

3.5 GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE

This section presents a summary of the current state of climate change science and greenhouse gas (GHG) emissions sources in California; a summary of applicable regulations; quantification of GHG emissions generated by the Project; and discussion of the Project's potential contribution to global climate change. Where impacts are found to be potentially significant, mitigation is presented. The primary source of information used for this analysis is the General Plan EIR (City of Elk Grove 2018, 2019). Energy impacts are evaluated in Section 3.5, "Energy," of this Draft SEIR.

For the purposes of this analysis, GHG emissions are measured as metric tons of carbon dioxide equivalent (MTCO_{2e}). The atmospheric impact of a GHG is based on the global warming potential (GWP) of that gas. GWP is a measure of the heat trapping ability of one unit of a gas over a certain timeframe relative to one unit of carbon dioxide (CO₂). The GWP of CO₂ is one (IPCC 2007). Consistent with the methodology used by the California Air Resources Board (CARB) in estimating statewide GHG emissions, this analysis uses GWP values from the Fourth Assessment Report Values by the Intergovernmental Panel on Climate Change (IPCC) (Greenhouse Gas Protocol n.d.).

No comments pertaining to GHGs and climate change were received in response to the notice of preparation (NOP).

3.5.1 Regulatory Setting

FEDERAL

In *Massachusetts et al. v. Environmental Protection Agency et al.*, 549 U.S. 497 (2007), the Supreme Court of the United States ruled that CO₂ is an air pollutant as defined under the federal Clean Air Act (CAA) and that the U.S. Environmental Protection Agency (EPA) has the authority to regulate GHG emissions. In 2010, EPA started to address GHG emissions from stationary sources through its New Source Review permitting program, including operating permits for "major sources" issued under Title V of the CAA.

The National Highway Traffic Safety Administration (NHTSA) regulate vehicle emissions through the Corporate Average Fuel Economy (CAFE) Standards. On April 2, 2018, the EPA administrator announced a final determination that the current standards should be revised. On August 2, 2018, the U.S. Department of Transportation and EPA proposed the Safer Affordable Fuel-Efficient Vehicles Rule (SAFE Rule), which would amend existing CAFE standards for passenger cars and light-duty trucks by increasing the stringency of the standards by 1.5 percent per year from models 2021 through 2026 (NHTSA 2020).

The CAA grants California the ability to enact and enforce more strict fuel economy standards through the acquisition of an EPA-issued waiver. Each time California adopts a new vehicle emission standard, the state applies to EPA for a preemption waiver for those standards. However, Part One of the SAFE Rule, which became effective on November 26, 2019, revoked California's existing waiver to implement its own vehicle emission standard and also established a standard to be adopted and enforced nationwide (84 Federal Register [FR] 51310). Pending several legal challenges to Part One of the SAFE Rule and administrative turnover, on December 21, 2021, the NHSTA published its CAFE Preemption Rule, which finalizes the repeal of the SAFE Rule Part 1 allowing California to continue procuring its waiver from EPA through the CAA to enforce more stringent emissions standards. Also, on April 1, 2022, the Secretary of Transportation unveiled new CAFE standards for 2024–2026 model year passenger cars and light-duty trucks. These new standards require new vehicles sold in the US to average at least 40 miles per gallon and apply to all states except those that enforce stricter standards.

STATE

Statewide GHG Emission Targets and Climate Change Scoping Plan

Reducing GHG emissions in California has been the focus of the State government for approximately two decades. GHG emission targets established by the State legislature include reducing statewide GHG emissions to 1990 levels by

2020 (Assembly Bill [AB] 32 of 2006) and reducing them to 40 percent below 1990 levels by 2030 (Senate Bill [SB] 32 of 2016). Executive Order S-3-05 calls for statewide GHG emissions to be reduced to 80 percent below 1990 levels by 2050. This target was superseded by AB 1279 which codifies a goal for carbon neutrality and reduce emissions by 85 percent below 1990 levels by 2045. These targets are in line with the scientifically established levels needed in the U.S. to limit the rise in global temperature to no more than 2 degrees Celsius, the warming threshold at which major climate disruptions, such as super droughts and rising sea levels, are projected; these targets also pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius.

California's 2017 Climate Change Scoping Plan (2017 Scoping Plan), prepared by CARB, outlines the main strategies California will implement to achieve the legislated GHG emission target for 2030 and "substantially advance toward our 2050 climate goals" (CARB 2017). It identifies the reductions needed by each GHG emission sector (e.g., transportation, industry, electricity generation, agriculture, commercial and residential, pollutants with high global warming potential, and recycling and waste).

On September 16, 2022, the state legislature passed AB 1279 which codified stringent emissions targets for the state of achieving carbon neutrality and an 85 percent reduction in 1990 emissions level by 2045. CARB released the *Final 2022 Scoping Plan for Achieving Carbon Neutrality* (2022 Scoping Plan) on November 16, 2022, as also directed by AB 1279 (CARB 2022). The 2022 Scoping Plan traces the pathway for the state to achieve its carbon neutrality and an 85 percent reduction in 1990 emissions goal by 2045 using a combined top down, bottoms up approach using various scenarios. CARB adopted the 2022 Scoping Plan on December 16, 2022.

CARB and other state agencies also released the *January 2019 Draft California 2030 Natural and Working Lands Climate Change Implementation Plan* consistent with the carbon neutrality goal of Executive Order B-55-18 (California Environmental Protection Agency et al. 2019).

The State has also passed more detailed legislation addressing GHG emissions associated with transportation, electricity generation, and energy consumption, as summarized below.

Transportation-Related Standards and Regulations

As part of its Advanced Clean Cars program, CARB established more stringent GHG emission standards and fuel efficiency standards for fossil fuel-powered on-road vehicles than EPA. In addition, the program's zero-emission vehicle (ZEV) regulation requires battery, fuel cell, and plug-in hybrid electric vehicles (EVs) to account for up to 15 percent of California's new vehicle sales by 2025 (CARB 2018a). In August 2022, CARB adopted the ACC II program, which sets sales requirements for ZEVs to ultimately reach the goal of 100 percent ZEV sales in the state by 2035.

Executive Order B-48-18, signed into law in January 2018, requires all State entities to work with the private sector to have at least 5 million ZEVs on the road by 2030, as well as 200 hydrogen-fueling stations and 250,000 EV-charging stations installed by 2025. It specifies that 10,000 of these charging stations must be direct-current fast chargers.

CARB adopted the Low Carbon Fuel Standard (LCFS) in 2007 to reduce the carbon intensity (CI) of California's transportation fuels. Low-CI fuels emit less CO₂ than other fossil fuel-based fuels such as gasoline and fossil diesel. The LCFS applies to fuels used by on-road motor vehicles and off-road vehicles, including construction equipment (Wade, pers. comm., 2017).

In addition to regulations that address tailpipe emissions and transportation fuels, the State legislature has passed regulations to address the amount of driving by on-road vehicles. Since passage of SB 375 in 2008, CARB requires metropolitan planning organizations (MPOs) to develop and adopt sustainable communities strategies (SCSs) as a component of the federally-prepared regional transportation plans (RTPs) to show reductions in GHG emissions from passenger cars and light-duty trucks in their respective regions for 2020 and 2035. These plans link land use and housing allocation to transportation planning and related mobile-source emissions. The Sacramento Area Council of Governments (SACOG) serves as the MPO for Sacramento, Placer, El Dorado, Yuba, Sutter, and Yolo counties, excluding those lands located in the Tahoe Basin. The Project site is in Sacramento County. Under SB 375, SACOG adopted the Metropolitan Transportation Plan/Sustainable Communities Strategy 2035 (MTP/SCS) in 2016. SACOG was tasked by CARB to achieve a 7-percent per capita reduction compared to 2012 emissions by 2020 and a 16-percent per capita reduction by 2035, both of which CARB confirmed the region would achieve by implementing the

MTP/SCS (CARB 2016). In March 2018, CARB promulgated revised targets tasking SACOG to achieve a 7-percent and a 19-percent per capita reduction by 2020 and 2035, respectively (CARB 2018b). SACOG completed and adopted its most recent 2020 MTP/SCS in November 2019 (SACOG 2019).

Legislation Associated with Electricity Generation

The State has passed legislation requiring the increasing use of renewables to produce electricity for consumers. California utilities are required to generate 33 percent of their electricity from renewables by 2020 (SB X1-2 of 2011); 52 percent by 2027 (SB 100 of 2018); 60 percent by 2030 (also SB 100 of 2018); and 100 percent by 2045 (also SB 100 of 2018).

Building Energy Efficiency Standards (Title 24, Part 6)

The energy consumption of new residential and nonresidential buildings in California is regulated by the California Code of Regulations Title 24, Part 6, Building Energy Efficiency Standards (California Energy Code). The California Energy Commission (CEC) updates the California Energy Code every three years with more stringent design requirements for reduced energy consumption, which results in the generation of fewer GHG emissions. The 2022 California Energy Code went into effect on January 1, 2023. The 2022 California Energy Code advances the onsite energy generation progress started in the 2019 California Energy Code by encouraging electric heat pump technology and use, establishing electric-ready requirements when natural gas is installed, expanding solar photovoltaic (PV) system and battery storage standards, and strengthening ventilation standards to improve indoor air quality. CEC estimates that the 2022 California Energy Code will save consumers \$1.5 billion and reduce GHGs by 10 million metric tons of carbon dioxide-equivalent over the next 30 years (CEC 2021).

LOCAL

Sacramento Metropolitan Air Quality Management District

The Sacramento Metropolitan Air Quality Management District (SMAQMD) is the primary agency responsible for addressing air quality concerns in all of Sacramento County—its role is discussed further in Section 3.2, “Air Quality,” of this Draft SEIR. SMAQMD also recommends methods for analyzing project-generated GHGs in CEQA analyses and offers multiple potential GHG reduction measures for land use development projects. SMAQMD developed thresholds of significance to provide a uniform scale to measure the significance of GHG emissions from land use and stationary source projects in compliance with CEQA to align with the statewide GHG target of 40 percent below 1990 levels by 2030 with passage of SB 32 for land use development projects (SMAQMD 2021).

SMAQMD’s new published new guidance to address GHGs was released in February 2021. SMAQMD recommends that an 1,100 metric tons of carbon dioxide equivalent (MTCO_{2e}) be applied as a bright-line threshold of significance for evaluating construction emissions of GHGs. SMAQMD also recommends a tiered approach to evaluating the significance of operational emissions. All projects are required to implement the following tier 1 best management practices (BMP):

- ▶ BMP 1 – Projects shall be designed and constructed without natural gas infrastructure.
- ▶ BMP 2 – Projects shall meet the current CalGreen Tier 2 standards, except all electric vehicle capable spaces shall instead be electric vehicle ready.

Projects can screen out by comparing to the SMAQMD’s operational screening levels table (equivalent to 1,100 MTCO_{2e}/year), including implementation of tier 1 BMPs. If the project emissions exceed the screening level, or the project fails to implement tier 1 BMPs, the project may have a cumulatively considerable contribution to a significant cumulative environmental impact, and all feasible mitigation is required. Projects exceeding the screening level, must implement tier 1 and tier 2 BMPs, or provide equivalent onsite or off-site mitigation measures.

SMAQMD also provides guidance for program-level analysis of general plans and area plans. The Project would meet the criteria of a General Plan Element Update as the Project would result in amendments to the existing General Plan, and therefore, SMAQMD’s guidance for general plans will be used in this analysis (SMAQMD 2020). SMAQMD recommends that program-level analyses “incorporate development policies, standards, and mitigation measures

achieving GHG reductions that result in a less-than-significant impact with respect to GHG emissions, this could alleviate the need to evaluate and mitigate GHGs at the project level for projects that are found to be consistent with the general or area plan” (SMAQMD 2020: 9-9). This recommendation for program level analysis can be satisfied through the development of a qualified CAP that accompanies a general plan.

City of Elk Grove General Plan

The *City of Elk Grove General Plan* contains the following policies and standards related to climate change that apply to the Project (City of Elk Grove 2019a):

- ▶ **Policy NR-5-2:** Improve the health and sustainability of the community through improved regional air quality and reduction of greenhouse gas emissions that contribute to climate change.
- ▶ **Policy NR-6-1:** Promote energy efficiency and conservation strategies to help residents and businesses save money and conserve valuable resources.
- ▶ **Policy NR-6-3:** Promote innovation in energy efficiency.
- ▶ **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-6-6:** Encourage renewable energy options that are affordable and benefit all community members.
- ▶ **Policy NR-6-7:** Encourage the use of solar energy systems in homes, commercial businesses, and City facilities as a form of renewable energy.
- ▶ **Policy H-2-3:** Support energy-conserving programs in the production and rehabilitation of affordable housing to reduce household energy costs, improve air quality, and mitigate potential impacts of climate change in the region.
- ▶ **Policy ER-6-11:** Seek to provide the community with information relating to sustainability, climate change, and innovative development strategies.

City of Elk Grove Climate Action Plan

The *City of Elk Grove Climate Action Plan 2019 Update (CAP)*, adopted in February 2019 and amended in December 2019 and December 2022 by the City, was incorporated into the current General Plan (discussed above). The CAP includes GHG emission reduction targets, strategies, and implementation measures developed to help the City reach these targets. Reduction strategies address GHG emissions associated with transportation and land use, energy, water, waste management and recycling, agriculture, and open space. Through the deployment of measures included in the CAP, as well as reductions achieved by Statewide regulatory schemes, consistent with direction from SB 32, the City would achieve a per capita emissions target of 4.1 MTCO_{2e} per year by 2030; however, based on projection within the CAP, the City would be expected to reduce per capita emissions to 3.0 MTCO_{2e} per year by 2050, which exceeds the State’s 2050 reduction target of 1.4 MTCO_{2e} per year (City of Elk Grove 2019b: 4-3). As discussed in the CAP, “additional technological advances across multiple sectors would be required to reduce emission further, combined with additional regulatory actions at the State or federal levels.” Further, the City “would identify new or modified GHG reduction measures that would achieve longer-term, post-2030 targets that may be set by the State or others in the future” (City of Elk Grove 2018: 5.7-37). The following GHG reduction actions would apply to development under the Project:

- ▶ **BE-1. Building Stock: Promote Energy Conservation.** Promote energy conservation by residents and businesses in existing structures in close coordination with other agencies and local energy providers, including the Sacramento Municipal Utility District (SMUD) and Pacific Gas and Electric (PG&E).
- ▶ **BE-4. Building Stock: Encourage or Require Green Building Practices in New Construction.** Encourage new construction projects to comply with CALGreen Tier 1 standards, including a 15 percent improvement over minimum Title 24 Part 6 Building Energy Efficiency Standards. For projects that the City determines are not exempt from CEQA (i.e., an environmental document is required) and that qualify for project-level GHG analysis streamlining under CEQA Guidelines Section 15183.5, compliance with CALGreen Tier 1 may be required as a

mitigation measure, unless other measures are determined by the City to achieve equivalent GHG reductions such that the CAP remains on track to achieving the overall GHG reduction target.

- ▶ **BE-5. Building Stock: Phase in Zero Net Energy Standards in New Construction.** Phase in zero net energy (ZNE) standards for new construction, beginning in 2020 for residential projects and 2030 for commercial projects. Specific phase-in requirements and ZNE compliance standards will be supported by updates in the triennial building code updates, beginning with the 2019 update.
- ▶ **BE-6. Building Stock: Electrification in New and Existing Residential Development.** Encourage and incentivize new residential developments to include all-electrical appliances and HVAC systems in the design of new projects. Support local utilities in implementing residential retrofit programs to help homeowners convert to all electrical appliances and HVAC systems. Explore the feasibility of phasing in minimum standards for all-electric developments. For certain projects that the City determines are not exempt from CEQA (i.e., an environmental document is required) and that qualify for project-level GHG analysis streamlining under CEQA Guidelines Section 15183.5, compliance with this measure may be required as a mitigation measure, unless other measures are determined by the City to achieve equivalent GHG reductions such that the CAP remains on track to achieving the overall GHG reduction target.
- ▶ **BE-7. Building Stock: Solar Photovoltaics in New and Existing Residential and Commercial Development.** Encourage and require installation of on-site solar photovoltaic (PV) in new single-family and low-rise multi-family developments. Promote installation of on-site PV systems in existing residential and commercial development.
- ▶ **BE-8. SMUD Greenergy and SolarShares Programs.** Encourage participation in SMUD's offsite renewable energy programs (i.e., Greenergy, SolarShares), which allow building renters and owners to opt into cleaner electricity sources.
- ▶ **TACM-5. Affordable Housing.** Continue to promote and require the development of affordable housing in the City.
- ▶ **TACM-6. Limit Vehicle Miles Traveled.** Achieve a 15 percent reduction in daily VMT compared to existing conditions (2015) for all new development in the City, consistent with state-mandated VMT reduction targets for land use and transportation projects.
- ▶ **TACM-9: EV Charging Requirements.** Adopt an electric vehicle (EV) charging station ordinance that establishes minimum EV charging standards for all new residential and commercial development. Increase the number of EV charging stations at municipal facilities throughout the City. In 2022, the City amended its municipal code to implement the requirements of Part 6 of the 2022 Title 24 California Building Code (CalGreen Code) for multi-family residential units and non-residential land uses.

The City is currently in the process of updating the existing CAP to align with long-term GHG reduction goals set forth by AB 1279. The aforementioned CAP aligns with the regulatory setting in place at the time of its adoption and includes policies capable of assisting the City in meeting the targets codified by SB 32 (40 percent reduction from 1990 emissions by 2030). The new CAP intends to include policies that will extend beyond 2030.

3.5.2 Environmental Setting

GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE

Certain gases in the earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. Solar radiation enters the atmosphere from space. A portion of the radiation is absorbed by the earth's surface, and a smaller portion of this radiation is reflected toward space. The absorbed radiation is then emitted from the earth as low-frequency infrared radiation. Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth.

Prominent GHGs contributing to the greenhouse effect are CO₂, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Human-caused emissions of these GHGs in excess of natural ambient concentrations are found to be responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. It is "extremely likely" that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations and other anthropogenic forcing (IPCC 2014).

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas most pollutants with localized air quality effects have relatively short atmospheric lifetimes (approximately 1 day), GHGs have long atmospheric lifetimes (1 year to several thousand years). GHGs persist in the atmosphere long enough to be dispersed around the globe. Although the lifetime of any GHG molecule depends on multiple variables and cannot be determined with any certainty, it is understood that more CO₂ is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO₂ emissions, approximately 55 percent are estimated to be sequestered through ocean and land uptake every year, averaged over the last 50 years, whereas the remaining 45 percent of human-caused CO₂ emissions remain stored in the atmosphere (IPCC 2013).

The quantity of GHGs in the atmosphere responsible for climate change is not precisely known, but it is considered to be enormous. No single project alone would measurably contribute to an incremental change in the global average temperature or to global or local climates or microclimates. From the standpoint of CEQA, GHG impacts relative to global climate change are inherently cumulative.

GREENHOUSE GAS EMISSION SOURCES

As discussed previously, GHG emissions are attributable in large part to human activities. The total GHG inventory for California in 2019 was 418 MMTCO_{2e} (CARB 2021). This is less than the 2020 target of 431 MMTCO_{2e} (CARB 2021).

A GHG inventory for the City is provided in the City's CAP and summarized in Table 3.5-1. As shown below, on-road vehicles and residential, commercial, and industrial energy consumption constitute the greatest sources of emissions.

Table 3.5-1 City of Elk Grove's Greenhouse Gas Emissions Inventory for 2013 and Business-as-Usual Forecast Years (MTCO_{2e})

| Emissions Sector | 2013 | 2020 | 2030 | 2050 |
|------------------------------|---------|-----------|-----------|-----------|
| On-Road Vehicles | 730,340 | 645,542 | 844,317 | 1,241,867 |
| Residential Energy | 231,400 | 257,171 | 310,017 | 413,560 |
| Commercial/Industrial Energy | 129,860 | 147,685 | 196,037 | 293,532 |
| Off-Road Vehicles | 93,340 | 102,776 | 123,896 | 165,275 |
| Solid Waste | 26,260 | 36,181 | 39,817 | 47,781 |
| Wastewater | 3,854 | 4,283 | 5,163 | 6,888 |
| Water-Related | 2,708 | 3,010 | 3,628 | 4,840 |
| Agriculture | 1,030 | 2,585 | 1,061 | 299 |
| Total | 918,790 | 1,199,232 | 1,523,936 | 2,174,042 |

Notes: Totals may not equal the sum of the numbers because of independent rounding.

MTCO_{2e} = metric tons of carbon dioxide equivalent.

Source: City of Elk Grove 2019b: Appendix A.

As shown in Table 3.5-1, the transportation and building sectors are the largest GHG emission sectors in the City.

Emissions of CO₂ are byproducts of fossil fuel combustion. Methane, a highly potent GHG, primarily results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) and is largely associated with agricultural practices, landfills, and forest fires. Nitrous oxide is also largely attributable to

agricultural practices and soil management. CO₂ sinks, or reservoirs, include vegetation and the ocean, which absorb CO₂ through sequestration and dissolution (CO₂ dissolving into the water) and are two of the most common processes for removing CO₂ from the atmosphere.

EFFECTS OF CLIMATE CHANGE ON THE ENVIRONMENT

According to IPCC, which was established in 1988 by the World Meteorological Organization and the United Nations Environment Programme, global average temperature will increase by 3.7 to 4.8 degrees Celsius (°C) (6.7 to 8.6 degrees Fahrenheit [°F]) by the end of the century unless additional efforts to reduce GHG emissions are made (IPCC 2014:10). According to *California's Fourth Climate Change Assessment*, with global GHGs reduced at a moderate rate California will experience average daily high temperatures that are warmer than the historic average by 2.5 °F from 2006 to 2039, by 4.4 °F from 2040 to 2069, and by 5.6 °F from 2070 to 2100; and if GHG emissions continue at current rates then California will experience average daily high temperatures that are warmer than the historic average by 2.7 °F from 2006 to 2039, by 5.8 °F from 2040 to 2069, and by 8.8 °F from 2070 to 2100 (OPR et al. 2018).

Since its previous climate change assessment in 2012, California has experienced several of the most extreme natural events in its recorded history: a severe drought from 2012–2016, an almost non-existent Sierra Nevada winter snowpack in 2014–2015, increasingly large and severe wildfires, and back-to-back years of the warmest average temperatures (OPR et al. 2018). According to California Natural Resource Agency's *Safeguarding California Plan: 2018 Update*, California experienced the driest 4-year statewide precipitation on record from 2012 through 2015; the warmest years on average in 2014, 2015, and 2016; and the smallest and second smallest Sierra snowpack on record in 2015 and 2014 (CNRA 2018). According to the National Oceanic and Atmospheric Administration and the National Aeronautics and Space Administration, 2016, 2017, and 2018 were the hottest recorded years in history (NOAA 2019). In contrast, the northern Sierra Nevada experienced one of its wettest years on record during the 2016–2017 water year (CNRA 2018). The changes in precipitation exacerbate wildfires throughout California through a cycle of high vegetative growth coupled with dry, hot periods which lowers the moisture content of fuel loads. As a result, the frequency, size, and devastation of forest fires has increased. In November 2018, the Camp Fire completely destroyed the town of Paradise in Butte County and caused 85 fatalities, becoming the state's deadliest fire in recorded history, and the largest fires in the state's history have occurred in the 2018–2020 period. Moreover, changes in the intensity of precipitation events following wildfires can also result in devastating landslides. In January 2018, following the Thomas Fire, 0.5 inch of rain fell in 5 minutes in Santa Barbara causing destructive mudslides formed from the debris and loose soil left behind by the fire. These mudslides resulted in 21 deaths.

As temperatures increase, the amount of precipitation falling as rain rather than snow also increases, which could lead to increased flooding because water that would normally be held in the snowpack of the Sierra Nevada and Cascade Range until spring would flow into the Central Valley during winter rainstorm events. This scenario would place more pressure on California's levee/flood control system (CNRA 2018). Portions of the City are within the 100-year and 200-year floodplain and may see increases in flood hazards in the future. Furthermore, in the extreme scenario involving the rapid loss of the Antarctic ice sheet and the glaciers atop Greenland, the sea level along California's coastline is expected to rise 54 inches by 2100 if GHG emissions continue at current rates (OPR et al. 2018).

Temperature increases and changes to historical precipitation patterns will likely affect ecological productivity and stability. Existing habitats may migrate from climatic changes where possible, and those habitats and species that lack the ability to retreat will be severely threatened. Altered climate conditions will also facilitate the movement of invasive species to new habitats thus outcompeting native species. Altered climatic conditions dramatically endanger the survival of arthropods (e.g., insects, spiders) which could have cascading effects throughout ecosystems (Lister and Garcia 2018). Conversely, a warming climate may support the populations of other insects such as ticks and mosquitos, which transmit diseases harmful to human health such as the Zika virus, West Nile virus, and Lyme disease (European Commission Joint Research Centre 2018).

Changes in temperature, precipitation patterns, extreme weather events, wildfires, and sea-level rise have the potential to threaten transportation and energy infrastructure, crop production, forests and rangelands, and public health (CNRA 2018; OPR et al. 2018). The effects of climate change will also have an indirect adverse impact on the economy as more severe natural disasters cause expensive, physical damage to communities and the state.

Additionally, adjusting to the physical changes associated with climate change can produce mental health impacts such as depression and anxiety.

3.5.3 Environmental Impacts and Mitigation Measures

METHODOLOGY

The following impact analysis is based primarily on review of the information and analysis presented in the General Plan EIR then compared to Project-related modeling performed for this analysis.

The analysis in this section is consistent with the recommendations of the SMAQMD's Guide to Air Quality Assessment in Sacramento County, Chapter 9, Program-Level Analysis of General Plans and Area Plans (SMAQMD 2020b). The analysis primarily focuses on the extent to which the Project would conflict with a plan for reduction of GHG emissions as defined by CEQA Guidelines Section 15183.5. Both short-term construction emissions and long-term operational emissions were calculated using the California Emissions Estimator Model (CalEEMod), version 2020.4.0, computer program.

SMAQMD recommends that construction emissions be estimated for program levels of analysis consistent with guidance provided for project-level analyses. As indicated in Chapter 2, "Project Description," the Project entails various density adjustments to the current General Plan. There is uncertainty surrounding the schedule and exact location of where development would occur, therefore, construction emissions were modeled using the assumptions that development would occur gradually over the course of the General Plan's horizon year (2040). The acreages of the land uses proposed under the Project were used. Due to the programmatic nature of this analysis, CalEEMod default values for trip generation, heavy-duty equipment type, and construction phasing were used.

With respect to operational emissions, mobile source emissions were estimated using Project-estimated annual VMT derived from the traffic study prepared for the Project (see Section 3.9, "Transportation"). Energy-, area-, solid waste-, and water-sourced emissions were estimated using CalEEMod default values. These emissions are disclosed for informational purposes.

The City updated its CAP concurrently with the General Plan in 2019 (the 2019 CAP). The 2019 CAP is intended to carry out the 2019 General Plan goals and policies to reduce GHG emissions and address the impacts of climate change. The City's GHG emissions inventory and forecasts were updated to reflect new activity data and both current and projected population, housing, and employment demographic information consistent with the General Plan. The 2019 CAP includes GHG emissions reduction targets of 7.6 MTCO₂e per capita by 2020, and 4.1 MTCO₂e per capita by 2030. These targets are consistent with guidance provided to local governments in the 2017 Scoping Plan on setting plan-level GHG reduction goals that are consistent with the state's efforts to achieve the 2030 target established by SB 32. Consistency with the 2019 CAP is evaluated in this analysis. As noted in Section 3.5.1, "Regulatory Setting," the CAP is currently being updated to comply with the 2022 Scoping Plan Update, recently adopted by CARB in December 2022. However, at the time of preparing this analysis, this new CAP has not been adopted.

Detailed model assumptions and inputs for these calculations are presented in Appendix D.

THRESHOLDS OF SIGNIFICANCE

The issue of global climate change is inherently a cumulative issue because the GHG emissions of individual projects cannot be shown to have any material effect on global climate. Thus, the Project's impact on climate change is addressed only as a cumulative impact.

The significance criteria used to evaluate project impacts on climate change under CEQA are based on Section 15064 of the CEQA statute and relevant portions of Appendix G of the State CEQA Guidelines, which recommend that a lead agency consider a project's consistency with relevant, adopted plans and discuss any inconsistencies with

applicable regional plans, including plans to reduce GHG emissions. Implementation of a project would result in a cumulatively considerable contribution to climate change if it would:

- ▶ generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- ▶ conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

With respect to GHG emissions, the CEQA Guidelines Section 15064.4(a) states that lead agencies “shall make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate” GHG emissions resulting from a project. The CEQA Guidelines note that an agency has the discretion to either quantify a project’s GHG emissions or rely on a “qualitative analysis or performance-based standards” (Section 15064.4[a]). A lead agency may use a “model or methodology” to estimate GHG emissions and has the discretion to select the model or methodology it considers “most appropriate to enable decision makers to intelligently take into account the project’s incremental contribution to climate change” (Section 15064.4[c]). The CEQA Guidelines provide that the lead agency should consider the following when determining the significance of impacts from GHG emissions on the environment (Section 15064.4[b]):

- ▶ The extent a project may increase or reduce GHG emissions as compared to the existing environmental setting.
- ▶ Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
- ▶ The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

CEQA Guidelines Appendix G is a sample Initial Study checklist that includes a number of factual inquiries related to the subject of climate change, as it does on a whole series of additional environmental topics. Notably, lead agencies are under no obligation to use these inquiries in fashioning thresholds of significance on these subjects, or indeed on any subject addressed in the checklist. (*Save Cuyama Valley v. County of Santa Barbara* (2013) 213 Cal.App.4th 1059, 1068.) Rather, with few exceptions, “CEQA grants agencies discretion to develop their own thresholds of significance.” (*Ibid.*) Even so, it is a common practice for lead agencies to take the language from the inquiries set forth in Appendix G and to use that language in fashioning thresholds. The City has done so here.

Since California’s legislative mandate to reduce total projected GHG emissions to 1990 levels by the year 2020 has been achieved, the focus is now on reducing emissions 40 percent below 1990 levels by the year 2030 (SB 32), 85 percent below 1990 levels by 2045 (AB 1279), and carbon neutrality by 2045 (AB 1279). To achieve these targets, future development must be planned and implemented in the most GHG-efficient manner possible. GHG-efficient development reduces VMT by supporting compact, dense, mixed-use, pedestrian and bicycle-friendly, transit-oriented development. Development that reduces VMT by shifting car trips to walking, biking and transit use also imparts numerous public health co-benefits, such as increases in rates of routine physical activity and corresponding reductions in rates of obesity, diabetes, hypertension, and other chronic conditions; fewer injuries and deaths from traffic collisions; and more direct visual surveillance of the urban environment, which leads to reduced rates of crime and violence. Local agencies are strongly encouraged to address GHG emissions when updating and/or adopting general and area plans. The general plan is perhaps the best venue for addressing GHG emissions in making meaningful progress toward attaining GHG reduction goals while addressing CEQA requirements.

As stated previously, the 2019 Elk Grove General Plan was prepared in conjunction with the City’s 2019 CAP. The CAP is a qualified plan that has service metric targets for 2030 pursuant to the statewide reduction goals set forth by SB 32. However, development under the Project would extend beyond 2030 (i.e., 2040). As stated in the CAP, the CAP “demonstrates initial progress towards meeting the State’s long-term 2050 goal of reducing emissions to 80 percent below 1990 levels as stated in Executive Order S-03-05” (City of Elk Grove 2019b). The CAP sets a target to reduce emissions in the City to 1.4 MTCO₂e per capita by 2050. While 2020 and 2030 comprise the primary focus years of the CAP, the CAP, and future updates to it, establishes and quantifies measures that will evolve and expand into the future to ensure that the City meets its target by 2050. 2040 is the projected first full year of operation of the development under the Project; therefore, to determine the potential significance of the Project, the Project will be

evaluated for its consistency with the 2019 CAP. For the purposes of determining the significance of the Project, the Project would result in a cumulatively considerable contribution to climate change if it would:

- ▶ Not meet the 1.4 MTCO₂ per capita target for 2050 contained in the 2019 CAP.

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Impact 3.5-1: Project-Generated GHG Emissions and Consistency with Plans and Regulations

The General Plan EIR determined that GHG-related impacts would be less than significant through the incorporation of GHG reduction actions included in the General Plan and 2019 CAP (Impact 5.7.1) but would not likely meet long term reduction goals under Executive Order S-3-05 and result in a significant and unavoidable impact (Impact 5.7.2).

Construction and operation of development under the Project would generate an estimated 29,701 MTCO₂e/year in 2040, the assumed first full year of Project operation. Consistent with the findings of the General Plan EIR, new development under the Project would be subject to the policies contained in the 2019 CAP and 2019 General Plan, which would demonstrate consistency with statewide GHG reduction goals set forth by SB 32. However, development under the Project would extend beyond 2030 into 2040 and beyond. While the current CAP has a long-term reduction target for 2050 of 1.4 MTCO₂e per capita, the measures of the CAP are designed to reduce the gap in emission between a business-as-usual scenario for 2020 and 2030 but do not currently fully address reduction targets for 2050. Also, since the time the current CAP was prepared GHG reduction goals have become more stringent (i.e., 80 percent reduction in 1990 GHG emissions by 2050 versus an 85 percent reduction in 1990 GHG emissions by 2045).

Because the measures of the current CAP are limited to target years of 2020 and 2030, it does not account for the newest GHG reduction targets, and compliance with CAP measures would not be sufficient to meet the State's long-term targets. Due to the more stringent GHG reduction targets and increase in emissions, this impact would result in a substantially more severe impact than what was addressed in the General Plan EIR. Project impacts would be **significant and unavoidable**.

LEA Community Plan

Impact 5.7.2 of the General Plan EIR evaluated the General Plan's potential to conflict with long-term statewide GHG reduction goals for 2050. The General Plan EIR determined that development under the General Plan had the potential to conflict with statewide GHG reduction goals for 2050 because the measures of the CAP would only be sufficient to reduce GHG emissions to 3.0 MTCO₂ per capita, Impact 5.7.2 found the General Plan to have significant and unavoidable climate change impacts.

Construction-related activities associated with the Project would generate GHG emissions from the use of heavy-duty off-road equipment, materials transport, and worker commute. Based on modeling conducted for the Project, the Project would generate an estimated total 24,400 MTCO₂e from construction activity. SMAQMD recommends that project-level construction emissions be measured against a 1,100 MTCO₂e per year significance threshold which would be applied to projects undergoing project-level review. Refer to Appendix D for detailed construction modeling inputs and parameters.

Operation of the Project, which includes the LEA Community Plan Area, would directly generate GHG emissions from vehicle movement throughout the Planning Area, on-site natural gas consumption (e.g., stoves, fireplaces, water heaters), and use of landscaping equipment. GHGs would be indirectly emitted from electricity consumption, solid waste disposal at landfills, and water and wastewater treatment.

Table 3.5-2 summarizes the anticipated level of emissions for the Project by emissions sector. Refer to Appendix D for detailed input parameters and assumptions.

Table 3.5-2 Greenhouse Gas Emissions of the Project in 2040

| Emissions Sector | MTCO ₂ e |
|--|---------------------|
| Mobile Source | 12,164 |
| Energy Consumption ¹ | 4,069 |
| Solid Waste Generation | 667 |
| Water Consumption and Wastewater Treatment | 478 |
| Area Sources | 50 |
| Total Operational GHG Emissions | 17,426 |
| GHG Emissions per Capita | 2.9 |

Notes: Totals may not add due to rounding.

MTCO₂e = metric tons of carbon dioxide equivalent, MTCO₂e/year/SP = metric tons of carbon dioxide equivalent per year per service population.

¹ Energy was estimated in accordance with the 2019 California Energy Code (Part 6 of the Title 24 California Building Code). The California Energy Code is updated triennially and expected to enhance the energy efficiency and decarbonization of future development.

See Appendix D for detailed input parameters and modeling results.

Source: Modeled by Ascent Environmental in 2022.

As shown in Table 3.5-2, operation of the Project would generate approximately 17,426 MTCO₂e/year or 2.9 MTCO₂e per capita in 2040, the assumed first full year of Project operation. This is close to the per capita estimates in the CAP for 2050. While this estimate does not satisfy the target of 1.4 MTCO₂e per capita by 2050, it is relatively consistent with the projections in the 2019 CAP. Notably, the CAP does not establish a GHG reduction target for the year 2040. The General Plan EIR's GHG emissions inventory included operational emissions from the land uses sites identified in the previous General Plan land use maps. Implementation of the Project would introduce new operational emissions from increased density; however, as explained in the City's CAP, the projected GHG inventories for 2030 and 2050 contained assumptions pertaining to regional population growth, new households, and driving behavior.

Consistent with the analysis performed in the General Plan EIR, the Project would be subject to GHG reduction actions outlined in the 2019 CAP, which would reduce construction and operational emissions. Measures BE-1, BE-4, BE-5, BE-6, BE-7, BE-8, TACM-6, TACM-8, TACM-9, and ACM-5 from the 2019 CAP would apply to residential and nonresidential development constructed as part of implementation of the LEA Community Plan. The LEA Community Plan is designed to provide a walkable urban area in the City with a variety of mobility options and neighborhood streets. The centers of each of the three transections in the LEA Community Plan Area would be defined by the assemblage of diverse and dense land uses and public features such as plazas, parks, gathering spaces, and access to public transit. Therefore, the LEA Community Plan Area would be designed to promote alternative transportation and reduce mobile GHG emissions.

Additionally, the Elk Grove Municipal Code (EGMC) Chapter 16.07 provides streamlined permitting for EV charging stations. Future development constructed and operated under the LEA Community Plan that seeks to install EV charging stations would be entitled to use the streamlining mechanisms outlined in EGMC Chapter 16.07. EGMC Section 23.58.120 requires one "EV ready" parking space for all new one family and two-family dwelling units. This section also requires that 2.5 percent of parking for multifamily projects provide EV charging and an additional 2.5 percent of parking be ready for future EV charging expansion. This section additionally implements the requirements of Part 6 of the 2022 Title 24 California Building Code (CalGreen Code) for multi-family residential units and non-residential land uses. Compliance with these measures would be demonstrated in subsequent project building and site plan submittals for building permit approval and/or design review.

Although implementation of the Project would result in both direct and indirect GHG emissions, the 2019 CAP and associated General Plan policies would reduce emissions consistent with local GHG emissions reduction targets that were developed in consideration of the statewide 2030 reduction target established by SB 32 and the 2017 Scoping Plan. Unmitigated GHG emissions would increase under the Project due to the construction and operation of new development; however, as stated previously, the CAP's future GHG forecast included new emissions from regional population growth, additional household, and changing in driving behaviors. The CAP measures were developed in

consideration of this growth and adjusted accordingly to achieve the GHG reduction targets set forth by SB 32 and Executive Order S-3-05. As stated in the CAP, “[t]he City is also committed to updating the inventory, forecast, and reduction measures a minimum of once every five years. The City will use an implementation and monitoring tool to assist in tracking progress on CAP implementation and developing annual report for City Council presentations.”

Nevertheless, development under the LEA Community Plan, and the Project in a greater context, extends beyond 2030 to 2040 and beyond. The CAP establishes a long-term reduction target for 2050 of 1.4 MTCO₂e per capita however, the current CAP does not contain measures sufficient to meet this target. This is in large part because the gap between an unmitigated BAU scenario and adjusted BAU could not be accurately depicted at the time of preparing the current CAP due to the uncertainty of the nature and breadth of regulatory mechanisms that would be enacted by the state to achieve long-term targets extending to 2050, as well as available technology and systems. For instances, the regulatory landscape during the preparation of the CAP did not encompass the targets set forth by AB 1279 (i.e., carbon neutrality and a reduction of 85 percent less than 1990 emissions by 2045) and the future 2022 Scoping Plan. Therefore, the CAP, as it is currently written, does not address the state’s more recent long-term GHG reduction targets.

The City has made a commitment to ensure the efficacy of the CAP will improve over time through identifying the GHG reduction actions that achieve the greatest reductions, removing or amending the existing GHG reduction actions that are not reducing emissions, and adding new GHG reduction actions in response to new technologies, practices, and feasibility. As stated in the CAP, the CAP will “be reviewed every five years to understand the successes and barrier of implementation and ensure the most appropriate information and emissions reduction measures are included” (City of Elk Grove 2019: 1-3). Additionally, future GHG inventories would account for new data pertaining to regional growth and housing needs, which is being met as an objective of the LEA Community Plan.

Despite this commitment, the existing CAP measures would not be sufficient to reduce the City’s per capita emissions to the 2050 target, or until 2040 had a target been available at the time the CAP was prepared. While the CAP is currently being updated and is planned to be adopted in 2024, the targets of the existing CAP do not address the state’s most recent regulatory targets of carbon neutrality and a reduction of 85 percent below 1990 emissions levels by 2045. It is currently not known how the CAP update would address these new standards and what additional reduction measures may be applied to future development.

Portions of the LEA Community Plan Area have been previously analyzed in certified CEQA documents for the following projects: Southeast Policy Area Strategic Plan, Laguna Ridge Specific Plan, and Lent Ranch Marketplace Special Planning Area (SPA). Mitigation measures from the Southeast Policy Area Strategic Plan EIR include requirements related to reduction of GHG emissions. A comprehensive list of mitigation measures from these community plans prior environmental review are included in Appendix G. Mitigation from the Southeast Policy Area Strategic Plan includes measures to reduce GHG emissions based on measures from the City’s CAP and Elk Grove Municipal Code. Although as equivalent in effectiveness as requirements contained in the General Plan, Elk Grove Municipal Code, and exiting CAP mitigation measures would not be sufficient to reduce the City’s per capita emissions to the 2050 target.

With new long-term targets that are more aggressive than and supersede the state’s previous long-term targets of reducing emissions by 80 percent below 1990 levels by 2050, the Project would exceed emissions targets at a higher rate than anticipated as part of the General Plan. Because the Project would introduce development not captured in the inventory prepared for the CAP (i.e., the Project introduces land uses inconsistent with the assumptions of the previous General Plan) the efficacy of the CAP measures becomes more speculative. For this reason, impacts would be more severe than identified in the General Plan EIR. Because the CAP does not include the most recent regulations and there is no other mitigation available to reduce GHG impacts, this impact would be **significant and unavoidable**.

General Plan Land Use Designation Amendments

Construction and operational GHG emissions anticipated to occur from the proposed General Plan land use amendments in the Old Town Policy Area was included in the overall construction and operational modeling associated with the Project (see Table 3.5-2). As discussed above, the Project would generate emissions similar to those discussed in the General Plan EIR. Development in the Old Town Policy Area would similarly be subject to requirements of the City’s CAP and EGMC to reduce GHG emissions. However, it is currently not known how the CAP update would address the state’s newest GHG reduction goals and what additional reduction measures may be

applied to future development to do its “fair share” in meeting those goals. With these new long-term targets that are more aggressive than and supersede the state’s previous long-term targets of reducing emissions by 80 percent below 1990 levels, the Project would exceed emissions targets at a higher rate than anticipated as part of the General Plan. Construction- and operation-related emissions from implementation of the proposed General Plan land use amendments would result in a new or substantially more severe climate change impacts that was addressed in the General Plan EIR. Impacts would be **significant and unavoidable**.

Grant Line Road Precise Roadway Study

Construction emissions usage anticipated to occur from Grant Line Road Precise Roadway Study was included in the overall construction modeling associated with the Project. Construction of the Precise Study would generate short-term construction emissions; however, the Precise Study would not individually generate more vehicle trips and associated GHG mobile emissions as compared to the General Plan. Therefore, no operational emissions would occur from buildout of the Precise Plan. Construction emissions from implementation of the Precise Study would not result in a new or substantially more severe energy impacts that was addressed in the General Plan EIR. Impacts would be remain **significant and unavoidable**.

South and West Study Areas

Construction and operational GHG emissions anticipated to occur from the South and West Study Areas was included in the overall construction and operational modeling associated with the Project (see Table 3.5-2). As discussed above, the Project would generate emissions similar to those discussed in the General Plan EIR. Development in the South and West Study Areas would similarly be subject to requirements of the City’s CAP and EGMC to reduce GHG emissions. However, it is currently not known how the CAP update would address the state’s newest GHG reduction goals and what additional reduction measures may be applied to future development to do its “fair share” in meeting those goals. With these new long-term targets that are more aggressive than and supersede the state’s previous long-term targets of reducing emissions by 80 percent below 1990 levels, the Project would exceed emissions targets at a higher rate than anticipated as part of the General Plan. Construction- and operation-related emissions from implementation of the South and West Study Areas would result in a new or substantially more severe climate change impacts that was addressed in the General Plan EIR. Impacts would be **significant and unavoidable**.

Mitigation Measures

No additional mitigation is available beyond compliance with Measures BE-1, BE-4, BE-5, BE-6, BE-7, BE-8, TACM-6, TACM-8, TACM-9, and ACM-5 from the 2019 CAP and EGMC Chapter 16.07 and Section 23.58.120. The City is in the process of updating the 2019 CAP to meet the most recent regulatory requirements, however the CAP would not be completed before adoption of the Project.

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