

BOPC Received 3-18-2021

4.7 Greenhouse Gas Emissions

This section assesses the potential for the Project to result in significant adverse environmental impacts from greenhouse gas (GHG) emissions. This analysis considers the GHG emissions that would result from construction and operation activities associated with the Project and compares these emissions to thresholds of significance. Existing City policies that would reduce potential impacts are identified.

This section relies in part on the Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report (*Air Quality Technical Report*) prepared by Ramboll in support of the Project (see Appendix AIR, *Air Quality Supporting Information*), which was independently peer reviewed by ESA.

The Notice of Preparation (NOP) for this EIR received comments related to GHG emissions, involving the Project's consistency with various plans, policies, and regulations relating to GHG reduction and climate change, requests for green infrastructure in the West Oakland Community, fossil fuel alternatives in the development and operation of the Project, and evaluation of on- and off-site GHG reduction measures. These topics are included in the analysis in this section.

This section also analyzes the Maritime Reservation Scenario, focused on environmental conditions, regulations, impacts and mitigation measures that are different from those identified for the proposed Project.

4.7.1 Environmental Setting Greenhouse Gases and Climate Change

Gases that trap heat in the atmosphere are called greenhouse gases or GHGs. GHGs allow sunlight to enter the atmosphere, but trap a portion of the outward-bound infrared radiation, which warms the air. The process is similar to the effect greenhouses have in raising the internal temperature, hence the name GHGs. Both natural processes and human activities emit GHGs. The natural accumulation of GHGs in the atmosphere regulates the Earth's temperature; however, emissions from human activities such as fossil fuel-based electricity production, the use of internal combustion engines and motor vehicles have elevated the concentration of GHGs in the atmosphere. This anthropogenic accumulation of GHGs has contributed to an increase in the temperature of the Earth's atmosphere and has contributed to global climate change.

Global climate change is a change in the average weather on earth that can be measured by wind patterns, storms, precipitation, and temperature. Although there is disagreement as to the rate of global climate change, multiple studies published in peer-reviewed scientific journals show that 97 percent or more of actively publishing scientists agree: climate-warming trends over the past century are very likely due to human activities (NASA, 2015). The principal GHGs are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and nitrogen trifluoride (NF₃). CO₂ is the reference gas for estimating GHG emissions.

To account for the global warming potential of different GHGs, emissions are often quantified and reported as CO₂ equivalents (CO₂e). For example, SF₆ is a GHG commonly used in the utility industry as an insulating gas in circuit breakers and other electronic equipment. SF₆, while comprising a small fraction of the total GHGs emitted annually world-wide, is a much more potent GHG with 22,800 times the global warming potential as CO₂.¹ Large emission sources are reported in million metric tons (MMT) of CO₂e (MMTCO₂e).²

Global warming potential ratios are provided by the Intergovernmental Panel on Climate Change (IPCC). Historically, GHG emission inventories were calculated using ratios from the IPCC's Second Assessment Report (SAR), published in 1996. The IPCC has since updated the ratios based on the latest science in its Fourth Assessment Report and Fifth Assessment Report, published in 2007 (IPCC, 2007) and 2014, respectively (IPCC, 2015). The California Air Resources Board (CARB) uses ratios in the Fourth Assessment Report for the statewide GHG emissions inventory (CARB, 2019); in the current Climate Change Scoping Plan (CARB, 2017), and in the current version of the California Emissions Estimator Model (CalEEMod)³ that is used to calculate CO₂e values for construction as well as operations for existing and Project build-out conditions. Compounds that are regulated as GHGs are discussed below.

Carbon Dioxide. In the atmosphere, carbon generally exists in its oxidized form, as CO₂. Natural sources of CO₂ include the respiration (breathing) of humans, animals and plants, volcanic outgassing, decomposition of organic matter, and evaporation from the oceans. Human-caused sources of CO₂ include the combustion of fossil fuels and wood, waste incineration, mineral production, and deforestation. Natural removal processes, such as photosynthesis by land- and ocean-dwelling plant species, cannot keep pace with this extra input of man-made CO₂ and consequently the gas is building up in the atmosphere. CO₂ accounted for approximately 83 percent of anthropogenic GHG emissions (CO₂e) in California in 2016.

Methane. CH₄ is produced when organic matter decomposes in environments lacking sufficient oxygen. Natural sources include wetlands, termites, and oceans. Decomposition occurring in landfills accounts for the majority of human-generated CH₄ emissions in California and in the United States as a whole. Agricultural processes such as intestinal fermentation, manure management, and rice cultivation are also large sources of CH₄ in California. Methane is also released at the points of natural gas extraction and in leakages throughout the gas pipeline system. The global warming potential of CH₄ is considered by the State of California to be approximately 25 times that of CO₂ as averaged over a 100-year timescale. On this timescale, CH₄ accounted for approximately 9 percent of anthropogenic GHG emissions (CO₂e) in California in 2017.⁴ However, since CH₄ breaks down rapidly into CO₂ once in the atmosphere, there is growing

¹ The California Emissions Estimator Model (CalEEMod) is the modeling software used chiefly for determining GHG emissions from CEQA projects. CalEEMod currently utilizes the global warming potentials from the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4).

² The term *metric ton* is commonly used in the U.S. to refer to the metric system unit, tonne, which is defined as a mass equal to 1,000 kilograms. A metric ton is approximately 1.1 short tons and approximately 2,204.6 pounds.

³ Version 2016.3.1. Available: <http://www.caleemod.com>.

⁴ California Air Resources Board. Methane (CH₄). 2019. Available online at: <https://ww3.arb.ca.gov/cc/inventory/background/ch4.htm>.

recognition among climate scientists that a 20-year time horizon is more relevant. The 20-year global warming potential of CH₄ is between 84 and 87 times greater than that of CO₂.⁵ That means methane is a much larger contributor to California's anthropogenic GHG emissions over the shorter time frame of 20 years.

Nitrous Oxide. N₂O is produced naturally by a wide variety of biological sources, particularly microbial action in soils and water. Tropical soils and oceans account for the majority of natural source emissions. N₂O is a product of the reaction that occurs between nitrogen and oxygen during fuel combustion. Both mobile and stationary combustion emit N₂O, and the quantity emitted varies according to the type of fuel, technology, and pollution control device used, as well as maintenance and operating practices. Agricultural soil management and fossil fuel combustion are the primary sources of human-generated N₂O emissions in California. N₂O has a GWP of approximately 298 and its emissions accounted for approximately 3 percent of anthropogenic GHG emissions (CO₂e) in California in 2016.

Hydrofluorocarbons, Perfluorocarbons, and Sulfur Hexafluoride. HFCs are primarily used as substitutes for ozone-depleting substances regulated under the Montreal Protocol.⁶ PFCs and SF₆ are emitted from various industrial processes, including aluminum smelting, semiconductor manufacturing, electric power transmission and distribution, and magnesium casting. There is no aluminum or magnesium production in California; however, the rapid growth in the semiconductor industry leads to greater use of PFCs, HFCs, and SF₆. These accounted for approximately 5 percent of anthropogenic GHG emissions (CO₂e) in California in 2016.

Nitrogen trifluoride. NF₃ is primarily used in manufacturing semiconductor and LCD panels, and certain types of solar panels and chemical lasers. The ability to measure NF₃ atmospheric concentrations has only recently been possible and this has revealed much higher concentrations than originally assumed. This is a major cause of concern as NF₃ is an extremely potent GHG and has a global warming potential of 17,200 times that of CO₂ (WRI and WBCSD, 2013).

Effects of Climate Change

Climate change refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). The scientific community's understanding of the fundamental processes responsible for global climate change has improved over the past decade, and its predictive capabilities are advancing. However, there remain significant scientific uncertainties in, for example, predictions of local effects of climate change, occurrence, frequency, and magnitude of extreme weather events, effects of aerosols, changes in clouds, shifts in the intensity and distribution of precipitation, and changes in oceanic circulation.

⁵ U.S. EPA, Understanding Global Warming Potentials; available at: <https://www.epa.gov/ghgemissions/understanding-global-warming-potentials>.

⁶ The Montreal Protocol is an international treaty that became effective on January 1, 1989, and was intended to protect the ozone layer by phasing out the production of several groups of halogenated hydrocarbons believed to be responsible for ozone depletion.

Due to the complexity of the Earth’s climate system and inability to accurately model it, the uncertainty surrounding climate change may never be completely eliminated. Nonetheless, the IPCC’s *Fifth Assessment Report, Summary for Policy Makers* states that, “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 greenhouse gas concentrations and other anthropogenic forces [*sic*] together” (IPCC, 2015). A report from the National Academy of Sciences concluded that 97 to 98 percent of the climate researchers most actively publishing in the field support the tenets of the IPCC in that climate change is very likely caused by human (i.e., anthropogenic) activity (Anderegg et al., 2010).

The Fourth California Climate Change Assessment (Fourth Assessment), published in 2018, finds that the potential impacts in California due to global climate change include: loss in snow pack; sea level rise; more extreme heat days per year; more high ozone days; more extreme forest fires; more severe droughts punctuated by extreme precipitation events; increased erosion of California’s coastlines and sea water intrusion into the Sacramento and San Joaquin Deltas and associated levee systems; and increased pest infestation (OPR et al., 2018).

The Fourth Assessment’s findings are consistent with climate change studies published by the California Natural Resources Agency (CNRA) since 2009, starting with the *California Climate Adaptation Strategy* as a response to the Governor’s Executive Order S-13-2008 (CNRA, 2009c). In 2014, the CNRA rebranded the first update of the 2009 adaptation strategy as the *Safeguarding California Plan* (CNRA, 2014). The 2018 update to *Safeguarding California* identifies hundreds of ongoing actions and next steps State agencies are taking to safeguard and help Californians adapt to climate impacts within a framework of 81 policy principles and recommendations (CNRA, 2018a).

In 2016, the CNRA released *Safeguarding California: Implementation Action Plans* in accordance with Executive Order B-30-15, identifying a lead agency to lead adaptation efforts in each sector. In accordance with the 2009 *California Climate Adaptation Strategy*, the California Energy Commission (CEC) was directed to develop a website on climate change scenarios and impacts that would be beneficial for local decision makers. The website, known as Cal-Adapt, became operational in 2011.⁷ The information provided on the Cal-Adapt website represents a projection of potential future climate scenarios comprised of local average values for temperature, sea level rise, snowpack and other data representative of a variety of models and scenarios, including potential social and economic factors.

Below is a summary of some of the potential effects that could be experienced in California as a result of global warming and climate change.

Temperature Increase

The primary effect of adding GHGs to the atmosphere has been a rise in the average global temperature. The impact of human activities on global temperature is readily apparent in the observational record. Since 1895, the contiguous U.S. has observed an average temperature

⁷ The Cal-Adapt website address is: <http://cal-adapt.org>.

increase of 1.5 degrees Fahrenheit (°F) per century. The last five-year period (2014–2018) is the warmest on record for the contiguous U.S. (NOAA, 2019), while the 20 warmest years have occurred over the past 22-year period (Climate Central, 2019).

The Fourth Assessment indicates that average temperatures in California could rise 5.6°F to 8.8°F by the end of the century, depending on the global trajectory of GHG emissions (OPR et al., 2018). According to the Cal-Adapt website, the portion of the City of Oakland in which the Project site is located could result in an average increase in temperature of approximately 6 to 9 percent (about 4.0 to 6.7°F) by 2070–2090, compared to the baseline 1961–1990 period.

With climate change, extreme heat conditions and heat waves are predicted to impact larger areas, last longer, and have higher temperatures. Heat waves, defined as three or more days with temperatures above 90°F, are projected to occur more frequently by the end of the century. Heat-related illness includes a spectrum of illnesses ranging from heat cramps to severe heat exhaustion and life-threatening heat stroke (CalEPA, 2013).

Wildfires

The hotter and dryer conditions expected with climate change will make forests more susceptible to extreme wildfires. A recent study found that, if GHG emissions continue to rise, the frequency of extreme wildfires burning over approximately 25,000 acres would increase by nearly 50 percent, and the average area burned statewide each year would increase by 77 percent, by the year 2100. In the areas that have the highest fire risk, the cost of wildfire insurance is anticipated to rise by 18 percent by 2055 and the fraction of property insured would decrease (Westerling, 2018).

Air Quality

Higher temperatures, conducive to air pollution formation, would worsen air quality in California and make it more difficult for the State to achieve both national and state ambient air quality standards. Climate change may increase the concentration of ground-level ozone in particular, which can cause breathing problems, aggravate lung diseases such as asthma, emphysema, and chronic bronchitis, and cause chronic obstructive pulmonary disease. Emissions from wildfires can lead to excessive levels of particulate matter, ozone, and volatile organic compounds. The resulting increase in fine particulate matter from wildfires is a direct threat to human health even during relatively short exposures, particularly for children, the elderly, and people with existing respiratory problems (Kenward et al., 2013). Additionally, severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the State (CalEPA, 2013).

Water Supply and Water Quality

There is a high degree of uncertainty with respect to the overall impact of global climate change on future water supplies in California. Studies indicate considerable variability in predicting precise impacts of climate change on California hydrology and water resources. Increasing uncertainty in the timing and intensity of precipitation will challenge the operational flexibility of California's water management systems. Warmer, wetter winters would increase the amount of runoff available for groundwater recharge; however, this additional runoff could occur at a time when some basins are either being recharged at their maximum capacity or are already full.

Conversely, reductions in spring runoff and higher evapotranspiration because of higher temperatures could reduce the amount of water available for recharge (CNRA, 2014).

Climate change could alter water quality in a variety of ways, including through higher winter flows that reduce pollutant concentrations (through dilution) or increase erosion of land surfaces and stream channels, leading to higher sediment, chemical, and nutrient loads in rivers. Water temperature increases and decreased water flows can result in increasing concentrations of pollutants and salinity. Increases in water temperature alone can lead to adverse changes in water quality, even in the absence of changes in precipitation.

Hydrology and Sea Level Rise

Climate changes could potentially affect: the amount of snowfall, rainfall and snow pack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide and high runoff events); sea level rise and coastal flooding; coastal erosion; and the potential for salt water intrusion (CNRA, 2014).

Rising sea level is one of the major areas of concern related to global climate change. Two of the primary causes for a sea level rise are the thermal expansion of ocean waters (water expanding as it heats up) and the addition of water to ocean basins by the melting of land-based ice (i.e., glaciers and polar ice caps). In 2013, the State issued guidance on sea level rise based on the scientific findings from the National Academy of Science National Research Council that indicated sea levels could rise 11 inches by 2050; 36 inches by 2100; and 55 inches by the end of the century as global climate change continues. Subsequent to the 2013 guidance, as explained in Section 4.9, *Hydrology and Water Quality*, the State's latest guidance adopts a probabilistic approach and includes estimates of the likely range of global sea level rise under different global emission scenarios, where the "likely range" covers the central 66 percent of the probability distribution (i.e., the sea levels that fall within the range created by the value that is 17 percent likely to occur and the value that is 83 percent likely to occur). Sea level rise of this magnitude would increasingly threaten California's coastal regions with more intense coastal storms, accelerated coastal erosion, threats to vital levees, and disruption of inland water systems, wetlands, and natural habitats. Residents may also be affected if wastewater treatment is compromised by inundation from rising sea levels, given that a number of treatment plants discharge to the Bay.

Agriculture

California has a massive agricultural industry that represents 11.3 percent of total U.S. agricultural revenue. Higher CO₂ levels can stimulate plant production and increase plant water-use efficiency. However, a changing climate presents significant risks to agriculture due to "potential changes to water quality and availability; changing precipitations patterns; extreme weather events including drought, severe storms, and floods; heat stress; decreased chill hours; shifts in pollinator lifecycles; increased risks from weeds, pest and disease; and disruptions to the transportation and energy infrastructure supporting agricultural production." (CNRA, 2014)

Ecosystems and Wildlife

Increases in global temperatures and the potential resulting changes in weather patterns could have ecological effects on a global and local scale. With climate change, ecosystems and wildlife will be challenged by the spread of invasive species, barriers to species migration or movement in response to changing climatic conditions, direct impacts to species health, and mismatches in timing between seasonal life-cycle events such as species migration and food availability (CNRA, 2014).

Public Health

Global climate change is also anticipated to result in more extreme heat events (OPR et al., 2018). These extreme heat events increase the risk of death from dehydration, heart attack, stroke, and respiratory distress, especially with people who are ill, children, the elderly, and the poor, who may lack access to air conditioning and medical assistance. A warming planet is expected to bring more severe weather events, worsening wildfires and droughts, a decline in air quality, rising sea levels, increases in allergens and in vector-borne diseases, all of which present significant health and wellbeing risks for California populations (CNRA, 2018a).

While the possible outcomes and the feedback mechanisms involved are not fully understood and much research remains to be done, the potential for substantial environmental, social, and economic consequences over the long term may be great. All of these impacts will have either direct or indirect negative effects for the residents and businesses of the proposed Project and the City of Oakland (the City).

Emissions Inventories

An emissions inventory that identifies and quantifies the primary human-generated sources and sinks of GHGs is a well-recognized and useful tool for addressing human society's contributions to climate change. This section summarizes the latest information on global, United States, California, and local GHG emission inventories.

Global Emissions

Global estimates are based on country inventories developed as part of programs of the United Nations Framework Convention on Climate Change. Worldwide man-made emissions of GHGs were approximately 49 billion metric tons (MT) CO₂e (MTCO₂e) in 2010, including ongoing emissions from industrial and agricultural sources and emissions from land use changes (e.g., deforestation). Emissions of CO₂ from fossil fuel use and industrial processes account for 65 percent of the total while CO₂ emissions from all sources accounts for 76 percent of the total. Methane emissions account for 16 percent and N₂O emissions for 6.2 percent. Worldwide emissions of GHGs in 1970 were 27 billion MTCO₂e per year (IPCC, 2015).

U.S. Emissions

In 2017, the United States emitted about 6,457 MMTCO₂e, with 76.1 percent of those emissions coming from fossil fuel combustion. Of the major sectors nationwide, transportation accounts for the highest amount of GHG emissions (approximately 29 percent), followed by electricity (28 percent), industry (22 percent), agriculture (9 percent), commercial buildings (6 percent), and residential buildings (5 percent). Between 1990 and 2017, total net U.S. GHG emissions rose by

1.3 percent, accounting for forestry and land use changes. Since peaking in 2005, net total emissions have decreased by about 9 percent (U.S. EPA, 2019).

State of California Emissions

The California Air Resources Board (CARB) compiles GHG inventories for the State of California. Based on the 2017 GHG inventory data (i.e., the latest year for which data are available from CARB) prepared by CARB in 2019, California emitted 424 MMTCO₂e, including emissions resulting from imported electrical power (CARB, 2019). Between 1990 and 2017, the population of California grew by approximately 9.4 million (from 29.8 to 39.9 million) (California Department of Finance, 2019) representing an increase of approximately 31 percent from 1990 population levels. In addition, the California economy, measured as gross state product, grew from \$773 billion in 1990 to \$2.62 trillion in 2016 representing an increase of approximately 239 percent (just over three times the 1990 gross state product) (California Department of Finance, 2018). Despite the population and economic growth, CARB’s 2017 statewide inventory indicates that California’s net GHG emissions in 2017 were just below 1990 levels, which is the 2020 GHG reduction target codified in California Health and Safety Code (HSC), Division 25.5, also known as The Global Warming Solutions Act of 2006 (AB 32).

Table 4.7-1 identifies, quantifies and compares statewide anthropogenic GHG emissions and sinks (e.g., carbon sequestration due to forest growth) in 1990 and 2016. As shown in the table, the transportation sector is the largest contributor to statewide GHG emissions at approximately 40 percent in 2017.

**TABLE 4.7-1
 STATE OF CALIFORNIA GREENHOUSE GAS EMISSIONS**

Category	Total 1990 Emissions Using IPCC SAR (MMTCo ₂ e)	Percent of Total 1990 Emissions	Total 2017 Emissions Using IPCC AR4 (MMTCo ₂ e)	Percent of Total 2017 Emissions
Transportation	150.7	35%	169.9	40%
Electric Power	110.6	26%	62.4	15%
Commercial Fuel Use	14.4	3%	15.1	4%
Residential	29.7	7%	26.0	6%
Industrial	103.0	24%	89.4	21%
Recycling and Waste ^a	—	—	8.9	2%
High GWP/Non-Specified ^b	1.3	<1%	19.9	5%
Agriculture/Forestry	23.6	6%	32.4	8%
Forestry Sinks	-6.7	-2%	— ^c	—
Net Total (IPCC SAR)	426.6	100%	—	—
Net Total (IPCC AR4)^d	431		424.0	100%

NOTES:

- a Included in other categories for the 1990 emissions inventory.
- b High global warming potential (GWP) gases are not specifically called out in the 1990 emissions inventory.
- c Revised methodology under development (not reported for 2017).
- d CARB revised the State’s 1990 level GHG emissions using GWPs from the IPCC AR4 (IPCC, 2007).

SOURCES: California Air Resources Board, Staff Report – California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit, (2007); California Air Resources Board, “California Greenhouse Gas 2000–2017 Inventory by Scoping Plan Category – Summary,” <http://www.arb.ca.gov/cc/inventory/data/data.htm>, accessed September 2019.

Bay Area Emissions Inventory

In the nine county San Francisco Bay Area, GHG emissions from the transportation sector represent the largest source of the Bay Area's GHG emissions in 2015 at 41 percent, followed by the stationary industrial sources at 26 percent, electricity generation and co-generation at 14 percent, and fuel use (primarily natural gas) by buildings at 10 percent. The remaining 8 percent of emissions is comprised of fluorinated gas emissions and emissions from solid waste and agriculture. Of the total transportation emissions in 2015, on-road sources accounted for approximately 87 percent, while off-road sources accounted for the remainder (BAAQMD, 2017b).

Alameda County Emissions Inventory

Emission inventories developed for Alameda County reveal that activities in the unincorporated County regions and within the County's 14 municipalities generated approximately 13.7 MMTCO_{2e} emissions in 2005 (Alameda County, 2009). The transportation sector is the greatest contributor generating approximately 57 percent of these emissions while commercial/industrial sector accounts for 18 percent. The residential, direct access fuel/power purchases, and waste sectors make up 14 percent, 7 percent and 4 percent, respectively.

City of Oakland Emissions Inventory

The City of Oakland, in partnership with the International Council for Local Environmental Initiatives (ICLEI), an international association of local, regional, and national governments and government organizations that have made a commitment to sustainable development, prepared the Baseline Greenhouse Gas Emissions Inventory Report to determine the community-wide levels of GHG emissions that the City of Oakland emitted in its base year, 2005. The City has since updated its core emissions inventory for calendar years 2010, 2013, 2015 and 2017. The core emissions inventory includes emissions associated with energy used and waste produced within the Oakland city limits, as well as other emission sources associated with activities occurring in Oakland, such as industrial point sources, vehicle travel on roads and highways, public transit, airport and maritime port operations, and energy used to convey water to Oakland (City of Oakland, 2018a). **Table 4.7-2** summarizes Oakland's core emissions inventory as estimated in 2005, 2010, 2013, 2015 and 2017.

Oakland emitted approximately 2.62 MMTCO_{2e} in 2017 from all major sources, with almost two-thirds from on-road transportation. The inventory report shows that core emissions have decreased by approximately 23 percent since 2005. Despite these decreases, the inventory report shows that emissions are not on track to meet the City's 2020 target of 36 percent below 2005 baseline levels. (City of Oakland, 2020a).

**TABLE 4.7-2
 OAKLAND CORE CITYWIDE GHG EMISSIONS (MMTCO₂E)**

GHG Emissions Source	2005	2010	2013	2015	2017	Percent of 2017 Inventory
Transportation, on-road	1,969,635	1,711,318	1,683,005	1,687,596	1,687,818	64%
Commercial Energy	586,839	550,664	528,230	402,983	308,148	12%
Residential Energy	496,715	496,021	472,983	406,537	365,613	14%
Port of Oakland – Airport (Buildings + Energy Use)	10,930	8,142	9,638	8,835	6,330	0.24%
Port of Oakland – Seaport (Buildings + Energy Use, Transportation)	65,540	60,866	58,648	55,084	57,467	2.2%
Solid Waste (Landfill + Transportation)	180,455	137,625	133,539	101,917	125,977	5%
Public Transit	91,779	79,896	76,542	80,119	56,369	2%
Water and Wastewater	11,360	11,223	9,517	9,342	9,327	0.4%
Total	3,413,252	3,055,753	2,972,102	2,752,413	2,617,048	100%

SOURCE: City of Oakland, 2020a.

Port of Oakland Seaport Air Emissions Inventory

Since 2012, the Port of Oakland has published GHG emissions for the activities and geographic area defined in its periodic Seaport Air Emissions Inventories. The Port of Oakland seaport GHG emissions for 2005, 2012, 2015, and 2017 are summarized in the 2017 Seaport Air Emissions Inventory. The estimated 2017 emissions of GHG from the seaport are 209,675 short tons of CO₂e. Although the City’s 2005 and 2015 inventories include emissions from the maritime Port, the numbers do not match for a variety of reasons. In 2005, both the Port and the City include ocean-going vessels in their inventories, but the estimates for total Port emissions differs by approximately 5 percent, likely due to differences in methods and modeling systems used by the Port and the City at that time. In 2015 the difference between inventories is much greater, primarily because the Port includes ocean going vessels in its inventory while the City does not. Note that the City does not rely on the Seaport Air Emissions Inventory for quantifying emissions from seaport sources. (Port of Oakland, 2018; Port of Oakland, 2019)

Existing Site Emissions

The Project site currently accommodates short-term tenants of the Port engaged in uses including truck parking, loaded and empty container storage and staging, berthing vessels for maintenance and storage, and longshore training facilities.⁸ As discussed in Chapter 3, *Project Description*, the existing Port tenants and users of Howard Terminal are assumed to move to other locations within the Seaport (including the Roundhouse parking adjacent to Howard Terminal), the City, or the region where their uses are permitted under applicable zoning and other regulations. All trucks currently making trips in/out of Howard Terminal are expected to continue to make the same number of trips to and from the Seaport from their new locations. Therefore, GHG emissions from

⁸ Other site uses include the Peaker Plant, which is discussed in Chapter 5, *Project Variants*, and the fire station, which was vacant at the time the NOP was issued and for which baseline GHG emissions are therefore assumed to be zero.

current uses at the Project site would still occur in the region and would not be eliminated with the Project.

4.7.2 Regulatory Setting

Federal

U.S. Environmental Protection Agency “Endangerment” and “Cause or Contribute” Findings

The U.S. Supreme Court held that the United States Environmental Protection Agency (U.S. EPA) must consider regulation of motor vehicle GHG emissions. In *Massachusetts v. Environmental Protection Agency et al.*, twelve states and cities, including California, together with several environmental organizations sued to require the U.S. EPA to regulate GHGs as pollutants under the CAA (127 S. Ct. 1438 (2007)). The Supreme Court ruled that GHGs fit within the CAA’s definition of a pollutant and the U.S. EPA had the authority to regulate GHGs.

On December 7, 2009, the U.S. EPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA:

- **Endangerment Finding:** The current and projected concentrations of the six key GHGs—CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆—in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding:** The combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

These findings did not, by themselves, impose any requirements on industry or other entities. However, these actions were a prerequisite for implementing GHG emissions standards for vehicles.

Vehicle Emissions Standards

In 1975, Congress enacted the Energy Policy and Conservation Act, which established the first fuel economy standards for on-road motor vehicles in the United States. Pursuant to the act, the EPA and National Highway Traffic Safety Administration (NHTSA) are responsible for establishing additional vehicle standards. In August 2012, standards were adopted for model year 2017 through 2025 for passenger cars and light-duty trucks. By 2025, vehicles are required to achieve both 54.5 mpg (if GHG reductions are achieved exclusively through fuel economy improvements) and 163 grams of CO₂ per mile. According to the U.S. EPA, a model year 2025 vehicle would emit one-half of the GHG emissions from a model year 2010 vehicle (U.S. EPA, 2012). Notably, the State of California harmonized its vehicle efficiency standards through 2025 with the federal standards (see *Advanced Clean Cars Program* below).

In January 2017, U.S. EPA issued its Mid-Term Evaluation of the GHG emissions standards, finding that it would be practical and feasible for automakers to meet the model year 2022–2025 standards through a number of existing technologies.

In August 2018, the U.S. EPA revised its 2017 determination, and issued a proposed rule that maintains the 2020 Corporate Average Fuel Economy (CAFE) and CO₂ standards for model years 2021 through 2026.⁹ The estimated CAFE and CO₂ standards for model year 2020 are 43.7 mpg and 204 grams of CO₂ per mile for passenger cars and 31.3 mpg and 284 grams of CO₂ per mile for light trucks, projecting an overall industry average of 37 mpg, as compared to 46.7 mpg under the standards issued in 2012. On February 7, 2019, the State of California, joined by 16 other states and the District of Columbia, filed a petition challenging the U.S. EPA's proposed rule to revise the vehicle emissions standards, arguing that the U.S. EPA had reached erroneous conclusions about the feasibility of meeting the existing standards.¹⁰ As of December, 2019, the U.S. EPA's proposed rule remains subject to multiple lawsuits that have been filed in federal court regarding the U.S. EPA's GHG emissions standards. Because the outcome of pending litigation is speculative, this analysis assumes that the U.S. EPA's existing CAFE standards will remain unchanged, and applies those standards as opposed to relying on speculative future standards.

State

California has promulgated a series of executive orders, laws, and regulations aimed at reducing both the level of GHGs in the atmosphere and emissions of GHGs from commercial and private activities within the State. The major components of California's climate protection initiative are summarized below.

California Environmental Quality Act and Senate Bill 97

Under CEQA lead agencies are required to disclose the reasonably foreseeable adverse environmental effects of projects they are considering for approval. GHG emissions have the potential to adversely affect the environment because they contribute to global climate change. In turn, global climate change has the potential to raise sea levels, alter rainfall and snowfall, and affect habitat.

Senate Bill (SB) 97, signed in August 2007, acknowledges that climate change is a prominent environmental issue requiring analysis under CEQA. This bill directed the Governor's Office of Planning and Research (OPR) to prepare, develop, and transmit to the CNRA guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, no later than July 1, 2009. The CNRA was required to certify or adopt those guidelines by January 1, 2010. On December 30, 2009, the CNRA adopted amendments to the State CEQA Guidelines, as required by SB 97. The State CEQA Guidelines amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in draft CEQA documents. The amendments became effective March 18, 2010.

The State CEQA Guidelines are embodied in the California Code of Regulations (CCR), Public Resources Code, Division 13, starting with Section 21000. Section 15064.4 of the 2019 State CEQA Guidelines specifically addresses the significance of GHG emissions, requiring a lead

⁹ Federal Register. Vol. 83, No. 165. August 24, 2018. Proposed Rules.

¹⁰ Amicus brief, 2019. USCA Case #18-1114, Doc#1772455 filed February 14, 2019. Available: <http://climatecasechart.com/case/california-v-epa-4/>. Accessed April 17, 2019.

agency to make a “good-faith effort” to “describe, calculate or estimate” GHG emissions in CEQA environmental documents (CNRA, 2018b). Section 15064.4 further states that the analysis of GHG impacts should include consideration of (1) the extent to which the project may increase or reduce GHG emissions, (2) whether the project GHG emissions would exceed a threshold of significance that the lead agency determines applies to the project, and (3) the extent to which the project would comply with “regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions (see, e.g., section 15183.5(b)).”

The CEQA Guidelines also state that a project’s incremental contribution to a cumulative effect might not be cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program (including plans or regulations for the reduction of greenhouse gas emissions) that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located (State CEQA Guidelines Sections 15064(h)(3 and 15064.4(b)).

The CEQA Guidelines do not require or recommend a specific analytical methodology or provide quantitative criteria for determining the significance of GHG emissions, nor do they set a numerical threshold of significance for GHG emissions. Section 15064.7(c) clarifies that “when adopting or using 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.”

When GHG emissions are found to be significant, State CEQA Guidelines Section 15126.4(c) includes the following direction on measures to mitigate GHG emissions:

Consistent with Section 15126.4(a), lead agencies shall consider feasible means, supported by substantial evidence and subject to monitoring or reporting, of mitigating the significant effects of greenhouse gas emissions. Measures to mitigate the significant effects of greenhouse gas emissions may include, among others:

- (1) Measures in an existing plan or mitigation program for the reduction of emissions that are required as part of the lead agency’s decision;
- (2) Reductions in emissions resulting from a project through implementation of project features, project design, or other measures;
- (3) Off-site measures, including offsets that are not otherwise required, to mitigate a project’s emissions;
- (4) Measures that sequester greenhouse gases; and
- (5) In the case of the adoption of a plan, such as a general plan, long range development plan, or plans for the reduction of greenhouse gas emissions, mitigation may include the identification of specific measures that may be implemented on a project-by project basis. Mitigation may also include the incorporation of specific measures or policies found in an adopted ordinance or regulation that reduces the cumulative effect of emissions.

State of California Executive Orders

Executive Order S-3-05. In 2005, in recognition of California’s vulnerability to the effects of climate change, Governor Arnold Schwarzenegger issued Executive Order S-3-05, which set forth a series of target dates by which statewide emissions of GHGs would be progressively reduced, as follows:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

Executive Order S-1-07. Executive Order S-1-07, which was signed by Governor Schwarzenegger in 2007, proclaims that the transportation sector is the main source of GHG emissions in California, generating more than 40 percent of statewide emissions. It established a low carbon fuel standard (LCFS) with a goal to reduce the carbon intensity of transportation fuels sold in California by at least 10 percent by 2020.

In September 2018, CARB extended the LCFS program to 2030, making significant changes to the design and implementation of the Program including a doubling of the carbon intensity reduction to 20 percent by 2030.

Executive Orders S-14-08 and S-21-09. In November 2008, Governor Schwarzenegger signed Executive Order S-14-08, which expands the State’s Renewable Portfolio Standard (RPS) to 33 percent renewable power by 2020. In September 2009, Governor Schwarzenegger continued California’s commitment to the RPS by signing Executive Order S-21-09, which directs CARB under its AB 32 authority to enact regulations to help the State meet its RPS goal of 33 percent renewable energy by 2020.

Executive Order S-13-08. Governor Schwarzenegger signed EO S-13-08 on November 14, 2008. The order called on State agencies to develop California’s first strategy to identify and prepare for expected climate impacts. As a result, the *2009 California Climate Adaptation Strategy (CAS)* report was developed to summarize the best known science on climate change impacts in the State to assess vulnerability and outline possible solutions that can be implemented within and across State agencies to promote resiliency. The State has also developed an Adaptation Planning Guide (CEMA, 2012) to provide a decision-making framework intended for use by local and regional stakeholders to aid in the interpretation of climate science and to develop a systematic rationale for reducing risks caused or exacerbated by climate change. The State’s third major assessment on climate change explores local and statewide vulnerabilities to climate change, highlighting opportunities for taking concrete actions to reduce climate-change impacts.

Executive Order B-16-12. In March 2012, Governor Jerry Brown issued an executive order establishing a goal of 1.5 million zero emission vehicles (ZEVs) on California roads by 2025. In addition to the ZEV goal, EO B-16-12 stipulated that by 2015 all major cities in California will have adequate infrastructure and be ‘zero-emission vehicle ready’; that by 2020 the State will have established adequate infrastructure to support 1 million ZEVs; that by 2050, virtually all

personal transportation in the State will be based on ZEVs, and that GHG emissions from the transportation sector will be reduced by 80 percent below 1990 levels.

Executive Order B-30-15. Governor Brown signed EO-B-30-15 on April 29, 2015, directed the following:

- Established a new interim statewide reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030.
- Ordered all State agencies with jurisdiction over sources of GHG emissions to implement measures to achieve reductions of GHG emissions to meet the 2030 and 2050 reduction targets.
- Directed CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of MMTCO₂e.

Executive Order B-48-18. On January 26, 2018, Governor Brown issued an executive order establishing a goal of 5 million ZEVs on California roads by 2030.

Executive Order B-55-18. On September 10, 2018, Governor Brown signed EO B-55-18, committing California to total, economy-wide carbon neutrality by 2045. EO B-55-18 directs CARB to work with relevant State agencies to develop a framework to implement and accounting that tracks progress toward this goal.

State of California Policy and Legislation

Assembly Bill 1493

In 2002, Governor Gray Davis signed Assembly Bill (AB) 1493. AB 1493 requires that CARB develop and adopt, by January 1, 2005, regulations that achieve “the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the State.”

To meet the requirements of AB 1493, in 2004 CARB approved amendments to the California Code of Regulations, adding GHG emissions standards to California’s existing standards for motor vehicle emissions. All mobile sources are required to comply with these regulations as they are phased in from 2009 through 2016.

Because the Pavley standards (named for the bill’s author, State Senator Fran Pavley) would impose stricter standards than those under the CAA, California applied to the U.S. EPA for a waiver under the CAA. In 2008, the U.S. EPA denied the application. In 2009, however, the U.S. EPA granted the waiver. The waiver has been extended consistently since 2009; however, in 2018 the U.S. EPA and NHTSA indicated their intent to revoke California’s waiver, and prohibit future State emissions standards enacted under the CAA. As of October 2020, the waiver was still in place and the status of the federal government’s revocation of the waiver was uncertain. Because the outcome of pending litigation is speculative, this analysis assumes that the U.S. EPA’s existing CAFE standards will remain unchanged, and applies those standards, as opposed to relying on speculative future standards.

Senate Bills 1078 and 107

SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010.

California Global Warming Solutions Act of 2006 (Assembly Bill 32 and Senate Bill 32)

In September 2006, Governor Arnold Schwarzenegger signed the California Global Warming Solutions Act (AB 32). AB 32 (California Health and Safety Code, Division 25.5) establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. This reduction will be accomplished by enforcing a statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

In 2016, SB 32 and its companion bill AB 197 amended HSC Division 25.5 and established a new climate pollution reduction target of 40 percent below 1990 levels by 2030 and included provisions to ensure the benefits of State climate policies reach into disadvantaged communities.

Climate Change Scoping Plan

A specific requirement of AB 32 was to prepare a Climate Change Scoping Plan for achieving the maximum technologically feasible and cost-effective GHG emission reduction by 2020. CARB developed and approved the initial Scoping Plan in 2008, outlining the regulations, market-based approaches, voluntary measures, policies, and other emission reduction programs that would be needed to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the State's long-range climate objectives (CARB, 2008).

The First Update to the Scoping Plan was approved by CARB in May 2014 and built upon the initial Scoping Plan with new strategies and recommendations (CARB, 2014). CARB approved the 2017 Climate Change Scoping Plan Update (2017 Scoping Plan Update) in December 2017. The 2017 Scoping Plan Update outlines the proposed framework of action for achieving the 2030 GHG target of 40 percent reduction in GHG emissions relative to 1990 levels (CARB, 2017). The 2017 Scoping Plan Update identifies key sectors of the State's implementation strategy, which includes improvements in low carbon energy, industry, transportation sustainability, natural and working lands, waste management, and water. Through a combination of data synthesis and modeling, CARB determined that the target statewide 2030 emissions limit is 260 MMTCO_{2e}, and that further commitments will need to be made to achieve an additional reduction of 50 MMTCO_{2e} beyond current policies and programs. The cornerstone of the 2017 Scoping Plan Update is an expansion of the Cap-and-Trade program to meet the aggressive 2030 GHG emissions goal and ensure achievement of the 2030 limit set forth by E.O. B-30-15.

The 2017 Scoping Plan Update’s strategy for meeting the State’s 2030 GHG target incorporates the full range of legislative actions and State-developed plans that have relevance to the year 2030, including the following, described elsewhere in this section:

- Extending the low carbon fuel standard beyond 2020 and increasing the carbon intensity reduction requirement to at least 18 percent by 2030;
- SB 350, which increase renewables portfolio standard (RPS) to 50 percent and requires a doubling of energy efficiency for existing buildings by 2030;
- The 2016 Mobile Source Strategy is estimated to reduce emissions from mobile sources including an 80 percent reduction in smog-forming emissions and a 45 percent reduction in diesel particulate matter from 2016 level in the South Coast Air Basin, a 45 percent reduction in GHG emissions, and a 50 percent reduction in the consumption of petroleum-based fuels;
- The Sustainable Freight Action Plan to improve freight efficiency and transition to zero emission freight handling technologies (described in more detail below);
- SB 1383, which requires a 50 percent reduction in anthropogenic black carbon and a 40 percent reduction in hydrofluorocarbon and methane emissions below 2013 levels by 2030; and
- AB 398, which extends the State Cap-and-Trade Program through 2030.

In the 2017 Scoping Plan Update, CARB recommends statewide targets of no more than 6 MTCO₂e per capita by 2030 and no more than 2 MTCO₂e per capita by 2050. CARB acknowledges that because the statewide per capita targets are based on the statewide GHG emissions inventory that includes all emissions sectors in the State, it is appropriate for local jurisdictions to derive evidence-based local per-capita goals based on local emissions sectors and growth projections.

To demonstrate how a local jurisdiction can achieve its long-term GHG goals at the community plan level, CARB recommends developing a geographically specific GHG reduction plan (i.e., climate action plan) consistent with the requirements of CEQA Section 15183.5(b). A so-called “CEQA-qualified” GHG reduction plan, once adopted, can provide local governments with a streamlining tool for project-level environmental review of GHG emissions, provided there are adequate performance metrics for determining project consistency with the plan. Absent conformity with such a plan, CARB recommends “that projects incorporate design features and GHG reduction measures, to the degree feasible, to minimize GHG emissions. Achieving no net additional increase in GHG emissions, resulting in no contribution to GHG impacts, is an appropriate overall objective for new development.” (CARB, 2017)¹¹ While acknowledging that recent land use development projects in California have demonstrated the feasibility to achieve zero net additional GHG emissions (e.g., Newhall Ranch Resource Management and Development Plan), the 2017 Scoping Plan Update states that “Achieving net zero increases in GHG emissions, resulting in no contribution to GHG impacts, may not be feasible or appropriate for every project, however, and the inability of a project to mitigate its GHG emissions to net zero does not imply the project results in a substantial contribution to the cumulatively significant environmental impact of climate change under CEQA. Lead agencies have the discretion to develop evidence-based numeric thresholds (mass emissions, per capita, or per service

¹¹ At pages 100–101.

population) consistent with this Scoping Plan, the State’s long-term GHG goals, and climate change science...To the degree a project relies on GHG mitigation measures, CARB recommends that lead agencies prioritize on-site design features that reduce emissions, especially from VMT, and direct investments in GHG reductions within the project’s region that contribute potential air quality, health, and economic co-benefits locally.” (CARB, 2017)¹²

Cap-and-Trade Program

Initially authorized by the California Global Warming Solutions Act of 2006 (AB 32), and extended through the year 2030 with the passage of AB 398 (2017), the California Cap-and-Trade Program is a core strategy that the State is using to meet its GHG reduction targets for 2020 and 2030, and ultimately achieve an 80 percent reduction from 1990 levels by 2050. CARB designed and adopted the California Cap-and-Trade Program to reduce GHG emissions from “covered entities”¹³ (e.g., electricity generation, petroleum refining, cement production, and large industrial facilities that emit more than 25,000 MTCO₂e per year), setting a firm cap on statewide GHG emissions and employing market mechanisms to achieve reductions.¹⁴ Under the Cap-and-Trade Program, an overall limit is established for GHG emissions from capped sectors. The statewide cap for GHG emissions from the capped sectors commenced in 2013. The cap declines over time. Facilities subject to the cap can trade permits to emit GHGs.¹⁵

Up to eight percent of a covered entity’s compliance obligation can be met using carbon offset credits, which are created through the development of projects, such as renewable energy generation or carbon sequestration projects, that achieve a reduction of emissions or an increase in the removal of carbon from the atmosphere from activities not otherwise regulated, covered under the cap, or resulting from government incentives. Offsets are verified reductions of emissions whose ownership can be transferred to others. As required by AB 32, any reduction of GHG emissions used for compliance purposes must be real, permanent, quantifiable, verifiable, enforceable, and additional. Offsets used to meet regulatory requirements must be quantified according to CARB-adopted methodologies, and CARB must adopt a regulation to verify and enforce the reductions. The criteria developed will ensure that the reductions are quantified accurately and are not double-counted within the system (CARB, 2008).

If California’s direct regulatory measures reduce GHG emissions more than expected, then the Cap-and-Trade Program will be responsible for relatively fewer emissions reductions. If California’s direct regulatory measures reduce GHG emissions less than expected, then the Cap-and-Trade Program will require relatively more emissions reductions. In other words, the Cap-and-Trade Program can be adaptively managed by the State to ensure achievement of California’s 2020 and 2030 GHG emissions reduction mandates, depending on whether other regulatory measures are more or less effective than anticipated.

¹² At page 102. “VMT” refers to vehicle miles travelled.

¹³ “Covered Entity” means an entity within California that has one or more of the processes or operations and has a compliance obligation as specified in subarticle 7 of the Cap-and-Trade Regulation; and that has emitted, produced, imported, manufactured, or delivered in 2008 or any subsequent year more than the applicable threshold level specified in Section 95812(a) of the Regulation.

¹⁴ 17 CCR Sections 95800–96023.

¹⁵ See generally 17 CCR Sections 95811 and 95812.

Senate Bill 375

Signed into law on October 1, 2008, SB 375 supplements GHG reductions from new vehicle technology and fuel standards with reductions from more efficient land use patterns and improved transportation. Under the law, the CARB approved GHG reduction targets in February 2011 for California's 18 federally designated regional planning bodies, known as Metropolitan Planning Organizations (MPOs). The CARB may update the targets every four years and must update them every eight years. MPOs in turn must demonstrate how their plans, policies and transportation investments meet the targets set by the CARB through Sustainable Communities Strategy. The target reductions for the Bay Area, as a regional reduction of per-capita CO₂ emissions from cars and light-duty trucks, were initially approved by CARB in 2010 at a 7 percent reduction by 2020 and 15 percent reduction by 2035, compared to a 2005 baseline. ABAG addresses these targets in *Plan Bay Area 2040*, which identifies Priority Development Areas (PDAs) near transit options to reduce use of on-road vehicles. By focusing and incentivizing future growth in PDAs, *Plan Bay Area 2040* demonstrates how the 9-county Bay Area can reduce per-capita CO₂ emissions by 16 percent by 2035. (MTC and ABAG, 2017)¹⁶ In a March 2018 hearing, CARB approved revised targets of 10 percent reduction in per-capita emissions by 2020, and 19 percent reduction by 2035 (CARB, 2018).

Senate Bill X 1-2

Senate Bill X 1-2, signed by Governor Edmund G. Brown in April 2011, enacted the California Renewable Energy Resources Act. The law obligates all California electricity providers, including investor-owned and publicly owned utilities, to obtain at least 33 percent of their energy from renewable resources by the year 2020.

Advanced Clean Cars Program

In January 2012, pursuant to Recommended Measures T-1 and T-4 of the Scoping Plan, CARB approved the Advanced Clean Cars Program, an emissions-control program for model year 2017 through 2025. The program combines the control of smog, soot, and GHGs with requirements for greater numbers of zero-emission vehicles. By 2025, when the rules will be fully implemented, the new automobiles will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions.

The program also requires car manufacturers to offer for sale an increasing number of zero-emission vehicles (ZEVs) each year, including battery electric, fuel cell, and plug-in hybrid electric vehicles. In December 2012, CARB adopted regulations allowing car manufacturers to comply with California's GHG emissions requirements for model years 2017–2025 through compliance with the EPA GHG requirements for those same model years.¹⁷

Senate Bill 743

In 2013, Governor Brown signed Senate Bill (SB) 743, which added Public Resources Code Section 21099 to CEQA, to change the way that transportation impacts are analyzed in transit

¹⁶ At page 69.

¹⁷ Advanced Clean Car program information available online at: <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/about>. Accessed on February 7, 2020.

priority areas under CEQA to better align local environmental review with statewide objectives to reduce GHG emissions, encourage infill mixed-use development in designated priority development areas, reduce regional sprawl development, and reduce VMT in California.¹⁸

As required under SB 743, OPR developed potential metrics to measure transportation impacts that may include, but are not limited to, vehicle miles traveled (VMT), VMT per capita, automobile trip generation rates, or automobile trips generated. The new VMT metric is intended replace the use of automobile delay and level of service (LOS) as the metric to analyze transportation impacts under CEQA. In its 2018 Technical Advisory on Evaluating Transportation Impacts in CEQA, OPR recommends different thresholds of significance for projects depending on land use types. For example, residential and office space projects must demonstrate a VMT level that is 15 percent less than that of existing development to determine whether the mobile-source GHG emissions associated with the project are consistent with statewide GHG reduction targets. With respect to retail land uses, any net increase of VMT may be sufficient to indicate a significant transportation impact (OPR, 2018).

In 2016, the City of Oakland adopted local VMT metrics to implement the directive from SB 743 (discussed in more detail in Section 4.15, Transportation and Circulation).

Mobile Source Strategy (2016)

Implementing CARB's Mobile Source Strategy includes measures to reduce total light-duty VMT by 15 percent from the business-as-usual in 2050. The Mobile Source Strategy includes an expansion of the Advanced Clean Cars Program (which further increases the stringency of GHG emissions for all light-duty vehicles, and 4.2 million zero-emission and plug-in hybrid light-duty vehicles by 2030). It also calls for more stringent GHG requirements for light-duty vehicles beyond 2025 as well as GHG reductions from medium-duty and heavy-duty vehicles and increased deployment of zero-emission trucks primarily for class 3–7 “last mile” delivery trucks in California. Statewide, the Mobile Source Strategy would result in a 45 percent reduction in GHG emissions, and a 50 percent reduction in the consumption of petroleum-based fuels by 2030/2031.

California Sustainable Freight Action Plan (2016)

California Sustainable Freight Action Plan includes strategies to improve freight efficiency and transition to zero emission freight handling technologies. It includes goals to achieve 25 percent improvement of freight system efficiency by 2030, and to deploy over 100,000 freight vehicles and equipment capable of zero emission operation by 2030, and maximize near-zero emission freight vehicles and equipment powered by renewable energy by 2030 (Caltrans, 2016).

Senate Bill 350

The Clean Energy and Pollution Reduction Act of 2015. SB 350 (Chapter 547, Statutes of 2015) was approved by Governor Brown on October 7, 2015. SB 350 increased the standards of the California Renewable Portfolio Standards (RPS) program by requiring that the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources be increased from 33 percent to 50 percent by December 31, 2030. The Act requires the

¹⁸ Steinberg. 2013. Available online at http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB743, accessed on March 10, 2017.

State Energy Resources Conservation and Development Commission to establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in existing electricity and natural gas final end uses of retail customers by January 1, 2030.

Senate Bill 100

On September 10, 2018, Governor Brown signed SB 100, establishing that 100 percent of all electricity in California must be obtained from renewable and zero-carbon energy resources by December 31, 2045. SB 100 also creates new standards for the RPS goals that were established by SB 350 in 2015. Specifically, the bill increases required energy from renewable sources for both investor-owned utilities and publicly owned utilities from 50 percent to 60 percent by 2030. Incrementally, these energy providers must also have a renewable energy supply of 33 percent by 2020, 44 percent by 2024, and 52 percent by 2027. The updated RPS goals are considered achievable, since many California energy providers are already meeting or exceeding the RPS goals established by SB 350.

Senate Bill 1383 (Short-Lived Climate Pollutants)

Senate Bill 1383, passed in 2016, requires statewide reductions in short-lived climate pollutants (SLCPs) across various industry sectors. The SLCPs covered under AB 1383 include methane, fluorinated gases, and black carbon – all GHGs with a much higher warming impact than carbon dioxide and with the potential to have detrimental effects on human health. SB 1383 requires the CARB to adopt a strategy to reduce methane by 40 percent, hydrofluorocarbon gases by 40 percent, and anthropogenic black carbon by 50 percent below 2013 levels by 2030. The methane emission reduction goals include a 75 percent reduction in the level of statewide disposal of organic waste from 2014 levels by 2025.

Assembly Bill 341

AB 341, which became law in 2011, establishes a new statewide goal of 75 percent recycling through source reduction, recycling, and composting by 2020, and changed the way that the State measures progress toward the 75 percent recycling goal, focusing on source reduction, recycling and composting. AB 341 also requires all businesses and public entities that generate 4 cubic yards or more of waste per week to have a recycling program in place. The purpose of the law is to reduce GHG emissions by diverting commercial solid waste to recycling efforts and expand the opportunity for additional recycling services and recycling manufacturing facilities in California (CalRecycle, 2019).

Assembly Bill 1826

AB 1826, known as the Commercial Organic Waste Recycling Law, became effective on January 1, 2016, and requires businesses and multi-family complexes (with 5 units or more) that generate specified amounts of organic waste (compost) to arrange for organics collection services. The law phases in the requirements on businesses with full implementation realized in 2019:

- **First Tier:** Commencing in April 2016, the first tier of affected businesses included those that generate eight or more cubic yards of organic materials per week.

- **Second Tier:** In January 2017, the affected businesses expanded to include those that generate four or more cubic yards of organic materials per week.
- **Third Tier:** In January 2019, the affected businesses are further expanded to include those that generate four or more cubic yards of commercial solid waste per week.

Assembly Bill 734

California Environmental Quality Act: Oakland Sports and Mixed-Use Project (AB 734), signed by the Governor in September 2018, provides an expedited judicial review process of 270 days for any potential lawsuit pursuant to CEQA, provided the Project meets certain conditions and is approved by the Governor. Among the required conditions are:

- Achieve Leadership in Energy and Environmental Design (LEED) Gold certification for the ballpark and non-residential buildings and LEED Gold or equivalent for residential buildings;
- Result in no net additional GHG emissions, and meets a requirement that not less than 50 percent of the GHG emission reduction measures necessary (excluding those from residential uses) are from local sources; and
- Include a Transportation Management Plan or Transportation Demand Management Program resulting in 20 percent vehicle trip reductions.

A full discussion of the AB 734 requirements is provided in Chapter 3, *Project Description*.

State of California Building Codes

California Building and Energy Efficiency Standards (Title 24)

The CEC first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (CCR Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the State. 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 (typically every three years) to allow for the consideration and inclusion of new energy efficiency technologies and methods (CEC, 2016).

The current Title 24, Part 6 standards (2019 standards) were made effective on January 1, 2020.

California Green Buildings Standards Code (CALGreen)

Part 11 of the Title 24 Building Energy Efficiency Standards is referred to as the California Green Building Standards (CALGreen) Code. CALGreen is intended to encourage more sustainable and environmentally friendly building practices, require low-pollution emitting substances that cause less harm to the environment, conserve natural resources, and promote the use of energy-efficient materials and equipment. Since 2011, the CALGreen Code is mandatory for all new residential and non-residential buildings constructed in the State. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design and overall environmental quality. The CALGreen Code was most recently updated in 2016 to include new mandatory measures for residential and nonresidential uses; the new measures took effect on January 1, 2017 (California Building Standards Commission, 2016).

Regional

The BAAQMD is the regional government agency that regulates stationary sources of air pollution within the nine San Francisco Bay Area counties. The BAAQMD regulates GHG emissions through the following plans, programs, and guidelines.

BAAQMD Clean Air Plan

BAAQMD and other air districts prepare clean air plans in accordance with the state and federal Clean Air Acts. On April 19, 2017, the BAAQMD Board of Directors adopted the 2017 Clean Air Plan Spare the Air, Cool the Climate, an update to the 2010 Clean Air Plan. The Clean Air Plan is a comprehensive plan that focuses on the closely related goals of protecting public health and protecting the climate. Consistent with the State's GHG reduction targets, the plan lays the groundwork for a long-term effort to reduce Bay Area GHG emissions 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050.

As part of the Basin-Wide Methane Strategy outlined in the 2017 Clean Air Plan, the BAAQMD is currently developing a new regulation to address significant releases of methane in the Bay Area, called *Regulation 13, Rule 1: Significant Methane Releases*, which would serve as a general backstop rule to address releases of methane from regulated sources.

BAAQMD Climate Protection Program

The BAAQMD established a climate protection program to reduce pollutants that contribute to global climate change and affect air quality in the San Francisco Bay Area Air Basin. The climate protection program includes measures that promote energy efficiency, reduce vehicle miles traveled, and develop alternative sources of energy, all of which assist in reducing emissions of GHG and in reducing air pollutants that affect the health of residents. BAAQMD also seeks to support current climate protection programs in the region and to stimulate additional efforts through public education and outreach, technical assistance to local governments and other interested parties, and promotion of collaborative efforts among stakeholders.

BAAQMD CEQA Air Quality Guidelines

The BAAQMD CEQA Air Quality Guidelines were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process, consistent with CEQA requirements, and include recommended thresholds of significance, mitigation measures, and background air quality information. The guidelines also include recommended assessment methodologies for air toxics, odors, and greenhouse gas emissions. In June 2010, the BAAQMD's Board of Directors adopted CEQA thresholds of significance and an update of the CEQA Guidelines, which included significance thresholds for GHG emissions based on the emission reduction goals for 2020 articulated by the State Legislature in AB 32. The first threshold, 1,100 MTCO₂e per year, is a numeric emissions level below which a project's contribution to global climate change would be less than cumulatively considerable. For larger and mixed-use projects, the Guidelines state that emissions would be less than cumulatively significant if the project as a whole would result in an efficiency of 4.6 MTCO₂e per service population or better (BAAQMD, 2010).

On March 5, 2012, the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the thresholds of significance in the BAAQMD CEQA Air Quality Guidelines. That decision was appealed to the Court of Appeal and one of the issues in the case has been decided by the California Supreme Court. The Supreme Court found that CEQA does not require an analysis of how existing environmental conditions will impact future residents or users of a proposed project, and remanded the case down for the lower court to decide remaining issues. Following the Superior Court order, the BAAQMD released revised *CEQA Air Quality Guidelines* in May of 2012 that include guidance on calculating air pollution emissions, obtaining information regarding the health impacts of air pollutants, and identifying potential mitigation measures, and which set aside the significance thresholds. There was no challenge to BAAQMD's 2010 greenhouse gas thresholds or the substantial evidence supporting those thresholds (BAAQMD, 2012). In May 2017, BAAQMD published a new version of the Guidelines, which included no changes to the quantitative greenhouse gas thresholds, but presented them as guidance and recommended that lead agencies consider the information to develop their own thresholds of significance.

Under BAAQMD's current Air Quality Guidelines, a local government may prepare a qualified GHG Reduction Strategy that is consistent with AB 32 goals. If a project is consistent with an adopted qualified GHG Reduction Strategy and General Plan that addresses the project's GHG emissions, it can be presumed that the project will not have significant GHG emissions under CEQA (BAAQMD, 2017a).

Metropolitan Transportation Commission/Association of Bay Area Governments Sustainable Communities Strategy

MTC is the federally recognized MPO for the nine county Bay Area, which includes Alameda County and the City of Oakland. On July 18, 2013, Plan Bay Area (MTC and ABAG, 2013) was jointly approved by ABAG's Executive Board and by MTC. The Plan includes the region's Sustainable Communities Strategy, as required under SB 375, and the 2040 Regional Transportation Plan. The Sustainable Communities Strategy lays out how the region will meet GHG reduction targets set by the California Air Resources Board (CARB). CARB's current targets call for the region to reduce per capita vehicular GHG emissions 10 percent by 2020 and 19 percent by 2035 from a 2005 baseline.¹⁹ A central greenhouse gas reduction strategy of Plan Bay Area (2013) is the concentration of future growth within Priority Development Areas (PDAs) and Transit Priority Areas (TPAs). To be eligible for PDA designation, an area must be within an existing community, near existing or planned fixed transit or served by comparable bus service, and planned for more housing. A TPA is an area within one-half mile of an existing or planned major transit stop such as a rail transit station, a ferry terminal served by transit, or the intersection of two or more major bus routes (MTC, 2013). The Project site is located within both a PDA and a TPA.

On July 26, 2017, MTC adopted *Plan Bay Area 2040*, a focused update that builds upon the growth pattern and strategies developed in the original Plan Bay Area (2013) but with updated

¹⁹ CARB, 2018. SB 375 Regional Greenhouse Gas Emissions Reduction Targets. Available: <https://www.arb.ca.gov/cc/sb375/finaltargets2018.pdf>. Accessed: March 11, 2019.

planning assumptions that incorporate key economic, demographic and financial trends since the original plan was adopted (MTC and ABAG, 2017).

Local

City of Oakland General Plan

Land Use and Transportation Element

The Land Use and Transportation Element (which includes the Pedestrian Master Plan and Bicycle Master Plan) of the Oakland General Plan contains the following policies that address issues related to reducing transportation-related sources of GHG Emissions and their effects on Climate Change:

Policy T.2.1: Encouraging Transit-Oriented Development. Transit-oriented development should be encouraged at existing or proposed transit nodes, defined by the convergence of two or more modes of public transit such as BART, bus, shuttle service, light rail or electric trolley, ferry, and inter-city or commuter rail.

Policy T.2.2: Guiding Transit-Oriented Development. Transit-oriented developments should be pedestrian oriented, encourage night and day time use, provide the neighborhood with needed goods and services, contain a mix of land uses, and be designed to be compatible with the character of surrounding neighborhoods.

Policy T.3.5: Including Bikeways and Pedestrian Walks. The City should include bikeways and pedestrian ways in the planning of new, reconstructed, or realigned streets, wherever possible.

Policy T.3.6: Incorporating Design Feature for Alternative Travel. The City will require new development, rebuilding, or retrofit to incorporate design features in their projects that encourage use of alternative modes of transportation such as transit, bicycling, and walking.

Policy T.4.2: Creating Transportation Incentives. Through cooperation with other agencies, the City should create incentives to encourage travelers to use alternative transportation options.

Policy T.4.5: Preparing a Bicycle and Pedestrian Master Plan. The City should prepare, adopt, and implement a Bicycle and Pedestrian Master Plan as a part of the Transportation Element of [the] General Plan.

Policy N.3.2: Encouraging Infill Development. In order to facilitate the construction of needed housing units, infill development that is consistent with the General Plan should take place throughout the City.

Open Space, Conservation and Recreation Element (OSCAR)

The OSCAR Element includes policies that address GHG reduction and adaptation to global climate change. Listed below are OSCAR policies that encourage the provision of open space, which increases vegetation area (trees, grass, landscaping, etc.) to effect cooler climate, reduce excessive solar gain, and absorb CO₂; OSCAR policies that encourage stormwater management, which relates to the maintenance of floodplains and infrastructure to accommodate potential increased storms and flooding; and OSCAR policies that encourage energy efficiency and use of alternative energy sources, which directly address reducing GHG emissions.

Policy OS.1.1: Wildland Parks. Conserve existing City and Regional Parks characterized by steep slopes, large groundwater recharge areas, native plant and animal communities, extreme fire hazards, or similar conditions.

Policy OS.2.1: Protection of Park Open Space. Manage Oakland's urban parks to protect and enhance their open space character while accommodating a wide range of outdoor recreational activities.

Policy CO-12.1: Land Use Patterns Which Promote Air Quality: Promote land use patterns and densities which help improve regional air quality conditions by: (a) minimizing dependence on single passenger autos; (b) promoting projects which minimize quick auto starts and stops, such as live-work development, mixed use development, and office development with ground floor retail space; (c) separating land uses which are sensitive to pollution from the sources of air pollution; and (d) supporting telecommuting, flexible work hours, and behavioral changes which reduce the percentage of people in Oakland who must drive to work on a daily basis.

Policy CO-12.3: Transportation Systems Management. Expand existing transportation systems management and transportation demand management strategies which reduce congestion, vehicle idling, and travel in single passenger autos.

Policy CO-12.4: Design of Development to Minimize Air Quality Impacts: Require that development projects be designed in a manner which reduces potential adverse air quality impacts. This may include: (a) the use of vegetation and landscaping to absorb carbon monoxide and to buffer sensitive receptors; (b) the use of low-polluting energy sources and energy conservation measures; and (c) designs which encourage transit use and facilitate bicycle and pedestrian travel.

Policy CO.13.2: Energy Efficiency. Support public information campaigns, energy audits, the use of energy-saving appliances and vehicles, and other efforts which help Oakland residents, businesses, and City operations become more energy efficient.

Policy CO.13.3: Construction Methods and Materials. Encourage the use of energy-efficient construction and building materials. Encourage site plans for new development which maximize energy efficiency.

Policy CO.13.4: Alternative Energy Sources. Accommodate the development and use of alternative energy resources, including solar energy and technologies which convert waste or industrial byproducts to energy, provided that such activities are compatible with surrounding land uses and regional air and water quality requirements.

Historic Preservation Element

A key Historic Preservation Element policy relevant to climate change encourages the reuse of existing building (and building materials) resources, which could reduce landfill material (a source of methane, a GHG), avoid the incineration of materials (which produces CO₂ as a by-product), avoid the need to transport materials to disposal sites (which produces GHG emissions), and eliminate the need for materials to be replaced by new product (which often requires the use of fossil fuels to obtain raw and manufacture new material).

Safety Element

The Safety Element contains the following policies that address issues related to wildfire and flood hazards that are expected to intensify with climate change.

Policy FI-3: Prioritize the reduction of the wildfire hazard, with an emphasis on prevention.

Policy FL-1: Enforce and update local ordinances and comply with regional orders that would reduce the risk of storm-induced flooding.

Policy FL-2: Continue or strengthen city programs that seek to minimize the storm-induced flooding hazard.

Housing Element

The Housing Element establishes the City's overall housing policies. The Housing Element of the Oakland General Plan includes the following policies and actions pertaining to GHG emissions and climate change:

Policy 7.1: Sustainable Residential Development Programs. In conjunction with the City's adopted Energy and Climate Action Plan (ECAP), develop and promote programs to foster the incorporation of sustainable design principles, energy efficiency and smart growth principles into residential developments. Offer education and technical assistance regarding sustainable development to project applicants.

Policy 7.2: Minimize Energy Consumption. Encourage the incorporation of energy conservation design features in existing and future residential development beyond minimum standards required by State building code.

Policy 7.3: Encourage Development that Reduces Carbon Emissions. Continue to direct development toward existing communities and encourage infill development at densities that are higher than—but compatible with—the surrounding communities. Encourage development in close proximity to transit, and with a mix of land uses in the same zoning district, or on the same site, so as to reduce the number and frequency of trips made by automobile.

Policy 7.4: Minimize Environmental Impacts from New Housing. Work with developers to encourage construction of new housing that, where feasible, reduces the footprint of the building and landscaping, preserves green spaces, and supports ecological systems.

Policy 7.5: Climate Adaptation and Neighborhood Resiliency. Continue to study the potential local effects of climate change in collaboration with local and regional partners, such as BCDC [Bay Conservation and Development Commission]. Identify potential adaptation strategies to improve community resilience to climate change, and integrate these strategies in new development, where appropriate.

Oakland Green Building Ordinance

The City of Oakland adopted mandatory green building standards for private development projects on October 19, 2010 (13040 C.M.S.) (City of Oakland, 2010). The following project types are included in the City's green building ordinance:

- Residential New Construction
- Residential Additions and Alterations
- Non-Residential New Construction

- Non-Residential Additions and Alterations
- Removal of a Historic Resource and New Construction
- Historic Residential Additions and Alterations
- Historic Non-Residential Additions and Alterations
- Mixed-Use Construction
- Construction Requiring a Landscape Plan

All buildings or projects must comply with all requirements of the 2013 California Building Energy Efficiency Standards and subsequent updates to those standards, as well as meet a variety of checklist requirements. These standards indirectly reduce GHGs through design features lowering building energy use and will directly impact the proposed Project as it contains new construction of residential and non-residential uses.

City of Oakland Mandatory Recycling Ordinance

Mandatory recycling in the City of Oakland has been in effect since July 1, 2012 for businesses and institutions with 4 or more cubic yards of garbage service as well as multi-family properties with 5 or more units. Phase 2 of the Mandatory Recycling Ordinance began July 1, 2014, which requires all businesses to participate. Requirements to collect food scraps and compostable paper separately from garbage are effective as of July 1, 2016.

All businesses and institutions (regardless of garbage service volume) must provide containers and service of sufficient number, size and frequency for recyclable materials. The Ordinance prohibits the disposal of any food scraps or compostable paper in the garbage. Organics are considered to be “significant” when 10 or more gallons are disposed of in a garbage cart or 20 or more gallons of organics are disposed of in a garbage bin. Those businesses and institutions with significant waste organics—typically restaurants and grocery stores—must provide containers and service of sufficient number, size and frequency for organics collection.

City of Oakland Municipal Code for Plug-in Electric Vehicle Charging Stations

City Municipal Code Chapter 15.04, Part 11, requires all new multifamily and non-residential buildings to include full circuit infrastructure for plug-in electric vehicle (PEV) charging stations for at least 10 percent of the total parking spaces. In addition, inaccessible conduits for future expansion of PEV spaces must be installed for 90 percent of the total parking at multi-family buildings and 10 percent of the total parking at non-residential buildings. The new requirements are designed to accelerate the installation of vehicle chargers to address demand.

2017 Pedestrian Master Plan

Oakland’s Pedestrian Master Plan, *Oakland Walks!* was adopted June 27, 2017, and identifies policies and implementation measures that promote a walkable city. The plan’s vision is built around four pillars – Safety, Equity, Responsiveness, and Vitality (City of Oakland, 2017a). For more details about the plan, see Section 4.15, *Transportation and Circulation*.

2019 Bicycle Master Plan

The Oakland City Council adopted the Let's Bike Oakland Plan on July 9, 2019, incorporating it into the City's General Plan. The plan includes four main goals regarding access, health and safety, affordability and collaboration. Each goal outlines specific objectives and actions related to the goal (City of Oakland, 2019a). For more details about the plan, see Section 4.15, *Transportation and Circulation*.

City of Oakland GHG Reduction Targets and Climate Action Plan

In 2009, the Oakland City Council passed Resolution 82129 establishing greenhouse gas (GHG) reduction targets for the City, setting goals of 36 percent reduction by 2020 and 83 percent reduction by 2050, relative to 2005. Resolution No. 84126 C.M.S., approved December 4, 2012, adopted the Energy and Climate Action Plan, which provided the City's strategy through 2020 and included Oakland's first GHG Emissions Inventory as an Appendix.

In October 2018, the Oakland City Council passed Resolution 87183 adopting an interim citywide GHG emissions reduction target of 56 percent below 2005 levels by the year 2030 to keep the City on track to meeting its 2050 target. The staff report recommending adoption of the new, interim GHG reduction target for 2030 was based on the 2018 report *Pathways to Deep GHG Reduction in Oakland Final Report* (City of Oakland, 2018b), which uses the CURB²⁰ planning tool to identify the most cost-effective GHG reduction strategies for achieving long-term GHG targets consistent with state and international goals. The City's 2018 CURB report represents a robust analysis of the land use and transportation sectors, identifying the following measures related to building and transportation systems that the City could take through 2030 to change its existing emissions trajectory and achieve its long-term GHG reduction goals:

- Update codes for new buildings to eliminate gas heating systems by 2030
- Accelerate the electrification of space heating systems and dramatically improve building envelopes in existing buildings
- Increase mass transit options and coverage
- Continue to build out pedestrian and bicycle infrastructure
- Accelerate the electrification of private vehicles and low-capacity taxi and transportation network company (TNC) vehicles

In July 2020, via Resolution 88267, Oakland City Council adopted the 2030 Equitable Climate Action Plan (ECAP), a comprehensive plan to achieve the 2030 GHG reduction target and increase Oakland's resilience to the impacts of the climate crisis, both through a deep equity lens (City of Oakland, 2020b). Alongside the 2030 ECAP, Council also adopted a goal to achieve community-wide carbon neutrality no later than 2045 (City of Oakland, 2020c). Achieving

²⁰ Climate Action for Urban Sustainability (CURB) is a scenario planning tool that was developed by the World Bank, C40, Global Covenant of Mayors, and Bloomberg Philanthropies to assist cities in the creation of climate action plans. More information available at: <http://www.worldbank.org/en/topic/urbandevelopment/brief/the-curb-tool-climate-action-for-urban-sustainability>.

carbon neutrality will require complete decarbonization (ensuring that all mechanical systems run on clean electricity) of Oakland's building sector.

The 2030 ECAP includes a set of 40 Actions projected to result in a 60 percent reduction in GHG emissions by 2030, relative to Oakland's 2005 emission levels. Actions are split into seven sectors:

- Transportation and Land Use
- Buildings
- Material Consumption and Waste
- Adaptation
- Carbon Removal
- City Leadership
- Port of Oakland

The following 2030 ECAP Actions direct the City to take actions that would affect private development in Oakland:

TLU-1: Align all Planning Policies and Regulations with ECAP Goals and Priorities. In the course of scheduled revisions, the City will amend or update the General Plan, Specific Plans, Zoning Ordinance, Subdivision Regulations, Parks Master Plan, and appropriate planning policies or regulations to be consistent with the GHG reduction, adaptation, resilience, and equity goals in this ECAP. Appropriate planning policies should study the following strategies and incorporate such policies that are found not to have adverse environmental or equity impacts:

- Remove parking minimums and establish parking maximums where feasible, ensuring public safety and accessibility
- Require transit passes bundled with all new major developments
- Revise zoning such that the majority of residents are within 1/2-mile of the most essential destinations of everyday life
- Provide density bonuses and other incentives for developments near transit that provide less than half of the maximum allowable parking
- Update the Transit Oriented Development (TOD) Guidelines to further prioritize development of housing near transit, including housing for low, very low, and extremely low-income levels
- Require structured parking be designed for future adaptation to other uses
- Institute graduated density zoning
- Remove barriers to and incentivize development of affordable housing near transit
- Incorporate policies addressing sea level rise, heat mitigation, and other climate risks into zoning standards and all long-range planning documents. Revise these policies every five years based on current science and risk projections
- Identify and remove barriers to strategies that support carbon reduction, adaptation, resilience, and equity goals, including community solar and energy storage

TLU-2: Align Permit and Project Approvals with ECAP Priorities. The City will amend Standard Conditions of Approval (SCAs), as well as mitigation measures and other permit conditions, to align with the ECAP's GHG reduction priorities. The City will explore adoption of a threshold of significance for GHG impacts to align with the ECAP. In applying conditions on permits and project approvals, the City will ensure that all cost-effective strategies to reduce GHG emissions from buildings and transportation are required or otherwise included in project designs, including infrastructure improvements like bicycle corridor enhancements, wider sidewalks, crossing improvements, public transit improvements, street trees and urban greening, and green stormwater infrastructure. Where onsite project GHG reductions are not cost-effective, prioritize local projects benefiting frontline communities.

TLU-5: Create a Zero Emission Vehicle (ZEV) Action Plan. Completion of the ZEV Action Plan by 2021 will increase adoption of electric vehicles and e-mobility while addressing equity concerns and prioritizing investment in frontline communities. The plan will set ambitious targets for ZEV infrastructure and be coordinated with other land use and mobility options so that ZEVs increase as a percentage of all vehicles while overall vehicle miles traveled decreases. The plan will address the following sectors: medium and heavy-duty vehicle electrification, including trucks and delivery vehicles; personal vehicle charging infrastructure in multifamily buildings, including affordable buildings; curbside charging; electric micromobility; workforce development; curbside charging in the public right-of-way; and City-owned parking facilities.

TLU-7: Rethink Curb Space. The City will prioritize use of curb space throughout the city by function. In order of priority, the City will allocate curb space for mobility needs for public transit and active transportation, such as walking and biking; access for people and commerce (loading zones and short-term parking); activation; and storage for long-term parking. The City's adopted Bike and Pedestrian Plans will be used to determine mobility needs. Where on-street parking is provided, the City will revise pricing, availability, and location of parking to encourage (in order of priority) active transportation, public transit, and clean vehicles, without increasing cost-burden to low-income residents and other sensitive populations such as seniors. The City will also require parking costs to be unbundled from residential and commercial leases.

TLU-8: Expand and Strengthen Transportation Demand Management Requirements. The City will increase TDM performance requirements for new developments where feasible to support the mode shifts necessary to achieve a low carbon transportation system. The City will expand the TDM program to include requirements for existing employers, and fund ongoing monitoring and enforcement of TDM requirements.

B-1: Eliminate Natural Gas in New Buildings. By 2023, the City will prohibit new buildings and major renovations from connecting to natural gas infrastructure.

B-4: Reduce Lifecycle Emissions from Building Materials. By 2023, the City will adopt a concrete code for new construction that limits embodied carbon emissions. In subsequent building code updates, the City will implement improved embodied carbon performance standards including additional materials and material-efficient building practices, with exemptions for cost barriers as needed to prevent these changes from directly increasing housing or rent costs. The City will ensure requirements are at least as stringent as the State of California procurement standards in effect at the time of the building code adoption. The City will explore ways of supporting local market development for low-lifecycle-emission and carbon-storing biogenic building materials.

In addition, ECAP measures that may apply directly to private development include:

TLU-4: Abundant, Affordable, and Accessible Public Transit. The City will work with public transit agencies to replace autos with public transit as a primary transportation mode for trips beyond walking distance, ensuring convenient, safe, and affordable public transit access within Oakland and to neighboring cities for all Oaklanders.

TLU-9: Ensure Equitable and Clean New Mobility. Ensure that new mobility platforms and technologies equitably support City carbon reduction goals, including integrated planning for vehicles, public transit, and active transportation networks and amenities.

B-3: Prevent Refrigerant Pollution. By 2023, the City will develop a refrigerant management program that:

- Establishes a phaseout timeline for high-GWP refrigerants in existing buildings
- Integrates with existing local and regional energy efficiency and building electrification programs as appropriate
- Ensures enforcement of performance measures
- Identifies financial assistance for low-income residents and businesses; and
- Aligns with refrigerant management strategies adopted by the State of California

MCW-1: Eliminate Disposal of Compostable Organic Materials to Landfills. The City will fully fund and implement the requirements of California SB1383 (Short-Lived Climate Pollutants: Organic Waste Methane Emissions Reduction), reduce surplus food waste, and eliminate disposal of compostable organic materials to landfills. The City will ensure robust engagement with businesses and institutions, including schools, and continued residential outreach to reduce wasted food and effectively keep compostable material out of the landfill-bound waste stream.

MCW-3: Eliminate Single-Use Plastics and Prioritize Reuse in Food Preparation, Distribution, and Sale. By 2023, the City will work with StopWaste and regional partners to pass an ordinance to reduce the prevalence of single-use plastic in Oakland and to ensure that reusable food service ware is the default in dining, including requiring reusable food service ware for all dine-in establishments.

MCW-6: Establish a Deconstruction Requirement. The City will establish a deconstruction requirement to reduce demolition waste from construction and renovation and facilitate material reuse. The City will regulate hauling and processing of construction and demolition debris to ensure that salvageable materials are identified and removed for reuse instead of being recycled or disposed to landfill.

A-2: Enhance Community Energy Resilience. Work with EBCE to develop a program and timeline for increasing resilience to power losses, including Public Safety Power Shutoffs (PSPS), and climate-driven extreme weather events for low-income, medically dependent, and elderly populations through installation of renewable energy and onsite energy storage with islanding capabilities, following appropriate project-level environmental review. Include energy efficiency building upgrades in any program, leveraging local and regional incentives.

A-6: Expand and Protect Green Infrastructure & Biodiversity. The City will fund and implement a green infrastructure program for the installation and maintenance of projects and existing civic resources such as the parks system and public spaces, to improve stormwater management, support biodiversity, reduce air pollution exposure, and increase access to

natural spaces, including trees. The City will prioritize investment in frontline communities, and particularly in residential neighborhoods dominated by concrete and asphalt with limited green space and elevated air pollution, in Priority Conservation Areas, and in areas where green infrastructure, including trees and other types of vegetated buffers, can effectively address stormwater management issues and reduce air pollution exposure among sensitive populations.

CR-1: Develop Local Carbon Investment Program. By 2023, the City will establish a program for both voluntary and compliance GHG mitigation fees to be invested locally. Prioritize projects in frontline communities, such as tree planting and urban greening, including in parks; building electrification; creek restoration; and neighborhood EV car share.

CR-2: Expand and Protect Tree Canopy Coverage. By 2022, the City create a fifty-year Urban Forest Master Plan that prioritizes strategies to address disparities among neighborhoods in tree canopy coverage, and ensures that carbon sequestration is a major factor in tree planting targets, selection of tree species, and tree management practices.

City of Oakland Ordinance Requiring All-Electric Construction in Newly Constructed Buildings

On December 1, 2020, the City of Oakland adopted Ordinance 13632 prohibiting newly constructed buildings (both residential and commercial) from connecting to natural gas or propane. Newly constructed buildings must use a permanent supply of electricity as the source of energy for all space heating, water heating (including pools and spas), cooking appliances, and clothes drying appliances. The prohibition does not affect existing buildings, renovations or additions made to a structure, including attached accessory dwelling units. The ban includes a waiver for developers who can demonstrate that it is not feasible for a new building to go 100 percent electric.

Port of Oakland Seaport Air Quality 2020 and Beyond Plan

In June 2019, the Port of Oakland approved its Seaport Air Quality 2020 and Beyond Plan (Port of Oakland, 2019), a masterplan that addresses emissions arising from equipment and operations at the Seaport, with a pathway towards zero emissions. The 2020 and Beyond Plan seeks to minimize emissions of criteria air pollutants and toxic air contaminants, including diesel particulate matter (DPM), as well as GHG emissions. The 2020 and Beyond Plan goals and strategies are designed to complement concurrent and future plans and studies by federal, State, regional, and regulatory agencies and organizations to address air quality, community health risk, and climate change. It builds upon the Port's existing Maritime Air Quality Improvement Plan that was approved by the Board of Port Commissioners in 2009.

Other City of Oakland Sustainability Programs and Policies

The City of Oakland has supported and adopted a number of programs and policies designed to reduce GHG emissions and continue Oakland's progress toward becoming a model sustainable city (City of Oakland, 2015). Other programs and policies of relevance to the proposed Project include:

- **Sustainable Oakland Program.** Oakland's sustainability efforts, which include actions that could reduce GHG emissions, are coordinated through the Sustainable Oakland program, a

product of the Oakland Sustainability Community Development Initiative (SDI) created in 1998 (Ordinance 74678 C.M.S.).

- **Waste Reduction and Recycling Programs.** In March 2006, the Oakland City Council adopted a Zero Waste Goal by 2020 Resolution (Resolution 79774 C.M.S.) and commissioned the creation of a Zero Waste Strategic Plan to achieve the goal of 90 percent diversion from landfill.

In July 2016, the City of Oakland expanded its compost and recycling services to further its progress toward zero waste. These improvements have included:

- Compost service for food scraps and yard trimmings covering all residences, including apartment buildings and condos over five units;
- Bulky pickup service for condos and apartment buildings as well as bulky drop-off events for residents;
- Improved right-sizing opportunities for residents, including 20 gallon carts for all three material streams.

In 2016, over 600 Oakland commercial customers signed up for organics collection service, bringing the total number of commercial organics subscribers to nearly 1500 by July 2017. Technical assistance to help businesses divert the correct materials is provided by StopWaste (Alameda County's Regional Agency), and Waste Management of Alameda County, Inc. (Service Provider). The Oakland Unified School District, among other organizations, is recovering surplus edible school food and providing it to those in need.

Oakland supports a Recycling Market Development Zone (RMDZ) to incentivize the local use of recycled materials such as paper and cardboard, glass, ferrous metals, mixed plastic, and yard and food waste. The RMDZ encompasses Oakland's central business district, major industrial areas in West Oakland and the Coliseum area, the Port of Oakland's seaport facilities, and the Port of Oakland's Oakland International Airport. Oakland offers businesses participating in the RMDZ expedited permit processing, low-interest loans, and technical assistance such as site location and project coordination.

The City also adopted Construction and Demolition Recycling requirements, for which the City passed a resolution in July 2000 (Ordinance 12253, OMC Chapter 15.34), requiring certain nonresidential or apartment house projects to recycle 100 percent of all Asphalt & Concrete (A/C) materials and 65 percent of all other materials. These programs reduce GHG emissions by diverting degradable organic carbon from the landfill that would otherwise produce methane and through the reuse of existing construction and demolition materials - reducing upstream fossil-based energy required for the extraction of virgin resources and fabrication of new building materials.

Based on solid waste disposal rates reported by the California Department of Resources Recycling and Recovery (CalRecycle) for the City of Oakland in 2015 (CalRecycle, 2019), the City currently diverts about 70 percent of its waste from landfills to be recycled or reused, which exceeds the previous statewide goal to reduce waste by 50 percent in 2000 under AB 939. The current statewide goal mandated under AB 341 is to reduce waste disposal by 75 percent by 2020.

West Oakland Community Action Plan

AB 617 requires that communities and air districts collaborate to reduce air pollution and associated health effects in certain impacted communities like West Oakland. Pursuant to AB 617, the BAAQMD and the West Oakland Environmental Indicators Project together developed a community emissions reduction plan for West Oakland, referred to as the West Oakland Community Action Plan. The plan, adopted by the BAAQMD on October 2, 2019, and by CARB on December 5, 2019, identifies 89 potential community-level strategies and control measures that may reduce criteria air pollutant, toxic air contaminant, and GHG emissions. The West Oakland Community Action Plan Final Environmental Impact Report was certified on October 2, 2019. Specific strategies and emissions reduction measures are organized under the following categories: Health Programs, Land Use, Trucks, Other Mobile Sources, and Stationary Sources. Selected measures and strategies that are relevant to the proposed Project include, but are not limited to the following (BAAQMD and West Oakland Environmental Indicators Project, 2019):

Action 9: The City of Oakland develops a plan to limit the hours that trucks can operate in the community.

Action 13: The City of Oakland conducts a study regarding development fees for environmental mitigations.

Action 14: The Air District provides subsidized loans for local businesses to install energy storage systems (e.g., batteries, fuel cells) to replace stationary sources of pollution (e.g., back-up generators).

Action 17: The City of Oakland adopts policies to lessen air quality impacts of residential and office buildings through the reduction or elimination of natural gas systems.

Action 18: The Air District advocates for more electrical infrastructure and power storage, development of (1) fast-charging facility, (1) truck charging stations and better land use support for electric trucks by 2025.

Action 20: The City of Oakland revises development requirements to require the implementation of as many transportation demand management (TDM) strategies as feasible by developers of new buildings.

Action 29: CARB develops the following regulations to increase the number of zero-emission trucks and buses operating in West Oakland:

- The Advanced Clean Trucks regulation to transition to zero-emission technology those truck fleets that operate in urban centers, have stop-and-go driving cycles, and are centrally maintained and fueled.
- Amendment to the drayage truck regulation to transition the drayage truck fleet to zero emissions.

Action 36: The Air District works with CARB to streamline the process for providing financial incentives for fueling infrastructure, and for low and zero-emission equipment. The Air District increases outreach and assistance to individual owner-operators and small companies by providing 2 workshops in West Oakland by 2022

Action 44: The Air District offers financial incentives to replace box and yard diesel trucks with zero emission trucks owned by West Oakland businesses every year.

Action 47: The Air District will award up to \$1 million in funding incentives to pay for the cost of purchasing cleaner equipment in West Oakland potentially including: electric lawn and garden equipment, battery electric Transportation Refrigeration Units, cargo-handling equipment by 2021.

Action 49: The Air District will award up to \$1 million in funding incentives to pay for the cost of purchasing cleaner equipment in West Oakland potentially including: electric lawn and garden equipment, battery electric Transportation Refrigeration Units, cargo-handling equipment by 2021.

Action 52: Through the Pilot Trip Reduction Program, the BAAQMD offers incentives for the purchase of electric bicycles for bike share programs.

Action 69: The Air District advocates for a plan that East Bay Clean Energy and PG&E are spearheading to replace the Dynergy Power Plant with a cleaner and more reliable source of energy by 2022. The proposed location for this initiative is the Oakland C, Oakland L, Maritime Port of Oakland, and Schnitzer Steel substation pocket, which is located within PG&E's Oakland distribution planning area. Eligible resource types include: (1) in-front-of-the-meter renewable generation; (2) in-front-of-the-meter energy storage, and (3) behind-the-meter energy storage. EBCE is seeking to procure the energy, resource adequacy (RA), and renewable energy credits (RECs) associated with these local resources, while PG&E will focus on meeting Oakland's transmission reliability needs.

Action 81: The Alameda County Public Health Department works with agency and local partners to investigate the use of green building approaches in housing construction and renovation that will reduce emissions and exposure to air pollution emissions. This work examines weatherization/energy efficiency and renewable energy services. This work draws from the Contra Costa County Health Department's pilot effort in cooperation with the Regional Asthma Management Program.

Action 83: The City of Oakland revises standard conditions of approval for conditional use permits for large projects to require "opt-up" to East Bay Community Energy's Brilliant 100 carbon-free electricity supply.

4.7.3 Significance Criteria

The City has elected to use project-specific thresholds for the purposes of this EIR, consistent with State CEQA Guidelines Section 15064.4 and Appendix G. Specifically, the Project would be deemed to have a significant adverse impact²¹ related to GHG emissions if it would:

1. Generate "net additional" GHG emissions, either directly or indirectly, from the construction and operation of the Project;
2. Result in a conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs.

²¹ Greenhouse gas impacts are, by their nature, cumulative impacts because one project by itself cannot cause global climate change. These thresholds pertain to a project's contribution to cumulative impacts but are labeled "Project-Level Impacts" here to be consistent with the terminology used by BAAQMD.

The first threshold is consistent with the requirements of AB 734, which requires that the Project will not result in any net additional emissions of GHGs compared to the baseline. The no net additional threshold is an appropriate CEQA significance threshold for this Project given this special State legislation and the unique major league ballpark Project use. The City has identified this threshold as appropriate given the unique nature of the Project, available guidance, and the requirements of AB 734. This threshold does not establish a precedent for use for any other project within the City.

The second threshold requires an assessment of the Project's consistency with applicable plans, policies or regulations adopted for the purpose of reducing the emissions of GHGs, including the City's 2030 ECAP, *Plan Bay Area 2040*, CARB's 2017 Climate Change Scoping Plan Update, and Executive Order S-3-05.

For further discussion of the City's CEQA significance thresholds for GHG, refer to Appendix AIR.

Approach to Analysis

GHG emissions and global climate change represent cumulative impacts of human activities and development projects locally, regionally, statewide, nationally, and worldwide. GHG emissions from all of these sources cumulatively contribute to the significant adverse environmental impacts of global climate change. No single project could generate enough GHG emissions to noticeably change the global average temperature; instead, the combination of GHG emissions from past, present, and future projects around the world have contributed and will continue to contribute to global climate change and its associated environmental impacts.

The following analysis of the proposed Project's impact on climate change focuses on the Project's contribution to cumulatively significant GHG emissions. Given that analysis of GHG emissions is cumulative in context, this section constitutes both the individual project-specific impact and the cumulative assessment.

Project Features

Construction Activities

Construction of the Project would generate GHG emissions through the use of off-road construction equipment, construction workers' vehicle trips, truck hauling trips, and vendor truck trips. In addition, construction GHG emissions are generated by the use of stationary equipment (e.g., generators and air compressors) and indirectly by the electricity used to power off-road equipment and to supply, treat, and distribute water that is used in the construction process. For details on construction equipment and phasing, see Section 4.2, *Air Quality*, and the *Air Quality Technical Report* (Appendix AIR.1).

Project Operations

The Project would generate operational GHG emissions from a variety of sources, including stationary sources (diesel emergency generators); energy sources (natural gas combustion for heating and cooking); area sources (landscape equipment); indirect emissions from purchased

electricity;²² water and wastewater sources, solid waste sources, mobile sources (daily automobile and truck trips), transportation refrigeration units, and truck idling emissions from Port delays.

GHG emissions were calculated separately for Phase 1 operations and full buildout operations, and separately for the ballpark and non-ballpark land uses. Phase 1 will include the ballpark with up to 3,500 parking spaces, up to 540 residential units, up to 250,000 square feet of office, up to 30,000 square feet of retail, approximately 400 hotel rooms located in one or more hotels, up to 1,240 parking spaces, and associated infrastructure. Phase 2 will include the remaining non-ballpark development which comprises up to 2,460 residential units, up to 1.25 million square feet of office, up to 240,000 square feet of retail, up to 50,000 square feet of performance venue, an additional 5,660 parking spaces for the remainder of the mixed-use development, and associated infrastructure. On-site ballpark parking would be reduced over time by 1,500 parking spaces for a total of up to 2,000 parking spaces for the ballpark and 6,900 parking spaces for other uses at full buildout.

The proposed ballpark at Howard Terminal, to be completed in Phase 1, will have a capacity of 35,000 attendees. For the Proposed Ballpark, it was assumed that the Athletics game schedule would not shift substantially from current Coliseum activity, which typically includes 41 weekday evening, 14 weekday day, and 27 weekend games. For other events, it was assumed that the ballpark would host up to 9 concerts with a maximum of 35,000 attendees, 100 corporate or community events with a maximum of 2,000 attendees, 16 plaza events with a maximum of 4,000 attendees, and 35 other events with a maximum of 7,500 attendees per event (for a total of approximately 841,500 event attendees annually). As estimates, these numbers are at the high end of what may occur, and therefore provide a conservative basis for the analysis.

Sustainable Design Features

LEED Certification

To qualify for CEQA expedited judicial review for claims under AB 734, the ballpark must receive LEED Gold certification for new construction within one year after completion of the first baseball season, and each new nonresidential building must receive LEED Gold certification for new construction within one year after its construction is completed. Residential buildings must achieve sustainability standards of at least a LEED Gold level or the comparable GreenPoint rating, including meeting sustainability standards for access to quality transit. According to Build It Green, the nonprofit organization that developed the rating system, the GreenPoint Rated (Version 7) equivalent to LEED Gold for Homes (v4) is GreenPoint Rated Gold, requiring 100 to 139 points (Build It Green, 2019).

Electric Vehicle Chargers

Chapter 15.04 of the City's Municipal Code requires the installation of plug-in electric vehicle (PEV) charging infrastructure for at least 10 percent of the proposed Project's total number of parking spaces (City of Oakland, 2017b). City code requires EV-ready electrical prewiring but not actual charger installation. The Project sponsor anticipates that the electric vehicle charging stations will achieve a similar or better functionality as a Level 2 charging station. This will

²² Indirect emissions are those that result from an activity (such as the use of purchased electricity), but are actually emitted from sources owned by other entities (e.g., a fossil-fueled power plant).

encourage the use of EVs at the Project site and discourage the use of gasoline and diesel passenger vehicles, thus reducing mobile source GHG emissions associated with vehicle travel to and from the Project site and requiring analysis of indirect emissions related to the source of electricity. Refer to Appendix AIR, *Air Quality Supporting Information*, for additional information on quantification methods, along with studies supporting the link between EV charging infrastructure and consumer EV purchases and EV travel.

Transportation Management Plan & Transportation Demand Management

To qualify for judicial streamlining under AB 734, the Project needs to meet several environmental standards, including achievement of a 20 percent vehicle trip reduction (VTR) via implementation of a Transportation Management Plan (TMP) and/or Transportation Demand Management (TDM) Plan. This requirement applies to both the ballpark, for which a TMP is proposed, and the other development, for which a TDM Plan is proposed. The 20 percent VTR needs to be achieved within one year after completing the first baseball season for the ballpark component of the Project and within one year after completing the other development.

Note that while the TMP and TDM Plan are required by AB 734 and proposed as part of the Project, they are also addressed in transportation mitigation to ensure their effectiveness and monitoring. For more information, see Section 4.15, *Transportation and Circulation*.

Methods for Analysis of Impacts

The evaluation of GHG emissions that may result from the construction and long-term operations of the Project is consistent with State CEQA Guidelines Section 15064.4(a) and recent related guidance from OPR.²³ This analysis considers GHG emissions resulting from Project-related incremental (net) increases in the use of on road vehicles, electricity, and natural gas compared to existing conditions. This includes construction activities associated with the proposed Project such as demolition, hauling, and construction worker trips. This analysis also considers indirect GHG emissions from water conveyance, wastewater generation, and solid waste handling. Because potential impacts resulting from GHG emissions are long-term rather than acute, GHG emissions were calculated on an annual basis.

GHG quantification methods rely on guidance from state and regional agencies with scientific expertise in quantifying GHG emissions, including CARB and the BAAQMD. GHG emissions were estimated primarily using methods consistent with CalEEMod Version 2016.3.2, which is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria air pollutant and GHG emissions from a variety of land use projects. CalEEMod was developed in collaboration with the air districts of California and is recommended by the BAAQMD for evaluating GHG emissions for projects under CEQA.²⁴ CalEEMod separates the

²³ The GHG operational analysis is consistent with the OPR's *CEQA and Climate Change Advisory Discussion Draft*. As stated therein, "when possible, lead agencies should quantify the project's construction and operational greenhouse gas emissions, using available data and tools, to determine the amount, types, and sources of greenhouse gas emissions resulting from the project." Governor's Office of Planning and Research, *CEQA and Climate Change Advisory Discussion Draft*, December 2018, page 8. Accessed March 2019.

²⁴ BAAQMD recommended tools and methodologies for CEQA. <http://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/ceqa-tools>. Accessed April 25, 2019.

construction process into multiple phases to account for various construction scenarios and associated emissions, including demolition, site preparation, grading, building, architectural coating, and paving phases. CalEEMod also quantifies emissions from operational activities based on the project land use types and user-defined inputs for project location, operational year, and climate zone. Regional data (e.g., emission factors, trip lengths, meteorology, source inventory, etc.) have been provided by the various California air districts to account for local requirements and conditions. The model is an established, accurate and comprehensive tool for quantifying air quality and GHG impacts from land use projects throughout California.²⁵

CalEEMod uses CARB's approved on-road and off-road equipment emission models including the Emission FACTor model (EMFAC) for 2014 (EMFAC2014) and the CARB In-Use Off-Road Equipment model (OFFROAD2011), and studies commissioned by California agencies such as the CEC and CalRecycle. OFFROAD is an emission factor model used to calculate emission rates from off-road mobile sources (e.g., construction equipment, agricultural equipment). The off-road diesel emission factors used by CalEEMod are based on the CARB OFFROAD2011 program. EMFAC is an emission factor model used to calculate emissions rates from on-road vehicles (e.g., passenger vehicles). The emission factors used by CalEEMod are based on the CARB EMFAC2014 program. CARB has released an updated EMFAC2017 version that includes various updates, notably the incorporation of U.S. EPA and ARB regulations and standards (e.g., Advanced Clean Cars and the Truck and Bus Rule). EMFAC 2017 was approved for use by the U.S. EPA on August 15, 2019. To improve the accuracy of the mobile GHG emission inventories, EMFAC2017 was incorporated into this analysis.

Determining Net Additional Emissions of Greenhouse Gases²⁶

The net additional GHG emissions associated with the proposed Project is defined as the difference in emissions between the A's related existing emissions and the Project's total operational emissions, including construction emissions amortized over the lifetime of the Project. For the purpose of the GHG analysis, existing conditions include the Athletics' headquarters/offices at Jack London Square and the operations at the existing 47,170-seat Coliseum that are associated with Oakland Athletics' home games that will be shifted to the Project site once the new ballpark is operational. For purposes of the analysis, the 30-year annual average A's game attendance of 22,671 at the Coliseum was used as the existing conditions attendance. The Coliseum also hosts non-A's events, including National Football League (NFL) football games (through 2019 season after which Oakland Raiders relocated to Las Vegas, Nevada) and other special events (e.g., Motocross and Monster Jam exhibitions). However, only emissions associated with baseball-related events and activities that would be relocated to the new ballpark were accounted for in the estimate of "net additional" emissions associated with the Project. Since emissions associated with other

²⁵ See: <http://www.aqmd.gov/caleemod/>, Accessed April 25, 2019.

²⁶ Note that the "net additional emissions" estimate provided by the AB 734 analysis differs from the analysis provided herein, with the EIR analysis using more conservative assumptions affecting emissions. The most important differences are: the EIR's assumption that zero non-A's related events (e.g., concerts and football games) are included in the Project's baseline conditions, whereas the AB 734 analysis assumes 4 such "backfill" events; and the EIR's use of a declining emissions baseline applied to the Phase 1 and Full Buildout "net additional" calculation due to the RPS and changing vehicle emissions standards.

(non-A's) events will not be relocated to the new ballpark, these emissions were not subtracted from the Project's operational emissions to determine the net additional emissions for the Project.

For the purposes of determining impacts of the Project based on net additional GHG emissions, current (2018) activity levels for existing conditions were used as the basis for estimating future "existing" emissions over time as emission factors decrease (see sections below for additional discussion on changing emission factors). For example, the Project's emissions in any future year were compared to existing emissions adjusted to reflect emission factors applicable that year in order to determine net additional Project emissions. This approach is conservative relative to using a static 2018 accounting of emissions from existing conditions because fewer emissions are subtracted from the Project's total emissions to arrive at the "net additional" figure.

As discussed in Chapter 3, Project Description, the existing tenants and users of Howard Terminal are assumed to move to other locations within the Seaport, the City, or the region where their uses are permitted under applicable zoning and other regulations. All trucks currently making trips in/out of Howard Terminal will continue to make the same number of trips to and from the Seaport from their new locations. VMT associated with truck travel is likely to change, but the magnitude of the change and whether VMT would increase or decrease is currently not known by either the Project sponsor, the City, or the Port. Therefore, estimating the change in VMT and resulting emission increases or decreases would be speculative and is therefore not conducted.

Existing Emissions²⁷

Energy

For the existing operations at the Coliseum stadium, electricity and natural gas use were calculated using the 30-year annual average A's game attendance of 22,671 and the energy use per attendee in 2017 for A's games (3.2 kilowatt hour [kWh]/attendee/year and 1.3 kilo-British thermal unit [kBtu]/attendee/year). See *Energy Technical Memorandum* for energy quantification details (Appendix ENE, *Energy Supporting Information*).

For the A's headquarters at Jack London Square, electricity and natural gas use rates were calculated using CalEEMod default energy consumption profile for a General Office Building (in climate zone 5). As the headquarters building was constructed prior to 2010, it is conservative to quantify energy use based on current CalEEMod defaults (i.e., 2016 Title 24 Building Energy Efficiency Standards), because it results in a lower energy use and lower GHG emissions than are likely occurring at that facility.

To estimate GHG emissions from natural gas combustion, the existing natural gas usage was multiplied by CalEEMod default emission factors which represent energy consumption based on similar land uses within the state.

To estimate indirect GHG emissions from electricity use, the existing electricity usage in 2018 was multiplied by the anticipated emission intensity factor for PG&E-delivered electricity. Along with the Project's operational electricity emissions, the existing electricity emissions (which provides the

²⁷ As noted earlier, the fire station located on the Project site was not in operation when the NOP was issued and GHG emissions associated with its use were not included in the calculation of existing emissions.

basis for determining the Project’s “net additional” emissions) will change over time according to the grid electricity emission factor, which is expected to be reduced as the State’s RPS is implemented and PG&E’s electricity mix becomes lower in emissions intensity. For estimating existing electricity emissions occurring each year over the life of the Project, CO₂e intensity factors were projected for each operational year based on RPS compliance, as shown in **Table 4.7-3**. The electricity emission factors presented here are consistent with the 60 percent projected RPS for 2030 and 100 percent carbon-free electricity for 2045, as mandated by SB 100. The electricity emissions factor is assumed to remain constant after 2050.

Mobile Sources

Mobile source emissions for A’s related existing conditions include event-day trips related to Athletics games at the Coliseum, commute trips by employees to the Coliseum and to the team headquarters in Jack London Square, and delivery trips associated with Athletics games. Regarding the Athletics’ home games, trips that previously would have begun or ended at the Oakland – Alameda County Coliseum would instead be replaced with trips to or from the Project site. The estimate for existing transportation emissions uses 2018 trip rates and VMT from the transportation analysis conducted for the Project, scaled down to reflect the 30-year annual average attendance of 22,671 attendees per game, and vehicle emission factors from EMFAC2017 for Alameda County. A passenger vehicle fleet mix (mainly passenger and medium-duty vehicles) was used for event attendee trips and commute trips, a truck fleet mix (mainly medium and heavy-duty vehicles) was used for delivery trips, and a bus fleet mix was used for bus trips. For details, see Section 4.3.4 and Table 24 in the *Air Quality Technical Report* (Appendix AIR.1).

Similar to electricity, emission factors for mobile source emissions are assumed to decrease in future years due to fleet turnover and regulations such as Advanced Clean Cars Program. Accordingly, emission factors were derived from EMFAC2017, as shown in Table 4.7-3. EMFAC2017 does not provide emission factors beyond 2050; thus, emissions associated with mobile sources were assumed to remain constant after 2050. For estimating mobile source emissions over the life of the Project, annual VMT is multiplied by the appropriate projected CO₂e intensity factor shown in Table 4.7-3.

Solid Waste

For estimating emissions from solid waste, a per-attendee solid waste disposal rate for Coliseum land uses was estimated based on 2017 Coliseum waste disposal data provided by the Athletics. The solid waste disposal rate was multiplied by the 30-year average annual attendance at A’s games at the Coliseum to derive waste disposal in tons per year. For the A’s headquarters at Jack London Square, solid waste disposal was calculated using the CalEEMod default profile for a General Office Building. For details, see the *Air Quality Technical Report* (Appendix AIR.1).

**TABLE 4.7-3
EMISSION FACTORS OVER TIME**

Year	RPS Mandate	Electricity Emission Factor (lb CO ₂ e/MWh) ^a	Mobile Source Emissions Factors: (g CO ₂ e/mile) ^b			
			Passenger Vehicles	All Vehicles	Trucks	Buses
2020	33%	299	310	406	1,290	1,712
2021		287	301	396	1,269	1,687
2022		275	291	385	1,240	1,671
2023		263	282	373	1,193	1,644
2024	44%	251	272	364	1,176	1,620
2025		239	262	354	1,157	1,618
2026		228	254	345	1,136	1,604
2027	52%	216	247	337	1,114	1,587
2028		204	240	329	1,092	1,572
2029		192	234	321	1,066	1,559
2030	60%	180	228	315	1,046	1,549
2031		168	224	309	1,028	1,539
2032		156	220	304	1,012	1,531
2033		144	216	300	998	1,523
2034		132	213	296	985	1,516
2035		120	210	292	974	1,509
2036		109	208	290	964	1,503
2037		97	206	287	955	1,497
2038		85	204	285	947	1,491
2039		73	203	283	940	1,487
2040		61	201	282	934	1,483
2041		49	201	281	929	1,479
2042		38	200	280	925	1,476
2043		26	199	279	921	1,473
2044		14	199	279	918	1,471
2045	100%	2.0	198	278	916	1,468
2046		2.0	198	278	914	1,466
2047		2.0	197	278	912	1,463
2048		2.0	197	277	910	1,461
2049		2.0	197	277	908	1,458
2050 ^c		2.0	197	277	910	1,455

NOTES:

- a See Table 21 of *Air Quality Technical Report* and for derivation of electricity emission factors for RPS milestone years of 2020, 2027, 2030 and 2045; Table 54 in the *Air Quality Technical Report* derives the EFs for other years using linear interpolation.
- b Based on EMFAC 2017; see Table 54 in Appendix AIR.1 for derivation of mobile source emission factors through the year 2050;
- c Electricity and mobile emissions factor assumed to remain constant after 2050.

SOURCE: *Air Quality Technical Report* (Appendix AIR.1)

Water and Wastewater

Indirect GHG emissions result from the production of electricity used to convey, treat, and distribute existing uses of water and wastewater. For estimating the emissions associated with water use at the Coliseum stadium, a per-attendee water use rate was estimated based on East Bay Municipal Utility District (EBMUD) water supply billing data for the 2017 MLB season and 2017 MLB attendance. The per-attendee water use rate was used to estimate total water usage associated with Athletics games at the Coliseum in units of gallons per year. For the A's headquarters at Jack London Square, water use was calculated using the CalEEMod default water consumption profile for a General Office Building.

Emissions from water and wastewater were calculated using methods from CalEEMod® 2016.3.2. Emission factors are based on CalEEMod® defaults for Alameda County. The electricity intensity factor associated with water use is the same as used for electricity emissions, as described above. For details, see the *Air Quality Technical Report* (Appendix AIR.1).

Area Sources

Emissions from area sources such as landscaping equipment were calculated using CalEEMod. For details, see the *Air Quality Technical Report* (Appendix AIR.1).

Transportation Refrigeration Units (TRUs)

Transportation Refrigeration Units (TRUs) are cooling units installed on trucks carrying perishable goods, such as food. For the existing Coliseum, TRU emissions were estimated for perishable goods delivery based on the assumption that all TRUs are diesel-powered. Emissions during travel time and during unloading were calculated using TRU trips per event, number of events, engine size and load factors from CARB's 2011 off-road inventory, average speed and miles traveled for trucks, and unloading time. For details, see the *Air Quality Technical Report* (Appendix AIR.1).

Project Construction Emissions

Construction GHG emissions were estimated using the emission factors from CARB's OFFROAD2011 and the EMFAC2017 model.²⁸ Emissions were evaluated consistent with the methodology used by CalEEMod (version 2016.3.2).

Emissions calculations associated with off-road construction equipment were based on the construction schedule, type and quantity of equipment, and hours of operation for each piece of equipment based on Project-specific information provided by the Project Sponsor for demolition, geotechnical work, site preparation and grading, cut off wall construction, utility upgrade installation, building construction, architectural coating, and paving activities.²⁹ Emissions from off-road electric equipment were based on equipment type, engine size, and hours of operation provided by the Project sponsor, with a 2020 electricity emission factor (299 lb CO₂e/MWh)

²⁸ While CARB has published updated EMFAC2017 emission factors in December 2017, these updated factors have not yet been approved by U.S. EPA. Refer to SEIR Appendix E for a technical memorandum on the ramifications of using the latest U.S. EPA-approved model.

²⁹ Fire Station 2 is proposed to remain in place as part of the Project and would be incorporated into the Project design; however, the impacts of demolition of Fire Station 2 are analyzed and disclosed in this EIR in case the demolition is desired or necessary in the future.

conservatively used for all construction years. A Project-specific construction equipment list is provided in the *Air Quality Technical Report* (Appendix AIR.1).

On-road construction vehicles, such as passenger vehicles for workers, medium-duty and heavy-duty vehicles used by vendors, medium-duty vehicles used for water trucks, and heavy-duty trucks for demolition material, soil, and other material hauling, generate emissions. These emissions were calculated based on the number of trips and trip length along with emissions factors from EMFAC2017. Trip counts were provided by the Project sponsor and CalEEMod defaults were used for trip lengths. On-road vehicle trips and fleet mix assumptions are provided in the *Air Quality Technical Report* (Appendix AIR.1).

Total construction GHG emissions by phase and subphase were calculated as tons per year using the estimated construction duration of each phase of construction. Refer to *Air Quality Technical Report* (Appendix AIR.1) for a detailed list of Project-specific equipment considered and duration assumptions.

For the purposes of this analysis, the Project is conservatively assumed to be developed in two phases, though actual phasing may be in two or more phases or subphases. The emissions estimates presented in this section are based on a technical analysis assuming Phase 1 of construction would begin in 2020 (referred to throughout this section as Year 1) with a target completion date of mid-2023 (Year 4), Phase 2 demolition would occur in conjunction with Phase 1 during Years 1 and 2 the construction of Phase 2 would begin in 2023 (Year 4) to be completed by 2027 (Year 8). This represents a conservative estimate because construction is now anticipated to start two years later than assumed in this analysis (2022 instead of 2020) and emission estimates presented in this analysis do not account for the benefits of technological advances, fuel-efficiency improvements, and building code updates likely to occur in the future which would reduce the construction emissions from those contained in this analysis (ESA, 2021).³⁰

This analysis also assumes that the buildings constructed in each phase of the construction program (i.e., Phase 1 or Phase 2) would be occupied and fully operational as soon as construction of each phase is completed. This is conservative because occupancy and operation of each phase would likely ramp up over time, rather than immediately upon completion of construction. Also because operation of Phase 1 is anticipated to occur during construction of Phase 2, the operational analysis (see Impact GHG-1) accounts for Phase 1 operational emissions that would occur simultaneously with construction of Phase 2. This allows for an analysis of the total emissions that would occur from construction activities and simultaneous operations during the construction period.

For more detail on the construction phasing used in the analysis, and a detailed discussion of data sources and analysis methods used to calculate construction emissions, see the *Air Quality Technical Report* in Appendix AIR.1.

³⁰ To avoid unnecessary confusion, the GHG analysis presented in this section uses numerically sequenced years (e.g., Year 1, Year 2, Year 3, etc.) to refer to the start and end of construction and other aspects of the project schedule assumed in the technical analysis presented in Appendix AIR.1. The Appendix continues to utilize the years used in the analysis (e.g., construction commencing in year 2020).

Project Operational Emissions

The Project's operational emissions would occur starting in Year 4 of construction with the completion of Phase 1, and would increase in Year 8 of construction with full Project buildout, after which, operational emissions would continue through the lifetime of the Project. For the purpose of this analysis, and consistent with CEQA guidance, the Project's annual total emissions include total construction emissions amortized over a 30-year period.³¹

A detailed discussion of data sources and analysis used to calculate operational GHG emissions is provided in the *Air Quality Technical Report* (Appendix AIR.1) in conjunction with the air quality analysis.³²

Energy

Natural gas combustion for the Project ballpark stadium was estimated based on historical natural gas use from the Coliseum on a per-attendee basis. The per-attendee usage rate was scaled based on full capacity annual attendance to estimate annual natural gas usage for the Project ballpark. This is conservative as the new ballpark stadium is will likely be more efficient for natural gas use than the existing Coliseum Ballpark. Natural gas use for non-ballpark land uses was estimated using CalEEMod default values and adjusted to reflect the energy efficiency improvements in the 2019 Title 24 Energy Efficiency Standards, which apply to all new construction after January 1, 2019. Accordingly, for the Phase 1 and Full Project scenarios, natural gas use rates were reduced by 1.0 percent, per the CEC's 2019 Title 24 Impact Analysis (Noresco, 2019).

Electricity use by the new ballpark was based on Project-specific estimates, while electricity use by the proposed Project's retail, hotel, office, restaurant, performance venue, residential, and parking uses was calculated using CalEEMod default energy consumption profiles which are based on typical energy consumption profiles for these types of land uses in California. For the Phase 1 and full buildout scenarios, building and lighting electricity use rates were reduced by 10.7 percent, to reflect the energy efficiency improvements in the 2019 Title 24 Energy Efficiency Standards per the CEC's 2019 Title 24 Impact Analysis (Noresco, 2019). As the Project phasing schedule anticipates a construction period spanning eight years, further reductions can be anticipated from future Title 24 code cycles, which are generally revised every three years. Because future reductions cannot be anticipated with certainty, this analysis represents a conservative estimate of energy-related emissions.

As with existing electricity emissions, the indirect GHG emissions from operational electricity use were estimated for each year of the Project using the anticipated emission intensity factor for PG&E-delivered electricity. These factors will reduce in carbon intensity over time as the State's RPS is implemented as shown in Table 4.7-3. Derivation of electricity emission factors are presented in the *Air Quality Technical Report* (Appendix AIR.1).

³¹ This is more conservative than guidance provided by the City of Oakland, which recommends using a 40-year project lifetime for amortizing construction emissions.

³² Operational emissions do not include those associated with operation of the fire station, which are assumed to occur with or without the Project, because operation of the fire station is a City service, unrelated to the project, and would occur on the project site or elsewhere in the City whether or not the project is constructed.

Mobile Sources

Mobile source emissions for the proposed Project include event-day trips related to MLB games and other events at the new ballpark; commute trips by ballpark and sports team management employees; resident, employee, and visitor trips associated with the non-ballpark development land uses; vendor and visitor trips for retail uses and the performance venue; delivery trips associated with events at the ballpark and performance venue; and bus trips to the performance venue.

Mobile-source emissions were calculated using VMT from the transportation analysis conducted for the Project (Fehr & Peers, 2019), and vehicle emission factors from EMFAC2017 for Alameda County, adjusted to reflect the appropriate fleet mix for the trip type. A passenger vehicle fleet mix was used for resident and employee commute trips, attendee trips to the ballpark for MLB games and other events, and attendee trips to the performance venue. A truck fleet mix was used for delivery trips, and a bus fleet mix was used for bus trips to the performance venue. For all non-ballpark land uses besides the performance venue, the default Alameda County fleet mix was used to estimate fleet-average emission factors. For details, see the *Air Quality Technical Report* (Appendix AIR.1).

Similar to electricity, emission factors for mobile source emissions are assumed to decrease in future years due to fleet turnover and regulations such as Advanced Clean Cars Program. Accordingly, emission factors were derived from EMFAC2017 for each year through 2050, as shown in Table 4.7-3. EMFAC2017 does not provide emission factors beyond 2050; thus, emissions associated with mobile sources were assumed to remain constant after 2050 (a conservative assumption because mobile emission factors are likely to continue to decline after 2050). For estimating operational mobile source emissions over the lifetime of the Project, annual VMT is multiplied by the appropriate projected CO₂e intensity factor shown in Table 4.7-3.

As described in the *Air Quality Technical Report* (Appendix AIR.1), the analysis accounts for emissions from heavy-duty truck idling, both from the trucks serving the Project, and from Port trucks experiencing traffic delays resulting from the Project. Idling exhaust was estimated using a gram/trip emission factor provided by EMFAC2017. EMFAC2017 takes account of idling emissions from light duty vehicles and other vehicle types in running emissions estimates.

Transportation Refrigeration Units (TRUs)

TRU emissions were estimated for perishable goods delivery for the ballpark and performance venue events, based on the assumption that all TRUs servicing the Project are diesel-powered.³³ Emissions from the TRUs during travel time and during unloading were calculated using TRU trips per event, number of events, engine size and load factors from CARB's 2011 off-road

³³ Only truck operations data for the ballpark and performance venue events were available; other heavy-duty delivery truck activity associated with other development is not known. TRU emissions from non-ballpark, non-performance venue land uses of the Project were not included since it is not yet known which tenants will be included in these land uses. Therefore, for the ballpark and performance venue, emissions associated with heavy-duty TRU usage during delivery truck idling and TRU transit were based on specific ballpark-related truck activity. For the non-ballpark uses, heavy-duty delivery truck emissions are based on EMFAC2017 default values, and no TRU-related emissions were included due to lack of data.

inventory, average speed and miles traveled for trucks, and unloading time. For details, see the *Air Quality Technical Report* (Appendix AIR.1).

EV Charging Stations

Electric vehicles (EVs), including battery-electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs), comprise a growing fraction of the passenger vehicles on the roads in California, and EV adoption is expected to greatly increase over the upcoming decades due in part to improvements in battery technology and public initiatives and goals. The Project's use of EV chargers results in indirect GHG emissions from electricity use, while displacing tailpipe GHG emissions that would otherwise occur from conventional fossil-fueled vehicles.

Project parking would be equipped with electric vehicle chargers at 10 percent of the total number of parking spaces (equipping parking with chargers goes beyond City of Oakland code requirements, which require new multifamily and non-residential buildings to include full circuit infrastructure for PEV charging stations for at least 10 percent of the total parking spaces).³⁴ The Project's EV charging stations are anticipated to achieve the functionality and performance of a Level 2 charging station or similar.

Full calculation details showing the GHG emissions benefit of the Project's EV charging stations are shown in Tables 38 and 39 of the *Air Quality Technical Report* (Appendix AIR.1). The *Air Quality Technical Report* assumes that the Project's design to provide 10 percent of parking spaces with EV charging stations supports the state's goal of having 5 million ZEVs on California roads by 2030, and determines that there is an additional benefit to GHG reduction beyond what is reflected in the Project's mobile emissions modeling using EMFAC, which reflects currently adopted regulations. Although the use of EVs increases the demand for electricity, the net effect of their use is to reduce emissions due to the displacement of VMT that would otherwise be accomplished using conventional vehicles powered by gasoline or diesel.

The emissions from electricity associated with EV charging station use were quantified based on the following factors and assumptions:³⁵

- **EV vehicle penetration:** The Project's charging infrastructure would support EV vehicle penetration that goes beyond what is needed to support CARB's ZEV mandate (1.5 million vehicles by 2025). The *Air Quality Technical Report* assumes that the Project will support EV populations needed in the Bay Area region for the state to reach its ZEV goal for 2030, as represented by CARB's VISION Model Cleaner Technologies and Fuels (CTF) scenario.³⁶ This goes beyond CARB's VISION model Reference scenario that is based on EMFAC2014 and currently adopted regulations and Sustainable Communities Strategies (SCSs). The EV miles associated with the Project are based on the EV penetrations represented by the CTF scenario, and the net effect of the Project's EV charging infrastructure is determined by subtracting the total EV miles per year under the Reference scenario from the total EV miles

³⁴ City of Oakland, 2017b. Electric Vehicle Infrastructure Requirements for New Multi-Family and Nonresidential Buildings. <http://www2.oaklandnet.com/oakca1/groups/pwa/documents/report/oak063669.pdf>, accessed March 2019.

³⁵ For quantification and methodology details, see Ramboll, 2019. *Air Quality Technical Report* Section 2.4.10 and Tables 38 and 39.

³⁶ CARB. VISION Scenario Planning. <https://ww3.arb.ca.gov/planning/vision/vision.htm>, accessed December 2019.

under the CTF scenario. This approach thus accounts for charger use that occurs due to the Project and does not double count the charger use that would be expected to occur with default EV fleet penetration.

- **Usage rates:** The hours of charging per non-residential activity is limited to assume realistic time windows during which a car could feasibly be charged for each non-residential activity. For ballpark land uses, it was assumed that vehicles can be charged throughout the duration of a ballgame (approximately 3 hours). For the non-ballpark non-residential land uses, it was assumed that charging can occur at the office for a standard 8-hour workday, at the retail and restaurant land uses for 10 hours, and at the hotel for 2 hours. The performance venue was assumed to share EV chargers with the ballpark and charge for a 3-hour performance.
- **Charging rate (driving range per hour):** Estimated to be 25 miles of driving range per hour of charging, based on technology trends for chargers, batteries, and EV efficiency.
- **EV fuel economy (kWh/mile):** Estimated to be 25 kWh per 100 miles, to represent the near-future EV fleet expected upon initial Project operation.
- **Electricity emission factor (MTCO₂e/kWh):** Estimates for future year PG&E electricity emission factors are the same as used for quantifying emissions from building and lighting electricity, as described above.
- **EV charger availability:** EV charging at residential land uses assumes that all available chargers would be consistently used on a daily basis, consistent with the general practice that most owners charge during off peak hours while at home. EV charging at non-residential land uses is different in that sometimes there is a surplus of chargers relative to EVs coming to the site. For land uses or events with lower trip generation relative to available chargers (smaller concerts at ballpark, office), only a fraction of chargers would be used as the number of EVs coming to the site would be fewer than the total number of charger capacity, particularly in earlier years and under the VISION Reference scenario. For land uses or events with high trip generation relative to available chargers (baseball games, hotel retail), the site would be charger limited and all chargers would be used.

The fossil fuel emissions from conventional vehicles displaced by the EVs using the Project's EV chargers were estimated using the total EV driving range (eVMT) provided by the EV chargers, multiplied by the appropriate vehicle fleet emission factor from EMFAC2017 for each operational year.

Stationary Sources

Operational emissions from stationary sources (diesel emergency generators), energy sources (natural gas combustion for heating and cooking); and area sources (landscape equipment) were estimated using methods consistent with the CalEEMod (version 2016.3.2) emissions model.

Potential emissions from emergency diesel generators (stationary sources) were estimated using operational limits established by the CARB Airborne Toxics Control Measure (ATCM) for Stationary Compression Ignition Engines for model year 2008 and newer generators based on horsepower values provided by the Project sponsors (17 CCR Section 93115; CARB, 2011). The analysis conservatively assumed that the Project will include an emergency generator at the ballpark stadium as well as a new emergency generator on each of the mixed-use parcels for a total of 17 new generators at full buildout. The number and size of Project emergency generators were provided by the Project sponsors for the maximum development scenario; not all buildings

may need an emergency generator, depending on the final configuration of Project buildings. It is assumed for the unmitigated scenario that generators would operate a maximum of 50 hours per year, consistent with the maximum allowed testing time from the ATCM (17 CCR Section 93115). For details, see the *Air Quality Technical Report* (Appendix AIR.1). With implementation of **Mitigation Measure AIR-2c** (Diesel Backup Generator Specifications), diesel backup generators would have an annual maintenance testing limit of 20 hours.

Solid Waste

Solid waste emissions for the Project's ballpark were quantified using the same methodology as described for the existing conditions. Solid waste disposal rates for the Project's retail, hotel, office, restaurant, performance venue, residential, and parking uses were calculated using CalEEMod defaults for Alameda County. The Project would also implement waste reduction and recycling measures as required by City of Oakland Ordinances that may further reduce solid waste disposal, which were not quantified as part of the analysis. For details, see the *Air Quality Technical Report* (Appendix AIR.1).

Water and Wastewater

Indirect GHG emissions result from the production of electricity used to convey, treat, and distribute the Project's water and wastewater. Indoor water use for all land uses was based on Project-specific estimates, while outdoor water use was based on CalEEMod defaults for Alameda County. Emissions from water and wastewater were calculated using methods from CalEEMod version 2016.3.2. Emission factors are based on CalEEMod defaults for Alameda County. The electricity intensity factor associated with water use is the same as used for electricity emissions, as described above. For details, see the *Air Quality Technical Report* (Appendix AIR.1).

4.7.4 Impacts of the Project

GHG Emissions Impacts

Impact GHG-1: The Project could generate “net additional” GHG emissions, either directly or indirectly, from its construction and operation. (Criterion 1) (*Less than Significant with Mitigation*)

Existing emissions

As discussed above in the *Approach to Analysis* section, the annual operational GHG emissions currently produced by Athletics games at the current Coliseum stadium and the Athletics' current headquarters/offices at Jack London Square would no longer occur when the A's move to the Project site and are subtracted from Project emissions to calculate “net additional” emissions.

Table 4.7-4 presents total annual GHG emissions by source for existing conditions (2018), and adjusts these emissions for the first operational year of Project Phase 1, and the first operational year of Project Buildout, by accounting for the effect that the RPS and the State's vehicle efficiency standards would have in reducing emissions from electricity generation and mobile sources (see Table 4.7-3). This approach is more conservative than using a fixed baseline as of the year 2018, because as emissions from existing activities would decrease over time, the net new emissions for the Project increase.

**TABLE 4.7-4
 A'S-RELATED EXISTING CONDITIONS EMISSIONS IN 2018 AND FIRST OPERATIONAL YEAR OF PHASE 1 AND
 FULL BUILDOUT TOTAL ANNUAL GHG EMISSIONS BY SOURCE (MTCO₂E/YEAR)**

Category	2018	Phase 1 ^a	Full Buildout ^a
Mobile	6,954	5,950	5,211
Electricity	872	762	624
Natural Gas	170	170	170
Water and Wastewater	83	79	75
Solid Waste	500	500	500
Area Sources (Landscaping)	0.2	0.2	0.2
TRU Operation	0.4	0.4	0.4
Emergency Generators ^b	0	0	0
Total^c	8,580	7,462	6,580

NOTES:

- a The first operational year of Phase 1 is assumed to be concurrent with Year 4 of construction and the first operational year of Full Buildout is expected to be concurrent with Year 8 of construction. Emissions are adjusted to account for the anticipated change in CO₂e intensity factors for electricity (due to the RPS) and mobile sources (due to State regulations for vehicle efficiency), as shown in *Air Quality Technical Report*, Tables 21 and 25.
- b Emissions from the Coliseum's existing emergency generators are conservatively assumed to be zero, as it is difficult to accurately apportion their use to the A's operations.
- c Due to rounding, emissions from individual sectors may not add up to total.

SOURCE: Ramboll, 2020, *Air Quality Technical Report* (Appendix AIR.1), Tables 31 and 43; Adjusted by ESA to incorporate 2023 and 2027 emission factors.

Construction Emissions

As discussed above in the *Approach to Analysis* section, the Project is assumed to be developed in two phases over a period that extends over 8 years. Initial construction activities include demolition of the existing Howard Terminal buildings and parking lots, followed by geotechnical work. Phase 1 construction is assumed to be completed within four years. Construction activities related to Phase 1 land uses (the ballpark and initial mixed-use development) include cut off wall construction, grading, site preparation, and site utility upgrades, followed by building construction, paving, and architectural coating. Phase 2 is assumed to begin in Year 4 and be completed in Year 8, and would include the remaining development.

As described in Section 4.8, *Hazards and Hazardous Materials*, the Project would require development related environmental remediation and/or mitigation and site grading. These processes could occur in a phased manner if the Project is built out over time, or they could be completed for the entire site at once. Remediation will proceed according to the Remedial Action Workplan (RAW) approved by the Department of Toxic Substances Control (DTSC) after certification of the EIR by the City. (See Section 4.8, *Hazards and Hazardous Materials* for more information.)

Table 4.7-5 presents the Project's total annual construction emissions by year over the duration of the construction schedule. Mitigated construction emissions presented in Table 4.7-5 incorporate additional construction activity associated with implementation of the pedestrian and bicycle overcrossing as well as off-site construction associated with transportation improvements

required as mitigation in Section 4.15, *Transportation and Circulation*. These measures are required to mitigate operational air quality and transportation impacts, not construction impacts, and result in additional construction activity compared to unmitigated emissions. This is why mitigated construction emissions as shown in Table 4.7-5 are higher than unmitigated construction emissions.

**TABLE 4.7-5
 PROJECT CONSTRUCTION EMISSIONS**

Year ^a	UNMITIGATED CO ₂ e Emissions (MT/year)	MITIGATED CO ₂ e Emissions (MT/year) ^b
1	349	349
2	5,979	6,474
3	5,991	6,180
4	3,597	3,673
5	4,090	4,090
6	3,869	3,869
7	4,814	4,814
8	3,082	3,082
Total^c	31,771	32,530
Amortized over 30 Years ^d	1,059	1,084

NOTES:

- a The technical analysis assumes Phase 1 construction begins in 2020 rather than 2022 as now anticipated, and also assumes that all construction is completed by 2027. These are conservative assumptions with respect to GHG emissions analysis because emission factors for electricity and on-road vehicles are expected to decrease over time due to the RPS and State regulations for vehicle efficiency, respectively.
- b Accounts for construction emissions from the Pedestrian and Bicycle Overcrossing. This results in higher emissions under mitigated conditions than under unmitigated conditions. Note that Mitigation Measure AIR-1b (Criteria Air Pollutant Controls) and Mitigation Measure AIR 1c (Diesel Particulate Matter Controls) reduce criteria pollutant and toxic air contaminant emissions, but not GHG emissions. Refer to Section 4.2, *Air Quality*, for additional discussion of air quality mitigation measures.
- c Due to rounding, emissions from Individual years may not add up to total.
- d Construction emissions amortized over a period of 30 years to represent the estimated useful life of proposed Project.

SOURCE: Ramboll, 2020, *Air Quality Technical Report* (Appendix AIR.1), Table 16

Operational Emissions

As discussed above in the *Approach to Analysis* section, operation of the Project would result in GHG emissions from a variety of emissions sources, including on-site stationary sources (emergency generators), energy sources (e.g., natural gas combustion for space and water heating, indirect emissions from electricity consumption), on-site area sources (landscape maintenance), and mobile on-road sources. Operational emissions would be minimized due to physical design features incorporated in the Project that stem from LEED Gold certification, Title 24 compliance, compliance with the City’s Green Building Ordinance, and required vehicle trip reductions.³⁷ As discussed above in the *Approach to Analysis* section, the operational emissions associated with the Project were calculated using methods consistent with the CalEEMod land use emissions model.

³⁷ The *Air Quality Technical Report* takes the 20 percent vehicle trip reduction required by AB 734 and as required in the TMP and TDM Plan for the Project into account in quantifying the Project’s emissions from mobile sources.

Table 4.7-6 presents total annual GHG emissions by source for Phase 1 operations and Full Buildout operations.³⁸ Table 4.7-6 includes mitigated construction emissions (as shown in Table 4.7-5) amortized over a period of 30 years and then added to annual operational emissions starting with the first year of Full Buildout operation.

In addition, the operational emissions in Table 4.7-6 account for Mitigation Measures AIR-1c (Diesel Particulate Matter Controls), AIR-2c (Diesel Backup Generator Specifications), and the 20 percent vehicle trip reduction required by AB 734.

As indicated in Table 4.7-6, the Project's operational GHG emissions at Phase 1 and Full Buildout (including amortized mitigated construction emissions) would be 25,452 and 58,453 MTCO_{2e} per year, respectively. Table 4.7-6 also presents net additional annual GHG emissions for Phase 1 and full buildout, as 17,990 and 52,957 MTCO_{2e} per year, respectively.

Net Additional Emissions

Over the 30-year life of the Project, the annual emissions for both Project operation and existing emissions associated with Athletics' games and headquarters/offices that will be shifted to the new ballpark are expected to go down with implementation of the RPS and State's vehicle efficiency standards as electricity emission factors and vehicle fleet emission factors decline. **Table 4.7-7** presents net additional annual GHG emissions over the 30-year lifetime of the fully built out proposed Project. As indicated in Tables 4.7-6 and 4.7-7, the Project's net additional GHG emissions at Full Buildout would be approximately 52,957 MTCO_{2e} per year. By the end of 30 years, annual net additional emissions would be substantially lower at approximately 34,116 MTCO_{2e} per year, due to anticipated mandated improvements in vehicle fuel efficiency and a lower GHG intensity of the electricity supply provided by PG&E.

As shown in Table 4.7-7, the Project's net additional emissions, accounting for implementation of Mitigation Measures Mitigation Measure AIR-1c (Diesel Particulate Matter Controls) and AIR-2c (Diesel Backup Generator Specifications), and the 20 percent vehicle trip reduction required by AB 734, would exceed the City's significance threshold of zero net additional emissions for all years from the start of operations through the end of the 30 year period, with maximum net additional emissions occurring during the first full year of Project operations at full buildout at 52,957 MTCO_{2e}. As shown in Table 4.7-7, the Project's total net additional emissions over its 30-year lifetime are anticipated to be 1,266,567 MTCO_{2e}. This is a significant impact, and additional mitigation measures are required.

³⁸ Based on the Project proponent's 8-year construction timeline, Year 4 and Year 8 represent the earliest possible years of operation for Phase 1 and Full Buildout, respectively. The Project's GHG emissions estimates are conservative, since emission factors for electricity and on-road vehicles are expected to decrease over time due to RPS and State regulations for vehicle efficiency.

**TABLE 4.7-6
 TOTAL ANNUAL PROJECT OPERATIONAL EMISSIONS AT PHASE 1 AND FULL BUILDOUT (MTCO₂E/YEAR)**

Category ^a	Ballpark	Non-Ballpark	All Land Uses
Phase 1 Conditions			
Mobile ^b	9,106	10,469	19,575
Electricity	1,338	1,291	2,629
Natural Gas	257	1,060	1,317
Water and Wastewater	218	228	446
Solid Waste	961	368	1,329
Area Sources (Landscaping)	0.02	6.8	6.8
Emergency Generators ^c	21	43	64
TRU Operation	0.4	–	0.4
Truck Idling	45	43	88
EV chargers	–	-3.5	-3.5
Total Project Operational Emissions^c	11,946	13,505	25,452
A's-Related Existing Conditions Emissions^f		–	7,462
Net Additional Emissions			17,990
Full Buildout Conditions			
Mobile ^b	7,977	37,050	45,027
Electricity	961	4,772	5,733
Natural Gas	257	3,614	3,872
Water and Wastewater	196	920	1,116
Solid Waste	961	1,650	2,611
Area Sources (Landscaping)	0.06	37	37
Emergency Generators ^c	21	145	166
TRU Operation	0.2	0.2	0.5
Truck Idling	19	88	107
EV chargers	-8.9	-208	-217
Total Project Operational Emissions^d	10,384	48,068	58,453
Mitigated Construction Emissions (Amortized)^e			1,084
Total Emissions Including Construction			59,537
A's-Related Existing Conditions Emissions^f			6,580
Net Additional Emissions			52,957

NOTES:

- a These are conservative assumptions with respect to GHG emissions analysis because emission factors for electricity and on-road vehicles are expected to decrease over time due to the RPS and State regulations for vehicle efficiency, respectively.
- b Mobile source emissions include the 20 percent vehicle trip reduction required by AB 734. For emissions without this reduction, refer to Appendix AIR, *Air Quality Supporting Information*.
- c Emergency generator emissions account for emission reductions from Mitigation Measures AIR-1c (Diesel Particulate Matter Controls) and (Mitigation Measure AIR-2c (Diesel Backup Generator Specifications).
- d Due to rounding, emissions from individual sectors may not add up to total.
- e Mitigated construction emissions (see footnote "c") for Ballpark and Non-ballpark uses, amortized over a period of 30 years starting at full buildout, from Table 4.7-5.
- f From Table 4.7-4. 2018 existing emissions are adjusted at Phase 1 and Full Buildout to account for the anticipated change in CO₂e intensity factors for electricity (due to the RPS) and mobile sources (due to State regulations for vehicle efficiency).

SOURCE: Ramboll, 2020, *Air Quality Technical Report* (Appendix AIR.1), Tables 16, 22, 26, 31, 33, 34, 37, 39, 43 and 59.

**TABLE 4.7-7
ANNUAL NET ADDITIONAL EMISSIONS (MTCO₂E/YEAR) OVER 30-YEAR PROJECT LIFETIME**

Year ^a	Project Operational Emissions ^{b,c,d,e}	Construction Emissions ^f	A's-Related Existing Conditions Emissions ^g	"Net Additional" Emissions
4	25,452	—	7,462	17,990
5	24,434	—	7,152	17,282
6	23,739	—	6,917	16,822
7	23,085	—	6,705	16,380
8	58,453	1,084	6,580	52,957
9	56,822	1,084	6,333	51,573
10	55,227	1,084	6,171	50,140
11	53,694	1,084	6,024	48,755
12	52,275	1,084	5,890	47,470
13	50,948	1,084	5,768	46,265
14	49,819	1,084	5,657	45,246
15	48,728	1,084	5,556	44,256
16	47,727	1,084	5,465	43,347
17	46,748	1,084	5,381	42,451
18	45,830	1,084	5,305	41,609
19	44,951	1,084	5,235	40,801
20	44,109	1,084	5,171	40,022
21	43,289	1,084	5,112	39,261
22	42,499	1,084	5,058	38,526
23	41,733	1,084	5,007	37,810
24	41,004	1,084	4,959	37,129
25	40,250	1,084	4,913	36,421
26	39,519	1,084	4,870	35,734
27	39,165	1,084	4,862	35,388
28	38,802	1,084	4,856	35,031
29	38,471	1,084	4,850	34,705
30	38,148	1,084	4,846	34,386
31	37,874	1,084	4,842	34,116
32	37,874	1,084	4,842	34,116
33	37,874	1,084	4,842	34,116
34	37,874	1,084	4,842	34,116
35	37,874	1,084	4,842	34,116
36	37,874	1,084	4,842	34,116
37	37,874	1,084	4,842	34,116
30-Year Project Lifetime Total	1,420,039	32,529	186,001	1,266,567

NOTES:

- a The technical analysis assumes Phase 1 operations begin in 2023, concurrent with the fourth year of construction, and that Full Buildout operations begin in 2027. This is earlier than now anticipated and represent conservative assumptions since emission factors for electricity and on-road vehicles are expected to decrease over time due to RPS and State regulations for vehicle efficiency, respectively.
- b Annual Project operational emissions account for the anticipated change over time in CO₂e intensity factors for electricity (due to the RPS) and mobile sources (due to State regulations for vehicle efficiency).
- c Mobile source emissions include the 20 percent vehicle trip reduction required by AB 734. For emissions without this reduction, refer to Appendix AIR, *Air Quality Supporting Information*.
- d Emergency generator emissions account for emission reductions from Mitigation Measures AIR-1c (Diesel Particulate Matter Controls) and Mitigation Measure AIR-2c (Diesel Backup Generator Specifications).
- e Operational emissions include reductions from Project's installation of EV chargers for at least 10% of its parking spaces.
- f Represents mitigated construction emissions amortized over Project life of 30 years, starting in Year 8, the first year of Full Buildout conditions (1,084 MTCO₂e per year, from Table 4.7-5).
- g Includes emissions from the Athletics' games and headquarters/offices being shifted to the new ballpark. Annual existing emissions account for the anticipated change over time in CO₂e intensity factors for electricity (due to the RPS) and mobile sources (due to State regulations for vehicle efficiency).

SOURCE: Values for Year 4 and Year 8 are from Table 4.7-6. Values for all other years are derived from *Air Quality Technical Report*, Table 58.

Shuttle bus service connecting the ballpark's Transportation Hub to one or more of the three nearby BART stations (West Oakland, 12th Street, and Lake Merritt) on game days or for large concerts is identified as a City priority measure in the TMP. Because shuttle service is a priority TMP measure that may result in additional GHG emissions compared to existing conditions, GHG emissions from this service have been estimated. These emissions are anticipated to be approximately 264 MTCO_{2e} per year (see Appendix AIR, *Air Quality Supporting Information*; Ramboll, 2020). These emissions would be in addition to those set forth in Tables 4.7-6 and 4.7-7. With the addition of shuttle bus emissions, the conclusions regarding the significance of impacts from the Project's GHG emissions would not change and the mitigation measures and their application would remain the same.

Mitigation Measure GHG-1: Preparation and Implementation of a GHG Reduction Plan.

Prior to the City's approval of the first construction or grading-related permit for the Project, the Project sponsor shall retain a qualified air quality consultant to develop a Project-wide GHG Reduction Plan (Plan) for implementation over the life of the Project in accordance with the requirements of this mitigation measure.

The Plan shall quantify, using the most current information available, projected emissions from the first phase of Project construction as well as Project construction for full buildout of all phases of the approved development, and operational GHG emissions for the life of the project (defined as 30 years of operation). The Plan shall specify anticipated GHG emission reduction measures sufficient to reduce or offset these emissions in accordance with the standards set forth below, such that the resulting GHG emissions are below the City's "no net additional" threshold of significance pursuant to CEQA. The Plan shall also contain a separate schedule of projected GHG emissions, emission reductions and GHG offset purchases prepared in accordance with CARB's AB 734 determination (CARB, 2020) in order to comply with AB 734's requirement that those measures be monitored and enforced by the City for the life of the Project sponsor's obligation.

For each phase or sub-phase of development, the Plan shall be updated as set forth in greater detail in Section B.1 below. At all times throughout the life of the Project, the Plan shall demonstrate that emissions from all construction and development are below the City's "no net additional" threshold of significance pursuant to CEQA for (1) phases already completed, permitted, and being proposed for permitting; and (2) anticipated future phases.

The City shall retain the services of a third-party expert to assist with the City's review and approval of the Plan. The third-party expert shall also assist the City with its review and approval of updates to the GHG Reduction Plan and Annual Reports, as described below. All costs relating to the third-party expert, including City review of its services, shall be paid by the project applicant.

A. GHG Reduction Plan Contents and Standards

Specific information on the components of each element of the Plan, as it pertains to CEQA compliance, is described below:

- 1) ***Land Use Program and Project GHG Emissions Estimates, by Phase*** –The GHG Reduction Plan shall identify the amount of construction and square footage of development anticipated within each phase or sub-phase of the Project

and shall estimate the projected annual and total net emissions of the Project by phase or sub-phase, inclusive of all sources of Project emissions and consistent with all categories of sources identified in the EIR.

To estimate the construction and operational emissions, the Plan shall utilize full approved buildout (e.g., number of units, square footage of retail, etc.), inclusive of any required design features or other GHG Emission Reduction Measures as described below. The Project GHG emissions estimates in the Plan shall be based upon design and energy use estimates, Project-specific traffic generation, and equipment to be used on-site. The emission factors for electricity and transportation shall be based on those commonly used at the time the Plan is completed or at the time the Plan is subsequently amended, reflecting vehicle emissions standards and building energy standards in effect at the time. Consistent with the methodology used in the EIR, future year emissions factors shall be based on enacted regulations that are in effect and affect the emissions source (e.g., California's Renewables Portfolio Standard for electricity, and fuel efficiency standards for on-road vehicles).

Construction-related emissions shall be presented for both horizontal and vertical construction emissions by year for each phase. Net (incremental) emissions shall be derived by subtracting from total Project emissions (construction plus operations) the emissions from the existing A's baseball operations at the Oakland Coliseum and at their offices in Jack London Square using the methodology in EIR. Future emission factors shall be applied both to the Project and to the existing operations so as to reflect vehicle emissions standards and building energy standards in effect at the time, as described in the previous paragraph. The net emissions calculated shall demonstrate compliance with the "no net additional" threshold as set forth in greater detail above.

- 2) ***GHG Emission Reduction Measures*** – The Plan shall identify GHG Emission Reduction Measures that shall be implemented for each Project phase or sub-phase to achieve the "no net additional" CEQA significance threshold. Measures shall be verifiable and feasible to implement, and the Plan shall identify the person/entity responsible for each measure, each measure's reduction amount, and the person/entity responsible for monitoring that reduction, all subject to review and approval by the City. If reduction measures associated with any given phase are shown to exceed net (incremental) emissions of that phase, the estimated credit towards future phase(s) shall be identified as set forth in Section B.1 below.

GHG reduction measures to be considered include, but are not be limited to, those listed below, as well as measures in the 2030 ECAP, Pathways to Deep GHG Reductions in Oakland: Final Report (City of Oakland, 2018b), BAAQMD's latest CEQA Air Quality Guidelines (May 2017, as may be revised), the California Air Resources Board Scoping Plan (November 2017, as may be revised), the California Air Pollution Control Officers Association (CAPCOA) Quantifying Greenhouse Gas Mitigation Measures (August 2010, as may be revised), the California Attorney General's website, and Reference Guides on LEED published by the U.S. Green Building Council.

a. **Horizontal Construction Emission Reduction Measures**

The reduction measures for horizontal construction emissions from the Project shall be:

- (1) Mitigation Measure AIR-1b Criteria Air Pollutant Controls; and
- (2) Purchase of Carbon Offset Credits subject to Section 2c, *Standards for Carbon Offset Credits*, below.

b. **Vertical Construction and Operational Emission Reduction Measures**

(1) Type and Location Requirements.

GHG reduction measures shall be subject to the following requirements with respect to type and location.

The order of priority for the type of reduction measures shall be: (1) physical design features; (2) operational features; and (3) the purchase of carbon offset credits subject to the standards described below under Section 2c, *Standards for Carbon Offset Credits*.

The order of priority for the location of physical design features and operational features shall be: (1) the project site; (2) off-site within the neighborhood surrounding the Project site, including Old Oakland, Jack London Square, Chinatown, and West Oakland; (3) the greater City of Oakland community; and (4) within the San Francisco Bay Area Air Basin.

To the extent that the Plan proposes GHG reduction measures that do not conform to the priorities set forth above, the Plan shall contain substantial evidence to support the exclusion of higher priority measure(s) considered and determined to be infeasible as defined under CEQA.

(2) Required Measures.

The Plan shall incorporate the following measures to reduce Project emissions:

- i. Mitigation Measure AIR-1b: Criteria Air Pollutant Controls.

The Plan shall incorporate the following mitigation measures related to operation:

- ii. Mitigation Measure AIR-2c: Diesel Backup Generator Specifications.
- iii. Mitigation Measure AIR-2d: Diesel Truck Emission Reduction.
- iv. Mitigation Measure AIR-2e: Criteria Pollutant Emission Reduction Plan.
- v. The ballpark receives LEED Gold certification or above for new construction within one year after completion of the first baseball season. Each new nonresidential building receives LEED Gold certification or above for new construction within one year after completion of the applicable nonresidential building. Any residential building shall achieve sustainability standards of at least a LEED Gold level or the comparable GreenPoint rating, including meeting sustainability standards for access to quality transit.

- vi. Mitigation Measure TRANS-1a: Transportation and Parking Demand Management (TDM) Plan.
- vii. Mitigation Measure TRANS-1b: Transportation Management Plan.
- viii. Install EV chargers at 10% of onsite parking spaces.
- ix. Electrify a minimum of 50% of the residential units as required by CARB certification.

Unless a waiver is granted by the City for a Project use, the Project would also be required to comply with building electrification requirements in the City's building code that reduce or eliminate the use of natural gas in effect at the time of Project development. Compliance with regulatory measures shall not qualify as a mitigation measure.

(3) Menu of Additional Emission Reduction Measures: On-Site

The following types of measures shall be included in the Plan as necessary to meet the requirements of this mitigation measure and the "no net additional" GHG emissions requirement for the Project.

- i. *On-site measures to reduce operational energy emissions:*
 - (a) *Minimize the Project's energy demand through physical design features, with the ultimate goal of zero net GHG emissions from energy use:* Minimize electricity and natural gas demand through implementation of design measures. New development, including residential, commercial, and retail buildings, could be designed as zero net GHG emissions buildings.
 - (b) *100 percent zero-carbon electricity for all land uses:* Procure 100 percent zero-carbon electricity through East Bay Community Energy or other renewable energy provider (e.g., green power purchase agreement with electric utility) for all electricity loads, including residential, commercial, and retail buildings.³⁹
 - (c) *On-site rooftop solar PV panels or other on-site renewable energy generation:* Install on-site roof-top solar PV panels or other on-site renewable energy on all buildings at the Project site subject to space availability.
 - (d) *Electrify residential and nonresidential development:* Go beyond building code requirements for electrification of residential and nonresidential buildings. Any requirement for building electrification then in effect and applicable to the Project under the City's Building Code shall not qualify as a mitigation measure but shall be treated as a project design feature and its efficacy in reducing GHG emissions shall be taken into consideration in calculating the Project's emissions.
 - (e) *Reduce refrigerant emissions:* Specify low-GWP (global warming potential) refrigerants in heat pumps installed in residential and nonresidential buildings, such as for HVAC systems, water heaters, and refrigeration.

³⁹ East Bay Community Energy (EBCE). Information available online: <https://ebce.org/power-mix/>.

- (f) *Convert the Peaker Plant:* Remove the jet-fueled turbines in the Peaker Plant and the associated jet fuel storage tank and replace with a battery energy storage system. The methodology used to calculate emission reductions and the amount of reduction resulting from Peaker Plant conversion attributable to the Project and applied towards the “no net additional” CEQA significance threshold shall be subject to City review and approval based on information provided as part of the Plan and other available information.
- ii. *On-site measures to reduce transportation emissions:*
 - (a) *Additional EV charging stations beyond regulatory requirements:* Install EV charging stations, including but not limited to curbside public EV charging stations, that provide charging opportunities beyond regulatory requirements.
 - (b) *Preferred parking for alternative-fueled vehicles and car sharing:* Promote the use of clean fuel-efficient vehicles through preferential (designated and proximate to entry) parking for zero-emission vehicles beyond regulatory requirements. Reduce the need to have a vehicle (or second vehicle) by providing preferential (designated and proximate to entry) parking for ride sharing vehicles on site beyond regulatory requirements. Promote the use of zero-emission vehicles by requesting that any car share program operator with vehicles provided on Project site include electric vehicles within its car share program.
 - (c) *Additional TDM and/or TMP measures:* Implement TDM and/or TMP measures that go beyond 20 percent vehicle trip reduction in the TDM and TMP Plans by encouraging mode shift from vehicles to other modes of transportation including transit, biking, walking, and car-sharing, with preference to active transportation and public transit.
 - iii. *On-site measures to reduce solid waste emissions:*
 - (a) *Ballpark solid waste diversion:* Increase waste diversion rate at the new ballpark to 75 percent or greater.
 - (b) *Organic waste diversion:* Ensure that unused edible food at restaurants and supermarkets is donated to recovery and collection organizations that can distribute it to the neediest populations beyond regulatory requirements.
 - (c) *Increase the use of reusable bags:* Promotions by on-site merchants to support the City’s “Bring Your Own Bag” campaign and increase the use by customers of durable reusable bags.
 - iv. *On-site measures to reduce water and wastewater emissions:*
 - (a) *Water efficient fixtures:* Install water efficient fixtures in residential and commercial buildings, including water-saving sinks, showers, urinals and toilets beyond regulatory requirements.

- v. *On-site operational measures to reduce area source (landscaping) emissions:*
 - (a) *Water-efficient landscaping:* Install water-efficient landscaping and irrigation systems, including the use of native drought-tolerant vegetation beyond regulatory requirements.
 - (b) *Compost application:* Include a minimum of 0.5-inches of compost applied to any landscaping.
 - (c) *Recycled water:* Install dual plumbing (purple pipe) for the use of recycled water for landscape irrigation, fire protection, toilet and urinal flushing in non-residential facilities, and outdoor landscape features such as fountains and water features beyond regulatory requirements.

vi. *Additional on-site measures and technologies.*

- (a) The Plan may include additional or substitute measures and technology to reduce GHG emissions from Project construction or operations that are not currently known or available. This may include new energy systems (such as battery storage), new transportation systems (such as autonomous vehicle networks), or other technology (such as carbon capture and storage) that is not currently available at the project-level, provided that the GHG Reduction Plan demonstrates to the City's satisfaction that such measures are equally or more effective as existing available measures, including those described above.

(4) Menu of Additional Emission Reduction Measures: Off-Site

i. *Off-site measures to reduce energy emissions:*

- (a) *Community energy efficiency retrofits:* Fund, contribute to, or implement community energy efficiency retrofits to reduce offsite building energy use.
- (b) *Community energy decarbonization projects:* Fund or implement measures to increase use of non-carbon sources of energy, such as retrofits or other infrastructure projects (e.g., electrification), to reduce offsite building energy use.
- (c) *Community solar projects:* Fund or implement community solar PV installations.
- (d) *Community energy storage projects:* Fund or implement community energy storage installations, such as batteries or mechanical energy storage.

ii. *Off-site measures to reduce transportation emissions:*

- (a) Fund or implement programs to increase use of public transit so as to exceed the 20 percent vehicle trip reduction requirement of the TDM Plan and TMP.
- (b) Fund or implement programs to increase use of bicycles, including electric bicycles, so as to exceed the 20 percent vehicle trip reduction requirement of the TDM Plan and TMP.

- (c) Fund or implement programs that promote walking in the communities neighboring the Project site, including West Oakland, and/or the greater Oakland community, so as to exceed the 20 percent vehicle trip reduction requirement of the TDM Plan and TMP.
 - (d) *Off-site EV chargers*: Fund or implement a program that expands the installation of EV chargers, including but not limited to curbside public EV charging stations.
 - (e) Fund or implement programs that increase use of electric vehicles.
 - (f) Contribute to or implement programs that increase electrification of public transit buses in the communities neighboring the Project site, including West Oakland, and/or the greater Oakland community.
- iii. *Off-site measures to increase carbon sequestration*:
- (a) *Tree planting and vegetated buffers*: Fund or implement program that results in significant new tree planting and/or vegetated buffers.
- iv. *Purchase of Carbon Offset Credits*: The purchase of Carbon Offset Credits, subject to Section 2c, *Standards for Offset Credits*, below, shall only be used as a reduction measure for construction and operational emissions after all the following conditions are satisfied: (1) AB 734’s commitment to reduce 50% of net new emissions associated with the ballpark and other non-residential uses through the implementation of local direct measures has been met; and (2) for non-transportation sector and non-ballpark and non-hotel uses only, physical design features or operational features located on the project site or off-site within the City of Oakland have reduced project emissions levels to at or below 0.6 MTCO_{2e}/service population in keeping with the City’s GHG emission reduction target.⁴⁰

c. Standards for Carbon Offset Credits

- (1) Carbon offset credits can result from activities that reduce, avoid, destroy or sequester an amount of GHG emissions in an off-site location to offset the equivalent amount of GHG emissions occurring elsewhere. For the purpose of Project mitigation, carbon offset credits shall consist of direct emission reductions or sequestration that are used to offset the Project’s direct emissions. As described in the CARB Determination for AB 734, all carbon offset credits shall be purchased from a carbon offset registry approved by CARB, which at present include the following: the American Climate Registry, Climate Action Reserve, and Verra (formerly Verified Carbon Standard). The carbon offset credits shall be verifiable by the City and enforceable in accordance with the registry’s applicable standards, practices, or protocols. The carbon offsets must

⁴⁰ This performance metric is derived from the 2030 ECAP, which incorporates the City of Oakland’s adopted GHG emissions target of 56 percent below 2005 levels by the year 2030. For non-transportation emissions this equates to a Citywide efficiency threshold of 0.61 MTCO_{2e} per service population. Refer to the Downtown Oakland Specific Plan Draft EIR, Table V.D-3 (p. 277), for its derivation, which divides the citywide 2030 non-transportation emissions target of 491,799 MTCO_{2e} by a projected service population of 812,535 (City of Oakland, 2019b).

substantively satisfy all six of the statutory “environmental integrity” requirements applicable to the CARB Cap-and-Trade Program, generally as set forth in both subdivisions (d)(1) and (d)(2) of California Health and Safety Code §38562: real, permanent, quantifiable, verifiable, enforceable, and additional. All offset credits shall be verified by an independent verifier who meets stringent levels of professional qualification (i.e., ANAB Accreditation Program for Greenhouse Gas Validation/Verification Bodies or a Greenhouse Gas Emissions Lead Verifier accredited by CARB), or an expert with equivalent qualifications to the extent necessary to assist with the verification. Without limiting the generality of the foregoing, in the event that an approved registry becomes no longer accredited by CARB and the offset credits cannot be transferred to another accredited registry, the project applicant shall comply with the rules and procedures for retiring and/or replacing offset credits in the manner specified by the applicable protocol or other applicable standards including (to the extent required) by purchasing an equivalent number of credits to recoup the loss.

- (2) Geographic location: Carbon offset credits shall be obtained from GHG reduction projects that occur in the following locations in order of priority to the extent feasible: (1) off-site within the neighborhood surrounding the Project site, including West Oakland; (2) the greater City of Oakland community; (3) within the San Francisco Bay Area Air Basin; (4) the State of California; and (5) the United States of America. Any offset credits used for mitigation are subject to the approval of the City.

B. Implementation, Monitoring, and Enforcement

1) *Updated GHG Reduction Plan Required for Each Phase*⁴¹

Prior to issuance of the first grading or construction-related permit for each phase or sub-phase of development (i.e., a Final Development Plan and/or permit for horizontal improvements) the Applicant shall update the GHG Reduction Plan to calculate the actual quantity of emissions from construction and operation of the phase or sub-phase for the life of the Project (defined as 30 years of operation), to calculate the reductions necessary (including local, direct, and offset credits) to achieve the “no net additional” threshold for the proposed phase or sub-phase, and to identify the specific local reduction measures and offset requirements that will be implemented to meet the threshold for the proposed phase or sub-phase. The Applicant shall provide the updated Plan to the City for review and approval, along with a separate “AB 734 Compliance Memorandum” for the phase or sub-phase, prepared in conformance with the methodology set forth in the CARB Determination, a courtesy copy of which shall also be provided to CARB.

The GHG Reduction Plan, as amended, shall identify any proposed GHG Emissions Reduction Measures to be implemented or offset credits to be purchased as part of each phase that exceed those required to offset the phase’s emissions and achieve the “no net additional” threshold, in which case the balance of the reductions and/or credits shall be considered a “credit bank” applicable to subsequent phases.

⁴¹ CARB’s AB 734 Determination refers to the GHG Reduction Plan Updates completed at each phase as the “AB 734 Compliance Memorandum.”

2) ***Implementation***

The Project sponsor shall implement the updated and approved GHG Reduction Plan during construction and operation of each permitted phase as follows:

For physical GHG reduction measures to be incorporated into the design of the Project, the measures shall be included on the drawings submitted for construction-related permits and implemented during construction. The City shall confirm inclusion of these measures in the plans prior to issuance of a building permit for the applicable phase and confirm the measures were built as part of the final inspection for a Temporary Certificate of Occupancy (TCO).

For physical GHG reduction measures to be incorporated into off-site projects, the Project sponsor shall obtain all necessary permits/approvals and the measures shall be included on drawings and submitted to the City Planning Director or his/her designee for review and approval prior to issuance of the first building permit for the applicable phase. These off-site improvements shall be installed prior to completion of the applicable phase as shown in final development plan or equivalent. The City shall confirm completion of these measures prior to issuance of a TCO for the applicable phase and as part of the final inspection.

For GHG reduction measures involving the purchase of carbon offset credits for horizontal construction emissions, contracts for purchase of credits shall be entered into prior to issuance of the first grading and/or permit for horizontal construction (P-Job permit) for each construction phase or subphase for horizontal construction and the Applicant shall provide the third-party verification report concerning those credits, and the unique serial numbers of those credits showing that they have been retired. The City shall confirm receipt evidence that the contract has been entered into prior to issuance of the permit and evidence of the of the verification reports and serial numbers prior to completion of the phase.

For GHG Reduction measures involving the purchase of carbon offset credits for vertical construction emissions, contracts for purchase of credits shall be entered into prior to issuance of the building permit for each building's construction, and the Applicant shall provide the third-party verification report concerning those credits, and the unique serial numbers of those credits showing that they have been retired prior to issuance of the building permit for each building's construction. The City shall confirm receipt of verification reports and serial numbers prior to permit issuance.

For GHG Reduction measures involving the purchase of carbon offset credits for operational emissions, contracts for purchase of credits shall be entered into prior to issuance of a TCO for each building and the Applicant shall provide the third-party verification report concerning those credits, and the unique serial numbers of those credits showing that they have been retired. The City shall confirm receipt of the verification reports and serial numbers prior to issuance of a TCO.

3) ***Annual Report Required***

The Applicant shall submit an annual report to the City's Planning Director on November first of each calendar year starting one year after the City issues the first TCO for the project.

The Annual Report shall summarize the Project's implementation of GHG reduction measures over the preceding year, provide information on past, current, and anticipated Project phasing, describe compliance with the conditions of the Plan, and include a brief summary of any revisions to the GHG Reduction Plan since the previous Annual Report was submitted, including the start of new phases or sub-phases affected by the Plan. The Annual Report shall keep an ongoing tally of all carbon offset credits that have been purchased and applied to the Project, including the serial numbers of the credits, and the registry into which they have been permanently retired.

The City or its third-party GHG emissions expert shall review the Annual Report to verify that the GHG Reduction Plan is being implemented in full and monitored in accordance with the terms of this mitigation measure. The City retains the right to request a Corrective Action Plan if the Annual Report is not submitted or if the GHG Reduction Measures in the Plan are not being fully implemented and/or maintained as appropriate over the Project's 30-year lifetime, and to enforce provisions of that Corrective Action Plan if specified actions are not taken or are not successful at addressing the violation within the specified period of time.

Notwithstanding the foregoing, the City retains its discretion to enforce all mechanisms under the Municipal Code and other laws to enforce non-compliance with the requirements of this mitigation measure.

The City shall have the discretion to reasonably modify the timing of reporting, with reasonable notice and opportunity to comment by the Applicant, to coincide with other related monitoring and reporting required for the Project, provided that the Annual Report shall be submitted not less than once per calendar year.

Effectiveness of Mitigation

As described above, Mitigation Measure GHG-1 requires implementation of GHG emission reduction measures to meet the "no net additional" threshold at each phase or sub-phase, and to continually demonstrate Project-wide compliance with the "no net additional" CEQA significance threshold over the 30-year life of the Project. As shown in Table 4.7-7, the Project's total "net additional" emissions without mitigation over its 30-year lifetime, based on currently available information regarding the Project's design and current emission factors, are anticipated to be 1,266,567 MTCO₂e.

This represents the Project's total mitigation obligation, which would be recalculated and met on a phase-by-phase basis as described in Mitigation Measure GHG-1. This obligation may change over time as the Project is implemented because the applicable emission factors and regulatory requirements will change, and new technologies will become available and effective.

The obligation established by Mitigation Measure GHG-1 is different from the obligation on the Project sponsor required by CARB in their AB 734 determination based on CARB's assumptions regarding future emission factors, additional events at the Coliseum that were credited by CARB,

and potential “backfill” events at the Coliseum. The CARB AB 734 obligations will be subject to a separate condition of approval.⁴²

Summary

The Project would incorporate Mitigation Measures AIR-1c and AIR-2c through 2e, and would achieve the 20 percent vehicle trip reduction required by AB 734 and as provided for in Mitigation Measures TRANS-1a and 1b. As shown in Table 4.7-6, the Project’s net additional emissions without additional mitigation would result in approximately 17,990 MTCO_{2e} per year at Phase 1 (as defined in this EIR) and 52,957 MTCO_{2e} per year at buildout, and may be reduced over time due to lower CO_{2e} intensity factors expected for electricity and mobile sources. Over its 30-year lifetime, the Project’s total net additional emissions are anticipated to be 1,266,567 MTCO_{2e}.

As discussed above, with implementation of **Mitigation Measures GHG-1**, the Project would result in no net additional GHG emissions. Mitigation Measure GHG-1 provides a list of required measures and a menu of options for on-site and off-site GHG reduction measures, as well as a monitoring and reporting program enabling the City to actively manage compliance with the mitigation, and ensuring that the mitigation would effectively reduce project emissions to the “no net additional” threshold of significance.

Mitigation Measure GHG-1: Preparation and Implementation of a GHG Reduction Plan. (See above)

Mitigation Measure AIR-1b: Criteria Air Pollutant Controls. (See Section 4.2, *Air Quality*)

Mitigation Measure AIR-1c: Diesel Particulate Matter Controls. (See Section 4.2, *Air Quality*)

Mitigation Measure AIR-2c: Diesel Backup Generator Specifications. (See Section 4.2, *Air Quality*)

Mitigation Measure AIR-2d: Diesel Truck Emission Reduction. (See Section 4.2, *Air Quality*)

Mitigation Measure AIR-2e: Criteria Pollutant Emission Reduction Plan. (See Section 4.2, *Air Quality*)

Mitigation Measure TRANS-1a: Transportation and Parking Demand Management (TDM) Plan. (See Section 4.15, *Transportation and Circulation*)

Mitigation Measure TRANS-1b: Transportation Management Plan. (See Section 4.15, *Transportation and Circulation*)

Significance after Mitigation: Less than Significant.

⁴² CARB’s AB 734 determination requires establishment of an escrow account, setting aside funding to be used to reduce and offset emissions from any event at the Coliseum beyond the historic average of four per year. The City will impose this requirement as a non-CEQA condition of approval.

Impact GHG-2: The Project could generate GHG emissions, either directly or indirectly, that result in a conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs. (Criterion 2) (*Less than Significant with Mitigation*)

Consistency with the ECAP and Adopted Targets

As explained in Section 4.7.2, *Regulatory Setting*, the City of Oakland has adopted citywide GHG emissions targets for 2020 and 2030 of 36 below 2005 levels and 56 percent below 2005 levels, respectively.

Since there is no “2005 emissions level” available for the Project, a direct comparison to City targets based on 2005 levels is not possible. However, the City’s adopted 2030 ECAP (City of Oakland, 2020b) is designed to enable the City to achieve its 2030 emissions target through the implementation of 40 Actions projected to result in a 60 percent reduction in GHG emissions by 2030, relative to Oakland’s 2005 emission levels. In addition, through City Council Resolution 88268, the City has adopted a goal to achieve community-wide carbon neutrality no later than 2045 (city of Oakland, 2020c).

For project review under CEQA Section 15183.5(b), in December 2020 the City adopted a checklist for determining project consistency with the ECAP. However, the checklist is not needed to determine consistency of the proposed Project with the ECAP since the Project is required to meet the “no new additional” GHG emissions Project-specific threshold through Mitigation Measure GHG-1, as described above. The “no new additional” GHG emissions requirement will result in greater reductions in GHG emissions than would be required under the ECAP and is consistent with the City’s carbon neutrality goal by 2045. The Project is therefore consistent with the 2030 ECAP and City Council Resolution 88268. Moreover, the Project’s consistency with the ECAP is also supported by **Table 4.7-9**, which provides a summary of ECAP Actions that are relevant to the Project and to which the Project is consistent.

Consistency with SB 743 and the City’s Transportation Impact Review Guidelines (TIRG)

The Project would not exceed the thresholds of significance for VMT as recommended by OPR in its 2018 guidance and by the City of Oakland’s TIRG. In Section 4.15, *Transportation and Circulation*, the analysis of VMT found that the Project would have a less-than-significant impact on VMT because the Project would meet the following thresholds of significance, which are consistent with OPR’s 2018 Technical Advisory on Evaluating Transportation Impacts in CEQA (OPR, 2018) and the City of Oakland’s CEQA Thresholds of Significance as adopted in the TIRG. Specifically:

- VMT generated by the residential and commercial components of the Project would be more than 15 percent below the regional averages and would thus be less than significant for the residential and commercial components of the Project.
- Citywide VMT per service population would remain the same without and with the retail/restaurant component of the Project, which would be less than significant for the regional retail component of the Project.

**TABLE 4.7-8
 SUMMARY OF ECAP ACTIONS THAT ARE RELEVANT TO THE PROJECT**

Action	Description	Consistency Analysis
Transportation and Land Use		
TLU-1	<p>Align all Planning Policies and Regulations with ECAP Goals and Priorities. Specifically, appropriate planning policies should study the following strategies and should incorporate such policies that are found not to have adverse environmental or equity impacts:</p> <ul style="list-style-type: none"> • Remove parking minimums and establish parking maximums where feasible, ensuring public safety and accessibility • Require transit passes bundled with all new major developments • Revise zoning such that the majority of residents are within 1/2-mile of the most essential destinations of everyday life • Provide density bonuses and other incentives for developments near transit that provide less than half of the maximum allowable parking • Update the Transit Oriented Development (TOD) Guidelines to further prioritize development of housing near transit, including housing for low, very low, and extremely low-income levels • Require structured parking be designed for future adaptation to other uses • Institute graduated density zoning • Remove barriers to and incentivize development of affordable housing near transit • Incorporate policies addressing sea level rise, heat mitigation, and other climate risks into zoning standards and all long-range planning documents. Revise these policies every five years based on current science and risk projections • Identify and remove barriers to strategies that support carbon reduction, adaptation, resilience, and equity goals, including community solar and energy storage 	<p>Consistent – This action calls for future updates to the General Plan, Specific Plans, Zoning Ordinance, Subdivision Regulations, Parks Master Plan, and appropriate planning policies or regulations to be consistent with the GHG reduction, adaptation, resilience, and equity goals in the ECAP.</p> <p>The Project is consistent with TLU-1 in that it supports its relevant objectives, including:</p> <ul style="list-style-type: none"> • Support for transit, TOD and VMT reduction: <ul style="list-style-type: none"> – The Project site plan, TMP and TDM Plan include TDM measures that encourage and support transit and alternative transportation strategies for employees. Information will be provided to residents, employees and workers about various transportation options in the Project area and the TDM strategies provided by the building or employer. – The Project is located within the Downtown and Jack London Priority Development Area (PDA) as defined by Plan Bay Area and is consistent with the region’s Sustainable Communities Strategy; – The Project would assist in meeting the City’s goal of constructing 17,000 new housing units between 2015 and 2023, as identified in the 2014 Housing Element of the General Plan (City of Oakland, 2014) by constructing up to 3,000 new dwelling units and implementing an affordable housing plan. – The Project is located adjacent to the San Francisco Bay Ferry Terminal, and within a one-mile area that includes the Lake Merritt, 12th Street, and West Oakland BART Stations, the Amtrak Rail Station, and within a 10- to 15-minute walk of 13 AC Transit bus routes serving downtown and beyond. – The Project would meet the 20 percent trip reduction requirement of AB 734 via implementation of the TMP and TDM Plan. The Project will meet the VMT reductions under the City CEQA thresholds. • Parking: The zoning for the Project will include parking maximums and unbundled parking. Parking maximums would be the same or more stringent than current maximums downtown. The Project would propose 3,500 (phase one) and 2,000 (built-out) parking spaces for the ballpark as opposed to 9,100 at the Coliseum, and would have a maximum of 6,900 spaces for non-ballpark development. • Parking structure retrofits: As described in the TDM Plan (MM TRANS-1a) the Project’s parking garages exceeding 1.25 spaces per unit (residential) or 1:1000 sf. (commercial) parking ratios would be designed with retrofittable garages for the excess spaces.

Action	Description	Consistency Analysis
TLU-2	<p>Align Permit and Project Approvals with ECAP Priorities. The City will amend Standard Conditions of Approval (SCAs), as well as mitigation measures and other permit conditions, to align with the ECAP's GHG reduction priorities. The City will explore adoption of a threshold of significance for GHG impacts to align with the ECAP. In applying conditions on permits and project approvals, the City will ensure that all cost-effective strategies to reduce GHG emissions from buildings and transportation are required or otherwise included in project designs, including infrastructure improvements like bicycle corridor enhancements, wider sidewalks, crossing improvements, public transit improvements, street trees and urban greening, and green stormwater infrastructure. Where onsite project GHG reductions are not cost-effective, prioritize local projects benefiting frontline communities.</p>	<p>Consistent – The Project is consistent with the City's adopted 2030 target by virtue of its commitment to resulting in no net new GHG emissions. Furthermore, the Project is consistent with the ECAP's GHG reduction priorities, as described in the analysis of TLU-1, as well as:</p> <ul style="list-style-type: none"> To qualify for CEQA streamlining under AB 734, the ballpark must receive LEED Gold certification for new construction within one year after completion of the first baseball season, and each new nonresidential building must receive LEED Gold certification for new construction within one year after its construction is completed. Residential buildings must also achieve sustainability standards of at least a LEED Gold level or the comparable GreenPoint rating. These certifications would likely include improved lighting, cooling, and water heating efficiencies that go beyond Title 24 requirements. The Project is proposing bike parking consistent with code requirements, and bicycle facilities would be constructed on 7th Street between Mandela Parkway and Martin Luther King Jr. Way (MM TRANS-2a); Martin Luther King Jr. Way between the site and 14th Street (MM TRANS-2b); Washington Street from Embarcadero West to 10th Street (MM TRANS-2c); Embarcadero West (south side of the railroad tracks) between Martin Luther King Jr. Way and Broadway (MM TRANS-3a); and over the railroad tracks at Jefferson or Clay Streets (or similar locations) (MM TRANS-3b). In addition, the multi-use Bay Trail will be extended through the site as part of the proposed Project. The Project is consistent with the Pedestrian Master Plan; in addition to providing pedestrian amenities site-wide, the Project would implement offsite upgrades to sidewalks, lighting, curb ramps, and crosswalks on primary pedestrian corridors serving the Project via implementation of MM TRANS-1e. <p>The Project's proposed infrastructure improvements are consistent with the City of Oakland's adopted Complete Streets Policy, which directs the City to plan, design, construct, operate, and maintain the street network to accommodate safe, convenient, comfortable travel for all modes, including pedestrians, bicyclists, transit users, motorists, trucks, and emergency vehicles.</p> <p>With implementation of Mitigation Measure HYD-1a, the Project would implement post-construction BMPs, including site design measures to reduce the amount of impervious services and appropriate landscaping along the estuary.</p> <p>See also the response to TLU-1.</p>
TLU-4	<p>Abundant, Affordable, and Accessible Public Transit. The City will work with public transit agencies to replace autos with public transit as a primary transportation mode for trips beyond walking distance, ensuring convenient, safe, and affordable public transit access within Oakland and to neighboring cities for all Oaklanders.</p>	<p>Consistent – Although TLU-4 is concerned with the City's coordination with transit agencies, the Project supports transit ridership by developing a Transportation Hub (MM TRANS-1c) supporting integration with existing lines, adding stops, and increasing walkability to/from and between stops. The Project is located adjacent to the San Francisco Bay Ferry Terminal, and within a one-mile area that includes the Lake Merritt, 12th Street, and West Oakland BART Stations, the Amtrak Rail Station, and within a 10- to 15-minute walk of 13 AC Transit bus routes serving downtown and beyond.</p>

Action	Description	Consistency Analysis
TLU-5	<p>Create a Zero-Emission Vehicle (ZEV) Action Plan. Completion of the ZEV Action Plan by 2021 will increase adoption of electric vehicles and e-mobility while addressing equity concerns and prioritizing investment in frontline communities.</p>	<p>Consistent – The Project supports the goal of TLU-5 to increase adoption of electric vehicles by providing EV charging infrastructure and stations. Project parking would be equipped with EV chargers at 10 percent of the total number of parking spaces (which goes beyond City of Oakland code requirements).</p>
TLU-7	<p>Rethink Curb Space. The City will prioritize use of curb space throughout the city by function. In order of priority, the City will allocate curb space for mobility needs for public transit and active transportation, such as walking and biking; access for people and commerce (loading zones and short-term parking); activation; and storage for long-term parking. The City’s adopted Bike and Pedestrian Plans will be used to determine mobility needs. Where on-street parking is provided, the City will revise pricing, availability, and location of parking to encourage (in order of priority) active transportation, public transit, and clean vehicles, without increasing cost-burden to low-income residents and other sensitive populations such as seniors. The City will also require parking costs to be unbundled from residential and commercial leases.</p>	<p>Consistent – As outlined in more detail in Section 4.15, <i>Transportation and Circulation</i>, the Project is consistent with the City’s policies, plans, and programs addressing the safety or performance of the circulation system, including transit, roadways, bicycle lanes, and pedestrian sidewalks and paths, including:</p> <ul style="list-style-type: none"> • The City’s Complete Streets Policy, which calls for the City to plan, design, construct, operate, and maintain the street network to accommodate safe, convenient, comfortable travel for all modes, including pedestrians, bicyclists, transit users, motorists, trucks and emergency vehicles. • The LUTE, which calls for promoting alternative means of transportation such as transit, biking, and walking, providing facilities that support alternative modes, and implementing street improvements. • The Pedestrian Master Plan, which envisions a pedestrian system built on safety, equity, responsiveness, and vitality. • The Let’s Bike Oakland Plan, which envisions a comprehensive network of bicycle facilities addressing bicycle safety and access through street design and maintenance programs; bicycle access to transit; and secure and convenient bicycle parking. • The City’s Transit First Policy, supporting public transit and other alternatives to the single occupant vehicle incorporating various methods of expediting transit services on designated street and encouraging greater transit use. <p>See also the response to TLU-2.</p>

Action	Description	Consistency Analysis
TLU-8	<p>Expand and Strengthen Transportation Demand Management Requirements. The City will increase TDM performance requirements for new developments where feasible to support the mode shifts necessary to achieve a low carbon transportation system. The City will expand the TDM program to include requirements for existing employers, and fund ongoing monitoring and enforcement of TDM requirements.</p>	<p>Consistent – The Project includes a TDM Plan (MM TRANS-1a) for non-ballpark uses and TMP for the ballpark (MM TRANS-1b). These plans include TDM measures that encourage and support transit and alternative transportation strategies for employees. The goals of the TDM Plan include:</p> <ul style="list-style-type: none"> • Reduce vehicle traffic and parking demand generated by the Project to the maximum extent practicable. • Prioritize pedestrian, bicycle, transit, and carpool/vanpool modes of travel. • Enhance the City's transportation system, consistent with City policies and programs. <p>The TDM Plan for each building shall include a range of services and programs designed to meet the 20 percent reduction that is required by AB 734, such as providing incentives for transit usage and carpools, bicycle parking and support, signage, and real-time transit information.</p> <p>Per the TMP and TDM Plan, information will be provided to residents, employees and workers about various transportation options in the Project area and the TDM strategies provided by the building or employer. Both are intended to be living documents with strategies to increase use of transit, biking, and walking, and meet the 20 percent vehicle trip reduction performance standard.</p>
TLU-9	<p>Ensure Equitable and Clean New Mobility. Ensure that new mobility platforms and technologies equitably support City carbon reduction goals, including integrated planning for vehicles, public transit, and active transportation networks and amenities.</p>	<p>Consistent – See responses to TLU-1 and TLU-7.</p>
Building Energy Use		
B-1	<p>Eliminate Natural Gas in New Buildings. By 2023, the City will prohibit new buildings and major renovations from connecting to natural gas infrastructure.</p>	<p>Consistent – The City's newly adopted natural gas ban (Ordinance 13632) for new residential and commercial buildings applies to the Project. The Project will comply with any requirement for building electrification then in effect and applicable to the Project under the City's Building Code, which shall not qualify as a mitigation measure but shall be treated as a Project design feature. The Project sponsor has committed to electrify 50% of residential buildings, and Mitigation Measure GHG-1 includes an on-site measure as part of menu of Plan options to design and construct all residential and nonresidential buildings to be 100 percent electric and not include any natural gas appliances, including water heaters, clothes washers and dryers, HVAC systems, and stoves.</p>

Action	Description	Consistency Analysis
B-3	<p>Prevent Refrigerant Pollution. By 2023, the City will develop a refrigerant management program that:</p> <ul style="list-style-type: none"> • Establishes a phaseout timeline for high-GWP refrigerants in existing buildings • Integrates with existing local and regional energy efficiency and building electrification programs as appropriate • Ensures enforcement of performance measures • Identifies financial assistance for low-income residents and businesses; and • Aligns with refrigerant management strategies adopted by the State of California 	<p>Consistent – This action calls for future program development by the City that would affect private development. The Project would be required to comply with any then in effect City’s building code requirement applicable to the Project that restricts or eliminates the use of refrigerants in existing buildings; Mitigation Measure GHG-1 includes an on-site measure as part of menu of Plan options to specify low-GWP (global warming potential) refrigerants in heat pumps installed in residential and nonresidential buildings, such as for HVAC systems, water heaters, and refrigeration.</p>
B-4	<p>Reduce Lifecycle Emissions from Building Materials. By 2023, adopt a concrete code for new construction that limits embodied carbon emissions. In subsequent building code updates, implement improved embodied carbon performance standards including additional materials and material-efficient building practices, with exemptions for cost barriers as needed to prevent these changes from directly increasing housing or rent costs.</p>	<p>Consistent – This action calls for future policy development by the City that would affect private development. The Project would be required to comply with City codes and performance standards regarding construction materials and building practices. In addition, the LEED standard incorporated as a Project feature provides multiple credits to projects that reduce lifecycle emissions from building materials, through Building Life-Cycle Impact Reduction and Building Product Disclosure and Optimization regarding environmental product declarations, the sourcing of raw materials, and material ingredients.</p>
Material Consumption and Waste		
MCW-1	<p>Eliminate Disposal of Compostable Organic Materials to Landfills. The City will fully fund and implement the requirements of California SB1383 (Short-Lived Climate Pollutants: Organic Waste Methane Emissions Reduction), reduce surplus food waste, and eliminate disposal of compostable organic materials to landfills. The City will ensure robust engagement with businesses and institutions, including schools, and continued residential outreach to reduce wasted food and effectively keep compostable material out of the landfill-bound waste stream.</p>	<p>Consistent – The Project must comply with AB 1826, which requires businesses and multi-family complexes to arrange for organics collection services, and it must comply with the Alameda County’s Mandatory Recycling Ordinance, which goes beyond the current thresholds set by AB1826. The County Ordinance requires all businesses to participate, not just those generating AB 1826’s minimum threshold of 2 cubic yards per week. The ordinance also states that businesses and institutions that generate significant quantities of organics (food scraps and/or compostable paper), such as restaurants and grocery stores, provide containers and service of sufficient number, size and frequency for organics, and place food scraps and compostable paper in separate organics cart/bin for organics collection. In addition, Mitigation Measure GHG-1 includes an on-site measure as part of menu of Plan options to ensure that unused edible food at restaurants and supermarkets is donated to recovery and collection organizations that can distribute it to the neediest populations.</p>
MCW-3	<p>Eliminate Single-Use Plastics and Prioritize Reuse in Food Preparation, Distribution, and Sale. By 2023, the City will work with StopWaste and regional partners to pass and ordinance to reduce the prevalence of single-use plastic in Oakland and to ensure that reusable food service ware is the default in dining, including requiring reusable food service ware for all dine-in establishments.</p>	<p>Consistent – This action calls for future policy development by the City that will affect private businesses. The Project would comply with current and future bans including straws and other single use plastics. Mitigation Measure GHG-1 includes an on-site measure as part of menu of Plan options to increase the use of durable reusable bags by supporting the City’s “Bring Your Own Bag” campaign.</p>

Action	Description	Consistency Analysis
MCW-6	Establish a Deconstruction Requirement. The City will establish a deconstruction requirement to reduce demolition waste from construction and renovation and facilitate material reuse. The City will regulate hauling and processing of construction and demolition debris to ensure that salvageable materials are identified and removed for reuse instead of being recycled or disposed to landfill.	Consistent – This action calls for future policy development by the City that will affect projects generating construction and demolition debris. The Project must comply with the City's current municipal codes regarding waste reduction and recycling, including the City of Oakland's Construction and Demolition Ordinance, which requires recycling 100% of all asphalt & concrete materials, and 65% of all other materials.
Adaptation		
A-2	Enhance Community Energy Resilience. Work with EBCE to develop a program and timeline for increasing resilience to power losses, including Public Safety Power Shutoffs (PSPS), and climate-driven extreme weather events for low-income, medically dependent, and elderly populations through installation of renewable energy and onsite energy storage with islanding capabilities, following appropriate project-level environmental review. Include energy efficiency building upgrades in any program, leveraging local and regional incentives.	Consistent – Mitigation Measure GHG-1 includes on-site solar and community solar programs as a qualifying off-site measure for reducing operational energy emissions. In addition, the Peaker Power Plant Variant would provide a battery storage system that would improve grid reliability, promote the transition to more renewably sourced electricity, and eliminate the need for additional Peaker Power Plant operation using fossil fuels. (See Chapter 5, <i>Project Variants</i> , for more information.)
A-6	Expand and Protect Green Infrastructure and Biodiversity. The City will fund and implement a green infrastructure program for the installation and maintenance of projects and existing civic resources such as the parks system and public spaces, to improve stormwater management, support biodiversity, reduce air pollution exposure, and increase access to natural spaces, including trees. The City will prioritize investment in frontline communities, and particularly in residential neighborhoods dominated by concrete and asphalt with limited green space and elevated air pollution, in Priority Conservation Areas, and in areas where green infrastructure, including trees and other types of vegetated buffers, can effectively address stormwater management issues and reduce air pollution exposure among sensitive populations.	Consistent – The Project is consistent with the goals of this measures in that it will replace a greater number of trees than will be removed, in compliance with the City's Tree Preservation Ordinance (Chapter 12.36 of the Oakland Municipal Code) and Planning Code. It will also provide a new waterfront park that includes completion of a 1.25-mile segment of the Bay Trail on the Project site by extending it along the waterfront. With implementation of Mitigation Measure HYD-1a, the Project would implement post-construction BMPs, including site design measures to reduce the amount of impervious services and appropriate landscaping along the estuary.
Carbon Removal		
CR-1	Develop Local Carbon Investment Program. By 2023, the City will establish a program for both voluntary and compliance GHG mitigation fees to be invested locally. Prioritize projects in frontline communities, such as tree planting and urban greening, including in parks; building electrification; creek restoration; and neighborhood EV car share.	Consistent – This action calls for future program development by the City that is consistent with the provision in Mitigation Measure GHG-1 that prioritizes carbon reduction projects at the Project site or within the neighborhood surrounding the Project site, including West Oakland, which is considered a frontline community.
CR-2	Expand and Protect Tree Canopy Coverage. By 2022, the City create a fifty-year Urban Forest Master Plan that prioritizes strategies to address disparities among neighborhoods in tree canopy coverage, and ensures that carbon sequestration is a major factor in tree planting targets, selection of tree species, and tree management practices.	Consistent – This action calls for a 50-year plan to be developed by the City. Mitigation Measure GHG-1 includes an off-site measure as part of menu of Plan options to increase carbon sequestration by funding or implementing a program that results in significant new tree planting and maintenance.

SOURCES: *City of Oakland 2030 Energy and Climate Action Plan* (City of Oakland, 2020b); City Ordinance No. 13040 (Green Building Ordinance, City of Oakland, 2010)

- VMT generated by the Project for the performance venue would be more than 15 percent below existing similar uses with a comprehensive TDM Plan encompassing the entirety of the non-ballpark development including the parking maximums described in Chapter 3, *Project Description*.
- VMT generated by the ballpark component of the Project would be more than 15 percent below existing similar uses with a comprehensive TMP for both Phase 1 of and full buildout of the Project including a 2,000-parking space maximum for buildout and a 3,500-space maximum for Phase 1.

As described in Section 4.15, *Transportation and Circulation*, all Project uses would meet the VMT reduction requirements under the City-adopted significance thresholds, which are consistent with SB 743 and would result in a less-than-significant impact.

Consistency with Plan Bay Area 2040

Pursuant to California Senate Bill 375, ABAG and the MTC adopted *Plan Bay Area 2040* to establish targets and strategies intended to meet the region's needs for housing at all income levels, while reducing GHGs associated with private passenger and light duty truck traffic. *Plan Bay Area 2040*'s core strategy is encouraging growth in existing communities along the existing transportation network, focusing new development in Priority Development Areas (PDAs) and Transit Priority Areas (TPAs) within urbanized centers where there is more public transit and other mobility options available to reduce driving by cars and light trucks. In addition to significant transit and roadway performance investments to encourage focused growth, *Plan Bay Area 2040* directs funding to neighborhood active transportation and complete streets projects, climate initiatives, lifeline transportation and access initiatives, pedestrian and bicycle safety programs, and PDA planning.

The Project is consistent with *Plan Bay Area 2040* by virtue of being located within the Downtown and Jack London PDA and within a TPA. Additionally, as required by the TMP and TDM Plan, the Project would implement programs to directly encourage more employees to shift from driving alone to other modes of travel. These programs would consist of strategies that incentivize travel by non-automobile modes, such as discounted transit tickets and preferential carpool parking, and strategies that disincentive travel by automobile, such as higher parking fees.

The Project's proposed strategy to specifically limit parking supply through both the TMP for the ballpark and the TDM Plan for the non-ballpark development minimizes automobile trips resulting in a greater share using transit. There are many local and regional transit service options available including Lake Merritt, 12th Street, and West Oakland BART Stations, Amtrak Station, Ferry Terminal, and the well-connected AC Transit bus routes within a 10- to 15-minute walk. For more details on the Project's VMT reduction analysis, see the impact analysis in Section 4.15, *Transportation and Circulation*.

Consistency with Advanced Clean Cars Initiative and the State's Zero-Emission Vehicles Mandate

The Project is consistent with State goals for zero-emission vehicles (ZEVs) as expressed in the Advanced Clean Cars Initiative and the ZEV mandate established by Executive Order B-16-12,

which sets a target of reaching 1.5 million ZEVs (meaning battery electric vehicles and fuel cell electric vehicles) and plug-in hybrid electric vehicles on California's roadways by 2025.

According to EMFAC2017, which incorporates the State's ZEV mandate, there will be approximately 31,700,000 passenger cars and light trucks on the road in California by 2030. 1.5 million ZEVs would constitute approximately 4.7 percent of all vehicles in 2030.⁴³ The more aggressive CARB Mobile Source Strategy, included in the 2017 Scoping Plan Update as a component of the overall strategy for achieving the State's 2030 GHG target, calls for 4.2 million ZEVs on the road by 2030, equivalent to about 13.2 percent of passenger vehicles + light duty trucks.

The Project supports these ZEV goals by providing 10 percent of all parking spaces with EV charging capability.

Consistency with 2017 Scoping Plan Update

As directed by Executive Order B-30-15, CARB's 2017 Scoping Plan Update describes how the State plans to achieve the 2030 GHG emission reduction goal for California of 40 percent below 1990 levels by 2030, as mandated by SB 32. The 2017 Scoping Plan Update's strategy for meeting the State's 2030 GHG target incorporates the full range of legislative actions and state-developed plans that have relevance to the year 2030, including the LCFS, SB 350, the 2016 Mobile Source Strategy, the Sustainable Freight Action Plan, SB 1383, and the State's Cap-and-Trade Program (AB 398).

The Project would be consistent with key State plans and regulatory requirements referenced in the 2017 Scoping Plan Update designed to reduce statewide emissions. According to the 2017 Scoping Plan Update, reductions needed to achieve the 2030 target are expected to be achieved by increasing the RPS to 50 percent of the State's electricity by 2030, greatly increasing the fuel economy of vehicles and the number of zero-emission or hybrid vehicles, reducing the rate of growth in VMT, supporting high speed rail and other alternative transportation options, and increasing the use of high efficiency appliances, water heaters, and HVAC systems. The Project would support and would not impede implementation of these potential reduction strategies identified by CARB, and it would benefit from statewide and utility-provider efforts towards increasing the portion of electricity provided from renewable resources.⁴⁴ The Project would also benefit from statewide efforts towards increasing the fuel economy standards of vehicles and reducing the carbon content of fuels. The Project would utilize energy efficiency appliances and equipment, as required by Title 24, and it would provide EV charging stations to support the future use of electric and hybrid-electric vehicles by employees and visitors traveling to and from

⁴³ EMFAC2017 estimates the future percentage of the state's ZEVs based on compliance with the State's ZEV mandate. EMFAC2017's forecasted ZEV population for 2030 is approximately 3.6 percent of all passenger and light duty vehicles, but the 3.6 percent figure represents the equivalent percentage of all vehicles operating as a pure zero emission vehicle (e.g., 100% battery electric), whereas the actual population would include PHEVs that operate partially on fossil fuels.

⁴⁴ As discussed previously, with the passage of SB 100, California's RPS has been increased over what is prescribed by the 2017 Scoping Plan Update, requiring retail sellers and local publicly owned electric utilities to procure eligible renewable electricity for 44 percent of retail sales by the end of 2024, 52 percent by the end of 2027, and 60 percent by the end of 2030; and requires that CARB should plan for 100 percent eligible renewable energy resources and zero-carbon resources by the end of 2045.

the site. For these reasons, the Project's post-2020 emissions trajectory is expected to follow a declining trend consistent with the objectives of the 2017 Scoping Plan Update.

To demonstrate how a local jurisdiction can achieve its long-term GHG goals at the community plan level, the 2017 Scoping Plan Update recommends developing a geographically specific GHG reduction plan (i.e., climate action plan) consistent with the requirements of CEQA Section 15183.5(b), that demonstrates how future projects will be consistent with the state's 2030 GHG reduction target mandated by SB 32. As explained in Section 4.7.2, *Regulatory Setting*, the City of Oakland has adopted a City-specific GHG emissions target for 2030 of 56 percent below 2005 levels to be consistent with the State's GHG reduction target established by SB 32. The target is based on the City's emissions profile across the land use and transportation sectors. In June 2020, the City adopted its 2030 ECAP, which is a comprehensive plan to achieve the target. Based on that target, the Project is required to meet an efficiency metric for non-transportation emissions (0.6 MTCO_{2e} per service population), as described under Mitigation Measure GHG-1.

In the 2017 Scoping Plan Update, CARB advises "that projects incorporate design features and GHG reduction measures, to the degree feasible, to minimize GHG emissions. Achieving no net additional increase in GHG emissions is an appropriate overall objective for new development." (CARB, 2017)⁴⁵ The proposed Project's ability to achieve no net additional emissions, as described under Impact GHG-1, is consistent with this guidance. It is also consistent with the City's newly adopted Resolution No. 88268 to achieve community-wide carbon neutrality no later than 2045 (City of Oakland, 2020c). The Project will be much more efficient on average than existing development in the City and far more efficient than what the Scoping Plan assumes for new development throughout the state.

In addition, the Project is consistent with the 2017 Scoping Plan Update's guidance on mitigation measures: "To the degree a project relies on GHG mitigation measures, CARB recommends that lead agencies prioritize on-site design features that reduce emissions, especially from VMT, and direct investments in GHG reductions within the project's region that contribute potential air quality, health, and economic co-benefits locally. For example, on-site design features to be considered at the planning stage include land use and community design options that reduce VMT, promote transit oriented development, promote street design policies that prioritize transit, biking, and walking, and increase low carbon mobility choices, including improved access to viable and affordable public transportation, and active transportation opportunities." (CARB, 2017)⁴⁶ The Project's mitigation measures emphasize on-site measures that reduce emissions, including GHG-1 (Preparation and Implementation of a GHG Reduction Plan), AIR-1c (Diesel Particulate Matter Controls), AIR-2c (Diesel Backup Generator Specifications), TRANS-1a (Transportation Demand Management [TDM] Plan), TRANS-1b (Transportation Management Plan), TRANS-1c (Implement a Transportation Hub on 2nd Street), TRANS-1d (Implement Bus-Only Lanes on Broadway), TRANS-1e (Implement Pedestrian Improvements), TRANS-2a (Implement Buffered Bike Lanes on 7th Street from Mandela Parkway to Martin Luther King Jr. Way), TRANS-2b (Implement Bike Lanes Consistent with the Bike Plan on Martin Luther King

⁴⁵ At page 101.

⁴⁶ At page 102.

Jr. Way from Embarcadero West to 8th Street), TRANS-2c (Implement Bike Lanes Consistent with the Bike Plan on Washington Street from Embarcadero West to 10th Street), TRANS-3a (Implement At-Grade Railroad Crossing Improvements), and TRANS-3b (Pedestrian and Bicycle Overcrossing). In addition, as described in Section 4.7.3 under *Sustainable Design Features*, the Project's buildings will be designed to achieve at least a LEED Gold rating or the comparable GreenPoint rating, which by nature will be accomplished through on-site measures that reduce GHG emission through more efficient use energy, materials and resources.

For these reasons described above, the Project is consistent with the 2017 Scoping Plan Update.

Consistency with Executive Order S-3-05

Executive Order No. S3-05 established a goal of reducing the State's GHG emissions to 80 percent below the 1990 level by the year 2050. Based on the analysis presented herein, the Project's emissions are expected to decline from its full buildout year starting in 2027 through at least 2050 due to existing plans, policies and regulations. As described above, implementation of the 2017 Scoping Plan Update would decrease emissions through the RPS, more fuel-efficient vehicles, VMT reduction, high speed rail and other alternative transportation options, and more efficient appliances, water heaters, and HVAC systems. With implementation of Mitigation Measure GHG-1, the proposed Project would result in no net additional emissions and would not hinder achievement of the statewide 2050 goal established by Executive Order No. S3-05. The Project emissions show a decrease in trajectory over time towards the year 2050.

The California Supreme Court in *Cleveland National Forest Foundation, et al v. San Diego Association of Governments* ((2017) 3 Cal. 5th 497, Supreme Court Case No. 5223603), upheld SANDAG's EIR in its approach of not determining project impacts for 2050 based on Executive Order No. S3-05 goal for 2050, noting that "the [Executive Order No. S3-05] lacks the force of a legal mandate binding on SANDAG in the preparation of its EIR" and that the EIR was not required to "explicitly engage in an analysis of the consistency of projected 2050 emissions" with Executive Order No. S3-05. Therefore, determining impacts based on the Project's consistency with Executive Order No. S3-05 is not required under CEQA and is presented here to inform decision makers and the public.

Summary

As discussed above, the Project would not conflict with attainment of near-term and long-term plans, policies and regulations created to achieve GHG reductions in Oakland, the Bay Area, and the State of California. With mitigation, there would be a less-than-significant impact involving a conflict with a plan, policy, or regulation adopted to reduce GHGs. Mitigation Measure GHG-1, as well as Mitigation Measures AIR-1b, AIR-1c, AIR-2c, AIR-2d, AIR-2e, HYD-1a, TRANS-1a, TRANS-1b, TRANS-1c, TRANS-1d, TRANS-1e, TRANS-2a, TRANS-2b, TRANS-2c, TRANS-3a, and TRANS-3b would directly support the Project's alignment with the goals, policies, and regulations in these plans aimed at reducing GHGs.

Mitigation Measure GHG-1: Preparation and Implementation of a GHG Reduction Plan. (See Impact GHG-1)

Mitigation Measure AIR-1b: Criteria Air Pollutant Controls. (See Section 4.2, *Air Quality*)

Mitigation Measure AIR-1c: Diesel Particulate Matter Controls. (See Section 4.2, *Air Quality*)

Mitigation Measure AIR-2c: Diesel Backup Generator Specifications. (See Section 4.2, *Air Quality*)

Mitigation Measure AIR-2d: Diesel Truck Emission Reduction. (See Section 4.2, *Air Quality*)

Mitigation Measure AIR-2e: Criteria Pollutant Emission Reduction Plan. (See Section 4.2, *Air Quality*)

Mitigation Measure HYD-1a: Creek Protection Plan (See Section 4.9, *Hydrology and Water Quality*)

Mitigation Measure TRANS-1a: Transportation Demand Management (TDM) Plan. (See Section 4.15, *Transportation and Circulation*)

Mitigation Measure TRANS-1b: Transportation Management Plan. (See Section 4.15, *Transportation and Circulation*)

Mitigation Measure TRANS-1c: Implement a Transportation Hub on 2nd Street. (See Section 4.15, *Transportation and Circulation*)

Mitigation Measure TRANS-1d: Implement Bus-Only Lanes on Broadway. (See Section 4.15, *Transportation and Circulation*)

Mitigation Measure TRANS-1e: Implement Pedestrian Improvements. (See Section 4.15, *Transportation and Circulation*)

Mitigation Measure TRANS-2a: Implement Buffered Bike Lanes Consistent with the Bike Plan on 7th Street from Mandela Parkway to Martin Luther King Jr. Way. (See Section 4.15, *Transportation and Circulation*)

Mitigation Measure TRANS-2b: Implement Bike Lanes Consistent with the Bike Plan on Martin Luther King Jr. Way from Embarcadero West to 8th Street. (See Section 4.15, *Transportation and Circulation*)

Mitigation Measure TRANS-2c: Implement Bike Lanes Consistent with the Bike Plan on Washington Street from Embarcadero West to 10th Street. (See Section 4.15, *Transportation and Circulation*)

Mitigation Measure TRANS-3a: At-grade railroad corridor and crossing improvements. (See Section 4.15, *Transportation and Circulation*)

Mitigation Measure TRANS-3b: Pedestrian and Bicycle Overcrossing. (See Section 4.15, *Transportation and Circulation*)

Mitigation Measure UTIL-3: Recycling Collection and Storage Space. (See Section 4.16, *Utilities and Service Systems*)

Significance after Mitigation: Less than Significant.

Maritime Reservation Scenario

The Maritime Reservation Scenario involves an alternative site plan for the Project that was analyzed alongside the Project. The Maritime Reservation Scenario includes the same development program as the proposed Project, but would distribute that development program within a different Project site boundary that removes a portion of the southwest corner of the site.

At any point before May 13, 2029, the Port of Oakland may choose to exercise its option and take back a portion of the site from the A's in order to accommodate possible expansion of the existing turning basin used to turn large vessels within Oakland's Inner Harbor. As a result, the Project site plan would be modified, and the proposed development would be denser, fitting the same development program (i.e., the ballpark and mix of other uses proposed) onto the smaller site. Changes to the Project site plan that would occur with the Maritime Reservation Scenario would occur within the area of the Project site that would be developed after Phase 1. The Maritime Reservation Scenario would distribute the Project's development program differently within the altered site configuration.

The Port of Oakland has not designed or permitted an expanded turning basin and the impacts of the expansion, if it were proposed, are not considered in this EIR. If the Port were to exercise its option and take back a portion of the Project site from the Project sponsor, the Port would analyze the potential impacts of expanding the turning basin at that time.

This EIR presents the GHG emissions impacts of the Maritime Reservation Scenario that are different from those identified for the Project.

Construction Impacts

As described in the *Air Quality Technical Report* (Appendix AIR.1), all of the square footage of the Project is being preserved (in a smaller footprint) in the Maritime Reservation Scenario, and the construction schedule and construction equipment list are the same as the Project. However, construction emissions for the Maritime Reservation Scenario were scaled down slightly from Project emissions according to the change in acreage for on-road vehicles and off-road equipment for horizontal development, as shown in **Table 4.7-9**, which indicates that the Marine Reservation Scenario would generate 31,408 MTCO_{2e} from construction activities, compared to 32,530 MTCO_{2e} for the Project, as shown in Table 4.7-5. When amortized over the 30-year life of the project, construction emissions for the Maritime Reservation Scenario amount to approximately 1,047 MTCO_{2e} per year, which is approximately 37 MTCO_{2e} per year less than the amortized construction emissions for the Project.

**TABLE 4.7-9
 MARINE RESERVATION SCENARIO: CONSTRUCTION EMISSIONS**

Year ^a	CO ₂ e Emissions (MT/year)
1	324
2	6,466
3	6,180
4	3,520
5	3,220
6	3,803
7	4,813
8	3,082
Total^b	31,408
Amortized over 30 Years ^c	1,047

NOTES:

- a The technical analysis assumes Phase 1 construction begins in 2020 rather than 2022 as now anticipated, and also assumes that all construction is completed by 2027. These are conservative assumptions with respect to GHG emissions analysis because emission factors for electricity and on-road vehicles are expected to decrease over time due to the RPS and State regulations for vehicle efficiency, respectively.
- b Due to rounding, emissions from individual years may not add up to total.
- c Construction emissions amortized over a period of 30 years to represent the presumed lifetime of proposed Project.

SOURCE: Ramboll, 2020, *Air Quality Technical Report* (Appendix AIR.1), Table 76

Operational Emissions

Because land uses and activities are the same for the Maritime Reservation Scenario and the Project, operations between the two scenarios are generally assumed to remain the same, with the exception of generators. As described in the *Air Quality Technical Report*, the Maritime Reservation Scenario would have fewer non-ballpark buildings than the Project, but each with more square footage; therefore, fewer generators are required but they would have higher capacities.

Table 4.7-10 presents total annual GHG emissions by source for the Marine Reservation Scenario, for Phase 1 operations (2023), and Full Buildout operations (2027). These estimates differ from Project (as shown in Table 4.2-6) only for the Emergency Generator emissions under the Ancillary land use category. At Phase 1, Emergency Generator emissions are equivalent for both the Marine Reservation Scenario and the Project, 64 MT CO₂e/yr. At Full Buildout, the Marine Reservation Scenario results in generator emissions of 157 MTCO₂e per year, a decrease of approximately 9 MTCO₂e per year, but the amortized mitigated construction emissions for the Marine Reservation Scenario are approximately 37 MTCO₂e less than for the Project, resulting in a decrease in “net new” emissions of approximately 46 MTCO₂e per year (52,911 MTCO₂e compared to 52,957 MTCO₂e for the Project).

As with the base Project, the operational emissions account for Mitigation Measures AIR-1c (Diesel Particulate Matter Controls), AIR-2c (Diesel Backup Generator Specifications), and the 20 percent vehicle trip reduction required by AB 734.

**TABLE 4.7-10
MARINE RESERVATION SCENARIO: TOTAL ANNUAL OPERATIONAL EMISSIONS AT PHASE 1 AND FULL
BUILDOUT (MTCO₂E/YEAR)**

Category ^a	Ballpark	Non-ballpark	All Land Uses
Phase 1			
Mobile ^b	9,106	10,469	19,575
Electricity	1,338	1,291	2,629
Natural Gas	257	1,060	1,317
Water and Wastewater	218	228	446
Solid Waste	961	368	1,329
Area Sources (Landscaping)	0.02	76.8	7
Emergency Generators ^c	21	43	64
TRU Operation	0.4	—	0.4
Truck Idling	45	43	88
EV chargers	—	-3.5	-3.5
Total Phase 1 Operational Emissions^d	11,946	13,505	25,452
A's related Existing Emissions^e		—	7,462
Net Additional Emissions			17,990
Full Buildout			
Mobile ^a	7,977	37,050	45,027
Electricity	961	4,772	5,733
Natural Gas	257	3,614	3,872
Water and Wastewater	196	920	1,116
Solid Waste	961	1,650	2,611
Area Sources (Landscaping)	0.06	37	37
Emergency Generators ^c	21	136	157
TRU Operation	0.24	0.052	0.5
Truck Idling	19	88	107
EV chargers	-8.9	-208	-217
Total Project Operational Emissions^d	10,384	48,060	58,444
Amortized Mitigated Construction Emissions^f			1,047
Total Emissions Including Construction			59,491
A's Related Existing Emissions^e			6,565
Total Net Additional Emissions			52,926

NOTES:

- a The technical analysis assumes Phase 1 operations begin in 2023 rather than 2025 as now anticipated, and also assumes that operations associated with the full Project Buildout occurs as early as 2027. These are conservative assumptions with respect to GHG emissions analysis because emission factors for electricity and on-road vehicles are expected to decrease over time due to the RPS and State regulations for vehicle efficiency, respectively.
- b Mobile source emissions include the 20 percent vehicle trip reduction required by AB 734. For emissions without this reduction, refer to Appendix AIR, *Air Quality Supporting Information*.
- c Emergency generator emissions account for the emission reductions from Mitigation Measures AIR-1c (Diesel Particulate Matter Controls) and Mitigation Measure AIR-2c (Diesel Backup Generator Specifications).
- d Due to rounding, emissions from individual sectors may not add up to total.
- e From Table 4.7-4. 2018 existing emissions are adjusted at Phase 1 and Full Buildout to account for the anticipated change in CO₂e intensity factors for electricity (due to the RPS) and mobile sources (due to State regulations for vehicle efficiency).
- f From Table 4.7-9. Construction emissions amortized over a period of 30 years starting at full buildout.

SOURCE: Ramboll, 2020, *Air Quality Technical Report* (Appendix AIR.1), Table 79

GHG Emissions Impact

At the completion of Phase 1, the net additional emissions for the Maritime Reservation Scenario would be essentially the same as for the Project. At Full Buildout, the net additional emissions for the Maritime Reservation Scenario would be approximately 46 MTCO_{2e} less than they would be for the Project. The results of the net additional emissions analysis for the Marine Reserve Scenario do not affect the conclusions regarding Impact GHG-1 and Impact GHG-2. Thus, with implementation of Mitigation Measures AIR-1c, AIR-2c, and GHG-1, the GHG emissions impact of the Maritime Reservation Scenario would remain less than significant with mitigation.

4.7.5 References – Greenhouse Gas Emissions

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