sensitive receptors to localized concentrations of carbon monoxide (CO).

A mobile-source pollutant of localized concern is CO. Continuous engine exhaust may elevate localized CO concentrations, or "hot spots." Prior SMAQMD guidance for the assessment of potential impacts associated with CO emissions included a two-tiered screening approach to determine whether traffic would cause a potential CO hotspot at affected intersections. The June 2020 update of the SMAQMD CEQA Guide no longer includes this specific screening approach. The current guidance does acknowledge that land use development projects do not typically have the potential to result in localized concentrations of criteria air pollutants that expose sensitive receptors to substantial pollutant concentrations, in part, because the predominant source of these pollutants is typically in the form of mobile-source exhaust from vehicle trips that occur throughout a network of roads and are not concentrated in a single location.

Emissions and ambient concentrations of CO have decreased substantially throughout California in the past three decades. The national statewide CO standard is attained statewide in California, and an exceedance of NAAQS or CAAQS in the region was last recorded in 1993. This is primarily attributable to requirements for cleaner vehicle emissions. The Federal Motor Vehicle Control Program has mandated increasingly lower emission levels for vehicles manufactured since 1973. Between 2000 and 2019, national average CO concentrations, as well as regional average CO concentrations in the California and Nevada region, have decreased by approximately 65 percent (EPA 2020c).

Local mobile-source emissions of CO near roadway intersections are a direct function of traffic volume, speed, and delay. CO typically disperses rapidly with distance from the source under normal meteorological conditions. Under specific meteorological conditions, CO concentrations near roadways and/or intersections may reach unhealthy levels for local sensitive land uses such as residential units, hospitals, schools, and childcare facilities. CO hot spots are typically observed at heavily congested roadway intersections where a substantial number of gasoline-powered vehicles idle for prolonged durations throughout the day. Construction sites are less likely to result in localized CO hot spots due to the nature of construction activities, which normally utilize diesel-powered equipment for intermittent or short durations.

While ambient CO concentrations in the region have not exceeded NAAQS or CAAQS in many years, localized CO concentrations could still occur, particularly at intersections of high-volume roadways. Relevant screening metrics that serve as indicators of potential CO hotspots include whether a project would contribute to substantial traffic delays at or along high-volume intersections and roadways or contribute additional traffic to a unique setting in which mixing of air, and therefore pollutant dispersion, would be substantially limited, such as within a tunnel, underpass, urban street canyon, below-grade roadway, or other similar setting. Several air districts, including the surrounding Bay Area Air Quality Management District, San Joaquin Valley Unified Air Pollution Control District, and Placer County Air Pollution Control District provide recommended screening methodologies

as a conservative indication of whether implementation of a proposed project would result in localized CO emissions that would generate a hotspot and potentially significant impact. If all screening criteria are met, a proposed project is considered to result in a less-than-significant impact to air quality with respect to concentrations of local CO; projects that exceed these screening thresholds would be required to further quantify CO emissions and conduct modeling to determine localized CO concentrations with implementation of the proposed project.

The Bay Area Air Quality Management District screening criteria requires the following metrics be met (BAAQMD 2017):

- Project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans;
- The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour; and
- The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

Placer County Air Pollution Control District-recommended criteria identify a project as having a potential CO impact if (PCAPCD 2017):

- The project's CO emissions from vehicle operation would be more than 550 pounds per day (lb/day); ***and***
- Traffic generated by the proposed project would result in deterioration of intersection peak-hour level of service (LOS) from an acceptable peak-hour LOS (e.g., A, B, C, or D) to an unacceptable LOS (e.g., E or F); or
- project would contribute additional traffic that would substantially worsen and already existing unacceptable peak-hour LOS on one or more intersections in the project vicinity. "Substantially worsen" is defined by PCAPCD as a situation where a delay would increase by 10 seconds or more when project-generated traffic is included.

Similarly, the San Joaquin Valley Unified Air Pollution Control District considers a project to have a potentially significant impact if it would reduce the LOS on one or more streets or at one or more intersections in the project vicinity to LOS E or F, or substantially worsen the traffic at a location within the project vicinity already operating at LOS F (SJVAPCD 2015).

Although this screening criteria is no longer a part of the SMAQMD CEQA Guide, it is provided here as a reference for how the above noted indicators have typically been used to determine potential CO hotspot impacts within the project vicinity. The first tier states that the project's CO impact would be less than significant if:

- Traffic generated by the proposed Project would not result in deterioration of intersection LOS to LOS E or F; and

- The Project would not contribute additional traffic to an intersection that already operates at LOS of E or F.

If the first tier of screening criteria is not met, SMAQMD provides a second tier screening step which states that the project's CO impacts would be less than significant if:

- The project would not result in an affected intersection experiencing more than 31,600 vehicles per hour.
- The project would not contribute traffic to a tunnel, parking garage, bridge underpass, urban street canyon, below-grade roadway, or other locations where horizontal or vertical mixing of air would be substantially limited.
- The mix of vehicle types at the intersection is not anticipated to be substantially different from the County average.

Under existing plus full development of the Project site, according to the traffic analysis (see Section 3.14 of this EIR, "Transportation"), most of the study intersections would continue to operate acceptably at LOS D or better, except for five identified intersections, which would operate at LOS E or F with future development within the project site. However, the most vehicles per hour that affected intersections would experience would range from approximately 500 vehicles per hour during peak hour at the lowest-volume intersections to 4,800 vehicles per hour during peak hour at the heaviest-traveled intersections (Wood Rodgers 2020). This is substantially less than the historical SMAQMD second-tier screening criterion of 31,600 vehicles per hour, as well as the above noted BAAQMD screening criterion of 44,000 vehicles per hour. In addition, the future development within the project site would not contribute to a tunnel, parking garage, bridge underpass, urban street canyon, below-grade roadway, or other locations where horizontal or vertical mixing of air would be substantially limited, and the mix of vehicle types at the intersections is not anticipated to be substantially different from the County average. Finally, the proposed Project will be required by the City to implement roadway improvements identified in the traffic analysis, in order to ensure that development of the Project site would not result in increased congestion, pursuant to City policies. Therefore, future development of the proposed Project would meet all recommended first tier screening criteria, in addition to tier two screening criteria, and, as with the 2019 SOIA EIR, this impact is **less than significant**.

Mitigation Measures

No mitigation measures are required.

Exposure of sensitive receptors to toxic air contaminant emissions during construction.

Construction of the proposed Project would generate emissions of TACs from a variety of sources, including off-road construction equipment, on-road vehicles, earthmoving activities, architectural coating activities, and paving activities. These activities may expose nearby receptors to TACs, including residences on the north side of Grant Line Road that are approximately 100 feet from the northern border of the Project site, as well as existing and future on-site receptors. The greatest potential for TAC emissions during construction would be related to diesel particulate matter (DPM) emissions associated with operation of diesel-powered heavy-duty construction equipment and trucks.

However, as the Project site is more than 550 acres, the majority of construction activities would take place throughout the entirety of the Project site, not along the Project site boundaries that are closest to off-site sensitive

receptors. Existing off-site residents would only be within close proximity (as near as 100 feet [30 meters]) to construction activities associated with the mixed-use planned land use and off-site roadway improvements at the northeast of the project site.

Generation of diesel PM from construction projects typically occurs in a single area for a short period of time but could also include linear infrastructure projects to support new land uses. Because construction activities and subsequent emissions vary depending on the phase of construction (e.g., grading, building construction), the construction-related emissions to which nearby receptors could be exposed would also vary throughout the duration of construction activities. Concentrations of mobile-source diesel PM emissions are typically reduced by 70 percent at a distance of approximately 500 feet (ARB 2005). Construction would occur throughout the Project site, and even in intensive phases of construction, there would not be substantial pollutant concentrations, with the potential exception of the immediate vicinity of a particular construction site, due the highly dispersive properties of DPM (concentrations lower extremely quickly over distance).

The dose to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance in the environment and the extent of exposure a person has with the substance; a longer exposure period to a fixed amount of emissions would result in higher health risks for nearby sensitive receptors. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments used to determine the exposure of sensitive receptors to TAC emissions should be based on a 30-year exposure period (OEHHA 2015). Duration associated with any given construction activity at a specific location within the project site would be temporary. Existing off-site residents on the north side of Grant Line Road would only be within close proximity to construction activities during the construction activities associated with development in the immediate vicinity of Grant Line Road. Such exposure durations would be temporary and of short duration relative to the total exposure period used for typical health risk calculations (i.e., 30 years).

It is important to note that emissions from construction equipment would be reduced over the approximately 20-year period of development of the Project site. The use of newer off-road equipment is also effective in reducing PM emissions from off-road equipment used during construction; while not required, these vehicles are increasingly in use in construction equipment fleets. In January 2001, EPA promulgated a final rule to reduce emissions standards for heavy-duty diesel engines in 2007 and subsequent model years. These emissions standards represent a 90 percent reduction in NO_X emissions, 72 percent reduction of non-methane hydrocarbon emissions, and 90 percent reduction of PM emissions, in comparison to the emissions standards for the 2004 model year. In December 2004, ARB adopted a fourth phase of emission standards (Tier 4) in the Clean Air Non-road Diesel Rule that are nearly identical to those finalized by EPA on May 11, 2004. Tier 4 emission standards requires engine manufacturers to meet after-treatment-based exhaust standards for NO_X and PM starting in 2011 that are more than 90 percent lower than 2004 levels, putting emissions from off-road engines virtually on par with those from on-road heavy-duty diesel engines. As construction equipment continues to turnover and/or be retrofitted over time, diesel PM emissions associated with construction will continue to decrease.

In addition to generating emissions that could result in the exposure of off-site receptors to TACs, there are three existing homes on large parcels within the project site and the proposed Project could include development of sensitive land uses within the “mixed use” designation that is proposed an assumes the potential for a wide range of land uses, including residential development. Land use planning would occur after further study, zoning, and design review to ensure that the proposed uses are compatible with surrounding lands. Future applications for development in this area may require additional environmental analysis. However, even considering the

information above, because the exact location with respect to sensitive receptors and length of construction activities cannot be determined at the time of this analysis, it is conservatively assumed that certain construction activities could expose sensitive receptors to substantial TAC concentrations. This TAC impact from construction activities is considered **potentially significant.**

Mitigation Measures

Mitigation Measure 3.4-3a: Implement Mitigation Measure 3.4-1a

Significance after Mitigation

Implementation of the Mitigation Measure 3.4-1a would further reduce PM emissions and satisfy the recommendation of SMAQMD. The use of newer off-road equipment is also effective in reducing PM emissions. In January 2001, EPA promulgated a final rule to reduce emissions standards for heavy-duty diesel engines in 2007 and subsequent model years. These emissions standards represent a 90 percent reduction in NO_X emissions, 72 percent reduction of non-methane hydrocarbon emissions, and 90 percent reduction of PM emissions, in comparison to the emissions standards for the 2004 model year. In December 2004, ARB adopted a fourth phase of emission standards (Tier 4) in the Clean Air Non-road Diesel Rule that are nearly identical to those finalized by EPA on May 11, 2004. Tier 4 emission standards requires engine manufacturers to meet after-treatment-based exhaust standards for NO_X and PM starting in 2011 that are more than 90 percent lower than current levels, putting emissions from off-road engines virtually on par with those from on-road heavy-duty diesel engines. With the application of mitigation, as with the 2019 SOIA EIR, the impact is considered **less than significant.**

Exposure of sensitive receptors to toxic air contaminant emissions during operations.

Future development of the project site is assumed to include parks and open spaces, mixed-use, commercial, and industrial uses. Residential land uses do not typically generate substantial TAC emissions. Land uses that are more likely to generate substantial TAC emissions include industrial land uses that involve stationary sources and manufacturing processes, some commercial land uses such as dry-cleaning establishments and gasoline-dispensing facilities, as well as any land uses with diesel-fueled backup generators. Such stationary sources and any others that may emit TACs would be subject to SMAQMD Rules and Regulations. Non-stationary sources of TACs also include portable engines, cargo handling equipment that may be used at warehouses or distribution centers, transportation refrigeration units, and idling by commercial vehicles and large haul trucks. While State regulations has been shown to lead to successful implementation of TAC reduction measures, land use planning to consider potential localized TAC impacts on sensitive receptors is critical, particularly as mixed-use development and connectivity between residential uses and employment service land uses (such as commercial and industrial) is one of the primary strategies to reduce vehicle miles travelled and associated criteria and greenhouse gas pollutants.

While not law or adopted policy, ARB published the *Air Quality and Land Use Handbook: A Community Health Perspective* (Handbook), providing guidance concerning land use compatibility with regard to sources of TAC emissions (ARB 2005). The handbook offers advisory recommendations for the siting of sensitive receptors near uses associated with TACs, such as freeways and high-traffic roads, commercial distribution centers, rail yards, ports, refineries, dry cleaners, gasoline stations, and industrial facilities. The recommended distances of separation between land uses relevant to the future development of the project site include:

- Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads carrying 100,000 vehicles per day, or rural roads carrying 50,000 vehicles per day.
- Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard.
- Avoid siting new sensitive land uses within 300 feet of a large gasoline station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50-foot separation is recommended for typical gasoline dispensing facilities.
- Avoid siting new sensitive land uses within 300 feet of any dry-cleaning operation using perchloroethylene. For operations with two or more machines, provide 500 feet. For operations with three or more machines, consult the local air district. Do not site new sensitive land uses in the same building with dry-cleaning operations that use perchloroethylene.
- Avoid the siting of new commercial trucking facilities that accommodate more than 100 trucks per day, or 40 trucks equipped with transportation refrigeration units (TRUs), within 1,000 feet of sensitive receptors (e.g., residences).

Since the 2005 publication of the Handbook, ARB also published a Technical Advisory as a supplement to the Handbook to provide information on scientifically based strategies to reduce exposure to emissions near high-volume roadways in order to protect public health (ARB 2017). This Technical Advisory demonstrates that reduced exposure to traffic-related pollution can be achieved while pursuing infill development that independently provides public health benefits. The Technical Advisory identifies strategies to reduce air pollution exposure near roadways, including those that reduce vehicular emissions, such as incorporation of roundabouts for speed reduction, traffic signal management, and speed limit reductions on high-speed roadways (those greater than 55 miles per hour); strategies that reduce the concentrations of traffic pollution, such as urban design that promotes air flow, solid barriers to pollution, and vegetation to reduce pollutant concentrations; and strategies that remove pollution from indoor air such as through high efficiency filtration. This Technical Advisory does not negate the ARB Handbook but offers multiple variables for consideration for land use, transportation, and environmental planning and development.

ARB implements several statewide diesel-related programs and strategies designed to reduce diesel PM emissions and subsequent exposure. The following programs reduce and regulate criteria pollutant emissions, as well as diesel PM and TAC emissions, from exhaust:

- **In-Use Mobile Agricultural Equipment Regulation**. Used as a regulation for mobile agricultural equipment that moves California towards meeting ambient air quality standards for the San Joaquin Valley by using the cleanest available technologies. The regulation provides the administrative mechanism for emission reductions resulting from mobile agricultural equipment program projects to be eligible for State Implementation Plan credit.
- **In-Use Off-Road Equipment**. Used as a regulation to reduce diesel particulate matter and oxides of nitrogen emissions from in-use (existing) off-road heavy-duty diesel vehicles in California. Such vehicles are used in construction, mining, and industrial operations.

- **New Off-Road Engines and Equipment.** This category consists of regulations applicable to Off-Road Compression-Ignition Engines (a.k.a. diesel engines), and is primarily for the interest and needs of manufacturers and others that are required to obtain certification from ARB. These engines are found in a wide variety of off-road applications, such as farming, construction, and industrial. Some familiar examples include tractors, excavators, dozers, scrapers, and portable generators.

- **Heavy-Duty In-Use Vehicle Regulation.** This regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Newer heavier trucks and buses must meet PM filter requirements beginning January 1, 2012. Lighter and older heavier trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent. The regulation applies to nearly all privately and federally owned diesel fueled trucks and buses and to privately and publicly owned school buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds.

- **Heavy-Duty Vehicle Inspection Program.** Enforcement program developed to control excessive smoke emissions and tampering from heavy-duty diesel trucks and buses. The Heavy-Duty Vehicle Inspection Program requires heavy-duty trucks and buses to be inspected for excessive smoke and tampering, and engine certification label compliance. Any heavy-duty vehicle traveling in California, including vehicles registered in other states and foreign countries may be tested.

- **Heavy-Duty Diesel Emission Control Label Inspection Program.** Enforcement program developed as a way to reduce emissions of air contaminants through the fair, consistent and comprehensive enforcement of air pollution laws, and by providing training and compliance assistance. Each vehicle operating in California - including those in transit from Mexico, Canada, or any other state - must be equipped with engines that meet California and/or EPA or equivalent emission standards as provided on specified Emission Control Labels (ECLs). The ECL must be legible, maintained at the location originally installed by the engine manufacturer and correspond to the engine serial number stamped on the engine.

- **In-Use Public and Utility Fleets (Heavy-Duty).** Regulation mandating Public Agency and utility vehicle owners reduce diesel PM emissions from their affected vehicles through the application of Best Available Control Technology on these vehicles by specified implementation dates. Implementation is phased-in by engine model year groups with the goal to reduce both criteria pollutant emissions and exposure to toxic air contaminants.

- **In-Use Solid Waste Collection Vehicles (SWCV).** Regulation targeting the reduction of cancer-causing particulate matter and smog-forming nitrogen oxide emissions from diesel-fueled waste collection trucks to reduce the harmful health impacts of exhaust. The regulation requires owners to use ARB-verified control technology that best reduces emissions, following a phased-in schedule from 2004 through 2010.

- **PCAPCD Rule 501 (General Permit Requirements)**. The requirements are intended to provide an orderly procedure for the review of new stationary sources of air pollution and modification and operation of existing sources through the issuance of permits. Stationary Sources that would emit more than 2 pounds of any pollutant in any 24-hour period would be subject to PCAPCD's permit requirements.

ARB has also, and continues to, work to reduce emissions from locomotives. Emission reductions from the rail sector are critical to meet the criteria pollutant standards across the state, particularly as rail activity increases and

is promoted as an alternative to personal automobile transportation. ARB and South Coast AQMD have developed draft concepts to reduce criteria pollutants, toxic air contaminants, and greenhouse gas emissions for locomotives in-use, idling, and maintenance activities, as well as emissions from other equipment at railyards. ARB has submitted the Locomotive Petition to the EPA, requesting EPA to update its emissions standards locomotives and create a new, cleaner Tier 5 emissions standard for locomotives that would take effect for remanufactured locomotives in 2023 and for newly built locomotives in 2025.

Proposed development within the Project site would not result in the siting of sensitive land uses within 500 feet of a freeway, urban roads carrying 100,000 vehicles per day, or rural roads carrying 50,000 vehicles per day or within 1,000 feet of a major service and maintenance rail yard; nor would it result in an increase in daily vehicle trips to this level at affected intersections and roadway segments (see Section 3.14 of this EIR, "Transportation"). The proposed land uses within 1,000 feet of the Union Pacific Railroad that runs adjacent to the western boundary of the project site are industrial and would not be considered to include sensitive receptors. However, mobile sources of TACs could be associated with the operation of on-road heavy-duty diesel trucks used for on-site commercial and industrial activities (e.g., unloading/loading). In addition, operational activities associated with planned land uses could require the use of diesel-fueled vehicles for extended periods, such as commercial trucking facilities or delivery/distribution areas, and thereby generate diesel PM emissions that could expose sensitive receptors to DPM emissions. The diesel exhaust PM emissions generated by these uses could be produced primarily at single locations on a regular basis (e.g., loading dock areas). Idling trucks, including TRUs, would increase DPM levels at these locations. Existing and potential future sensitive land uses could be exposed to DPM emissions on a recurring basis.

It is also possible that future development within the Project site would include stationary sources of TACs, such as dry-cleaners, gasoline-dispensing facilities and diesel-fueled backup generators. These types of stationary sources, in addition to any other stationary sources that may emit TACs, would be subject to SMAQMD rules and regulations, including but not limited to Rule 202, *New Source Review*, Rule 203, *Prevention of Significant Deterioration*, and Rule 801, *New Source Performance Standards*. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including new-source review standards and air toxics control measures. SMAQMD limits emissions and public exposure to TACs through several programs. SMAQMD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors.

Because the exact location of potential operational sources of TACs cannot be determined at the time of this analysis, it is conservatively assumed that certain long-term operational activities could expose sensitive receptors to substantial TAC concentrations. Therefore, this TAC impact from operational activities is considered **potentially significant**.

Mitigation Measures

Mitigation Measure 3.4-3b: Implement Guidelines in the California Air Resources Board's Air Quality and Land Use Handbook: A Community Health Perspective (2019 SOIA EIR Mitigation Measure 3.4-5)

The City of Elk Grove shall require, as a part of proposed development projects, the implementation of strategies to avoid exposure of sensitive receptors to substantial toxic air contaminant pollutant concentrations. Projects that would result in substantial TAC emissions directly or indirectly (e.g., industrial sources), that would expose sensitive receptors to substantial TAC concentrations (e.g.,

residential land uses located near existing TAC sources), the City of Elk Grove will implement ARB's *Air Quality and Land Use Handbook: A Community Health Perspective* (Handbook) guidance concerning land use compatibility with regard to sources of TAC emissions, or ARB guidance as it may be updated in the future. If these guidelines are infeasible, and a project would have the potential to generate substantial TAC emissions or expose sensitive receptors to substantial TAC pollutant concentrations, the City will require project-level analysis and appropriate mitigation, as necessary, to ensure that sensitive receptors are not exposed to substantial pollutant concentrations. In communication with the SMAQMD, the City will require, if necessary, a site-specific analysis for operational activities to determine whether health risks would exceed applicable health risk thresholds of significance. Site-specific analysis may include screen level analysis, dispersion modeling, and/or a health risk assessment, consistent with applicable guidance from the SMAQMD. Analyses shall take into account regulatory requirements for proposed uses.

If the results of analysis determine that the performance standard for this mitigation would be exceeded, actions shall be taken to reduce potential operational impacts which may include, but not necessarily limited to:

- locating air intakes and designing windows to reduce particulate matter exposure by, for example, not allowing windows facing the source to open;
- providing electrification hook-ups for TRUs to avoid diesel-fueled TRUs continuing to operate at loading docks during loading and unloading operations;
- requiring the TAC-generating activity (e.g., loading docks) be located away from sensitive receptors;
- incorporating exhaust emission controls on mobile and/or stationary sources (e.g., filters, oxidizers);
- develop and implement a dock management system at the time of occupancy to minimize on-site idling below regulatory limits;
- require all on-site user owned and operated trucks with transportation refrigeration units to be capable of plugging into power at loading docks and require plug-in when at the loading dock;
- utilize on-site cargo and material handling equipment that is the lowest emitting equipment available at the time of occupancy;
- evaluate the potential to electrify a portion of entirety of an on-site user-owned and operated truck fleet;
- evaluate the potential to consolidate delivery or haul truck trips to increase the load and decrease vehicle trips;
- provide building air filtration units with a Minimum Efficiency Reporting Value (MERV) that is adequate to address adjacent sensitive land uses according to performance standards of this mitigation measure;

- Ensure adequate distance between existing and planned sensitive receptors and gasoline dispensing facilities, based on the proposed size and design of any gasoline-dispensing facilities.

The City will require the project applicant(s) to identify and implement feasible mitigation measures to reduce any potentially significant effect and communicate with SMAQMD to identify measures to reduce exposure of sensitive receptors to substantial pollutant concentrations to levels consistent with thresholds recommended by the SMAQMD applicable at the time the project is proposed. Agreed upon feasible mitigation actions shall be documented as a project condition of approval.

Significance after Mitigation

Implementation of Mitigation Measure 3.4-3b would ensure that all uses that could generate TAC emissions will evaluate and mitigate TAC emissions to ensure that sensitive receptors are not exposed to substantial pollutant concentrations. With the feasible actions outlined that have been demonstrated to substantially reduce exposure to TAC emissions and the clear performance standards included in this mitigation, with implementation of mitigation, as with the 2019 SOIA EIR, this impact would be reduced to a **less-than-significant** level.

Exposure of sensitive receptors to long-term emissions of criteria air pollutants and precursors.

As described above in the Environmental Setting, criteria air pollutants and their precursors can contribute to a variety of health effects in sensitive receptors, which vary depending on the pollutant, the ambient air concentrations of each given pollutant, the duration of exposure, and any other underlying health conditions that a receptor may have. Recent rulings from California Supreme Court, in the case of *Sierra Club v. County of Fresno* (2018) 6 Cal. 5th 502, determined that the subject EIR should relate the expected adverse air quality impacts to likely health consequences or explain in meaningful detail why it is not feasible at the time of drafting to provide such an analysis.

The analysis of potential health impacts resulting from criteria pollutant emissions has long been focused on a regional or air basin wide level because criteria air pollutants typically act on a large, regional scale, whereas TACs and CO act on a more localized level. In many cases, the concern regarding health risks from criteria pollutants is not related to the specific pollutant itself, such as ROG or NO_X, but the potential for the pollutant to undergo reactions within the atmosphere and form secondary pollutants, such as ozone. In such cases, the secondarily formed ozone is the pollutant of concern. The formation of PM can similarly be dependent on regional atmospheric chemistry, geography, weather, and climate. The complex reactions and conditions that lead to the formation of ozone and PM in the atmosphere can also result in the transport of pollutants over wide areas, meaning that the emissions of ozone precursor pollutants and PM, from a single project does not necessarily translate directly into a specific concentration of ozone, or a specific level of health risk, in the project vicinity.

Since the time of adoption of the 2019 SOIA EIR, SMAQMD published *Guidance to Address the Friant Ranch Ruling for CEQA Projects in the Sac Metro Air District* (SMAQMD 2020b), which provides a screening level analysis estimating the health effects of criteria ai pollutants and their precursors, ROG, NO_X, CO, ozone, SO_2, PM_{10}, and $PM_{2.5}$, as well as provides guidance for conducting a health effects analysis of a project that satisfies the requirements of the Friant Ranch court decision. The Guidance was prepared by conducting regional photochemical modeling and relies on the EPA's Benefits Mapping and Analysis Program to assess health impacts from ozone and PM2.5. Analysis was conducted to estimate the level of health effects for a proposed project that has emissions at the maximum SMAQMD-recommended thresholds of significance using 41

hypothetical project locations, as well as a screening model conducted to estimate potential health effects for strategic areas where growth is anticipated to exceed thresholds of significance. The results were used to develop two screening tools intended to support individual projects in analyzing health risks from criteria pollutants: the Minor Project Health screening Tool for projects with criteria pollutant emissions below SMAQMD's adopted thresholds of significance, and the Strategic Area Project Health Screening Tool for projects with emissions between two and six times the SMAQMD threshold levels.

The modeling results support a conclusion that any one proposed project in the Five-Air-District Region with emissions at or below the maximum SMAQMD threshold of significance levels for criteria air pollutants does not on its own lead to sizeable health effects. The findings of the SMAQMD screening modeling indicate that the mean health incidence for a project emitting at the threshold of significance levels at all 41 representative locations within the air district was less than 3 per year for mortality and less than 1.5 per year for other health outcomes evaluated. At the strategic area locations, as expected, mean health incidences are higher than the Minor Projects Health Effects Screening Tool. The maximum reported mortality rate is 22 incidences per year and all other health outcomes evaluated are under 9 per year from a project emitting 656 pounds/day of NOx, ROG, and PM at the downtown Sacramento location.

As shown in Table 3.4-3, modeled emissions for future operations of the proposed Project would exceed SMAQMD's maximum emissions levels used in the strategic area locations screening analysis. However, table 3.4-3 is intended to demonstrate a conservative estimate of the maximum potential daily emissions that could result from the proposed Project, and not the realistic average annual or average daily emissions. Table 3.4-3 presents emissions assuming full operations in the year 2022, while development is realistically anticipated to occur over a 20-year duration, with increasingly stringent emissions regulations in place over the duration of development. Because mobile emissions are the primary source of NO_X emissions, and there is existing regulation in place that will result in continued reductions in mobile-source emissions over time, taking into account the realistic nature of development of the proposed Project for the purposes of analyzing the potential health risks is appropriate. In addition, the emissions in Table 3.4-3 are inclusive of all anticipated vehicle miles travelled, a substantial portion of which would occur outside of the Project site itself, particularly for commercial and industrial land uses that would incur truck to and from the Project site from outside of the City to serve daily operations. Finally, the proposed Project would be subject to the City's General Plan policies, and land use planning and design of the Project site will be required to take into consideration the City's required VMT limits.

As shown in Table 3.4-4, modeled emissions for operations of the proposed Project with implementation of VMT reduction measures to meet the VMT limits per General Plan Policy MOB-1-1, yet still assuming full operations in the year 2022 and the less strict emissions standards associated with the fleet mix in 2022, would be approximately 302 lb/day for ROG, 594 lb/day for NO_X and 63 lb/day for $PM_{2.5}$. These emissions are still inclusive of vehicle activity serving land uses of the proposed Project that would not necessarily all occur within the boundaries of the Project site.

In order to present a realistic but still conservative analysis of potential health impacts of the Project's emissions, with reduced VMT but operations occurring in 2022, the emissions shown in Table 3.4-5 were applied to the SMAQMD Strategic Area Project Health Screening Tool. The screening tool estimates that a project at the strategic growth area location of Ranch Cordova, emitting 302 lb/day for ROG, 594 lb/day for NO_X and 63 lb/day for $PM_{2.5}$, would result in 5.3 premature deaths per year or a 0.011 percent increase from background health incidences across the modeling domain due to the increase in PM concentrations, and 0.33 premature deaths per

year or a 0.00091 percent increase from background health incidences across the modeling domain due to the increase in ozone.

As discussed above, the nature of criteria pollutants is such that the emissions from an individual project cannot be directly identified as responsible for health impacts within any specific geographic location. As a result, attributing health risks at any specific geographic location to a single proposed project is not feasible. Nonetheless, the results of the Strategic Area Project Health Screening Tool have been presented for informational purposes. The modeling results support a conclusion that the proposed project does not, on its own, lead to sizeable regional health effects from the emissions of criteria air pollutants and precursors (note that the discussion of TAC and CO emissions as they relate to localized health risks is addressed in the sub-section above). It should also be noted that this screening evaluation applied the maximum daily emissions to simulate a full year of exposure, thereby assuming that the maximum daily emissions would in fact be the average daily emissions over each operational year. As a result, the actual Project-related health effects will be less because the maximum daily emissions are substantially higher than the average daily scenario. In addition, as noted above, any projects that could result in localized health risks would be subject to Mitigation Measures 3.4-3a and 3.4-3b, which would further reduce project-related emissions, particularly those associated with vehicle and off-road equipment, including the ROG, NO_X and PM emissions that were analyzed here on a regional scale. Therefore, criteria air pollutants generated as a result of the proposed Project would not result in the exposure of sensitive receptors to substantial criteria air pollutant concentrations and this impact would be **less than significant.**

Significance after Mitigation

No mitigation measures are required.

Impact 3.4-4: Result in Other Emissions (such as those leading to odors) Adversely Affecting a Substantial Number of People.

Development of the Project site could involve actions that would expose people to objectionable odors. The human response to odors is subjective and sensitivity to odors varies greatly among the public. Two situations increase the potential for odor problems. The first occurs when a new odor source is located near existing sensitive receptors. The second occurs when new sensitive receptors are developed near existing sources of odors.

During construction, the predominant source of power for construction equipment is diesel engines. Odors from these sources would be localized and generally confined to the immediate area surrounding the development area. Exhaust odors from diesel engines, as well as emissions associated with asphalt paving and the application of architectural coatings, may be considered offensive to some individuals. Similarly, diesel-fueled trucks traveling on local roadways would produce associated diesel exhaust fumes. However, odors associated with diesel fumes, asphalt paving, and architectural coatings would be temporary and would disperse rapidly with distance from the source. Projects constructed within the Project site would use typical construction techniques, and the odors would be typical of most construction sites and temporary in nature. In addition, because odors would be temporary and disperse rapidly with distance from the source, construction-generated odors would not result in the frequent exposure of receptors to objectionable odor emissions. Furthermore, the City of Elk Grove is required to comply with SMAQMD Rules 402 (Nuisance) and 442 (Architectural Coatings), which would ensure that odors generated by short-term construction would not affect a substantial number of people. Therefore, this impact would be **less than significant**.

Operationally, industries and/or facilities that are widely considered major sources of odors include wastewater treatment and pumping facilities, chemical manufacturing facilities, sanitary landfills, fiberglass manufacturing facilities, transfer stations, painting/coating operations (e.g., auto body shops), composting facilities, food processing facilities, confined animal facilities, asphalt batch plants, rendering plants, metal smelting plants, and coffee roasters. This list is meant not to be entirely inclusive, but to act as general guidance. In the context of land use planning, one of the most important factors influencing the potential for an odor impact to occur is the distance between the odor source and receptors, or a "buffer zone." SMQMD has published a its *Recommended Odor Screening* Distances table, which provides suggested buffer distances between sensitive receptors and a variety of odor-generating sources. These recommended buffer distances are listed below in Table 3.4-6.

Table 3.4-6 Odor Screening Distances for Consideration in Land Use Planning

Land Use / Type of Operation	Suggested Buffer Screening Distance
Wastewater Treatment Plant	2 miles
Wastewater Pumping Facilities	1 mile
Sanitary Landfill	1 mile
Transfer Station	1 mile
Composting Facility	2 miles
Petroleum Refinery	2 miles
Asphalt Batch Plant	2 miles
Chemical Manufacturing	1 mile
Fiberglass Manufacturing	1 mile
Painting / Coating Operations	1 mile
Rendering Plant	4 miles
Coffee Roaster	1 mile
Food Processing Facility	1 mile
Feed lot / Dairy	1 mile
Green Waste and Recycling Operations	2 miles
Metal Smelting Plants	1 mile
Source: SMAQMD 2009	

Future development of the Project site would include multiple land use types. Surrounding land uses include both agricultural and industrial land uses, which are likely to generate odors that are detectable on and in the vicinity of the Project site. Future development within the Project site could result in the siting of sensitive receptors that would be exposed to these odor sources. However, land use proposed on the west side of the Project site, in proximity to the existing industrial uses and railway include heavy industrial and light industrial land uses. Proposed mixed-use designated land uses, which could include the siting of sensitive receptors, are more than one-half mile east of the existing railway and other industrial land uses.

The City of Elk Grove and SMAQMD work in cooperation with industrial facilities and agricultural producers to limit the odor emissions associated with manufacturing processes and agricultural burning. Other smaller and dispersed odor sources include residential and commercial dumpsters, which can be in proximity of sensitive receptors. However, with proper disposal containers and regular trash collection services, odors from residential and commercial dumpsters are typically minimized. SMAQMD Rule 402 provides that air contaminants emitted

by any person shall not cause annoyances, and SMAQMD provides an on-line complaint website and phone number if any resident experiences odor concerns.

It cannot be known at this time what specific development would be implemented and if any development would generate objectionable odors. However, future land uses could result in the operation of new land use that generates objectionable odors or the siting of sensitive receptors in proximity to then-existing odor-generating land uses within the Project site. Therefore, future development of the Project site could result in the exposure of receptors to objectionable odor emissions. This impact is considered to be **potentially significant**.

Mitigation Measures

Mitigation Measure 3.4-6: Reduce Exposure of Sensitive Receptors to Odorous Emissions (2019 SOIA EIR Mitigation Measure 3.4-6).

Projects that propose uses that could expose sensitive receptors to objectionable odors shall implement strategies to avoid exposure of sensitive receptors to objectionable odors.

- Project applicant(s) for residential development in areas adjacent to ongoing agricultural operations shall include a disclosure clause advising buyers and tenants of the potential adverse odor impacts in the deeds to all residential properties. Residential subdivisions shall provide notification to buyers in writing of odors associated with existing dairies, agricultural burning, and decay of agricultural waste.
- For existing odor-producing sources, sensitive receptors shall be sited as far away as possible from the existing sources.
- For new project-generated odor-producing sources, sensitive receptors shall be sited as far away as possible from the new sources.
- Apply SMAQMD-Recommended Odor Screening Distances in the siting of land uses.

Significance after Mitigation

Implementation of Mitigation Measure 3.4-6 would reduce odor emissions because siting measures imposed would avoid conflicts between odor emissions and sensitive receptors. With implementation of mitigation, as with the 2019 SOIA EIR, this impact would be reduced to a **less-than-significant** level.

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