

4.5—GREENHOUSE GAS EMISSIONS

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This section of the subsequent environmental impact report (SEIR) documents potential impacts associated with greenhouse gas (GHG) emissions and plans for reducing GHG emissions that would occur as a result of the project.

The information in this section is based on a peer review of an applicant-prepared study and publicly available sources. The applicant-prepared study used is:

- *Air and Greenhouse Gas Emissions Study, Eliot Quarry SMP-23 Reclamation Plan Amendment Project, Alameda County, California* (Compass Land Group 2019) (Appendix C-1, “Air Quality and Greenhouse Gases Report,” of this SEIR)

This analysis was peer reviewed by the County-retained Yorke Engineering, LLC in May of 2019. The peer review letter reports are on file with the County. The applicant revised the referenced analysis and provided responses to the peer reviewer comments, which are also on file with the County. Appendix C-1, dated December 2019, adequately addressed the peer reviewer’s comments and questions.

4.5.1 Greenhouse Gas Conditions at the Time of the LAVQAR EIR

The *Livermore-Amador Valley Quarry Area Reclamation Specific Plan Environmental Impact Report* (LAVQAR EIR) did not evaluate or discuss greenhouse gas. Air quality conditions at the time of the LAVQAR EIR are discussed in Section 4.2, “Air Quality.”

4.5.2 Environmental Setting

This section discusses GHGs and climate change issues to provide a context for the analysis of project impacts associated with GHG emissions. It also provides a discussion of the actions and phenomena that contribute to climate change and puts into context global, national, and state emissions of GHGs. The term “climate change” is often used interchangeably with the term “global warming;” however, “climate change” is the preferred term because it helps convey that there are other changes in addition to rising temperatures (NAS 2005).

4.5.2.1 The Greenhouse Effect and Greenhouse Gases

GHGs trap heat in the atmosphere. Principal GHGs include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), O₃, and water vapor (H₂O). Some GHGs, such as CO₂, CH₄, and N₂O, occur naturally and are emitted into the atmosphere through natural processes and human activities. Of these gases, CO₂ and CH₄ are emitted in the greatest quantities from human activities. Man-made GHGs, which have a much greater heat-absorption potential than CO₂, include fluorinated gases, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF₆), and nitrogen trifluoride (NF₃), are associated with certain industrial products and processes. The major GHGs emitted by human activities remain in the atmosphere for periods ranging from decades to centuries; therefore, it is expected that atmospheric concentrations of GHGs will continue to rise over the next few decades (EPA 2020d).

Human activity has been increasing the concentration of GHGs in the atmosphere (mostly carbon dioxide from combustion of coal, oil, and gas, and a few other trace gases). Human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C. Global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate.

A warming trend from anthropogenic emissions, or human activity, from the pre-industrial period to the present is predicted to persist for centuries to millennia and continue to cause further long-term changes in the climate system, such as sea level rise, with associated impacts. Climate models project robust differences in regional climate characteristics between present-day and global warming of 1.5°C, and between 1.5°C and 2°C. These differences include increases in: mean temperature in most land and ocean regions, hot extremes in most inhabited regions, heavy precipitation in several regions, and the probability of drought and precipitation deficits in some regions (IPCC 2018).

The effect each GHG has on climate change is measured as a combination of the volume or mass of its emissions, plus the potential of a gas or aerosol to trap heat in the atmosphere, known as its global warming potential (GWP), and is expressed as a function of how much warming would be caused by the same mass of CO₂. Thus, GHG emissions are typically measured in terms of pounds or tons of “carbon dioxide equivalent” (CO₂e).

4.5.2.2 Contributions to Greenhouse Gas Emissions

Global

Anthropogenic GHG emissions worldwide in 2010 totaled approximately 44,542 million metric tons of carbon dioxide equivalent (MMTCO₂e) (CAIT 2014). The carbon dioxide equivalent for a gas is derived by multiplying the tons of the gas by the associated GWP, such that MMTCO₂e = (million) metric tons of a GHG x (GWP of the GHG). For example, the GWP for methane is 21. This means that emissions of 1 million metric tons of methane are equivalent to emissions of 21 million metric tons of CO₂. Six countries—China, the U.S., the Russian Federation, India, Japan, and Brazil—and the European Community accounted for approximately 66 percent of the total global emissions, approximately 28,943 MMTCO₂e (CAIT 2014). Anthropogenic GHG emissions worldwide in 2011 totaled approximately 43,816 MMTCO₂e.

United States

In 2012, the United States produced 6,676 million metric tons (MMT) of CO₂ (EPA 2020b). The primary GHG emitted by human activities in the United States was CO₂, representing approximately 81 percent of total GHG emissions. The largest source of CO₂, and of overall GHG emissions, was fossil-fuel combustion, which accounted for approximately 93 percent of the CO₂ emissions. Since 1990, gross U.S. greenhouse gas emissions have increased by 3.7 percent. From year to year, emissions can rise and fall due to changes in the economy, the price of fuel, and other factors. In 2018, U.S. greenhouse gas emissions increased compared to 2017 levels. The increase in CO₂ emissions from fossil fuel combustion was a result of multiple factors, including increased energy use due to greater heating and cooling needs due to a colder winter and hotter summer in 2018 compared to 2017 (EPA 2020d).

State of California

According to the 2019 GHG inventory data compiled by California Air Resources Board (CARB) for the California Greenhouse Gas Inventory for 2000–2017, California emitted 424 MMTCO₂e of GHGs, including emission resulting from out-of-state electrical generation (CARB 2019). The primary contributors to GHG emissions in California are transportation, industry, electric power production from both in-state and out-of-state sources, agriculture, and other sources, which include commercial and residential activities. These primary contributors to California’s GHG emissions and their relative contributions in 2017 are presented in Table 4.5-1, “GHG Sources in California.”

**TABLE 4.5-1
GHG SOURCES IN CALIFORNIA**

Source	Percent of Total ^a
Agriculture	7.6%
Commercial Uses	3.6%
Electricity Generation	14.7% ^b
Industrial Uses	21.1%
Recycling and Waste	2.1%
Residential Uses	6.1%
Transportation	40.1%
High GWP Substances	4.7%
TOTAL^c	100%

Source: CARB 2019

Notes:

- a. Percentage of total has been rounded.
- b. Includes emissions associated with imported electricity, which account for 44.07 MMT CO₂e annually.
- c. Totals may not sum due to rounding.

4.5.2.3 Potential Effects of Human Activity on Climate Change

Globally, climate change has the potential to impact numerous environmental resources though uncertain impacts related to future air temperatures and precipitation patterns. Scientific modeling predicts that continued emissions of GHGs at or above current rates would induce more extreme climate changes during the 21st century than were observed during the 20th century. Estimated global warming from human activity is currently increasing at 0.2°C (likely between 0.1°C and 0.3°C) per decade due to past and ongoing emissions (IPCC 2018).

The 2014 *Safeguarding California: Reducing Climate Risk* report prepared by the California Natural Resources Agency (CNRA) identified anticipated impacts to California due to climate change through extensive modeling efforts. The Intergovernmental Panel on Climate Change’s Working Group II Report, *Climate Change 2007: Impacts, Adaptation and Vulnerability*, also describes anticipated impacts on a global scale. Collectively, the two reports indicate general climate changes in California may include the following the following events:

- Increasing evaporation;
- Rearrangement of ecosystems as species and ecosystems shift northward and to higher elevations;
- Increased frequency, duration, and intensity of conditions conducive to air pollution formation (particularly ozone);
- Reduced precipitation, changes to precipitation and runoff patterns, reduced snowfall (precipitation occurring as rain instead of snow), earlier snowmelt, decreased snowpack, and increased agricultural demand for water;
- Increased experiences of heat waves;
- Increased growing season and increased growth rates of weeds, insect pests and pathogens;
- Inundation by sea level rise, and exacerbated shoreline erosion; and
- Increased incidents and severity of wildfire events and expansion of the range and increased frequency of pest outbreaks (CNRA 2014 and IPCC 2007).

Changes described above are based on the results of several models prepared under different climatic scenarios; therefore, discrepancies may occur between projections and interpretations.

4.5.3 Regulatory Setting

Climate change has relatively recently become widely recognized as a threat to the global climate, economy, and population. As a result, the climate change regulatory setting – at the federal, state and local levels– is complex and evolving. This section identifies key legislation, executive orders, and seminal court cases related to climate change that are germane to the project’s GHG emissions.

4.5.3.1 Federal

In 2002, President George W. Bush set a national policy goal of reducing the GHG emission intensity (tons of GHG emissions per million dollars of gross domestic product) of the U.S. economy by 18% by 2012. The goal did not establish any binding reduction mandates. Rather, the United States Environmental Protection Agency (EPA) began to administer a variety of voluntary programs and partnerships with GHG emitters in which the EPA partners with industries that produce and utilize synthetic gases to reduce emissions of particularly potent GHGs.

The Bush Administration's approach to addressing climate change was challenged in *Massachusetts et al. v. Environmental Protection Agency*, 549 U.S. 497 (2007). In this decision, the U.S. Supreme Court held that the EPA was authorized by the Clean Air Act to regulate CO₂ emissions from new motor vehicles. The Court did not mandate that the EPA enact regulations to reduce GHG emissions, but found that the only instances in which the EPA could avoid taking action were if it found that GHGs do not contribute to climate change or if it offered a “reasonable explanation” for not determining that GHGs contribute to climate change.

On December 7, 2009, the EPA issued an endangerment finding under the Clean Air Act, concluding that GHGs threaten the public health and welfare of current and future generations and that motor vehicles contribute to greenhouse gas pollution. These findings provide the basis for adopting new national regulations to mandate GHG emission reductions under the federal Clean Air Act.

The following four sections summarize EPA’s recent regulatory activities with respect to various types of GHG sources.

Stationary Sources

Mandatory Greenhouse Gas Reporting Rule

Congress passed the Consolidated Appropriations Act of 2008 (HR 2764) in December 2007, which includes provisions requiring the establishment of mandatory GHG reporting requirements. On September 22, 2009, EPA issued a final rule to require reporting of GHG emissions from all sectors of the United States economy. Fossil fuel and industrial GHG suppliers, motor vehicle and engine manufacturers, and facilities that emit 25,000 metric tons or more of CO₂e per year are required to report GHG emissions data to EPA annually. The first annual reports for the largest emitting facilities, covering calendar year 2010, were submitted to EPA in 2011. This program covers approximately 85 percent of the nation’s GHG emissions and applies to roughly 10,000 facilities. USEPA’s reporting system provides a better understanding of GHG sources and will guide development of the best possible policies and programs to reduce emissions. The data also allows the reporters to track their own emissions, compare them to similar facilities, and aid in identifying cost-effective methods to reduce emissions in the future.

Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule

The Clean Air Act established the Prevention of Significant Deterioration (PSD) and Title V programs, which apply to stationary sources that emit certain levels of regulated air pollutants (generally those pollutants for which USEPA has established ambient air quality standards and their precursors or has established emission standards). The PSD applicability thresholds are up to 250 tons per year (tpy) of an attainment pollutant, while the Title V applicability thresholds are up to 100 tpy of a regulated air pollutant. On June 3, 2010, EPA published a final rule that tailors the applicability criteria that determine whether stationary sources and modification projects become subject to permitting requirements for GHG emissions under the PSD and Title V programs of the Clean Air Act (tailoring rule). Under the tailoring rule, only the largest sources of GHGs (i.e., those responsible for 70 percent of the GHG pollution from stationary sources) would be subject to these GHG permitting requirements.

In 2014, the U.S. Supreme Court issued its decision in *Utility Air Regulatory Group v. EPA* (No. 12-1146), finding that the U.S. EPA may not treat GHGs as an air pollutant for purposes of determining whether a source is a major source required to obtain a permit pursuant to the “Clean Air Act’s Prevention of Significant Deterioration” or “Title V” operating permit programs. The Court also held that PSD permits that are otherwise required (based on emissions of other pollutants) may continue to require limitations on GHG emissions based on the application of Best Available Control Technology (BACT). The U.S. EPA’s Greenhouse Gas Reporting Program requires facilities that emit 25,000 MTCO₂e. or more of GHG to report their GHG emissions to the U.S. EPA to inform future policy decisionmakers (EPA 2020f).

Mobile Sources

EPA and NHTSA Joint Rulemaking for Vehicle Standards

In response to the *Massachusetts v. EPA* U.S. Supreme Court ruling discussed above, the Bush Administration issued an Executive Order on May 14, 2007, directing the EPA, the Department of Transportation (DOT), and the Department of Energy (DOE) to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. On December 19, 2007, the Energy Independence and Security Act of 2007 (EISA) was signed into law. EISA reinforces the energy reduction goals for federal agencies put forth in Executive Order 13423, as well as introduces more aggressive requirements. The three key provisions enacted are the Corporate Average Fuel Economy Standards, the Renewable Fuel Standard (RFS), and the appliance/lighting efficiency standards. The law includes an increased Corporate Average Fuel Economy (CAFE) standard of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020. (EPA 2020e). On March 31, 2020, the National Highway and Traffic Safety Administration (NHTSA) and EPA finalized CAFE and carbon dioxide emissions standards for model years 2021-2026 (NHTSA 2020).

On June 30, 2009, the EPA granted a waiver for California for its greenhouse gas emission standards for motor vehicles. In August 2016, the USEPA and the NHTSA adopted Phase 2 of the Heavy Duty Vehicle National Program. Phase 2 aims to set performance-based standards that would be met through wider deployment of existing and advanced technologies. For diesel engines, the proposed standards began for model year 2018 engines and phase in through 2027. Phase 2 is expected to reduce GHG emissions by an additional 10 percent.

However, EPA withdrew the waiver on September 19, 2019 and announced “The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program.” NHTSA also proposed

regulatory text implementing its statutory authority to set nationally applicable fuel economy standards that made explicit that California’s programs would also be preempted under NHTSA’s authorities. The SAFE Vehicles Rule sets fuel economy and carbon dioxide standards that increase 1.5% in stringency each year from model years 2021 through 2026. These standards apply to both passenger cars and light trucks (NHSTA 2020). However, California and twenty three other states and the Cities of Los Angeles and New York have challenged the legality of the SAFE program in federal court.

Additional GHG Rules and Policies

In addition to the rules and regulations developed with respect to stationary and mobile sources, discussed above, other federal developments have aimed to reduce GHGs from other sources, including land use activities.

Energy Independence and Security Act

On December 19, 2007, President Bush signed the Energy Independence and Security Act of 2007 (EISA). Among other key measures, the Act would do the following, which would aid in the reduction of national GHG emissions:

1. Increase the supply of alternative fuel sources by setting a mandatory RFS requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.
2. Set a target of 35 miles per gallon for the combined fleet of cars and light trucks by Model Year 2020; directs National Highway Traffic Safety Administration to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.
3. Prescribe or revise standards affecting regional efficiency for heating and cooling products, procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

Additional provisions of the EISA address energy savings in government and public institutions, promoting research for alternative energy, additional research in carbon capture, international energy programs, and the creation of “green jobs.”

Partnership for Sustainable Communities

On June 16, 2009, the DOT, US Department of Housing and Urban Development, and USEPA announced the creation of the Partnership for Sustainable Communities (Partnership). The Partnership was formed to help improve access to affordable housing and transportation choices, and to lower transportation costs while protecting the environment. In order to achieve these goals, the Partnership agencies have and will continue to incorporate the following six livability principles into federal funding programs, policies and legislative proposals:

- Provide more transportation choices.
- Promote equitable, affordable housing.
- Enhance economic competitiveness.
- Support existing communities.
- Coordinate and leverage federal policies and investment.
- Value communities and neighborhoods.

Since 2009, the Partnership awarded more than \$4 billion in grants to support livability investments, provided recommendations for the sustainable siting of federal facilities, and participated in various forums to encourage sustainable housing and transportation strategies. Going forward, the Partnership plans to continue to work with existing grantees to encourage economic growth and implementation of livability principles, and leverage off of these efforts to provide additional communities with lessons learned from these experiences, as well as improving the federal government's ability to provide additional communities with more streamlined access to Partnership programs (EPA 2014).

CEQ NEPA Guidelines on GHGs

On June 26, 2019, the Council on Environmental Quality (CEQ) published draft guidance on how National Environmental Policy Act (NEPA) analysis and documentation should address greenhouse gas (GHG) emissions and climate change. It recommends agencies attempt to quantify a proposed action's projected direct and reasonably foreseeable indirect GHG emissions when the amount of those emissions is substantial enough to warrant quantification, and when it is practicable to quantify them using available data and GHG quantification tools. When an agency determines that the tools, methods, or data inputs necessary to quantify a proposed action's GHG emissions are not reasonably available, or it otherwise would not be practicable, the agency should include a qualitative analysis and explain its basis for determining that quantification is not warranted.

The draft guidance provides reporting tools and instructions on how to assess the effects of climate change. The draft guidance does not apply to land and resource management actions, nor does it propose to regulate greenhouse gases. The CEQ extended the comment period on the draft guidance, which was scheduled to close on July 26, 2019, for 31 days until August 26, 2019. Although CEQ has not yet issued final guidance, various NEPA documents are beginning to incorporate the approach recommended in the draft guidance (CEQ 2019).

4.5.3.2 Regional

Western Regional Climate Action Initiative

The Western Regional Climate Action Initiative (WCI) is a partnership among seven states, including California, and four Canadian provinces to implement a regional, economy-wide cap-and-trade system to reduce global warming pollution. The WCI will cap GHG emissions from the region's electricity, industrial, and transportation sectors with the goal to reduce the heat trapping emissions that cause global warming to 15% below 2005 levels by 2020. When the WCI adopted this goal in 2007, it estimated that this would require 2007 levels to be reduced worldwide between 50% and 85% by 2050. California is working closely with the other states and provinces to design a regional GHG reduction program that includes a cap-and-trade approach. California Air Resources Board's (CARB) planned cap and-trade program, discussed below, is also intended to link California and the other member states and provinces.

California

California has adopted various administrative initiatives and enacted legislation relating to climate change, much of which sets aggressive goals for GHG emissions reductions within the state. However, none of this legislation provides definitive direction regarding the treatment of climate change in environmental review documents prepared under CEQA. In particular, the amendments to the CEQA Guidelines do not require or suggest specific methodologies for performing an assessment or thresholds of significance, and do not specify greenhouse gas reduction mitigation measures. Instead, the CEQA amendments continue to rely on lead agencies to choose methodologies and make significance determinations based on substantial evidence, as discussed in further detail below.

Consequently, no State agency has promulgated binding regulations for analyzing GHG emissions, determining their significance, or mitigating any significant effects in CEQA documents.

The discussion below provides a brief overview of CARB and Office of Planning and Research (OPR) documents and of the primary legislation that relates to climate change that may affect the emissions associated with the proposed project. It begins with an overview of the primary regulatory acts that have driven GHG regulation in California, which underlie many of the GHG rules and regulations that have been developed.

Executive Order S-3-05 (Statewide GHG Targets)

California Executive Order S-03-05 (June 1, 2005) mandates a reduction of GHG emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80% below 1990 levels by 2050. Although the 2020 target is the core of AB 32, and has effectively been incorporated into AB 32, the 2050 target remains the goal of the Executive Order only.

Assembly Bill 32 and Senate Bill 32 (Statewide GHG Reductions)

The California Global Warming Solutions Act of 2006, Assembly Bill (AB) 32, was signed into law in September 2006 after considerable study and expert testimony before the Legislature. The law instructs CARB to develop and enforce regulations for the reporting and verifying of statewide GHG emissions. The Act directed CARB to set a GHG emission limit of approximately 28.5% below “business-as-usual” predictions of year 2020 GHG emissions, based on 1990 levels, to be achieved by December 31, 2020. The bill set a timeline for adopting a scoping plan for achieving GHG reductions in a technologically and economically feasible manner, and required CARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions. SB 32 and Executive Order B-30-15 requires the state to reduce emissions by 40 percent below 1990 levels by 2030.

On December 11, 2008, CARB adopted the initial Scoping Plan to achieve the goals of AB 32. The Scoping Plan established an overall framework for the measures that would be adopted to reduce California’s GHG emissions. CARB determined that achieving the 1990 emission level would require a reduction of GHG emissions of approximately 29% below what would otherwise occur in 2020 in the absence of new laws and regulations (referred to as “business as usual”). The 2008 Scoping Plan evaluated opportunities for sector-specific reductions, integrated all CARB and Climate Action Team early actions and additional GHG reduction measures by both entities, identified additional measures to be pursued as regulations, and outlined the role of a cap-and-trade program. In a report prepared on September 23, 2010, CARB indicated 40 percent of the reduction measures identified in the Scoping Plan had been secured. Although the cap-and-trade program began on January 1, 2012 (after CARB completed a series of activities dealing with the registration process, compliance cycle, and tracking system), covered entities did not have an emissions obligation until 2013.

In July 2011, CARB revised its “business as usual” GHG emission estimate for 2020, in order to account for the recent economic downturn in its emission projections. The estimate presented in the scoping plan (596 million metric tons CO₂e) was based on pre-recession, 2007 data from the Integrated Energy Policy Report. CARB also updated the projected “business as usual” 2020 GHG emissions to 545 million metric tonnes CO₂e at this time. The Scoping Plan was reapproved in August 2011 with the program’s environmental documentation.

On February 10, 2014, CARB released the public draft of the “First Update to the Scoping Plan.” “The First Update” built upon the 2008 Scoping Plan with new strategies and recommendations, and

identified opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low carbon investments. “The First Update” defined CARB’s climate change priorities over the next five years, and set the groundwork to reach post-2020 goals set forth in Executive Orders S-3-05 and B-16-12. It also highlighted California’s progress toward meeting the 2020 GHG emission reduction goals defined in the 2008 Scoping Plan. “The First Update” evaluated how to align the State’s long-term GHG reduction strategies with other State policy priorities for water, waste, natural resources, clean energy, transportation, and land use. “The First Update” to the Scoping Plan was approved by the Board on May 22, 2014 (CARB 2020).

The second update to the scoping plan, the *2017 Climate Change Scoping Plan* update (CARB 2017), was adopted by CARB in December 2017. The primary objective for the *2017 Climate Change Scoping Plan* is to identify the measures required to achieve the mid-term GHG reduction target for 2030 (i.e., reduce emissions by 40 percent below 1990 levels by 2030) established under Executive Order B-30-15 and SB 32. The 2017 Climate Change Scoping Plan identifies an increased need for coordination among State, Regional, and local governments to realize the potential for GHG emissions reductions that can be gained from local land use decisions. It notes that emissions reductions targets set by more than one hundred local jurisdictions in the State could result in emissions reductions of up to 45 MMTCO_{2e} and 83 MMTCO_{2e} by 2020 and 2050, respectively. To achieve these goals, the 2017 Scoping Plan Update includes a recommended plan-level efficiency threshold of six metric tons or less per capita by 2030 and no more than two metric tons by 2050. The major elements of the 2017 Climate Change Scoping Plan framework include:

- Implementing and/or increasing the standards of the Mobile Source Strategy, which include increasing zero emission vehicle (ZEV) buses and trucks;
- Low Carbon Fuel Standard (LCFS), with an increased stringency (18 percent by 2030);
- Implementation of SB 350, which expands the Renewable Portfolio Standard (RPS) to 50 percent and doubles energy efficiency savings by 2030;
- California Sustainable Freight Action Plan, which improves freight system efficiency, utilizes near-zero emissions technology, and deployment of ZEV trucks;
- Implementing the proposed Short-Lived Climate Pollutant Strategy, which focuses on reducing CH₄ (methane) and hydrocarbon emissions by 40 percent and anthropogenic black carbon emissions by 50 percent by year 2030;
- Continued implementation of SB 375;
- Post-2020 Cap-and-Trade Program that includes declining caps;
- 20 percent reduction in GHG emissions from refineries by 2030;
- Development of a Natural and Working Lands Action Plan to secure California’s land base as a net carbon sink (CARB 2017).

Energy Conservation Standards

The Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24, of the California Code of Regulations [CCR], known as “Title 24”) were established in 1978 in response to a legislative mandate to reduce California’s energy consumption. Since that time, Title 24 has undergone several revisions. Although not originally intended to reduce GHG emissions, increased energy efficiency, and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated

periodically to allow for the consideration and inclusion of new energy efficiency technologies and methods.

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards, referred to as "CALGreen". The California Green Building Standards Code (Title 24, proposed Part 11) was adopted as part of the California Building Standards Code (24 CCR). Part 11 which adopts certain mandatory standards for residential and nonresidential development and imposes a number of requirements on California buildings, including those with respect to planning and design for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and indoor environmental quality. The California Green Building Standards Code also contains a variety of voluntary measures, which local governments can choose to require and which would enable buildings to qualify for special recognition. In part, the purpose of the California Green Building Code is to reduce greenhouse gas emissions from buildings.

CALGreen contains both mandatory and voluntary measures. For non-residential land uses there are 39 mandatory measures including, but not limited to exterior light pollution reduction, wastewater reduction by 20 percent, and commissioning (i.e. bringing into operation and ensuring quality) of projects over 10,000 square feet. Two tiers of voluntary measures apply to non-residential land uses, for a total of 36 additional elective measures.

California's Building Energy Efficiency Standards are updated on an approximately three-year cycle. The 2019 standards, which were adopted May 9, 2018 and went into effect on January 1, 2020, improve upon existing standards, focusing on three key areas: proposing new requirements for installation of solar photovoltaics for newly constructed low-rise residential buildings; updating current ventilation and Indoor Air Quality (IAQ) requirements; and extending Title 24 Part 6 to apply to healthcare facilities. The 2019 standards also propose several smaller improvements in energy efficiency, such as lighting controls and improvements for water heating systems.

Mobile Sources

Senate Bill 375 (Sustainable Communities and Climate Protection Act)

In January 2009, California SB 375, known as the Sustainable Communities and Climate Protection Act, went into effect. SB 375 provides for a new planning process to coordinate land use planning, regional transportation plans, and funding priorities in order to help California meet the GHG reduction goals established in AB 32. SB 375 includes provisions for streamlined CEQA review for some infill projects such as transit oriented development. SB 375 also requires Metropolitan Planning Organizations (MPOs) relevant to the project area (including the Association of Bay Area Governments [ABAG]) to incorporate a "sustainable communities strategy" (SCS) in their regional transportation plans (RTPs) that will achieve GHG emission reduction targets set by CARB. The applicable SCS for the project area is called Plan Bay Area 2040 (see Section 4.5.2.4).

The SCS is a growth strategy in combination with transportation policies that will show how the MPO will meet its GHG reduction target. If the SCS cannot meet the reduction goal, an Alternative Planning Strategy may be adopted that meets the goal through alternative development, infrastructure, and transportation measures or policies.

In August 2010, CARB released the proposed GHG reduction targets for the MPOs to be adopted in September 2010. The proposed reduction targets for the Bay Area region were seven percent by year 2020 and 15 percent by year 2035. On February 15, 2011, CARB's Executive Officer approved the final targets. CARB filed a Notice of Decision two days later on February 17, 2011.

SB 375 also required CARB to appoint a Regional Targets Advisory Committee (RTAC) by January 31, 2009, to recommend factors for CARB to consider and methodologies for it to use in setting GHG emission reduction targets for each region. The RTAC must include representation from the League of California Cities, the California State Association of Counties,

MPOs, developers, planning organizations, and other stakeholders. In January 2009, CARB appointed 21 members to the RTAC, from a variety of constituencies. On September 29, 2009, the RTAC released its recommendations to CARB, representing a key step in the establishment of regional targets for inclusion in sustainable community strategies. The RTAC recommendations focus largely on the manner in which CARB staff should interact with various stakeholders during the target-setting process, and how staff should use empirical studies and modeling in establishing regional GHG targets.

Senate Bill 743

Traditionally, transportation impacts have been evaluated pursuant to CEQA by examining whether the project is likely to cause automobile delay at intersections and congestion on nearby individual highway segments, and whether this delay will exceed a certain amount (this is known as Level of Service or LOS analysis). SB 743, which was signed into law in 2013, initiated an update to the CEQA Guidelines to change how lead agencies evaluate transportation impacts, with the goal of better measuring the actual transportation-related environmental impacts, including greenhouse gas emissions, of any given project.

According to the Legislature: "New methodologies under the California Environmental Quality Act [were] needed for evaluating transportation impacts that are better able to promote the state's goals of reducing greenhouse gas emissions and traffic-related air pollution, promoting the development of a multimodal transportation system, and providing clean, efficient access to destinations."

Starting on July 1, 2020, agencies analyzing the transportation impacts of new projects must look at a metric known as vehicle miles traveled (VMT) instead of LOS. VMT measures how much actual auto travel (additional miles driven) a proposed project would create on California roads. If the project adds excessive car travel onto roads, the project may cause a significant transportation impact.

Agencies have used VMT as a concept and metric for some time. Prior to SB 743, VMT was already being used in CEQA to study other potential impacts such as greenhouse gas, air quality, and energy impacts.

Assembly Bill 1493 (Mobile Source Reductions)

AB 1493 required CARB to adopt regulations by January 1, 2005, to reduce GHG emissions from noncommercial passenger vehicles and light-duty trucks of model year 2009 and after. The bill required the California Climate Action Registry (CCAR) to develop and adopt protocols for the reporting and certification of GHG emissions reductions from mobile sources for use by CARB in granting emission reduction credits. The bill authorized CARB to grant emission reduction credits for reductions of GHG emissions prior to the date of the enforcement of regulations, using model year 2000 as the baseline for reduction.

In 2004, CARB applied to the EPA for a waiver under the Federal Clean Air Act to authorize implementation of these regulations. The waiver request was formally denied by the EPA in December 2007. In January 2008, the State Attorney General filed a lawsuit against the EPA challenging the denial of California's request for a waiver to regulate and limit GHG emissions from

these vehicles. In January 2009, President Barack Obama issued a directive to the EPA to reconsider California’s request for a waiver, which the EPA granted on June 30, 2009, as discussed further below. As part of this waiver, the EPA specified that CARB may not hold a manufacturer liable or responsible for any noncompliance caused by emission debits generated by the manufacturer for the 2009 model year. The waiver was later withdrawn on September 19, 2019 under the "SAFE Vehicles Rule Part One: One National Program," discussed above. As noted above, the withdrawal of the waiver and implementation of SAFE are currently undergoing suit by California and several other states and cities.

Low Carbon Fuel Standard (LCFS)

Executive Order S-01-07 (January 18, 2007) requires a 10% or greater reduction (from current transportation fuels) in the average fuel carbon intensity for CARB-regulated transportation fuels in California. CARB identifies the Low Carbon Fuel Standard as a Discrete Early Action item under AB 32, and the final resolution (09 31) was issued on April 23, 2009. CARB is currently in the process of updating its Carbon Intensity Lookup Tables to add new pathways to calculate emissions from fuel sources.

CEQA Guidelines

Senate Bill 97 (CEQA Guidelines)

SB 97 required OPR to prepare amended CEQA Guidelines for submission to the CNRA regarding GHG analysis and feasible mitigation of the effects of GHG emissions as required by CEQA. The CNRA was required to certify and adopt these revisions to the State CEQA Guidelines by January 1, 2010. These amendments became effective as of March 18, 2010. The adoption of SB 97 and subsequent CEQA amendments are widely recognized as confirmation that lead agencies are required to include an analysis of climate change impacts in CEQA documents.

CEQA Amendments

Pursuant to SB 97, OPR developed proposed amendments to the CEQA Guidelines (CEQA Amendments) for the feasible mitigation of GHG emissions and their effects, which it first submitted to the Secretary of the CNRA on April 13, 2009. After a public review and comment period, on December 30, 2009, the CNRA adopted the CEQA Amendments, which became effective on March 18, 2010.

The CEQA Amendments for Greenhouse Gas Emissions state in Section 15064.4(a) that lead agencies should “make a good faith effort, to the extent possible on scientific and factual data, to describe, calculate or estimate” GHG emissions. The CEQA Amendments note that an agency may identify emissions by either selecting a “model or methodology” to quantify the emissions or by relying on “qualitative analysis or other performance based standards.” Section 15064.4(b) provides that the lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment:

- The extent a project may increase or reduce GHG emissions as compared to the 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.

In addition, Section 15064.7(c) of the CEQA Amendments specifies that “[w]hen adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence.” Similarly, the revision to CEQA Appendix G, “Environmental Checklist Form,” which is often used as a basis for lead agencies’ selection of significance thresholds, does not prescribe specific thresholds. Rather, Appendix G asks whether the project would conflict with a plan, policy or regulation adopted to reduce GHG emissions; or generate GHG emissions that would significantly affect the environment, indicating that the determination of what is a significant effect on the environment should be left to the lead agency.

Accordingly, the CEQA Amendments do not prescribe specific methodologies for performing an assessment, do not establish specific thresholds of significance, and do not mandate specific mitigation measures. Rather, the CEQA Amendments emphasize the lead agency’s discretion to determine the appropriate methodologies and thresholds of significance consistent with the manner in which other impact areas are handled in CEQA.

The CEQA Amendments indicate that lead agencies should consider all feasible means, supported by substantial evidence and subject to monitoring and reporting, of mitigating the significant effects of GHG emissions. As pertinent to the project, these potential mitigation measures, set forth in Section 15126.4(c), may include (1) measures in an existing plan or mitigation program for the reduction of GHG emissions that are required as part of the lead agency’s decision; (2) reductions in GHG emissions resulting from a project through implementation of project design features; (3) off-site measures, including offsets, to mitigate a project’s emissions; and (4) carbon sequestration measures.

Among other things, the CNRA noted in its Public Notice for these changes that impacts of GHG emissions should focus on the cumulative impact on climate change. The Public Notice states:

While the Proposed Amendments do not foreclose the possibility that a single project may result in greenhouse gas emissions with a direct impact on the environment, the evidence before [CNRA] indicates that in most cases, the impact will be cumulative. Therefore, the Proposed Amendments emphasize that the analysis of greenhouse gas emissions should center on whether a project’s incremental contribution of greenhouse gas emissions is cumulatively considerable.

Thus the CEQA Amendments continue to make clear that the significance of greenhouse gas emissions is most appropriately considered on a cumulative level.

Other State GHG Activities

Executive Order S-13-08

On November 14, 2008, Governor Schwarzenegger issued Executive Order S-13-08 instructing California agencies to assess and prepare for the impacts of rising sea level associated with climate change. Rising sea levels could have devastating effects on California’s infrastructure, such as threatening the state’s water supply, highways, and airports. Pursuant to S-13-08, by June 30, 2009, the CNRA must have assessed California’s vulnerability to climate change impacts and outlined solutions to climate change problems. The CNRA released the 2009 Climate Adaptation Strategy on August 3, 2009. The report summarizes the latest science on how climate change could impact the state and provides recommendations on how to manage against those threats in seven sector areas. The report is to be reviewed every two years.

Executive Order S-13-08 also required the CNRA to request that the National Academy of Sciences (NAS) convene an independent panel to complete the first California Sea Level Rise Assessment Report by December 1, 2010. In October 2010, the Sea-Level Rise Task Force of the Coastal and Ocean Working Group of the California Action Team released the State of California Sea-Level Rise Interim Guidance Document. The final report from the National Academy of Sciences, *Sea-Level Rise for the Coasts of California, Oregon, and Washington*, was released in June 2012. The final report was updated in 2013, and again in 2017 in response to Governor Brown’s Executive Order B-30-15, establishing a California greenhouse gas reduction target of 40 percent below 1990 levels by 2030. The current 2017 version of the report is published under the name *Rising Seas in California: An Update on Sea-Level Rise Science*. The updated guidance incorporates new information presented in the NAS Report to reflect recent advances in ice loss science and projections of sea-level rise.

Renewable Power Requirements

A major component of California’s Renewable Energy Program is the Renewable Portfolio Standard (RPS) established under SBs 1078 (Sher), 107 (Simitian), and 2X (Simitian). Under the RPS, certain retail sellers of electricity are required to increase the amount of renewable energy each year by at least one percent until they reach twenty percent by December 31, 2010, with a final goal of 33 percent by 2020. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. The increase in renewable sources for electricity production will decrease indirect GHG emissions from the project because electricity production from renewable sources is generally considered “carbon neutral.” For purposes of this analysis, it is assumed that the production of electricity from these renewable sources does not produce any net emissions of CO₂.

Vehicle Emissions Standards/Improved Fuel Economy

AB 1493 (Pavley) and the Low Carbon Fuel Standard (LCFS) is a clean-car standard that reduces GHG emissions from new passenger vehicles (light duty auto – medium duty vehicle [LDAMDV]) from 2009 through 2016, and is anticipated to reduce GHG emissions from passenger vehicles by 30% in 2016.. The LCFS requires a reduction of 2.5% in the carbon intensity of California’s transportation fuels by 2015 and a reduction of at least 10% by 2020.

For on-road vehicle CO₂ emissions, California Emissions Estimator Model (CalEEMod) applies AB 1493 and LCFS reductions to the appropriate vehicle classes for scenario years 2011 and after, based on CARB’s EMFAC model and associated post processors.

4.5.3.3 Local

Bay Area Air Quality Management District Policies

The Bay Area Air Quality Management District (BAAQMD) is the primary agency responsible for comprehensive air pollution control in the entire San Francisco Bay Area Air Basin. BAAQMD adopted its CEQA significance thresholds for greenhouse gas emissions on June 2, 2010, and presents these thresholds along with methods for evaluating compliance in its guidance document entitled, “California Environmental Quality Act Air Quality Guidelines (Updated May 2017).”

Permitted stationary source emissions of GHG are subject to a 10,000 metric tonne/year significance threshold. This is based upon a determination that approximately 95 percent of all GHG emissions from new permit applications for stationary sources in the San Francisco Bay Area would be captured by this threshold.

BAAQMD's significance thresholds for land use development projects (e.g. residential and nonresidential building energy use, mobile sources, area sources, and indirect sources associated with water usage) are based primarily upon a determination of what GHG-emission reductions are required from land use development projects in order to achieve AB 32's emission-reduction mandates. BAAQMD presents three different criteria for determining significance of a project's GHG emissions. Compliance with any one of these three options is sufficient to demonstrate compliance with the significance threshold; it is not necessary for a project to meet all three criteria. The first option was determined based upon an assessment of the "appropriate share" required of a land use development project under BAAQMD's jurisdiction in order to achieve AB 32's emission-reduction goals. After conducting a "gap analysis" to determine what reductions would be necessary after accounting for legislatively-mandated reductions, BAAQMD determined that a "bright line" threshold of 1,100 metric tonnes CO₂e per year was appropriate for non-stationary operational emission sources. BAAQMD recognizes, however, that this threshold is based upon conservative assumptions about what GHG-emission-reduction requirements will be in place and that, in particular, as AB 32 and SB 375 are implemented, a higher threshold may be appropriate.

The second option is also based on reductions necessary to achieve AB 32's requirements. An efficiency metric based on the service population (the residential population plus the number of jobs associated with the land-uses) was determined such that, on a per service population basis, a project would be consistent with AB 32's mandates. This efficiency threshold is 4.6 tonnes per service population per year for non-stationary operational emissions.

The third option is compliance with a Qualified GHG Reduction Strategy that includes enforceable measures to reduce GHG emissions consistent with AB 32 goals or Executive Order S-03-05 targets. Such Qualified GHG Reduction Strategies must meet the requirements provided in Section 15183.5 of the State CEQA Guidelines. BAAQMD's guidance also recognizes, consistent with Section 15183.5(c) of the State CEQA Guidelines that for projects located within an area covered by an adopted Sustainable Communities Strategy or Alternative Planning Strategy under SB 375, emissions from cars and light duty trucks need not be analyzed in the environmental analysis.

Plan Bay Area 2040

As discussed above, SB 375 is intended to help achieve AB 32's goals by coordinating land use and transportation planning, and funding priorities. SB 375 requires each MPO in California to develop an SCS as part of its RTP that will achieve the GHG-reduction targets required by AB 32. As required by SB 375, the MTC and ABAG adopted its previous plan, Plan Bay Area, in July 2013. As the Bay Area's first regional transportation plan to include an SCS, the original Plan Bay Area charted a course for reducing per-capita greenhouse gas emissions through the promotion of more compact, mixed-use residential and commercial neighborhoods near transit. Plan Bay Area supported Priority Development Areas (PDAs) selected and approved by city and county governments with planning grants, technical assistance, and prioritization for regional and state transportation and affordable housing funds.

Plan Bay Area 2040 is a limited and focused update that builds upon the growth pattern and strategies developed in the original Plan Bay Area but with updated planning assumptions that incorporate key economic, demographic and financial trends from the last four years.

SB 375 requires that the SCS developed by each MPO provide a strategy for achieving the reduction targets established by CARB. For Plan Bay Area 2040, the regional GHG emissions reduction targets for cars and light-duty trucks, on a per-capita basis, is 15 percent for 2040.

San Francisco Bay Conservation and Development Commission

The San Francisco Bay Conservation and Development Commission (BCDC) was first established as a temporary state agency by the McAteer-Petris Act. The Commission was charged with preparing a plan for the long-term use of the Bay and regulating development in and around the Bay while the plan was being prepared. The San Francisco Bay Plan, which was completed in January 1969, includes policies on issues critical to the wise use of the Bay ranging from ports and public access to design and transportation. The Bay Plan also contains maps of the entire Bay which designate shoreline areas that should be reserved for water-related purposes like ports, industry, public recreation, airports, and wildlife refuges.

In August 1969, the McAteer-Petris Act was amended to make BCDC a permanent agency and to incorporate the policies of the Bay Plan into state law. In 1977 the Commission's authority was expanded to provide special protection of the Suisun Marsh. The BCDC is also the federally-designated state coastal management agency for the San Francisco Bay segment of the California coastal zone. This designation empowers the BCDC to use the authority of the federal Coastal Zone Management Act to ensure that federal projects and activities are consistent with the policies of the Bay Plan and state law.

On October 6, 2011, the BCDC approved amendments to the Bay Plan. The amendments address climate change by updating several sections of the Bay Plan, including Safety of Fills, Tidal Marshes and Tidal Flats, Shoreline Protection, and Public Access, and by adding a new climate change section with new findings and policies. There are five policy goals for the approved amendments:

1. Update language on sea level rise. This current policy language recommends that new development not be approved in low-lying areas that are in danger of flooding now or in the future unless the development is elevated above possible flood levels. The amended policies allow protection from flooding, encourage innovative means of dealing with flood danger, and make it clear that local governments will determine how best to deal with development proposals inland of the Commission's jurisdiction.
2. Encourage a variety of types of projects that have regional benefits. Proposed new development will continue to be evaluated by the Commission on a case-by-case basis to determine if the benefits of a project outweigh the risk from flooding and to ensure steps are taken to deal with the flooding danger.
3. Continue to protect the Bay and other valuable natural resources within BCDC's jurisdiction.
4. Continue to protect existing tidal wetlands and, where appropriate, expand them. To accomplish this, resource protection and habitat enhancement in undeveloped low-lying areas will be encouraged, but development will not be absolutely prohibited in these areas.
5. Work with its regional partners, local governments, businesses, labor, environmentalists, investors, insurers, and the general public to develop a comprehensive regional strategy that deals with all the impacts of climate change.

Alameda County

Community Climate Action Plan

In February 2014, Alameda County Board of Supervisors approved the final draft of the Alameda County (Unincorporated Areas) Community Climate Action Plan, which would apply to several communities including Sunol. The plan outlines measures to reduce County wide greenhouse gas emissions by more than 15 percent by 2020, through initiatives involving land use, transportation choices, water conservation, waste diversion, energy use, and green infrastructure. The plan is

incorporated into the Countywide General Plan as the Community Climate Action Plan Element. The County is planning to begin the process to update its Community Climate Action Plan beginning in the third quarter of Calendar Year 2021. As the public review period of this SEIR is anticipated to occur well before this time, the potential for discovery of new information that might require updating the Final SEIR is unlikely.

4.5.4 Analysis Methodology and Significance Criteria

The following sections discuss the methods for evaluating project emissions of greenhouse gasses.

4.5.4.1 Significance Criteria

Appendix G of the CEQA Guidelines identifies the following impact issues in Greenhouse Gas Emissions tables of the Appendix G Environmental Checklist, asking whether the project would:

- a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
- b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?

4.5.4.2 Methodology

Emissions associated with a project are subject to two types of GHG emission thresholds: one specifically for BAAQMD permit-requiring stationary sources and one for other non-permit, land use development-related sources. Stationary sources are subject to a significance threshold of 10,000 metric tonnes of CO₂e per year; however, the proposed project does not propose any stationary sources as the existing plants on the site are not part of the project. The project's annual emissions inventory (i.e., excluding stationary source emissions) was compared against the "bright line" threshold of 1,100 metric tonnes CO₂e /year. It was also used to determine the project's compliance with BAAQMD's efficiency-based significance threshold of 4.6 metric tonnes CO₂e/service population/year, where service population is the sum of the project's employees (the service population can also include residents, however for this project there are no residents). In addition, consistent with BAAQMD guidance, one-time construction emissions were quantified and evaluated for compliance with AB32 GHG reduction goals; however, BAAQMD does not provide significance thresholds for construction-related GHG emissions.

Units of Measurement: Tonnes of CO₂ and CO₂e

The term "GHGs" refers to gases that contribute to the natural greenhouse effect, such as CO₂, CH₄, N₂O, and water; and to gases that are man-made and emitted through the use of modern industrial products, such as HFCs and CFCs. The most important greenhouse gas in human-induced global warming is CO₂. While many gases have much higher GWPs than CO₂, CO₂ is emitted in such vastly higher quantities that it accounts for 85% of the GWP of all GHGs emitted by the United States.

The effect each of these gases has on global warming is a combination of the volume of their emissions and their GWP. GWP indicates, on a pound for pound basis, how much a gas will contribute to global warming relative to how much warming would be caused by the same mass of CO₂. CH₄ and N₂O are substantially more potent than CO₂, with GWPs of 21 and 310, respectively. GHG emissions are typically measured in terms of mass of CO₂e. CO₂e are calculated as the product of the mass of a given GHG and its specific GWP.

In many sections of the air report, including the final summary sections, emissions are presented in units of CO_{2e} either because the GWPs of CH₄ and N₂O were accounted for explicitly, or the CH₄ and N₂O are assumed to contribute a negligible amount of GWP when compared to the CO₂ emissions from that particular emissions category.

In Appendix C-1, tonnes are used to refer to metric tonnes (1,000 kilograms). Tons will be used to refer to short tons (2,000 lbs.). Additionally, exact totals presented in all tables and report sections may not equal the sum of components due to independent rounding of numbers.

Overall Calculation Methodology

GHG emissions were estimated in accordance with the BAAQMD CEQA guidelines and the CARB Local Government Protocols (LGOP). Emissions from indirect energy use were quantified based on a combination of LGOP emission factors and publicly available data from the local utility, PG&E. A combination of vendor-provided data and EPA AP-42 emission factors were used to quantify emissions from existing stationary sources and certain mobile sources. CARB's equipment emissions models, Emission Factor Model (EMFAC) and Off-Road Emissions Inventory Program model (OFFROAD), were used to estimate emissions from on-road employee and vendor vehicles and off-road construction equipment. CARB engine certificate emission factors were used for mobile pumps. EMFAC compiles real fleet data on the county-level for the state of California, and provides emission factors based on the project's vehicle fleet and year of use. OFFROAD estimates the activity and emissions of off-road mobile emissions sources, such as construction equipment, based on the project's equipment fleet and year of use.

Alameda County defaults were used in the EMFAC and OFFROAD model runs unless otherwise noted in the methodology descriptions below. Details regarding the specific methodologies used by EMFAC and OFFROAD can be found in their User's Guides and associated appendices.

Development of GHG Emissions Inventory

The project is located within the Bay Area Air District, and the emissions inventory has been developed in accordance with BAAQMD guidelines. As recommended in the BAAQMD CEQA guidelines, the project emissions inventory considers the following categories of GHG emissions, as applicable:

- emissions from construction activities,
- stationary source emissions,
- non-stationary off-road equipment emissions,
- indirect energy use emissions,
- mobile source emissions,
- emissions associated with water and wastewater
- emissions due to land use (vegetation) changes, and
- area source emissions, from sources such as landscaping equipment, consumer products, or architectural coatings.

GHG emissions were quantified in accordance with the BAAQMD CEQA guidelines and the CARB LGOP based on a combination of site-specific data, electricity generation emission factor from Pacific Gas and Electric (PG&E), and emission estimation software programs developed by CARB, including EMFAC and OFFROAD models. EMFAC compiles real fleet data on the county-level for the state of California, and provides emission factors based on the project's vehicle fleet and year of use. OFFROAD estimates

the activity and emissions of off-road mobile emissions sources, such as construction equipment, based on the project's equipment fleet and year of use.

The GHG emissions estimates contained in Appendix C-1 incorporate reductions in emissions from electricity generation that will occur between now and full buildout as a result of promulgated regulations. Specifically, the emissions estimated for electricity consumption assumes that there will be an increase in energy production from renewables or non-GHG producing sources given the requirements of the RPS. Direct energy consumption resulting from the proposed project would largely be limited to the operation of the low flow diversion pumps for the ADV realignment, which were modeled by the air consultant by hand using CARB emissions factors for pumps.

Emissions Inventory Scope, Assumptions and Limitations

Simplifying and conservative assumptions regarding energy use were applied during the development of this GHG inventory. BAAQMD does not have an adopted threshold of significance for construction-related GHG emissions. In the absence of a BAAQMD-adopted construction GHG threshold, the Air Quality and Greenhouse Gases Study compared project emissions to BAAQMD's operational threshold as a reasonable proxy for furthering AB 32 GHG reduction goals. BAAQMD's operational thresholds are used to determine significance of long-term operation of land uses and developments, often with far greater GHG emissions potentials than that of the proposed project.

Existing operations emissions estimates are provided in Appendix C-1 for informational purposes and evaluated using a 5-year annual averaging period for production between 2013 through 2017. In order to evaluate these sources, the air consultant primarily relied upon CalEEMod for mining-related emissions, EPA AP-42 emission factors and BAAQMD regulation emissions standards for processing plant related emissions, and the CARB's 2017 EMFAC 1 model for mobile source emissions. For GHG emissions estimates, the air consultant used emission factors developed by Pacific Gas & Electric Company, the EPA (AP-42), and the Climate Registry (Compass Land Group 2019). Lastly, legislation and rules regarding climate change, as well as scientific understanding of the extent to which different activities emit GHGs, continue to evolve; as such, the inventory in Appendix C-1 is a reflection of the guidance and knowledge currently available.

4.5.5 Project Impacts and Mitigation Measures

4.5.5.1 LAVQAR EIR Impact Analysis

As previously described under Section 4.2, "Air Quality," air quality impacts were determined to be less than significant with implementation of mitigation. The 1981 project included the on-site operation of mobile equipment related to the excavation, grading, and transportation of materials on-site; the processing of mined materials; the backfill of slopes, and revegetation activities (Alameda County 1980: 40-41).

The approved project includes the following mitigation of air quality impacts:

- Availability of reclaimed land for higher intensity land uses does not necessarily mean that the land would actually be put to such uses. The potential impact on air quality would be eliminated by adherence to environmental policies which do not allow large scale development which would measurably deteriorate air quality.

However, greenhouse gas emissions were not analyzed in the LAVQAR EIR.

Project Revisions

As described under Section 4.2, “Air Quality,” previously, the project involves revisions to approved reclamation activities and does not involve evaluation of permitted mining or processing activities. The activities and equipment used would be similar to the equipment that was evaluated in the LAVQAR EIR, except that the proposed project would not include processing mined materials, which would reduce emissions compared to the 1981 project. In addition, the equipment used today is more efficient and produces fewer emissions than the equipment proposed to be used as part of the 1981 project.

Changed Circumstances

No changed circumstances related to the project would create a new or increased significant impact to greenhouse gas emissions.

New Information

Since the date of the certification of the LAVQAR EIR, various state laws have been adopted to require the reduction of greenhouse gas emissions. CEMEX has submitted the *Air and Greenhouse Gas Emissions Study*, which has been peer reviewed by the County (see Appendix C-1). The evaluation below focuses on emissions associated with reclamation activities and does not quantify emissions associated with ongoing mining. Emissions estimates for existing mining and processing uses are presented in Appendix C-1 for informational purposes only. The analysis quantifies estimated greenhouse gas emissions associated with reclamation activities under existing conditions (baseline or environmental setting) and under the proposed SMP-23 reclamation plan amendment, as these potential impacts were not considered in the LAVQAR EIR and this is new information.

4.5.5.2 Subsequent Environmental Analysis

Impact 4.5-1: Gas emissions generated by reclamation activities could have a significant impact on global climate change.

BAAQMD does not have an adopted threshold of significance for construction-related GHG emissions. Instead, to provide a conservative analysis of potential project-related GHG emissions, modeled GHG emissions are presented in relation to BAAQMD’s operational thresholds of significance. The modeling results indicate that Project GHG emissions are below applicable BAAQMD operational thresholds of significance for CEQA. In contrast to operational GHG emissions, project GHG emissions are temporary in nature and will cease when reclamation is complete. Table 4.5-2, “Greenhouse Gas Emissions Analysis,” presents the GHG emissions analysis.

**TABLE 4.5-2
GREENHOUSE GAS EMISSIONS ANALYSIS (MT/YEAR)²**

Emissions Category	CO ₂ e
Project Emissions	1,069.88
BAAQMD CEQA Significance Threshold ³	1,100
Exceeds Threshold (Yes/No)?	No

Source: Compass Land Group 2019

Notes:

1. MT= metric tons. CO₂e = carbon dioxide equivalent.
2. Proposed project emissions are reported for model year 2022, which is the highest emitting model year for CO₂e. See Appendix A-1 of the Air and Greenhouse Gas Emissions Study (Appendix C-1 of this SEIR) for detail.
3. BAAQMD thresholds from Table 4.2-2 of Section 4.2, Air Quality, for operational emissions.

Table 4.5-2 only reports emissions for model year 2022 because emissions for remaining model years (2023, 2028, 2030, and 2049) were significantly below the BAAQMD CEQA significance threshold. In addition, project emissions for year 2022 also constitutes a reduction in GHG emissions compared to existing conditions. With existing mining operations (not part of the project), existing GHG emissions are approximately 9,790 tons of CO₂e per year (Compass Land Group 2019). A complete summary of project emissions and detailed modeling inputs and outputs are included in Appendix C-1.

In the absence of adopted construction thresholds, the BAAQMD CEQA Guidelines state that the County should quantify and disclose GHG emissions that would occur during construction and make a determination on the significance of these construction generated GHG emission impacts in relation to meeting AB 32 GHG reduction goals. BAAQMD encourages lead agencies to incorporate best management practices to reduce GHG emissions during construction, as feasible and applicable. Sources of construction-related GHGs only include exhaust; therefore, construction best management practices should focus on direct and indirect exhaust emissions reductions. Best management practices may include but are not limited to: using alternative fueled (e.g., biodiesel, electric) construction vehicles/equipment of at least 15 percent of the fleet; using local building materials of at least 10 percent; and recycling or reusing at least 50 percent of construction waste or demolition materials.

In the absence of a BAAQMD-adopted construction GHG threshold, the *Air and Greenhouse Gas Emissions Study* compared project emissions to BAAQMD's operational threshold as a reasonable proxy for furthering AB 32 GHG reduction goals. BAAQMD's operational thresholds are used to determine significance of long-term operation of land uses and developments, often with far greater GHG emissions potentials than that of the proposed project. However, given that modeled GHG emissions are at about 97 percent of the operational threshold, it is possible that the project could result in a cumulatively considerable contribution of GHG emissions. Air quality and GHG emissions models are imperfect (like other models) as they are based on a set of assumptions used at the time of modeling. These assumptions (e.g., the duration of a construction activity or the vehicle miles traveled by construction contractors and vendors) are subject to change and actual emissions at the time of construction could be more or less than what is modeled. As a result, the project's greenhouse gas emissions constitute a potentially significant impact. Mitigation Measures 4.5-1a through 4.5-1h are provided to reduce the impacts to a less than significant level.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures:

Mitigation Measure 4.5-1a: Idling Times

Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all project access points. [Measure applies to idling times for all equipment].

Mitigation Measure 4.5-1b: Idling Times for Diesel-powered Equipment

Minimize the idling time of diesel-powered construction equipment to two minutes. [Measure applies to idling times for diesel-powered equipment only].

Mitigation Measure 4.5-1c: Equipment Maintenance

All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications.

Mitigation Measure 4.5-1d: Alternative Fuel Plan

Prior to construction, develop a plan demonstrating that alternative fueled (e.g., biodiesel, electric) construction vehicles/equipment will represent at least 15 percent of the construction fleet if commercially available.

Mitigation Measure 4.5-1e: Local Building Materials

Use at least 10 percent local building materials in construction (e.g., construction aggregates, concrete pipe).

Mitigation Measure 4.5-1f: Recycle or Reuse Construction and Demolition Materials

Recycle or reuse at least 50 percent of construction waste or demolition materials (e.g., during decommissioning and removal of processing plant facilities).

Mitigation Measure 4.5-1g: On-site Material Hauling

Perform on-site material hauling with trucks equipped with on-road engines (if less emissive of GHG emissions than off-road engines), if commercially available.

Mitigation Measure 4.5-1h: Generator Alternative Fuel

Use alternative fuels for generators at construction sites such as propane or solar, or use electrical power, as feasible for each construction site.

Significance After Mitigation: Less than significant.

Impact 4.5-2: Consistency with applicable GHG plans, policies, or regulations.

The proposed project would not conflict with applicable plans, policies, and regulations for reducing emissions of GHGs. The applicable Community Climate Action Plan is the Alameda County Community Climate Action Plan, which is incorporated into the County's General Plan. The proposed project is consistent with this plan, as outlined in Section 4.7, "Land Use and Planning," of this SEIR.

The USEPA and NHTSA heavy-duty vehicle GHG emissions standards, as adopted by CARB, would ensure that as the project's heavy-duty vehicles are turned over (i.e., as old model year trucks are retired and replaced with new model year trucks), future GHG emissions from these heavy-duty vehicles would decline in future years, consistent with the state's goal of reducing future year GHG emissions to meet the year 2030 target and beyond. In addition, transportation fuels used by the project's vehicles and equipment would be in conformance with the LCFS as fuel suppliers would be required to provide fuels meeting the applicable low carbon standard. Furthermore, electricity used by the project's electric-powered equipment would be obtained from the local utility providers, which would be supplied by an increasing percentage of renewable sources, consistent with California's Renewables Portfolio Standard of 60 percent by December 31, 2030 and 100 percent eligible renewable energy resources and zero-carbon resources by December 31, 2045. The project would also not impede the ability of electricity and transportation fuel producers and suppliers to comply with the Cap-and-Trade Program, which is the primary mechanism that the State is using the

achieve the State’s GHG reduction goals of AB 32 and SB 32. Finally, project GHG emissions are associated with reclamation activities, which will cease when reclamation is complete. As a result, the project would not conflict with applicable plans for reducing emissions of GHGs and impacts would be less than significant.

Level of Significance: Less than significant.

Mitigation Measures: None required.

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