Section 3.5
Greenhouse Gas Emissions

SECTION SUMMARY

This section describes greenhouse gas (GHG) emissions associated with the construction and operation of the Berths 191-194 Ecocem Cement Processing Facility Project (Proposed Project) and its three alternatives: the No Project Alternative (Alternative 1), the Reduced Project Alternative (Alternative 2), and the Product Import Terminal Alternative (Alternative 3).

Section 3.5, Greenhouse Gas Emissions, provides the following:

- A description of the existing setting as it relates to Port GHG emissions and climate change;
- A description of applicable local, state, and federal regulations and policies regarding GHGs;
- A discussion of the methodology used to determine whether the Proposed Project or any of the three alternatives would result in impacts to GHG emissions and climate change;
- A discussion of sea level rise;
- An impact analysis of the Proposed Project and alternatives; and
- A description of any mitigation measures proposed to reduce any potential impacts and residual impacts, as applicable.

Key Points of Section 3.5

As described in Section 2.5, the Proposed Project would construct and operate a facility that would produce low-carbon-intensity binder (ground granulated blast furnace slag [GGBFS]) by importing, grinding, and combining granulated blast furnace slag (GBFS) with natural gypsum minerals. GGBFS is a partial substitute to traditional Portland cement and Portland limestone cement.

Construction of the Proposed Project would result in emissions of greenhouse gases, from off-road equipment, construction vehicles, and harbor craft exhaust. The Proposed Project would process granulated blast furnace slag (GBFS), unload it from vessels and store it in open stockpiles that are handled by off-road mobile equipment. During operations, there would be emissions from heavy duty trucks hauling raw material (gypsum) and the product binder (ground granulated blast furnace slag [GGBFS]), dry bulk ocean-going vessels (OGVs), associated tugboats, natural gas-fueled dryer, on-site mobile equipment (front end loader [FEL] and excavator) and indirect GHGs related to electricity. In the Reduced Project Alternative (Alternative 2), all of the elements of the Proposed Project described above would be built, but the capacity of the facility to produce GGBFS would be reduced. In the Product Import Terminal Alternative (Alternative 3), there would not be any processing of raw materials and the finished product (GGBFS) would come from overseas by vessel. The Product Import Terminal Alternative (Alternative 3) operations would consist of the import of the product, temporary storage, and the loading of

customer trucks. Therefore, off-road equipment for stockpile management would not be part of this alternative nor the mill and dryer needed to process the raw materials.

Construction and operational GHG emissions under Impact GHG-1 would be significant and unavoidable under the California Environmental Quality Act (CEQA) for the Proposed Project for all analysis years and for the Reduced Project Alternative (Alternative 2) for the analysis year 2027. The Product Import Terminal (Alternative 3)'s impacts related to GHGs would be less than significant.

3.5.1 Introduction

This section evaluates the GHG emissions and climate change impacts associated with the Proposed Project and alternatives. Activities from construction and operation of the Proposed Project would affect GHG emissions in the immediate Project area and the surrounding region. This section includes a description of the affected environment, including: a discussion of the state of climate change science; the regulatory setting; predicted impacts of the Proposed Project; and reviews any feasible mitigation measures to address those impacts.

3.5.2 Environmental Setting

The Project site is located at the Port of Los Angeles within the City of Los Angeles, which is in the southwest coastal area of the South Coast Air Basin (SCAB). The SCAB consists of the non-desert portions of Los Angeles, Riverside, and San Bernardino counties and all of Orange County. The SCAB covers an area of approximately 15,500 square kilometers (6,000 square miles) and is bounded on the west by the Pacific Ocean; on the north and east by the San Gabriel, San Bernardino, and San Jacinto mountains; and on the south by San Diego County. The Project site occupies approximately 6.1 acres adjacent to the East Basin of Los Angeles Harbor and is generally bounded by the Vopak liquid bulk terminal to the north and west, and the USC Boathouse and the East Basin to the south and east, as described in Section 2.4.2.

Cement Consumption in Southern California

The environmental setting of the Proposed Project includes the existing construction industry in Southern California, specifically that portion of the industry that uses large amounts of concrete. As described in Section 1.2.2, cement is used in all concrete and in a variety of other construction applications. Large quantities of cement are used every year: in 2020, approximately 6.5 million metric tons of Portland cement were used in Southern California alone (USGS 2022). The production of traditional Portland cement (by far the most commonly used binder in concrete) results in high emissions of GHGs: one estimate is that the combustion of carbon-based fuels for cement production is responsible for approximately 8% of worldwide carbon dioxide (CO_2) emissions and 2% of California's emissions (Ellis et al. 2020; CARB 2021a). Nevertheless, as a necessary component of concrete, cement will continue to be one of the most consumed resources in the world and in Southern California, and a reliable supply of cement is therefore important for sustained economic growth. Accordingly, any substitute for traditional Portland cement that results in lower emissions of GHGs would benefit California by reducing the state's overall GHG emissions and helping the state to reach its GHG reduction goals.

The Proposed Project would produce approximately 775,000 tons per year of an alternative construction binder – ground granulated blast furnace slag (GGBFS) – that would substitute for Portland cement in many concrete and other construction applications. The production of GGBFS requires approximately 14% of the total energy and only 7% of the thermal energy (i.e., from fossil fuel combustion) required for Portland cement (see Table 3.3-1 in Section 3.03 Energy). This substantially reduces the consumption of fossil fuels necessary to produce GGBFS and results in a proportionate decrease in GHG emissions. Accordingly, substituting GGBFS for approximately 12% of Southern California's Portland cement consumption, that is, 775,000 tons – the planned throughput of the Proposed Project – out of the approximately 6.5 million tons per year of

Portland cement used in Southern California, would lead to corresponding reductions in the construction industry's GHG emissions.

3.5.3 Greenhouse Gas Pollutants

Greenhouse gases are defined as gases that have the capacity to trap heat in the atmosphere. This naturally occurring phenomena is primarily fueled by gases such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Artificially derived anthropogenic pollutants, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6) also have the capabilities to trap infrared radiation in the atmosphere and contribute to atmospheric warming. Together, these six gases are recognized by the Kyoto Accords as major GHGs (United Nations 1998).

The cumulative impact each pollutant has on global warming is based on the volume of emissions and their 100-year global warming potential (GWP). GWP is a unitless quantity that measures how much a gas will contribute to global warming relative to the same mass of CO_2. For example, CH_4 and N_2O have 100-year horizon GWPs of 27 and 273, respectively (IPCC 2021). However, artificially derived pollutants such as SF_6, HFCs, and CFCs, have been found to have substantially larger GWP values. Sulfur hexafluoride has one of the largest GWP values at 25,184, whereas CFCs and HFCs have GWPs as high as 13,902 and14,590 (IPCC 2021). For consistency amongst pollutants, GHG emissions are typically reported in terms of metric tons ("tonnes," or "MTon," equivalent to 1,000 kilograms) of carbon dioxide equivalents (CO_2e). In this document, GHG emissions will be reported in metric tons.

Arguably, the most important GHG contributing to global warming is carbon dioxide (CO_2). While many gases have much higher GWPs, CO_2 is emitted in higher quantities; accounting for 79 percent of the GWP of all GHGs emitted by the United States in 2020 (USEPA 2022). Fossil fuel combustion, a by-product of electricity generation and motor vehicle engines, has led to substantial increases in CO_2 emissions and thus global atmospheric concentrations over the last century. In 2022, the atmospheric CO_2 concentration was around 417 parts per million (ppm), exceeding the natural range over the last 800,000 years (NOAA 2022a). The accumulation of CO_2 in the atmosphere is a result of increased rate of emission paired with its relatively long atmosphere lifespan of 50 to 200 years (NOAA 2022a).

Concentrations of the second most prominent GHG, methane (CH_4), have also increased due to the growing prevalence of anthropogenic sources such as rice production, degradation of waste in landfills, cattle farming, and natural gas mining. In 2021, the atmospheric level of CH_4 was 162% greater than pre-industrial level at 1,895 parts per billion (ppb) (NOAA 2022b). CH_4 has a relatively short atmospheric lifespan of 12 years but has a higher GWP than CO_2.

Concentrations of nitrous oxide (N_2O) have increased from 270 parts per billion in pre-industrial times to about 334 parts per billion in 2021 (NOAA 2022a). These elevated concentrations are attributed to shifting agricultural practices (such as soil and manure management), fossil-fuel combustion, and the production of acids such as adipic acid. Nitrous oxide (N_2O) is a significant contributor to atmospheric warming as a result of its long atmospheric lifespan (120 years) in conjunction with its relatively large GWP.

Lastly, sulfur hexafluoride (SF_6), chlorinated fluorocarbons (CFCs) and hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs) are all artificially derived pollutants that contribute to atmospheric warming. These gases are most commonly used

in electrical industries or as refrigerants. Though their presence in the atmosphere is proportionally small, these gases' long atmospheric lifespans have categorized them as significant contributors to global warming. Studies estimate that these gases can persist within the atmosphere between 32,000 and 50,000 years.

GHGs differ from criteria pollutants in that they do not directly impact human health. Rather, their indirect impacts to human health via global warming is a cause for concern. Elevated atmospheric temperatures are likely to contribute to the increased occurrence of extreme weather events such as heat waves and precipitation events. Rising temperatures related to human activities likely contributed to Arctic sea-ice loss, an increase in upper ocean temperature, and global sea level rise during the latter half of the 20th century. As a result of continued growing concentrations of GHGs in the atmosphere, the trends observed in the past century such as oceanic warming and acidification, are expected to occur at a faster pace in the 21st century. (IPCC 2013; IPCC 2014; IPCC 2023).

Current predictions suggest that in the next 25 years California will experience longer and more extreme heat waves, greater frequency of heat waves, and longer dry periods. More specifically, California's Fourth Climate Change Assessment (OPR 2018) forecasts that California could witness the following events:

- Temperature rises of 2.7 to 8.8°F by the 2070 to 2100 time period;
- Sea level rises of 1.1 to 1.9 feet by 2050 and over 9 feet by 2100;
- Reductions in snowpack to less than two-thirds of the historical average by 2050 and to less than half or even one third by 2100; and
- Increased fire risk resulting in estimated burned area increases of 77 percent to 178 percent by the end of the century and increases in extreme wildfire frequency of 50 percent.

For the Port of Los Angeles specifically, data from the Cal-Adapt tool (CEC 2023) indicate that the harbor area could experience the following changes:

- Temperature increases of 3.2 to 3.9°F by mid-century (2035-2064) and 4.2 to 7.0°F by end of the century (2070-2099);
- Increases in the annual number of extreme heat days (i.e., days above the historical 98th percentile temperature of 93.7°F) of 3 to 4 days by mid-century and 5 to 12 days by the end of the century; and
- Small increases in the maximum 1-day precipitation of approximately 0.15 to 0.23 inches by the end of the century relative to the historical baseline (1961-1990) value of 1.63 inches.

The latest sea level rise scenarios from NOAA (Sweet et al. 2022) indicate that the median sea level rise in Los Angeles could range from approximately 0.4 to 1.1 feet by 2050 and 0.6 to 6.3 feet by 2100 relative to a baseline year of 2000.

3.5.4 Applicable Regulations

3.5.4.1 Federal

The Supreme Court's Decision in *Massachusetts v. Environmental Protection Agency* (2007) 549 U.S. 497

In April 2007, the U.S. Supreme Court in *Massachusetts v. Environmental Protection Agency* (2007) 549 U.S. 497, ruled that: (i) GHGs were air pollutants within the meaning of the Clean Air Act; and, (ii) that the Act authorizes the United States Environmental Protection Agency (USEPA) to regulate CO_2 emissions from new motor vehicles, should those emissions endanger the public health or welfare. The Court did not mandate that the USEPA enact regulations to reduce GHG emissions but found that the only instances where the USEPA could avoid taking action were if the agency found that GHGs do not contribute to climate change or if it offered a "reasonable explanation" for not determining that GHGs contribute to climate change.

On December 7, 2009, the USEPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the Clean Air Act:

- "Endangerment Finding": the USEPA Administrator found that the current and projected concentrations of the six key well-mixed GHGs – CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6 – in the atmosphere threaten the public health and welfare of current and future generations.
- "Cause or Contribute Finding": the USEPA Administrator found that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

The findings themselves did not impose any requirements on industry or other entities. However, this action was a prerequisite to finalizing the USEPA's proposed GHG emissions standards for light-duty vehicles (USEPA 2009).

Federal Vehicle Emissions Standards

In 1975, Congress enacted the Energy Policy and Conservation Act, which established the first fuel economy standards for on-road motor vehicles in the United States (i.e., the corporate average fuel economy [CAFE] standards). Pursuant to the Act, the USEPA and the National Highway Traffic Safety Administration (NHTSA) are responsible for establishing additional vehicle standards. In August 2012, standards were adopted for model years 2017 through 2025 for passenger cars and light-duty trucks. According to the USEPA, a model year 2025 vehicle would emit one-half of the GHG emissions than a model year 2010 vehicle (USEPA 2012). The State of California harmonized its vehicle efficiency standards through 2025 with the federal standards through the State's Advanced Clean Cars Program.

In 2019, the USEPA issued a final rule, known as the Safer Affordable Fuel-Efficient Vehicle (SAFE) Rule that established new fuel economy standards for light-duty vehicle fleets for the years 2021-2026, and rescinded the "California waiver" under the federal Clean Air Act, which had historically allowed California to issue its own motor vehicle emission standards for GHGs. The SAFE Rule was judicially challenged, and on March 9, 2022, the USEPA reinstated California's authority under the Clean Air Act to implement its own GHG emission standards and zero emission vehicle (ZEV) sales mandate.

(*California v. EPA* (D.C. Cir. 2019) 940 F.3d 1342; *Union of Concerned Scientists et al. v. NHTSA* (D.C. Cir. 2019) Case No. 19-1230.)

3.5.4.2 State

California has enacted a variety of laws and promulgated numerous rules and regulations that relate to climate change, many of which set aggressive goals for GHG reductions within the State. The discussion below provides a brief overview of the primary initiatives that relate to climate change and that may affect the GHG emissions associated with the Proposed Project or alternatives.

Assembly Bill 32 and Senate Bill 32 – Statewide GHG Reductions

The California Global Warming Solutions Act of 2006, widely known as Assembly Bill (AB) 32, requires the California Air Resources Board (CARB) to develop and enforce regulations for the reporting and verification of statewide GHG emissions. The California Air Resources Board (CARB) was directed to set emissions limits to achieve 2000 levels of GHGs by 2010 and 1990 levels by 2020. This bill codified the 2020 target set in Executive Order S-3-05 (June 1, 2005), which included an additional goal of 80% below 1990 levels by 2050. CARB reported that the 2020 goal was achieved in 2016, four years ahead of schedule.

Senate Bill (SB) 32, enacted in 2016, codified the interim goal of 40% below 1990 levels by 2030 set in Executive Order (EO) B-30-15 (enacted in 2015). This interim target was established to ensure the State meets the EO S-3-05 target of reducing greenhouse gas emissions to 80 percent below 1990 levels by 2050. To facilitate achievement of this goal, EO B-30-15 called for an update to CARB's Climate Change Scoping Plan (see below).

California Senate Bill 596 – Greenhouse gases: Cement Sector - Net Zero Emissions Strategy

AB 32 required CARB to develop a comprehensive strategy to achieve net-zero emissions of greenhouse gases within the state's cement sector. Senate Bill 596 was passed September 23, 2022 in accordance with that regulation (California Legislative Information 2021).

Senate Bill 596 requires the state board to: define a metric for GHG intensity of cement; establish baseline measurements to guide emission reduction targets; assess the effectiveness of current and future measures; and leverage state and federal incentives to encourage the development of low GHG intensity cement in the most cost-effective way. The bill requires the establishment of reduction interim goals based on average GHG intensity values to achieve 40% reductions below the average values from calendar year 2019 by December 31, 2035.

CARB is in an early stage of preparing the strategy required by SB 596, having held two workshops to present information on low-carbon concrete, traditional cement, and opportunities and constraints to the use of low-carbon cement, and to solicit public input. Accordingly, the goals of SB 596 with respect to metrics, potential reduction measures, and implementation strategies are not available, nor have interim reduction goals been developed.

Renewable Portfolio Standard, Senate Bill 100 & Executive Order B-55-18

California's Renewable Portfolio Standard (RPS) was first established in 2002 through Senate Bill (SB) 1078, as a regulation requiring electric utilities and retail electricity

providers to provide customers with a stated minimum of share of electricity generated from renewable resources. The RPS was revised, and its goals accelerated through SB 350. The latest revisions affecting RPS were done through SB 100 (SB100) and Executive Order B-55-18.

On September 10, 2018, Governor Brown signed SB 100, which established that 100% of all electricity in California must be obtained from renewable and zero-carbon energy resources by December 31, 2045. SB 100 also created new standards for the RPS goals that were separately established by SB 350, increasing electricity from renewable sources from 50% to 60% by 2030 with specific interim targets.

On the same day that SB 100 was signed, Governor Brown signed Executive Order (EO) B-55-18 with a new state-wide goal to achieve carbon neutrality (zero-net GHG emissions) by 2045. Specifically, it set a 2045 goal of powering all retail electricity sold in California and state agency electricity needs with renewable and zero-carbon resources, including those such as solar and wind energy that do not emit climate-altering greenhouse gases.

Executive Order N-79-20

Governor Newsom signed EO N-79-20 stating that “clean renewable fuels play a role as California transitions to a decarbonized transportation sector.” EO N-79-20 directed that, "to support the transition away from fossil fuels consistent with the goals established in this Order and California’s goal to achieve carbon neutrality by no later than 2045, the California Environmental Protection Agency and the California Natural Resources Agency, in consultation with other state, local and federal agencies, shall expedite regulatory processes to repurpose and transition upstream and downstream oil production facilities...” EO N-79-20 also directed CARB to “develop and propose strategies to continue the State’s current efforts to reduce the carbon intensity of fuels beyond 2030 with consideration of the full life cycle of carbon.”

CARB Climate Change Scoping Plan

A specific requirement of Assembly Bill (AB) 32 was to prepare a Climate Change Scoping Plan for achieving the maximum technologically feasible and cost-effective GHG emission reduction by 2020. CARB developed and approved the initial Scoping Plan in 2008, outlining the regulations, market-based approaches, voluntary measures, policies, and other emission reduction programs that would be needed to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the State’s long-range climate objectives (CARB 2009a, 2009b). CARB reported that this goal was achieved in 2016, four years ahead of the target of 2020.

In December 2017, CARB approved the 2017 Climate Change Scoping Plan Update (CARB 2017), which built upon the 2009 AB 32 scoping plan and provided guidance to meet the new statewide GHG reduction goal under SB 32 of 40 percent below 1990 emission levels by 2030.

In December 2022, CARB released the 2022 Scoping Plan Update (CARB 2022). The 2022 Scoping Plan Update assesses progress towards achieving the Senate Bill 32’s 2030 target and lays out a path to achieve carbon neutrality no later than 2045. The 2022 Scoping Plan Update outlines a sector-by-sector roadmap for California to achieve carbon neutrality by 2045 or earlier. It aims to reduce anthropogenic emissions to 85% below 1990 levels by 2045 using technically feasible and cost-effective solutions. The 2022 Scoping Plan Update focuses on electrification of transportation, homes and buildings, and

phasing out fossil fuels. In hard-to-electrify sectors, new solutions such as renewable hydrogen and biomethane are leveraged to achieve emissions reductions.

CARB's 2022 Scoping Plan Update outlines a number of actions for the Scoping Plan Scenario in that document's Table 2-1. The list below represents the actions which are most relevant to the Project:

- GHG Emissions Reductions Relative to the SB 32 Target: 40% below 1990 levels by 2030
- Light-duty Vehicle (LDV) Zero Emission Vehicles (ZEVs): 100% of LDV sales are ZEV by 2035
- Truck ZEVs: 100% of medium-duty (MDV)/HDV sales are ZEV by 2040 (AB 74 University of California Institute of Transportation Studies [ITS] report)
- Construction Equipment: 25% of energy demand electrified by 2030 and 75% electrified by 2045
- Low Carbon Fuels for Transportation: Biomass supply is used to produce conventional and advanced biofuels, as well as hydrogen
- Low Carbon Fuels for Buildings and Industry: In 2030, biomethane blended in pipeline; Renewable hydrogen blended in fossil gas pipeline at 7% energy (~20% by volume), ramping up between 2030 and 2040. The Scoping Plan specifically mentions blending with low-carbon materials as an opportunity to reduce GHG emissions of the cement industry, pointing out that process emissions of CO_2 from the production of Portland cement from limestone account for over 60% of the industry's total emissions.

In addition to the previous focus areas, the 2022 Scoping Plan Update developed a table of priority GHG reduction strategies that can be utilized by local governments (Table 1 in Appendix D of the 2022 Scoping Plan Update).

Low Carbon Fuel Standard

Executive Order S-01-07 established a statewide goal to reduce the carbon intensity of transportation fuels sold in California by at least ten percent from 2005 levels by 2020. The Low Carbon Fuel Standard (LCFS), a discrete early action item in the original Scoping Plan, was approved by CARB in 2009, with amendments implemented on January 1, 2013. In September 2018, CARB extended the LCFS program to 2030, making significant changes to the design and implementation of the program including doubling the statewide carbon intensity reduction to 20 percent by 2030. The extension also added new crediting opportunities to promote zero-emission vehicle adoption and advanced technologies to achieve deep decarbonization in the transportation sector. Compliance with the LCFS will be based on a combination of strategies involving lower carbon fuels and more efficient, advanced-technology vehicles.

Ocean-Going Vessels At-Berth Regulation

In December 2007, the original Ocean-Going Vessels At-Berth Regulation was approved by CARB, which set control requirements for emissions from container, refrigerated cargo (reefer), and cruise vessels while hoteling at berth. The At-Berth Regulation was amended on December 30, 2020, increasing its requirements for already-covered vessel types, and expanding its requirements to include auto carriers (roll-on/roll-off vessels) and tanker ships to control hoteling emissions at-berth starting in 2025 for the Ports of Los Angeles

and Long Beach. Even though this regulation is meant to curtail local criteria pollutant emissions, it may have some co-benefits for reducing GHGs if controlled in conjunction with renewable-based electricity. It must be noted that the bulk vessel category, the type of vessels that would be part of the Proposed Project and its alternatives, do not have requirements under the current ruling.

Advanced Clean Trucks (ACT) / Advanced Clean Fleets (ACF) Regulations

In March 15, 2021, CARB approved the final Advanced Clean Trucks Regulation to reduce the release of criteria pollutants, toxic air contaminants, and GHGs through the accelerated penetration of zero-emission medium-and heavy-duty vehicles. This regulation requires manufacturers to comply with ZEV sale mandates and reporting requirements. The ZEV sale mandates would be based on the model year and weight class modifier of the rule's Final Regulation Order (CARB 2023a; CARB 2023b). By 2035, 55 percent of Class 2b – 3 truck sales, 75 percent of Class 4 – 8 straight truck sales, and 40 percent of truck tractor sales will need to be zero-emission vehicles. The rule does not specifically address cement-hauler trucks, but those trucks, which tend to be Class 8 vehicles, may be affected by this rule because electric or ZEV models of Class 8 vehicles may become available.

Additionally, in April 2023, the Advanced Clean Fleets (ACF) regulation was proposed by CARB, with the goal of achieving a zero-emission truck and bus California fleet by 2045 for certain market segments such as government fleets, last mile delivery, and drayage applications. However, since the ACF rule does not specify cement truck fleets and has yet to receive a waiver by the USEPA; no emissions reduction credits from this rule, as well the Advanced Clean Trucks (ACT) rule, were quantified in the analysis. Per the Clean Air Act, California must seek a waiver from the USEPA to enact emissions standards that are more stringent than those enacted at the federal level. California is granted this ability because of its unique air quality issues, but for each California regulation CARB must seek a waiver from USEPA.

3.5.4.3 Local and Regional

South Coast Air Quality Management District

On December 5, 2008, the South Coast Air Quality Management District (SCAQMD) Governing Board adopted its staff proposal for an interim CEQA GHG significance threshold of 10,000 metric tons per year (mty) CO_2e emissions for industrial projects where SCAQMD is the lead agency. A metric ton is defined as 1000 kg and is a unit in common use in GHG emissions analysis as it is in the metric system and easy to compare across geographies; CO_2e emissions are the total CO_2 emissions plus conversion of other GHGs such as CH_4 and N_2O into their CO_2 equivalents using their GWP. This threshold has also been included as part of the SCAQMD Air Quality Thresholds since 2008 (SCAQMD 2008).

Senate Bill 375 -- Southern California Association of Governments (SCAG) Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) Connect SoCal

Pursuant to SB 375 (the Sustainable Communities and Climate Protection Act of 2008), the Southern California Association of Government (SCAG) prepared, and on April 7, 2016, adopted the 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (2016 RTP/SCS; SCAG 2016). The RTP/SCS was the culmination of a multi-year effort involving stakeholders from across the SCAG Region, and contained, among other policies, a regional commitment for the broad deployment of zero- and near-zero

emission transportation technologies in the 2020-2040 timeframe and clear steps to move toward this objective.

The RTP was updated as "Connect SoCal" (SCAG 2020), which sets forth the long-range regional plan, policies, and strategies for transportation improvements and regional growth throughout the SCAG region through the horizon year of 2045. Connect SoCal includes regional growth forecasts, financial plans, and a strategic plan to support identified transportation projects and facilitate coordinated implementation of those projects. One of the plan's guiding principles is to encourage transportation investments that will result in improved air quality and public health and reduced greenhouse gas emissions.

The regional, industry-wide, and port-wide strategies of Connect SoCal are not directly applicable to a project-level analysis. However, Connect SoCal identifies numerous, major transportation infrastructure construction projects throughout the SCAG region that, in aggregate, will require large quantities of concrete (and therefore, cement binder). A proposed project that would supply concrete manufacturers with a cement binder that has a lower carbon footprint than traditional Portland cement would, therefore, further the principles and goals of Connect SoCal related to GHG emissions reductions.

City of Los Angeles

General Plan

The Mobility Element of the General Plan (City of Los Angeles 2016) contains general policies and objectives related to greenhouse gases. Specifically, one of the document's overall policies calls for the City to target GHG reductions through more sustainable transportation systems. One of the goals articulated in Chapter 5, Clean Environments and Healthy Communities, is to meet a 19% per capita GHG reduction by 2035, consistent with the SCAG RTP (i.e., Connect SoCal). The reductions in GHG emissions from the cement industry to which lower-carbon construction binders would contribute would forward those policies and goals.

Green New Deal Sustainable City pLAn

In 2019, Mayor Eric Garcetti launched an update to the Sustainable City pLAn (City of Los Angeles 2015), which was, in turn, a replacement for the Green LA plan (City of Los Angeles 2007). The update, LA's Green New Deal Sustainable City pLAn, aims to model local governments' consistency with the Paris Climate Agreement (Garcetti 2019). Among its milestones and chapter goals related to goods movement are:

- Identify air quality hotspots in impacted communities from goods movement, ports, and refineries by 2021;
- Develop an electric freight and commercial vehicle billing rate by 2035; and
- By 2050, reduce Port-related GHG emissions by 80% by:
    - Incorporating sustainable practices in tenant lease agreements at cargo terminals by 2030;
    - Developing technology and pilot at-berth controls for liquid bulk vessels by 2028;
    - Deploying 50-100 zero emission trucks in a clean truck pilot by 2035; and,
    - Implementing an updated Clean Truck Program with prioritization on zero emission trucks.

Port of Los Angeles

Port Climate Action Plan

The 2007 Green LA Plan led to the Los Angeles Harbor Department (LAHD)'s development of an individual Climate Action Plan, consistent with the goals of Green LA, to examine opportunities to reduce GHG emissions from Port operations (such as Port buildings and Port workforce operations).

In accordance with this directive, the Port's Climate Action Plan, developed in December 2007, covers GHG emissions related to the Port's municipal activities (such as Port buildings and Port workforce operations). The Climate Action Plan outlines specific steps that LAHD has taken and will take on global climate change. These steps include specific actions that will be taken for energy audits, green building policies, onsite photovoltaic solar energy, green energy procurement, tree planting, water conservation, alternative fuel vehicles, increased recycling, and green procurement. The Climate Action Plan also identifies San Pedro Bay Ports Clean Air Action Plan (CAAP) measures that have significant GHG reduction co-benefits, such as the Vessel Speed Reduction Program (VSRP) and Alternative Marine Power (AMP). GHG reduction needs from Port's tenant activities are recognized in the Port Climate Action Plan, but are deferred to the CAAP, which addresses tenant operations.

In addition, the June 2008 Port of Los Angeles Sustainability Assessment contains an assessment of existing programs and policies against the eight goals that were identified in Executive Directive No. 10 on Sustainability Practices in the City of Los Angeles. LAHD has also completed annual GHG inventories of the Port's municipal activities and reported these to third-party registries since 2006. LAHD's Annual Inventory of Air Emissions has also included GHG estimates for transportation activities associated with goods movement for ocean-going vessels (OGVs), harbor craft, trucks, locomotives, and cargo handling equipment since 2006. LAHD expanded the GHG inventories to include an expanded geographical delineation for OGVs, trucks, and locomotives. These annual inventories and their methodology reports can be found on the Port's website (LAHD 2022).

San Pedro Bay Ports Clean Air Action Plan

The Ports of Los Angeles and Long Beach, with the participation and cooperation of the USEPA, CARB, and SCAQMD staff, developed the San Pedro Bay Ports CAAP, a planning and policy document that sets goals and implementation strategies to reduce air emissions and health risks associated with port operations while allowing port development to continue (POLA and POLB 2006; POLB and POLA 2010). Each individual CAAP measure is a proposed strategy for achieving these emissions reduction goals.

The CAAP was updated in 2010 and most recently in 2017. The 2017 CAAP Update (POLA and POLB 2017) aligns with the California Sustainable Freight Action Plan, supports the zero-emissions and freight efficiency targets set by the state and other agencies, and contains a new focus on GHG reductions with a 2050 emissions reductions target. The 2017 CAAP emission reduction targets include:

- Reduce population-weighted residential cancer risk of Port-related diesel particulate matter (DPM) emissions by 85 percent by 2020, compared to 2005 conditions;
- Reduce Port-related emissions by 59 percent for NOx, 93 percent for SOx and 77 percent for DPM emissions by 2023, compared to 2005 conditions;

- Reduce GHGs from Port related sources to 40 percent below 1990 levels by 2030; and
- Reduce GHGs from Port related sources to 80 percent below 1990 levels by 2050.

The 2017 CAAP Update strategies may result in GHG reductions as older technologies are replaced with newer, more fuel-efficient ones.

City of Los Angeles Actions to Reduce Greenhouse Gas Emissions by 2050

The "Actions to Reduce Greenhouse Gas Emissions by 2050 report (LAHD 2014) outlines actions/strategies that are either being implemented or evaluated to continue the reduction of GHG emissions and meet a target of 35 percent below 1990 levels by 2035 and 80 percent below 1990 levels by 2050. The creation of this report was a response to Los Angeles City Council Motion No. 14-0907. The report lists GHG emissions reduction strategies for Port operations as well as the applicable implementing programs. The report does not identify new programs or measures. It lists existing initiatives and reiterates the Port's commitment to continued collaboration with the international maritime community, as well as between all stakeholders and regulators.

Los Angeles Harbor Department Sustainable Construction Guidelines

As part of LAHD's overall environmental goals and CAAP strategies, any construction at the Port must follow the Department's Sustainable Construction Guidelines, adopted in February 2008 (LAHD 2009). The guidelines reinforce and require sustainability measures under construction contracts, addressing a variety of emission sources that operate at the Port during construction. Examples of affected sources include ships and barges used to deliver construction related materials, harbor craft, dredging equipment, haul and delivery trucks, and off-road construction equipment. The guidelines are described in detail in Table B1-2 in Appendix B1.

Additional Rules, Regulations and Policies

In addition to the above rules, regulations, and policies that primarily focus on GHG emission reductions, many of the rules, regulations and policies discussed in Appendix B1 (Air Quality Emissions) that reduce fuel consumption would have the co-benefit of reducing GHG emissions. Any fuel consumption results in GHG emissions, therefore any reduction in fuel consumption would proportionally reduce GHG emissions.

3.5.5 Greenhouse Gases and Climate Impacts

This section presents a discussion of the potential GHG emission impacts associated with construction and operation of the Proposed Project and alternatives.

3.5.5.1 Methodology for Estimating Greenhouse Gas Emissions

For the Proposed Project and alternatives, the greenhouse gas emissions related to construction would be generated from engine exhaust associated with off-road construction equipment, delivery/hauling trucks, worker vehicles, and harbor craft (HC) used in the wharf repair and backland construction activities. The byproduct of fuel combustion from these sources are greenhouse gases like CO_2, CH_4, and N_2O. Construction emissions were analyzed for construction years 2024 and 2025.

The operational greenhouse gas emissions of the Proposed Project and the Reduced Project Alternative (Alternative 2) would be generated by dry-bulk ocean-going vessels

(OGVs), HC, off-road equipment managing the stockpiles, on-road vehicles (trucks and worker vehicles), and direct and indirect combustion from stationary sources such as the natural gas dryer and electricity consumption, respectively (electricity would be provided by the Los Angeles Department of Water and Power [LADWP]). The operational emissions of the Product Import Terminal Alternative (Alternative 3) would be generated by the vessels, associated harbor craft, trucks picking up the product, and indirect emissions from electrical consumption. These sources are described in more detail below. Operational emissions were analyzed for the years 2025 (first year of operations), 2027 (first year at maximum throughput), and 2049 (towards the end of the lease and a key exposure year for health risk assessment). The key activities for the Proposed Project and Alternatives for each analyzed year are summarized in Table 3.1-3. Any postponement of construction and operational activities would not likely result in any higher emissions as increasingly stringent regulatory requirements related to construction equipment and cleaner engines from turnover are implemented compared to those assumed in the analyzed years.

Information regarding the activity and emissions characteristics of the Proposed Project and alternatives construction and operational activities was obtained primarily from Ecocem, LAHD staff, and the 2021 Port Emissions Inventory (POLA 2022). Methodologies for mobile emission sources commonly found at the Port such as vessels, harbor craft, trucks and off-road equipment are consistent with those in the San Pedro Bay Ports Emissions Inventory Methodology Report (SPBP 2022) and updated to reflect Ecocem specific project design data when available. Methodologies for stationary sources are consistent with USEPA's AP-42 methods.

Greenhouse gas emissions are analyzed on an annual basis, as opposed to criteria pollutant emissions which are analyzed primarily on a peak day basis. Construction GHG emissions are calculated for the entire construction period and then amortized over the life of the Project (30 years). The amortized annual construction emissions are then added to the operational annual emissions, as will be shown in Section 3.5.6 Impact Determination. Travel emissions from any mobile sources are tracked up to the California state water or land boundary, as required by CEQA. That means, vessel and truck travel is estimated within California boundaries, when applicable. A brief description of the sources of GHG emissions follows. Assumptions and emission factors for both the operational and construction sources are described in more detail in Appendix B1.

Ocean Going Vessels (OGVs) – Dry Bulk Vessels

The Proposed Project and alternatives operations rely on dry bulk oceangoing vessels to bring raw materials (or finished product in the case of the Product Import Terminal Alternative [Alternative 3]) to the site. No OGV activity occurred in the baseline or would occur during construction; vessel emissions would only occur during operations (2025 and beyond).

Bulk vessels operational activity for 2025, 2027, and 2049, as well as vessel characteristics, were provided by Ecocem on the basis of the design for the Proposed Project and the Reduced Project Alternative (Alternative 2). For the Product Import Terminal Alternative (Alternative 3), the POLA 2021 emission inventory's average vessel characteristics and engine sizes for dry bulk OGVs were used (POLA 2022) because a vessel fleet with characteristics different from those of the Proposed Project would be required for this alternative. Vessel emissions were calculated from berth to the state overwater boundary, approximately 178 nautical miles from the Port (130 nautical miles [nm] beyond the SCAB overwater boundary).

Harbor Craft (HC) – Assist Tugs

During construction and operation of the Proposed Project and alternatives, harbor craft would consist of tugboats/assist tugs used to support wharf repairs and other in-water work during construction, to assist bulk vessels while maneuvering and docking during operations, and to install/remove Yokohama fenders during operations. One tugboat was assumed to be required for assistance of each barge arrival/departure during construction and two tugboats per bulk vessel during operation, along with an additional tugboat to install and remove Yokohama fenders before arrival and after departure of the vessels (Yokohama fenders are used to protect vessels from impacting the dock upon docking and while docked). HC main and auxiliary engine sizes and load factors, and other vessel operational characteristics were obtained from the 2021 Port Emissions Inventory (POLA 2022). All construction HC engine tiers were assumed to be Tier 3 in compliance with the Port's Sustainable Construction Guidelines as described in Table B1-2 of Appendix B1.

Off-Road Equipment - Construction Equipment and Operations Stockpile Mobile Equipment

For construction, off-road construction equipment characteristics and activity were provided by Ecocem for wharf repairs and backlands construction, as described in detail in Appendix B1. During operations, off-road equipment for the Proposed Project and Reduced Project Alternative (Alternative 2) would consist of a diesel-powered excavator and a front-end loader moving material between stockpiles and the process hoppers. Off-road activity (hours per day) was based on projected terminal throughput as estimated by Ecocem. Off-road emission factors were derived from emission rates in the CARB EMFAC2021 Emissions Inventory model (CARB 2021a), in the case of the excavator and construction equipment; and project specific engine certification data, in the case of the front-end loader. All construction equipment were assumed to be Tier 4 in compliance with the Port's Sustainable Construction Guidelines as described in Table B1-2 of Appendix B1.

On-Road Vehicles – Construction Trucks and Operations Delivery Trucks

During construction, on-road vehicles are represented by hauling and material delivery heavy duty diesel trucks. During operations, on-road vehicles would be diesel heavy heavy-duty trucks hauling totally enclosed tanker-type trailers to pick up product (GGBFS) to and from the site to deliver gypsum. Emissions from on-road vehicles related to driving and idling during construction and operation of the Proposed Project and alternatives were calculated based on average regional South Coast Air Basin (SCAB) diesel fleet characteristics in EMFAC2021. Although it is possible that cement industry truck average emissions could be slightly lower in future years due to the increasing availability of zero-emissions Class 8 vehicles as a result of the Advanced Clean Trucks rule, the analysis conservatively does not take credit for this assuming a full diesel fleet during the life of the project. Direct GHG emissions from on-road vehicle exhaust were calculated for travel distances within the California state boundary. All construction vehicle emissions were assumed to comply with the Port's Sustainable Construction Guidelines requirements as described in Table B1-2 of Appendix B1.

Worker Vehicles

Emissions from worker vehicles are associated with employee commute during construction and operation of the Proposed Project and alternatives and were calculated using emission factors for light-duty gasoline vehicles generated by the EMFAC2021 model for on-road mobile sources representing the SCAB average light duty vehicle fleet.

Stationary Sources – Operational Process Sources

The dryer is the only stationary source that would generate emissions from the combustion of natural gas. All other stationary sources would be electrically powered and are described in more detail in the following section. Stationary source emissions from the dryer were calculated based on emission factors using SCAQMD's 400-CEQA Greenhouse Gas Estimator (SCAQMD 2017a). Both the maximum rated heat input capacity and operating schedule were provided by Ecocem.

Emissions from Electricity Consumption

For the Proposed Project and Reduced Project Alternative (Alternative 2), electricity on site would mainly be consumed by electrical stationary equipment used in the production of GGBFS (or unloading and storage of GGBFS in the case of the Product Import Terminal Alternative [Alternative 3]). Electricity consumption during operations was estimated for the various electrical components of the processing facility, such as the material conveyors, mill, static separator, compressor, and general backland energy consumption sources such as office lighting. The electrical substation would not consume electricity, but instead supply, and therefore would not be a source of GHG emissions. Operational electricity usage was calculated based on individual machine energy requirement (or loads) and annual operational hours, as provided by Ecocem, and described in Section 6.3 of Appendix B1. These activity values (in kilowatt-hours per year [kw-hrs/year]) were then converted to CO_2 mass emissions using electrical grid emission factors on a per-kilowatt-hour basis from the USEPA eGRID database, which provides average GHG emission factors for power generated in California (USEPA 2023). Given that electricity related GHGs are a substantial fraction of the Proposed Project's annual GHG emissions, the analysis here aims to capture the effects of existing California regulations to decarbonize the electrical grid, thereby lowering electricity related emissions in the future. One of these regulations is SB 100. SB 100 establishes that 100% of all electricity in California must be obtained from renewable and zero-carbon energy resources by the end 2045 through the RPS.

The U.S. Department of Energy in collaboration with the National Renewable Energy Laboratory (NREL) have developed a set of studies on future trends in the electricity sector (and its related GHG emissions) throughout the United States and for individual states. A mid-case scenario from the NREL "Scenario Viewer" tool (NREL 2023) was selected, which projected baseline (2022) renewable energy contributions towards the future based on a set of average inputs such as fuel prices, demand growth, and the effects of current state policies and nascent technologies (Gagnon et al. 2022). The forecasted trend for "2022 Scenarios, Mid-Case" allowed this analysis to estimate the year-to-year reductions in the California baseline electricity emission factor. Thus, the 2021 CO_2e emission factor (in lb per MWh) for California from EPA's eGRID was adjusted for each analysis year to account for projections of increased renewable energy usage in the future for California's electrical grid. This is described in more detail in Section 6.4 of Appendix B1.

3.5.5.2 Geographic Boundaries

For the purpose of assessing GHG impacts under CEQA, GHG emissions of the Proposed Project and Project alternatives were calculated to the California border both on land and on water (described below). Emissions from Proposed Project activity were calculated as follows:

- Oceangoing vessel GHG emissions were calculated within CARB's California over-water boundary off the coast (a maximum one-way transit distance of 178 nm). Truck emissions were calculated based on a distribution of trip distances within California boundaries (primarily within the SCAB region) provided by Ecocem. Most truck trips would remain within the SCAB border, although some gypsum trucks may travel beyond the SCAB border;
- All electrical power production was assumed to be generated within the state for calculating emissions associated with electric power demand. The carbon footprint of electricity is based on the California energy mix in 2021 (USEPA 2023). For future years, the carbon intensity emission factor for California electricity was adjusted to reflect a National Renewable Energy Laboratory (NREL) study (Gagnon et al. 2023) on U.S electricity outlook and GHGs reductions through 2050 from current policies and nascent technologies; and
- This document acknowledges that Project-related GHG emissions would extend beyond state borders. However, origin and destination data for out-of-state emissions over the life of the Proposed Project or an alternative do not exist and would be speculative on a project-specific level. Therefore, estimation of out-of-state GHG emissions is not required under CEQA.

3.5.5.3 CEQA Baseline

CEQA Guidelines, Section 15125, subdivision (a), provides that an Environmental Impact Report (EIR) must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, from both a local and regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant.

The LAHD's normal practice is to define the baseline as the conditions in the first full year calendar year preceding publication of the Notice of Preparation (NOP), which was 2021. Since the NOP was released in March 2022, the LAHD has determined that 2021 is the baseline year for the CEQA analysis. In 2021, activity within the boundaries of the Project site (i.e. the Berth 191 and the backlands at Berths 192-194 per Figure 2-2) was nil as the site is vacant and there were no vessel calls at Berth 191. Activity on the waterfront of Berth 192-194 consisted of operation of the boat restoration and equipment storage uses. That activity involved operation of a few light- and medium-duty vehicles and equipment such as lifts and powered tools, and use of small amounts of chemicals and materials associated with marine repair operations. However, for purposes of defining the CEQA Baseline, it is considered that annual activities at the Project site during 2021 were negligible, resulting in a baseline of zero emissions.

3.5.5.4 Thresholds of Significance

CEQA Guidelines Appendix G suggests two criteria for determining the significance of impacts related to GHG:

- VII(a). Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
- VII(b). Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The Initial Study (IS) in the NOP (Appendix A) eliminated VII(b) from further consideration. However, additional review on consistency with relevant plans and policies and regulations is included in the informational Section 3.5.7 below. In terms of criteria VII(a), the Proposed Project or alternative would have a significant impact if it would:

GHG-1: Generate GHG emissions that, either directly or indirectly, may have a significant impact on the environment.

As noted above, CEQA Guidelines section 15064.4(a) affords a lead agency discretion to evaluate the significance of GHG emissions quantitatively – and to select the model or methodology it considers appropriate for doing so, provided it supports its decision with substantial evidence – or qualitatively. CEQA Guidelines section 15064.4(b) sets forth factors that should be considered by a lead agency when assessing the significance of impacts from GHG emissions on the environment. These factors include:

- The extent to which a project may increase or reduce GHG emissions compared with the existing environmental setting;
- Whether project emissions exceed a threshold of significance that the lead agency determines applicable to a project; and
- The extent to which a project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. Such requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of greenhouse gas emissions.

The Guidelines do not specify significance thresholds and afford the lead agency with discretion in how to address and evaluate significance based on these criteria. To provide guidance to local lead agencies regarding determining significance for GHG emissions in CEQA documents, SCAQMD convened the GHG CEQA Significance Threshold Working Group. Members of the working group included government agencies that implement CEQA and representatives from various stakeholder groups that provide input to SCAQMD staff members regarding developing the GHG CEQA significance thresholds.

On December 5, 2008, the SCAQMD Governing Board adopted the staff proposal regarding an interim GHG significance threshold for projects where SCAQMD is lead agency. For stationary sources/industrial sector projects, a significance threshold of 10,000 mty of CO_2e emissions was established. Construction GHG emissions, amortized over project life, are required to be included in a project's annual GHG emissions totals (SCAQMD, 2008). LAHD has determined that the SCAQMD-adopted 10,000 mty CO_2e threshold is suitable for all LAHD projects for the following reasons:

- The SCAQMD industrial source threshold is appropriate for projects with future operations continuing as far out as 2050. The SCAQMD threshold development

methodology (SCAQMD 2008) used the EO S-3-05 emission reduction targets as the basis in developing the threshold, with the AB 32 reduction requirements (2020) incorporated as a subset of EO S-3-05. EO S-3-05 sets an emission reduction target of 80 percent below 1990 levels by 2050.

- The SCAQMD industrial source threshold is appropriate for projects with both stationary and mobile sources, both of which are components of LAHD projects. The California Air Pollution Control Officers Association (CAPCOA) guidance (CAPCOA 2008) considers industrial projects to include substantial GHG emissions associated with mobile sources. SCAQMD, on industrial projects for which it is the lead agency, uses the 10,000 mty threshold to determine CEQA significance by combining a project's stationary source and mobile source emissions. Although the threshold was originally developed for stationary sources, SCAQMD staff views the threshold as conservative for projects with both stationary and mobiles sources because it is applied to a larger set of emissions, and therefore captures a greater percentage of projects than would be captured if the threshold was only used for stationary sources (SCAQMD pers. comm. 2016). For example, the SCAQMD has applied the 10,000 mty threshold to an EIR related to a refinery project (SCAQMD 2017b) where the mobile source emissions would increase and the stationary source emissions (combined direct and indirect) would decrease relative to baseline. The mobile source emissions included construction equipment, on-road vehicles, and on- and off-site rail transport. Moreover, in the same EIR, the SCAQMD also applied the 10,000 mty threshold to its list of related cumulative projects, two of which were LAHD projects (SCIG and ILWU Local 13 Dispatch Hall) with dominant mobile source emissions. Historically, the SCAQMD (pers. comm. 2015) has approved the use of the 10,000 mty threshold on other Port CEQA projects dominated by mobile sources (Berths 97-109 [China Shipping] Container Terminal Project Supplemental Environmental Impact Report and Berths 167-169 [Shell] Marine Oil Terminal Wharf Improvements Project).
- The SCAQMD industrial source threshold is appropriate for projects with sources that use primarily diesel fuel. Although most of the sources that were considered by the SCAQMD (2008) in the development of the 10,000 mty threshold are natural gas-fueled, both natural gas and diesel combustion produce CO_2 as the dominant GHG (The Climate Registry 2016). Furthermore, the conversion of all GHG species into a CO_2e ensures that the GHG emissions from any source, regardless of fuel type, can be evaluated equitably.
- The SCAQMD industrial source threshold is conservative for LAHD projects. Based on the 10,000 mty threshold, it would be exceeded by approximately 90 percent of regulated, permitted industrial facilities subject to the SCAQMD's Annual Emission Reporting (AER) program (SCAQMD 2008). LAHD projects subject to CEQA review usually far exceed this threshold because of their large size and large number of mobile sources such as oceangoing vessels (OGVs), harbor crafts, and trucks. A review of LAHD CEQA documents certified between 2007 and 2018 (POLA 2023; GHG emissions were not quantified in Port CEQA documents before 2007;) shows that the 10,000 mty threshold would have been exceeded by projects representing 98 percent of LAHD project CO_2e emissions.

After considering these guidelines and LAHD-specific climate change impact issues, LAHD has set the following thresholds for use in this EIR to determine the significance of potential Proposed Project-related GHG impacts:

Impacts under GHG-1 are determined by comparing the Proposed Project's combined amortized construction and future operational emissions with the baseline emissions. These are referred to as "incremental GHG emissions". In this case, baseline GHG emissions are assumed to be zero, given the very low level of baseline activity at the site. Total construction emissions are amortized over the life of the Proposed Project or alternatives (assumed to be 30 years) and included in the CEQA impact determination. Projects would create a significant GHG impact if annual GHG emissions exceed the significance threshold of 10,000 MT/year CO_2e.

Finally, CEQA Guidelines Section 15126.2(a) identifies the need to evaluate potential impacts of locating development in areas that are vulnerable to climate change effects. The EIR "should evaluate any potentially significant impacts of locating development in other areas susceptible to hazardous conditions (e.g., floodplains, coastlines, wildfire risk areas)." Although no quantitative significance thresholds are defined for evaluating the potential impacts of locating development in areas that are vulnerable to climate change effects, the analysis addresses this evaluation qualitatively under the subsections on sea level rise in Section 3.5.8.

3.5.6 Impact Determination

3.5.6.1 Proposed Project

Under the Proposed Project, the Ecocem facility in 2027 and onward would handle a throughput of 775,000 metric tons/yr of GGBFS product, derived from 800,000 metric tons/yr of GBFS delivered by dry bulk vessels and 39,500 metric tons/yr of gypsum received by truck. For more information see Chapter 2.

As described earlier in more detail in Section 3.5.5.1, construction of the Proposed Project would primarily be land-based, located in the backlands of Berths 192-194, and include some over-water repairs to the wharf deck at Berth 191. Emissions produced by off-road equipment, hauling/delivery trucks, worker vehicles and harbor craft involved in these activities make up the Proposed Project's construction emissions inventory. Operational direct sources of emissions at the Ecocem facility would be comprised of oceangoing (dry bulk) vessels, harbor craft, heavy-duty trucks, off-road equipment working the stockpiles, worker vehicles, and natural gas-fueled stationary sources. Indirect sources of GHG emissions include those related to operations electricity consumption; construction related electricity consumption is expected to be minimal and therefore emissions were not quantified.

Impact GHG-1: Would the Proposed Project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

Table 3.5-1 presents amortized annual GHG emissions associated with construction of the Proposed Project. Amortized construction emissions were determined by summing GHG emissions over all years of construction and amortizing over (dividing by) the life of the Proposed Project (30 years). Amortized construction emissions are calculated as metric tons of CO_2 equivalence (CO_2e) using the 100-year GWP conversion for each pollutant as referenced by the IPCC Sixth Synthesis Report and then divided by the project lifetime (IPCC 2021, 2023). Table 3.5-2 shows amortized annual GHG emissions associated with

construction, annual GHG emissions associated with operational activities and comparison to SCAQMD's industrial sector significance threshold.

Table 3.5-1: Construction GHG Emissions– Proposed Project (mty)

Source Category	CO_2 (mty)	CH_4 (mty)	N_2O (mty)	Total CO_2e (mty)
Construction Year 2024				
Off-road Construction Equipment	3,082	<1	<1	3,093
Harbor Craft	9	<1	<1	9
On-road Construction-Related Vehicles	2,935	<1	<1	3,061
Worker Vehicles	260	<1	<1	262
Total Construction Year 2024	6,287	<1	<1	6,425
Construction Year 2025				
Off-road Construction Equipment	1,076	<1	<1	1,080
Harbor Craft	2	<1	<1	2
On-road Construction-Related Vehicles	581	<1	<1	606
Worker Vehicles	77	<1	<1	77
Total Construction Year 2025	8,023	<1	<1	1,765
			Amortized Construction	**273**

Notes:
1. Construction emissions reflect the construction activities for the Proposed Project.
2. On-road construction vehicle emissions include exhaust emissions from haul trucks and material delivery trucks.
3. Worker Vehicle emissions include exhaust emissions from construction worker commute.
4. Emissions might not add precisely due to rounding.

Table 3.5-2: Amortized Construction and Operational GHG Emissions – Proposed Project (mty)

Source Category	CO_2	CH_4	N_2O	CO_2e
Amortized Construction				273
Year – 2025				
OGV - Transit	1,199	<1	<1	1,211
OGV – Hoteling/Anchoring	346	<1	<1	349
Harbor Craft	43	<1	<1	44
Trucks	3,009	<1	<1	3,044
Worker Vehicles	30	<1	<1	30
Offroad Equipment	281	<1	<1	284
Dryer Combustion	2,484	<1	<1	2,497
Electricity Consumption	--	--	--	4,639
Total Operations with Proposed Project Amortized Construction	**-**	**<1**	**<1**	**12,371**

Table 3.5-2: Amortized Construction and Operational GHG Emissions – Proposed Project (mty)

Source Category	CO_2	CH_4	N_2O	CO_2e
Total GHG emissions above SCAQMD's 10,000 MT CO_2e threshold?				Yes
Year – 2027				
OGV - Transit	2,399	<1	<1	2,423
OGV – Hoteling/Anchoring	690	<1	<1	695
Harbor Craft	87	<1	<1	87
Trucks	5,889	<1	<1	5,958
Worker Vehicles	37	<1	<1	37
Offroad Equipment	562	<1	<1	569
Dryer Combustion	4,968	<1	<1	4,995
Electricity Consumption	--	--	--	6,261
Total Operations with Proposed Project Amortized Construction	**-**	**<1**	**<1**	**21,298**
Total GHG emissions above SCAQMD's 10,000 MT CO_2e threshold?				Yes
Year – 2049				
OGV - Transit	2,399	<1	<1	2,423
OGV – Hoteling/Anchoring	690	<1	<1	695
Harbor Craft	87	<1	<1	87
Trucks	4,986	<1	<1	5,045
Worker Vehicles	31	<1	<1	32
Offroad Equipment	562	<1	<1	568
Dryer Combustion	4,968	<1	<1	4,995
Electricity Consumption	--	--	--	93
Total Operations with Proposed Project Amortized Construction	**-**	**<1**	**< 1**	**14,210**
Total GHG emissions above SCAQMD's 10,000 MT CO_2e threshold?				Yes

Notes:
1. Truck and vessel travel emissions include transport within the California State Boundary.
2. Emissions might not precisely add due to rounding.

The annual GHG emissions from the Proposed Project would exceed the SCAQMD mass emissions threshold in all three analysis years. The largest contributors to annual GHG emissions would be truck travel during operations, the natural gas combustion from the dryer, and the facility's electricity consumption. As described in Section 3.5.5.1, indirect GHG emissions related to electrical consumption are expected to decrease over time, as shown in Table 3.5-2, related to increasing decarbonization of the California electrical grid per regulations like the Renewables Portfolio Standard and SB 100.

Table 3.5-3 shows emissions of the Proposed Project per unit of product (GGBFS). Per unit emissions would be reduced once the facility reaches maximum throughput (2027)

and slightly decrease over time (to 2049) for both direct sources, such as the dryer, trucks, vessels, etc. and indirect sources (i.e., electricity consumption) as it is expected the percentage of renewable energy supply in the grid to increase and technological advances to improve energy efficiency across sectors. Based on the estimated GHG emissions per unit of product, the carbon footprint of the Proposed Project may decrease to about 57 percent of the 2025 value by the end of the Proposed Project's life, mainly due to the decarbonization of its consumed electricity.

Table 3.5-3: Greenhouse Gas Emissions for Proposed Project per Unit of Throughput

Years	CO_2e Emissions (mty)	Throughput (MT of GGBFS)	Per Unit Emissions (MT of CO_2e per 1,000 MT of GGBFS)	
			Direct and Indirect Sources (Electricity)	Only Direct Sources
2025	12,371	387,500	31.9	20.0
2027	21,298	775,000	27.5	19.4
2049	14,210	775,000	18.3	18.2

MT: metric ton

In addition, the Proposed Project would further the goals of SB 695 by increasing the region's supplies of a low-carbon supplemental cementitious material (SCM). CARB's workshops in support of its SB 695 mandate (see Section 3.5.4.2) include consideration of Supplementary Cementitious Materials (SCMs) as a component of low-carbon cement strategies, and the Proposed Project would produce substantial quantities of a low-carbon SCM. At full production, the Proposed Project could account for as much as 12% of the cement used in Southern California (775,000 tons of the more than 6.5 million tons used annually). As the typical energy footprint (and therefore GHG footprint) of GGBFS is approximately 14% of that of conventional Portland cement (see Table 3.3-1 in Section 3.3 Energy of this EIR), the Proposed Project could appreciably reduce the GHG emissions attributable to cement use in the region.

CEQA Impact Determination

Table 3.5-2 shows that the Proposed Project's GHG mass emissions would exceed the GHG threshold of 10,000 mty in 2025, 2027, and 2049 analysis years. Therefore, GHG emissions of the Proposed Project would be significant under CEQA.

Although not considered for the significance determination, the GHG emissions per unit of product would decrease over the life of the Proposed Project, thereby demonstrating an improvement in GHG emissions efficiency.

Mitigation Measures

Review of Air Quality Mitigation

The largest direct source of GHG emissions in the Proposed Project is travel from customer trucks picking up GGBFS and trucks delivering gypsum during operations. Ecocem does not own or control the truck fleets of its future customers or gypsum providers, therefore, the Proposed Project cannot determine the technology or composition of the truck fleet that would serve the facility. It is possible that cement tanker trucks, which tend to be Class 8 vehicles – although not under a direct mandate by CARB's ACT and ACF rules – may benefit from the ACT rule that dictates that 40 percent of sales of Class 8 Trucks by 2035 must be zero emission vehicles (ZEVs). As more heavy-duty

ZEVs become available and cement trucks are due for replacement, a fraction of the fleet is likely to become ZEV in the future. However, this analysis does not take credit for this as that fraction is uncertain. Accordingly, controlling truck technologies is not a feasible mitigation.

Another main source of GHGs is the natural gas-fueled dryer, used in the GGBFS processing. The use of an electric alternative for the dryer in the grinding mill was considered as a means to reduce combustion emissions from the natural gas dryer. However, electric alternatives large enough to meet the specification required by the project are not available. Accordingly, an electric-powered dryer was deemed infeasible as mitigation.

Vessel hoteling emissions are another major contributor of GHGs. These emissions may be controlled by a vessel's shore power connection to the electrical grid while at berth (while relying on renewable-based electricity). Currently, CARB does not require dry bulk vessels, such as those in the Project, to control their hoteling emissions under the California At-Berth regulation, and therefore, bulk vessels are not currently certified to use shore power. Bonnet exhaust capture systems are able to control specific criteria pollutants like NOx and PM but not GHGs. Accordingly, vessel hotelling controls are not a feasible mitigation for reducing GHGs at this time.

The Proposed Project analysis assumes compliance with the LAHD Sustainable Construction Guidelines (LAHD 2009), as required for all developments in the Port. Those guidelines already include control measures requiring construction equipment to meet more stringent emission standards than those reflected in an average regional fleets (as described in Section 4 of Appendix B1). Therefore, additional control measures of GHG emissions from construction sources are not feasible at this time.

The Proposed Project and alternatives would implement the following lease measures for air quality; although some were not quantified within the analysis (except for LM AQ-4, LM AQ-5, and LM AQ-6) these measures would generate further reductions of GHG emissions as a co-benefit:

> **LM AQ-1: Fleet Modernization for Cementitious Material Handling Equipment.** Tenant shall replace cementitious material handling equipment used for operation with the cleanest available equipment, that meets operating and safety requirements, anytime new or replacement equipment is purchased, with a first preference for zero-emission equipment, a second preference for near-zero equipment (such as, hybrid or low-NOx equipment), and third for the cleanest available if zero or near-zero equipment is not feasible, provided that LAHD shall conduct engineering assessments to confirm that such equipment is capable of installation at the facility. Tenant may make a recommendation to LAHD for LAHD's concurrence as to which equipment is available and is feasible.
>
> Starting one year after the effective date of a new entitlement between the Tenant and the LAHD, Tenant shall submit to the Port an equipment inventory and 5-year procurement plan for new equipment, and infrastructure, and will update the procurement plan annually in order to assist with planning for transition of equipment to zero emissions in accordance with the foregoing paragraph.
>
> **LM AQ-2: Periodic Review of New Technology.** The Tenant will conduct a periodic review of any Port-identified or other new emissions-reducing technology and report to the LAHD on the feasibility of any new technology advancements that may reduce emissions not less frequently than once every five years following

the effective date of the entitlement. The technology review would be subject to approval by LAHD and would involve consulting with appropriate resources (e.g., consultants, engineers, regulators) to validate the findings. If the review demonstrates the new technology would be effective in reducing emissions and is determined by the LAHD to be feasible, including but not limited to, financial, technical and operational considerations, the Tenant will implement the new air quality technological advancements, subject to mutual agreement, which shall not be unreasonably withheld.

LM AQ-3: At-Berth Vessel Emissions Control Pilot Study. The Tenant shall complete a pilot study to evaluate the feasibility of implementing an at-berth vessel emissions capture and control system within 3 years of entitlement execution. If proven to be feasible, including but not limited to financial, technical, and operational considerations, and upon California Air Resources Board certification, the Tenant will be required to implement the technology when operationally feasible as described in Tenant's pilot study. This measure will rely on the Tenant's pilot study evaluation and determination, and is subject to mutual agreement between the Tenant and LAHD, which shall not be unreasonably withheld or unreasonably required.

LM AQ-4: Port of Los Angeles Sustainable Construction Guidelines. The project shall implement and comply with all measures as required by the Los Angeles Harbor Department's Sustainable Construction Guidelines adopted in February 2008 and updated in November 2009 during Project construction activities. These requirements shall be stipulated in the construction contracts and bid documents.

LM AQ-5: Vessel Speed Reduction Program (VSRP). 95 percent of vessels calling at the Ecocem Dry Bulk Processing Facility will be required to comply with the expanded VSRP at 12 knots between 40 nautical miles (nm) from Point Fermin and the Precautionary Area.

LM AQ-6: Front End Loader Replacement Schedule. The tenant shall maintain a replacement schedule of the off-road diesel front end loader of every two years, where an equivalent new piece that meets operational requirements and meets Tier 4 Final standards or cleaner, would be procured.

LM GHG-1: GHG Credit Fund: LAHD shall establish a Greenhouse Gas Fund, which LAHD shall have the option to accomplish through a Memorandum of Understanding (MOU) with the California Air Resources Board (CARB) or another appropriate entity. The fund shall be used for GHG-reducing projects and programs approved by the Port of Los Angeles, or through the purchase of emission reduction credits from a CARB approved offset registry. It shall be the responsibility of the Tenant to contribute to the fund to mitigate emissions over the threshold (11,298 MT) at the existing market rate of $35.20 per carbon credit. Fund contribution shall be a one-time payment of $397,690 payable upon substantial completion of Project construction. If LAHD is unable to establish the fund within one year prior to when payment is due, the Tenant shall instead purchase emission reduction credits from a CARB approved GHG offset registry.

This analysis of mitigation measures and application of lease measures is also applicable to Reduced Project Alternative (Alternative 2) and Product Import Terminal Alternative (Alternative 3).

Residual Impacts

GHG emissions impacts under the Proposed Project would be significant and unavoidable for all analyzed years.

3.5.6.2 Alternative 1 – No Project Alternative

Under the No Project Alternative (Alternative 1) – the Project site would remain largely unused as no future development has been permitted or approved. Accordingly, none of the Proposed Project's construction activities would occur in backlands or at the wharf. In addition, none of the Proposed Project's operational activities, including oceangoing vessel activity, raw material handling, product milling, and truck loading, would occur. Because no operational activities would occur under the No Project Alternative (Alternative 1), no operational emissions would be generated.

Impact GHG-1: Would the No Project Alternative (Alternative 1) generate GHG emissions, either directly or indirectly, that would have a significant impact on the environment?

Because Alternative 1 is the No Project Alternative, there is no construction associated with Alternative 1. Operational GHG emissions are assumed to be equivalent to the baseline condition, i.e., negligible. Therefore, there would not be incremental GHG emissions associated with the No Project Alternative, particularly because there has presently been no future development permitted or approved for the site.

CEQA Impact Determination

The No Project Alternative (Alternative 1) would not generate construction or operational emissions that would exceed SCAQMD's thresholds of significance. Accordingly, Alternative 1 would create no impact.

Mitigation Measures

No mitigation is required.

Residual Impacts

There would be no impact.

3.5.6.3 Alternative 2 – Reduced Project Alternative

In the Reduced Project Alternative, all of the elements of the Proposed Project described in Section 3.5.5.1 would be built, but the facility's GGBFS throughput would be less. Therefore, fewer trucks and vessels would bring raw materials and pick up product (GGBFS), and lower electricity consumption and natural gas combustion (from the dryer) would occur in this alternative.

Impact GHG-1: Would the Reduced Project Alternative (Alternative 2) generate GHG emissions, either directly or indirectly, that would have a significant impact on the environment?

In the Reduced Project Alternative (Alternative 2), all of the elements of the Proposed Project described above would be built, but the capacity of the facility to produce GGBFS would be reduced. However, the logistics of stockpiling GBFS delivered by oceangoing

vessels and the economies that could arise from simply operating the mill fewer hours per day mean that it is likely that the Reduced Project Alternative (Alternative 2) would construct a facility very similar in size and configuration to the Proposed Project. Therefore, it is expected that construction-related GHG emissions of the Reduced Project Alternative (Alternative 2) would be the same as those of the Proposed Project, as shown in Table 3.5-1. The amortized construction from Table 3.5-1 is therefore also applicable for the Reduced Project Alternative (Alternative 2).

Under this Alternative, the Ecocem facility would produce 522,950 metric tons/yr of GGBFS product, derived from 540,000 metric tons/yr of GBFS and 26,700 metric tons/yr of gypsum raw material received per year. For more information see Section 2.7.1 in Chapter 2. Table 3.5-4 shows amortized annual GHG emissions associated with construction, annual GHG emissions associated with operational activities of the Reduced Project and a comparison to SCAQMD's industrial sector significance threshold.

Table 3.5-4: Construction and Operational GHG Emissions – Reduced Project Alternative (mty)

Source Category	CO_2	CH_4	N_2O	CO_2e
Amortized Construction				273
Year – 2025				
OGV - Transit	800	<1	<1	808
OGV – Hoteling/Anchoring	232	<1	<1	233
Harbor Craft	29	<1	<1	29
Trucks	2,031	<1	<1	2,055
Worker Vehicles	13	<1	<1	13
Offroad Equipment	189	<1	<1	192
Dryer Combustion	1,676	<1	<1	1,685
Electricity Consumption	--	--	--	3,131
Total Operations with Amortized Construction				**8,418**
Total GHG emissions above SCAQMD's 10,000 MT CO_2e threshold?				No
Year – 2027				
OGV - Transit	1,599	<1	<1	1,615
OGV – Hoteling/Anchoring	461	<1	<1	464
Harbor Craft	58	<1	<1	58
Trucks	3,975	<1	<1	4,022
Worker Vehicles	26	<1	<1	26
Offroad Equipment	379	<1	<1	384
Dryer Combustion	3,353	<1	<1	3,370
Electricity and Consumption	--	--	--	4,225
Total Operations with Amortized Construction	**-**	**<1**	**<1**	**14,436**
Total GHG emissions above SCAQMD's 10,000 MT CO_2e threshold?				Yes
Year – 2049				

Table 3.5-4: Construction and Operational GHG Emissions – Reduced Project Alternative (mty)

Source Category	CO_2	CH_4	N_2O	CO_2e
OGV - Transit	1,599	<1	<1	1,615
OGV – Hoteling/Anchoring	461	<1	<1	464
Harbor Craft	58	<1	<1	58
Trucks	3,366	<1	<1	3,405
Worker Vehicles	22	<1	<1	22
Offroad Equipment	379	<1	<1	383
Dryer Combustion	3,353	<1	<1	3,370
Electricity Consumption	--	--	--	63
Total Operations with Amortized Construction	**-**	**<1**	**<1**	**9,654**
Total GHG emissions above SCAQMD's 10,000 MT CO_2e threshold?				No

Notes:
1. Truck and vessel travel emissions include transport within the California State Boundary
2. Emissions might not precisely add due to rounding.

The annual GHG emissions from Reduced Project Alternative (Alternative 2) would be lower than those of the Proposed Project but would still exceed the SCAQMD mass emissions thresholds for analysis year 2027. The largest contributors to annual GHG emissions would be truck travel during operations, dryer combustion, and the backlands electricity consumption. Similar to the Proposed Project, the increasing decarbonization of the California electrical grid per regulations like the Renewable Portfolio Standard and SB100 would result in a decrease in the Reduced Project Alternative (Alternative 2)'s GHG emissions per metric ton of product (GGBFS) over time, as noted in Table 3.5-5. Because the Reduced Project Alternative (Alternative 2) would require an equivalent level of construction effort (and associated construction emissions) but has significantly less throughput, the overall GHG emissions per unit of GGBFs for the Reduced Project Alternative (Alternative 2) would be higher than those of the Proposed Project.

Table 3.5-5: Greenhouse Gas Emissions for the Reduced Project Alternative per Unit of Throughput

Years	CO_2e Emissions (mty)	Throughput (MT of GGBFS)	Per Unit Emissions (MT of CO_2e per 1,000 MT of GGBFS)	
			Direct and Indirect Sources (Electricity)	Only Direct Sources
2025	8,418	261,475	32.2	20.2
2027	14,436	522,950	27.6	19.5
2049	9,654	522,950	18.5	18.3

MT: metric ton

CEQA Impact Determination

Table 3.5-4 shows that the Reduced Project Alternative's GHG mass emissions would exceed the GHG threshold of 10,000 mty in 2027 analysis year. Therefore, GHG

emissions of the Reduced Project Alternative (Alternative 2) would be significant under CEQA in 2027.

Although not considered for the significance determination, the GHG emissions per unit of product would decrease over the life of the Reduced Project Alternative (Alternative 2), thereby demonstrating an improvement in GHG emissions efficiency.

Mitigation Measures

Feasible mitigation measures are not available as described in 3.5.6.1. The Reduced Project (Alternative 2) would implement the following lease measures for air quality; although some were not quantified within the analysis (except only LM AQ-4 and LM AQ-5 and LM AQ-6) these measures would generate further reductions of GHG emissions as a co-benefit:

LM AQ-1: Fleet Modernization for Cementitious Material Handling Equipment.

LM AQ-2: Periodic Review of New Technology.

LM AQ-3: At-Berth Vessel Emissions Control Pilot Study.

LM AQ-4: Port of Los Angeles Sustainable Construction Guidelines.

LM AQ-5: Vessel Speed Reduction Program (VSPR).

LM AQ-6: Front End Loader Replacement Schedule.

LM GHG-1: GHG Credit Fund.

The analysis of mitigation measures feasibility and application of lease measures can be found in Section 3.5.6.1 and the description of measures can be found in Section 3.5.10 Mitigation Monitoring.

Residual Impacts

GHG emissions impacts under the Reduced Project Alternative (Alternative 2) would be significant and unavoidable for the analysis year 2027.

3.5.6.4 Alternative 3 – Product Import Terminal Alternative

For the Product Import Terminal Alternative (Alternative 3), there would be no processing of raw materials on the Proposed Project site as the GGBFS product would come ready from overseas by vessel. There would be no open storage piles for GBFS and gypsum and none of the mobile equipment needed to manage the storage piles. Construction of the facility would be less intensive to that the Proposed Project, as the bulk storage facility would require similar ground improvements and foundations but fewer structures to operate. For example, structures that would hold the process equipment like the mill and dryer would not be required, and the conveyance system from vessels to silos would be simpler than that of the Proposed Project. The finished powder product produced overseas would be transported by ocean-going bulk vessels to Berth 191, where it would be off-loaded to the storage silos by a vacuum conveyor system. Under this alternative, the maximum capacity of the Ecocem facility would be 775,000 metric tons of GGBFS per year, the same as the Proposed Project.

Impact GHG-1: Would the Product Import Terminal Alternative (Alternative 3) generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

Table 3.5-6 presents amortized annual GHG emissions associated with construction of the Product Import Terminal Alternative (Alternative 3). Total amortized construction emissions were determined by summing over yearly emissions associated with all construction elements and amortizing (dividing) over the life of the Product Import Terminal (Alternative 3) (30 years). Table 3.5-7 shows amortized annual GHG emissions associated with construction, annual GHG emissions associated with operational activities and comparison to SCAQMD's industrial sector significance threshold.

Table 3.5-6: Construction GHG Emissions– Product Import Terminal (mty)

Source Category	CO_2 (mty)	CH_4 (mty)	N_2O (mty)	Total CO_2e (mty)
Construction Year 2024				
Off-road Construction Equipment	948	<1	<1	951
Harbor Craft	3	<1	<1	3
On-road Construction-Related Vehicles	608	<1	<1	634
Worker Vehicles	46	<1	<1	47
Total Construction Year 2024	1,605	<1	<1	1,635
Construction Year 2025				
Off-road Construction Equipment	205	<1	<1	206
Harbor Craft	1	<1	<1	1
On-road Construction-Related Vehicles	82	<1	<1	85
Worker Vehicles	6	<1	<1	6
Total Construction Year 2025	294	<1	<1	298
Amortized Construction				**64**

1. Construction emissions reflect the construction activities for the Product Import Terminal Alternative.
2. On-road construction vehicle emissions include exhaust emissions from haul trucks and material delivery trucks.
3. Worker Vehicle emissions include exhaust emissions from construction worker commute
4. Emissions might not add precisely due to rounding.

Table 3.5-7: Construction and Operational GHG Emissions – Product Import Terminal Alternative (mty)

Source Category	CO_2	CH_4	N_2O	CO_2e
Amortized Construction				64
Year – 2025				
OGV - Transit	1,133	<1	<1	1,145

Table 3.5-7: Construction and Operational GHG Emissions – Product Import Terminal Alternative (mty)

Source Category	CO_2	CH_4	N_2O	CO_2e
OGV – Hoteling/Anchoring	549	<1	<1	553
Harbor Craft	43	<1	<1	44
Trucks	2,576	<1	<1	2,610
Worker Vehicles	9	<1	<1	9
Offroad Equipment	0	0	0	0
Dryer Combustion	0	0	0	0
Electricity Consumption	--	--	--	260
Total Operations with Amortized Construction				**4,684**
Total GHG emissions above SCAQMD's 10,000 MT CO_2e threshold?				No
Year – 2027				
OGV - Transit	2,172	<1	<1	2,194
OGV – Hoteling/Anchoring	1,049	<1	<1	1,056
Harbor Craft	83	<1	<1	84
Trucks	5,053	<1	<1	5,119
Worker Vehicles	17	<1	<1	17
Offroad Equipment	0	0	0	0
Dryer Combustion	0	0	0	0
Electricity and Consumption	--	--	--	351
Total Operations with Amortized Construction				**8,885**
Total GHG emissions above SCAQMD's 10,000 MT CO_2e threshold?				No
Year – 2049				
OGV - Transit	2,172	<1	<1	2,194
OGV – Hoteling/Anchoring	1,049	<1	<1	1,056
Harbor Craft	83	<1	<1	84
Trucks	4,250	<1	2	4,305
Worker Vehicles	15	<1	<1	15
Offroad Equipment	0	0	0	0
Dryer Combustion	0	0	0	0
Electricity Consumption	--	--	--	5
Total Operations with Amortized Construction				**7,723**
Total GHG emissions above SCAQMD's 10,000 MT CO_2e threshold?				No

Notes:
1. Truck and vessel travel emissions include transport within the California State Boundary.
2. Emissions might not precisely add due to rounding.

1

The annual GHG emissions from Product Import Terminal Alternative (Alternative 3) would be lower than those of the Proposed Project and remain below the SCAQMD mass emissions thresholds for all analyzed years. The largest contributors to annual GHG emissions would be truck travel during operations, vessel transit out to the state overwater boundary, and vessel hoteling. As described in Section 3.5.5.1, indirect GHG emissions related to electrical consumption are expected to decrease over time, as shown in Table 3.5-8, related to increasing decarbonization of the California electrical grid per regulations like the Renewable Portfolio Standard and SB 100. Because the Product Import Terminal Alternative (Alternative 3) would require a less intense operation and construction than the Proposed Project, the overall GHG emissions per unit of GGBFS would be lower than those of the Proposed Project. However, it must be noted that this alternative would be shifting production of the imported product (GGBFS or other) to overseas where the GHG emissions could be even higher than the Proposed Project due to less stringent local regulations or a lower contribution of renewable energy for the electricity powering the overseas production.

Table 3.5-8: Greenhouse Gas Emissions for the Product Import Terminal Alternative per Unit of Throughput

Years	CO_2e Emissions (mty)	Throughput (MT of GGBFS)	Per Unit Emissions (MT of CO_2e per 1,000 MT of GGBFS)	
			Direct and Indirect Sources (Electricity)	Only Direct Sources
2025	4,684	387,500	12.1	11.4
2027	8,885	775,000	11.4	11.0
2049	7,723	775,000	10.0	10.0

MT: metric ton

CEQA Impact Determination

Table 3.5-7 shows that the Product Import Terminal Alternative (Alternative 3)'s GHG mass emissions would not exceed the GHG threshold of 10,000 mty in any analyzed years. Therefore, GHG emissions of the Product Import Terminal Alternative (Alternative 3) would not be significant under CEQA.

Although not considered for the significance determination, the GHG emissions per unit of product would decrease over the life of the Product Import Terminal Alternative (Alternative 3), thereby demonstrating an improvement in GHG emissions efficiency.

Mitigation Measures

No mitigation is required. However, the following lease measures would be applied to the Product Import Terminal (Alternative 3) and would further reduce emissions.

LM AQ-1: Fleet Modernization for Cementitious Material Handling Equipment.

LM AQ-2: Periodic Review of New Technology.

LM AQ-3: At-Berth Vessel Emissions Control Pilot Study.

LM AQ-4: Port of Los Angeles Sustainable Construction Guidelines

LM AQ-5: Vessel Speed Reduction Program (VSPR).

LM AQ-6 is not included as this Alternative would not need a front-end loader. The analysis of mitigation measures feasibility and application of lease measures can be found in Section 3.5.6.1 and the description of measures can be found in Section 3.5.10 Mitigation Monitoring.

Residual Impacts

GHG emissions impacts under the Product Import Terminal Alternative (Alternative 3) would be less than significant for all analyzed years.

3.5.7 Consistency With Relevant Plans, Policies, and Regulations

As described in Section 3.5.5.4, the consistency of the Proposed Project and alternatives with applicable plans, policies, and regulations adopted for the purpose of reducing GHG emissions was considered in the IS/NOP (see Appendix A) and was found to have less-than-significant impacts and eliminated from consideration in this Draft EIR. However, for informational purposes the following discussion and Table 3.5-9 summarize the consistency of the Proposed Project and alternatives with key relevant GHG reduction strategies.

Table 3.5-9. Key Applicable GHG Emissions Reduction Strategies

	Strategy	Compliance with Strategy
	State AB 32 Plan Strategies and Scoping Plan Actions (CARB 2017, 2022)	
	Limited Idling Time for Commercial Vehicles (13 CCR § 2485) and Off-Road Equipment (13 CCR § 2449)	Construction contractors and cement and gypsum haul truck operators would be required to comply with applicable idling regulations for on-road vehicles (certain vehicles such as cement mixer trucks pouring cement during construction are exempt). Off-road equipment would also be required to comply with applicable idling restrictions during construction and operation.
	Use of Low Carbon or Alternative Fuels (Low Carbon Fuel Standard)	The primary source of GHG emissions by the Proposed Project and the two build alternatives is transportation fuel use. The off-road equipment and the haul trucks used both during construction and operations would use California fuels that are subject to the Low-Carbon Fuel Standard regulations. Over the life of the facility, therefore, GHG emissions by facility activities would decrease as

	Strategy	Compliance with Strategy
		low-carbon/renewable fuel availability and use increase statewide.
	Electricity Use/Renewables Performance Standard	The Proposed Project and the build alternatives would use electricity supplied by the Los Angeles Department of Water and Power (LADWP), a public utility subject to the Renewables Performance Standard (RPS) that requires increasing renewable energy procurement over time, thus reducing GHG emissions from electricity generation and complying with state GHG reduction strategies.
	Ocean-going Vessels (OGV)	The Proposed Project and the two build alternatives include a provision to implement, if feasible, at-berth emissions controls, consistent with the Scoping Plan OGV action.
	Cement Industry De-Carbonization	The Proposed Project and, to a lesser extent, the Reduced Project (Alternative 2) and Product Import Terminal (Alternative 3) would be consistent with the Scoping Plan strategy: "Develop a net-zero cement strategy to meet SB 596 targets for the GHG intensity of cement use in California."
	Advance Clean Truck/Advanced Clean Fleet Regulation	These regulations establish goals for the electrification of California's heavy-duty truck fleet. They do not specifically address cement-hauler trucks, but those trucks, which tend to be Class 8 vehicles, may be affected as electric or other ZE models of Class 8 vehicles spread throughout the market in the future.

	Strategy	Compliance with Strategy
	Port of Los Angeles and City of Los Angeles Plans and Strategies	
	LA's Green New Deal/ Sustainable City pLAn	The City of Los Angeles' Sustainable City pLAn is intended to guide operational, policy, and financial decisions to create a more sustainable Los Angeles. Although the Plan is mostly focused on city property, buildings, and public transportation, it includes a goal of 80 percent reduction from baseline emissions and two GHG emissions reduction initiatives relevant to the Proposed Project and the build alternatives. The Proposed Project and build alternatives would be consistent with the pLAn's energy-efficient buildings initiative because it would include LEED-certified buildings. In addition, consistency with the pLAn's initiative related to sustainable practices in Port leases would be achieved by LM AQ-1, requiring fleet modernization for cementitious material handling equipment, LM AQ-2, requiring Ecocem frequently to re-evaluate and replace its off-road equipment with the latest low-emission technology, and LM AQ-4, requiring compliance with the Port's Sustainable Construction Guidelines;
	San Pedro Bay Ports Clean Air Action Plan	The CAAP has several policy initiatives related to GHG emissions reductions. The CAAP initiatives that would apply to the Proposed Project's GHG emissions sources are the same as those listed above for the Sustainable City pLAn.
	City of Los Angeles General Plan – Mobility Element	The City of Los Angeles General Plan Mobility Element was developed to improve the way people, goods, and resources are moved in Los Angeles. The

Strategy	Compliance with Strategy
	Proposed Project and build alternatives, by using designated truck routes to and from the facility, would be consistent with this General Plan Element.

The No Project Alternative (Alternative 1) would not achieve any GHG emissions reductions relative to baseline. However, since the alternative would result in zero GHG emissions, it would not conflict with any of the initiatives.

Other regulatory programs targeting GHG emissions were discussed in Section 3.5.4, such as federal vehicle emissions standards, the governor's Executive Orders, CARB's 2022 Climate Change Scoping Plan Update, and SCAG's RTP/Connect SoCal plan. These are not directly relevant to the Proposed Project because they target GHG reductions at large geographic scales or for activities that do not pertain the Proposed Project, such as the rail sector, residential and commercial buildings, and transportation infrastructure and policies.

The specific goals with respect to metrics, potential reduction measures, and implementation strategies of SB 596 Net-Zero Emissions Strategy for the Cement Sector are not available at this time; however, as described in Sections 3.5.2 and 3.5.6.1, the Proposed Project would further the goals of SB 695 by increasing the region's supplies of a lower carbon footprint replacement for Portland cement.

3.5.8 Sea-Level Rise

An analysis of issues associated with future sea-level rise (SLR) is not required by CEQA. However, this consideration of the Proposed Project's vulnerability to SLR and the potential consequences of that vulnerability is presented in this Draft EIR for informational purposes.

3.5.8.1 Background

As summarized by Sweet et al (2022), SLR driven by global climate change (i.e., the effects of GHGs, see Section 3.5.3) has been documented and represents a risk to coastal communities and resources now and for the foreseeable future. Sea levels will continue to rise due to the ocean's sustained response to the warming that has already occurred, and this will occur even if climate change mitigation succeeds in limiting surface air temperatures in the coming decades. Accordingly, facility planning in coastal areas must incorporate a consideration of likely SLR.

For the Port of Los Angeles, the Sea Level Rise Adaptation Study (LAHD 2018) noted that mean sea levels have already risen four inches in the past 100 years. The study characterized SLR as "a significant risk that challenges the long-term viability of this national asset. If left unmitigated, business operations will be temporarily impacted, international cargo may move elsewhere, and community/commercial or natural habitat assets could be destroyed." The study considers available SLR data and forecasts, classifies port assets in terms of criticality, and projects consequences for the various areas of the harbor under several scenarios of SLR.

SLR can have two types of effects on coastal resources and surrounding communities. First, flooding of a project site due to SLR alone or SLR combined with extreme high tides and/or storm surge could damage facilities, resulting in financial loss and even injury or death to workers and visitors. Second, damage caused by flooding could result in releases to the environment of, for example, structural elements, hazardous materials, cargos, and raw materials. These releases could involve harbor waters, as elements are washed away, or the air, as tanks or other containers ruptured by flood waters release volatile materials to the air. These possibilities are considered below to the extent they would apply to the Proposed Project.

3.5.8.2 Methodology

The most relevant studies of SLR are the updated guidance from the State of California (OPC 2018; a planned update was not yet released at this document's time of preparation) and the Port's adaptation study (LAHD 2018). Both studies recognize the uncertainty of SLR projections, particularly beyond approximately 2050, and offer multiple potential future scenarios of SLR under different assumptions of GHG emissions, ice cap melting, and other factors. The State's study recommends selecting a level of risk aversion (low, medium-high, extreme) in order to select an appropriate future SLR scenario. For the Proposed Project, low risk aversion would be appropriate because the Proposed Project would not involve critical infrastructure (e.g., power plants, water and wastewater treatment facilities, public safety facilities) or hazardous materials for which SLR impacts would be serious. The State's study uses a high-emissions assumption through 2050 to estimate SLR. The Port's SLR estimates, which are based on an earlier National Research Council study, do not include a consideration of risk aversion levels but do incorporate a high-emissions scenario. The Port's study considers horizon years of 2030, 2050, and 2100 and three scenarios of global warming (low, mid-range, high). The Port's study focuses on Port infrastructure by predicting inundation and flooding under various scenarios of SLR, high tides, and storm tides, whereas the State's study is a more general consideration of SLR alone along the California coast.

To evaluate the effects of SLR on a project, the State's study recommends considering project life when selecting horizon years and SLR scenarios. The Proposed Project would be expected to have a maximum service life of 50 years and is therefore assumed to operate at least until 2050 but not until 2100. Therefore, only 2050 SLR estimates are used below to estimate impacts from the Proposed Project relative to SLR.

The State's study for the low-risk aversion level, high-emissions scenario (i.e., greatest SLR) at the Los Angeles tide gauge predicts SLR of approximately 12 inches (1.0 ft) higher than the 2000 level by 2050 (see OPC [2018] Appendix 3 Table 28). That prediction is based on the 66% probability for SLR, but a less likely outcome (the 1-in-200 chance) predicts SLR in 2050 of 22 inches (1.8 feet). The Port's study projects that under the high-emissions scenario, sea level at the Port could rise 24 inches above the 2000 level by 2050.

3.5.8.3 Discussion

Under the 24-inch estimate of SLR for 2050, the Port's study concludes that SLR alone would not cause permanent inundation or shoreline overtopping at Berths 191-194, even at normal high tide. Accordingly, SLR alone would not threaten the facilities at the Proposed Project site during their projected service life. However, allowing for a 2.6-foot 100-year storm tide (LAHD 2018), water levels at the Project site under storm tide conditions could

result in temporary flooding up to 2 feet deep, with concomitant interruption of terminal activities. Since the facility would, like all port facilities, operate under various contingency and emergency prevention and response plans that would mandate shutdown of infrastructure such as gas lines and electrical facilities in anticipation of flooding, the presence of two feet of water on the site would not pose a serious risk of rupture or electrical hazard. Although traffic would be blocked by water depths of more than a few inches, vehicle movement should be able to resume quickly after waters have receded, which would be a matter of hours. Accordingly, SLR does not pose substantial structural risks to the Proposed Project or either of the build alternatives, and no compensatory structural revisions are needed. Vessel operational procedures could, at some point in the future, need to be revised to accommodate higher mean water levels at the berth, but that is speculative at this time.

Flooding at the Project site would, for the Proposed Project and the Reduced Project Alternative (Alternative 2), cause a degree of inundation of the GBFS and gypsum stockpiles. Swiftly moving water in a storm surge could cause some erosion and transport of the raw materials. In the case of GBFS, such erosion would be minimal, given the coarse granular nature of the material and the crust that would form on the stockpile (see Section 2.5.1), and so any releases to harbor waters would be expected to involve small quantities. Gypsum, being finer-grained, would be more likely to be mobilized by flood flows, and some material could reach harbor waters to cause localized turbidity. However, because both GBFS and gypsum are non-toxic (see Section 2.5.1 and Table 2-1), releases to harbor waters would not have substantial adverse effects on coastal resources. The Product Import Terminal Alternative (Alternative 3) would not include open stockpiles, so there would be no possibility of inundation and mobilization of raw materials. The No Project Alternative (Alternative 1) would not introduce new issues or result in adverse effects related to SLR because the Project site would remain largely vacant, as under baseline conditions.

Neither the Proposed Project nor any of the alternatives includes quantities of hazardous materials that could be released by the rupture of storage tanks or other containers; accordingly, damage to facilities caused by SLR scenarios would not adversely affect nearby facilities or communities.

3.5.9 Summary of Impact Determinations

Table 3.5-10 provides a summary of the impact determinations of the Proposed Project and alternatives related to GHGs and climate change. This table allows easy comparison of the potential impacts of the Proposed Project and alternatives.

For each type of potential impact, the table provides a description of the impact, the impact determination, any applicable mitigation measures, and residual impacts (i.e., the impact remaining after mitigation). All impacts, whether significant or not, are included in this table.

Table 3.5-10: Summary Matrix of Impacts and Mitigation Measures Associated with the Proposed Project and Alternatives

Alternative	Environmental Impacts	Impact Determination	Applied Mitigation /Lease Measures or Controls	Residual Impacts
Proposed Project	**GHG-1**: The Proposed Project would generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.	GHG emissions would be significant under CEQA in 2025, 2027 and 2049 analysis years	LM AQ-1: Fleet Modernization for Cementitious Material Handling Equipment LM AQ-2: Periodic Review of New Technology LM AQ-3: At-Berth Vessel Emissions Control Pilot Study. Mitigation not required although LM AQ-4: Port of Los Angeles Sustainable Construction Guidelines would be applied LM AQ-5: Vessel Speed Reduction Program (VSRP) LM AQ-6: Front End Loader Replacement Schedule LM GHG-1: GHG Credit Fund	GHG emissions impacts would be significant and unavoidable for all analyzed years
Alternative 1 – No Project Alternative	**GHG-1**: No Project Alternative (Alternative 1) would generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.	No Impact	Not applicable	No Impact
Alternative 2 – Reduced Project Alternative	**GHG-1**: Reduced Project Alternative (Alternative 2) would generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.	GHG emissions would be significant under CEQA in analysis year 2027	LM AQ-1: Fleet Modernization for Cementitious Material Handling Equipment LM AQ-2: Periodic Review of New Technology LM AQ-3: At-Berth Vessel Emissions Control Pilot Study Mitigation not required although LM AQ-4: Port of Los Angeles Sustainable Construction Guidelines would be applied LM AQ-5: Vessel Speed Reduction Program (VSRP)	GHG emissions impacts would be significant and unavoidable for analysis year 2027

Table 3.5-10: Summary Matrix of Impacts and Mitigation Measures Associated with the Proposed Project and Alternatives

Alternative	Environmental Impacts	Impact Determination	Applied Mitigation /Lease Measures or Controls	Residual Impacts
			LM AQ-6: Front End Loader Replacement Schedule LM GHG-1: GHG Credit Fund	
Alternative 3 – Product Import Terminal Alternative	**GHG-1**: Product Import Terminal Alternative (Alternative 3) would generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.	Less than significant impact	Mitigation not required; however, the following lease measures would be applied: LM AQ-1: Fleet Modernization for Cementitious Material Handling Equipment LM AQ-2: Periodic Review of New Technology LM AQ-3: At-Berth Vessel Emissions Control Pilot Study Mitigation not required although LM AQ-4: Port of Los Angeles Sustainable Construction Guidelines would be applied LM AQ-5: Vessel Speed Reduction Program (VSRP)	Less than significant impact

3.5.10 Mitigation Monitoring

The mitigation monitoring program below does not contain any mitigation measures, as none were found feasible. Instead, this section summarizes implementation of the applicable lease measures.

Lease Measure	**LM AQ-1: Fleet Modernization for Cementitious Material Handling Equipment.** Tenant shall replace cementitious material handling equipment used for operation with the cleanest available equipment, that meets operating and safety requirements, anytime new or replacement equipment is purchased, with a first preference for zero-emission equipment, a second preference for near-zero equipment (such as, hybrid or low-NOx equipment), and third for the cleanest available if zero or near-zero equipment is not feasible, provided that LAHD shall conduct engineering assessments to confirm that such equipment is capable of installation at the facility. Tenant may make a recommendation to LAHD for LAHD's concurrence as to which equipment is available and is feasible. Starting one year after the effective date of a new entitlement between the Tenant and the LAHD, Tenant shall submit to the Port an equipment inventory and 5-year procurement plan for new equipment, and infrastructure, and will update the procurement plan annually in order to assist with planning for transition of equipment to zero emissions in accordance with the foregoing paragraph.
Timing	During operation.
Methodology	LAHD will include this lease measure in lease agreements with tenants.

Lease Measure	**LM AQ-2: Periodic Review of New Technology and Regulations.** The Tenant will conduct a periodic review of any Port-identified or other new emissions-reducing technology and report to the LAHD on the feasibility of any new technology advancements that may reduce emissions not less frequently than once every five years following the effective date of the entitlement. The technology review would be subject to approval by LAHD and would involve consulting with appropriate resources (e.g., consultants, engineers, regulators) to validate the findings. If the review demonstrates the new technology would be effective in reducing emissions and is determined by the LAHD to be feasible, including but not limited to, financial, technical and operational considerations, the Tenant will implement the new air quality technological advancements, subject to mutual agreement, which shall not be unreasonably withheld.
Timing	During operation.
Methodology	LAHD will include this lease measure in lease agreements with tenants.

Mitigation Measure	**LM AQ-3: At-Berth Vessel Emissions Control Pilot Study.** The Tenant shall complete a pilot study to evaluate the feasibility of implementing an at-berth vessel emissions capture and control system within 3 years of entitlement execution. If proven to be feasible, including but not limited to financial, technical, and operational considerations, and upon California Air Resources Board certification, the Tenant will be required to implement the technology when operationally feasible as described in Tenant's pilot study. This measure will rely on the Tenant's pilot study evaluation and determination and is subject to mutual agreement between the Tenant and LAHD, which shall not be unreasonably withheld or unreasonably required.
Timing	During operation.
Methodology	LAHD will include this lease measure in lease agreements with tenants.

Mitigation Measure	**LM AQ-4: Port of Los Angeles Sustainable Construction Guidelines.** The project shall implement and comply with all measures as required by the Los Angeles Harbor Department's Sustainable Construction Guidelines adopted in February 2008 and updated in November 2009 during Project construction activities. These requirements shall be stipulated in the construction contracts and bid documents.
Timing	During operation.
Methodology	LAHD will include this lease measure in lease agreements with tenants.

Mitigation Measure	**LM AQ-5: Vessel Speed Reduction Program (VSRP):** 95 percent of vessels calling at the Ecocem Dry Bulk Processing Facility will be required to comply with the expanded VSRP at 12 knots between 40 nautical miles (nm) from Point Fermin and the Precautionary Area.
Timing	During operation.
Methodology	LAHD will include this lease measure in lease agreements with tenants.

Mitigation Measure	**LM AQ-6: Front End Loader Replacement Schedule.** The tenant shall maintain a replacement schedule of the off-road diesel front end loader of every two years, where an equivalent new piece that meets operational requirements and meets Tier 4 Final standards or cleaner, would be procured.
Timing	During operation.
Methodology	LAHD will include this lease measure in lease agreements with tenants.

Mitigation Measure	**LM GHG-1: GHG Credit Fund:** LAHD shall establish a Greenhouse Gas Fund, which LAHD shall have the option to accomplish through a Memorandum of Understanding (MOU) with the California Air Resources Board (CARB) or another appropriate entity. The fund shall be used for GHG-reducing projects and programs approved by the Port of Los Angeles, or through the purchase of emission reduction credits from a CARB approved offset registry. It shall be the responsibility of the Tenant to contribute to the fund to mitigate 11,298 MT at the existing market rate of $35.20 per carbon credit. Fund contribution shall be a one time payment of $397,690 payable upon substantial completion of Project construction. If LAHD is unable to establish the fund within one year prior to when payment is due, the Tenant shall instead purchase emission reduction credits from a CARB approved GHG offset registry.
Timing	Payable upon substantial completion of Project construction.
Methodology	LAHD will include this lease measure in lease agreements with tenants.

3.5.11 Significant Unavoidable Impacts

Construction and operational GHG emissions under Impact GHG-1 would be significant and unavoidable under CEQA for the Proposed Project for all analysis years and for the Reduced Project Alternative (Alternative 2) for the analysis year 2027.

References

California Legislative Information. 2021. SB-596 Greenhouse gases: Cement sector: net-zero emissions strategy. https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220SB596

CAPCOA (California Air Pollution Control Officers Association). 2008. Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act. January. https://files.ceqanet.opr.ca.gov/123569-2/attachment/Dc_XNpc6Biol9y9det7vnwYYflp48EkdOXGXjh0rsuMLhAolIIti1OQ55_az23JpgFJv4UIcah2Fuf0m0

CARB (California Air Resources Board). 2009a. Climate Change Scoping Plan: A Framework for Change, published December 2008, amended version included errata and Board requested modifications posted May 11, 2009. https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/document/adopted_scoping_plan.pdf;.

_____.2009b. Climate Change Scoping Plan Appendices. Volume I: Supporting Documents and Measure Detail, published December 2008, amended version included errata and Board requested modifications posted May 11, 2009. https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/document/appendices_volume1.pdf

_____.2017. California's 2017 Climate Change Scoping Plan. November. https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2017-scoping-plan-documents

_____. 2021a. California Greenhouse Gas Emissions for 2000 to 2019: Trends of Emissions and Other Indicators. https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/2000_2019_ghg_inventory_trends_04-01.pdf.

_____.2021b. EMFAC2021. Mobile Source Emission Inventory. https://arb.ca.gov/emfac/emissions-inventory/2b238129718aa8f82ce1c9fe9ad1984b86be258d

_____. 2022. Final 2022 Scoping Plan Update and Appendices. December. Available at: https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents.

_____. 2023a. Final Regulation Order: Advanced Clean Trucks Regulation. Accessed April 18, 2023 at https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2019/act2019/fro2.pdf.

_____. 2023b. Advanced Clean Trucks Fact Sheer. Accessed April 18, 2023 at https://ww2.arb.ca.gov/resources/fact-sheets/advanced-clean-trucks-fact-sheet.

CEC (California Energy Commission). 2023. Cal-Adapt. Local Climate Change Snapshot. Data for census tract 6037980031. https://cal-adapt.org/tools/local-climate-change-snapshot/.

City of Los Angeles. 2007. Green LA: An Action Plan to Lead the Nation in Fighting Global Warming. May. https://www.dtsc-ssfl.com/files/lib_ceqa/ref_draft_peir/Chap4_6-GrnhouseGas/68342_LA_2007_-_greenla_cap_2007.pdf

_____. 2015. The Sustainable City pLAn. April. https://plan.lamayor.org/background/background_plan.html

_____. 2016. Mobility Plan 2035. An Element of the General Plan. Los Angeles Department of City Planning. Council File No. 15-0719-S15.

Ellis, L.D., A.F. Badel, M.L. Chiang, R. J-Y Park, and Y-M. Chiang. 2020. Toward electrochemical synthesis of cement – An electrolyzer-based process for decarbonizing CaCO3 while producing useful gas streams. PNAS 117(23): 12584-12591.

Gagnon, Pieter, Maxwell Brown, Dan Steinberg, Patrick Brown, Sarah Awara, Vincent Carag, Stuart Cohen, Wesley Cole, Jonathan Ho, Sarah Inskeep, Nate Lee, Trieu Mai, Matthew Mowers, Caitlin Murphy, Brian Sergi (2022). 2022 Standard Scenarios Report: A U.S. Electricity Sector Outlook. National Renewable Energy Laboratory. NREL/TP-6A40-84327. https://www.nrel.gov/docs/fy23osti/84327.pdf

Garcetti (Mayor Eric Garcetti). 2019. Sustainable City pLAn: LA's Green New Deal Sustainable City pLAn. https://plan.lamayor.org/

Governor Jerry Brown. 2016. California Sustainable Freight Action Plan 2016. July. https://ww2.arb.ca.gov/sites/default/files/2019-10/CSFAP_FINAL_07272016.pdf).

IPCC (Intergovernmental Panel on Climate Change). 2013. Summary for Policymakers. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A.Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_SPM_FINAL.pdf.

_____. 2014. Summary for Policymakers. In: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II, and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp. https://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf.

_____. 2021. Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 2391 pp. https://report.ipcc.ch/ar6/wg1/IPCC_AR6_WGI_FullReport.pdf.

_____. 2023. Synthesis Report of the IPCC Sixth Assessment Report (AR6):Longer Report [Core Writing Team, H. Lee, K. Calvin (eds.)]. IPCC, Geneva, Switzerland, 85 pp. https://report.ipcc.ch/ar6syr/pdf/IPCC_AR6_SYR_LongerReport.pdf.

LADWP (Los Angeles Department of Water and Power). 2022. Power Facts and Figures. https://www.ladwp.com/ladwp/faces/ladwp/aboutus/a-power/a-p-factandfigures?_adf.ctrl-state=an9w7bv2c_4&_afrLoop=648476746240207.

LAHD (Los Angeles Harbor Department). 2009. Port of Los Angeles Sustainable Construction Guidelines. November.

_____. 2014. Actions to Reduce Greenhouse Gas Emissions by 2050. Environmental Management Division. September. https://kentico.portoflosangeles.org/getmedia/e8a18593-9e64-40fc-b13c-2203899b02bb/pv_final_pola_ghg_assessment_sept_2014.

_____. 2018. Port of Los Angeles Sea Level Rise Adaptation Study. Final Draft. September. https://kentico.portoflosangeles.org/getmedia/29acdb3a-c9a1-4e9c-a233-0a4e74438a3c/2018_Sea_Level_Rise_Adaptation_Study .

_____. 2022. Port of Los Angeles, Studies and Reports: http://www.portoflosangeles.org/environment/studies_reports.asp.

NOAA (National Atmospheric & Oceanographic Administration). 2022a. Climate Change Indicators: Atmospheric Concentrations of Greenhouse Gases. https://www.epa.gov/climate-indicators/climate-change-indicators-atmospheric-concentrations-greenhouse-gases#:~:text=Over%20the%20past%20800%2C000%20years,is%20primarily%20due%20to%20agriculture.

_____. 2022b Increase in atmospheric methane set another record during 2021. https://www.noaa.gov/news-release/increase-in-atmospheric-methane-set-another-record-during-2021#:~:text=Atmospheric%20methane%20levels%20averaged%201%2C895.7,than%20the%201984%2D2006%20period.

NREL (National Renewable Energy Laboratory). 2023. Scenario Viewer Tool. https://scenarioviewer.nrel.gov/

OPC (Ocean Protection Council). 2018. State of California Sea-Level Rise Guidance. 2018 Update. Developed in coordination with the California Natural Resources Agency, the Governor's Office of Planning and Research, and the California Energy Commission. https://opc.ca.gov/webmaster/ftp/pdf/agenda_items/20180314/Item3_Exhibit-A_OPC_SLR_Guidance-rd3.pdf.

OPR (Governor's Office of Planning and Research), Scripps Institution of Oceanography, California Energy Commission, California Public Utilities Commission. 2018. Statewide Summary Report. California's Fourth Climate Change Assessment Report. Publ. SUM-CCCA4-2018-013.

POLA and POLB (Port of Los Angeles and Port of Long Beach). 2006. San Pedro Bay Ports Clean Air Action Plan (CAAP). https://kentico.portoflosangeles.org/getmedia/4a54591c-83f2-4b60-acee-8473d6e8dc14/caap_overview_final_2

_____. 2010. San Pedro Bay Ports Clean Air Action Plan (CAAP) 2010 Update. https://kentico.portoflosangeles.org/getmedia/68ad1b1f-2241-4edb-8bf2-d9621af288b2/2010_caap_update_final

_____. 2017. San Pedro Bay Ports Clean Air Action Plan (CAAP) 2017 Update. https://kentico.portoflosangeles.org/getmedia/9d371f7b-9812-4c75-bcfd-23e83a191435/CAAP_2017_Draft_Document-Final

POLA (Port of Los Angeles). 2023. CEQA/EIR Projects and Public Notices. Projects Certified by the Board of Harbor Commissioners. https://www.portoflosangeles.org/environment/environmental-documents Website accessed May 2023.

_____. 2022. 2021 Port Emissions Inventory. https://www.portoflosangeles.org/environment/air-quality/air-emissions-inventory

SCAG (Southern California Association of Governments). 2016. Regional Transportation Plan/Sustainable Communities Strategy. https://scag.ca.gov/sites/main/files/file-attachments/f2016rtpscs.pdf?1606005557.

_____. 2020. Connect SoCal. Demographics and Growth Forecast Technical Report. https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal_demographics-and-growth-forecast.pdf?1606001579.

SCAQMD (South Coast Air Quality Management District). 2008. Draft Guidance Document, Interim CEQA Greenhouse Gas (GHG) Significance Threshold, Attachment E. October 2008. http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgattachmente.pdf?sfvrsn=2.

_____. 2017a. SCAQMD 400-CEQA Greenhouse Gas Estimator. https://www.aqmd.gov/docs/default-source/permitting/ceqa-2017/ghg-estimator-(2017-11).xlsx?sfvrsn=8

_____. 2017b. Tesoro Los Angeles Refinery Integration and Compliance. Project Final Environmental Impact Report. Available: http://www.aqmd.gov/docs/default-source/ceqa/documents/permit-projects/2017/tesorolaric/tesoro_feir.pdf

SPBP (San Pedro Bay Port). 2022. San Pedro Bay Ports Emissions Inventory Methodology Report. https://kentico.portoflosangeles.org/getmedia/ad5ec383-8dc6-4652-ae0d-81b6ea4c7819/SPBP_Emissions_Inventory_Methodology_v3a.

Sweet, W.V., B.D. Hamlington, R.E. Kopp, C.P. Weaver, P.L. Barnard, D. Bekaert, W. Brooks, M. Craghan, G. Dusek, T. Frederikse, G. Garner, A.S. Genz, J.P. Krasting, E. Larour, D. Marcy, J.J. Marra, J. Obeysekera, M. Osler, M. Pendleton, D. Roman, L. Schmied, W. Veatch, K.D. White, and C. Zuzak. 2022. Global and Regional Sea Level Rise Scenarios for the United States: Updated Mean Projections and Extreme Water Level Probabilities Along U.S. Coastlines. NOAA Technical Report NOS 01. National Oceanic and Atmospheric Administration, National Ocean Service, Silver Spring, MD, 111 pp. https://oceanservice.noaa.gov/hazards/sealevelrise/noaa-nos-techrpt01-global-regional-SLR-scenarios-US.pdf

The Climate Registry. 2016 Climate Registry Default Emission Factors. April. https://docslib.org/doc/12502355/is-pleased-to-present-the-updated-default-emission-factors-for-2016

United Nations, 1998. Kyoto Protocol To The United Nations Framework Convention On Climate Change. http://unfccc.int/resource/docs/convkp/kpeng.pdf

USEPA (United States Environmental Protection Agency). 2022. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020. U.S. Environmental Protection Agency, EPA 430-R-22-003. https://www.epa.gov/system/files/documents/2022-04/us-ghg-inventory-2022-main-text.pdf.

_____. 2009. U.S. Environmental Protection Agency. Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act.

_____. 2012. United States Environmental Protection Agency and NHTSA Standards to Reduce Greenhouse Gases and Improve Fuel Economy for Model Years 2017-2025 Cars and Light Trucks. EPA-420-F-12-051. August. https://nepis.epa.gov/Exe/ZyPDF.cgi/P100EZ7C.PDF?Dockey=P100EZ7C.PDF.

_____. 2022. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020. U.S. Environmental Protection Agency, EPA 430-R-22-003. https://www.epa.gov/system/files/documents/2022-04/us-ghg-inventory-2022-main-text.pdf.

_____. 2023. eGrid Power Profiler. Electricity emission factors data for 2021. https://www.epa.gov/egrid/power-profiler#/CAMX

USGS (United States Geological Survey). 2022. Mineral Industry Surveys. Cement in December 2021. https://www.usgs.gov/centers/national-minerals-information-center/cement-statistics-and-information.

Personal Communication

SCAQMD. 2015. Meeting between Port of Los Angeles staff and consultants and SCAQMD staff regarding the China Shipping supplemental EIR project. December 9, 2015

_____. 2016. Personal communication between L. Granovsky/iLanco Environmental and Mike Krause/SCAQMD regarding the SCAQMD GHG significance threshold for industrial projects. July 29, 2016.