4.5 Energy

Section 21100(b) of the California Public Resources Code (PRC) directs all State agencies, boards, and commissions to assess the environmental impacts of projects for which they are a Lead Agency under CEQA to determine whether the project could result in significant effects on the environment, including effects from the wasteful, inefficient, and unnecessary consumption of energy, and to identify mitigation measures to minimize any such significant effects. The goal of this assessment is to evaluate whether the Project would ensure the wise and efficient use of energy.

> This section describes the California energy profile (i.e., mix of energy resources and consumption characteristics); describes the energy production and transmission profile of Pacific Gas and Electric Company (PG&E), the regional purveyor of natural gas and electricity throughout the Bay Area and much of central and Northern California; identifies regulatory and policy frameworks that govern the production and consumption of energy resources and aim to increase energy efficiency while reducing reliance on fossil fuels; and examines the proposed Project's energy usage characteristics to determine whether the Project could result in any significant energy-related environmental impacts during its construction or operation activities.

This section incorporates information and analysis from the *Energy Technical Report* (see **Appendix ENE**) and the *Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report* (see **Appendix AIR**) prepared by Ramboll, which were independently peer reviewed by the City of Oakland's environmental consultant, Environmental Science Associates (ESA).

Comments on the Notice of Preparation (NOP) included a request to analyze potential on-site energy usage reduction measures and concerns regarding fossil fuel consumption. This analysis and potential effects of the proposed Project on energy resources are included in the following analysis.

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.

4.5.1 Environmental Setting

State Setting

Energy Profile

Total energy usage in California was 7,830 trillion British Thermal Units (Btus) in 2016 (the most recent year for which specific data are available), which equates to an average of 199 million Btu per capita. These figures place California second among the nation's 50 states in total energy use and 48th in per capita consumption. Of California's total energy usage, the breakdown by sector is roughly 40 percent transportation, 24 percent industrial, 19 percent commercial, and 18 percent residential. Electricity and natural gas in California are generally consumed by stationary users such as residences and commercial and industrial facilities, whereas petroleum-based fuel consumption is generally accounted for by transportation-related energy use (EIA, 2019).

California relies on a regional power system composed of a diverse mix of natural gas, renewable, hydroelectric, and nuclear generation resources. Approximately 71 percent of the electrical power needed to meet California's demand is produced in the state; the balance, approximately 29 percent, is imported from the Pacific Northwest and the Southwest. In 2018, California's in-state electricity use was derived from natural gas (35 percent), coal (3 percent), large hydroelectric resources (11 percent), nuclear sources (9 percent), renewable resources that include geothermal, biomass, small hydroelectric resources, wind, and solar (31 percent), and unspecified sources (11 percent) (CEC, 2020a).

Electricity

In 2018, total system electric generation for California was 285,488 gigawatt-hours (GWh), down 2 percent from 2017's total generation of 292,037 GWh (CEC, 2020a). Electricity from non-CO_2 emitting electric generation categories (i.e., nuclear, large hydroelectric, and renewable generation) accounted for 53 percent of total in-state generation for 2018, compared to 56 percent in 2017. California's in-state electric generation dropped by 6 percent in 2018 compared to 2017, while net imports increased by 6 percent. The overall decline observed in California's total electric generation system for 2018 is consistent with the recently published California Energy Demand 2018 – 2030 Revised Forecast (CEC, 2018a).

Factors contributing to the increase in total system electric generation include growth in the number of light duty electric vehicles registered in the state, increased manufacturing electricity consumption, and reductions in savings from energy efficiency programs; this last point suggesting that population growth is the primary driver of increased electricity consumption. With regard to total consumption, Californians consumed 255,350 GWh of electricity in 2018 (EIA, 2019).

Increasingly, electricity is used in multiple transportation modes, including light-duty vehicles, transit buses, and light and heavy rail. In California, its use is forecast to emerge in battery-electric medium-duty trucks, battery-electric buses, catenary-electric port drayage trucks, and high-speed rail. The California Energy Commission (CEC) forecasts the statewide electricity demand for electricity-powered transportation modes will increase from its current level of 2,000 GWh annually to between 12,000 and 18,000 GWh per year by 2030, depending on technology development and market penetration of the various vehicle types (CEC, 2017).

Natural Gas

One third of energy commodities consumed in California is natural gas. Although natural gas is the most common energy source for electricity generation in California, 90 percent of the state's natural gas is imported from the Rocky Mountain region, the Southwest, and Canadian basins (CEC, 2019a). Californians consumed 12,666 million therms of natural gas in 2018, which is equal to 1,266,600,000 million Btu (MMBtu) (CEC, 2020b). The natural gas market continues to evolve and service options expand, but its use falls mainly into the following four sectors: residential, commercial, industrial, and electric power generation. In addition, natural gas is a viable alternative to petroleum fuels for use in cars, trucks, and buses. Nearly 45 percent of the natural gas burned in California is used for electricity generation, and most of the remainder is consumed in the residential (21 percent), industrial (25 percent), and commercial (9 percent) sectors. California depends on out-of-state imports for nearly 90 percent of its natural gas supply.

Natural gas has become an increasingly important source of energy since the majority of the state's power plants rely on this fuel (CEC, 2019a).

Transportation Fuels

The energy consumed by the transportation sector accounts for roughly 41 percent of California's petroleum demand. Gasoline and diesel, both derived from petroleum (also known as crude oil), are the two most common fuels used for vehicular travel. According to the CEC, the state relies on petroleum-based fuels for 96 percent of its transportation needs. The transportation sector, including on-road and rail transportation (but excluding aviation), accounts for more than 96 percent of all motor gasoline use in the U.S., at roughly 3.4 million barrels in 2017. California is the third largest consumer of gasoline in the world, behind the U.S. (as a whole) and China (EIA, 2017). In 2018, approximately 31 percent of California's crude oil was produced within the state, about 11 percent was produced in Alaska, and the remaining 58 percent was produced in foreign lands (CEC, 2019b).

In 2018, taxable gasoline sales (including aviation gasoline) in California accounted for approximately 15.5 billion gallons of gasoline (CBE, 2019a), and taxable diesel fuel sales accounted for approximately 2.8 billion gallons of diesel fuel (CBE, 2019b). Statewide there was an overall decrease in gasoline and diesel consumption from 2007 to 2011 due to the economic recession, but consumption has increased since then.

The CEC forecasts demand for gasoline in California will range from 12.3 billion to 12.7 billion gallons in 2030, with most of the demand generated by light-duty vehicles. While the models show an increase in light-duty vehicles along population and income growth over the forecast horizon, total gasoline consumption is expected to decline, primarily due to increasing fuel economy (stemming from federal and State regulations) and gasoline displacement from the increasing market penetration of zero emission vehicles (ZEVs). For diesel, demand is forecast to increase modestly by 2030, following the growth of California's economy, but would be tempered by an increase in fleet fuel economy and market penetration of alternative fuels, most prominently by natural gas in the medium- and heavy-duty vehicle sectors (CEC, 2017).

California's oil fields comprise the fourth-largest petroleum-producing area in the United States, behind federal offshore production, Texas, and North Dakota. Crude oil is moved from area to area within California through a network of pipelines that carry it from both onshore and offshore oil wells to the refineries that are located in the San Francisco Bay Area, the Los Angeles area, and the Central Valley. Currently, 16 petroleum refineries operate in California, processing approximately 2.0 million barrels per day of crude oil (EIA, 2019).

Other transportation fuel sources used in California include alternative fuels, such as methanol and denatured ethanol (alcohol mixtures that contain no less than 70 percent alcohol), natural gas (compressed or liquefied), liquefied petroleum gas (LPG), hydrogen, and fuels derived from biological materials (i.e., biomass).

Regional Setting

The nine-county Bay Area and the entire City of Oakland is served by PG&E, an investor-owned utility company that provides electricity and natural gas supplies and services throughout a 70,000-square-mile service area that extends from Eureka in the north, to Bakersfield in the south, and from the Pacific Ocean on the west to the Sierra Nevada on the east. Operating characteristics of PG&E's electricity and natural gas supply and distribution systems are provided below. Also discussed are East Bay Community Energy, and regional consumption of transportation fuels.

Electric Utility Operations

PG&E provides "bundled" services (i.e., electricity, transmission, and distribution services) to most of the six million customers in its service territory, including residential, commercial, industrial, and agricultural consumers. Some customers also can obtain electricity from alternative providers such as municipalities, or community choice aggregators as allowed under Assembly Bill 117 (2002), as well as from self-generation distributed resources, such as rooftop solar installations. In Alameda County alone, electricity consumption in 2018 was 10,417 GWh (CEC, 2020c).

In recent years, PG&E has continued to make improvements to its electric transmission and distribution systems to accommodate the integration of new renewable energy resources, distributed generation resources, and energy storage facilities, and to help create a platform for the development of new Smart Grid technologies that help with load balancing and ensuring reliable electricity delivery to end customers. In December 2014, the California Public Utilities Commission (CPUC) issued Decision D.14-12-079 that permits the California investor-owned electric utilities to own electric vehicle (EV) retail charging equipment in their respective service territories to help meet the State's goal of reducing greenhouse gas (GHG) emissions by promoting cleaner transportation. On February 9, 2015, PG&E filed an application to request that the CPUC approve their proposal to develop, maintain, and operate an EV-charging infrastructure in its service territory. In 2016, the CPUC issued Decision D.16-12-065 establishing a three-year electric vehicle (EV) program of $130 million to deploy up to 7,500 charging stations (PG&E, 2018a). Further deployment of light-duty EV infrastructure was considered and approved in a second phase of the program with a total PG&E budget of over $236 million per CPUC Decision D.18-05-040 (EPIC, 2018).

PG&E is required to maintain physical generating capacity adequate to meet its customers' demand for electricity ("load"), including peak demand and planning and operating reserves, deliverable to the locations and at times as may be necessary to provide reliable electric service. PG&E is required to dispatch or schedule all of the electricity resources within its portfolio in the most cost-effective way. PG&E obtains its electricity supplies from power plants in northern California and from electricity purchased outside its service area and delivered through high-voltage transmission lines that form the PG&E the power grid.

In 2017, PG&E generated and/or procured a total of 61,397 gigawatt hours (GWh) of electricity generated by natural gas-fired power plants (20 percent), nuclear power plants (27 percent), large hydroelectric power plants (18 percent), renewable power plants (33 percent), and other

unspecified generators (2 percent) (PG&E, 2018b). Of this total, PG&E owns 7,687 megawatts (MW) of generating capacity, itemized below. The remaining electrical power is purchased from other sources in and outside of California. Approximately 27 percent of the electricity produced by PG&E comes from natural gas-fired sources (see **Table 4.5-1**).

TABLE 4.5-1
PG&E-OWNED ELECTRICITY GENERATING SOURCES

Source	Generating Capacity (Megawatts MW)
Nuclear (Diablo Canyon-2 reactors)	2,240
Hydroelectric	3,892
Natural Gas-Fired	1,400
Fuel Cell	3
Solar Photovoltaic (13 units-12 in Fresno County, 1 in Kings County)	152
Total	7,687

SOURCE: PG&E, 2018b. 2017 Joint Annual Report to Shareholders.

In January 2019, following a series of major California wildfires, including many for which PG&E was expected to be held liable, PG&E filed for Chapter 11 bankruptcy. On September 26, 2019, CPUC opened a formal proceeding to consider the ratemaking and other implications of a proposed plan of reorganization filed by PG&E in the U.S. Bankruptcy Court in San Francisco. PG&E's Plan of Reorganization compensates victims impacted by the wildfires of 2017 and 2018. It requires PG&E to modify its governance structure and to establish local operating regions, as well as establish an enhanced oversight and enforcement process that will escalate consequences faced by PG&E if it fails to improve its safety performance. These new oversight tools and changes to PG&E's Board of Directors and management are designed to ensure PG&E will emerge from bankruptcy as a fundamentally changed company that has a commitment and ability to provide safe and reliable service and can simultaneously continue needed improvements to mitigate wildfire risk and achieve the state's climate goals. (CPUC, 2020). On May 28, 2020 the CPUC approved PG&E's Chapter 11 Plan of Reorganization, and the Plan was subsequently confirmed by the Bankruptcy Court on June 20, 2020.

Renewable Energy Resources

California law requires load-serving entities, such as PG&E, to gradually increase the amount of renewable energy they deliver to their customers to at least 33 percent of their total annual retail sales by 2020, 44 percent by 2024, 52 percent by 2027, and 60 percent by 2030. This program, known as the Renewables Portfolio Standard (RPS), became effective in December 2011, and has since been enhanced with the passage of Senate Bill (SB) 350 and SB 100 (see Section 4.5.3, *Regulatory Setting*, for more information). Renewable generation resources, for purposes of the RPS program, include bioenergy such as biogas and biomass, small hydroelectric facilities (30 MW or less), wind, solar, and geothermal energy. As shown in **Table 4.5-2**, in 2017 approximately 33 percent of PG&E's energy deliveries were from qualifying renewable energy sources.

TABLE 4.5-2
PG&E RENEWABLE ENERGY SOURCES IN 2017

Source	Percent of Total Energy Portfolio
Biopower	3.6
Geothermal	4.6
Wind	8.2
RPS-Eligible Hydroelectric	3.2
Solar	13.5
Total	**33.1**

SOURCE: PG&E, 2018b, 2017 Joint Annual Report to Shareholders.

Electricity Transmission

Transmission lines are high voltage power lines that transmit electricity between electric substations. PG&E owns approximately 19,200 circuit miles of interconnected transmission lines operating at voltages ranging from 60 kilovolts (kV) to 500 kV. PG&E also operates approximately 92 electric transmission substations with a capacity of approximately 64,700 megavolt amperes (MVA). PG&E's electric transmission system is interconnected with electric power systems in the Western Electricity Coordinating Council, which includes many western states, Alberta and British Columbia, and parts of Mexico.

PG&E periodically upgrades substations and reconductors transmission lines to improve maintenance and system flexibility, reliability, and safety. PG&E expects to undertake various new transmission projects over the next several years to upgrade and expand the capacity of its transmission system to secure access to renewable generation resources and replace aging or obsolete equipment and improve system reliability (PG&E, 2018b).

Electricity Distribution

Distribution power lines are lower voltage power lines that transmit electricity from electric substations to end user, such as residential and other land use developments. PG&E's electricity distribution network consists of approximately 107,200 circuit miles of distribution lines (of which approximately 20 percent are underground and approximately 80 percent are overhead), 59 transmission switching substations, and 605 distribution substations, with a capacity of approximately 31,800 MVA.

These distribution substations serve as the central hubs for PG&E's electric distribution network. Emanating from each substation are primary and secondary distribution lines connected to local transformers and switching equipment that link distribution lines and provide delivery to end-users. In some cases, PG&E sells electricity from its distribution facilities to entities, such as municipal and other utilities, that resell the electricity. PG&E also operates electric distribution control center facilities in Concord, Rocklin, and Fresno, California (PG&E, 2018b).

Natural Gas Operations

PG&E provides natural gas transportation services to "core" customers and to "non-core" customers (i.e., industrial, large commercial, and natural gas-fired electric generation facilities) that are connected to its gas system in its service territory. Core customers can purchase natural gas procurement service (i.e., natural gas supply) from either PG&E or non-utility third-party gas procurement service providers (referred to as core transport agents). When core customers purchase gas supply from a core transport agent, PG&E still provides gas delivery, metering, and billing services to those customers. When PG&E provides both transportation and procurement services, PG&E refers to the combined service as "bundled" natural gas service. Currently, more than 95 percent of core customers, representing nearly 80 percent of the annual core market demand, receive bundled natural gas service from PG&E.

PG&E does not provide procurement service to non-core customers, who must purchase their gas supplies from third-party suppliers. PG&E offers backbone gas transmission, gas delivery (local transmission and distribution), and gas storage services as separate and distinct services to its non-core customers. Access to PG&E's backbone gas transmission system is available for all natural gas marketers and shippers, as well as non-core customers. PG&E also delivers gas to off-system customers (i.e., outside of PG&E's service territory) and to third-party natural gas storage customers. In 2020, total consumption of natural gas in Alameda County was 377 million therms, or 37,700,000 MMBtu (CEC, 2020b).

Natural Gas Supplies

PG&E receives natural gas from all the major natural gas basins in western North America, including basins in western Canada, the Rocky Mountains, and the southwestern United States. PG&E also is supplied by natural gas fields in California. PG&E purchases natural gas to serve its core customers directly from producers and marketers in both Canada and the United States. The contract lengths and natural gas sources of PG&E's portfolio of natural gas purchase contracts have fluctuated generally based on market conditions. During 2014, PG&E purchased approximately 291,100 million cubic feet (MMcf) of natural gas (net of the sale of excess supply of gas). Nearly all this natural gas was purchased under contracts with a term of one year or less. PG&E's largest individual supplier represented approximately 14 percent of the total natural gas volume PG&E purchased during 2014 (PG&E, 2018b).

Natural Gas System Assets

PG&E owns and operates an integrated natural gas transmission, storage, and distribution system that includes most of northern and central California. PG&E's natural gas system consists of approximately 42,800 miles of distribution pipelines, over 6,400 miles of backbone and local transmission pipelines, and various storage facilities. PG&E owns and operates eight natural gas compressor stations on its backbone transmission system and one small station on its local transmission system that are used to move gas through PG&E's pipelines. PG&E's backbone transmission system is used to transport gas from PG&E's interconnection with interstate pipelines, other local distribution companies, and California gas fields to PG&E's local transmission and distribution systems.

East Bay Community Energy

East Bay Community Energy (EBCE) is a community-governed, local power supplier that provides low-carbon electricity to Oakland residents and businesses under Alameda County's community choice energy (CCE) program at rates that are lower or comparable to PG&E's rates. In 2002, the State of California passed legislation (Assembly Bill 117) that permits local agencies to form CCE programs for their communities. Under a CCE program, the utility company (in this case PG&E) continues to operate and service the transmission and delivery system and provides billing and customer service. EBCE's standard electricity product that has a higher renewable energy content than PG&E at rates marginally lower than PG&E's base offering. It also provides a 100 percent renewable product at a rate equivalent to PG&E's base offering.

Transportation Fuels

Gasoline and diesel fuel are by far the largest transportation fuels used by volume in Alameda County. The total estimated 2018 sales of gasoline in Alameda County was 569 million gallons and the total estimated 2018 sales of diesel fuel in Alameda County were 129 million gallons (CEC, 2020d).

Local Setting

Port Utility Services

The Port of Oakland provides utility services (electrical and gas) to Port facilities (tenant-operated and Port-operated facilities) in support of aviation, maritime, and commercial real estate operations. The Oakland International Airport and portions of the Seaport are served by the Port as a municipal utility. Electricity for all other areas of the Port not served by the Port is provided by PG&E. For the areas served by the Port as a municipal utility, the Port's Utilities Department purchases and manages the delivery of electricity to the Port's customers (Port of Oakland, 2019).

Project Site

PG&E's current Oakland "C" Substation (100 Martin Luther King Jr. Way) is located adjacent to the Project site to the north across from Embarcadero West. The Peaker Power Plant, located in the PG&E Station C facility on the northern portion of the Project site, south of Embarcadero West (601 Embarcadero West), is a 165 MW jet-fuel fired power generation facility. Fuel storage for the facility is located in a large tank across Jefferson Street from the energy facility. The Peaker Power Plant, owned by Vistra Energy, is currently in operation.

Vistra Energy is planning to retire the jet-fuel fired Peaker Power Plant. On June 5, 2019, East Bay Community Energy (EBCE) approved a contract to receive the power generated from a proposed 20 MW/80 MWh battery energy storage project that would be built at the Peaker Power Plant site (EBCE, 2019) (refer to the Peaker Power Plant Variant discussion in Chapter 5, *Project Variants*, of this Draft EIR). On September 23, 2020, the California ISO issued a notice extending Vistra Energy's "must run" agreement through December 31, 2021 (California ISO, 2020).

Existing electrical infrastructure on the Project site includes power lines that enter the site from Market Street and Martin Luther King Jr. Way, and overhead power lines along the northern

Project boundary from Martin Luther King Jr. Way to Linden Street. Existing natural gas transmission lines currently enter the site from Market Street and Castro Street.

4.5.2 Regulatory Setting

Federal

Federal policies and regulations set broad energy efficiency standards and incentives for consumer products, automobile and fuel efficiency, etc. Such requirements, as those listed below, tend to be applicable to the manufacturing sector and not directly applicable to the Project, nonetheless are listed here for informational purposes.

National Energy Conservation Policy Act

The National Energy Conservation Policy Act (NECPA) serves as the underlying authority for federal energy management goals and requirements. Signed into law in 1978, it has been regularly updated and amended by subsequent laws and regulations. This act is the foundation of most federal energy requirements. NECPA established energy-efficiency standards for consumer products and includes a residential program for low-income weatherization assistance, grants and loan guarantees for energy conservation in schools and hospitals, and energy-efficiency standards for new construction. Initiatives in these areas continue today.

National Energy Policy Act of 2005

The National Energy Policy Act of 2005 sets equipment energy efficiency standards and seeks to reduce reliance on nonrenewable energy resources and provide incentives to reduce current demand on these resources. For example, under the act, consumers and businesses can attain federal tax credits for purchasing fuel-efficient appliances and products, including hybrid vehicles; constructing energy-efficient buildings; and improving the energy efficiency of commercial buildings. Additionally, tax credits are available for the installation of qualified fuel cells, stationary microturbine power plants, and solar power equipment.

Executive Order 13423 (Strengthening Federal Environmental, Energy, and Transportation Management), signed in 2007, strengthens the key energy management goals for the federal government and sets more challenging goals than the Energy Policy Act of 2005. The energy reduction and environmental performance requirements of Executive Order 13423 were expanded upon in Executive Order 13514 (Federal Leadership in Environmental, Energy, and Economic Performance), and signed in 2009.

Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 sets federal energy management requirements in several areas, including energy reduction goals for federal buildings, facility management and benchmarking, performance and standards for new buildings and major renovations, high-performance buildings, energy savings performance contracts, metering, energy-efficient product procurement, and reduction in petroleum use, including by setting automobile efficiency standards, and increase in alternative fuel use. This act also amends portions of the National Energy Policy Conservation Act.

Corporate Average Fuel Economy Standards

Established by the U.S. Congress in 1975, the Corporate Average Fuel Economy standards reduce energy consumption by increasing the fuel economy of cars and light trucks. The National Highway Traffic Safety Administration (NHTSA) and United States Environmental Protection Agency (U.S. EPA) jointly administer the Corporate Average Fuel Economy standards. The U.S. Congress has specified that Corporate Average Fuel Economy standards must be set at the "maximum feasible level" with consideration given for: (1) technological feasibility; (2) economic practicality; (3) effect of other standards on fuel economy; and (4) need for the nation to conserve energy.[1]

State

Warren-Alquist Act

The 1975 Warren-Alquist Act established the California Energy Resources Conservation and Development Commission, now known as the California Energy Commission (CEC). The Act established a State policy to reduce wasteful, uneconomical, and unnecessary uses of energy by employing a range of measures.

Assembly Bill 734

California Environmental Quality Act: Oakland Sports and Mixed-Use Project [Assembly Bill (AB) 734], signed by the Governor in September 2018, and codified in Public Resources Code Section 21168.6.7, provides an expedited judicial review process of 270 days for any potential lawsuit against the Project to be adjudicated pursuant to the California Environmental Quality Act 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 new 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*.

California Energy Action Plan

California's *2008 Energy Action Plan Update* updates the *2005 Energy Action Plan II*, which is the State's principal energy planning and policy document. The plan maintains the goals of the original *Energy Action Plan*, describes a coordinated implementation plan for State energy policies, and identifies specific action areas to ensure that California's energy is adequate, affordable, technologically advanced, and environmentally sound. First-priority actions to address

[1] For more information on the Corporate Average Fuel Economy standards, refer to https://www.nhtsa.gov/laws-regulations/corporate-average-fuel-economy. Accessed March 2019.

California's increasing energy demands are to promote energy efficiency, demand response (i.e., reducing customer energy usage during peak periods to address power system reliability and support the best use of energy infrastructure), and use of renewable power sources. To the extent that these strategies are unable to satisfy increasing energy and capacity needs, the plan supports clean and efficient fossil-fuel fired generation.

State of California Integrated Energy Policy

In 2002, the Legislature passed Senate Bill 1389, which required the CEC to develop an integrated energy plan biannually for electricity, natural gas, and transportation fuels, for the California Energy Report. SB 1389 requires the CEC to prepare a biennial Integrated Energy Policy Report (IEPR) that assesses major energy trends and issues facing the state's electricity, natural gas, and transportation fuel sectors and provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the state's economy; and protect public health and safety (Public Resources Code Section 25301[a]). The IEPR has replaced the Energy Action Plan as the chief program intended to provide a comprehensive statewide energy strategy to guide energy investments, energy-related regulatory efforts and greenhouse gas (GHG) reduction measures.

The most recent update to the IEPR (2018) examines how California's energy system must be transformed to meet the State's 2030 GHG reduction goal, including implementation of SB 350 (De Leon, Chapter 547, Statues of 2015) to double the energy efficiency of existing buildings and SB 100's target of achieving 60 percent renewables in the electricity supply by 2030. The report also covers policies and trends in integrated resource planning, distributed energy resources, transportation electrification, barriers faced by disadvantaged communities, demand response, transmission and landscape-scale planning, the California Energy Demand Preliminary Forecast, the preliminary transportation energy demand forecast, renewable gas (in response to Senate Bill 1383), the natural gas outlook, and solutions to increase resiliency in the electricity sector. The key strategies identified in the most recent, 2018 IEPR Update, are summarized below (CEC, 2018b). CEC staff are currently conducting public workshops for the 2019 IEPR Update, which is expected to be finalized in January 2019, and adopted in February 2019 (CEC, 2019c).

Decarbonizing the Electricity Sector

Decarbonizing the electricity sector is part of an integrated approach to reducing emissions from energy use. In 2018, about 34 percent of the electricity used to serve California was produced from renewable resources. In fact, the electricity sector is leading the State's efforts to reduce GHG emissions. Although the AB 32 and SB 32 GHG reduction goals are economy-wide, in 2016, the electricity sector surpassed AB 32's 2020 goal and nearly met SB 32's 2030 goal (see Section 4.7, *Greenhouse Gas Emissions*, for more information about AB 32 and SB 32). In 2016, GHG emissions from the electricity sector were 37.6 percent below 1990 levels. These gains are largely attributable to advancements in energy efficiency, increased use of renewable energy resources, and reduced use of coal-fired electricity. To further reduce GHG emissions, California is increasingly using renewable resources to produce electricity while planning for increased demand from transportation electrification and other opportunities for electrification.

In 2017, solar accounted for 36 percent of the state's renewable generation. The increase in solar and other renewables is a California success story in reducing GHG emissions, but also creates operational challenges. Grid operators must manage the ramp-up of solar generation as it peaks midday and then ramps down at sunset while electricity demand remains high.

The 2018 IEPR emphasizes the current challenge the State faces in increasing the state's ability to integrate more renewable energy into the grid. There is an increasing need for energy storage that can balance supply and demand by absorbing excess energy and reinjecting it into the grid when demand increases. There is also a need for transmission investments to link our extensive renewable resources to load centers throughout the grid. The challenges are compounded by increasing numbers of Californians who are generating, and in some cases, storing their own electricity or purchasing electricity from local providers called community choice aggregators.

Energy Efficiency and Building Decarbonization

In 2017, as called for in Senate Bill 350, the CEC established ambitious annual targets to achieve a statewide doubling of cumulative energy efficiency savings in electricity and natural gas end uses by 2030. The CEC developed the doubling targets in collaboration with the CPUC, investor-owned utilities (IOUs), publicly owned utilities (POUs), and other stakeholders through a public process. Achieving these efficiency targets is one of the primary ways the energy sector can help achieve the State's climate goal of reducing GHG emissions to 40 percent below 1990 levels by 2030. However, the State will need additional efforts to decarbonize homes and businesses to meet California's goals for 2030 and 2050.

Electrification of space and water heating is one of the State's key strategies to reduce or eliminate GHG emissions from buildings, including the methane emissions associated with natural gas use. GHG reductions will accelerate as the electricity system becomes cleaner with large increases in renewable resources.

As spelled out in the California Energy Efficiency Strategic Plan, the CPUC has set a goal of achieving zero net energy (ZNE) performance for all new low-rise homes constructed in or after 2020, and for all new commercial buildings constructed in or after 2030. The latest adopted building energy standards (2019 Title 24 standard, described below), require, for the first time, PV installations on new homes. However, outstanding issues remain, including how ZNE should be defined, and the need to identify compliance pathways when on-site renewable generation is not feasible, as well as the appropriate role for natural gas in ZNE buildings. The primary challenge is to build a technical and regulatory foundation for orchestration of energy efficiency and all other feasible distributed and customer-sited clean energy resources.

Transportation Electrification

California is working to transform the transportation sector away from petroleum to near-zero emission vehicles operating with low-carbon fuels and ZEVs that run on electricity from batteries or hydrogen fuel cells. Including emissions from refineries, the transportation sector accounted for more than 50 percent of the state's GHG emissions as of 2016. The State is advancing goals, policies, and plans to support the proliferation of zero-emission and near-zero-emission vehicles. As described in more detail below, the Governor's Executive Orders have set goals of reaching

1.5 million ZEVs on California's roadways by 2025 and 5 million by 2030. As usage grows, ZEVs will have an increasing role in grid management and the integration of renewables in particular.

Title 24 – California Energy Efficiency Standards

The Energy Efficiency Standards for residential and nonresidential buildings specified in Title 24, Part 6 of the California Code of Regulations were established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated approximately every three years to allow for consideration and possible incorporation of new energy-efficiency technologies and methods. The current standards became effective on January 1, 2020. The 2019 Title 24 standards require solar photovoltaic systems for new homes, encourage demand responsive technologies including battery storage and heat pump water heaters, and improve the building's thermal envelope through high performance attics, walls and windows. In nonresidential buildings, the standards update indoor and outdoor lighting making maximum use of LED technology. (CEC, 2019d). The next update to the Title 24 energy efficiency standards (2022 standards) are scheduled to go into effect on January 1, 2023. Title 24, Part 6 is updated approximately every three years.

California Green Building Standards Code (CALGreen, or Title 24 Part 11)

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 updated in 2016 to include new mandatory measures for residential and nonresidential uses; the new measures took effect on January 1, 2017 (CBSC, 2016). Most changes are related to the definitions and to the clarification or addition of referenced manuals, handbooks, and standards. The 2019 CALGreen Code updates, which took effect on January 1, 2020, incorporate amendments to electric vehicle charging spaces, outdoor water use provisions, and clarifications (CBSC, 2019).

Renewables Portfolio Standard

The State of California adopted standards to increase the percentage that retail sellers of electricity, including investor-owned utilities and community choice aggregators, must provide from renewable resources. The standards are referred to as the RPS. Qualifying renewables under the RPS include bioenergy such as biogas and biomass, small hydroelectric facilities (30 MW or less), wind, solar, and geothermal energy. The CPUC and the CEC jointly implement the RPS program. The CPUC's responsibilities include: (1) determining annual procurement targets and enforcing compliance; (2) reviewing and approving each investor-owned utility's renewable energy procurement plan; (3) reviewing contracts for RPS-eligible energy; and (4) establishing the standard terms and conditions used in contracts for eligible renewable energy (CPUC, 2019).

Executive Orders S-14-08 and S-21-09

In November 2008, then-Governor Schwarzenegger signed Executive Order S-14-08, which expanded the state's RPS to 33 percent renewable power by 2020. In September 2009, then-Governor Schwarzenegger continued California's commitment to the Renewable Portfolio Standard by signing Executive Order S-21-09, which directed the California Air Resources Board under its Assembly Bill (AB) 32 authority to enact regulations to help the State meet its RPS goal of 33 percent renewable energy by 2020.

SB 350 – Clean Energy and Pollution Reduction Act of 2015

SB 350, known as the Clean Energy and Pollution Reduction Act of 2015 was enacted on October 7, 2015 and provides a new set of objectives in clean energy, clean air, and pollution reduction by 2030. The objectives include the following:

1. To increase from 33 percent to 50 percent by December 31, 2030, the procurement of our electricity from renewable sources.
2. To double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.

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 and publicly-owned utilities from 50 percent to 60 percent by 2030. Incrementally, these energy providers are also required to 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.

On the same day that SB 100 was signed, Governor Brown signed Executive Order B-55-18 with a new statewide goal to achieve carbon neutrality (zero-net GHG emissions) by 2045 and to maintain net negative emissions thereafter.

Appliance Efficiency Regulations, California Code of Regulations Title 20

California's Appliance Efficiency Regulations (20 CCR Part 160-1608) contain standards for both federally regulated appliances and non-federally regulated appliances. The regulations are updated regularly to allow consideration of new energy efficiency technologies and methods. The current regulations were adopted by the CEC on November 18, 2009. The standards outlined in the regulations apply to appliances that are sold or offered for sale in California. More than 23 different categories of appliances are regulated, including refrigerators, freezers, water heaters, washing machines, dryers, air conditioners, pool equipment, and plumbing fittings.

Transportation Energy

AB 1007 (Pavley) – Alternative Fuel Standards

Assembly Bill 1007, (Pavley, Chapter 371, Statutes of 2005) required the CEC to prepare a State plan to increase the use of alternative fuels in California (State Alternative Fuels Plan). The CEC prepared the State Alternative Fuels Plan in partnership with the California Air Resources Board and in consultation with other State, federal, and local agencies. The final State Alternative Fuels Plan, published in December 2007, attempts to achieve an 80-percent reduction in GHG emissions associated with personal modes of transportation, even as California's population increases.

California Assembly Bill 1493 (AB 1493, Pavley)

In response to the transportation sector accounting for more than half of California's carbon dioxide (CO2) emissions, AB 1493 (commonly referred to as California Air Resources Board (CARB)'s Pavley regulations), enacted on July 22, 2002, requires CARB to set GHG emission standards for new passenger vehicles, light duty trucks, and other vehicles manufactured in and after 2009 whose primary use is non-commercial personal transportation. Phase I of the legislation established standards for model years 2009 through 2016 and Phase II established standards for model years 2017through 2025 (CARB, 2017 and U.S. EPA, 2012). Refer to Section 4.7, *Greenhouse Gas Emissions*, of this Draft EIR for additional details regarding this regulation.

Low Carbon Fuel Standard

The Low Carbon Fuel Standard (LCFS), established in 2007 through Executive Order S-1-07 and administered by CARB, requires producers of petroleum-based fuels to reduce the carbon intensity of their products that started with a 0.25 percent reduction in 2011 and culminated in a 10-percent total reduction in 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.

Petroleum importers, refiners, and wholesalers can either develop their own low carbon fuel products, or buy LCFS credits from other companies that develop and sell low carbon alternative fuels, such as biofuels, electricity, natural gas, and hydrogen.

Executive Order B-16-12 – 2025 Goal for Zero Emission Vehicles

In March 2012, Governor Brown issued an executive order establishing a goal of 1.5 million ZEVs on California roads by 2025. In addition to the ZEV goal, Executive Order (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; and that by 2050, virtually all personal transportation in the state will be based on ZEVs, and GHG emissions from the transportation sector will be reduced by 80 percent below 1990 levels.

California Air Resources Board Advanced Clean Car Program

The Advanced Clean Cars emissions-control program was approved by CARB in 2012 and is closely associated with the Pavley regulations (CARB, 2017). The program requires a greater number of zero-emission vehicle models for years 2015 through 2025 to control smog, soot, and GHG emissions. This program includes the Low-Emissions Vehicle (LEV) regulations to reduce

criteria pollutants and GHG emissions from light- and medium-duty vehicles; and the ZEV regulations to require manufactures to produce an increasing number of pure ZEV's (meaning battery and fuel cell electric vehicles) with the provision to produce plug-in hybrid electric vehicles (PHEV) between 2018 and 2025.[2]

California Air Resources Board Mobile Source Strategy

The Mobile Source Strategy (2016) 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 classes 3 through 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. CARB's Mobile Source Strategy includes measures to reduce total light-duty vehicle miles travelled (VMT) by 15 percent compared to business-as-usual in 2050.

California Air Resources Board Advanced Clean Trucks Rule

The Advanced Clean Trucks regulation was approved on June 25, 2020 and has two main components, a manufacturers ZEV sales requirement and a one-time reporting requirement for large entities and fleets. Manufacturers who certify Class 2b-8 chassis or complete vehicles with combustion engines are required to sell zero-emission trucks as an increasing percentage of their annual California sales from 2024 to 2035. By 2035, zero-emission truck/chassis sales need to be 55% of Class 2b – 3 truck sales, 75% of Class 4 – 8 straight truck sales, and 40% of truck tractor sales.

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 and spur the installation and construction of 250,000 plug-in electric vehicle chargers, including 10,000 direct current fast chargers, and 200 hydrogen refueling stations by 2025.

Local Plans, Ordinances, and Policies

City of Oakland General Plan

The Open Space, Conservation and Recreation (OSCAR) Element of the Oakland General Plan describes the following policies regarding energy resources, adopted for the purpose of avoiding or mitigating an environmental effect, and that apply to the Project.

[2] Note that in September, 2019, the Trump Administration announced that the U.S. EPA would withdraw the Clean Air Act preemption waiver the previous administration granted to the State of California in January 2013, as it relates to California's GHG and ZEV programs. Available at: https://www.epa.gov/newsreleases/trump-administration-announces-one-national-program-rule-federal-preemption-state-fuel. Accessed: September 2019. California and other jurisdictions have filed a lawsuit challenging the U.S. EPA's authority to withdraw the preemption waiver, and that litigation is pending – with the final results unknown – as of the preparation of this analysis.

***Policy CO-13.1*:** Promote a reliable energy network which meets future needs and long-term economic development objectives at the lowest practical cost.

***Policy CO-13.2*:** 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*:** Encourage the use of energy-efficient construction and building materials. Encourage site plans for new development which maximize energy efficiency.

***Policy CO-13.4*:** 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 improvements.

The Housing Element Update 2015-2023 of the Oakland General Plan contains the following policies that address issues related to energy, that were adopted for the purpose of avoiding or mitigating an environmental effect, and that are relevant to the Project:

HE 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.

HE 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.

HE 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.

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 CURB[3] 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, 2020a). Alongside the 2030 ECAP, Council also adopted a goal to achieve community-wide carbon neutrality no later than 2045 (City of Oakland, 2020b.). Achieving 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

[3] 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.

The following energy-related actions in the 2030 ECAP direct the City to take actions that would directly or indirectly 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-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-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.

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.

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

As of March 2017, Chapter 15.04, Article II, Part 11 of the City's Municipal Code 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 the remaining 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.

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% electric.

4.5.3 Significance Criteria

Changes to Appendix G of the State CEQA Guidelines effective in December 2018 were intended to reflect recent changes to the CEQA statutes and court decisions. In the case of energy, the topic was added to the Appendix G checklist, in addition to being discussed in Appendix F of the State CEQA Guidelines. For purposes of this analysis, consistent with the changes to Appendix G of the State CEQA Guidelines, impacts associated with energy are considered to be significant if the Project would:

1. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or
2. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

The City of Oakland has also established thresholds of significance for CEQA impacts (City of Oakland, 2016). The City's thresholds of significance for CEQA impacts listed under the topic of utilities include the following two thresholds relating to energy. Based on these thresholds, the Project would have a significant adverse impact related to energy if it would:

1. Violate applicable federal, state and local statutes and regulations relating to energy standards;[4] or
2. Result in a determination by the energy provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the providers' existing commitments and require or result in construction of new energy facilities or expansion of existing facilities, construction of which could cause significant environmental effects.

These City thresholds of significance are addressed as part of the analysis of the two significance criteria identified above.

Approach to Analysis

This impact analysis evaluates the potential for the proposed Project to result in the wasteful use of energy or wasteful use of energy resources during Project construction and operation, consistent with Public Resources Code Section 21100(b)(3) and Section 15126.2(b) and Appendices F and G of the State CEQA Guidelines. The analysis provides construction and operational energy use estimates for the proposed Project. The analysis then uses this information to evaluate whether this energy use would be considered wasteful, inefficient, or unnecessary, taking into account available energy supplies and existing use patterns, the Project's energy efficiency features, and compliance with applicable standards and policies aimed to reduce

[4] See Appendix F of the State CEQA Guidelines for guidance on information related to energy-conservation that must be contained in an EIR.

energy consumption, including the City's 2030 ECAP and the State's Title 24 Energy Efficiency Standards. Energy quantification details supporting the Project estimates presented in this section are based on the *Energy Technical Report* prepared by Ramboll, provided in Appendix ENE of this Draft EIR, which has been peer-reviewed for use in this EIR by ESA.

Sustainable Design Features

LEED Certification

To qualify for CEQA expedited judicial review for claims under AB 734, the proposed 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 the City of Oakland Green Building Compliance Standards, the GreenPoint rating equivalent to LEED Gold for Homes is 53 points after including other mandatory local measures, for situations when a historic building is demolished (City of Oakland, 2014).

Building Electrification

Through the AB 734 process, the Project sponsor has committed to construct at least 50 percent of residential buildings to be all-electric (i.e., no use of natural gas) and the Project would be required to comply with any changes to the City's building code applicable to the Project that eliminate the use of natural gas, unless a waiver is granted for the Project's restaurants and/or other land uses.

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 code requires EV-ready electrical prewiring but not actual charger installation. The Project sponsor anticipates that the electric vehicle charging stations would achieve a similar or better functionality as a Level 2 charging station.[5] This would encourage the use of EVs at the Project site and discourage the use of gasoline and diesel passenger vehicles, thus reducing mobile source fuel consumption associated with vehicle travel to and from the Project site.

Transportation Management Plan

As discussed in Section 4.15, *Transportation and Circulation*, California Assembly Bill 734 provides that the construction of a new ballpark for the Oakland A's and an accompanying mixed-use development would qualify for expedited judicial review if it meets several environmental standards, including a 20 percent Vehicle Trips Reduction (VTR). This VTR would be achieved via a Transportation Management Plan (TMP) for the ballpark and a Transportation Demand Management (TDM) Plan for non-ballpark uses. The 20 percent VTR

[5] Level 2 charging stations use higher-output 240-volt power sources so that recharge times for PEVs are much faster than standard charging stations.

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 non-ballpark development.

Note that while the TMP and TDM Plan are required as part of AB 734 and proposed as part of the Project, they are also included as transportation mitigation to ensure their effectiveness and monitoring. For more information, see **Mitigation Measures TRANS-1a** (Transportation Demand Management plan for non-ballpark development) and **TRANS-1b** (Transportation Management Plan for ballpark development).[6]

Construction Energy Estimates

The proposed Project would be constructed in two or more development phases with full buildout expected to occur approximately seven or more years after entitlements for the Project would be secured. This energy analysis includes quantification of electricity, natural gas, and fuels that would be required to construct the Project. The analysis conservatively assumes that there would be as few as two phases, that the complete build out would occur in as few as seven years, and 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. These assumptions are conservative because full build-out may take longer than seven years, and because occupancy and operation of each phase would likely ramp up over time, rather than upon completion of construction.

The first phase of construction would commence after all existing uses have vacated the site. The preliminary construction schedule assumed that construction would start in 2020, that it would last approximately seven years, and that it would mostly occur five days per week with multiple pieces of equipment conducting various construction activities at the site. While the start of construction is now anticipated to begin in 2022 and the duration of construction activities may change, the analysis is conservative because technological and regulatory advances are anticipated to reduce energy use in the future.

Initial construction activities would include demolition of the existing Howard Terminal buildings and parking lots, followed by geotechnical work. Construction activities related to Phase 1 land uses (i.e., the ballpark and initial mixed-use development) would include construction of a cut off wall, grading, site preparation, and site utility upgrades, followed by building construction, paving, and architectural coating. Construction activities related to Phase 2 would be the same for the remaining mixed-use development as described for Phase 1.

Energy use requirements in the form of diesel fuel and electricity consumption associated with on-site off-road construction equipment have been estimated based on the construction schedule; type, quantity, and use hours of equipment provided by the Project sponsor where available; California Emissions Estimator Model (CalEEMod) default information where specific information is not available; and methods consistent with U.S. EPA AP-42 technical guidance for analysis of diesel fuel. All off-road equipment is assumed to be either diesel-fueled or electric

[6] The transportation analysis for the Project indicates that the Project's TMP and TDM Plan would reduce vehicle trip generation by at least 20 percent, and in doing so would achieve at least a 15 percent reduction below similar existing uses.

based on Project-specific information. Table 2 of the *Energy Technical Report* (Appendix ENE) provides the anticipated fuel and electricity usage that would be associated with each type of off-road equipment during each construction activity for Project Phases 1 and 2. The construction energy use for the Project was estimated assuming implementation of **Mitigation Measure AIR-1c** (Diesel Particulate Matter Controls).

With regard to on-road construction vehicles, it is assumed that light-duty automobiles and trucks that would be used by commuting workers would be fueled by gasoline and that on-road construction vehicles, such as vendor and haul trucks for demolition debris, soil, and other material hauling, would require diesel fuel. This analysis assumes that no electric on-road vehicles would be used during construction of the Project. The fuel quantities that would be required for on-road vehicles during construction have been calculated based on fuel efficiency factors estimated for each vehicle type using the Emission Factors Model version 2017 (EMFAC2017). Estimated trip counts were provided by the Project sponsor and CalEEMod defaults were used for worker, vendor, and haul trip lengths. Refer to Table 8 of the *Energy Technical Report* for details on the fuel efficiency derivations for the on-road vehicle types and the anticipated fuel consumption that would be associated with on-road construction vehicles.

In addition to fuels for equipment and vehicles, construction activities would include the use of water that would require electricity to supply, treat, and transport the water to the Project site. Table 5 of the *Energy Technical Report* provides details on the estimated electricity consumption that would be required associated with water usage during construction of the Project. Summaries of the total estimated Project construction energy use requirements for electricity, diesel fuel, and gasoline are presented in Table 4.5-3 under the Impact ENE-1 discussion.

Construction energy use for the Maritime Reservation Scenario was calculated by scaling the Project energy usage by the ratio of acreage of the Maritime Reservation Scenario to the Project. According to the Project Description, the only difference in acreage is in Phase 2 of construction; therefore, Phase 1 energy usage for the Maritime Reservation Scenario would be the same as the Project. Additionally, building square footage would be conserved under the Maritime Reservation Scenario so energy from building construction and architectural coating phases would be the same as the Project. The electricity usage for electric equipment and water consumption were conservatively assumed to be the same as the Project, and thus these values were not scaled for energy usage. Summaries of the total estimated Maritime Reservation Scenario construction energy use requirements for electricity, diesel fuel, and gasoline are presented in Table 4.5-5 under the Maritime Reservation Scenario discussion in Section 4.5.4.

Operational Energy Estimates

Building Energy Use

Natural gas and electricity would be the energy sources for the proposed residential and commercial use buildings. Energy use associated with A's-related activities, which represents existing conditions for the Project, was estimated based on a combination of historical use data, the 30-year annual average A's game attendance of 22,671, the energy use per attendee in 2017 for A's games, and CalEEMod default values. For the existing Coliseum stadium, per-attendee electricity and natural gas use rates were estimated for the 2017 A's season using PG&E

electricity billing data, and facility natural gas metering data. Energy use associated with the National Football League (NFL) and Other Events are not included in the A's-related existing conditions total in order to conservatively estimate net new energy use attributable to the Project. It is assumed that energy use in 2018 (the existing conditions year) is comparable to 2017. The per-attendee energy use rates were used to estimate total energy usage associated with events at the Coliseum in units of kilowatt-hours (kWh) of electricity and thousand British thermal units (kBtu) of natural gas. For the A's headquarters at Jack London Square, electricity and natural gas use rates were calculated using the CalEEMod default energy consumption profile for a General Office Building (in climate zone 5). Since the headquarters building was constructed prior to 2010, it is conservative for the baseline conditions to assume CalEEMod default energy use rates for 2016 Title 24 Building Energy Efficiency Standards.

The estimated annual energy use for the Project is based on a combination of historical data, Project-specific data proved by Meyers+, a mechanical and engineering firm, and CalEEMod defaults adjusted for the 2019 Title 24 requirements. Natural gas consumption for the Project's ballpark was quantified using the same methodology as for existing conditions. The analysis assumes that natural gas use characteristics for the proposed Project are comparable to the Coliseum on a per-attendee basis. This is a conservative assumption because the new venue for events would likely be far more efficient for overall energy use than the existing Coliseum Stadium, which was constructed in 1966. Electricity use for the ballpark stadium was provided by Meyers+. Energy use for the proposed Project's retail, hotel, office, restaurant, performance venue, residential, and parking uses were calculated using CalEEMod default energy consumption profiles, updated to reflect buildings constructed to 2019 Title 24 Building Energy Efficiency Standards. Meyers+ provided estimates of peak electricity use and peak natural gas use for each land use subtype. The Project would also be required to achieve LEED Gold building design[7] per the A's commitment to comply with AB 734, which would include improved lighting, cooling, and water heating efficiencies beyond Title 24 requirements; however, the exact design details are not known at this time and are therefore conservatively excluded from the Project's energy use estimates.

Energy use associated with water consumption in the form of electricity would be required to supply, treat, and distribute potable water and to treat the resulting wastewater that would be associated with the Project. Project-related water consumption was quantified as shown in Table 31 of the *Air Quality Greenhouse Gas, and Health Risk Assessment Technical Report* provided in Appendix AIR of this Draft EIR. The total water-related electricity that would be required for Project operations are summarized in Table 4.5-4, below under Impact ENE-1.

Table 4.5-4 shows the annual operational electricity and natural gas use that would be associated with Project buildings after the first phase of construction is completed and at full buildout. Additional information regarding electricity and natural gas usage estimates can be found in *Energy Technical Report* provided in Appendix ENE of this Draft EIR. Note that the analysis presented in Table 4.5-4 does not reflect the Project sponsor's commitment to CARB to construct at least 50 percent of residential buildings to be all-electric (i.e., use of electricity rather than natural gas for cooking and heating), which results in an overstatement of natural gas use and an

[7] AB 734 has differing LEED requirements for different land uses. The Ballpark and non-residential uses must be LEED Gold certified, but the residential uses can use another rating scale equivalent to LEED Gold.

understatement of electricity use. In addition, the City's 2030 ECAP calls for the City to prohibit, by 2023, new buildings and major renovations from connecting to natural gas infrastructure, and the Project would be required to comply with any such changes to the City's building code that would be applicable to the Project unless a waiver is granted for the Project's restaurants and/or other land uses.

Building natural gas and electricity use (both annual and peak) and water consumption and wastewater generation for the Maritime Reservation Scenario is not expected to be different than the Project, since the overall square footage, land uses, and population are assumed to be the same.

Mobile Energy Use

Mobile fuel usage was estimated based on VMT by Project-related residents, spectators, event staff, employees, and visitors. Trip generation rates and total VMT for each land use for A's-related existing conditions, Phase 1 Buildout, and Full Project Buildout were provided by Fehr & Peers, as shown in Table 23 of the *Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report* provided in Appendix AIR of this Draft EIR. Fuel usage was estimated using an average mile per gallon (mpg) rate obtained from EMFAC2017 for the fleet mix corresponding to the vehicle category and fuel type (i.e., gasoline, diesel, compressed natural gas, or electricity).

Detailed vehicle fuel usage estimates for each scenario, including the 20 percent VTR required by AB 734, are shown in Table 8 of the *Energy Technical Report* provided in Appendix ENE of this Draft EIR.[8] Implementation of mitigation measures in Section 4.15, *Transportation and Circulation*, would ensure total trips are reduced by at least 20 percent, which is accounted for in Table 4.5-4 below. (For an analysis of operational VMT without the 20 percent VTR, refer to Appendix AIR.)

As shown in Table 8, mobile fuel usage is estimated to increase with full Project buildout due to the increase in annual VMT, despite improvements in vehicle fuel efficiency. Electricity used to charge additional EVs beyond the fleet average EV projections due to the Project's commitment to install EV charging stations is accounted for in Table 9 of the *Energy Technical Report*. The *Air Quality Technical Report* assumes that the Project's design to provide 10 percent of parking spaces with EV charging supports the State's goal of having 5 million ZEVs on California roads by 2030, and determines that there is an additional benefit beyond what is reflected in the Project's mobile emissions modeling using EMFAC, which reflects currently adopted regulations. Battery EVs use electricity to drive the motor rather than the combustion of gasoline or diesel fuel. The gasoline and diesel displaced by the additional electric vehicles is also calculated in Table 9 of the *Energy Technical Report*. The detailed derivation of the displacement of miles travelled by gasoline- and diesel-fueled vehicles by miles travelled by EVs is shown in *Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report* Table 38 (Appendix AIR).

Additionally, this analysis accounts for energy use from Transportation Refrigeration Units (TRUs), which are cooling units installed on trucks carrying perishable goods, such as food. TRU

[8] The Energy Technical Report takes the 20 percent vehicle trip reduction requirement of AB 734 into account in quantifying the Project's energy use from mobile sources.

energy use was calculated to account for perishable goods delivery for the existing Coliseum, as well as for the Project ballpark. It was assumed that all TRUs are diesel-powered. Energy use during travel time and during unloading were calculated using TRU assumptions discussed in *Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report* Table 40 (Appendix AIR).

Vehicle miles travelled for the Maritime Reservation Scenario would be the same as the Project since there is no change in square footage, land uses, or population. Therefore, mobile energy use associated with mobile sources during operations would also be the same for the Maritime Reservation Scenario and the Project.

Emergency Generator Energy Use

The existing conditions include two installed emergency generators that would be removed from the Project site prior to the commencement of proposed demolition activities; however, the baseline energy use associated with these generators was conservatively not quantified because the specifications and operation parameters of the existing generators are not known. The existing Coliseum currently has two emergency generators; these were conservatively not included in the A's related existing conditions for the purposes of calculating net energy use since the generators may remain after Project completion.

For full buildout of the Project, 17 emergency generators are anticipated to be installed based on the maximum heights of the buildings proposed. The emergency generators would use diesel fuel for testing and maintenance and for emergency generation of electricity in the event of a power outage. Routine proposed maintenance and testing for each of the emergency generators is conservatively assumed to consist of 50 hours run time per year, consistent with the maximum allowed testing time pursuant to the Airborne Toxics Control Measure (ATCM) for Stationary Compression Ignition Engines (17 CCR 93115); however, pursuant to implementation of **Mitigation Measure AIR-2c**, the energy use presented in Table 4.5-4 associated with testing of each of the proposed emergency generators assumes that testing would be limited to an annual duration of 20 hours per year.

Emergency generator fuel usage was estimated based on the fuel consumption rate and anticipated size of the generators (i.e., average of 872 horsepower for phase 1 and 931 horsepower for full buildout of the Project). Table 10 of the *Energy Technical Report* provides details on fuel usage estimates from emergency generators. Additional details on fuel consumption rates and hours of operation for the emergency generators can be found in the *Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report* Table 37.

For the full buildout of the Maritime Reservation Scenario, it is assumed that each of the non-ballpark buildings would have one emergency generator and the Howard Terminal ballpark would also have one generator, for a total of 15 generators (two less than the Project). As is assumed for the mitigated proposed Project, energy use associated with operation for routine maintenance and testing for each emergency generator under the Maritime Reservation Scenario is assumed to be 20 hours per year, per Mitigation Measure AIR-2c.

4.5.4 Impacts and Mitigation Measures

Impact ENE-1: Construction and operation of the Project could result in potentially significant environmental impact due to the wasteful, inefficient, and/ or unnecessary use of energy. (Criterion 1) (*Less than Significant with Mitigation*)

Construction Energy Use

Construction of the proposed Project would require the use of fuels (primarily gasoline and diesel) for the operation of construction equipment and vehicles to perform a variety of activities, including excavation, hauling, paving, and vehicle travel. Energy in the form of electricity may also be consumed by some pieces of construction equipment, such as welding machines, power tools, lighting, etc.

Table 4.5-3 presents total and annual average estimated construction energy consumption by energy source for the proposed Project and for the mitigated Project. The energy usage for construction of the mitigated Project is higher than for the proposed Project due to a number of transportation improvements, required as mitigation measures in the Transportation section, that call for construction of off-site facilities that may also generate construction emissions. These include but are not limited to creation of a Transportation Hub, bus lanes, bike lanes, and a pedestrian and bicycle overcrossing of the railroad tracks (see Section 4.2, *Air Quality*, and Section 4.15, *Transportation and Circulation*, for additional details).

Total energy consumption would occur incrementally during the various construction phases over a period of approximately 7 years, rather than all at once. The level of energy usage would fluctuate depending on the type of construction activities underway during any particular time period. Energy use would be higher during the first phases of construction involving the initial site clearance and earth-moving/grading, where the largest and most powerful equipment would be required to excavate, lift, and transport large volumes of soil and demolished materials (such as concrete slabs and asphalt) from the site. Gasoline and diesel fuel would be the primary energy source for vehicles driven by construction crews and to power the large trucks used to deliver and retrieve construction equipment, materials, and debris. Electricity would be used to transport (pump) water to the site, and to power automated hand tools and smaller types of construction machinery such as compressors for painting applications.

Operational Energy Use

Project operations would require long-term consumption of energy in the form of electricity, natural gas, gasoline, and diesel fuel. The electricity, natural gas, and water usage that would be required for operation of the proposed buildings have been estimated based on Project specific building area estimates, historical data, and CalEEMod default factors, as discussed above. Electricity would be used as the primary power source for the proposed buildings, including to operate the heating, ventilation, and air conditioning (HVAC) system, non-ballpark and ballpark lighting, etc. In addition, water use for buildings would require the consumption of electricity to supply, treat, and distribute potable water to the buildings and to treat wastewater generated at the buildings. Natural gas use for the buildings would primarily be associated with space and water heating.

TABLE 4.5-3
PROJECT CONSTRUCTION ENERGY RESOURCE USE

Energy Use Type	Unit of Measure	Project Energy Usage	Mitigated Project Energy Usage[a]
Electricity			
Water Consumption[b]	kWh/Project	812,894	815,619
Off-road Equipment[c]	kWh/Project	3,019,533	3,019,591
Total Electricity Use	kWh/Project	3,832,427	3,835,210
Annual Average Electricity Consumption[d]	**kWh/year**	**547,490**	**547,887**
Diesel			
On-road vehicles[e]	gallons/Project	750,725	777,648
Off-road equipment[c]	gallons/Project	1,800,927	1,845,763
Total Diesel Use	gallons/Project	2,551,652	2,623,410
Annual Average Diesel Use[4]	**gallons/year**	**364,522**	**374,773**
Gasoline			
On-road vehicles[e]	gallons/Project	859,030	869,915
Total Gasoline Use	gallons/Project	859,030	869,915
Annual Average Gasoline Use[4]	**gallons/year**	**122,719**	**124,274**

NOTES:

a The energy usage for the mitigated Project includes usage associated with construction of a pedestrian and bicycle overcrossing and other off-site construction associated with transportation improvements, which are required as mitigation in the Transportation section.
b Construction water use is based on the Project specific estimate as shown in Table 5 of the Energy Technical Report.
c Off-road equipment electricity use based on hours of operation for electric equipment. Off-road diesel fuel usage based on a fuel usage rate of 0.051 gallons of diesel per horsepower (hp)-hour, consistent with diesel conversion factors provided in U.S. EPA AP-42 Table 3.4-1.
d Annual averages are estimated by dividing the total use values by the expected 7-year duration of construction.
e On-road mobile source fuel use is based on vehicle miles traveled (VMT) for all years of construction and fleet-average fuel consumption in gallons per mile from EMFAC2017 for calendar years 2020 through 2027 in Alameda County.

SOURCE: Ramboll, 2020. (Detail provided in Appendix ENE to this Draft EIR.)

Mobile source fuel use associated with operation of the Project has been estimated based on VMT and the fleet-average fuel consumption (in gallons per mile) from EMFAC2017 for 2027 for the full Project buildout. Project VMT reflects the 20 percent VTR required by AB 734. Electricity demand for electric vehicles is based on VMT estimated for the Project, which in turn is based on the number of EV charging stations and their utilization and estimated EV energy economy (in kWh per mile), assuming 30 kWh/100 miles for existing conditions and 25 kWh/100 miles for full buildout conditions. Electricity used to charge additional EVs beyond the projected EMFAC2017 fleet average EV penetration has been estimated based on the Project's commitments to install electric vehicle chargers at 10 percent of the total number of parking spaces (which goes beyond City of Oakland code requirements), as described in *Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report*, Table 38.

The *Air Quality Technical Report* assumes that the Project would 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.[9] 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 under the CTF scenario. This approach thus accounts for charger use that would occur due to the Project and does not double count the charger use that would be expected to occur with default EV fleet penetration.

The operational energy use estimates also account for implementation of Mitigation Measure AIR-2c (Diesel Backup Generator Specifications). The annual energy use requirements estimated for full buildout operations of the Project relative to baseline conditions are summarized in **Table 4.5-4** by energy use type.

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 energy use compared to existing conditions, energy use from these shuttles has been estimated. The shuttles would consume an estimated 19,387 gallons of diesel fuel per year (see Appendix AIR, Table E-6). With the addition of shuttle bus fuel use, the conclusions regarding the significance of impacts from the Project's energy use would not change and the mitigation measures and their application would remain the same.

Analysis of Factors Identified in State CEQA Guidelines Appendix F

Appendix F of the State CEQA Guidelines identifies factors relating to whether a project would result in the wasteful, inefficient, or unnecessary consumption of fuel or energy, and conversely whether the project would fail to incorporate renewable energy or energy efficiency measures into building design, equipment use, transportation or other project features. The Appendix F factors are addressed below and used as guidance to evaluate the energy impact of the Project relative to the identified significance criteria.

[9] CARB. VISION Scenario Planning. Available at: https://ww3.arb.ca.gov/planning/vision/vision.htm. Accessed: December 2019.

TABLE 4.5-4
PROJECT OPERATIONAL ENERGY USE (ANNUAL)

Energy Use Type	A's-Related Existing Conditions in 2018	Phase 1 Operational Usage	Full Buildout Operational Usage	Net New Project
Electricity (MWh/year)				
Buildings[a]	6,376	19,356	58,767	52,391
Water Consumption	225	1,270	3,957	3,732
Mobile Sources[b]	84	334	1,147	1,063
EV Chargers	0	3	235	235
Total Electricity Use	**6,685**	**20,963**	**64,107**	**57,421**
Natural Gas (kBtu/year)				
Buildings[a]	3,174,285	24,539,193	72,122,326	68,948,041
Mobile Sources[b,c]	3,566	801,762	3,546,469	3,542,903
Total Natural Gas Use	**3,177,851**	**25,340,955**	**75,668,795**	**72,490,944**
Diesel (gallons/year)				
Mobile Sources[b]	6,891	281,745	1,025,277	1,018,386
TRU Operation	260	288	319	59
Mobile Source Reduction from EV Chargers	0	-136	-8,453	-8,453
Generator Testing[d]	0	6,234	16,167	16,167
Total Diesel Use	**7,151**	**288,131**	**1,033,310**	**1,026,159**
Gasoline (gallons/year)				
Mobile Sources	798,616	1,921,269	3,953,070	3,154,454
Mobile Source Reduction from EV Chargers	0	-445	-26,518	-26,518
Total Gasoline Use	**798,616**	**1,920,825**	**3,926,552**	**3,127,936**

NOTES:

kBtu = thousand British Thermal Unit; MWh = Megawatt-hour; and EV = electric vehicle.

a The analysis does not reflect the Project sponsor's commitment to CARB to construct at least 50 percent of residential buildings to be all-electric (i.e., use of electricity rather than natural gas for cooking and heating), which results in an overstatement of natural gas use and an understatement of electricity use.

b Mobile source energy use estimates include the 20 percent VTR required by AB 734.

c EMFAC2017 includes compressed natural gas in terms of diesel gallon equivalents. This is converted into Btu per the U.S. Department of Energy Alternative Fuel Data Center conversion: 1 DGE of CNG = 128,488 Btu. Available at: https://afdc.energy.gov/fuels/equivalency_methodology.html.

d Emergency generator diesel use estimates account for implementation of Mitigation Measure AIR-2c.

SOURCE: Ramboll, 2020. (Detail provided in Appendix ENE to this Draft EIR.)

Appendix F.II.C.1: Energy Requirements and Energy Use Efficiencies

State CEQA Guidelines Appendix F, Section II.C.1, includes the following impact guidance factor:

> *The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project including construction, operation, maintenance and/or removal. If appropriate the energy intensiveness of materials may be discussed.*

The energy inventories prepared for this evaluation include electricity and natural gas, and fuels used for construction and operation of the Project. These energy use requirements are summarized above in Table 4.5-3 for construction activities and below in Table 4.5-4 for the phase 1 and full buildout operational activities as well as the change from the existing conditions to full buildout. As shown in these tables, considerable amounts of electricity, diesel, and gasoline would be consumed during the construction and operational phases of the Project. For the effects of the Project on the local and regional energy supplies and on requirements for additional capacity, refer to the Appendix F.II.C.2 discussion, below.

In addition to direct construction- and operation-related energy consumption, indirect energy use would be required to generate electricity, refine fuels, and make the materials and components used in construction, including the energy used for extraction of raw materials, manufacturing, and transportation. Energy intensiveness of electricity generation, fuel refining, and materials, also referred to as the energy "lifecycle," is not addressed in this analysis because the California Natural Resources Agency (CNRA) has indicated that lifecycle analyses are not required under CEQA (CNRA, 2009). The CNRA explained in the context of greenhouse gas emissions, that: (1) there exists no standard regulatory definition for lifecycle, and (2) even if a standard definition for lifecycle existed, the term might be interpreted to refer to emissions beyond those that could be considered 'indirect effects' as defined by the State CEQA Guidelines, and therefore, beyond what an EIR is required to estimate and mitigate (CNRA, 2009). This reasoning was reaffirmed in Section 15126.2(b) of the November 2018 State CEQA Guidelines, which cautions that the analysis of energy impacts is subject to the rule of reason, and must focus on energy demand caused by the project, signaling that a full "lifecycle" analysis that would account for energy used in building materials and consumer projects will generally not be required (CNRA, 2018).

Nonetheless, recycling reduces indirect energy consumption associated with making materials and components, and reduces the energy used for extraction of raw materials, manufacturing, and transportation. California has a statewide goal of 75 percent waste diversion by 2020, while the City of Oakland Zero Waste goal aims to reduce emissions, and associated energy use, from waste by 89 percent between 2005 and 2020 (City of Oakland, 2019a). To achieve this goal, the City of Oakland administers a Recycling and Solid Waste Program. For multifamily homes, this includes composting service provided by Waste Management. California Waste Solutions provides recycling service for City of Oakland residences, while commercial recycling is an open market with other potential providers (City of Oakland, 2019b). Operations of the Project would comply with these goals by implementing waste diversion policies and infrastructure. With regard to the construction phases of the Project, the A's would comply with the requirements of the CALGreen mandatory measures and the applicable requirements of the City of Oakland Green Building Ordinance (chapter 18.02 of the Oakland Municipal Code), which would also require the

A's to comply with the requirements for Build It Green or LEED New Construction for commercial uses. These recycling efforts would reduce the effects of the Project's indirect energy use.

Appendix F.II.C.2: Local and Regional Energy Supplies

State CEQA Guidelines Appendix F, Section II.C.2, includes the following impact guidance factor:

> *The effects of the project on local and regional energy supplies and on requirements for additional capacity.*

As discussed above, the Project would result in the consumption of electricity, natural gas, gasoline, and diesel associated with mobile vehicle sources, building energy uses, emergency generator operations, and construction activities. The Project site is currently supplied both electricity and natural gas by PG&E. PG&E has established contracts and commitments to ensure there is adequate electricity generation and natural gas capacity to meet its current and future energy loads. Total energy use requirements are shown in Table 4.5-3 for construction activities and in Table 4.5-4 for the change from the baseline conditions to full buildout of Project operations.

Electricity

Annual average electricity consumption that would be required for the construction period of the mitigated Project (i.e., 547,887 kWh) would be substantially less than annual electricity consumption required for Project operations (see Tables 4.5-3 and 4.5-4). Therefore, this discussion focuses on electricity demand that would occur during full build out of Project operations. To put the Project's operational electricity requirements in context, in 2018 the total generated electricity for California was 285,488 GWh of electricity (CEC, 2020a), of which consumers in Alameda County used 10,417 GWh (CEC, 2020c). The CEC estimates that statewide energy demand will increase to 320,375 GWh in 2025 based on an average annual mid-energy demand growth rate of 1.32 percent (CEC, 2018a). As shown in Table 4.5-4, the Project's anticipated long-term operational increase in electricity usage from 6,685 megawatt-hours (MWh) per year for the baseline conditions in 2018 to 64,107 MWh per year by full buildout in 2027 reflects an increase of 57,421 MWh per year in electricity usage. This represents approximately 0.02 percent of the total 2017 statewide electricity usage and 0.55 percent of Alameda County electricity usage. PG&E's service planning and substation teams have reviewed the anticipated proposed electricity load and have indicated that there is currently adequate capacity at the electric substation that would serve the Project to support that proposed load (PG&E, 2019).

Based on a comparison to the statewide and Alameda County annual energy demand and the projected demand growth rate, as well as input provided by PG&E's service planning and substation teams, the Project-related increase in electricity consumption would not cause adverse effects on local and regional energy supplies or require additional generation capacity beyond the statewide planned increase to accommodate projected energy demand growth. In addition, the Project's operational electricity demand estimates conservatively exclude the benefits of LEED Gold design that would occur pursuant to AB 734 as well as due to future revisions to Title 24 energy standards, which would further reduce electricity demand. Furthermore, implementation of **Mitigation Measure GHG-1** (Preparation and Implementation of a GHG Reduction Plan)

would reduce the Project's electricity demand described in Table 4.5-4 through implementation of other electricity use reduction measures (see Section 4.7, Impact GHG-1).

The transition toward electric power sources for on-road vehicles, including for installation of additional electric vehicle charging stations, resulted in an increase in the calculated total electricity usage; however, as shown in Table 4.5-4, above, the associated increased electricity use would be modest and would not significantly impact overall electricity supply or infrastructure. This small increase would likely be offset by gains in energy efficiency at the Project site through implementation of Mitigation Measure GHG-1 and requirements set forth in AB 734 that have not been quantitatively addressed in the energy usage calculations, as noted above.

Natural Gas

There would be no natural gas consumption associated with Project construction activities. The Project's annual operational natural gas consumption are estimated to increase by 72,491 MMBtu from 3,178 MMBtu for the A's-related existing conditions in 2018 to 75,669 MMBtu at full buildout in 2027 (see Table 4.5-4). In comparison, statewide natural gas consumption in 2018 was 1,266,600,000 MMBtu and Alameda County natural gas demand was 37,700,000 MMBtu in 2018 (CEC, 2020b). The Project's increase in natural gas consumption would account for less than 0.01 percent of the 2018 statewide annual consumption and approximately 0.19 percent of the 2018 countywide consumption. It is projected that California natural gas demand will decrease at an annual rate of 1.1 percent to 2026 due to continued implementation of renewable generation projects and the penetration of energy efficient products in the state. After 2026, California natural gas demand is projected to increase due to population growth and associated demand (CEC, 2015). The Project's estimated natural gas consumption rate is not substantial compared to the 2017 countywide consumption and would not cause adverse effects on local and regional energy supplies or require additional transmission capacity beyond the statewide planned increase in consumption.

The Project sponsor has committed to electrify 50 percent of residential buildings and would be required to comply with any changes to the City's building code that eliminate the use of natural gas, including the provisions of Ordinance 13632 prohibiting most newly constructed buildings (both residential and commercial) from connecting to natural gas or propane as applicable, unless the Project is granted a waiver for restaurants and/or other land uses. In addition, the LEED Gold design and improvements in demand response to reduce usage during peak demand that would occur pursuant to implementation of AB 734 as well as due to future revisions to Title 24 energy standards that would improve building insulation, etc., would reduce natural gas demand. By monitoring the flow rate and consumption at individual zones, it becomes possible to identify unusual consumption points, promote conservation, and in turn reduce energy costs as well as minimize the adverse environmental impact. Furthermore, implementation of Mitigation Measure GHG-1, Preparation and Implementation of a GHG Reduction Plan, could reduce the Project's natural gas demand by restricting natural gas usage for heating or cooking by the proposed residential and commercial uses (see Section 4.7, Impact GHG-1 and Table 15 of the Energy Technical Report, Appendix ENE).

Transportation Fuels

Regarding fuel consumption for the mitigated Project, it is estimated that off-road construction equipment and on-road vehicles would consume an annual average of approximately

374,773 gallons diesel fuel per year and on-road worker vehicles would consume an annual average of approximately 124,274 gallons per year of gasoline during the construction phase of the Project (see Table 4.5-3). During operations, it is estimated that the net annual increase in consumption of diesel fuel for full buildout of the Project would be approximately 1,026,159 gallons per year and the net annual increase in consumption of gasoline would be approximately 3,127,936 gallons per year (see Table 4.5-4). These annual average diesel use amounts for construction and operations are equivalent to approximately 0.29 percent and 0.80 percent, respectively, of the diesel fuel sold in Alameda County, and the gasoline use amounts for construction and operations are equivalent to approximately 0.02 percent and 0.55 percent, respectively, of the total gasoline fuel sold in Alameda County (see "Transportation Fuels" in Section 4.5.1, *Environmental Setting*).

The overall energy use requirements would not be substantial relative to the total sales of transportation fuels in Alameda County. In addition, implementation of **Mitigation Measure AIR-1b** (Criteria Air Pollutant Controls) would help avoid wasteful or inefficient use of energy during construction by requiring that equipment be well maintained, and require that idling of commercial vehicles over 10,000 pounds and off-road equipment over 25 horsepower be limited to a maximum of 2 minutes in accordance with the Title 13, Section 2485, of the California Code of Regulations and Title 13, Section 2449, of the California Code of Regulations. Also, vehicle use associated with operations of the Project would meet the 20 percent VTR requirement of AB 734, via implementation of a TMP and TDM Plan.[10] Mitigation Measure AIR-2c (Diesel Backup Generator Specifications) would reduce diesel fuel consumption associated with diesel generators by restricting generator testing to 20 hours per year. **Mitigation Measure AIR-2d** (Diesel Truck Emission Reduction) would reduce diesel fuel use in trucks by reducing truck idling and requiring electric hook-ups for loading docks. **Mitigation Measure AIR-2e** (Criteria Pollutant Mitigation Plan) would incorporate a wide variety of emission reduction measures into the Project design prior to the start of construction, which would further reduce energy use associated with operations (although the specific measures to be implemented are currently not known). Finally, Mitigation Measure GHG-1 (Preparation and Implementation of a GHG Reduction Plan) would require a range of on-site and off-site GHG reduction measures to reduce the Project's net new GHG emissions to zero, and many of these measures may also reduce energy use (although the specific measures to be implemented are currently not known).

The Project would not require additional power generation plants, natural gas transmission facilities, or fuel refineries to be constructed. Through use of renewable energy, energy efficiency standards, and electric vehicle charging infrastructure, the Project would minimize impacts on the local and regional energy supply.

Appendix F.II.C.3: Peak and Base Period Demands

State CEQA Guidelines Appendix F, Section II.C.3, includes the following impact guidance factor:

[10] Mitigation Measure TRANS-1A (Transportation Demand Management) and TRANS-1B (Transportation Management Plan) outline the process for achieving and monitoring the required 20 percent trip reduction (see Section 4.15, *Transportation and Circulation*). For an analysis of operational energy use without the required 20 percent trip reduction, please refer to Appendix AIR.

The effects of the project on peak and base period demands for electricity and other forms of energy.

Peak period electrical demand is the short period of time during which electrical power is needed when electricity is in highest demand. Base period electrical load is the minimum amount of electrical demand needed over a 24-hour time period. Wasteful, inefficient, or unnecessary consumption or use of energy during the peak period of electrical demand has greater potential to cause adverse environmental effects compared to during the base period because of the higher demand during the peak period. The Project would not have a substantial impact on the peak and base period demands for electricity or other forms of energy. The Project's base energy consumption compared to regional and statewide energy consumption is discussed above. Further details and reasoning on the peak demand are described below.

In 2018, California's peak grid demand was 46,424 MW. On the same day, PG&E reached a maximum demand of 19,245 MW (Cal ISO, 2019). In comparison, the Project's maximum demand is expected to be at most 21.1 MW. This number was derived by conservatively adding the peak demand for all individual land use subtypes as provided by Meyers+ Engineers, although the peak is unlikely to occur at the same time for all land uses. This also conservatively excludes the benefits of LEED Gold design[11] and improvements in demand response due to future updates to the Title 24 energy standards, which would further reduce peak demand through its performance standards that are based on the time dependent valuation of energy, which uses the value of the electricity or natural gas used at every hour of the year to incentivize load shifting off of the peak use periods. In addition, the mixed-use nature of the Project site naturally allows for a balanced energy load, as not all uses would be occupied at the same time of day. Overall, the Project peak demand represents approximately 0.1 percent of PG&E's peak demand and with proper planning of the PG&E power generation inventory, would have a relatively minor effect on PG&E's system-wide peak demands.

Appendix F.II.C.5: Energy Resources

State CEQA Guidelines Appendix F, Section II.C.5, includes the following impact guidance factor:

The effects of the project on energy resources.

The Project's energy use, including electricity, natural gas, gasoline, and diesel consumption, would primarily be associated with construction activities, vehicle travel, building operations, and emergency generator testing and maintenance. Total energy use requirements are shown in Table 4.5-3 for construction activities and in Table 4.5-4 for the change from existing conditions to full buildout operations. Refer to the Appendix F.II.C.2 and F.II.C.3 discussions, above, for the effects that the Project would have on energy resources. The Project's use of energy would not have a substantial adverse effect on statewide or regional energy resources relative to wasteful, inefficient, or unnecessary use of energy.

[11] The Ballpark and non-residential uses must be LEED Gold certified, but the residential uses can use another rating scale equivalent to LEED Gold.

Appendix F.II.C.6: Transportation Energy Use

State CEQA Guidelines Appendix F, Section II.C.6, includes the following impact guidance factor:

> *The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.*

The Project's transportation energy use requirements in terms of gasoline and diesel quantities for construction and operation of the Project are presented in Tables 4.5-3 and 4.5-4, respectively. The quantification of VMT associated with Project operations, which is used to quantify the total operational transportation-related energy use requirements, is discussed in detail in the transportation and circulation analysis (see Section 4.15). Pursuant to the requirements of AB 734, the Project VMT reflects a 20 percent reduction in transportation and associated energy usage at full buildout compared to a Project without a TMP and TDM Plan.[12] Additional reductions of gasoline and diesel fuel use would occur due to the installation of additional electric vehicle charging stations The EV charging stations are anticipated to reduce fuel use and GHG emissions by assisting Bay Area residences in the shift from fossil-fueled vehicles to electric vehicles, while the fossil fuels needed to produce electricity for charging will continue to decrease.

In addition, as discussed above, Mitigation Measure AIR-2c (Diesel Backup Generator Specifications) would reduce diesel fuel consumption associated with diesel generators, Mitigation Measure AIR-2d (Diesel Truck Emission Reduction) would reduce diesel fuel use, and both Mitigation Measure AIR-2e (Criteria Pollutant Mitigation Plan) and Mitigation Measure GHG-1 (Preparation and Implementation of a GHG Reduction Plan) would further reduce energy use associated with operations through a wide variety of emission reduction measures (although the specific measures to be implemented are currently not known). The Project would also be well positioned to take advantage of the many public transit options in the Bay Area. Three Bay Area Rapid Transit (BART) stations, including West Oakland (0.9 miles), 12th Street Oakland City Center (0.8 miles), and Lake Merritt (1.1 miles), exist within approximately one-mile of the Project site. In general, vehicle trip-generating developments near public transit facilities result in reduced energy use of projects compared to projects not in the vicinity of such facilities. According to the California Air Pollution Control Officers Association (CAPCOA, 2010), "[l]ocating a project with high density near transit will facilitate the use of transit by people traveling to or from the Project site. The use of transit results in a mode shift and therefore reduced VMT."

Impact Conclusion Summary

Based on the above analysis, there could be a potential for the Project to result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of fuel or energy; however, the impact would be reduced to less than significant with the VTR requirement of AB 734 and implementation of Mitigation Measures AIR-1b, AIR-1c, AIR-2c,

[12] Mitigation Measure TRANS-1A (Transportation Demand Management) and TRANS-1B (Transportation Management Plan) outline the process for achieving and monitoring the required 20 percent trip reduction (see Section 4.15, *Transportation and Circulation*).

AIR-2d, AIR-2e, GHG-1, TRANS-1a, TRANS-1b, TRANS-1c, TRANS-1d, TRANS-1e, TRANS-2a, TRANS-2b, TRANS-2c, TRANS-3a, and TRANS-3b.

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 Mitigation Plan. (See Section 4.2, *Air Quality*)

Mitigation Measure GHG-1: Preparation and Implementation of a GHG Reduction Plan. (See Section 4.7, *Greenhouse Gas Emissions*)

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*)

Significance after Mitigation: Less than Significant.

Impact ENE-2: Construction and operation of the Project could conflict with or obstruct adopted energy conservation plans or violate energy efficiency standards. (Criterion 2) (*Less than Significant with Mitigation*)

Discussion of whether construction and operation of the Project would result in a conflict with adopted energy conservation plans or violate energy efficiency standards are discussed below relative to construction vehicles and equipment, building efficiency, and transportation.

Appendix F.II.C.4: Existing Energy Standards

State CEQA Guidelines Appendix, Section II.C.4, includes the following impact guidance factor:

> *The degree to which the project complies with existing energy standards.*

The Project would comply with existing energy standards, including State and local standards designed to minimize use of fuel in passenger and construction vehicles, ensure that buildings employ strict energy efficiency techniques, and operate comprehensive transportation demand management programs, as described further below.

Construction Vehicles and Equipment

Project construction would require use of on-road trucks for soil and debris hauling and material deliveries, and off-road equipment such as excavators, cranes, forklifts, and pavers. The Project would comply with State and local requirements designed to minimize idling and associated emissions, which also minimizes use of fuel. Specifically, pursuant to Mitigation Measure AIR-1b, Criteria Air Pollutant Controls, idling of commercial vehicles over 10,000 pounds and off-road equipment over 25 horsepower would be limited to a maximum of 2 minutes in accordance with the Title 13, Section 2485, of the California Code of Regulations and Title 13, Section 2449, of the California Code of Regulations.

Building Energy Efficiency

The Project's anticipated electricity and natural gas use in buildings are discussed above. New building construction is subject to California's Title 24, as discussed in Section 4.5.2, above. California's Title 24 reduces energy use in residential and commercial buildings through progressive updates to both the Green Building Standards Code (Title 24, Part 11) and the Energy Efficiency Standards (Title 24, Part 6). Provisions added to Title 24 over the years include consideration and possible incorporation of new energy efficiency technologies and methods for building features such as space conditioning, water heating, lighting, as well as construction waste diversion goals. Additionally, some standards focus on larger energy saving concepts such as reducing loads at peak periods and seasons, improving the quality of energy-saving installations, and performing energy system inspections. Past updates to the Title 24 standards have proved very effective in reducing building energy use, with the 2013 update to the energy efficiency standards estimated to reduce energy consumption in residential buildings by 25 percent and energy consumption in commercial buildings by 30 percent, relative to the 2008 standards (CEC, 2012). The 2019 standards are expected to further reduce high-rise residential and non-residential electricity consumption by approximately 10.7 percent and natural gas consumption by 1 percent (CEC, 2018c).

Further reductions can be anticipated from future Title 24 code revision cycles if building permits are issued at future dates corresponding to those updates. Additionally, pursuant to the implementation of and the A's commitment to AB 734, construction and operation of the proposed new buildings would achieve the LEED Gold standard,[13] which goes beyond current Title 24 energy conservation requirements. The energy conservation benefit of this commitment is conservatively not reflected in the energy use estimates for the Project presented in Table 4.5-4. Also, Mitigation Measure AIR-2c (Diesel Backup Generator Specifications) would reduce diesel fuel consumption associated with diesel generators by restricting generator testing to 20 hours per year.

Reductions in energy use associated with the Project's operation would also be consistent with the City's 2030 ECAP. ECAP Measure B-1 calls for the City to eliminate natural gas in new buildings, and specifically by 2023 to prohibit new buildings and major renovations from connecting to natural gas infrastructure. The Project sponsor has committed to eliminating natural gas in at least 50 percent of residential buildings and would be required to comply with any changes to the City's building code that eliminate the use of natural gas as applicable to the Project, and as noted in Mitigation Measure GHG-1 (Preparation and Implementation of a GHG Reduction Plan), unless a waiver is granted for the Project's restaurants and/or other land uses.

ECAP measure B-4 calls for reducing lifecycle emissions from building materials, and specifically by 2023 for the City to adopt a concrete code for new construction that limits embodied energy and carbon emissions. The Project would be required to comply with City codes and performance standards regarding construction materials and building practices, except as expressly provided for in the Development Agreement. In addition, the Leadership in Energy and Environmental Design (LEED) standard to which the Project is being held 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.

Transportation

Pursuant to Mitigation Measure AIR-1b (Criteria Air Pollutant Controls) idling of commercial vehicles over 10,000 pounds and off-road equipment over 25 horsepower would be limited to a maximum of 2 minutes in accordance with the Title 13, Section 2485, of the California Code of Regulations and Title 13, Section 2449, of the California Code of Regulations. Mitigation Measure AIR-1c (Diesel Particulate Matter Controls) would reduce diesel fuel consumption through the use of newer model, more efficient off-road construction equipment. Additionally, Mitigation Measure AIR-2d (Diesel Truck Emission Reduction) would reduce diesel fuel use in trucks by requiring a 2-minute idling maximum for trucks.

Operational vehicle use associated with the Project would be reduced consistent with requirements of AB 734, achieved and monitored through the TMP and TDM Plan via implementation Mitigation Measure TRANS-1A (Transportation Demand Management) and TRANS-1B (Transportation Management Plan). VMT is generally correlated with fuel use. Many regulatory requirements reduce mobile vehicle fuel use and VMT, and the Project would comply with or exceed

[13] AB 734 has differing LEED requirements for different land uses. The Ballpark and non-residential uses must be LEED Gold certified, but the residential uses can use another rating scale equivalent to LEED Gold.

all requirements. For example, SB 743 requires projects to evaluate VMT relative to existing regional averages rather than evaluating traffic Level of Service (LOS) for CEQA significance, and allows streamlining for projects in high quality transit areas. SB 375, the Sustainable Communities & Climate Protection Program, requires Metropolitan Planning Organizations to develop Sustainable Communities Strategies to reduce per capita VMT. The Project would focus on housing and job growth within an existing urbanized area near transit in order to fulfill one of the key aspects of the Sustainable Communities Strategies (CARB, 2019). The Project would also help accomplish the Governor's Zero Emission Vehicle Action Plan (Executive Order B-48-18) by promoting the use of electric vehicles through the installation of EV charging infrastructure. The vehicles that travel to and from the Project sites would be registered at the Department of Motor Vehicles consistent with the overall regional fleet. To obtain registration, the Department of Motor Vehicles requires that vehicles comply with vehicle efficiency standards.

Reductions in operational vehicle use associated with the Project would also be consistent with the City's 2030 ECAP. ECAP Measure TLU-1 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. The Project is consistent with TLU-1 in that it supports its relevant objectives regarding transit, transit-oriented development (TOD) and VMT reduction::

- The Project site plan and TMP/TDM program 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 may 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, including implementation of 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/ 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.

ECAP Measure TLU-4 calls for Abundant, Affordable, and Accessible Public Transit. Although TLU-4 is concerned with the City's coordination with transit agencies, the Project supports transit ridership by proposing a Transportation Hub supporting integration with existing lines, adding stops, and increasing walkability to/from and between stops.

ECAP Measure TLU-5 calls for the City to create a Zero Emission Vehicle (ZEV) Action Plan. by 2021, to increase adoption of electric vehicles and e-mobility while addressing equity concerns and prioritizing investment in frontline communities. The Project supports the goal of TLU-5 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).

ECAP Measure TLU-7 calls for the City to prioritize use of curb space throughout the city for mobility needs for public transit and active transportation, such as walking and biking. As outlined in more detail in Section 4.15, *Transportation and Circulation*, 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.

ECA Measure TLU-8 calls for the City to increase TDM performance requirements for new developments where feasible to support the mode shifts necessary to achieve a low carbon transportation system. 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:

- Reduce vehicle traffic and parking demand generated by the Project by at least 20%
- Prioritize pedestrian, bicycle, transit, and carpool/vanpool modes of travel.
- Enhance the City's transportation system, consistent with City policies and programs.

The TDM Plan 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. 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.

Impact Conclusion Summary

Based on the above analysis, the potential for the Project to conflict with adopted energy conservation plans or violate energy standards could result in a significant impact; however, with the 20 percent VTR requirement of AB 734 and implementation of Mitigation Measures AIR-1b, AIR-1c, AIR-2c, AIR-2d, GHG-1, TRANS-1a, TRANS-1b, TRANS-1c, TRANS-1d, TRANS-1e, TRANS-2a, TRANS-2b, TRANS-2c, TRANS-3a and TRANS-3b the impact would be reduced to a less-than-significant level.

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 GHG-1: Preparation and Implementation of a GHG Reduction Plan. (See Section 4.7, Greenhouse Gas Emissions)

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-3c: Pedestrian and Bicycle Overcrossing. (See Section 4.15, *Transportation and Circulation*)

Significance after Mitigation: Less than Significant.

Maritime Reservation Scenario

Under the Maritime Reservation Scenario, up to approximately 10 acres of the proposed Project site would not be developed. The reconfigured Project site boundary would change, and the Project site area would become smaller. **Table 4.5-5** presents the Maritime Reservation Scenario's total and annual average estimated construction energy consumption by energy source. Gasoline and diesel fuel would be the primary energy source for vehicles driven by construction

crews and to power the large trucks used to deliver and retrieve construction equipment, materials, and debris. Electricity would be used to transport (pump) water to the site, and to power automated hand tools and smaller types of construction machinery such as compressors for painting applications.

TABLE 4.5-5
MARITIME RESERVATION SCENARIO CONSTRUCTION ENERGY RESOURCE USE

Energy Use Type	Unit of Measure	Maritime Reservation Scenario Construction Usage[e]	
		Unmitigated	Mitigated
Electricity			
Water Consumption[a]	kWh/Project	812,894	815,619
Off-road Equipment[b]	kWh/Project	3,019,533	3,019,591
Total Electricity Use	kWh/Project	3,832,427	3,835,210
Annual Average Electricity Consumption[3]	**kWh/year**	**547,490**	**547,887**
Diesel			
On-road vehicles[d]	gallons/Project	707,137	734,060
Off-road equipment[b]	gallons/Project	1,716,991	1,761,826
Total Diesel Use	gallons/Project	2,424,128	2,495,886
Annual Average Diesel Use[c]	**gallons/year**	**346,304**	**356,555**
Gasoline			
On-road vehicles[d]	gallons/Project	854,623	865,507
Total Gasoline Use	gallons/Project	854,623	865,507
Annual Average Gasoline Use[c]	**gallons/year**	**122,089**	**123,644**

NOTES:

a Construction water use is based on the Project specific estimate as shown in Table 5 of the Energy Technical Report.
b Off-road equipment electricity use based on hours of operation for electric equipment. Off-road diesel fuel usage based on a fuel usage rate of 0.051 gallons of diesel per horsepower (hp)-hour, consistent with diesel conversion factors provided in U.S. EPA AP-42 Table 3.4-1.
c Annual averages are estimated by dividing the total use values by the expected 7-year duration of construction.
d On-road mobile source fuel use is based on vehicle miles traveled (VMT) for all years of construction and fleet-average fuel consumption in gallons per mile from EMFAC2017 for calendar years 2020 through 2027 in Alameda County.
e The Maritime Reservation Scenario construction energy usage has been calculated from Project usage values using scaling factors that account for the change in land use between the Maritime Reservation Scenario and the Project. The electricity usage for electric equipment and water consumption were not scaled for the scenario emissions calculations, and thus these values were not scaled for energy usage either.

SOURCE: Ramboll, 2020. (Detail provided in Appendix ENE to this Draft EIR.)

With the exception of the electricity usage, which would be the same as the Project, the Maritime Reservation Scenario would require slightly less amounts of energy consumption during construction compared to the Project. Therefore, the impacts and analysis for construction of the Maritime Reservation Scenario would be the same as those discussed above for the proposed Project. As explained above, those impacts would be less than significant with mitigation.

With regard to operations, the energy inventories prepared for this evaluation include electricity and natural gas, and fuels used for construction and operation of the Maritime Reservation Scenario. The long-term energy use requirements for operations of the Maritime Reservation Scenario would be the same as the Project as summarized above in Table 4.5-4 for the Phase 1 and full buildout, with the exception of diesel consumption for emergency generator testing, which would result in approximately 900 fewer gallons consumed per year during full buildout due to the use of two fewer emergency generators compared to the Project, a reduction of less than 0.1 percent of diesel fuel. Therefore, the impacts and analysis for operations of the Maritime Reservation Scenario would be the same as those discussed above for the proposed Project. As explained above, those impacts would be less than significant with mitigation.

4.5.5 Cumulative Impacts

Impact ENE-1.CU: The Project, combined with cumulative development in the Project vicinity and citywide, could result in significant cumulative energy impacts. ***(Less than Significant with Mitigation)***

Geographic Context

The geographic scope of potential cumulative effects with respect to energy resources includes PG&E's electric grid and natural gas transmission system that would serve the Project, and areas from which transportation fuels would be provided (for this EIR, publicly available fuel sources in the vicinity of the Project site), and the cumulative projects discussed in Section 4.0 and identified in **Appendix DEV**, *Oakland Major Development Projects List* – March 2019.

Cumulative Impact and Project Contribution

There is no significant cumulative condition to which the Project could contribute related to the use of large amounts of fuel or energy in a wasteful or inefficient manner. Given the relatively small percentage of the Project's fuel and energy use compared to existing fuel and energy use in the region, the Project's less-than-significant incremental impacts related to the use of fuel or energy in a wasteful or inefficient manner are not expected to combine with the incremental impacts of other projects to cause an adverse cumulative impact. The operational electricity and natural gas requirements of the Project would be considerable, but the estimated consumption rates are not substantial compared to the 2018 countywide consumption. In addition, implementation of Mitigation Measure GHG-1, Preparation and Implementation of a GHG Reduction Plan, could further reduce the Project's natural gas demand if the proposed residential development has no natural gas connections for heating or cooking, and limited natural gas connections for non-residential uses (see Section 4.7, Impact GHG-1). The Project's incremental cumulative impact relating to the consumption of energy would be less than significant with mitigation.

Project-related transportation fuel impacts could overlap with the transportation needs (including fuel needs) of previously approved past projects, as well as other present or future projects that occur during the Project's construction and operation. However, there is no significant cumulative condition to which the Project could contribute. In addition, implementation of Mitigation Measure AIR-1b, Criteria Air Pollutant Controls, would help avoid wasteful or inefficient use of energy during construction by requiring that equipment be well maintained, and require that idling of commercial vehicles over 10,000 pounds and off-road equipment over 25 horsepower be

limited to a maximum of 2 minutes. VMT associated with operations of the Project would be reduced consistent with the 20 percent VTR requirement of AB 734 achieved and monitored through the TDM and TMP programs via implementation Mitigation Measure TRANS-1A (Transportation Demand Management) and TRANS-1B (Transportation Management Plan). Mitigation Measure AIR-2c (Diesel Backup Generator Specifications) would reduce diesel fuel consumption associated with diesel generators, Mitigation Measure AIR-2d (Diesel Truck Emission Reduction) would reduce diesel fuel use, and both Mitigation Measure AIR-2e (Criteria Pollutant Mitigation Plan) and Mitigation Measure GHG-1 (Preparation and Implementation of a GHG Reduction Plan) would further reduce energy use associated with operations through a wide variety of emission reduction measures (although the specific measures to be implemented are currently not known). Therefore, the Project's incremental impact associated with its energy use would result in less-than-significant cumulative impacts with mitigation.

The cumulative projects listed in Appendix DEV could require increased peak and base energy demands and, therefore, could cause or contribute to adverse cumulative conditions. However, the cumulative projects would be subject to the same applicable federal, State, and local energy efficiency requirements (e.g., the State's Title 24 requirements and Chapter 15.04, Part 11, of the City of Oakland Municipal Code) that would be required of the Project, which would result in efficient energy use during their construction and operation. Adverse Project-related impacts to electricity demand would be negligible, would not significantly impact peak or base power demands during construction, operation, or maintenance. Accordingly, the Project's less-than-significant incremental contribution to cumulative peak and base demands would not be cumulatively considerable.

Conclusion

Therefore, potential energy-related impacts that would result from construction and operation of development of the Project could have a cumulatively considerable contribution to a cumulative impact; however, the impact would be reduced to less than significant with the 20 percent VTR requirement of AB 734 and implementation of Mitigation Measures AIR-1b, AIR-1c, AIR-2c, AIR-2d, AIR-2e, GHG-1, TRANS-1a, TRANS-1b, TRANS-1c, TRANS-1d, TRANS-1e, TRANS-2a, TRANS-2b, TRANS-2c, TRANS-3a, and TRANS-3b.

> **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 Mitigation Plan.** (See Section 4.2, A*ir Quality*)
>
> **Mitigation Measure GHG-1: Preparation and Implementation of a GHG Reduction Plan.** (See Section 4.7, *Greenhouse Gas Emissions*)

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*)

Significance after Mitigation: Less than Significant.

Maritime Reservation Scenario – Cumulative

As discussed above for the project-level impacts that would be associated with the Maritime Reservation Scenario, the construction-related energy use requirements for the Maritime Reservation Scenario would be the same or less than the Project, and there would be only a slight decrease (less than 0.1 percent) in diesel consumption compared to the Project due to reduced emergency generator testing. Therefore, potential energy-related impacts that would result from construction and operation of development of the Maritime Reservation Scenario would be the same as the Project and there could be a cumulatively considerable contribution to a cumulative impact. However, the cumulative impact would be reduced to less than significant with the 20 percent VTR requirement of AB 734 and implementation of Mitigation Measures AIR-1b, AIR-1c, AIR-2c, AIR-2d, AIR-2e, GHG-1, TRANS-1c, TRANS-1d, TRANS-1e, TRANS-2a, TRANS-2b, TRANS-2e, TRANS-3a and TRANS-3b.

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