Appendix A1
Air Quality Regulations/Methodology and Air Quality and GHG Emissions

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1.0 Introduction

This appendix describes, in detail, the regulatory background, methods and results of emissions inventory analysis that estimates the annual and peak period emissions of criteria pollutants and greenhouse gases from construction and operation of the Berths 121-131 Container Terminal.

2.0 Applicable Regulations

2.1 International Regulations

International Maritime Organization International Convention for the Prevention of Pollution from Ships Annex VI [1]International Maritime Organization International Convention for the Prevention of Pollution from Ships Annex VI

The International Maritime Organization (IMO) International Convention for the Prevention of Pollution from Ships (MARPOL) Annex VI, which came into force in May 2005, set new international nitrogen oxides (NOX) emission limits on marine engines over 130 kilowatts (kW) installed on new vessels retroactive to the year 2000. In October 2008, IMO adopted amendments to international requirements under MARPOL Annex VI, which introduced NOX emission standards for new engines and more stringent fuel quality requirements. In April 2014, amendments to MARPOL Annex VI were adopted regarding the effective date of NOx Tier III standards (DieselNet 2022a; IMO 2008). The Annex VI North American Emission Control Area (ECA) requirements applicable to the Proposed Project include:

- Limits on the sulfur content of fuel as a measure to control sulfur oxides (SOx) emissions and, indirectly, particulate (PM) emissions. For ECAs, the sulfur limits are capped at 0.1 percent effective in 2015. The Proposed Project assumes full compliance with MARPOL Annex VI SOx limits.
- Ships constructed on or after January 1, 2016 shall comply with the Tier III NOx emission limits when operating within the North American ECA (IMO 2010). Tier I and Tier II limits effective 2000 and 2011 are global limits, whereas Tier III limits, effective in 2016, apply only in NOx ECAs.

2.2 Federal Regulations

State Implementation Plan

In federal nonattainment areas, the Federal Clean Air Act (CAA) requires preparation of a SIP detailing how the state will attain the NAAQS within mandated timeframes. In response to this requirement, SCAQMD, in collaboration with other agencies, such as CARB and Southern California Association of Governments (SCAG), periodically prepares an Air Quality Management Plan (AQMP) designed to bring the SCAB into attainment with federal requirements and/or to incorporate the latest technical planning

information. The AQMP is then incorporated into the SIP, which is submitted by CARB to EPA for approval.

SCAQMD has prepared AQMPs in 1997, 2003, 2007, 2012, 2016, and most recently in 2022. Each iteration of the AQMP is an update of the previous AQMP. The focus of the 2007 AQMP (SCAQMD 2007) was to demonstrate compliance with the NAAQS for $PM_{2.5}$ and 8-hour ozone and other planning requirements, including compliance with the NAAQS for PM_{10}. The SCAQMD did not meet the standards by the original attainment year; therefore, subsequent AQMPs address new attainment deadlines.

The 2012 AQMP (SCAQMD 2013) focused on $PM_{2.5}$ control measures designed to attain the federal 24-hour $PM_{2.5}$ standard and contained proposed actions to reduce ozone. The 2016 AQMP (SCAQMD 2017) focused primarily on addressing the ozone and $PM_{2.5}$ standards. The 2022 AQMP, released in December 2022 (SCAQMD 2022), addresses requirements for meeting the 70ppb ozone standard and focuses on NO_x control measures for residential, commercial, and large industrial combustion sources. Many of the control measures rely on research and development, demonstration, and incentives to facilitate the widespread deployment of zero-emissions (ZE) and low NO_x technologies alongside funding programs to support research, development, demonstration of such advanced technologies.

USEPA Emissions Standards for Marine Diesel Compression Ignition Engines—Category 1 and 2 Engines

Category 1 and Category 2 (engine displacements per cylinder less than 30 liters) engines are often the iliary engines on large ocean-going vessels (OGVs) as well as auxiliary and propulsion engines on harbor craft. To reduce emissions from these marine diesel engines, USEPA established 1999 emission standards for newly built engines, referred to as *Tier 2 marine engine standards*. These standards were based on the land-based standard for non-road engines. The Tier 2 standards were phased in from 2004 to 2007 (year of manufacture), depending on the engine size (CARB, 2007).

In 2008, USEPA finalized a program to reduce emissions from marine diesel Category 1 and 2 engines (73 FR 88 25098-25352). The regulations introduced Tier 3 and Tier 4 standards, which apply to both new and remanufactured diesel engines. The phase-in of Tier 3 standards extended from 2009 to 2014 for new Category 1 engines and from 2013 to 2014 for new Category 2 engines. Tier 4 standards were phased in for new Category 1 and 2 engines above 600 kW from 2014 to 2017. For remanufactured engines, standards apply only to commercial marine diesel engines above 600 kW when the engines are re-manufactured and as soon as certified systems are available (EPA, 2008).

For the Proposed Project, this rule is assumed to affect harbor craft but not oceangoing vessel auxiliary engines because the latter would likely be manufactured overseas and, therefore, would not be subject to the rule.

USEPA Emission Standards for Large Marine Diesel Engines—Category 3 Engines

Category 3 engines (greater than 30 liters) represent the main propulsion engines on OGVs and are regulated by NO_x standards for Category 3 marine propulsion engines on U.S. flagged ocean-going vessels (40 CFR Part 9 and 94; 68 FR 9745-9789). The standards went into effect for new engines built in 2004 and later and cover Tier 1 through Tier 4 engines. In 2009, USEPA adopted Tier 2 and Tier 3 emissions standards for newly built Category 3 engines installed on U.S. flagged vessels, as well as marine

fuel sulfur limits. The Tier 2 and 3 engines standards and fuel limits are equivalent to the amendments to MARPOL Annex VI. Tier 2 NO_X standards for newly built engines applied beginning in 2011 and require the use of engine-based controls, such as engine timing, engine cooling, and advanced electronic controls. Tier 3 standards applied beginning in 2016 in ECAs and are met with the use of high efficiency emission control technology, such as selective catalytic reduction. The Tier 2 standards are anticipated to result in a 15 to 25 percent NO_X reduction below the Tier 1 levels; Tier 3 standards are expected to achieve NO_X reductions 80 percent below the Tier 1 levels (DieselNet 2022a). In addition to the Tier 2 and Tier 3 NO_X standards, the final regulation established standards for hydrocarbon (HC) and carbon monoxide (CO).

USEPA Emission Standards for Non-Road Diesel Engines

To reduce emissions from non-road diesel equipment, USEPA established a series of increasingly strict emission standards for new non-road diesel engines (DieselNet 2022b). Tier 1 standards were phased in on newly manufactured equipment from 1996 through 2000 (year of manufacture), depending on the engine horsepower category. Tier 2 standards were phased in on newly manufactured equipment from 2001 through 2006. Tier 3 standards were phased in on newly manufactured equipment from 2006 through 2008. Tier 4 standards, which require advanced emission control technology to attain them, were phased in between 2008 to 2015. These standards apply to construction off-road land-based equipment.

USEPA Emission Standards for Locomotives

EPA has established a series of increasingly strict emission standards for new or remanufactured locomotive engines (63 FR 18997-19084). In 2008, EPA strengthened the Tier 0 through 2 standards to apply to existing locomotives and introduced more stringent Tier 3 and 4 emission requirements (73 FR 88 25098-25352) (DieselNet 2022c).

USEPA Emission Standards for On-Road Trucks

Heavy-duty trucks are subdivided into three categories by the vehicle's GVWR: light heavy-duty engines (8,500 to 19,500 pounds), medium heavy-duty engines (19,500 to 33,000 pounds), and heavy heavy-duty engines (greater than 33,000 pounds).

To reduce emissions from on-road, heavy-duty diesel trucks, USEPA established a series of increasingly strict emission standards for new truck engines (DieselNet 2022d). The latest U.S. federal emission standards affecting criteria pollutants from heavy-duty engines were adopted by USEPA on December 20, 2022. These standards set new limits for NO_x, PM, volatile organic compounds (VOC), and CO for heavy-duty engines starting with model year 2027 and newer.

In 2011, USEPA and Department of Transportation's National Highway Traffic Safety Administration (NHTSA) finalized regulations to reduce greenhouse gas (GHG) emissions and improve fuel efficiency of medium- and heavy-duty vehicles (USEPA 2011), including large pickup trucks and vans, semi-trucks, and all types and sizes of work trucks and buses. The regulations incorporate all on-road vehicles rated at a gross vehicle weight at or above 8,500 pounds, and the engines that power them. Under the regulations, fuel economy will be improved and GHG emissions will be reduced in model years 2014 to 2018. In 2016, USEPA and NHTSA implemented Phase 2 of the Heavy-Duty National Program to cover model years 2018 to 2027 for certain trailers and model

years 2021 to 2027 for semi-trucks, large pickup trucks, vans, and all types and sizes of buses and work trucks.

USEPA Non-Road Diesel Fuel Rule

With this rule, USEPA set sulfur limitations for non-road diesel fuel, including locomotives and marine vessels (though not for the marine residual fuel used by large engines on oceangoing vessels). For the Proposed Project, this rule affects line-haul locomotives; the California Diesel Fuel Regulation (described below) (CARB 2005) generally pre-empts this rule for other sources such as yard locomotives, construction equipment, terminal equipment, and harbor craft. Under this rule, the diesel fuel used by line-haul locomotives was limited to 15 ppm sulfur content (ultra-low-sulfur diesel) starting January 1, 2010 for non-road fuel, and June 2012 for marine and locomotive fuels (EPA 2004).

USEPA and National Highway Traffic Safety Administration Medium- and Heavy-Duty Engines and Vehicles GHG Emission Standards and Fuel Economy Standards

In 2011, USEPA, in conjunction with the Department of Transportations' National Highway Traffic Safety administration (NHTSA), established GHG emission standards and fuel efficiency standards for medium- and heavy-duty engines and vehicles. Final GHG emissions and fuel consumption standards apply to 2017 and newer model year vehicles.

USEPA and National Highway Traffic Safety Administration Light-Duty Vehicle GHG Emission Standards and Corporate Average Fuel Economy Standards

In 2010, USEPA, in conjunction with the Department of Transportation's National Highway Traffic Safety Administration (NHTSA), finalized the Light-Duty Vehicle Rule that establishes a national program consisting of greenhouse gas (GHG) emissions standards and Corporate Average Fuel Economy standards for light-duty vehicles (EPA 2010). Light-Duty Vehicle Rule standards first apply to new cars and trucks starting with model year 2012. Although the rule is primarily designed to address GHG emissions, the fuel economy standards portion of the rule also serves to reduce criteria pollutant emissions. In 2012, USEPA and NHTSA extended the National Program of harmonized GHG and fuel economy standards to model year 2017 through 2025 passenger vehicles (EPA 2012). The rules affect passenger vehicles (i.e., terminal workers) and other light-duty vehicles traveling to the terminal.

2.3 State Regulations and Agreements

California Clean Air Act

The California Clean Air Act of 1988, as amended in 1992, outlines a program to attain the CAAQS by the earliest practical date. Because the CAAQS are more stringent than the NAAQS, attainment of the CAAQS requires more emissions reductions than what would be required to show attainment of the NAAQS. Consequently, the main focus of attainment planning in California has shifted from the federal to state requirements. Similar to the federal system, the state requirements and compliance dates are based upon the severity of the ambient air quality standard violation within a region.

SB-1

On April 28, 2017 Governor Brown signed into law Senate Bill 1 (SB-1). Among the changes to California state law was the addition of Health and Safety Code Section 43021. This section, in part, sets strict restrictions on the ability of the California Air Resources Board's (CARB) and other agencies to require the "…retirement, replacement, retrofitting, or repower" of commercial trucks as defined by Section 34601 of the California Vehicle Code "…until the later of the following":

(1) Thirteen years from the model year the engine and emissions control system are first certified for use in self-propelled commercial motor vehicles by the state board or other applicable state and federal agencies.

(2) When the vehicle reaches the earlier of either 800,000 vehicle miles travelled or 18 years from the model year the engine and emissions control system are first certified for use in self-propelled commercial motor vehicles by the state board or other applicable state and federal agencies.

Section 43021, by its terms, restricts the ability of CARB and other agencies to mandate the retirement, replacement, or retrofit of trucks from California's public highways and roads. The stated legislative intent of SB-1 "to provide owners of self-propelled commercial motor vehicles…certainty about the useful life of engines certified by the state board and other applicable agencies to meet required environmental standards…" Nevertheless, Section 43021, by its terms, applies only to laws or regulations adopted or amended after January 1, 2017, and "does not apply to voluntary incentive or grant programs, including but not limited to, those that give preferential access to a facility to a particular vehicle or class of vehicles."

AB 2650

Under AB 2650, shipping terminal operators are required to limit truck-waiting times to no more than 30 minutes at the Ports of Los Angeles, Long Beach, and Oakland, or face fines of $250 per violation. A companion piece of legislation (AB 1971) ensures that the intent of AB 2650 is not circumvented by moving trucks with appointments inside the terminal gates to wait.

CARB Heavy Duty Diesel Vehicle Idling Emission Reduction Regulation

This CARB rule has been in effect for heavy-duty diesel trucks in California since 2008. The rule requires that heavy-duty trucks be equipped with a non-programmable engine shutdown system that shuts down the engine after five minutes or optionally meet a stringent NO_x idling emission standard (CCR Title 13, Section 1956.8 and 2485). This regulation applies to trucks used during construction and operation.

CARB 1998 South Coast Locomotive Emissions Agreement

In 1998, CARB, Class I freight railroads operating in the SCAB (Burlington Northern and Santa Fe and Union Pacific Railroad), and EPA signed the 1998 Memorandum of Understanding (MOU) agreeing to a locomotive fleet average emissions program in the SCAQMD. The 1998 MOU requires that the Class I freight railroad fleet of locomotives in the SCAQMD, both line-haul (freight) and switch locomotives, achieve average emissions equivalent to the NO_x emission standard established by EPA for Tier 2 locomotives (5.5 g/bhp-hr). This emission level is equivalent, on a district-wide average,

to operating only federal Tier 2 NO_x-compliant locomotives in the SCAQMD (CARB 1998).

CARB 2005 Railroad Statewide Agreement

In 2005, CARB, Class I freight railroads operating in the SCAB, and EPA signed the 2005 MOU agreeing to programs intended to reduce the emission impacts of rail-yard operations on local communities. The 2005 MOU includes a locomotive idling-reduction program, early introduction of lower-sulfur diesel fuel in interstate locomotives, and a visible emission reduction and repair program (CARB 2005b).

CARB California Diesel Fuel Regulation

With this rule, CARB set sulfur limitations for diesel fuel sold in California for use in on-road and off-road motor vehicles (CCR Title 13, Sections 2281–2285; CCR Title 17, Section 93114). Harbor craft and intrastate locomotives were originally excluded from the rule, but were later included by a 2004 rule amendment (CARB 2005). Under this rule, diesel fuel used in motor vehicles, harbor craft, and intrastate locomotives has been limited to 15 ppm sulfur since 2007. A federal diesel rule similarly limited sulfur content in diesel fuel used in motor vehicles nationwide to 15 ppm by October 2006.

CARB General Requirements for In-Use Off-road Diesel-Fueled Fleets

In 2007, CARB adopted a rule that requires owners of off-road mobile equipment powered by diesel engines 25 hp or larger to meet or exceed the fleet average or best available control technology (BACT) requirements for NOX and PM emissions by January 1 of each year between 2014 and 2023 (CCR Title 13, Section 2449.1). The rule is structured by fleet size: large, medium, and small fleets. The regulation was adopted in April 2008 and subsequently amended to delay the turnover of Tier 1 equipment for meeting the NOX performance requirements of the regulation, and then to delay overall implementation of the equipment turnover compliance schedule in response to the economic downturn in 2008 and 2009.

In 2013, CARB received authorization from USEPA to enforce the In-Use Off-road Diesel Vehicle Regulation, including the regulation's performance requirements, such as turnover requirements and restrictions on adding older, dirtier Tier 0 and 1 vehicles. Enforcement of the restrictions on adding Tier 0 and 1 vehicles began January 1, 2014. Enforcement of the restrictions on adding Tier 2 vehicles began January 1, 2018, for large and medium fleets and began on January 1, 2023, for smaller fleets (CARB 2022). Enforcement of the first fleet average requirements for large fleets (greater than 5,000 total fleet horsepower) began on July 1, 2014.

CARB approved amendments to the regulation in November 2023, which will require once it comes into effect, the fleets to phase-out use of the oldest and highest polluting off-road diesel vehicles in California; prohibit the addition of high-emitting vehicles to a fleet; and require the use of R99 or R100 renewable diesel in off-road diesel vehicles.

CARB Measures to Reduce Emissions from Goods Movement Activities

In 2006, CARB approved the *Emission Reduction Plan for Ports and Goods Movement in California* (CARB 2006). The Goods Movement Plan proposes measures that would reduce emissions from the main sources associated with port cargo-handling activities, including ships, harbor craft, terminal equipment, trucks, and locomotives. This effort

was a step in implementing the *Goods Movement Action Plan (GMAP)* developed by the California Business, Transportation, and Housing Agency (BTH) and Cal/EPA. The final GMAP was released in January, 2007, and includes the following measures to address the various layers of the goods movement system throughout the state including freeways, rail, and ports.

CARB Airborne Toxic Control Measure for Diesel-Fueled Transport Refrigeration Units, Generator Sets, and Facilities Where Transport Refrigeration Units Operate

In 2011, CARB amended the 2004 rule designed to reduce the DPM emissions from in-use TRUs) and TRU generator set engines (CCR Title 13, Section 2477). Under the rule, TRU engines are required to meet in-use performance standards by installing the required level of verified diesel emission control strategy (VDECS) or using an alternative technology. Compliance may also be maintained by replacing the engine with a cleaner new or rebuilt engine. The in-use performance standards have two levels of stringency (Low Emission and Ultra Low Emission in-use performance standards) that are phased in per the compliance scheduled set forth in the rule.

CARB Regulations for Fuel Sulfur and Other Operational Requirements for OGVs within California Waters and 24 Nautical Miles of the California Baseline

In 2008, CARB approved the Regulation for Fuel Sulfur and Other Operational Requirements for Ocean-Going Vessels within California Waters and 24 Nautical Miles of the California Baseline (CCR Title 13, Section 2299.2). These regulations have required ship main engines, auxiliary engines, and auxiliary boilers operating in California waters since July 2009 to either use Marine Diesel Oil (MDO) with a maximum sulfur content of 0.5 percent or MGO with a maximum sulfur content of 1.5 percent. By August 1, 2012, these source activities were required to meet an MDO limit of 0.5 percent or MGO limit of 1.0 percent (CARB 2011a). Starting in 2009, this regulation has gradually reduced the permitted sulfur content of OGV fuels. Currently, ship main engines, auxiliary engines, and auxiliary boilers operating in California waters must use MDO or Marine Gas Oil (MGO) with a maximum sulfur content of 0.1 percent.

CARB Regulation to Reduce Emissions from Diesel Auxiliary Engines on OGVs While at Berth at a California Port (At-Berth Regulations)

In 2007, CARB adopted a regulation to reduce emissions from diesel auxiliary engines on OGVs while at berth for container, cruise, and refrigerated cargo vessels (CCR Title 17, Section 93118.3). The original regulation required container vessels, cruise ships, and refrigerated cargo vessels at the State's largest ports to meet emission or power reduction standards while at berth, increasing to 80-percent reduction requirement for 80-percent of vessel calls.

In 2020, CARB updated and expanded the regulation to cover tankers and roll-on/roll-off vessels (CCR Title 17, Sections 93130-93130.22 [At-Berth Regulations]). The updated At-Berth Regulations took effect in 2023, with implementation for the various vessel classes through 2027. Auto carriers (roll-on/roll-off vessels) and tanker ships are required to control hoteling emissions at-berth starting in 2025 for the Ports of Los Angeles and Long Beach (CARB 2020). The regulation requires 100-percent of container vessels to

control emissions (primarily via shore power), with limited exceptions (capped at 10-percent of vessel visits starting in 2025) for Vessel Incident Events (VIE) or Terminal Incident Events (TIE) that prevent the use of shore power or other emission reduction control technology. The At-Berth Regulations mandate that all AMP-capable vessels use shore power (CCR Title 17, Section 93130.7(a)). Vessels are required to use either shore power or a CARB-approved emission control strategy (CAECS) to reduce emissions, unless they have been granted a waiver by CARB under the Regulation's Innovative Concepts provision. The At-Berth Regulations include a research exception to allow for testing of CAECS; vessels participating in such testing may be exempt from the Regulations' requirements if they have a CARB-approved test plan. This process allows for the development and approval of new technologies to reduce at-berth emissions. A remediation fund is also available for shipping lines or terminal operators who are unable to use their primary compliance strategy to remain compliant for any given vessel visit (CCR Title 17, Sections 93130.8(d), (f)-(h), 93130.10(e)-(h)).

The At-Berth Regulations do not require the use of shore power due to "safety and emergency event[s]" (CCR Title 17, Sections 93130.8(a), 93130.10(a)). The At-Berth Regulations defined a "safety and emergency event" as "an event where a responsible official reasonably determines that compliance with this Control Measure would endanger the safety of the vessel, crew, cargo, passengers, terminal, or terminal staff because of severe weather conditions, a utility event, or other extraordinary reasons beyond the control of the terminal operator or vessel operator" (CCR Title 17, Section 93130.2(70)). The At-Berth Regulations do not require the use of shore power while hoteling when a vessel is "commissioning" (CCR Title 17, Sections 93130.8(c), 93130.10(c)). This process is "undertaken by the vessel operator and terminal operator to ensure that the shore power equipment on the vessel is compatible with the shore power equipment on the terminal and that there are no safety issues for both the equipment and the personnel handling the connection." (CCR Title 17, Section 93130.2(84).)

All parties necessary to achieving emission reductions from ocean-going vessels at berth have responsibilities and requirements under the At-Berth Regulations, including, but not limited to, vessel operators, terminal operators, and ports (CCR Title 17, Section 93130.1). The At-Berth Regulations require terminal and vessel operators to submit data to CARB to demonstrate compliance with its requirements (CCR Title 17, Section 93130.9(d)). All vessels are required to complete compliance checklists for each visit, and to submit detailed reports directly to CARB within 30 days of departure (CCR Title 17, Section 93130.7(e)). Terminal operators have similar requirements, ensuring that all AMP-capable vessels connect to shore power (CCR Title 17, Section 93130.9(a)). Terminal operators are also required to complete compliance checklists for each vessel visit and submit detailed reports directly to CARB within 30 days of a vessel's departure (CCR Title 17, Section 93130.9(d)).

CARB Regulation Related to Ocean Going Ship Onboard Incineration

CARB adopted this regulation in 2005 and amended it in 2006. The regulation prohibits all OGVs greater than 300 registered gross tons from conducting on-board incineration within 3 nautical miles of the California coast.

CARB Mobile Cargo-Handling Equipment at Ports and Intermodal Rail Yards

The Regulation for Mobile CHE at Ports and Intermodal Rail Yards (CCR Title 13, Section 2479) uses BACT to reduce diesel PM and NO_x emissions from mobile CHE at

ports and intermodal rail yards. Since 2007, the regulation has imposed emission performance standards on new and in-use terminal equipment that vary by equipment type. The regulation also includes recordkeeping and reporting requirements. The effects of this regulation are accounted for in CARB's CHE Inventory Model emission factors used in this study (CARB 2022c). In October 2012, the Office of Administrative Law approved amendments to the CARB regulation to provide additional flexibility for CHE owners/operators in an effort to reduce compliance costs while continuing to reduce emissions (CARB 2012).

CARB Emission Standards, Test Procedures, for Large Spark Ignition Engine Forklifts and Other Industrial Equipment

Since 2007, CARB has promulgated more stringent emissions standards for hydrocarbon and oxides of nitrogen combined (HC + NO_x) emissions and test procedures. The engine emission standards and test procedures were implemented in two phases. The first phase was implemented for engines built between January 2007 and December 2009. The second more stringent phase was implemented for engines built starting in January 2010. The regulation was amended in 2010 to establish fleet average emissions requirements for existing engines and in 2016 to extend and supplement existing record-keeping requirements.

CARB On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation—Truck and Bus Regulation

In December 2011, CARB amended the 2008 State-wide Truck and Bus Regulation to modernize in-use heavy-duty vehicles operating throughout the state. Under this regulation, existing heavy-duty trucks are required to be replaced with trucks meeting the latest NO_X and PM Best Available Control Technologies (BACT) or retrofitted to meet these levels.

Trucks with GVWR less than 26,000 (most construction trucks) were required to replace engines with 2010 or newer engines, or equivalent, by January 2023. Trucks with GVWR greater than 26,000 (most heavy-duty trucks) must meet PM BACT and upgrade to a 2010 or newer model year emissions equivalent engine pursuant to the compliance schedule set forth by the rule. By January 1, 2023, all model year 2007 Class 8 heavy-duty trucks were required to meet NO_X and PM BACT (i.e., USEPA 2010 and newer standards) (CARB 2022b).

For purposes of this analysis, this regulation affects the drayage truck fleet mix projections for the Proposed Project. The mix of model years in the truck fleet is used to determine composite truck emission factors.

CARB Heavy-Duty Trucks Inspection and Maintenance Program

Under the Clean Air Act, CARB has introduced the Clean Truck Check – Heavy-Duty Inspection and Maintenance (HD I/M) Program. The program aims to address air pollution from heavy-duty diesel vehicles over 14,000 pounds – a major source of NOx and PM2.5 emissions in the state. The program ensures vehicles are well-maintained and repaired promptly by implementing a comprehensive strategy: roadside emissions screening, improved onboard diagnostics testing, regular emissions reporting and compliance checks for related freight industries. When fully enacted by 2037, the program is expected to reduce NOx emissions by over 81 tons/day and PM by 0.7 tons/day.

CARB Regulation to Reduce Emissions from Diesel Engines on Commercial Harbor Craft

In 2007, CARB adopted a regulation to reduce diesel particulate matter (DPM) and NO_X emissions from new and in-use commercial harbor crafts (CHC). Under CARB's definition, commercial harbor crafts include tugboats, tow boats, ferries, excursion vessels, work boats, crew boats, and fishing vessels. The regulation implemented stringent emission limits on harbor craft auxiliary and propulsion engines. In 2010, CARB amended the regulation to add specific in-use requirements for barges, dredges, and crew/supply vessels.

The regulation requires that all in-use, newly purchased, or replacement engines meet USEPA's most stringent emission standards per a compliance schedule set forth by CARB. For harbor crafts with home ports in the SCAQMD, the compliance schedule is accelerated by two years, as compared to state-wide requirements. The compliance schedule as listed in the 2007 regulation ("2007 CHC ruling") for in-use engine replacement was supposed to begin in 2009, but was not enforced until August 2012, after USEPA approved CARB's regulation (CCR Title 13 Section 2299.5; CCR Title 17 Section 93118.5). The revised 2010 regulation required accelerated turnover to Tier 2 and 3 engines for select categories between 2009 and 2022. The CARB compliance schedule for harbor crafts is applied to determine the average model year of the tug assist fleet, ultimately shaping emission factors. In 2022, a new set of amendments were adopted to expand the applicability of the regulation to more vessel types and require cleaner upgrades and newer technology, including adoption of zero emission options where feasible and Tier 3 and Tier 4 engines with diesel particulate filters on all other harbor craft. These amendments also declared that effective January 2023, all CHC operating within regulated California Waters must comply with the renewable diesel fuel requirements as laid forth in Section 93118.5. Similarly, under the amendment, new and newly acquired engines are required to meet the most stringent marine standards (Tier 4 for most applications, and Tier 3 or cleaner for commercial fishing) based on the rule's implementation schedule that begins in 2024 (CARB 2023).

On January 6, 2025, CARB received partial authorization covering most elements of its revised 2022 Commercial Harbor Craft (CHC) Regulation amendments. However, for purposes of the current study, because emissions calculations were completed prior to USEPA's January 2025 granting of a partial waiver under the Clean Air Act, the analysis does not quantify potential reductions benefits of the 2022 CHC rule amendments.

CARB Statewide Portable Equipment Registration Program

The Portable Equipment Registration Program (PERP) establishes a uniform program to regulate portable engines and portable engine-driven equipment units (CARB, 2011c). Once registered in the PERP, engines and equipment units may operate throughout California without the need to obtain individual permits from local air districts. Equipment subject to the PERP must meet weighted fleet average PM emission requirements, per CARB's phased-in compliance schedule, based on engine size. The PERP generally would apply to construction-related dredging and barge equipment.

Other Pending CARB Rules

On January 13, 2025, CARB sent letters to the USEPA withdrawing CARB's requests for EPA's Clean Air Act (CAA) waivers allowing CARB to implement and enforce the following adopted state regulations:

- Advanced Clean Fleets – Complete Withdrawal
- In-Use Locomotive Standards - Complete Withdrawal
- Commercial Harbor Craft – Partial Withdrawal
- Transport Refrigeration Unit Engine Standards - Partial Withdrawal.

Below is key information on each of the regulations. Regulatory details and copies of the CARB EPA letters are available on CARB's website, https://www.epa.gov/state-and-local-transportation/vehicle-emissions-california-waivers-and-authorizations.

The Advanced Clean Fleets (ACF) regulation, adopted by CARB in April, 2023, contained requirements for drayage fleets, government fleets and high priority fleets. New drayage trucks registered in the State's drayage truck registry would have been required to be Zero Emissions (ZE) effective January 1, 2024. Combustion engine trucks registered in the State's drayage truck registry prior January 1, 2024 (legacy trucks) would have been gradually removed from the registry as they reached 13 years (if over 800,000 miles) or a maximum of up to 18 years (if under 800,000 miles). All drayage trucks would have been required to change over to ZE trucks by 2035. ACF also included requirements for all government fleets to purchase new ZE vehicles at a 50% rate starting in 2024 and 100% in 2027. However, in 2023 and 2024, CARB issued enforcement advisories advising it was exercising 'enforcement discretion" not to enforce certain ACF ZE sales requirements for MY 24, MY 25 and MY 26, due to lack of ZE heavy-duty truck commercial availability from engine manufacturers. California withdrew its waiver request, instead urging voluntary emissions reduction efforts by the trucking industry. Without a USEPA waiver, emissions reduction credit for on-road ZE trucks to Port terminals could not be included in the Draft RSEIR analysis.

The In-Use Locomotive regulation, approved by CARB in April, 2023, contained requirements for any locomotive operator within California. Only locomotives less than 23 years old would have been acceptable for use in California, unless operated in a ZE configuration. Switch locomotives with an original engine build date of 2030 and beyond would have been required to operate in a ZE configuration for use in California. Freight line-haul locomotives with an original engine build date of 2035 and beyond would have been required to operate in a ZE configuration for use in California. Without a USEPA waiver, emissions reduction credit for in-use locomotives with ZE configuration could not be included in the Draft RSEIR analysis.

The Commercial Harbor Craft (CHC) regulation, adopted in 2008 and amended in 2022, regulates transitioning to cleaner engines for tugboats, as well as various other vessel types not relevant to the Proposed Project. The partial waiver withdrawal for CHC pertains to ZE and advanced technologies standards for emissions "standards for in-use engines and vessels (excluding commercial fishing vessels) that would apply after the expiration of the feasibility extensions." The CHC regulation still requires turnover of engines to Tier 3 or Tier 4 (with diesel particulate filters). Facility/fleet reporting and associated fees will still be required. Without a USEPA waiver, however, emissions reduction credit for CHC transitioning to higher tier levels could not be included in the Draft RSEIR analysis.

The Transport Refrigeration Unit (TRU) regulation was adopted in 2004 and has been amended several times, most recently in 2022. The partial waiver withdrawal removes "requirements for the turnover of at least 15 percent of [the] diesel-fueled truck TRU fleet to ZE TRU by December 31, 2023, and each year thereafter" within the 2022 TRU Amendments. TRU fleets will still need to comply with CARB's lower global warming

emissions requirements but will not need to be phased to ZE. Port tenants will still need to report on TRU activities at their facilities. Without a USEPA waiver, emissions reduction credit for TRU fleet turnover to ZE could not be included in the Draft RSEIR analysis.

2.4 Local Rules and Regulations

SCAQMD develops Rules and Regulations to regulate sources of air pollution in the SCAB. SCAQMD's regulatory authority applies primarily to stationary sources. The emission sources associated with the Proposed Project are mobile sources and as such are, for the most part, not subject to the SCAQMD rules that apply to stationary sources, such as Regulation XIII (New Source Review), Rule 1401 (New Source Review of Toxic Air Contaminants), or Rule 431.2 (Sulfur Content of Liquid Fuels). However, SCAQMD's Rule 402 would apply to the Proposed Project as discussed below.

SCAQMD Rule 402—Nuisance

This rule prohibits discharge of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or that endanger the comfort, repose, health, or safety of any such persons or the public; or that cause, or have a natural tendency to cause, injury or damage to business or property.

LAHD Emission Reduction Programs

LAHD has developed several programs designed to reduce pollution from mobile sources associated with Port operations. The following programs are pertinent to the Proposed Project.

San Pedro Bay Ports Clean Air Action Plan

The Ports of Los Angeles and Long Beach, with the participation and cooperation of EPA, CARB, and SCAQMD staff, developed the San Pedro Bay Ports CAAP, a planning and policy document that guides the development and implementation of air emissions and health risk reduction activities associated with port operations while allowing port development to continue. The CAAP was updated in 2010 and 2017 to revise and strengthen the control measures established in the 2006 CAAP.

The 2006 CAAP (SPBP 2006) sought the reduction of criteria pollutant emissions to the levels that ensure port-related sources decrease their "fair share" of regional emissions to enable the SCAB to attain state and federal ambient air quality standards. The CAAP focuses primarily on reducing DPM, as well as NO_x and SO_x, through emission control measures expressed as Source-Specific Performance Standards, which may be implemented through the environmental review process, or could be included in new leases or port-wide tariffs, MOUs, voluntary action, grants, or incentive programs.

The 2010 CAAP Update identified updated and new emission control measures as proposed strategies that support the goals expressed as the Source-Specific Performance Standards and the Project-Specific Standards; the San Pedro Bay Standards, which establish emission and health risk reduction goals to significantly reduce the effects of cumulative port-related operations; and CAAP tracking progress (SPBP 2010).

The San Pedro Bay Standards set forth a Bay-wide health risk reduction standard and a Bay-wide mass emission reduction standard, which consist of the following reductions as compared to 2005 emissions levels:

- Health Risk Reduction Standard: 85% reduction in DPM by 2020
- Emission Reduction Standards:
  - By 2014, reduce emissions by 72% for DPM, 22% for NO_x, and 93% for SO_x
  - By 2023, reduce emissions by 77% for DPM, 59% for NO_x, and 92% for SO_x

The Project-Specific Standard remains as adopted in the original CAAP in 2006, requiring that new projects fall below the 10 in 1,000,000 excess residential cancer risk threshold, as determined by health risk assessments conducted subject to CEQA statutes, regulations, and guidelines, and implemented through required CEQA mitigations and/or lease negotiations. Although each port has adopted the Project-Specific Standard as a policy, the LAHD Board of Harbor Commissioners retains the discretion to consider and approve projects that exceed this threshold if the Board deems it necessary by adoption of a statement of overriding considerations at the time of project approval.

The latest CAAP Update, adopted in November 2017 (SPBP 2017), re-affirms the Ports' commitment to the goals and standards of previous CAAP versions, but also introduces new goals, standards, and programs. The 2017 CAAP Update incorporates two new emission reduction targets:

- Reduce greenhouse gases (GHG) from port-related sources to 40% below 1990 levels by 2030.
- Reduce GHGs from port-related sources to 80% below 1990 levels by 2050.

The 2017 update retains the reduction targets for emissions of diesel particulates, nitrogen oxides, and sulfur oxides set in the 2010 update. It also retains the health risk reduction goals set by the 2010 update, re-affirms the Ports' commitment to those goals, and further commits the Ports to working with regulators and stakeholders toward further reductions in emissions and health risks.

In addition, the 2017 CAAP Update incorporates commitments by the mayors of Los Angeles and Long Beach to move towards zero emissions at the Ports, including setting goals of zero-emissions cargo-handling equipment by 2030 and zero-emissions drayage trucks by 3035. Accordingly, the updated CAAP includes provisions for new investments in clean technology, expanded use of at-berth emission reduction technologies, and a zero-emissions drayage truck pilot program. The updated CAAP also includes a CAAP Implementation Stakeholder Advisory Group to advise the Ports on details of CAAP implementation and ongoing operational efficiency and energy conservation programs; a commitment to the nationwide Green Ports Collaborative; and a commitment to a joint effort to secure funding for necessary equipment purchases and infrastructure development.

The goals set forth as the Source-Specific Performance Standards of the CAAP address a variety of port-related emission sources—ships, trucks, trains, CHE, and harbor craft—and outline specific strategies to reduce emissions from each source category. The Source-Specific Performance Standards have been updated as detailed in Section 2 of the CAAP Update, and the applicable emission control measures (as detailed in Section 4 of the CAAP Update) for the Proposed Project are discussed below.

Although LAHD has adopted a general policy that its leases will be compliant with the CAAP, the Board of Harbor Commissioners has discretion regarding the form of all lease provisions and CAAP measures at the time of lease approval. In addition, tenants must comply with all applicable federal, state, and local air quality regulations.

As the CAAP is a planning document that sets goals and implementation strategies to guide future actions, it does not constrain the discretion of the Board of Harbor Commissioners as to any specific future action. Each individual CAAP measure is a proposed strategy for achieving necessary emission reductions. The Board of Harbor Commissioners uses its discretion in its approvals of projects, leases, tariffs, contracts, or other implementing activities in order to appropriately apply the CAAP to the particular situation, and may make adjustments if any proposed measure proves infeasible or if better alternatives for a measure emerge.

The key CAAP measures relevant to the Proposed Project are summarized below.

CAAP Measure—SPBP-OGV1, Vessel Speed Reduction Program

Under this voluntary program, which started in 2001, LAHD has requested that ships coming into the Port reduce their speed to 12 knots or less within 20 nm of the Point Fermin Lighthouse. This reduction of up to 10 knots (depending on the ship's normal cruising speed) can substantially reduce emissions from the main propulsion engines of the ships. The CAAP adopted the VSRP as control measure OGV1 and expanded the program out to 40 nm from the Point Fermin Lighthouse in 2008 (LAHD, 2020b).

CAAP Measure—SPBP-OGV2, Reduction of At-Berth OGV Emissions

This measure requires the use of shore power to reduce hoteling emissions at all container and cruise terminals. The measure also requires demonstration and application of alternative emissions reduction technologies for ships that are not viable candidates for shore power, to be facilitated through the Technology Advancement Program (TAP).

CAAP Measures — SPBP-OGV3 and 4, OGV Low Sulfur Fuel for Auxiliary Engines, Auxiliary Boilers, and Main Engines

This measure originally required the use of 0.2 percent or lower sulfur distillate fuels in the auxiliary engines, auxiliary boilers, and main engines of OGVs within 40 nm of Point Fermin and while at-berth. As of January 1, 2014, CARB's regulation surpasses these CAAP measures by requiring the use of MGO and MDO with a sulfur fuel content of 0.1 percent within 24 nm of the California coastline. The analysis assumes compliance with CARB's regulation.

CAAP Measure—SPBP-OGV5 and 6, Cleaner OGV Engines and OGV Engine Emissions Reduction Technology Improvements and Environmental Ship Index Program

Measure OGV5 seeks to maximize the early introduction and preferential deployment of vessels to the San Pedro Bay Ports with cleaner/newer engines meeting the new IMO NO_x standard for ECAs. Measure OGV6 focuses on reducing DPM and NO_x from the legacy fleet through identification and deployment of effective emission reduction technologies.

In order to advance the goals of OGV5 and 6, LAHD adopted the voluntary Environmental Ship Index (ESI) Program in May 2012. The ESI Program is an

international clean ship indexing program developed through the International Association of Ports and Harbors' World Ports Climate Initiative. Operators registered under this program earn an ESI score for their vessels by using cleaner technology and practices that reduce emissions beyond the regulatory requirements set by IMO. The ESI Program rewards vessel operators for reducing NO_x, SO_x, and GHG emissions in advance of regulatory requirements. The ESI Program also rewards vessel operators for bringing their newest and cleanest vessels to the Port and demonstrating technologies on board their vessels.

CAAP Measure—SPBP-HC1, Performance Standards for Harbor Craft

This measure calls for repowering all harbor craft home-based in the San Pedro Bay to Tier 3 within five years after Tier 3 engines become available. The measure also requires the use of shore power. In addition, LAHD plans to accelerate harbor craft emission reductions through emerging technologies, such as hybrid tugs, more efficient engine configurations, and alternative fuels, through incentives or voluntary measures.

CAAP Measure—SPBP-CHE1, Performance Standards for CHE

This measure calls for phased-in CHE emission reductions beyond CARB's CHE regulation, at the time of terminal lease renewal. Since 2014, all CHE with engines greater than 750 hp are required to meet, at a minimum, the EPA Tier 4 off-road engine standards or, until equipment is replaced with Tier 4, to be equipped with the cleanest CARB VDEC.

CAAP Measure—SPBP-RL1, Pacific Harbor Line Rail Switch Engine Modernization

This measure implements the switch locomotive engine modernization and emission reduction requirements included in the operating agreements between the ports and the Pacific Harbor Line (PHL). By the end of 2011, PHL had upgraded all of its Tier 2 switcher locomotives to meet Tier 3-plus standards.

CAAP Measure—SPBP-RL2, Class 1 Line-Haul and Switcher Fleet Modernization

This measure is designed to identify emission reductions associated with the CARB Class 1 railroads MOU and the 2008 EPA locomotive engine standards. The goal of this measure is for all Class 1 locomotives entering the ports to meet emissions equivalent to Tier 3 locomotive standards by 2023.

CAAP Measure—SPBP-HDV1, Performance Standards for On-Road Heavy-Duty Vehicles; Clean Trucks Program

The Port Clean Trucks Program (CTP) is a central element of the CAAP. The CTP established a progressive ban on polluting trucks. As of January 1, 2012, all trucks that did not meet the 2007 Federal Clean Truck Emissions Standards were banned from the Port. Following full implementation in 2014, Port truck emissions were reduced by more than 90 percent for DPM, PM and SO_X, and by 71 percent for NO_X (LAHD 2014). The analysis in this Draft RSEIR assumes full compliance with the CTP.

LAHD Sustainable Construction Guidelines

As part of LAHD's overall environmental goals and CAAP strategies, any construction at the Port must follow the 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 include ships and barges used to deliver construction related materials, harbor craft, dredging equipment, haul and delivery trucks, and off-road construction equipment. In addition, the LAHD Construction Guidelines include Best Management Practices (BMP)s based on CARB-verified BACT, designed to reduce air emissions from construction sources.

3.0 Emissions Analysis Introduction

The Draft EIR/EIS air quality analysis studies emissions from terminal operations in 2019 baseline and seven future years: 2026, 2027, 2028, 2036, 2050, 2055, and 2062. The analysis also estimated emissions from construction activities for the Proposed Project and Alternatives, including the demolition, dredging and reconstruction of the wharf at Berths 121-131 and improvements to the intermodal rail yard in years 2026 and 2027. During these two construction years the terminal would operate at reduced capacity and operational emissions from these two years were estimated similarly to other future years. The methodology for calculating emissions for the various construction and operational sources at Berths 121-131 terminal is discussed below. The scenarios are as follows:

1) Proposed Project – this scenario includes emissions associated with construction of the wharf at Berths 126-129 and the WBICTF rail yard improvements, as well as operational emissions with projected changes in activity. Future regulations that affect various emission sources are taken into account.
2) Mitigated Proposed Project – this scenario describes emissions for the Proposed Project after application of mitigation measures proposed in the current EIR/EIS. Future regulations that affect various emission sources and additional proposed mitigations are taken into account.
3) Alternative 1 No Project - this scenario includes emissions associated with operation at projected activity levels in the future, assuming that there are no changes to any berths or railyard at the Berths 121-131 terminal. Future regulations that affect various emission sources are taken into account.
4) Alternative 2 No Federal Action - this scenario includes emissions associated with construction of the WBICTF rail yard improvements and terminal operations with projected changes in activity. Future regulations that affect various emission sources are taken into account.
5) Mitigated Alternative 2 No Federal Action - this scenario describes emissions for Alternative 2 after application of proposed mitigation measures. Future regulations that affect various emission sources and additional proposed mitigations are taken into account.

4.0 Methodology for Determining Construction Emissions

Construction was assumed for the purposes of this analysis to be 2026 and 2027 in four scenarios (the Proposed Project, Proposed Project with Mitigation, No Federal Action and No Federal Action with Mitigation), which was reasonable at the time analysis commenced; this assumption is conservative because if construction were to occur later, emissions would be less because of the likely phase-in of cleaner equipment. . The construction for the Proposed Project scenario includes 5 main phases. Each main phase consists of several sub phases (also referred to as "construction activities"). The No Federal Action (Alternative 2) includes only the construction activities related to backlands/railyard reconstruction. This fifth phase, which occurs in both the No Federal Action and Proposed Project scenarios, is the reconstruction of a portion of the backlands to accommodate rail mounted gantry crane (RMG) operations in the WBICTF railyard, i.e. the railyard expansion. The No Federal Action does not include any construction work over water or near water such as demolition of the existing wharf at berths 121-131, dredging, construction of a new wharf and new wharf crane installation that would require a federal permit. Mitigations are applied to the construction emissions to both the Proposed Project and No Federal Action scenarios. The construction activities would result in emissions from the following areas:

- Engine exhaust emissions from off-road construction equipment
- Engine exhaust and road dust emissions from construction trucks for hauling materials
- Engine exhaust and road dust emissions from work vehicles visiting the site during construction
- Engine exhaust emissions from harbor craft used for delivering or hauling materials or machinery
- Engine exhaust emissions from ocean-going vessels used for delivering or hauling materials or machinery

Table A1-1 summarizes the regulations assumed in the future construction emissions calculations for all scenarios. Current in-place regulations are treated as default project elements because they represent enforceable rules, as opposed to Project specific mitigation measures.

Table A1-1. Regulations and Agreements Assumed as Part of the Construction Emissions Analysis

Off-road Construction Equipment	On-Road Trucks	Tugboats/Harbor Craft
EPA Emission Standards for Non-road Diesel Engines: Tier 1, 2, 3, and 4 standards gradually phased in over all years due to normal construction equipment fleet turnover. **CARB In-Use Off-road Diesel Vehicle Regulation:** Off-road mobile equipment powered by diesel engines 25 hp or larger are required to meet the fleet average or BACT requirements for NO_X and PM emissions. **California Diesel Fuel Regulation**: 15-ppm sulfur. \ **CARB Portable Diesel-Fueled Engines Air Toxic Control Measure (ATCM)**: Portable engines having a maximum rated horsepower of 50 bhp and greater and fueled with diesel must meet weighted fleet average PM emission standards. **LAHD Sustainable Construction Guidelines**: Idling restricted to maximum 5 minutes when not in use. All off-road diesel-powered construction equipment greater than 50hp, must meet Tier-4 off-road. emission standards at a minimum.	**EPA Emission Standards for On-road Trucks:** Tiered standards gradually phased in over all years due to normal truck fleet turnover. **California Diesel Fuel Regulation:** 15-ppm sulfur. **Heavy Duty Diesel Vehicle Idling Emission Reduction Regulation:** Idling limits for on-terminal trucks. **CARB On-Road Heavy Duty Diesel Vehicle In-Use Regulation:** Existing heavy-duty trucks are required to be replaced with trucks meeting the latest NOX and PM Best Available Control Technologies (BACT) or retrofitted to meet these levels. **CAAP Clean Truck Program:** In January 2012, banned all trucks that did not meet 2007+ EPA standards for heavy duty trucks. **CARB Statewide Truck and Bus Regulation:** Trucks less than 26,000 GVWR are required to replace engines with 2010+ engines by January 2023. Trucks with GVWR greater than 26,000 must meet PM BACT and upgrade to a 2010+ model year emissions equivalent engine pursuant to the rule compliance schedule.	**EPA Engine Standards for Marine Diesel Engines:** NO_X, HC, and CO engine emission standards for new engines. **CARB Regulation to Reduce Emissions from Diesel Engines on Commercial Harbor Craft:** Harbor craft are subject to engine replacement/retrofit schedule set forth by CARB. **California Diesel Fuel Regulation:** 15 ppm sulfur.
Note: This table is not a comprehensive list of all applicable regulations; rather, the table lists key regulations and agreements that substantially affect the emission calculations for the Proposed Project and Alternatives. For other applicable regulations see Section 2.0 of Appendix A1.		

In addition to applicable regulations, the construction emissions under a mitigated scenario (e.g. Proposed Project with Mitigation, and Alternative 2 with Mitigation) were

adjusted to reflect the following proposed mitigation measures (see Section 3.2 for details of these mitigation measures)

MM AQ-1: Harbor Craft Used During Construction.

MM AQ-2: On-road Trucks Used During Construction.

MM AQ-3: Non-Road Construction Equipment.

MM AQ-4: Cargo Ships Used During Construction.

MM AQ-5: Dredging Non-Road Equipment.

MM AQ-6: General Construction Mitigation Measure.

MM AQ-7: **Renewable Diesel Fuel**

Note that MM AQ-6, although expected to reduce construction emissions, is not quantified in this analysis.

Construction activity would tentatively start in 2026, and is expected to finish by the end of 2027. For each phase in the schedule the list of equipment used was partially provided by the Port and partially derived from similar Port construction project EIR documents. These EIRs include similar construction tasks and activities (LAHD 2007; 2014b). Parameters needed to calculate emissions for each equipment type are explained in this appendix under Section 4.0.

Peak day emissions were selected based on the construction day with the highest on-site daily activity and emissions. Peak 8-hr and peak 1-hr emissions were selected based on the peak working hours of each piece of equipment during the selected peak day.

4.1 Ocean Going Vessels

Ocean going vessels would be used to deliver wharf cranes during the construction of the wharf at Berths 126-129. The type of vessels was determined to be general cargo ships by comparing similar EIRs (LAHD 2007; LAHD 2014b) for Port construction projects. It was assumed that the three separate vessels would deliver the wharf cranes one after another over three consecutive 24 hour periods with overlap between consecutive vessels occurring only during transit in the zone between 20nm and 40nm from the port. Each vessel is assumed to hotel at Berths 126-129 for 17 hours before departing. Furthermore, it is assumed that AMP is not used during the hoteling period and that the main engines on the vessels are Tier 1, non-MAN engines. Tier 1 is assumed because that is the most common type of main engine for general cargo vessels that visited the Port according to the 2019 POLA emission inventory (LAHD, 2020). Engine loads for different zones and modes of operation are also taken from cargo vessel data in the 2019 POLA emission inventory. OGV transit speeds were set to 12 nm based on MM AQ-4.

4.2 Tug Boats (Harbor Craft)

Tugboats would be used during construction to assist in pile driving and construction of structures in or near the water. Tugboat emission factors were derived based on the CARB's Commercial Harbor Craft Model (CARB, 2021a). The applicable engine Tiers were determined based on type and average age of tugboats operating at the Port, as well as the CARB harbor craft compliance schedule (CARB 2009). For the Mitigated scenarios, emission factors were adjusted to reflect Tier 3 emission standards per MM AQ-1. Because of the information available on average model year of the fleet for 2019

baseline, and the projected turnover due to age and CARB compliance schedule, no further reductions were estimated for mitigated case.

The required fuel sulfur content for Port tug boats has been 15 ppm since September 1, 2006. Fuel sulfur content limits for California harbor craft are required in accordance with the California Diesel Fuel Regulation (CARB 2005).

4.3 Construction Trucks

Construction trucks are used for hauling and delivering materials and equipment to/from the construction site. Exhaust and idling emissions from on-road, heavy-duty diesel trucks during construction were calculated using emission factors generated by the EMFAC2021 on-road mobile source emission factor model for "T7 Tractor Class 8" single unit heavy duty diesel trucks representative of the SCAB fleet (CARB 2021b). The EMFAC2021 model output shows that, on a per-mile basis, emission factors will steadily decline in future years as older trucks are replaced with newer, cleaner trucks that meet the required state and federal on-road engine emission standards. Other assumptions regarding on-road trucks during construction include:

- The average off-site one-way trip travel distances for construction trucks were assumed to be 10 miles or 32.5 miles, depending on the construction phase/task. The average on-site one-way trip mileage was assumed 0.5 mile (LAHD 2014).
- Prior to mitigation, onsite truck idling times were assumed to be 10 minutes per one-way trip. After mitigation, onsite truck idling times were reduced to 5 minutes per round-trip.
- For the Proposed Project without Mitigation and the No Federal Action Alternative 2 without mitigation, aggregated model year emission factors were generated from EMFAC2021 using the model's default SCAB fleet age mix for T7 tractor class 8 trucks. For Proposed Project with Mitigation scenario and No Federal Action with Mitigation, only emission factors with model year 2012 or newer were generated, consistent with MM AQ-2. The by-model-year emission factors were weighted based on population data to get final truck emission factors that were used in the emission calculations. According to CARB, renewable diesel does not have a statistically significant impact on emissions for selective catalytic reduction (SCR)-equipped trucks. While renewable fuel content can have a greater impact on pre-SCR engines, the Truck and Bus Regulation has significantly reduced the number of pre-SCR trucks currently operating on the road (CARB, 2025a). Consequently, this analysis did not account for additional emission reductions as per MM AQ-7.
- Emission factors from EMFAC2021 for future years were adjusted using off-model adjustment factors as directed by CARB (CARB 2024). These adjustments account for the emission benefits of California's Heavy-Duty Vehicle Inspection and Maintenance Program, now renamed to Clean Truck Check, as well as EPA's Clean Trucks Plan.
- PM_{10} and $PM_{2.5}$ emissions from paved road dust were calculated and combined with the EMFAC2021 exhaust emissions. Road dust emission factors for on-terminal driving, off-terminal local streets, and freeways followed CARB's methodology to estimate entrained road dust emission factors; this involves using the equations in EPA's Compilation of Air Pollutant Emission Factors AP-42 (USEPA 2011b) and CARB silt loading values for California roadways in its 2021

guidance document for estimating entrained road dust emissions from paved roads (CARB 2021d).

4.4 Worker Vehicles

Worker vehicle emissions consist of light duty on-road vehicles used for construction workers commuting to and from the Berths 121-131 terminal. Activities tracked consist of off-site and on-site driving to employee parking lot. On-site idling from worker vehicles was assumed to be negligible.

- Emission factors from EMFAC2021 for gasoline light duty trucks (EMFAC category LDT1) were used to represent construction worker vehicle emissions, such as pick-up trucks. The South Coast default light duty truck fleet mix was used for the emission factor derivation.
- The average off-site round-trip travel distances for worker vehicles were assumed to be 12.7 miles. The average onsite round-trip distance was assumed to be 1 mile.
- PM_{10} and $PM_{2.5}$ emissions from paved road dust were calculated and combined with the EMFAC2021 exhaust emissions. Road dust emission factors for on-terminal driving, off-terminal local streets, and freeways followed CARB's methodology to estimate entrained road dust emission factors; this involves using the equations in EPA's Compilation of Air Pollutant Emission Factors AP-42 (EPA 2011b) and CARB silt loading values for California roadways in its 2021 guidance document for estimating entrained road dust emissions from paved roads (CARB 2021d).

4.5 Off-road Equipment

Off-road equipment used during construction includes diesel-fueled cranes, forklifts, generators, pavers, and excavators, among other construction engines. All off-road equipment was assumed to be diesel-fueled.

Emissions of VOC, NO_X, PM_{10}, $PM_{2.5}$,, SOx, and CO_2 were calculated using emission factors from the OFFROAD2021 Emissions Inventory Tool for equipment representative of the SCAB average fleet (CARB 2021f). Emission factors were calculated for each type of equipment based on the horsepower rating of the equipment and corresponding equipment operating hours. Emission factors and energy usage estimated as hp-hrs per equipment type were used to calculate emissions.

For scenarios with Mitigation, emissions related to the dredge piece used in dredging activity were assumed to be zero due to the electrification of the equipment per MM AQ-5. Other construction equipment was assumed to meet the EPA Tier-4 Off-road Emission Standards at a minimum per MM AQ-3. Additionally, as recommended by CARB, emission reductions from renewable diesel are applicable to engines that range from tier 0 to interim tier 4. Tier 4 final engines use the same emission factors for both diesel types, thus no additional reductions are applied for Tier 4 final engines per MM AQ-7. For engines that do not qualify under MM AQ-3 and are not Tier 4 final engines, emission reduction factors from renewable diesel, as provided by CARB (CARB 2025b), were applied per MM AQ-7. Activity parameters such as horsepower and load factors were also obtained from equivalent equipment from the aforementioned EIR documents (LAHD 2007, LAHD 2014) and CARB emissions inventory guidance (CARB, 2010).

5.0 Methodology for Determining Operational Emissions

Operational emissions consist of five major sources: (1) container ships (referred to as Ocean Going Vessels, or OGVs); (2) assist tugboats (also referred to as harbor craft); (3) drayage trucks; (4) line-haul and switcher locomotives; and (5) cargo handling equipment (CHE) working or servicing the Berths 121-131 terminal. These sources generate emissions in the form of CO, VOC, NO_X, SOx, PM10, PM2.5, and diesel PM (DPM); the latter is produced by diesel-fuelled sources. In addition, minor sources such as worker commute vehicles, are included. Finally, on-road sources like trucks and commuter vehicles contribute to estimated paved road dust PM10 and PM2.5 emissions.

Electricity consumption emissions are evaluated for greenhouse gases only. When ships are using shore power or AMP, indirect criteria pollutant and greenhouse gas emissions would be created by regional power plants burning fossil fuels to generate the electricity consumed by the hoteling ships; for purposes of CEQA analysis, off-site combustion AMP-related greenhouse gas emissions are estimated. Similarly, electricity consumption greenhouse gas emissions are also estimated for on-site power demand such as lighting, wharf crane operations, and buildings.

Information regarding the activity and characteristics of Proposed Project and Alternatives operational emission sources was obtained primarily from POLA staff, WBCT staff, BERTHA model (AECOM 2016), a traffic study conducted as part of this EIS/EIR, and the annually published Port of Los Angeles Emissions Inventories (LAHD, 2014-2023). Activity and utilization assumptions used to estimate peak daily operational emissions for comparison to SCAQMD emission thresholds represent upper-bound estimates of activity levels at the terminal; these levels would occur infrequently, and, therefore, represent a conservative set of assumptions.

Table A1-2 summarizes the regulations assumed in the future operational emissions calculations for all scenarios. Current in-place regulations are treated as default project elements rather than mitigation because they represent enforceable rules, with or without proposed project approval. Measures developed as part of the EIS/EIR analysis and planned for future implementation at the Project level were treated as mitigation.

Table A1-2. Regulations and Agreements Assumed as Part of the Unmitigated Operational Emissions

Container Ships	Tugboats	Terminal Equipment	Trucks	Trains
MARPOL Annex VI: 0.1% sulfur limit for fuels, beginning in 2015 (200 nm of CA coast). NO_X engine emission limits for new engines.[a] **EPA Engine Standards for Marine Diesel Engines:** NO_X, HC, and CO engine	**EPA Engine Standards for Marine Diesel Engines:** NO_X, HC, and CO engine emission standards for new engines. **CARB Regulation to Reduce Emissions from Diesel Engines on Commercial Harbor Craft:** Requires that	**EPA Emission Standards for Non-road Diesel Engines:** Engine standards for newly built engines. **CARB Mobile CHE at Ports and Intermodal Rail Yards:** Emission performance standards on new	**EPA Emission Standards for On-road Trucks:** Tiered standards gradually phased in over all years due to normal truck fleet turnover. **California Diesel Fuel Regulation:** 15-ppm sulfur. **Heavy Duty Diesel Vehicle Idling Emission**	**EPA Emission Standards for Locomotives:** Tier 0 through Tier 4 standards gradually phased in over all years due to normal locomotive fleet turnover. **CARB 1998 South Coast Locomotive Emissions Agreement:** Cleaner

Container Ships	Tugboats	Terminal Equipment	Trucks	Trains
emission standards for new engines.[b] **CARB Airborne Toxic Control Measure for Fuel Sulfur and Other Operational Requirements for Ocean-Going Vessels Within California Waters and 24 Nautical Miles of the California Coast:** Limits sulfur content for marine gas oil or marine diesel oil to 0.1% sulfur by January 2014. **CARB Regulation to Reduce Emissions from OGV Auxiliary Engines at Berth:** Operational limits for OGV auxiliary engines while at hoteling at berth: 50% in 2014, 70% in 2017, 80% in 2020, 95% in 2023 for container, reefer, and cruise vessels, 95% in 2025 for Ro-ro vessels and tankers for POLA/POLB, and 95% in 2027 for tankers in all other areas of Northern California.	harbor craft engines meet EPA's most stringent emission standards per an accelerated, rule-specified compliance schedule. **California Diesel Fuel Regulation:** 15 ppm sulfur.	and in-use terminal equipment**.** **California Diesel Fuel Regulation:** 15-ppm sulfur.	**Reduction Regulation:** Idling limits for on-terminal trucks. **CARB On-Road Heavy Duty Diesel Vehicle In-Use Regulation:** Existing heavy-duty trucks are required to be replaced with trucks meeting the latest NOX and PM Best Available Control Technologies (BACT) or retrofitted to meet these levels**.** **CAAP Clean Truck Program:** In January 2012, banned all trucks that did not meet 2007+ EPA standards for heavy duty trucks. **CARB Statewide Truck and Bus Regulation:** Trucks less than 26,000 GVWR are required to replace engines with 2010+ engines by January 2023. Trucks with GVWR greater than 26,000 must meet PM BACT and upgrade to a 2010+ model year emissions equivalent engine pursuant to the rule compliance schedule.	NO_X Class I locomotives. **CAAP PHL Rail Switch Engine Modernization:** All PHL locomotives meet Tier 3 or 4 standards. **CARB Non-road Diesel Fuel Rule:** 15-ppm sulfur starting January 1, 2012. Applies to all line-haul locomotives. **California Diesel Fuel Regulation:** 15-ppm sulfur. Applies to all switch locomotives. **CARB Measures to Reduce Emissions from Goods Movement Activities:** Applies reduce emissions from the main sources associated with the movement of goods through the port.

Note:
This table is not a comprehensive list of all applicable regulations; rather, the table lists key regulations and agreements that substantially affect the emission calculations for the years analyzed. A description of each regulation or agreement is provided in Section 2.0 of this appendix.
[a]100% compliance with IMO Annex VI sulfur limits in SO_X Emission Control Areas is assumed and analyzed.
[b] Compliance with EPA engine standards is assumed but not analyzed for every pollutant other than NOx. This is because emissions factors for marine vessels currently available in the literature only provide quantifiable effects of engine Tier levels for NOx emissions.

In addition to applicable regulations, the operational emissions under a mitigated scenario (e.g. Proposed Project with Mitigation, and Alternative 2 with Mitigation) were adjusted to reflect proposed mitigation measures.

MM AQ-8: Vessel Speed Reduction Program (VSRP).

MM AQ-9: Yard Tractor Emissions Standards.

MM AQ-10: Cargo-Handling Equipment Emissions Standards.

Quantifiable effects of mitigation measures on operational emissions are analysed for OGVs (transit) and CHE. For the emissions analysis, under mitigated scenarios other operational sources such as rail, worker vehicles, tugs and drayage trucks would remain equivalent to their unmitigated counterpart. For example, rail emissions in the mitigated Proposed Project and Proposed Project without mitigation would be the same.

For the calendar years 2055 and 2062, emissions for the Proposed Project, with and without mitigation, are assumed to be the same as those in 2050. Throughput and activity levels from 2050 to 2055 are expected to remain constant, as the terminal will reach capacity in 2050 under the Project. Under the No Project and No Federal Action Alternative, the terminal is projected to operate at maximum capacity in 2062. Since there are no emission factors for sources beyond 2050, it is assumed that changes in activity will exclusively influence emissions post-2050. Consequently, emissions calculations for 2055 and 2062 were conducted using a scaling approach, presuming that such activity changes would be directly proportional to variations in TEU numbers. For each source category—ocean-going vessels, harbor craft, heavy-duty trucks, worker vehicles, and cargo handling equipment—the ratio of 2062 TEUs to 2050 TEUs was applied to the emissions from 2050 to estimate emissions for 2055 and 2062.

Emissions for every pollutant by source category, by analysis year, by averaging period (annual, 24hr, 1hr, 8hr) and for every scenario analyzed are summarized in Appendix A1. Methodologies for estimating operational emissions for operational sources at Berths 121-131 terminal are discussed below.

5.1 Container Ships

Emissions of ocean-going vessels were calculated for each engine type (boiler, main propulsion engine, and auxiliary engine), activity and location. The types of activity include transit, hoteling at berth, and anchorage. Activity assumptions for the baseline were based on actual vessel call records for vessels visiting the Berths 121-131 terminal in 2019. Records provide vessel characteristics, including the TEU category of vessels, main engine horsepower, engine tier levels, etc. For future years, for the Proposed Project and alternatives, vessel call activity was forecasted using the BERTHA model (AECOM 2016) based on the Port's throughput forecast for the Berths 121-131 terminal and LAHD staff. This model simulated the annual number of calls at Berths 121-131 and the characteristics of each call such as TEU category, hoteling duration, transit speeds by zone, anchorage events, AMP usage, etc. BERTHA also models a hypothetical day with highest vessel activity (peak day). BERTHA model provides distinct vessel activity for these scenarios:

- 2026-2027 OGV operations during construction of Proposed Project (wharf reconstruction and railyard expansion)

- 2026-2027 OGV operations without wharf at Berth 126 reconstruction – applies to Alternatives 1 and 2
- 2028-2050 OGV operations under completed Proposed Project
- 2028-2050 OGV operations without wharf at Berth 126 reconstruction – applies to Alternatives 1 and 2

The assumptions below were applied to estimate OGV emissions.

5.1.1 Emission Factor Assumptions:

- Emission factors for propulsion engines, auxiliary engines, and auxiliary boilers were obtained from the 2022 Port Emission Inventory (LAHD, 2022).
- Based on the POLA inventory (LAHD, 2020), it was assumed that diesel propulsion engines were low-speed and auxiliary engines were medium-speed.
- Emission factors for propulsion and auxiliary engines are dependent upon engine tier, which in turn is dependent upon engine age. For the 2019 calculations, the distribution of vessels by age, i.e. vessel fleet mix, for each TEU category was determined from keel dates in actual vessel call records. For each TEU category, emission factors by tier were combined into fleet-wide averages based on the call frequency for specific TEU categories and tiers.
- The mix of older and newer ships visiting B121-131 in future years was predicted using POLA CEQA Terminal Level Container Ship Forecast for Tier 3 Engines (POLA 2015). A fleet mix baseline was established for OGVs calling in the future:
    - Vessels of size bins calling in the future which also appeared in 2019 (e.g. 2000 TEU, 4000 TEU and RoRo) were assumed to remain unchanged in terms of engine type or model year. Therefore, the age of vessels in these categories in future years was predicted by the POLA forecasting method. RoRo operations at this terminal have been historically rate and were not assumed in the future years.
    - Vessels size bins not present in 2019 but occurring in the future vessel modeled activity (5,000 TEU, 12,000 TEU and 14,000 TEU) were assumed to be the same fleet as equivalent-size-vessels visiting the Berths 121-131 or the Port in 2019. Therefore, for the purposes of forecasting the tier level composition of the fleet in the future, the tier levels of these vessel categories were used as a baseline.
- In 2019 baseline and future year calculations, 0.1% fuel sulfur content was assumed for peak day and annual ship calls per CARB's ATCM for Fuel Sulfur and Other Operational Requirements for Ocean-Going Vessels within California Waters and 24 Nautical Miles of the California Baseline and MARPOL Annex VI (CARB 2011a).
- Adjustment factors by percent load relative to the maximum rated propulsion load were applied to the Main Engine emission factors to account for engine loads and different engine manufacturing brands, i.e., MAN B&W versus Non-MAN B&W engines (see table A1-3). In addition, the effects of slide valves on emissions were also considered and adjustment factors were applied accordingly.

These adjustment factors were obtained from the POLA 2022 Emissions Inventory (LAHD 2022).

Table A1-3. Assumptions about Slide Valves and MAN/Non-MAN engines based on ship TEU category

TEU Category	Main Engine Type	Assumption
RoRo	MAN	Based on IHS Ship registry data of ships acquired by Berths 121-131.
2,000-3,000	MAN	Based on IHS Ship registry data of ships acquired by Berths 121-131.
3,000-4,000	MAN	Based on IHS Ship registry data of ships acquired by Berths 121-131.
5,000-6,000	MAN	Based on IHS Ship registry data of ships with most conservative assumption.
12,000-13,000	MAN	Based on IHS Ship registry data of ships with most conservative assumption.
14,0000-15,000	MAN	Based on IHS Ship registry data of ships with most conservative assumption.
TEU Category	**Has slide valve?**	**Assumption**
RoRo	Yes	Based on IHS Ship registry data of ships acquired by Berths 121-131.
2,000-3,000	No	Based on IHS Ship registry data of ships acquired by Berths 121-131.
3,000-4,000	Yes	Based on IHS Ship registry data of ships acquired by Berths 121-131.
5,000-6,000	Yes	Based on IHS Ship registry data of ships with most conservative assumption.
12,000-13,000	Yes	Based on IHS Ship registry data of ships with most conservative assumption.
14,0000-15,000	Yes	Based on IHS Ship registry data of ships with most conservative assumption.

5.1.2 Engine and Boiler Load Assumptions:

- Baseline 2019 and future years auxiliary engine and boiler loads by TEU ship category were obtained from the 2019 Port Emissions Inventory (LAHD 2020) .
- During transit, main engine loads were determined using the propeller law, which states that the engine load factor is proportional to the speed of the ship over maximum rated speed cubed, as shown in Equation 1. For the 2019 calculations, speeds by transit zone were obtained from 2019 vessel call records. For future years, the BERTHA model provided estimated transit speeds for the two zones from the South Coast Air Quality Management District (SCAQMD) overwater boundary to the outer edge of the precautionary area. For maneuvering and the

precautionary area average speeds from the 2019 Port Inventory were used (LAHD 2020).

$$Load\ [kw] = \left(\frac{Vessel\ speed\ in\ zone}{Max\ Rated\ Speed}\right)^3 x\ Max.Power\ Rating\ [k \quad \text{(eq. 1)}$$

- For vessel sizes that did not call during 2019, but were projected to call in the future, loads were assumed as follows:
    - Main Engines: The maximum rated power and speed for vessels taken from the 2019 POLA Inventory (LAHD 2020).
    - Auxiliary and Boiler: auxiliary engine and boiler loads for different zones were taken from the 2019 POLA inventory (LAHD 2020).

5.1.3 VSRP Assumptions:

- Vessel speed reduction program (VSRP) compliance in the baseline was determined from 2019 vessel call records of the terminal.
- Annual VSRP compliance was provided by the BERTHA model and is 95% between the precautionary zone and 20 nm (zone 4) and 82% between 20 nm and 40 nm (zone 5). This assumption applies to the unmitigated scenarios for all alternatives in any future year. Under the mitigated scenarios, in accordance with MM AQ-8, VSRP compliance for all future years is assumed to be 98.36% in zone 4 and 98.41% in zone 5. These future compliance rates were calculated as the average of B121-131 VSRP compliance from 2021 through 2023.
- Per BERTHA model, during future year peak days under any scenario, all vessels are traveling through the fairway under VSRP compliant speed, so no additional credit is taken from MM AQ-8 under the peak day period, only for annual emissions.

5.1.4 Hoteling Assumptions:

- During hoteling without AMP, ships were assumed to turn off main engines but leave the auxiliary engines and boilers running. During hoteling with AMP the auxiliary engines are also turned off for most of the hoteling duration except for a brief period immediately after the vessel arrives at berth and prior to leaving. These periods of auxiliary engine operation correspond to the time required to connect and disconnect the vessel from the AMP system.
- Hoteling duration used in annual calculations during 2019 were based on the actual 2019 call records for the Berths 121-131 terminal.
- The average hoteling duration per call for future analysis years was determined by expected future year call data and hoteling times. Auxiliary engines attached to AMP are expected to hotel for three (3) hours during connect and disconnect periods. Boiler engines and auxiliary engines not connected to AMP are expected to hoteling during the entire duration in the data call log.

- Peak-day hoteling durations were determined by BERTHA model for each analysis year and ship category, and were based on anticipated shipping schedules, future projected lifts per call, ship work rates, and crane productivity.

5.1.5 AMP Assumptions:

- With AMP, the auxiliary engines would be turned off during hoteling, but boilers would continue to operate. However, it is assumed that vessels connecting to AMP would require time with auxiliary engines running to engage and disengage from AMP (CARB 2021g). Connection time for AMP plug-in is assumed three hours per CARB's At-Berth regulation.
- In future analysis years, for all scenarios, an AMP compliance rate of 95% for annual calls was assumed for analysis years 2026-2050 based on CARB's At-Berth Rule requirements.
- For the peak day under the unmitigated scenario of the Proposed Project and Alternative 2, it was assumed that shore power was used for most of the calls. For the mitigated scenarios peak days, no additional AMP is quantified, so hotelling emissions are equivalent to unmitigated case.

5.1.6 Additional Assumptions:

- Ship transit emissions were calculated from berth to the edge of the SCAB over-water boundary (roughly a 50-mile one-way trip) for all criteria pollutants. For greenhouse gas emissions CEQA impact determination, annual transit emissions were calculated as far as the State Overwater Boundary, 170 nm outside of Angel's gate.
- 2019 peak day emissions are derived from analysing periods with the highest 24hr consecutive activity within the harbor based on actual vessel call records, and selecting the 24hr period with highest in-harbor emissions (inside of Angel's gate perimeter). In-harbor activity consists of hoteling at berth, maneuvering within harbor, and anchorage. These emissions were used for the health risk assessment because the receptors are located on land and the highest exposure would most likely occur in cases where the port activity close to land is highest.
- Once the peak day is selected the 8-hr period within the peak day with the highest NOx and PM emissions is selected as the peak 8-hr period. Similarly, the highest 1hr of NOx and PM emissions is selected as the 1-hr peak period.
- Future year peak day emission profiles are from the BERTHA model for each scenario. The peak day typically includes two or three vessels, two at berth or two at berth and one anchoring. These assumptions change depending on the year and scenario. The process for selecting the peak day, 8-hr and 1-hr emissions for the future years is identical with the baseline.
- Some arriving container ships are unable to proceed directly to the berth, but instead must wait at a designated anchorage point inside the breakwater until given clearance to proceed to the berth. Anchorage frequency and duration in the baseline was determined based on the actual call data for the Berths 121-131 terminal. Similar to hoteling, the main engine is assumed to be turned off during anchorage, while the auxiliary engines and boilers are assumed to remain running.

For future years, annual anchorage frequency and duration was provided by the BERTHA model.

- For future year peak days, one instance of anchorage and one of transit to or from anchorage (aka "shift") were added in the peak day scenario. Historical averages of anchorage duration were assumed for peak day event.

5.2 Tugboats (Harbor Craft)

During operations, tugboats are used to assist container ships while maneuvering and docking inside the Port breakwater. The assumptions below were applied to estimate peak day and annual emissions.

- Two tugboats were assumed for each arrival/departure assist of a container ship.
- Tugboat transit time was assumed to equal the average of container ship transit times in the harbor, multiplied by 1.3 to account for tug movement to and from base (LAHD 2014). Peak activity for daily, hourly, and 8-hr periods are based on vessel maneuvering transit durations for peak periods.
- Tugboat main and auxiliary engine sizes and load factors were obtained from the 2019 Port Emissions Inventory (LAHD 2020).
- Tugboat emission factors were derived from the CARB Commercial Harbor Craft Model (CARB 2021a). The applicable engine Tiers were determined based on EPA requirements for new engines, average age, and size of tugboats operating in the Port, as well as the CARB harbor craft compliance schedule (CARB 2009).
- For the baseline, average engine model year of harbor craft fleet was obtained from the 2019 Port Inventory (LAHD 2020). The fuel sulfur content was assumed to be 15 ppm for all analysis years, in accordance with California Diesel Fuel Regulation (CARB 2005).
- The turnover rate of the average engine was determined according to the CARB harbor craft compliance schedule and consequently was applied to zero-hour emission factors by model year and deterioration rates from CARB Harbor Craft Database to obtain composite emission rates for every future year analyzed.

5.3 Drayage Trucks

The assumptions below were applied to estimate peak day and annual emissions for drayage trucks handling cargo for the Berths 121-131 terminal for all years and scenarios. Drayage trucks are heavy duty diesel-fueled trucks, although a small percentage of the fleet servicing POLA terminals are LNG-fueled. Emissions produced by drayage trucks are derived from their activity while driving inside the terminal (on-site), while short-term idling at gate and inside the terminal, and while driving off-site to carry cargo to off-site railyards or other destinations.

- Emissions from on-road, heavy-duty diesel and LNG trucks were calculated using emission factors generated by the EMFAC2021v1.0.2 on-road mobile source emission factor model (CARB 2021b). The vehicle type used was the T7 POLA Class 8 category. Emission factors by model year were aggregated into composite fleet-wide emission factors using the Port drayage truck fleet mix for the baseline

from EMFAC2021. The EMFAC2021 default T7 POLA Class 8 future mix was assumed for the future years (CARB 2021b).

- Emission factors from EMFAC2021 for future years were adjusted using off-model adjustment factors as directed by CARB (CARB 2024). These adjustments account for the emission benefits of California's Heavy-Duty Vehicle Inspection and Maintenance Program, now renamed to Clean Truck Check, as well as EPA's Clean Trucks Plan.
- Trucks fueled with liquefied natural gas (LNG) comprised 4.4% of the POLA truck calls in the 2019 baseline year (LAHD 2020). Although the percentage of alternative-fueled drayage trucks is likely to increase in future years, the fleet was conservatively assumed to remain 4.4% LNG trucks for the Proposed Project scenario and alternatives, similar to 2019 baseline levels.
- PM_{10} and $PM_{2.5}$ emissions from paved road dust were calculated separately and added to the EMFAC2021 emissions from truck exhaust, tire wear, and brake wear. Road dust emission factors for on-terminal driving, off-terminal local streets, and freeways followed CARB's methodology to estimate entrained road dust emission factors, using the equations in EPA's Compilation of Air Pollutant Emission Factors AP-42 (EPA 2011b) and CARB silt loading values for California roadways in its 2021 guidance document for estimating entrained road dust emissions from paved roads (CARB 2021d).
- On-site activity including idling times and on-site driving distance was obtained from the 2019 Port Inventory (LAHD 2020).
- Off-site driving activity in the form of traffic flows and miles traveled by roadway segment ("link") for Berths 121-131 drayage trucks were obtained through traffic modeling as part of the transportation modeling study and from the LAHD staff. Daily and annual truck flows in every link were derived from transportation modeling, and emissions were estimated by-link for dispersion and health risk modeling. Sum of vehicle miles traveled (VMT) from all links composing the off-site traffic network are summarized as "off-site truck" emissions in Appendix A1.
- Peaking factor from transportation modeling analysis of drayage trucks and gate movements determined the peak daily period for drayage trucks. A 24-hr profile of activity derived from transportation modeling for drayage trucks was also used to determine 8-hr and 1-hr peaks by selecting the consecutive 8-hr and 1-hr periods with highest truck trips at the terminal.

5.4 Cargo Handling Equipment (CHE)

CHE includes yard tractors, RTG cranes, top handlers (i.e. top-picks), forklifts, off-road fuelling trucks and other miscellaneous equipment. The marine terminal wharf cranes used to lift containers on and off container ships are electric and, therefore, would have no direct criteria pollutant or TACs emissions (although their electricity consumption is included in electricity generation estimate for GHG emissions). The CHE equipment listed corresponds to the entire CHE fleet at WBCT since the CHE equipment at WBCT is shared between Berths 121-131 and China Shipping terminals. Therefore, for purposes of the analysis the hours of usage of each equipment unit are partitioned based on terminal throughput. The following assumptions were applied to estimate peak day and annual emissions:

5.4.1 Equipment and Activity Assumptions:

- 2019 baseline activity consisting of equipment inventory, specifications and annual hours of operation by piece for entire WBCT were obtained from the 2019 Port Inventory (LAHD 2020).
- Future year equipment list is based on a 2022 cargo handling equipment inventory provided by WBCT. This is to account for pieces scrapped and replaced between the baseline and the time this study was prepared.
- Hours of operation in future analysis years were scaled using projected terminal throughput in every future year and the baseline.
- Model year and load factors for the baseline were obtained from the Port 2019 Inventory (LADH 2020). Baseline load factors were assumed constant in the future years analyzed.
- Emission controls in baseline equipment were obtained from the Port 2019 Inventory (LADH 2020)
- Peaking factor from traffic modeling analysis of trucks and gate movements was used to derive peak daily activity for CHE under the assumption that both CHE and drayage trucks peak activity periods are concurrent. The 24hr profiles of activity for drayage trucks was also used to determine 8hr and 1hr peaks the same way it was done for drayage trucks by selecting highest consecutive peak periods of 8hr and maximum 1hr peak.

5.4.2 Emission Factors Assumptions:

- Emission factors used to estimate emissions for CHE equipment are selected based on the equipment description, fuel type, horsepower range, model year and age of equipment at analyzed year. CHE is grouped in these characteristics or bins, and thus emission rates are found for each bin combination. Emission factors for the baseline are found in Appendix A1and similar tables throughout CHE section for every year/scenario combination.
- Emission factors were calculated for every analysis year and scenario conditions for the CHE fleet characteristics in terms of model years (MY) and fuel type/technology. Every equipment piece that is subject to CARB's CHE Regulations is turned over based on ARB compliance schedule requirements for CHE (CARB, 2012). Any further mitigation is applied on top of or replacing CHE rule requirements when more stringent.
- Emission factors were derived from CARB's OFFROAD2021 inventory model, (CARB, 2021d) for diesel equipment. Because CHE model only provides rates for VOC, CO, NOx, PM10, and PM25; emission factors for N2O and CH4 are based off the ratio of gram per gallon emission factors to the CO2 gram per gallon emission factor from the inventory of U.S. Greenhouse Gas Emissions and Sinks (EPA, 2024).
- For liquefied petroleum gas (LPG)-fueled equipment, zero hour and deterioration rate emission factors were obtained from CARB.

- For electric CHE equipment, on-site exhaust emissions were assumed zero for all pollutants. Diesel-hybrid equipment was assumed to use same emission factors as diesel equipment, but engine horsepower was typically much smaller, thus producing lower emissions than a comparable diesel unit.
- For CNG yard tractors meeting the ultra-low NOx standard of 0.02 g/bhp-hr, deteriorated emission rates from FTP-test CARB certification data was obtained from manufacturers. The rates for NOx and other criteria pollutant, and GHGs from this certification data was used to represent yard tractors mitigated under the Proposed Project and No Federal Action Alternative.
- As per CARB, emission reductions from renewable diesel are applicable to engines that range from tier 0 to interim tier 4. Tier 4 final engines use the same emission factors for both diesel types, thus no additional reductions are applied for Tier 4 final engines per MM AQ-9 and MM AQ-10.

For the mitigated Proposed Project and mitigated No Federal Action scenarios a specific replacement schedule provided by POLA was implemented based on MM AQ-9 and MM AQ-10, as summarized in Table A1-4 below. The scenarios without mitigation do not use this replacement schedule, instead, equipment turnover is based on existing regulations and the CARB's mean useful life expectancy of the equipment (CARB 2011b). In some years, emissions of the unmitigated scenario may be higher than reported due to the use of CARB's default useful life assumptions for CHE equipment, which are based on average equipment useful life. Actual average equipment useful life will vary, terminal by terminal. For every equipment category, excluding trucks, those pieces whose age that will be below their useful life during the lease year of the project (2028), are assumed to eventually be replaced with pieces meeting the requirements of the mitigations MM AQ-9 and MM AQ-10, or a cleaner alternative available at the time, per LM AQ-1, once their useful life is completed.

Under the Proposed Project No Federal Action mitigated scenarios, several types of diesel and LPG-powered cargo handling equipment are expected to be replaced with zero-emissions (assumed to be electric-powered) cargo handling equipment starting in 2036. To support this transition, construction will be required to install electrical charging infrastructure. Equipment activity and fleet data were obtained from Scenario 6 of the Sacramento AQMD study (SCAQMD, 2021). Construction emissions related to the installation of electrical charging infrastructure at the B 121-131 Terminal were estimated using CalEEMod Version 2022 1.1.29 (SCAQMD, 2022) for the construction year 2035, accommodating the 41 chargers assumed to be required to meet the electrical charging needs.

Table A1-4: Proposed Project Mitigation and No Federal Action Mitigation Replacement Schedule for CHE

Equipment Category in 2022	HP	Fuel Type	Model Year	Quantity (WBCT)	Proposed Mitigation Replacement	Replacement Scheduled for
18-ton Forklifts	137	Diesel	2007	2	Tier 4 and renewable diesel per MMAQ-10 by 2028	2023
					Upgrade to zero-emission units per MMAQ-10 from 2035	Electric
	152	Diesel	2004	1	Tier 4 and renewable diesel per MMAQ-10 by 2028	2020
					Upgrade to zero-emission units per MMAQ-10 from 2035	Electric
	152	Diesel	2005	2	Tier 4 and renewable diesel per MMAQ-10 by 2028	2021
					Upgrade to zero-emission units per MMAQ-10 from 2035	Electric
	160	Diesel	2009	1	Tier 4 and renewable diesel per MMAQ-10 by 2028	2025
					Upgrade to zero-emission units per MMAQ-10 from 2035	Electric
	165	Diesel	2014	1	Tier 4 and renewable diesel per MMAQ-10 by 2028	2014
					Upgrade to zero-emission units per MMAQ-10 from 2035	Electric
	190	Diesel	2004	1	Tier 4 diesel per MMAQ-10 by 2028	2020
					Upgrade to zero-emission units per MMAQ-10 from 2035	Electric
5-ton Forklifts	59	LPG	2014	1	Zero emissions unit per MMAQ-10 from 2028	Electric
	59	LPG	2015	1	Zero emissions unit per MMAQ-10 from 2028	Electric
	160	LPG	2005	3	Zero emissions unit per MMAQ-10 from 2028	Electric
					Zero emissions unit per MMAQ-10 from 2028	Electric
	160	LPG	2008	2	Zero emissions unit per MMAQ-10 from 2028	Electric
					Zero emissions unit per MMAQ-10 from 2028	Electric
	165	LPG	1995	1	Retired	na
	165	LPG	2002	1	Retired	na
	165	LPG	2011	1	Zero emissions unit per MMAQ-10 from 2028	Electric
Rub-tired Gantry Cranes	197	Diesel	2011	1	no additional mitigation required, assumed to turn over by end of life	2035
	302	Diesel	2015	5	no additional mitigation required, assumed to turn over by end of life	2039
	454	Diesel	2004	2	Upgrade to diesel electric hybrid option meeting Tier 4 standards per MMAQ-10	2028
	612	Diesel	2003	8	Upgrade to diesel electric hybrid option meeting Tier 4 standards per MMAQ-10	2028
	685	Diesel	2005	5	Diesel electric hybrid option meeting Tier 4 standards per MMAQ-10	2028

Equipment Category in 2022	HP	Fuel Type	Model Year	Quantity (WBCT)	Proposed Mitigation Replacement	Replacement Scheduled for
Top handlers (top-picks)	250	Diesel	2002	1	Tier 4 and renewable diesel per MMAQ-10 by 2028	2018
					Upgrade to zero-emission units per MMAQ-10 from 2035	Electric
	260	Diesel	2006	5	Tier 4 and renewable diesel per MMAQ-10 by 2028	2022
					Upgrade to zero-emission units per MMAQ-10 from 2035	Electric
	260	Diesel	2007	6	Tier 4 and renewable diesel per MMAQ-10 by 2028	2023
					Upgrade to zero-emission units per MMAQ-10 from 2035	Electric
	260	Diesel	2008	15	Tier 4 and renewable diesel per MMAQ-10 by 2028	2024
					Upgrade to zero-emission units per MMAQ-10 from 2035	Electric
	335	Diesel	2011	3	Tier 4 and renewable diesel per MMAQ-10 by 2028	2027
					Upgrade to zero-emission units per MMAQ-10 from 2035	Electric
	363	Diesel	2017	6	Tier 4 and renewable diesel per MMAQ-10 by 2028	2017
					Upgrade to zero-emission units per MMAQ-10 from 2035	Electric
	370	Diesel	2014	1	Tier 4 and renewable diesel per MMAQ-10 by 2028	2014
					Upgrade to zero-emission units per MMAQ-10 from 2035	Electric
	388	Diesel	2017	2	Tier 4 and renewable diesel per MMAQ-10 by 2028	2017
					Upgrade to zero-emission units per MMAQ-10 from 2035	Electric
	388	Diesel	2021	1	Tier 4 and renewable diesel per MMAQ-10 by 2028	2021
					Upgrade to zero-emission units per MMAQ-10 from 2035	Electric
Off-highway Trucks (contracted service trucks)	250	Diesel	2005	2	Does not require additional mitigation, assumed to turn over by end of life	2017
	250	Diesel	2008	2	Does not require additional mitigation, assumed to turn over by end of life	2020
	330	Diesel	2008	1	Does not require additional mitigation, assumed to turn over by end of life	2020
	350	Diesel	2014	1	Does not require additional mitigation, assumed to turn over by end of life	2026
	280	LPG	1975	1	Retired	na
Yard tractors	158	Diesel	2019	30	Upgrade to Alternative-fuel units that meet or are lower than a NOx emission rate of 0.02 g/bhp-hr and Tier 4 final off-road emission rates for other criteria pollutants per MMAQ-9 from 2028	2028
					Upgrade to zero-emission units per MMAQ-9 from 2035	Electric

Equipment Category in 2022	HP	Fuel Type	Model Year	Quantity (WBCT)	Proposed Mitigation Replacement	Replacement Scheduled for
	174	LPG	2000	1	Upgrade to Alternative-fuel units that meet or are lower than a NOx emission rate of 0.02 g/bhp-hr and Tier 4 final off-road emission rates for other criteria pollutants per MMAQ-9 from 2028	2028
					Upgrade to zero-emission units per MMAQ-10 from 2035	Electric
	195	LPG	2004	35	Upgrade to Alternative-fuel units that meet or are lower than a NOx emission rate of 0.02 g/bhp-hr and Tier 4 final off-road emission rates for other criteria pollutants per MMAQ-9 from 2028	2028
					Upgrade to zero-emission units per MMAQ-10 from 2035	Electric
	195	LPG	2007	59	Upgrade to Alternative-fuel units that meet or are lower than a NOx emission rate of 0.02 g/bhp-hr and Tier 4 final off-road emission rates for other criteria pollutants per MMAQ-9 from 2028	2028
					Upgrade to zero-emission units per MMAQ-10 from 2035	Electric
	195	LPG	2008	40	Upgrade to Alternative-fuel units that meet or are lower than a NOx emission rate of 0.02 g/bhp-hr and Tier 4 final off-road emission rates for other criteria pollutants per MMAQ-9 from 2028	2028
					Upgrade to zero-emission units per MMAQ-10 from 2035	Electric
	231	LPG	2011	23	Upgrade to Alternative-fuel units that meet or are lower than a NOx emission rate of 0.02 g/bhp-hr and Tier 4 final off-road emission rates for other criteria pollutants per MMAQ-9 from 2028	2028
					Upgrade to zero-emission units per MMAQ-10 from 2035	Electric

5.5 Rail – Switchers and Linehaul Locomotives

Berths 121-131 terminal generates train trips to and from the on-dock rail yard at WBCT intermodal railyard, as well as in near- and off-dock rail yards. Containers arriving and departing via a near- or off-dock rail yard are transported between the terminal and these off-terminal rail yards by drayage trucks. Emissions associated with hauling containers by rail include diesel exhaust from Pacific Harbor Line (PHL) locomotives performing switching activities at the WBCT on-dock rail yard, switcher locomotives performing switching activities at the near- and off-dock rail yards, and line-haul locomotive transport within the South Coast Air Basin (SCAB) and idling at the rail yards. CHE activity related to movement of B121 -131 cargo within the near-dock or off-dock railyards were not included in the emission analysis as there was no detailed information

available for off-dock railyard operations. Rail emissions are estimated for baseline (year 2019), and all future year alternatives (year 2026, 2027, 2028, 2036, and 2050).

The assumptions below were applied to estimate peak day and annual emissions.

- Switcher emissions and line haul locomotive were calculated with emissions factors by engine Tier level sourced from the 2023 POLA Emission Inventory (LAHD 2024) and EPA Technical Highlights Emission Factors for Locomotives (EPA 2009).
- Emission factors by Tier were combined into composite fleetwide average using the fleet mix percentages forecasts by year obtained through CARB Locomotive Inventory (CARB, 2021e). The baseline fleet mix for PHL switchers was obtained from the 2019 Port Inventory (LAHD 2020) and it was conservatively assumed to remain constant through 2050 since the baseline fleet mix indicated the engines were composed of Tier 3 and Genset switcher engines; it is likely these would not be replaced by 2050 based on the equipment longevity, unless required.
- The fuel sulfur content was assumed to be 15 ppm for all analysis years, in accordance with California Diesel Fuel Regulation (CARB 2005).
- The transportation study for this DEIR provides the train and locomotive activity data used in the emission calculations based on annual throughput and mode splits for the Berths 121-131 railyard (i.e. the fraction of container throughput moved by rail versus drayage truck). The data includes average daily train visits at on-dock railyard, fractional train counts at off-dock railyards, train length, number of locomotives per train, average daily train-miles travelled within the SCAB along different subdivisions, and train-miles travelled between SCAB border and California State Boundary.
- Line haul locomotives were assumed to operate following the EPA line haul locomotive duty cycle, which reflects an average engine load factor.
- Switch engine locomotives were assumed to operate following the EPA switch locomotive duty cycle, which reflects an average engine load factor.
- Peak activity periods in railyard cargo loading and the drayage trucks are concurrent according to transportation modeling, so the annual-to-peak day peaking factor derived from transportation modeling of trucks was also used for determining the rail activity peak day for lineal and switchers. The 24-hr profile of activity for drayage trucks was also used to determine 8hr and 1hr peaks for rail activity.

5.6 Worker Commute Trips

Worker vehicle emissions consist of light duty on-road vehicles used for workers commuting to and from the Berths 121-131 terminal. Activities tracked consist of off-site driving to/from terminal and on-site driving to employee parking lot. On-site idling from worker vehicles was assumed to be negligible.

- Emissions from worker trips during the proposed project operation were calculated using worker trip on-site and off-site traffic flows by link provided by the traffic consultant and LAHD staff.

- Emission factors from EMFAC2021 for gasoline passenger cars were used to represent worker vehicle emissions. The South Coast default light duty vehicle fleet mix was used for the emission factor derivation.
- PM_{10} and $PM_{2.5}$ emissions from paved road dust were calculated and added to the EMFAC2021 emissions. Road dust emission factors for on-terminal driving, off-terminal local streets, and freeways followed CARB's methodology to estimate entrained road dust emission factors; this involves using the equations in EPA's Compilation of Air Pollutant Emission Factors AP-42 (EPA 2011b) and CARB silt loading values for California roadways in its 2021 guidance document for estimating entrained road dust emissions from paved roads (CARB 2021d).

5.7 Greenhouse Gas Emissions (GHG) from Electricity Consumption

GHG emissions from the production of electricity consumed at Berths 121-131 terminal were estimated for the following source categories:

- Wharf crane usage
- Backlands electricity consumption from buildings and lighting
- Electric RMG cranes
- AMP electricity consumption
- Electric CHE equipment in future

The CO_2e emission factor for all these calculations was provided by the municipal power utility – The Los Angeles Department of Water and Power (LADWP, 2023). These emission factors, regardless of the pollutant, have units of grams of pollutant per kWh of electricity and therefore emissions are calculated by using the electricity consumption which was either provided by WBCT or estimated based on current and projected activity. A brief description of the emission calculation for each source category follows.

The electricity used in the baseline by electric wharf cranes, and by buildings and exterior lighting poles (i.e. backlands electricity) was provided by WBCT. The amount used by the electric wharf cranes was scaled by the projected container throughput at the port for all future years and all scenarios as higher throughput is expected to increase usage of the wharf cranes. The electricity consumed in the backlands (building and lighting) was assumed to stay constant at baseline levels throughout any future year and scenario. For scenarios with mitigation, however, backlands energy consumption was increased based on the increased energy consumption from electric CHE equipment in the future years.

Electric rail mounted gantry cranes (RMG) will be installed at the railyard as part of the Proposed Project and No Federal Action Alternative 2. According to an AECOM phasing study, the RMGs will be installed in 2022 and used at half capacity during this year, in the years that follow all RMGs will be used under the expanded capacity of the on-dock railyard. The power consumption by these cranes was estimated based on data from the Trapac Terminal EIR which is a similar project at POLA performed at a different terminal (LAHD 2007). The power consumption was scaled based on the container throughput at the port in the baseline and the projected throughput for future years and scenarios. RMGs are not installed in the No Project Alternative and therefore, the emissions are zero for this source category in the No Project Alternative.

Emissions that result from the electricity consumed by vessels hoteling and using shore power (AMP) at the Berths 121-131 terminal were also estimated. The AMP power consumption was estimated based on LADWP invoices at Berths 121-131 terminal for the baseline year. For future years the AMP power consumption was scaled based on projected container vessel hoteling hours with AMP usage under each scenario and alternatives.

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7.0 Emissions Calculations and Input Data

This section contains tables summarizing the activity inputs, assumptions, emission rates and mass emissions totals for each source category and modeled time periods (annual, peak day, peak hour, peak 8hr). Emissions are organized by scenarios in the following groups:

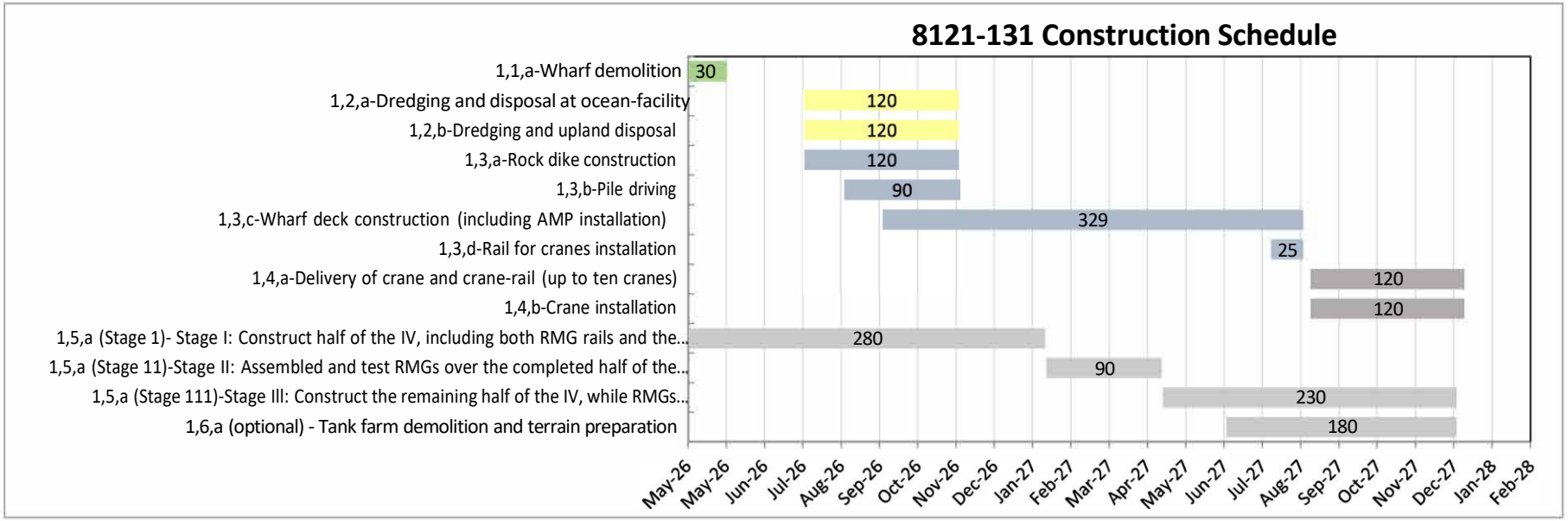
- Construction Emissions
    - Proposed Project (without Mitigation)
    - Proposed Mitigated with Mitigations
    - No Federal Action without Mitigations – Alternative 2
    - No Federal Action with Mitigation – Mitigated Alternative 2
- Operational Emissions

  Calculation Inputs by Source category
    - Cargo Handling Equipment (CHE)
    - Ocean Going Vessels
    - Rail - Locomotives and Switchers
    - Drayage Trucks
    - Worker Vehicles
    - Harbor Craft/Tugs

  Emissions summaries by Scenario and by Year
    - Proposed Project (without Mitigation)
    - Proposed Mitigated with Mitigations
    - No Project Alternative 1
    - No Federal Action without Mitigations – Alternative 2
    - No Federal Action with Mitigation – Mitigated Alternative 2

Construction Emission Inventory

Construction Schedule Chart by Activity - Proposed Project



Construction Schedule - Proposed Project

Activity	Description	Start	Finish	Duration (Days)
1,1	**Demolition of existing wharf at Berth 126-129**	**5/1/2026**	**7/30/2026**	**90**
1,1,a	Wharf demolition	5/1/2026	5/31/2026	30
1,2	**Dredging at Berths 126-129 and Rock Dike Reconstruction**	8/1/2026	11/29/2026	120
1,2,a	Dredging and disposal at ocean-facility	**8/1/2026**	**11/29/2026**	**120**
1,2,b	Dredging and upland disposal	8/1/2026	11/29/2026	120
1,3,a	Rock dike construction	8/1/2026	11/29/2026	120
1,3	**Construction of new 1,260-ft wharf at Berths 126-129 (pile supported)**	**8/1/2026**	**8/26/2027**	**391**
1,3,b	Pile driving	9/1/2026	11/30/2026	90
1,3,c	Wharf deck construction (including AMP installation)	10/1/2026	8/26/2027	330
1,3,d	Rail for cranes installation	8/1/2027	8/26/2027	25
1,4	New cranes installation at Berths 126-129	9/1/2027	12/30/2027	210
1,4,a	Delivery of crane and crane-rail (up to ten cranes)	**9/1/2027**	**10/1/2027**	**30**
1,4,b	Crane installation	9/1/2027	12/30/2027	120
1,5	**Reconstruction of rail expansion for RMG operations**	5/1/2026	12/24/2027	651
1,5,a (Stage I)	Stage I: Construct half of the IV, including both RMG rails and the three new tracks	**5/1/2026**	**2/5/2027**	**280**
1,5,a (Stage II)	Stage II: Assembled and test RMGs over the completed half of the yard	2/6/2027	5/7/2027	90
1,5,a (Stage III)	Stage III: Construct the remaining half of the IV, while RMGs operate over the completed half	5/8/2027	12/24/2027	230
1,6,a (optional)	Tank farm demolition and terrain preparation	6/27/2027	12/24/2027	180

B121-131 Off-road Equipment Emission Factors in g/bhp-hr - Proposed Project With Mitigation

											hp-hr/day	Emission Rates in g/bhp-hr								
Calender Year	Phase	Phase	Equipment Type	HP	Number of equipment	Hours of usage per day	Total working days	HPBIN	Load Factor	OFFROAD Category	Activity	ROG	TOG	CO	NOx	SOx	PM10	PM2.5	CO2	CH4	N2O
2026	1	1,a	air compressor	50	1	8	25	50	0.48	Air Compressors	192	0.16	0.20	2.01	1.68	0.00	0.04	0.03	267.74	0.01	0.00
2026	1	1,a	crane	330	1	8	95	600	0.2881	Cranes	760.584	0.09	0.10	1.07	0.22	0.01	0.01	0.01	536.38	0.02	0.00
2026	1	1,a	derrick barge	195	2	8	70	300	0.2881	Cranes	898.872	0.09	0.11	1.22	0.25	0.01	0.01	0.01	578.82	0.02	0.00
2026	1	1,a	excavator	290	1	8	25	300	0.3819	Excavators	886.008	0.13	0.15	1.04	0.23	0.00	0.01	0.01	513.35	0.02	0.00
2026	1	1,a	forklift	105	1	6	25	175	0.201	Forklifts	126.63	0.16	0.19	4.16	0.63	0.01	0.02	0.02	729.36	0.03	0.01
2026	1	1,a	generator	45	1	8	25	50	0.74	Generator Sets	266.4	0.17	0.20	2.39	2.40	0.01	0.04	0.04	410.88	0.02	0.00
2026	1	1,a	loader	220	1	8	95	300	0.3685		648.56	0.12	0.15	1.05	0.22	0.00	0.01	0.01	515.63	0.02	0.00
2026	1	1,a	vibratory hammer	45	1	8	70	50	0.4154		149.544	0.38	0.45	3.67	3.62	0.01	0.12	0.11	604.98	0.02	0.00
2026	2	2,b		2450	1	24	120	9999	0.4154		24425.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	2	2,b		375	1	24	120	600	0.4154		3738.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	2	2,b	derrick barge welder	40	1	24	120	50	0.45	Welders	432	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	2	2,b		50	1	24	120	50	0.4154		498.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	2	2,b		375	1	18	120	600	0.4154		2803.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	2	2,b	excavator	211	1	24	120	300	0.3819	Excavators	1933.9416	0.13	0.15	1.04	0.23	0.00	0.01	0.01	513.35	0.02	0.00
2026	2	2,b	sweeping truck	511	1	24	120	600	0.3819	Off-Highway Trucks	4683.6216	0.14	0.17	1.02	0.23	0.00	0.02	0.02	507.70	0.02	0.00
2026	3	3,a		353	1	8	120	600	0.4154		1173.0896	0.10	0.12	0.99	0.22	0.00	0.01	0.01	506.32	0.02	0.00
2026	3	3,a	derrick barge crane	376	1	8	120	600	0.2881	Cranes	866.6048	0.09	0.10	1.07	0.22	0.01	0.01	0.01	536.38	0.02	0.00
2026	3	3,a		86	1	8	120	100	0.4154		285.7952	0.11	0.13	3.43	1.02	0.01	0.09	0.08	648.95	0.03	0.01
2026	3	3,a	derrick barge generator	464	1	8	120	600	0.4154		1541.9648	0.10	0.12	0.99	0.22	0.00	0.01	0.01	506.32	0.02	0.00
2026	3	3,a		379	1	8	120	600	0.4154		1259.4928	0.10	0.12	0.99	0.22	0.00	0.01	0.01	506.32	0.02	0.00
2026	3	3,a		517	1	8	120	600	0.4154		1718.0944	0.10	0.12	0.99	0.22	0.00	0.01	0.01	506.32	0.02	0.00
2026	3	3,a	excavator	290	1	8	120	300	0.3819	Excavators	886.008	0.13	0.15	1.04	0.23	0.00	0.01	0.01	513.35	0.02	0.00
2026	3	3,a	loader	101	1	8	120	175	0.3685		297.748	0.14	0.16	3.08	0.54	0.00	0.02	0.02	519.73	0.02	0.00
2026	3	3,b		353	1	4	80	600	0.4154		586.5448	0.10	0.12	0.99	0.22	0.00	0.01	0.01	506.32	0.02	0.00
2026	3	3,b	derrick barge crane	376	1	4	80	600	0.2881	Cranes	433.3024	0.09	0.10	1.07	0.22	0.01	0.01	0.01	536.38	0.02	0.00
2026	3	3,b		86	1	4	80	100	0.4154		142.8976	0.11	0.13	3.43	1.02	0.01	0.09	0.08	648.95	0.03	0.01
2026	3	3,b	derrick barge generator	464	1	4	80	600	0.4154		770.9824	0.10	0.12	0.99	0.22	0.00	0.01	0.01	506.32	0.02	0.00
2026	3	3,b		379	1	4	80	600	0.4154		629.7464	0.10	0.12	0.99	0.22	0.00	0.01	0.01	506.32	0.02	0.00
2026	3	3,b		517	1	4	80	600	0.4154		859.0472	0.10	0.12	0.99	0.22	0.00	0.01	0.01	506.32	0.02	0.00
2026	3	3,b	vibratory hammer	439	1	8	80	600	0.4154		1458.8848	0.10	0.12	0.99	0.22	0.00	0.01	0.01	506.32	0.02	0.00
2026	3	3,c	excavator	211	1	8	10	300	0.3819	Excavators	644.6472	0.13	0.15	1.04	0.23	0.00	0.01	0.01	513.35	0.02	0.00
2026	3	3,c	crane	279	2	4	25	300	0.2881	Cranes	643.0392	0.09	0.11	1.22	0.25	0.01	0.01	0.01	578.82	0.02	0.00
2026	3	3,c	pile hammer	439	1	8	25	600	0.4154		1458.8848	0.10	0.12	0.99	0.22	0.00	0.01	0.01	506.32	0.02	0.00
2026	3	3,c	loader	101	1	8	10	175	0.3685		297.748	0.14	0.16	3.08	0.54	0.00	0.02	0.02	519.73	0.02	0.00
2026	3	3,c	forklift	200	1	8	50	300	0.201	Forklifts	321.6	0.12	0.14	1.07	0.27	0.00	0.01	0.01	512.25	0.02	0.00
2026	3	3,c	skip loader	101	1	8	10	175	0.3685	Skid Steer Loaders	297.748	0.14	0.17	3.10	0.63	0.00	0.02	0.02	516.30	0.02	0.00
2026	3	3,c	paving machine	110	1	8	1	175	0.3551	Paving Equipment	312.488	0.13	0.15	3.04	0.49	0.00	0.02	0.02	518.56	0.02	0.00
2026	3	3,c	water truck	511	1	8	50	600	0.3819	Off-Highway Trucks	1561.2072	0.14	0.17	1.02	0.23	0.00	0.02	0.02	507.70	0.02	0.00
2026	3	3,c	scraper	477	1	8	8	600	0.4824	Scrapers	1840.8384	0.09	0.10	1.02	0.19	0.00	0.01	0.01	487.79	0.02	0.00
2026	3	3,c	paving machine	110	1	8	2	175	0.3551	Paving Equipment	312.488	0.13	0.15	3.04	0.49	0.00	0.02	0.02	518.56	0.02	0.00
2026	3	3,c	roller	113	2	8	8	175	0.3752	Rollers	678.3616	0.12	0.15	3.00	0.45	0.00	0.02	0.02	521.02	0.02	0.00
2026	3	3,c	skip loader	101	1	8	8	175	0.3685	Skid Steer Loaders	297.748	0.14	0.17	3.10	0.63	0.00	0.02	0.02	516.30	0.02	0.00
2026	3	3,d	crane	279	2	4	20	300	0.2881	Cranes	643.0392	0.09	0.11	1.22	0.25	0.01	0.01	0.01	578.82	0.02	0.00
2026	3	3,d	loader	101	1	8	8	175	0.3685		297.748	0.14	0.16	3.08	0.54	0.00	0.02	0.02	519.73	0.02	0.00
2026	3	3,d	forklift	200	2	4	20	300	0.201	Forklifts	321.6	0.12	0.14	1.07	0.27	0.00	0.01	0.01	512.25	0.02	0.00
2026	4	4,a	crane	279	2	4	18	300	0.2881	Cranes	643.0392	0.09	0.11	1.22	0.25	0.01	0.01	0.01	578.82	0.02	0.00
2026	4	4,a	welder	62	2	4	18	50	0.45	Welders	223.2	0.12	0.14	1.74	1.34	0.00	0.01	0.01	261.78	0.01	0.00
2026	4	4,a	tractor	511	2	4	18	600	0.3685		1506.428	0.12	0.14	1.00	0.21	0.00	0.02	0.01	507.31	0.02	0.00
2026	4	4,b	crane - 50 ton	330	1	8	10	600	0.2881	Cranes	760.584	0.09	0.10	1.07	0.22	0.01	0.01	0.01	536.38	0.02	0.00
2026	4	4,b	Winch	305	1	4	8	600	0.3082	Aerial Lifts	376.004	0.11	0.13	1.58	0.14	0.00	0.01	0.01	514.03	0.02	0.00
2026	5	5,a (Stage I)	excavator	347	1	8	14	600	0.3819	Excavators	1060.1544	0.13	0.15	1.01	0.23	0.00	0.02	0.02	510.38	0.02	0.00
2026	5	5,a (Stage I)	loader	386	1	8	12	600	0.3685		1137.928	0.12	0.14	1.00	0.21	0.00	0.02	0.01	507.31	0.02	0.00
2026	5	5,a (Stage I)	Grader	220	1	8	4	300	0.4087	Graders	719.312	0.10	0.12	1.05	0.21	0.00	0.01	0.01	525.38	0.02	0.00
2026	5	5,a (Stage I)	smooth drum roller	132	1	8	5	175	0.3752	Rollers	396.2112	0.12	0.15	3.00	0.45	0.00	0.02	0.02	521.02	0.02	0.00
2026	5	5,a (Stage I)	Water truck	300	1	8	29	300	0.3819	Off-Highway Trucks	916.56	0.13	0.15	1.05	0.17	0.00	0.01	0.01	507.40	0.02	0.00
2026	5	5,a (Stage I)	backhoe	100	1	8	4	100	0.3685		294.8	0.11	0.13	3.36	1.00	0.01	0.09	0.08	591.33	0.02	0.00
2026	5	5,a (Stage I)	Dump truck	455	1	8	6	600	0.3819	Off-Highway Trucks	1390.116	0.14	0.17	1.02	0.23	0.00	0.02	0.02	507.70	0.02	0.00
2026	5	5,a (Stage I)	Tamper	230	1	8	2	300	0.3015	Surfacing Equipment	554.76	0.11	0.13	1.16	0.24	0.01	0.01	0.01	532.20	0.02	0.00
2026	5	5,a (Stage I)	Regulator	185	1	8	2	300	0.4154		614.792	0.10	0.12	1.12	0.22	0.01	0.01	0.01	533.69	0.02	0.00
2026	5	5,a (Stage I)	forklift	54	1	8	14	75	0.201	Forklifts	86.832	0.29	0.34	4.66	3.95	0.01	0.03	0.03	823.31	0.03	0.01
2026	5	5,a (Stage I)	Concrete truck	455	1	8	6	600	0.3819	Off-Highway Trucks	1390.116	0.14	0.17	1.02	0.23	0.00	0.02	0.02	507.70	0.02	0.00
2026	5	5,a (Stage I)	Paving machines	224	1	8	1	300	0.3551	Paving Equipment	636.3392	0.11	0.13	1.05	0.25	0.00	0.01	0.01	517.65	0.02	0.00
2026	5	5,a (Stage II)	Excavator	347	1	8	5	600	0.3819	Excavators	1060.1544	0.13	0.15	1.01	0.23	0.00	0.02	0.02	510.38	0.02	0.00
2026	5	5,a (Stage II)	Loader	386	1	8	4	600	0.3685		1137.928	0.12	0.14	1.00	0.21	0.00	0.02	0.01	507.31	0.02	0.00
2026	5	5,a (Stage II)	Grader	220	1	8	1	300	0.4087	Graders	719.312	0.10	0.12	1.05	0.21	0.00	0.01	0.01	525.38	0.02	0.00
2026	5	5,a (Stage II)	smooth drum roller	132	1	8	2	175	0.3752	Rollers	396.2112	0.12	0.15	3.00	0.45	0.00	0.02	0.02	521.02	0.02	0.00
2026	5	5,a (Stage II)	Water truck	300	1	8	9	300	0.3819	Off-Highway Trucks	916.56	0.13	0.15	1.05	0.17	0.00	0.01	0.01	507.40	0.02	0.00
2026	5	5,a (Stage II)	backhoe	100	1	8	1	100	0.3685		294.8	0.11	0.13	3.36	1.00	0.01	0.09	0.08	591.33	0.02	0.00
2026	5	5,a (Stage II)	Dump truck	455	1	8	2	600	0.3819	Off-Highway Trucks	1390.116	0.14	0.17	1.02	0.23	0.00	0.02	0.02	507.70	0.02	0.00
2026	5	5,a (Stage II)	Tamper	230	1	8	1	300	0.3015	Surfacing Equipment	554.76	0.11	0.13	1.16	0.24	0.01	0.01	0.01	532.20	0.02	0.00
2026	5	5,a (Stage II)	Regulator	185	1	8	1	300	0.4154		614.792	0.10	0.12	1.12	0.22	0.01	0.01	0.01	533.69	0.02	0.00
2026	5	5,a (Stage II)	forklift	54	1	8	5	75	0.201	Forklifts	86.832	0.29	0.34	4.66	3.95	0.01	0.03	0.03	823.31	0.03	0.01
2026	5	5,a (Stage II)	Concrete truck	455	1	8	2	600	0.3819	Off-Highway Trucks	1390.116	0.14	0.17	1.02	0.23	0.00	0.02	0.02	507.70	0.02	0.00
2026	5	5,a (Stage II)	Paving machines	224	1	8	0	300	0.3551	Paving Equipment	636.3392	0.11	0.13	1.05	0.25	0.00	0.01	0.01	517.65	0.02	0.00
2026	5	5,a (Stage II)	Excavator	347	1	8	14	600	0.3819	Excavators	1060.1544	0.13	0.15	1.01	0.23	0.00	0.02	0.02	510.38	0.02	0.00
2026	5	5,a (Stage II)	Loader	386	1	8	12	600	0.3685		1137.928	0.12	0.14	1.00	0.21	0.00	0.02	0.01	507.31	0.02	0.00
2026	5	5,a (Stage II)	Grader	220	1	8	4	300	0.4087	Graders	719.312	0.10	0.12	1.05	0.21	0.00	0.01	0.01	525.38	0.02	0.00
2026	5	5,a (Stage II)	smooth drum roller	132	1	8	5	175	0.3752	Rollers	396.2112	0.12	0.15	3.00	0.45	0.00	0.02	0.02	521.02	0.02	0.00
2026	5	5,a (Stage II)	Water truck	300	1	8	29	300	0.3819	Off-Highway Trucks	916.56	0.13	0.15	1.05	0.17	0.00	0.01	0.01	507.40	0.02	0.00
2026	5	5,a (Stage II)	backhoe	100	1	8	4	100	0.3685		294.8	0.11	0.13	3.36	1.00	0.01	0.09	0.08	591.33	0.02	0.00
2026	5	5,a (Stage II)	Dump truck	455	1	8	6	600	0.3819	Off-Highway Trucks	1390.116	0.14	0.17	1.02	0.23	0.00	0.02	0.02	507.70	0.02	0.00
2026	5	5,a (Stage II)	Tamper	230	1	8	2	300	0.3015	Surfacing Equipment	554.76	0.11	0.13	1.16	0.24	0.01	0.01	0.01	532.20	0.02	0.00
2026	5	5,a (Stage II)	Regulator	185	1	8	2	300	0.4154		614.792	0.10	0.12	1.12	0.22	0.01	0.01	0.01	533.69	0.02	0.00
2026	5	5,a (Stage II)	forklift	54	1	8	14	75	0.201	Forklifts	86.832	0.29	0.34	4.66	3.95	0.01	0.03	0.03	823.31	0.03	0.01
2026	5	5,a (Stage II)	Concrete truck	455	1	8	6	600	0.3819	Off-Highway Trucks	1390.116	0.14	0.17	1.02	0.23	0.00	0.02	0.02	507.70	0.02	0.00
2026	5	5,a (Stage II)	Paving machines	224	1	8	1	300	0.3551	Paving Equipment	636.3392	0.11	0.13	1.05	0.25	0.00	0.01	0.01	517.65	0.02	0.00
2027	1	1,a	air compressor	50	1	8	25	50	0.48	Air Compressors	192	0.15	0.19	2.00	1.63	0.00	0.03	0.03	267.64	0.01	0.00
2027	1	1,a	crane	330	1	8	95	600	0.2881	Cranes	760.584	0.09	0.10	1.04	0.21	0.01	0.01	0.01	531.50	0.02	0.00
2027	1	1,a	derrick barge	195	2	8	70	300	0.2881	Cranes	898.872	0.09	0.11	1.18	0.23	0.01	0.01	0.01	568.94	0.02	0.00
2027	1	1,a	excavator	290	1	8	25	300	0.3819	Excavators	886.008	0.13	0.15	1.05	0.22	0.00	0.01	0.01	513.59	0.02	0.00
2027	1	1,a	forklift	105	1	6	25	175	0.201	Forklifts	126.63	0.16	0.19	4.18	0.57	0.01	0.02	0.02	729.35	0.03	0.01
2027	1	1,a	generator	45	1	8	25	50	0.74	Generator Sets	266.4	0.16	0.19	2.38	2.33	0.01	0.04	0.03	410.76	0.02	0.00
2027	1	1,a	loader	220	1	8	95	300	0.3685		648.56	0.13	0.15	1.06	0.21	0.00	0.01	0.01	515.68	0.02	0.00
2027	1	1,a	vibratory hammer	45	1	8	70	50	0.4154		149.544	0.36	0.43	3.66	3.55	0.01	0.11	0.10	603.20	0.02	0.00
2027	2	2,b		2450	1	24	120	9999	0.4154		24425.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027	2	2,b		375	1	24	120	600	0.4154		3738.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027	2	2,b	derrick barge welder	40	1	24	120	50	0.45	Welders	432	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027	2	2,b		50	1	24	120	50	0.4154		498.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027	2	2,b		375	1	18	120	600	0.4154		2803.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027	2	2,b	excavator	211	1	24	120	300	0.3819	Excavators	1933.9416	0.13	0.15	1.05	0.22	0.00	0.01	0.01	513.59	0.02	0.00
2027	2	2,b	sweeping truck	511	1	24	120	600	0.3819	Off-Highway Trucks	4683.6216	0.14	0.17	1.02	0.22	0.00	0.02	0.01	508.58	0.02	0.00
2027	3	3,a		353	1	8	120	600	0.4154		1173.0896	0.10	0.12	0.99	0.20	0.00	0.01	0.01	507.54	0.02	0.00
2027	3	3,a	derrick barge crane	376	1	8	120	600	0.2881	Cranes	866.6048	0.09	0.10	1.04	0.21	0.01	0.01	0.01	531.50	0.02	0.00
2027	3	3,a		86	1	8	120	100	0.4154		285.7952	0.11	0.13	3.42	0.90	0.01	0.08	0.07	637.77	0.03	0.01
2027	3	3,a	derrick barge generator	464	1	8	120	600	0.4154		1541.9648	0.10	0.12	0.99	0.20	0.00	0.01	0.01	507.54	0.02	0.00
2027	3	3,a		379	1	8	120	600	0.4154		1259.4928	0.10	0.12	0.99	0.20	0.00	0.01	0.01	507.54	0.02	0.00
2027	3	3,a		517	1	8	120	600	0.4154		1718.0944	0.10	0.12	0.99	0.20	0.00	0.01	0.01	507.54	0.02	0.00
2027	3	3,a	excavator	290	1	8	120	300	0.3819	Excavators	886.008	0.13	0.15	1.05	0.22	0.00	0.01	0.01	513.59	0.02	0.00
2027	3	3,a	loader	101	1	8	120	175	0.3685		297.748	0.14	0.17	3.10	0.50	0.00	0.02	0.02	519.33	0.02	0.00
2027	3	3,b		353	1	4	80	600	0.4154		586.5448	0.10	0.12	0.99	0.20	0.00	0.01	0.01	507.54	0.02	0.00
2027	3	3,b	derrick barge crane	376	1	4	80	600	0.2881	Cranes	433.3024	0.09	0.10	1.04	0.21	0.01	0.01	0.01	531.50	0.02	0.00
2027	3	3,b		86	1	4	80	100	0.4154		142.8976	0.11	0.13	3.42	0.90	0.01	0.08	0.07	637.77	0.03	0.01
2027	3	3,b	derrick barge generator	464	1	4	80	600	0.4154		770.9824	0.10	0.12	0.99	0.20	0.00	0.01	0.01	507.54	0.02	0.00
2027	3	3,b		379	1	4	80	600	0.4154		629.7464	0.10	0.12	0.99	0.20	0.00	0.01	0.01	507.54	0.02	0.00
2027	3	3,b		517	1	4	80	600	0.4154		859.0472	0.10	0.12	0.99	0.20	0.00	0.01	0.01	507.54	0.02	0.00
2027	3	3,b	vibratory hammer	439	1	8	80	600	0.4154		1458.8848	0.10	0.12	0.99	0.20	0.00	0.01	0.01	507.54	0.02	0.00
2027	3	3,c	excavator	211	1	8	10	300	0.3819	Excavators	644.6472	0.13	0.15	1.05	0.22	0.00	0.01	0.01	513.59	0.02	0.00
2027	3	3,c	crane	279	2	4	25	300	0.2881	Cranes	643.0392	0.09	0.11	1.18	0.23	0.01	0.01	0.01	568.94	0.02	0.00
2027	3	3,c	pile hammer	439	1	8	25	600	0.4154		1458.8848	0.10	0.12	0.99	0.20	0.00	0.01	0.01	507.54	0.02	0.00
2027	3	3,c	loader	101	1	8	10	175	0.3685		297.748	0.14	0.17	3.10	0.50	0.00	0.02	0.02	519.33	0.02	0.00
2027	3	3,c	forklift	200	1	8	50	300	0.201	Forklifts	321.6	0.12	0.14	1.07	0.25	0.00	0.01	0.01	512.75	0.02	0.00
2027	3	3,c	skip loader	101	1	8	10	175	0.3685	Skid Steer Loaders	297.748	0.14	0.17	3.12	0.59	0.00	0.02	0.02	516.20	0.02	0.00
2027	3	3,c	paving machine	110	1	8	1	175	0.3551	Paving Equipment	312.488	0.13	0.16	3.06	0.45	0.00	0.02	0.02	517.96	0.02	0.00
2027	3	3,c	water truck	511	1	8	50	600	0.3819	Off-Highway Trucks	1561.2072	0.14	0.17	1.02	0.22	0.00	0.02	0.01	508.58	0.02	0.00
2027	3	3,c	scraper	477	1	8	8	600	0.4824	Scrapers	1840.8384	0.09	0.10	1.02	0.19	0.00	0.01	0.01	492.11	0.02	0.00
2027	3	3,c	paving machine	110	1	8	2	175	0.3551	Paving Equipment	312.488	0.13	0.16	3.06	0.45	0.00	0.02	0.02	517.96	0.02	0.00
2027	3	3,c	roller	113	2	8	8	175	0.3752	Rollers	678.3616	0.13	0.15	3.02	0.41	0.00	0.02	0.01	520.24	0.02	0.00
2027	3	3,c	skip loader	101	1	8	8	175	0.3685	Skid Steer Loaders	297.748	0.14	0.17	3.12	0.59	0.00	0.02	0.02	516.20	0.02	0.00

B121-131 Off-road Equipment Emission Factors in g/bhp-hr - Proposed Project With Mitigation

											hp-hr/day	Emission Rates in g/bhp-hr									
Calender Year	Phase	Phase	Equipment Type	HP	Number of equipment	Hours of usage per day	Total working days	HPBIN	Load Fact or	OFFROAD Category	Activity	ROG	TOG	CO	NOx	SOx	PM10	PM2.5	CO2	CH4	N2O
2027	L3	L3,d	Loader	108	1	8	8	175	0.3685		297.748	0.14	0.17	3.10	0.50	0.00	0.02	0.02	519.33	0.02	0.00
2027	L3	L3,d	Forklift	200	1	4	24	300	0.201	Forklifts	321.6	0.12	0.15	1.07	0.25	0.00	0.01	0.01	512.75	0.02	0.00
2027	L4	L4,a	crane	279	1	1	11	300	0.2881	Cranes	643.0392	0.09	0.11	1.18	0.23	0.01	0.01	0.01	568.94	0.02	0.00
2027	L4	L4,a	welder	62	1	1	11	50	0.45	Welders	223.2	0.12	0.15	1.77	1.35	0.00	0.01	0.01	261.86	0.03	0.00
2027	L4	L4,a	tractor	511	1	1	11	600	0.3685		1506.428	0.12	0.15	1.00	0.20	0.00	0.01	0.01	508.50	0.02	0.00
2027	L4	L4,b	Crane - 50 ton	330	1	1	11	600	0.2881	Cranes	760.584	0.09	0.10	1.04	0.21	0.01	0.01	0.01	531.50	0.02	0.00
2027	L4	L4,b	Winch	305	1	1	1	600	0.3082	Aerial Lifts	376.004	0.11	0.13	0.98	0.14	0.00	0.01	0.01	514.03	0.02	0.00
2027	L5	L5,a (Stage I)	Excavator	347	1	1	14.33691754	600	0.3819	Excavators	1060.1544	0.13	0.16	1.01	0.22	0.00	0.02	0.02	510.82	0.02	0.00
2027	L5	L5,a (Stage I)	Loader	386	1	1	12.18637991	600	0.3685		1137.928	0.12	0.15	1.00	0.20	0.00	0.01	0.01	508.50	0.02	0.00
2027	L5	L5,a (Stage I)	Grader	220	1	1	3.584229391	300	0.4087	Graders	719.312	0.10	0.12	1.05	0.20	0.00	0.01	0.01	524.28	0.02	0.00
2027	L5	L5,a (Stage I)	Smooth drum roller	132	1	1	5.161290321	175	0.3752	Rollers	396.2112	0.13	0.15	3.02	0.41	0.00	0.02	0.01	520.24	0.02	0.00
2027	L5	L5,a (Stage I)	Water truck	300	1	1	28.74551971	300	0.3819	Off-Highway Trucks	916.56	0.13	0.16	1.06	0.16	0.00	0.01	0.01	508.51	0.02	0.00
2027	L5	L5,a (Stage I)	Backhoe	100	1	1	3.584229391	100	0.3685		294.8	0.11	0.13	3.37	0.88	0.01	0.08	0.08	587.99	0.02	0.00
2027	L5	L5,a (Stage I)	Dump truck	455	1	1	5.734767027	600	0.3819	Off-Highway Trucks	1390.116	0.14	0.17	1.02	0.22	0.00	0.02	0.01	508.58	0.02	0.00
2027	L5	L5,a (Stage I)	Tamper	230	1	1	2.150537634	300	0.3015	Surfacing Equipment	554.76	0.12	0.14	1.15	0.23	0.01	0.01	0.01	531.56	0.02	0.00
2027	L5	L5,a (Stage I)	Regulator	185	1	1	2.150537634	300	0.4154		614.792	0.10	0.12	1.11	0.21	0.01	0.01	0.01	532.22	0.02	0.00
2027	L5	L5,a (Stage I)	Forklift	54	1	1	14.33691754	75	0.201	Forklifts	86.832	0.29	0.35	4.67	3.96	0.01	0.03	0.03	822.16	0.03	0.01
2027	L5	L5,a (Stage I)	Concrete truck	455	1	1	5.734767027	600	0.3819	Off-Highway Trucks	1390.116	0.14	0.17	1.02	0.22	0.00	0.02	0.01	508.58	0.02	0.00
2027	L5	L5,a (Stage I)	Paving machines	224	1	1	1.433691754	300	0.3551	Paving Equipment	636.3392	0.11	0.14	1.05	0.24	0.00	0.01	0.01	517.30	0.02	0.00
2027	L5	L5,a (Stage II)	Excavator	347	1	1	4.659498208	600	0.3819	Excavators	1060.1544	0.13	0.16	1.01	0.22	0.00	0.02	0.02	510.82	0.02	0.00
2027	L5	L5,a (Stage II)	Loader	386	1	1	3.960573477	600	0.3685		1137.928	0.12	0.15	1.00	0.20	0.00	0.01	0.01	508.50	0.02	0.00
2027	L5	L5,a (Stage II)	Grader	220	1	1	1.164874552	300	0.4087	Graders	719.312	0.10	0.12	1.05	0.20	0.00	0.01	0.01	524.28	0.02	0.00
2027	L5	L5,a (Stage II)	Smooth drum roller	132	1	1	1.677419355	175	0.3752	Rollers	396.2112	0.13	0.15	3.02	0.41	0.00	0.02	0.01	520.24	0.02	0.00
2027	L5	L5,a (Stage II)	Water truck	300	1	1	9.342293906	300	0.3819	Off-Highway Trucks	916.56	0.13	0.16	1.06	0.16	0.00	0.01	0.01	508.51	0.02	0.00
2027	L5	L5,a (Stage II)	Backhoe	100	1	1	1.164874552	100	0.3685		294.8	0.11	0.13	3.37	0.88	0.01	0.08	0.08	587.99	0.02	0.00
2027	L5	L5,a (Stage II)	Dump truck	455	1	1	1.863779281	600	0.3819	Off-Highway Trucks	1390.116	0.14	0.17	1.02	0.22	0.00	0.02	0.01	508.58	0.02	0.00
2027	L5	L5,a (Stage II)	Tamper	230	1	1	0.698924731	300	0.3015	Surfacing Equipment	554.76	0.12	0.14	1.15	0.23	0.01	0.01	0.01	531.56	0.02	0.00
2027	L5	L5,a (Stage II)	Regulator	185	1	1	0.698924731	300	0.4154		614.792	0.10	0.12	1.11	0.21	0.01	0.01	0.01	532.22	0.02	0.00
2027	L5	L5,a (Stage II)	Forklift	54	1	1	4.659498208	75	0.201	Forklifts	86.832	0.29	0.35	4.67	3.96	0.01	0.03	0.03	822.16	0.03	0.01
2027	L5	L5,a (Stage II)	Concrete truck	455	1	1	1.863779281	600	0.3819	Off-Highway Trucks	1390.116	0.14	0.17	1.02	0.22	0.00	0.02	0.01	508.58	0.02	0.00
2027	L5	L5,a (Stage II)	Paving machines	224	1	1	0.465949821	300	0.3551	Paving Equipment	636.3392	0.11	0.14	1.05	0.24	0.00	0.01	0.01	517.30	0.02	0.00
2027	L5	L5,a (Stage III)	Excavator	347	1	1	14.33691754	600	0.3819	Excavators	1060.1544	0.13	0.16	1.01	0.22	0.00	0.02	0.02	510.82	0.02	0.00
2027	L5	L5,a (Stage III)	Loader	386	1	1	12.18637991	600	0.3685		1137.928	0.12	0.15	1.00	0.20	0.00	0.01	0.01	508.50	0.02	0.00
2027	L5	L5,a (Stage III)	Grader	220	1	1	3.584229391	300	0.4087	Graders	719.312	0.10	0.12	1.05	0.20	0.00	0.01	0.01	524.28	0.02	0.00
2027	L5	L5,a (Stage III)	Smooth drum roller	132	1	1	5.161290321	175	0.3752	Rollers	396.2112	0.13	0.15	3.02	0.41	0.00	0.02	0.01	520.24	0.02	0.00
2027	L5	L5,a (Stage III)	Water truck	300	1	1	28.74551971	300	0.3819	Off-Highway Trucks	916.56	0.13	0.16	1.06	0.16	0.00	0.01	0.01	508.51	0.02	0.00
2027	L5	L5,a (Stage III)	Backhoe	100	1	1	3.584229391	100	0.3685		294.8	0.11	0.13	3.37	0.88	0.01	0.08	0.08	587.99	0.02	0.00
2027	L5	L5,a (Stage III)	Dump truck	455	1	1	5.734767027	600	0.3819	Off-Highway Trucks	1390.116	0.14	0.17	1.02	0.22	0.00	0.02	0.01	508.58	0.02	0.00
2027	L5	L5,a (Stage III)	Tamper	230	1	1	2.150537634	300	0.3015	Surfacing Equipment	554.76	0.12	0.14	1.15	0.23	0.01	0.01	0.01	531.56	0.02	0.00
2027	L5	L5,a (Stage III)	Regulator	185	1	1	2.150537634	300	0.4154		614.792	0.10	0.12	1.11	0.21	0.01	0.01	0.01	532.22	0.02	0.00
2027	L5	L5,a (Stage III)	Forklift	54	1	1	14.33691754	75	0.201	Forklifts	86.832	0.29	0.35	4.67	3.96	0.01	0.03	0.03	822.16	0.03	0.01
2027	L5	L5,a (Stage III)	Concrete truck	455	1	1	5.734767027	600	0.3819	Off-Highway Trucks	1390.116	0.14	0.17	1.02	0.22	0.00	0.02	0.01	508.58	0.02	0.00
2027	L5	L5,a (Stage III)	Paving machines	224	1	1	1.433691754	300	0.3551	Paving Equipment	636.3392	0.11	0.14	1.05	0.24	0.00	0.01	0.01	517.30	0.02	0.00

											day	Emission Rates in g/bhp-hr									
											ctivity	ROG	TOG	CO	NOx	SOx	PM10	PM2.5	CO2	CH4	N2O
											192	0.25	0.31	2.34	1.76	0.00	0.05	0.05	280.65	0.01	0.00
											760.584	0.14	0.17	1.33	1.17	0.01	0.05	0.05	528.11	0.01	0.00
											898.872	0.19	0.23	1.40	1.59	0.01	0.08	0.07	557.68	0.01	0.00
											886.008	0.18	0.22	1.09	1.15	0.00	0.05	0.04	512.59	0.01	0.00
											126.63	0.19	0.23	3.04	1.25	0.00	0.05	0.05	514.77	0.01	0.00
											266.4	0.26	0.31	2.78	2.52	0.01	0.06	0.06	430.69	0.01	0.00
											648.56	0.18	0.22	1.11	1.11	0.00	0.05	0.04	513.94	0.01	0.00
											149.544	0.58	0.69	4.27	3.80	0.01	0.17	0.15	604.98	0.01	0.00
											24425.52	0.15	0.18	0.71	5.59	0.00	0.10	0.09	535.48	0.01	0.00
											3738.6	0.15	0.18	1.16	1.03	0.00	0.05	0.04	505.43	0.01	0.00
											432	0.22	0.26	2.04	1.62	0.00	0.05	0.04	262.77	0.01	0.00
											498.48	0.58	0.69	4.27	3.80	0.01	0.17	0.15	604.98	0.01	0.00
											2803.95	0.15	0.18	1.16	1.03	0.00	0.05	0.04	505.43	0.01	0.00
											1933.9416	0.18	0.22	1.09	1.15	0.00	0.05	0.04	512.59	0.01	0.00
											4683.6216	0.18	0.21	1.08	0.81	0.00	0.04	0.03	508.07	0.01	0.00
											1173.0896	0.15	0.18	1.16	1.03	0.00	0.05	0.04	505.43	0.01	0.00
											866.6048	0.14	0.17	1.33	1.17	0.01	0.05	0.05	528.11	0.01	0.00
											285.7952	0.30	0.36	3.49	2.62	0.01	0.19	0.17	620.42	0.01	0.00
											1541.9648	0.15	0.18	1.16	1.03	0.00	0.05	0.04	505.43	0.01	0.00
											1259.4928	0.15	0.18	1.16	1.03	0.00	0.05	0.04	505.43	0.01	0.00
											1718.0944	0.15	0.18	1.16	1.03	0.00	0.05	0.04	505.43	0.01	0.00
											886.008	0.18	0.22	1.09	1.15	0.00	0.05	0.04	512.59	0.01	0.00
											297.748	0.20	0.23	3.08	1.27	0.00	0.05	0.05	517.69	0.01	0.00
											586.5448	0.15	0.18	1.16	1.03	0.00	0.05	0.04	505.43	0.01	0.00
											433.3024	0.14	0.17	1.33	1.17	0.01	0.05	0.05	528.11	0.01	0.00
											142.8976	0.30	0.36	3.49	2.62	0.01	0.19	0.17	620.42	0.01	0.00
											770.9824	0.15	0.18	1.16	1.03	0.00	0.05	0.04	505.43	0.01	0.00
											629.7464	0.15	0.18	1.16	1.03	0.00	0.05	0.04	505.43	0.01	0.00
											859.0472	0.15	0.18	1.16	1.03	0.00	0.05	0.04	505.43	0.01	0.00
											1458.8848	0.15	0.18	1.16	1.03	0.00	0.05	0.04	505.43	0.01	0.00
											644.6472	0.18	0.22	1.09	1.15	0.00	0.05	0.04	512.59	0.01	0.00
											643.0392	0.19	0.23	1.40	1.59	0.01	0.08	0.07	557.68	0.01	0.00
											1458.8848	0.15	0.18	1.16	1.03	0.00	0.05	0.04	505.43	0.01	0.00
											297.748	0.20	0.23	3.08	1.27	0.00	0.05	0.05	517.69	0.01	0.00
											321.6	0.19	0.23	1.18	1.27	0.00	0.06	0.05	510.96	0.01	0.00
											297.748	0.16	0.19	3.09	0.84	0.00	0.03	0.03	515.85	0.01	0.00
											312.488	0.18	0.21	3.09	1.11	0.00	0.05	0.05	516.98	0.01	0.00
											1561.2072	0.18	0.21	1.08	0.81	0.00	0.04	0.03	508.07	0.01	0.00
											1840.8384	0.16	0.19	1.52	1.21	0.00	0.06	0.05	482.69	0.01	0.00
											312.488	0.18	0.21	3.05	1.11	0.00	0.05	0.05	516.98	0.01	0.00
											678.3616	0.19	0.22	3.02	1.22	0.00	0.05	0.05	518.56	0.01	0.00
											297.748	0.16	0.19	3.09	0.84	0.00	0.03	0.03	515.85	0.01	0.00
											643.0392	0.19	0.23	1.40	1.59	0.01	0.08	0.07	557.68	0.01	0.00
											297.748	0.20	0.23	3.08	1.27	0.00	0.05	0.05	517.69	0.01	0.00
											321.6	0.19	0.23	1.18	1.27	0.00	0.06	0.05	510.96	0.01	0.00
											643.0392	0.19	0.23	1.40	1.59	0.01	0.08	0.07	557.68	0.01	0.00
											223.2	0.22	0.26	2.04	1.62	0.00	0.05	0.04	262.77	0.01	0.00
											1506.428	0.17	0.20	1.14	0.93	0.00	0.04	0.04	507.22	0.01	0.00
											760.584	0.14	0.17	1.33	1.17	0.01	0.05	0.05	528.11	0.01	0.00
											376.004	0.13	0.16	0.97	0.97	0.00	0.03	0.03	514.03	0.01	0.00
											1060.1544	0.16	0.19	1.03	0.78	0.00	0.03	0.03	510.07	0.01	0.00
											1137.928	0.17	0.20	1.14	0.93	0.00	0.04	0.04	507.22	0.01	0.00
											719.312	0.16	0.19	1.10	1.19	0.00	0.05	0.05	520.30	0.01	0.00
											396.2112	0.19	0.22	3.02	1.22	0.00	0.05	0.05	518.56	0.01	0.00
											916.56	0.23	0.28	1.28	1.66	0.00	0.08	0.08	506.44	0.01	0.00
											294.8	0.27	0.33	3.43	2.32	0.01	0.17	0.15	583.58	0.01	0.00
											1390.116	0.18	0.21	1.08	0.81	0.00	0.04	0.03	508.07	0.01	0.00
											554.76	0.21	0.25	1.23	1.53	0.00	0.07	0.06	521.59	0.01	0.00
											614.792	0.19	0.23	1.26	1.51	0.00	0.07	0.06	524.14	0.01	0.00
											86.832	0.27	0.32	3.42	3.12	0.01	0.06	0.06	583.51	0.01	0.00
											1390.116	0.18	0.21	1.08	0.81	0.00	0.04	0.03	508.07	0.01	0.00
											636.3392	0.17	0.20	1.09	1.10	0.00	0.05	0.04	514.81	0.01	0.00
											1060.1544	0.16	0.19	1.03	0.78	0.00	0.03	0.03	510.07	0.01	0.00
											1137.928	0.17	0.20	1.14	0.93	0.00	0.04	0.04	507.22	0.01	0.00
											719.312	0.16	0.19	1.10	1.19	0.00	0.05	0.05	520.30	0.01	0.00
											396.2112	0.19	0.22	3.02	1.22	0.00	0.05	0.05	518.56	0.01	0.00
											916.56	0.23	0.28	1.28	1.66	0.00	0.08	0.08	506.44	0.01	0.00
											294.8	0.27	0.33	3.43	2.32	0.01	0.17	0.15	583.58	0.01	0.00

										day										
										ctivity										
										1541.9648	0.15	0.18	1.15	0.92	0.00	0.04	0.04	506.38	0.01	0.00
										1259.4928	0.15	0.18	1.15	0.92	0.00	0.04	0.04	506.38	0.01	0.00
										1718.0944	0.15	0.18	1.15	0.92	0.00	0.04	0.04	506.38	0.01	0.00
										886.008	0.18	0.21	1.09	1.02	0.00	0.04	0.04	512.83	0.01	0.00
										297.748	0.19	0.23	3.10	1.16	0.00	0.05	0.05	517.59	0.01	0.00
										586.5448	0.15	0.18	1.15	0.92	0.00	0.04	0.04	506.38	0.01	0.00
										433.3024	0.14	0.17	1.29	1.06	0.00	0.05	0.04	525.56	0.01	0.00
										142.8976	0.28	0.33	3.45	2.37	0.01	0.17	0.16	616.20	0.01	0.00
										770.9824	0.15	0.18	1.15	0.92	0.00	0.04	0.04	506.38	0.01	0.00
										629.7464	0.15	0.18	1.15	0.92	0.00	0.04	0.04	506.38	0.01	0.00
										859.0472	0.15	0.18	1.15	0.92	0.00	0.04	0.04	506.38	0.01	0.00
										1458.8848	0.15	0.18	1.15	0.92	0.00	0.04	0.04	506.38	0.01	0.00
										644.6472	0.18	0.21	1.09	1.02	0.00	0.04	0.04	512.83	0.01	0.00
										643.0392	0.18	0.22	1.36	1.45	0.01	0.07	0.07	552.96	0.01	0.00
										1458.8848	0.15	0.18	1.15	0.92	0.00	0.04	0.04	506.38	0.01	0.00
										297.748	0.19	0.23	3.10	1.16	0.00	0.05	0.05	517.59	0.01	0.00
										321.6	0.19	0.23	1.18	1.17	0.00	0.05	0.05	511.39	0.01	0.00
										297.748	0.16	0.19	3.11	0.79	0.00	0.03	0.02	515.80	0.01	0.00
										312.488	0.18	0.21	3.06	1.00	0.00	0.05	0.04	516.72	0.01	0.00
										1561.2072	0.17	0.21	1.08	0.72	0.00	0.03	0.03	508.68	0.01	0.00
										1840.8384	0.15	0.18	1.48	1.09	0.00	0.05	0.05	486.75	0.01	0.00
										312.488	0.18	0.21	3.06	1.00	0.00	0.05	0.04	516.72	0.01	0.00
										678.3616	0.18	0.21	3.03	1.10	0.00	0.05	0.05	518.25	0.01	0.00
										297.748	0.16	0.19	3.11	0.79	0.00	0.03	0.02	515.80	0.01	0.00
										643.0392	0.18	0.22	1.36	1.45	0.01	0.07	0.07	552.96	0.01	0.00
										297.748	0.19	0.23	3.10	1.16	0.00	0.05	0.05	517.59	0.01	0.00
										321.6	0.19	0.23	1.18	1.17	0.00	0.05	0.05	511.39	0.01	0.00
										643.0392	0.18	0.22	1.36	1.45	0.01	0.07	0.07	552.96	0.01	0.00
										223.2	0.20	0.24	2.03	1.57	0.00	0.04	0.03	262.67	0.01	0.00
										1506.428	0.16	0.20	1.14	0.84	0.00	0.04	0.04	508.20	0.01	0.00
										760.584	0.14	0.17	1.29	1.06	0.00	0.05	0.04	525.56	0.01	0.00
										376.004	0.13	0.15	0.98	0.80	0.00	0.03	0.02	514.03	0.01	0.00
										1060.1544	0.16	0.19	1.04	0.70	0.00	0.03	0.03	510.40	0.01	0.00
										1137.928	0.16	0.20	1.14	0.84	0.00	0.04	0.04	508.20	0.01	0.00
										719.312	0.16	0.19	1.10	1.07	0.00	0.05	0.04	520.10	0.01	0.00
										396.2112	0.18	0.21	3.03	1.10	0.00	0.05	0.05	518.25	0.01	0.00
										916.56	0.23	0.27	1.26	1.48	0.00	0.07	0.07	507.32	0.01	0.00
										294.8	0.26	0.30	3.44	2.08	0.01	0.15	0.14	582.30	0.01	0.00
										1390.116	0.17	0.21	1.08	0.72	0.00	0.03	0.03	508.68	0.01	0.00
										554.76	0.20	0.24	1.23	1.36	0.00	0.06	0.06	522.21	0.01	0.00
										614.792	0.19	0.22	1.25	1.38	0.00	0.06	0.06	524.05	0.01	0.00
										86.832	0.27	0.32	3.42	3.10	0.01	0.06	0.05	582.85	0.01	0.00
										1390.116	0.17	0.21	1.08	0.72	0.00	0.03	0.03	508.68	0.01	0.00
										636.3392	0.17	0.20	1.09	0.98	0.00	0.04	0.04	514.86	0.01	0.00
										1060.1544	0.16	0.19	1.04	0.70	0.00	0.03	0.03	510.40	0.01	0.00
										1137.928	0.16	0.20	1.14	0.84	0.00	0.04	0.04	508.20	0.01	0.00
										719.312	0.16	0.19	1.10	1.07	0.00	0.05	0.04	520.10	0.01	0.00
										396.2112	0.18	0.21	3.03	1.10	0.00	0.05	0.05	518.25	0.01	0.00
										916.56	0.23	0.27	1.26	1.48	0.00	0.07	0.07	507.32	0.01	0.00
										294.8	0.26	0.30	3.44	2.08	0.01	0.15	0.14	582.30	0.01	0.00
										1390.116	0.17	0.21	1.08	0.72	0.00	0.03	0.03	508.68	0.01	0.00
										554.76	0.20	0.24	1.22	1.36	0.00	0.06	0.06	522.21	0.01	0.00
										614.792	0.19	0.22	1.25	1.38	0.00	0.06	0.06	524.05	0.01	0.00
										86.832	0.27	0.32	3.42	3.10	0.01	0.06	0.05	582.85	0.01	0.00
										1390.116	0.17	0.21	1.08	0.72	0.00	0.03	0.03	508.68	0.01	0.00
										636.3392	0.17	0.20	1.09	0.98	0.00	0.04	0.04	514.86	0.01	0.00
										1060.1544	0.16	0.19	1.04	0.70	0.00	0.03	0.03	510.40	0.01	0.00
										1137.928	0.16	0.20	1.14	0.84	0.00	0.04	0.04	508.20	0.01	0.00
										719.312	0.16	0.19	1.10	1.07	0.00	0.05	0.04	520.10	0.01	0.00
										396.2112	0.18	0.21	3.03	1.10	0.00	0.05	0.05	518.25	0.01	0.00
										916.56	0.23	0.27	1.26	1.48	0.00	0.07	0.07	507.32	0.01	0.00
										294.8	0.26	0.30	3.44	2.08	0.01	0.15	0.14	582.30	0.01	0.00
										1390.116	0.17	0.21	1.08	0.72	0.00	0.03	0.03	508.68	0.01	0.00
										554.76	0.20	0.24	1.22	1.36	0.00	0.06	0.06	522.21	0.01	0.00
										614.792	0.19	0.22	1.25	1.38	0.00	0.06	0.06	524.05	0.01	0.00
										86.832	0.27	0.32	3.42	3.10	0.01	0.06	0.05	582.85	0.01	0.00
										1390.116	0.17	0.21	1.08	0.72	0.00	0.03	0.03	508.68	0.01	0.00
										636 3392	0 17	0 20	1 09	0 98	0 00	0 04	0 04	514 86	0 01	0 00

Ocean Going Vessel Activities in Construction Phase 1,4,a • Proposed Project

Hour Entering vessel emission tracking zone (40nmfrom Portl	Inbound transit duration (hours)	Hour of arrival to berth or anchorage	Duration at Anchorage (hours)	Vessel Hotelling at Berth Start Hour	Vessel Hotelling at Berth End Hour	Duration of Hotelling at Berth (hours!	Vessel Moves	Commence Outbound Transit Start Hour	Outbound transit duration (hours)	Hour Exiting vessel emission tracking zone
-	-	-	-	-	-	17	-	-	-	-
24	-	-	-	-	-	17	-	-	-	-
48	-	-	-	-	-	17	-	-	-	-

Ocean Going Vessel Emissions Rates in Construction Phase 1,4,a - Proposed Project

Enlrine	Zone DescriDl:ion	PM10l•/hn-hrl	PM2.5lir/hn-hrl	HCl•/hn-hrl	DPM 111/hn-hrl	Soxl•/hn-hrl	COl11/hn-hrl	NOxl•/hn-hrl	CH4lir/hn-hrl	C02lir/hn-hrl	N20l•/hn-hrl
Aux	Berth	0.19	0.17	0.40	0.19	0.42	1.10	12.20	0.01	696.00	0.03
Aux	Fairwav: 20-Mile to Precautionary Area	0.19	0.17	0.40	0.19	0.42	1.10	12.20	0.01	696.00	0.03
Aux	Fairwav: AQMD Overwater Boundary to 20-Mile	0.19	0.17	0.40	0.19	0.42	1.10	12.20	0.01	696.00	0.03
Aux	Manueverin11:	0.19	0.17	0.40	0.19	0.42	1.10	12.20	0.01	696.00	0.03
Aux	Precautionarv Area	0.19	0.17	0.40	0.19	0.42	1.10	12.20	0.01	696.00	0.03
Boiler	Berth	0.16	0.15	0.10	0.00	0.59	0.20	2.00	0.00	962.00	0.08
Boiler	Fairway: 20-Mile to Precautionary Area	0.16	0.15	0.10	0.00	0.59	0.20	2.00	0.00	962.00	0.08
Boiler	Fairwav: AQMO Overwater Boundarv to 20-Mile	0.16	0.15	0.10	0.00	0.59	0.20	2.00	0.00	962.00	0.08
Boiler	Manueverin.ll	0.16	0.15	0.10	0.00	0.59	0.20	2.00	0.00	962.00	0.08
Boiler	Precautionarv Area	0.16	0.15	0.10	0.00	0.59	0.20	2.00	0.00	962.00	0.08
Main	Fairway: 20-Mile to Precautionary Area	0.18	0.17	0.60	0.18	0.36	1.40	16.00	0.01	593.00	0.03
Main	Fairwav: AQMO Overwater Boundarv to 20-Mile	0.18	0.17	0.60	0.18	0.36	1.40	16.00	0.01	593.00	0.03
Main	Manueverin.ll	0.60	0.55	4.97	0.60	0.73	6.69	36.91	0.10	1184.02	0.07
Main	Precautionarv Area	0.18	0.17	0.60	0.18	0.36	1.40	16.00	0.01	593.00	0.03

B121-131 Annual Harborcraft activity - Proposed Project without Mitigation

Year	Phase	Phase	Equipment Type	OFFROAD Category	HP	Number of equipment	Hours of usage per day	Load Factor	Total working days	Working days percentage in year	Annual working days	Activity (%on time)
2026	1,1	1,1,a	tugboat propulsion	Tug ME-1	1200	1	8	0.31	70	100%	70	100%
2026	1,1	1,1,a	tugboat auxiliary	TugAE-1	46	1	8	0.43	70	100%	70	100%
2026	1,2	1,2,b	tugboat propulsion	Tug ME-2	679	2	24	0.31	120	100%	120	75%
2026	1,2	1,2,b	tugboat auxiliary	TugAE-1	46	1	24	0.43	120	100%	120	25%
2026	1,2	1,2,b	tugboat propulsion 2	Tug ME-2	679	2	24	0.31	120	100%	120	75%
2026	1,2	1,2,b	tugboat auxiliary 2	TugAE-1	46	1	24	0.43	120	100%	120	25%
2026	1,2	1,2,a	tugboat propulsion 3	Tug ME-2	679	2	24	0.31	12	100%	12	75%
2026	1,2	1,2,a	tugboat auxiliary 3	TugAE-1	46	1	24	0.43	12	100%	12	25%
2026	1,3	1,3,b	tugboat propulsion	Tug ME-2	679	2	4	0.31	80	100%	80	25%
2026	1,3	1,3,b	tugboat auxiliary	TugAE-1	46	1	4	0.43	80	100%	80	75%
2026	1,3	1,3,b	dive boat propulsion	Dive ME	496	2	8	0.38	80	100%	80	25%
2026	1,3	1,3,b	dive boat auxiliary	DiveAE	74	1	8	0.32	80	100%	80	75%
2026	1,4	1,4,a	tugboat propulsion	Tug ME-2	679	2	4	0.31	3	0%	0	25%
2026	1,4	1,4,a	tugboat auxiliary	TugAE-1	46	1	4	0.43	3	0%	0	75%
2027	1,1	1,1,a	tugboat propulsion	Tug ME-1	1200	1	8	0.31	70	0%	0	100%
2027	1,1	1,1,a	tugboat auxiliary	TugAE-1	46	1	8	0.43	70	0%	0	100%
2027	1,2	1,2,b	tugboat propulsion	Tug ME-2	679	2	24	0.31	120	0%	0	75%
2027	1,2	1,2,b	tugboat auxiliary	TugAE-1	46	1	24	0.43	120	0%	0	25%
2027	1,2	1,2,b	tugboat propulsion 2	Tug ME-2	679	2	24	0.31	120	0%	0	75%
2027	1,2	1,2,b	tugboat auxiliary 2	TugAE-1	46	1	24	0.43	120	0%	0	25%
2027	1,2	1,2,a	tugboat propulsion 3	Tug ME-2	679	2	24	0.31	12	0%	0	75%
2027	1,2	1,2,a	tugboat auxiliary 3	TugAE-1	46	1	24	0.43	12	0%	0	25%
2027	1,3	1,3,b	tugboat propulsion	Tug ME-2	679	2	4	0.31	80	0%	0	25%
2027	1,3	1,3,b	tugboat auxiliary	TugAE-1	46	1	4	0.43	80	0%	0	75%
2027	1,3	1,3,b	dive boat propulsion	Dive ME	496	2	8	0.38	80	0%	0	25%
2027	1,3	1,3,b	dive boat auxiliary	DiveAE	74	1	8	0.32	80	0%	0	75%
2027	1,4	1,4,a	tue:boat orooulsion	Tue ME-2	679	2	4	0.31	3	100%	3	25%
2027	1,4	1,4,a	tugboat auxiliary	TugAE-1	46	1	4	0.43	3	100%	3	75%
2027	1,4	1,4,a	tue:boat orooulsion 2	Tue ME-2	679	2	2	0.31	3	100%	3	75%
2027	1,4	1,4,a	tugboat auxiliary 2	TugAE-1	46	1	2	0.43	3	100%	3	25%

B121-131 Annual Harborcraft Emissions Rates by Construction Phase and Equipment Category in tons/year- Proposed Project without Mitigation

Year	Phase	Phase	Equipment Type	OFFROAD Category	HP	Emission Rates in g/bhp-hr									
						ROG	THC	CO	NOx	SOx	PM10	PM2.5	CO2	CH4	N2O
2026	1,1	1,1,a	tugboat propulsion	Tug ME-1	1200	0.173367	0.164485	0.764531	4.884455	0.004994	0.085484	0.081723	535.4734	0.002492	0.001246
2026	1,1	1,1,a	tugboat auxiliary	TugAE-1	46	0.162811	0.15447	0.966931	4.081682	0.005892	0.15218	0.145484	631.771	0.00294	0.00147
2026	1,2	1,2,b	tugboat propulsion	Tug ME-2	679	0.172951	0.16409	0.723044	4.576051	0.004994	0.08263	0.078994	535.4734	0.002492	0.001246
2026	1,2	1,2,b	tugboat auxiliary	TugAE-1	46	0.162811	0.15447	0.966931	4.081682	0.005892	0.15218	0.145484	631.771	0.00294	0.00147
2026	1,2	1,2,b	tugboat propulsion 2	Tug ME-2	679	0.172951	0.16409	0.723044	4.576051	0.004994	0.08263	0.078994	535.4734	0.002492	0.001246
2026	1,2	1,2,b	tugboat auxiliary 2	TugAE-1	46	0.162811	0.15447	0.966931	4.081682	0.005892	0.15218	0.145484	631.771	0.00294	0.00147
2026	1,2	1,2,a	tugboat propulsion 3	Tug ME-2	679	0.172951	0.16409	0.723044	4.576051	0.004994	0.08263	0.078994	535.4734	0.002492	0.001246
2026	1,2	1,2,a	tugboat auxiliary 3	TugAE-1	46	0.162811	0.15447	0.966931	4.081682	0.005892	0.15218	0.145484	631.771	0.00294	0.00147
2026	1,3	1,3,b	tugboat propulsion	Tug ME-2	679	0.172951	0.16409	0.723044	4.576051	0.004994	0.08263	0.078994	535.4734	0.002492	0.001246
2026	1,3	1,3,b	tugboat auxiliary	TugAE-1	46	0.162811	0.15447	0.966931	4.081682	0.005892	0.15218	0.145484	631.771	0.00294	0.00147
2026	1,3	1,3,b	dive boat propulsion	Dive ME	496	0.171561	0.162771	0.719708	4.558276	0.004994	0.081631	0.078039	535.4734	0.002492	0.001246
2026	1,3	1,3,b	dive boat auxiliary	Dive AE	74	0.167701	0.159109	1.574715	4.215135	0.005552	0.185019	0.176879	595.2946	0.00277	0.001385
2026	1,4	1,4,a	tugboat propulsion	Tug ME-2	679	0.172951	0.16409	0.723044	4.576051	0.004994	0.08263	0.078994	535.4734	0.002492	0.001246
2026	1,4	1,4,a	tugboat auxiliary	TugAE-1	46	0.162811	0.15447	0.966931	4.081682	0.005892	0.15218	0.145484	631.771	0.00294	0.00147
2027	1,1	1,1,a	tugboat propulsion	Tug ME-1	1200	0.173621	0.164726	0.765172	4.887904	0.004994	0.085672	0.081903	535.4734	0.002492	0.001246
2027	1,1	1,1,a	tugboat auxiliary	TugAE-1	46	0.163032	0.154679	0.967989	4.082345	0.005892	0.152306	0.145605	631.771	0.00294	0.00147
2027	1,2	1,2,b	tugboat propulsion	Tug ME-2	679	0.173204	0.16433	0.723651	4.579282	0.004994	0.082812	0.079168	535.4734	0.002492	0.001246
2027	1,2	1,2,b	tugboat auxiliary	TugAE-1	46	0.163032	0.154679	0.967989	4.082345	0.005892	0.152306	0.145605	631.771	0.00294	0.00147
2027	1,2	1,2,b	tugboat propulsion 2	Tug ME-2	679	0.173204	0.16433	0.723651	4.579282	0.004994	0.082812	0.079168	535.4734	0.002492	0.001246
2027	1,2	1,2,b	tugboat auxiliary 2	TugAE-1	46	0.163032	0.154679	0.967989	4.082345	0.005892	0.152306	0.145605	631.771	0.00294	0.00147
2027	1,2	1,2,a	tugboat propulsion 3	Tug ME-2	679	0.173204	0.16433	0.723651	4.579282	0.004994	0.082812	0.079168	535.4734	0.002492	0.001246
2027	1,2	1,2,a	tugboat auxiliary 3	TugAE-1	46	0.163032	0.154679	0.967989	4.082345	0.005892	0.152306	0.145605	631.771	0.00294	0.00147
2027	1,3	1,3,b	tugboat propulsion	Tug ME-2	679	0.173204	0.16433	0.723651	4.579282	0.004994	0.082812	0.079168	535.4734	0.002492	0.001246
2027	1,3	1,3,b	tugboat auxiliary	TugAE-1	46	0.163032	0.154679	0.967989	4.082345	0.005892	0.152306	0.145605	631.771	0.00294	0.00147
2027	1,3	1,3,b	dive boat propulsion	Dive ME	496	0.171751	0.162951	0.720163	4.5607	0.004994	0.081767	0.078169	535.4734	0.002492	0.001246
2027	1,3	1,3,b	dive boat auxiliary	Dive AE	74	0.167887	0.159286	1.576131	4.215698	0.005552	0.185146	0.176999	595.2946	0.00277	0.001385
2027	1,4	1,4,a	tue:boat orooulsion	Tue ME-2	679	0.173204	0.16433	0.723651	4.579282	0.004994	0.082812	0.079168	535.4734	0.002492	0.001246
2027	1,4	1,4,a	tugboat auxiliary	TugAE-1	46	0.163032	0.154679	0.967989	4.082345	0.005892	0.152306	0.145605	631.771	0.00294	0.00147
2027	1,4	1,4,a	tue:boat orooulsion 2	Tue ME-2	679	0.173204	0.16433	0.723651	4.579282	0.004994	0.082812	0.079168	535.4734	0.002492	0.001246
2027	1,4	1,4,a	tugboat auxiliary 2	TugAE-1	46	0.163032	0.154679	0.967989	4.082345	0.005892	0.152306	0.145605	631.771	0.00294	0.00147

B121-131 T7 single construction Idling Emission Factors in g/hr - Proposed Project Without Mitigation

								Emission Rates in g/hr													
Calender Year	Equipment Type	Phase	Phase	Total working days	Daily roundtrips	Idling hours per roundtrip	Idling hours/day	ROG	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	SOx	CH4	N2O
2026		I,2,b	I,2	120	108	0.2	18	3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,2,b	I,2	120	108	0.2	18	3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,1,a	I,1	23	8	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,1,a	I,1	23	8	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,3,b	I,3	73	9	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,3,b	I,3	73	9	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,3,c	I,3	4	23	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,3,c	I,3	4	23	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,3,c	I,3	10	9	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,3,c	I,3	10	9	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,3,c	I,3	2	10	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,3,c	I,3	2	10	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,3,c	I,3	35	5	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,3,c	I,3	35	5	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,3,c	I,3	1	20	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,3,c	I,3	1	20	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,3,c	I,3	8	15	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,3,c	I,3	8	15	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,3,c	I,3	4	4	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,3,c	I,3	4	4	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,3,c	I,3	1	15	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,3,c	I,3	1	15	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,3,c	I,3	10	115	0.2	20	3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,3,c	I,3	10	115	0.2	20	3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,3,c	I,3	10	115	0.2	20	3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,3,c	I,3	10	115	0.2	20	3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,3,d	I,3	2	10	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,3,d	I,3	2	10	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,5,a (Stage I)	I,5	110	1	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,5,a (Stage I)	I,5	110	1	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,5,a (Stage II)	I,5	36	1	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,5,a (Stage II)	I,5	36	1	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,5,a (Stage III)	I,5	110	1	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2026		I,5,a (Stage III)	I,5	110	1	0.2		3.45	3.93	50.71	39.04	8146.93	0.02	0.02	0.00	0.00	0.00	0.00	0.08	0.16	1.28
2027		I,2,b	I,2	120	108	0.2	18	3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,2,b	I,2	120	108	0.2	18	3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,1,a	I,1	23	8	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,1,a	I,1	23	8	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,3,b	I,3	73	9	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,3,b	I,3	73	9	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,3,c	I,3	4	23	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,3,c	I,3	4	23	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,3,c	I,3	10	9	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,3,c	I,3	10	9	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,3,c	I,3	2	10	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,3,c	I,3	2	10	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,3,c	I,3	35	5	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,3,c	I,3	35	5	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,3,c	I,3	1	20	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,3,c	I,3	1	20	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,3,c	I,3	8	15	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,3,c	I,3	8	15	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,3,c	I,3	4	4	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,3,c	I,3	4	4	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,3,c	I,3	1	15	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,3,c	I,3	1	15	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,3,c	I,3	10	115	0.2	20	3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,3,c	I,3	10	115	0.2	20	3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,3,c	I,3	10	115	0.2	20	3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,3,c	I,3	10	115	0.2	20	3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,3,d	I,3	2	10	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,3,d	I,3	2	10	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,5,a (Stage I)	I,5	110	1	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,5,a (Stage I)	I,5	110	1	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,5,a (Stage II)	I,5	36	1	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,5,a (Stage II)	I,5	36	1	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,5,a (Stage III)	I,5	110	1	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	1.27
2027		I,5,a (Stage III)	I,5	110	1	0.2		3.45	3.93	50.77	38.17	8044.65	0.02	0.01	0.00	0.00	0.00	0.00	0.08	0.16	

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calender Vur	Eaulpment Type							
2026	haul trucks-onsltetransit	I,2,b	1,2 ••••	••••• 15	120	1	108	0.2
2026	haul trucks-offsltetransit	I,2,b	1,2	55	120	200	108	0.2
2026	haul truckdemoll shed materials-offsltetrans it	I,1,a	1,1	55	23	5	8	0.2
2026	haul truckdemoll shed materials-onsltetrans it	I,1,a	1,1	15	23	1	8	0.2
2026	pil edellvervtrucks-onsltetransit	I,3,b	1,3	15	73	1	9	0.2
2026	pil edellvervtrucks-offsltetransit	I,3,b	1,3	55	73	65	9	0.2
2026	concretedellvervtrucks-onsltetrans it	I,3,c	1,3	15	4	1	23	0.2
2026	concretedellvervtrucks-offsltetrans it	I,3,c	1,3	55	4	65	23	0.2
2026	haul trucks-onsltetransit	I,3,c	1,3	15	10	1	9	0.2
2026	haul trucks-offsltetransit	I,3,c	1,3	55	10	20	9	0.2
2026	rail dellvervtrucks-onsltetransit	I,3,c	1,3	15	2	1	10	0.2
2026	rail dellvervtrucks-offsltetransit	I,3,c	1,3	55	2	65	10	0.2
2026	pil edellvervtrucks-onsltetransit	I,3,c	1,3	15	35	1	5	0.2
2026	pil edellvervtrucks-offsltetransit	I,3,c	1,3	55	35	65	5	0.2
2026	debrishaul dellvervtrucks-onsltetransit	I,3,c	1,3	15	1	1	20	0.2
2026	debrishaul dellvervtrucks-offsltetransit	I,3,c	1,3	55	1	20	20	0.2
2026	haul dellvervtrucks-onsltetransit	I,3,c	1,3	15	8	1	15	0.2
2026	haul dellvervtrucks-offsltetransit	I,3,c	1,3	55	8	20	15	0.2
2026	concrete sl urrvdellvervtrucks-onsltetrans it	I,3,c	1,3	15	4	1	4	0.2
2026	concrete sl urrvdellvervtrucks-offsltetrans it	I,3,c	1,3	55	4	20	4	0.2
2026	asp haltdellvervtrucks-onsltetransit	I,3,c	1,3	15	1	1	15	0.2
2026	asp haltdellvervtrucks-offsltetransit	I,3,c	1,3	55	1	20	15	0.2
2026	asp haltdellvervtrucks-onsltetransit	I,3,c	1,3	15	10	1	115	0.2
2026	asp haltdellvervtrucks-offsltetransit	I,3,c	1,3	55	10	20	115	0.2
2026	scraoed materl al haulln1trucks-onsltetrans it	I,3,c	1,3	15	10	1	115	0.2
2026	scraoed materl al haulln1trucks-offsltetrans it	I,3,c	1,3	55	10	20	115	0.2
2026	rail dellvervtrucks-onsltetransit	I,3,d	1,3	15	2	1	10	0.2
2026	rail dellvervtrucks-offsltetransit	I,3,d	1,3	55	2	65	10	0.2
2026	Heavvtrucks-Onslte	I,5,a(Sta el)	1,5	15	110	1	1	0.2
2026	Heavvtrucks-Offslte	I,5,a(Sta el)	1,5	55	110	65	1	0.2
2026	Heavvtrucks-Onslte	I,5,a(Sta ell)	1,5	15	36	1	1	0.2
2026	Heavvtrucks-Offslte	I,5,a(Sta ell)	1,5	55	36	65	1	0.2
2026	Heavvtrucks-Onslte	I,5,a(Sta elll)	1,5	15	110	1	1	0.2
2026	Heavvtrucks-Offslte	I,5,a(Sta elll)	1,5	55	110	65	1	0.2
2026	Heavvtrucks-Onslte	1,6,a(oatfonal)	1,6	15	180	1	1	0.2
2026	Heavvtrucks-Offslte	1,6,a(oatfonal)	1,6	55	180	65	1	0.2
2027	haul trucks-onsltetransit	I,2,b	1,2	15	120	1	108	0.2
2027	haul trucks-offsltetransit	I,2,b	1,2	55	120	200	108	0.2
2027	haul truckdemoll shed materials-offsltetrans it	I,1,a	1,1	55	22.5	5	8	0.2
2027	haul truckdemoll shed materials-onsltetrans it	I,1,a	1,1	15	22.5	1	8	0.2
2027	pil edellvervtrucks-onsltetransit	I,3,b	1,3	15	73	1	9	0.2
2027	pil edellvervtrucks-offsltetransit	I,3,b	1,3	55	73	65	9	0.2
2027	concretedellvervtrucks-onsltetrans it	I,3,c	1,3	15	4	1	23	0.2
2027	concretedellvervtrucks-offsltetrans it	I,3,c	1,3	55	4	65	23	0.2
2027	haul trucks-onsltetransit	I,3,c	1,3	15	10	1	9	0.2
2027	haul trucks-offsltetransit	I,3,c	1,3	55	10	20	9	0.2
2027	rail dellvervtrucks-onsltetransit	I,3,c	1,3	15	2	1	10	0.2
2027	rail dellvervtrucks-offsltetransit	I,3,c	1,3	55	2	65	10	0.2
2027	pil edellvervtrucks-onsltetransit	I,3,c	1,3	15	35	1	5	0.2
2027	pil edellvervtrucks-offsltetransit	I,3,c	1,3	55	35	65	5	0.2
2027	debrishaul dellvervtrucks-onsltetransit	I,3,c	1,3	15	1	1	20	0.2
2027	debrishaul dellvervtrucks-offsltetransit	I,3,c	1,3	55	1	20	20	0.2
2027	haul dellvervtrucks-onsltetransit	I,3,c	1,3	15	8	1	15	0.2
2027	haul dellvervtrucks-offsltetransit	I,3,c	1,3	55	8	20	15	0.2
2027	concrete sl urrvdellvervtrucks-onsltetrans it	I,3,c	1,3	15	4	1	4	0.2
2027	concrete sl urrvdellvervtrucks-offsltetrans it	I,3,c	1,3	55	4	20	4	0.2
2027	asp haltdellvervtrucks-onsltetransit	I,3,c	1,3	15	1	1	15	0.2
2027	asp haltdellvervtrucks-offsltetransit	I,3,c	1,3	55	1	20	15	0.2
2027	asp haltdellvervtrucks-onsltetransit	I,3,c	1,3	15	10	1	115	0.2
2027	asp haltdellvervtrucks-offsltetransit	I,3,c	1,3	55	10	20	115	0.2
2027	scraoed materl al haulln1trucks-onsltetrans it	I,3,c	1,3	15	10	1	115	0.2
2027	scraoed materl al haulln1trucks-offsltetrans it	I,3,c	1,3	55	10	20	115	0.2
2027	rail dellvervtrucks-onsltetransit	I,3,d	1,3	15	2	1	10	0.2
2027	rail dellvervtrucks-offsltetransit	I,3,d	1,3	55	2	65	10	0.2
2027	Heavvtrucks-Onslte	I,5,a(Sta el)	1,5	15	110	1	1	0.2
2027	Heavvtrucks-Offslte	I,5,a(Sta el)	1,5	55	110	65	1	0.2
2027	Heavvtrucks-Onslte	I,5,a(Sta ell)	1,5	15	36	1	1	0.2
2027	Heavvtrucks-Offslte	I,5,a(Sta ell)	1,5	55	36	65	1	0.2
2027	Heavvtrucks-Onslte	I,5,a(Sta elll)	1,5	15	110	1	1	0.2
2027	Heavvtrucks-Offslte	I,5,a(Sta elll)	1,5	55	110	65	1	0.2
2027	Heavvtrucks-Onslte	1,6,a(oatfonal)	1,6	15	180	1	1	0.2
2027	Heavvtrucks-Offslte	1,6,a(oatfonal)	1,6	55	180	65	1	0.2

																ates in g/mi						
																PM10TW	PM10BW	PM2.5TW	PM2.5BW	SOx	CH4	N2O
																0.04	0.08	0.01	0.03	0.02	0.00	0.34
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.34
																0.04	0.08	0.01	0.03	0.02	0.00	0.34
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.34
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.34
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.34
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.34
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.34
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.34
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.34
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.34
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.34
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.34
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.34
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.34
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.34
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.34
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.34
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.34
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.33
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.33
																0.04	0.08	0.01	0.03	0.02	0.00	0.33
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.33
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.33
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.33
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.33
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.33
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.33
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.33
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.33
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.33
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.33
																0.04	0.08	0.01	0.03	0.01	0.00	0.22
																0.04	0.08	0.01	0.03	0.02	0.00	0.33
																0.04	0.08	0.01	0.03	0.01	0.00	0.22

B121-131 T7 Tractor Class 8 Activity - Proposed Project With Mitigation

2026	haul trucks - onsite transi	l,2,b	l,2	15	120	1		
2026	haul trucks - offsite trans	l,2,b	l,2	55	120	200		
2026	haul truck demolished m	l,1,a	l,1	55	23	5		
2026	haul truck demolished m	l,1,a	l,1	15	23	1		
2026	pile delivery trucks - onsi	l,3,b	l,3	15	73	1		
2026	pile delivery trucks - offsi	l,3,b	l,3	55	73	65		
2026	concrete delivery trucks -	l,3,c	l,3	15	4	1		
2026	concrete delivery trucks -	l,3,c	l,3	55	4	65		
2026	haul trucks - onsite transi	l,3,c	l,3	15	10	1		
2026	haul trucks - offsite trans	l,3,c	l,3	55	10	20		
2026	rail delivery trucks - onsit	l,3,c	l,3	15	2	1		
2026	rail delivery trucks - offsit	l,3,c	l,3	55	2	65		
2026	pile delivery trucks - onsi	l,3,c	l,3	15	35	1		
2026	pile delivery trucks - offsi	l,3,c	l,3	55	35	65		
2026	debris haul delivery truck	l,3,c	l,3	15	1	1		
2026	debris haul delivery truck	l,3,c	l,3	55	1	20		
2026	haul delivery trucks - ons	l,3,c	l,3	15	8	1		
2026	haul delivery trucks - offs	l,3,c	l,3	55	8	20		
2026	concrete slurry delivery t	l,3,c	l,3	15	4	1		
2026	concrete slurry delivery t	l,3,c	l,3	55	4	20		
2026	asphalt delivery trucks - o	l,3,c	l,3	15	1	1		
2026	asphalt delivery trucks - o	l,3,c	l,3	55	1	20		
2026	asphalt delivery trucks - o	l,3,c	l,3	15	10	1		
2026	asphalt delivery trucks - o	l,3,c	l,3	55	10	20		
2026	scraped material hauling	l,3,c	l,3	15	10	1		
2026	scraped material hauling	l,3,c	l,3	55	10	20		
2026	rail delivery trucks - onsit	l,3,d	l,3	15	2	1		
2026	rail delivery trucks - offsit	l,3,d	l,3	55	2	65		
2026	Heavy trucks - Onsite	l,5,a (Stage I)	l,5	15	110	1		
2026	Heavy trucks - Offsite	l,5,a (Stage I)	l,5	55	110	65		
2026	Heavy trucks - Onsite	l,5,a (Stage II)	l,5	15	36	1		
2026	Heavy trucks - Offsite	l,5,a (Stage II)	l,5	55	36	65		
2026	Heavy trucks - Onsite	l,5,a (Stage III)	l,5	15	110	1		
2026	Heavy trucks - Offsite	l,5,a (Stage III)	l,5	55	110	65		
2027	haul trucks - onsite transi	l,2,b	l,2	15	120	1		
2027	haul trucks - offsite trans	l,2,b	l,2	55	120	200		
2027	haul truck demolished m	l,1,a	l,1	55	22.5	5		
2027	haul truck demolished m	l,1,a	l,1	15	22.5	1		
2027	pile delivery trucks - onsi	l,3,b	l,3	15	73	1		
2027	pile delivery trucks - offsi	l,3,b	l,3	55	73	65		
2027	concrete delivery trucks -	l,3,c	l,3	15	4	1		
2027	concrete delivery trucks -	l,3,c	l,3	55	4	65		
2027	haul trucks - onsite transi	l,3,c	l,3	15	10	1		
2027	haul trucks - offsite trans	l,3,c	l,3	55	10	20		
2027	rail delivery trucks - onsit	l,3,c	l,3	15	2	1		
2027	rail delivery trucks - offsit	l,3,c	l,3	55	2	65		
2027	pile delivery trucks - onsi	l,3,c	l,3	15	35	1		
2027	pile delivery trucks - offsi	l,3,c	l,3	55	35	65		
2027	debris haul delivery truck	l,3,c	l,3	15	1	1		
2027	debris haul delivery truck	l,3,c	l,3	55	1	20		
2027	haul delivery trucks - ons	l,3,c	l,3	15	8	1		
2027	haul delivery trucks - offs	l,3,c	l,3	55	8	20		
2027	concrete slurry delivery t	l,3,c	l,3	15	4	1		
2027	concrete slurry delivery t	l,3,c	l,3	55	4	20		
2027	asphalt delivery trucks - o	l,3,c	l,3	15	1	1		
2027	asphalt delivery trucks - o	l,3,c	l,3	55	1	20		
2027	asphalt delivery trucks - o	l,3,c	l,3	15	10	1		
2027	asphalt delivery trucks - o	l,3,c	l,3	55	10	20		
2027	scraped material hauling	l,3,c	l,3	15	10	1		
2027	scraped material hauling	l,3,c	l,3	55	10	20		
2027	rail delivery trucks - onsit	l,3,d	l,3	15	2	1		
2027	rail delivery trucks - offsit	l,3,d	l,3	55	2	65		
2027	Heavy trucks - Onsite	l,5,a (Stage I)	l,5	15	110	1		
2027	Heavy trucks - Offsite	l,5,a (Stage I)	l,5	55	110	65		
2027	Heavy trucks - Onsite	l,5,a (Stage II)	l,5	15	36	1		
2027	Heavy trucks - Offsite	l,5,a (Stage II)	l,5	55	36	65		
2027	Heavy trucks - Onsite	l,5,a (Stage III)	l,5	15	110	1		
2027	Heavy trucks - Offsite	l,5,a (Stage III)	l,5	55	110	65		

				Emission Rates in g/mi													
										PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	SOx	CH4	N2O
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.34
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.34
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.35
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.35
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.35
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.35
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.35
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.35
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.35
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.35
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.35
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.35
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.35
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.35
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.35
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.35
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.35
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.35
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.33
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.33
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.34
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.34
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.34
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.34
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.34
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.34
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.34
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.34
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.34
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.34
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.34
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.34
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.34
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0.01	0.01	0.04	0.08	0.01	0.03	0.02	0.00	0.34
									0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.22
									0 01	0 01	0 04	0 08	0 01	0 03	0 02	0 00	0 34

B121-B131 ONROAD Vehicle Annual Emissions by Construction Phase - Running Exhaust

					ONROAD Vehicle						Emission Rate in g/mile		Annual Emissions in tons/year	
Year	Phase	Phase	Source Type	Equipment Type	Miles per roundtrip	Daily roundtrips	Total working days	2026 year Percentage	Annual Working days	Key	PM10	PM2.5	PM10	PM2.5
2026	I,1,a	I,1	onroad	haul truck demolis	5	8	23	100%	23	offsite	0.08			
2026	I,1,a	I,1	onroad	haul truck demolis	1	8	23	100%	23	onsite-truck	0.87			
2026	I,2,b	I,2	onroad	haul trucks - onsite	1	108	120	100%	120	onsite-truck	0.87			
2026	I,2,b	I,2	onroad	haul trucks - offsit	200	108	120	100%	120	offsite	0.08			
2026	I,2,b	I,2	onroad	worker vehicles (L	13	8	120	100%	120	onsite-pc	0.11			
2026	I,3,b	I,3	onroad	pile delivery trucks	1	9	73	100%	73	onsite-truck	0.87			
2026	I,3,b	I,3	onroad	pile delivery trucks	65	9	73	100%	73	offsite	0.08			
2026	I,3,b	I,3	onroad	worker vehicles (L	13	5	80	100%	80	offsite	0.08			
2026	I,3,c	I,3	onroad	concrete delivery t	1	23	4	28%	1	onsite-truck	0.87			
2026	I,3,c	I,3	onroad	concrete delivery t	65	23	4	28%	1	offsite	0.08			
2026	I,3,c	I,3	onroad	haul trucks - onsite	1	9	10	28%	3	onsite-truck	0.87			
2026	I,3,c	I,3	onroad	haul trucks - offsit	20	9	10	28%	3	offsite	0.08			
2026	I,3,c	I,3	onroad	rail delivery trucks	1	10	2	28%	1	onsite-truck	0.87			
2026	I,3,c	I,3	onroad	rail delivery trucks	65	10	2	28%	1	offsite	0.08			
2026	I,3,c	I,3	onroad	pile delivery trucks	1	5	35	28%	10	onsite-truck	0.87			
2026	I,3,c	I,3	onroad	pile delivery trucks	65	5	35	28%	10	offsite	0.08			
2026	I,3,c	I,3	onroad	debris haul deliver	1	20	1	28%	0	onsite-truck	0.87			
2026	I,3,c	I,3	onroad	debris haul deliver	20	20	1	28%	0	offsite	0.08			
2026	I,3,c	I,3	onroad	haul delivery truck	1	15	8	28%	2	onsite-truck	0.87			
2026	I,3,c	I,3	onroad	haul delivery truck	20	15	8	28%	2	offsite	0.08			
2026	I,3,c	I,3	onroad	concrete slurry del	1	4	4	28%	1	onsite-truck	0.87			
2026	I,3,c	I,3	onroad	concrete slurry del	20	4	4	28%	1	offsite	0.08			
2026	I,3,c	I,3	onroad	asphalt delivery tr	1	15	1	28%	0	onsite-truck	0.87			
2026	I,3,c	I,3	onroad	asphalt delivery tr	20	15	1	28%	0	offsite	0.08			
2026	I,3,c	I,3	onroad	worker vehicles (L	13	11	330	28%	91	offsite	0.08			
2026	I,3,c	I,3	onroad	asphalt delivery tr	1	115	10	28%	3	onsite-truck	0.87			
2026	I,3,c	I,3	onroad	asphalt delivery tr	20	115	10	28%	3	offsite	0.08			
2026	I,3,c	I,3	onroad	scraped material h	1	115	10	28%	3	onsite-truck	0.87			
2026	I,3,c	I,3	onroad	scraped material h	20	115	10	28%	3	offsite	0.08			
2026	I,3,c	I,3	onroad	worker vehicles (L	13	6	330	28%	91	offsite	0.08			
2026	I,3,d	I,3	onroad	rail delivery trucks	1	10	2	0%	0	onsite-truck	0.87			
2026	I,3,d	I,3	onroad	rail delivery trucks	65	10	2	0%	0	offsite	0.08			
2026	I,3,d	I,3	onroad	worker vehicles - c	13	11	20	0%	0	offsite	0.08			
2026	I,4,a	I,4	onroad	worker vehicles (L	13	6	18	0%	0	offsite	0.08			
2026	I,5,a (Stage I)	I,5	onroad	Heavy trucks - Ons	1	1	110	87%	96	onsite-truck	0.87			
2026	I,5,a (Stage I)	I,5	onroad	Heavy trucks - Offs	65	1	110	87%	96	offsite	0.08			
2026	I,5,a (Stage I)	I,5	onroad	Pickups - Onsite	1	1	34	87%	29	onsite-truck	0.87			
2026	I,5,a (Stage I)	I,5	onroad	Pickups - Offsite	65	1	34	87%	29	offsite	0.08			
2026	I,5,a (Stage II)	I,5	onroad	Heavy trucks - Ons	1	1	36	0%	0	onsite-truck	0.87			
2026	I,5,a (Stage II)	I,5	onroad	Heavy trucks - Offs	65	1	36	0%	0	offsite	0.08			
2026	I,5,a (Stage II)	I,5	onroad	Pickups - Onsite	1	1	11	0%	0	onsite-truck	0.87			
2026	I,5,a (Stage II)	I,5	onroad	Pickups - Offsite	65	1	11	0%	0	offsite	0.08			
2026	I,5,a (Stage III)	I,5	onroad	Heavy trucks - Ons	1	1	110	0%	0	onsite-truck	0.87			
2026	I,5,a (Stage III)	I,5	onroad	Heavy trucks - Offs	65	1	110	0%	0	offsite	0.08			
2026	I,5,a (Stage III)	I,5	onroad	Pickups - Onsite	1	1	34	0%	0	onsite-truck	0.87			
2026	I,5,a (Stage III)	I,5	onroad	Pickups - Offsite	65	1	34	0%	0	offsite	0.08			
2027	I,1,a	I,1	onroad	haul truck demolis	5	8	22.5	100%	23	offsite	0.08			
2027	I,1,a	I,1	onroad	haul truck demolis	1	8	22.5	100%	23	onsite-truck	0.87			
2027	I,2,b	I,2	onroad	haul trucks - onsite	1	108	120	100%	120	onsite-truck	0.87			
2027	I,2,b	I,2	onroad	haul trucks - offsit	200	108	120	100%	120	offsite	0.08			
2027	I,2,b	I,2	onroad	worker vehicles (L	13	8	120	100%	120	onsite-pc	0.11			
2027	I,3,b	I,3	onroad	pile delivery trucks	1	9	73	100%	73	onsite-truck	0.87			
2027	I,3,b	I,3	onroad	pile delivery trucks	65	9	73	100%	73	offsite	0.08			
2027	I,3,b	I,3	onroad	worker vehicles (L	13	5	80	100%	80	offsite	0.08			
2027	I,3,c	I,3	onroad	concrete delivery t	1	23	4	28%	1	onsite-truck	0.87			
2027	I,3,c	I,3	onroad	concrete delivery t	65	23	4	28%	1	offsite	0.08			
2027	I,3,c	I,3	onroad	haul trucks - onsite	1	9	10	28%	3	onsite-truck	0.87			
2027	I,3,c	I,3	onroad	haul trucks - offsit	20	9	10	28%	3	offsite	0.08			
2027	I,3,c	I,3	onroad	rail delivery trucks	1	10	2	28%	1	onsite-truck	0.87			
2027	I,3,c	I,3	onroad	rail delivery trucks	65	10	2	28%	1	offsite	0.08			
2027	I,3,c	I,3	onroad	pile delivery trucks	1	5	35	28%	10	onsite-truck	0.87			
2027	I,3,c	I,3	onroad	pile delivery trucks	65	5	35	28%	10	offsite	0.08			
2027	I,3,c	I,3	onroad	debris haul deliver	1	20	1	28%	0	onsite-truck	0.87			
2027	I,3,c	I,3	onroad	debris haul deliver	20	20	1	28%	0	offsite	0.08			

B121-131 Construction Annual Emissions - Proposed Project Without Mitigation

Year	Phase	Phase_dec	Category	Unit	ROG	CO	NOx	SOx	PM10	PM2.5
2026	l,1	Wharf dem	HC	tons/year	0.04	0.19	1.17	0.00	0.02	0.02
2026	l,1	Wharf dem	OFFROAD	tons/year	0.05	0.40	0.38	0.00	0.02	0.02
2026	l,1	Wharf dem	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026	l,2	Dredging	HC	tons/year	0.02	0.07	0.47	0.00	0.01	0.01
2026	l,2	Dredging	HC	tons/year	0.35	1.48	9.30	0.01	0.17	0.16
2026	l,2	Dredging	OFFROAD	tons/year	0.73	3.86	19.40	0.02	0.39	0.36
2026	l,2	Dredging	ONROAD HD	tons/year	0.05	0.38	2.79	0.04	0.64	0.20
2026	l,2	Dredging	ONROAD LDV	tons/year	0.00	0.03	0.00	0.00	0.00	0.00
2026	l,3	Rock dike	OFFROAD	tons/year	0.17	1.40	1.19	0.01	0.05	0.05
2026	l,3	Pile driving	HC	tons/year	0.02	0.10	0.55	0.00	0.01	0.01
2026	l,3	Pile driving	OFFROAD	tons/year	0.07	0.53	0.47	0.00	0.02	0.02
2026	l,3	Pile driving	ONROAD HD	tons/year	0.00	0.01	0.05	0.00	0.01	0.00
2026	l,3	Pile driving	ONROAD LDV	tons/year	0.00	0.01	0.00	0.00	0.00	0.00
2026	l,3	Rail for cra	OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026	l,3	Rail for cra	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026	l,3	Rail for cra	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026	l,3	Wharf deck	OFFROAD	tons/year	0.01	0.07	0.06	0.00	0.00	0.00
2026	l,3	Wharf deck	ONROAD HD	tons/year	0.00	0.02	0.03	0.00	0.01	0.00
2026	l,3	Wharf deck	ONROAD LDV	tons/year	0.00	0.03	0.00	0.00	0.00	0.00
2026	l,4	Crane install	OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026	l,4	Delivery of c	HC	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026	l,4	Delivery of c	OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026	l,4	Delivery of c	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026	l,5	Stage I: Cons	OFFROAD	tons/year	0.02	0.10	0.09	0.00	0.00	0.00
2026	l,5	Stage I: Cons	ONROAD HD	tons/year	0.00	0.00	0.01	0.00	0.00	0.00
2026	l,5	Stage I: Cons	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026	l,5	Stage II: Asse	OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026	l,5	Stage II: Asse	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026	l,5	Stage II: Asse	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026	l,5	Stage III: Cor	OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026	l,5	Stage III: Cor	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026	l,5	Stage III: Cor	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026 Total					**1.53**	**8.69**	**35.97**	**0.08**	**1.36**	**0.85**
2027	l,1	Wharf dem	HC	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	l,1	Wharf dem	OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	l,1	Wharf dem	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	l,2	Dredging	HC	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	l,2	Dredging	HC	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	l,2	Dredging	OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	l,2	Dredging	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.25	0.04
2027	l,2	Dredging	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	l,3	Rock dike	OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	l,3	Pile driving	HC	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	l,3	Pile driving	OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	l,3	Pile driving	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	l,3	Pile driving	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	l,3	Rail for cra	OFFROAD	tons/year	0.00	0.04	0.03	0.00	0.00	0.00
2027	l,3	Rail for cra	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	l,3	Rail for cra	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	l,3	Wharf deck	OFFROAD	tons/year	0.02	0.19	0.14	0.00	0.01	0.01
2027	l,3	Wharf deck	ONROAD HD	tons/year	0.00	0.04	0.08	0.00	0.01	0.00
2027	l,3	Wharf deck	ONROAD LDV	tons/year	0.00	0.07	0.01	0.00	0.00	0.00
2027	l,4	Crane install	OFFROAD	tons/year	0.00	0.01	0.01	0.00	0.00	0.00
2027	l,4	Delivery of c	HC	tons/year	0.00	0.00	0.02	0.00	0.00	0.00
2027	l,4	Delivery of c	OFFROAD	tons/year	0.01	0.06	0.05	0.00	0.00	0.00
2027	l,4	Delivery of c	OGV	tons/year	0.11	0.24	2.65	0.08	0.04	0.03
2027	l,4	Delivery of c	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	l,5	Stage I: Cons	OFFROAD	tons/year	0.00	0.01	0.01	0.00	0.00	0.00
2027	l,5	Stage I: Cons	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	l,5	Stage I: Cons	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	l,5	Stage II: Asse	OFFROAD	tons/year	0.01	0.04	0.03	0.00	0.00	0.00
2027	l,5	Stage II: Asse	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	l,5	Stage II: Asse	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	l,5	Stage III: Cor	OFFROAD	tons/year	0.02	0.11	0.10	0.00	0.00	0.00
2027	l,5	Stage III: Cor	ONROAD HD	tons/year	0.00	0.00	0.01	0.00	0.00	0.00
2027	l,5	Stage III: Cor	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027 Total					**0.51**	**3.23**	**5.01**	**0.09**	**0.42**	**0.17**

B121-131 Construction Peak Day Emissions - Proposed Project without Mitigation

Year	Phase	Phase_dec	Category	Unit	ROG	CO	NOx	SOx	PM10	PM2.5
2026	I,2	Dredging	HC	lbs/day	2.93	12.33	77.51	0.08	1.42	1.36
2026	I,2	Dredging	HC	lbs/day	5.86	24.66	155.03	0.17	2.84	2.72
2026	I,2	Dredging	OFFROAD	lbs/day	12.14	64.32	323.39	0.38	6.46	5.94
2026	I,2	Dredging	ONROAD HD	lbs/day	0.77	6.30	46.44	0.65	10.64	3.29
2026	I,2	Dredging	ONROAD LDV	lbs/day	0.02	0.52	0.04	0.00	0.03	0.01
2026	I,3	Rock dike	OFFROAD	lbs/day	2.87	23.41	19.87	0.09	0.91	0.84
2026	I,3	Pile driving	HC	lbs/day	0.52	2.49	13.68	0.02	0.29	0.28
2026	I,3	Pile driving	OFFROAD	lbs/day	1.68	13.35	11.71	0.05	0.54	0.50
2026	I,3	Pile driving	ONROAD HD	lbs/day	0.04	0.41	1.42	0.02	0.30	0.09
2026	I,3	Pile driving	ONROAD LDV	lbs/day	0.00	0.18	0.02	0.00	0.01	0.00
2026	I,3	Wharf deck	OFFROAD	lbs/day	0.90	9.03	5.82	0.03	0.26	0.24
2026	I,3	Wharf deck	ONROAD HD	lbs/day	0.29	3.76	7.04	0.08	2.87	0.61
2026	I,3	Wharf deck	ONROAD LDV	lbs/day	0.00	0.18	0.02	0.00	0.04	0.01
2026	I,5	Stage I: Cons	OFFROAD	lbs/day	3.26	23.04	20.06	0.09	0.92	0.85
2026	I,5	Stage I: Cons	ONROAD HD	lbs/day	0.00	0.04	0.14	0.00	0.03	0.01
2026	I,5	Stage I: Cons	ONROAD LDV	lbs/day	0.00	0.17	0.02	0.00	0.02	0.00
2026 Total					**31.30**	**184.18**	**682.19**	**1.64**	**27.59**	**16.74**
2027	I,4	Crane install	OFFROAD	lbs/day	0.34	2.98	2.43	0.01	0.10	0.09
2027	I,4	Delivery of c	HC	lbs/day	0.43	1.84	11.34	0.01	0.22	0.21
2027	I,4	Delivery of c	OFFROAD	lbs/day	0.91	6.71	5.62	0.03	0.25	0.23
2027	I,4	Delivery of c	OGV	lbs/day	52.57	118.77	1300.55	40.77	18.47	16.98
2027	I,4	Delivery of c	ONROAD LDV	lbs/day	0.00	0.21	0.02	0.00	0.02	0.00
2027	I,5	Stage III: Cor	OFFROAD	lbs/day	3.66	26.39	20.63	0.10	0.97	0.89
2027	I,5	Stage III: Cor	ONROAD HD	lbs/day	0.00	0.04	0.15	0.00	0.03	0.01
2027	I,5	Stage III: Cor	ONROAD LDV	lbs/day	0.00	0.18	0.02	0.00	0.02	0.00
2027 Total					**61.59**	**183.73**	**1361.57**	**41.03**	**21.09**	**19.32**

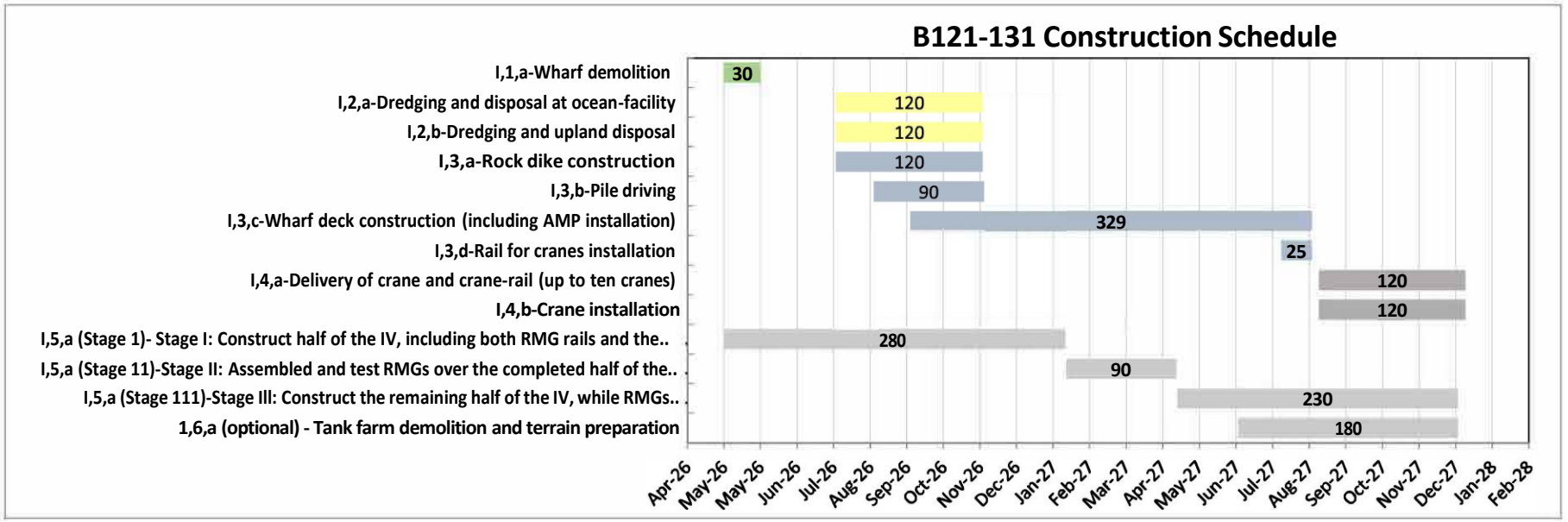
B121-131 Construction Annual Emissions - Proposed Project With Mitigation

Year	Phase	Phase_dec	Category	Unit	ROG	CO	NOx	SOx	PM10	PM2.5
2026	I,1	Wharf demolition	HC	tons/ye	0.04	0.19	1.17	0.00	0.02	0.02
2026	I,1	Wharf demolition	OFFROAD	tons/ye	0.05	0.40	0.38	0.00	0.02	0.02
2026	I,1	Wharf demolition	ONROAD HD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,2	Dredging and disposal at ocean-facility	HC	tons/ye	0.02	0.07	0.47	0.00	0.01	0.01
2026	I,2	Dredging and upland disposal	HC	tons/ye	0.35	1.48	9.30	0.01	0.17	0.16
2026	I,2	Dredging and upland disposal	OFFROAD	tons/ye	0.16	0.95	0.80	0.00	0.03	0.03
2026	I,2	Dredging and upland disposal	ONROAD HD	tons/ye	0.04	0.27	1.66	0.04	0.62	0.18
2026	I,2	Dredging and upland disposal	ONROAD LD	tons/ye	0.00	0.03	0.00	0.00	0.00	0.00
2026	I,3	Rock dike construction	OFFROAD	tons/ye	0.15	1.23	1.03	0.00	0.05	0.04
2026	I,3	Pile driving	HC	tons/ye	0.02	0.10	0.55	0.00	0.01	0.01
2026	I,3	Pile driving	OFFROAD	tons/ye	0.06	0.47	0.42	0.00	0.02	0.02
2026	I,3	Pile driving	ONROAD HD	tons/ye	0.00	0.01	0.03	0.00	0.01	0.00
2026	I,3	Pile driving	ONROAD LD	tons/ye	0.00	0.01	0.00	0.00	0.00	0.00
2026	I,3	Rail for cranes installation	OFFROAD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,3	Rail for cranes installation	ONROAD HD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,3	Rail for cranes installation	ONROAD LD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,3	Wharf deck construction (including AMP installation)	OFFROAD	tons/ye	0.01	0.07	0.06	0.00	0.00	0.00
2026	I,3	Wharf deck construction (including AMP installation)	ONROAD HD	tons/ye	0.00	0.01	0.02	0.00	0.01	0.00
2026	I,3	Wharf deck construction (including AMP installation)	ONROAD LD	tons/ye	0.00	0.03	0.00	0.00	0.00	0.00
2026	I,4	Crane installation	OFFROAD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,4	Delivery of crane and crane-rail (up to ten cranes)	HC	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,4	Delivery of crane and crane-rail (up to ten cranes)	OFFROAD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,4	Delivery of crane and crane-rail (up to ten cranes)	ONROAD LD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,5	Stage I: Construct half of the IY, including both RMG rails and the three ne	OFFROAD	tons/ye	0.02	0.11	0.11	0.00	0.00	0.00
2026	I,5	Stage I: Construct half of the IY, including both RMG rails and the three ne	ONROAD HD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,5	Stage I: Construct half of the IY, including both RMG rails and the three ne	ONROAD LD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,5	Stage II: Assembled and test RMGs over the completed half of the yard	OFFROAD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,5	Stage II: Assembled and test RMGs over the completed half of the yard	ONROAD HD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,5	Stage II: Assembled and test RMGs over the completed half of the yard	ONROAD LD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,5	Stage III: Construct the remaining half of the IY, while RMGs operate over t	OFFROAD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,5	Stage III: Construct the remaining half of the IY, while RMGs operate over t	ONROAD HD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,5	Stage III: Construct the remaining half of the IY, while RMGs operate over t	ONROAD LD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2026 Total					**0.92**	**5.43**	**16.00**	**0.07**	**0.98**	**0.50**
2027	I,1	Wharf demolition	HC	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,1	Wharf demolition	OFFROAD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,1	Wharf demolition	ONROAD HD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,2	Dredging and disposal at ocean-facility	HC	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,2	Dredging and upland disposal	HC	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,2	Dredging and upland disposal	OFFROAD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,2	Dredging and upland disposal	ONROAD HD	tons/ye	0.00	0.00	0.00	0.00	0.25	0.04
2027	I,2	Dredging and upland disposal	ONROAD LD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,3	Rock dike construction	OFFROAD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,3	Pile driving	HC	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,3	Pile driving	OFFROAD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,3	Pile driving	ONROAD HD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,3	Pile driving	ONROAD LD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,3	Rail for cranes installation	OFFROAD	tons/ye	0.00	0.04	0.03	0.00	0.00	0.00
2027	I,3	Rail for cranes installation	ONROAD HD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,3	Rail for cranes installation	ONROAD LD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,3	Wharf deck construction (including AMP installation)	OFFROAD	tons/ye	0.02	0.19	0.14	0.00	0.01	0.01
2027	I,3	Wharf deck construction (including AMP installation)	ONROAD HD	tons/ye	0.00	0.02	0.04	0.00	0.01	0.00
2027	I,3	Wharf deck construction (including AMP installation)	ONROAD LD	tons/ye	0.00	0.07	0.01	0.00	0.00	0.00
2027	I,4	Crane installation	OFFROAD	tons/ye	0.00	0.01	0.01	0.00	0.00	0.00
2027	I,4	Delivery of crane and crane-rail (up to ten cranes)	HC	tons/ye	0.00	0.00	0.02	0.00	0.00	0.00
2027	I,4	Delivery of crane and crane-rail (up to ten cranes)	OFFROAD	tons/ye	0.01	0.06	0.05	0.00	0.00	0.00
2027	I,4	Delivery of crane and crane-rail (up to ten cranes)	OGV	tons/ye	0.10	0.23	2.60	0.07	0.03	0.03
2027	I,4	Delivery of crane and crane-rail (up to ten cranes)	ONROAD LD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5	Stage I: Construct half of the IY, including both RMG rails and the three ne	OFFROAD	tons/ye	0.00	0.01	0.01	0.00	0.00	0.00
2027	I,5	Stage I: Construct half of the IY, including both RMG rails and the three ne	ONROAD HD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5	Stage I: Construct half of the IY, including both RMG rails and the three ne	ONROAD LD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5	Stage II: Assembled and test RMGs over the completed half of the yard	OFFROAD	tons/ye	0.01	0.04	0.03	0.00	0.00	0.00
2027	I,5	Stage II: Assembled and test RMGs over the completed half of the yard	ONROAD HD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5	Stage II: Assembled and test RMGs over the completed half of the yard	ONROAD LD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5	Stage III: Construct the remaining half of the IY, while RMGs operate over t	OFFROAD	tons/ye	0.02	0.12	0.10	0.00	0.00	0.00
2027	I,5	Stage III: Construct the remaining half of the IY, while RMGs operate over t	ONROAD HD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5	Stage III: Construct the remaining half of the IY, while RMGs operate over t	ONROAD LD	tons/ye	0.00	0.00	0.00	0.00	0.00	0.00
2027 Total					**0.51**	**3.23**	**4.94**	**0.09**	**0.42**	**0.17**

B121-131 Construction Peak Day Emissions - Proposed Project With Mitigation

Year	Phase	Phase_dec	Category	Unit	ROG	CO	NOx	SOx	PM10	PM2.5
2026	I,2	Dredging and disposal at ocean-facility	HC	lbs/day	2.93	12.33	77.51	0.08	1.42	1.36
2026	I,2	Dredging and upland disposal	HC	lbs/day	5.86	24.66	155.03	0.17	2.84	2.72
2026	I,2	Dredging and upland disposal	OFFROAD	lbs/day	2.60	15.75	13.27	0.07	0.58	0.53
2026	I,2	Dredging and upland disposal	ONROAD HD	lbs/day	0.68	4.44	27.74	0.65	10.29	2.95
2026	I,2	Dredging and upland disposal	ONROAD LD	lbs/day	0.02	0.52	0.04	0.00	0.03	0.01
2026	I,3	Rock dike construction	OFFROAD	lbs/day	2.48	20.42	17.21	0.07	0.80	0.73
2026	I,3	Pile driving	HC	lbs/day	0.52	2.49	13.68	0.02	0.29	0.28
2026	I,3	Pile driving	OFFROAD	lbs/day	1.49	11.85	10.38	0.05	0.48	0.44
2026	I,3	Pile driving	ONROAD HD	lbs/day	0.03	0.24	0.83	0.02	0.29	0.08
2026	I,3	Pile driving	ONROAD LD	lbs/day	0.00	0.18	0.02	0.00	0.01	0.00
2026	I,3	Wharf deck construction (including AMP installation)	OFFROAD	lbs/day	0.90	9.03	5.82	0.03	0.26	0.24
2026	I,3	Wharf deck construction (including AMP installation)	ONROAD HD	lbs/day	0.18	2.03	4.05	0.07	2.83	0.58
2026	I,3	Wharf deck construction (including AMP installation)	ONROAD LD	lbs/day	0.00	0.18	0.02	0.00	0.04	0.01
2026	I,5	Stage I: Construct half of the IY, including both RMG rails and the three ne	OFFROAD	lbs/day	3.36	24.93	21.64	0.09	0.93	0.86
2026	I,5	Stage I: Construct half of the IY, including both RMG rails and the three ne	ONROAD HD	lbs/day	0.00	0.02	0.08	0.00	0.03	0.01
2026	I,5	Stage I: Construct half of the IY, including both RMG rails and the three ne	ONROAD LD	lbs/day	0.00	0.17	0.02	0.00	0.02	0.00
2026 Total					**21.04**	**129.24**	**347.34**	**1.32**	**21.14**	**10.79**
2027	I,4	Crane installation	OFFROAD	lbs/day	0.34	2.98	2.43	0.01	0.10	0.09
2027	I,4	Delivery of crane and crane-rail (up to ten cranes)	HC	lbs/day	0.43	1.84	11.34	0.01	0.22	0.21
2027	I,4	Delivery of crane and crane-rail (up to ten cranes)	OFFROAD	lbs/day	0.91	6.71	5.62	0.03	0.25	0.23
2027	I,4	Delivery of crane and crane-rail (up to ten cranes)	OGV	lbs/day	49.82	114.12	1258.57	37.84	17.37	15.97
2027	I,4	Delivery of crane and crane-rail (up to ten cranes)	ONROAD LD	lbs/day	0.00	0.21	0.02	0.00	0.02	0.00
2027	I,5	Stage III: Construct the remaining half of the IY, while RMGs operate over t	OFFROAD	lbs/day	3.71	26.67	20.96	0.10	0.99	0.91
2027	I,5	Stage III: Construct the remaining half of the IY, while RMGs operate over t	ONROAD HD	lbs/day	0.00	0.03	0.09	0.00	0.03	0.01
2027	I,5	Stage III: Construct the remaining half of the IY, while RMGs operate over t	ONROAD LD	lbs/day	0.00	0.18	0.02	0.00	0.02	0.00
2027 Total					**58.93**	**179.60**	**1320.09**	**38.09**	**20.03**	**18.34**

Construction Schedule Chart by Activity - No Federal Action



Construction Schedule - Proposed Project - No Federal Action

Activity	Description	Start	Finish	Duration (Days)
1,1	**Demolition of existing wharf at Berth 126-129**	**5/1/2026**	**7/30/2026**	**90**
1,1,a	Wharf demolition	5/1/2026	5/31/2026	30
1,2	**Dredging at Berths 126-129 and Rock Dike Reconstruction**	8/1/2026	11/29/2026	120
1,2,a	Dredging and disposal at ocean-facility	**8/1/2026**	**11/29/2026**	**120**
1,2,b	Dredging and upland disposal	8/1/2026	11/29/2026	120
1,3,a	Rock dike construction	8/1/2026	11/29/2026	120
1,3	**Construction of new 1,260-ft wharf at Berths 126-129 (pile supported)**	**8/1/2026**	**8/26/2027**	**391**
1,3,b	Pile driving	9/1/2026	11/30/2026	90
1,3,c	Wharf deck construction (including AMP installation)	10/1/2026	8/26/2027	330
1,3,d	Rail for cranes installation	8/1/2027	8/26/2027	25
1,4	New cranes installation at Berths 126-129	9/1/2027	12/30/2027	210
1,4,a	Delivery of crane and crane-rail (up to ten cranes)	**9/1/2027**	**10/1/2027**	**30**
1,4,b	Crane installation	9/1/2027	12/30/2027	120
1,5	**Reconstruction of rail expansion for RMG operations**	5/1/2026	12/24/2027	651
1,5,a (Stage I)	Stage I: Construct half of the IV, including both RMG rails and the three new tracks	**5/1/2026**	**2/5/2027**	**280**
1,5,a (Stage II)	Stage II: Assembled and test RMGs over the completed half of the yard	2/6/2027	5/7/2027	90
1,5,a (Stage III)	Stage III: Construct the remaining half of the IV, while RMGs operate over the completed half	5/8/2027	12/24/2027	230
1,6,a (optional)	Tank farm demolition and terrain preparation	6/27/2027	12/24/2027	180

			Category	Unit	ROG	CO	NOx	SOx	PM10	PM2.5
			HC	tons/year	0.03	0.19	1.17	0.00	0.02	0.02
			OFFROAD	tons/year	0.05	0.40	0.38	0.00	0.02	0.02
			ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			HC	tons/year	0.01	0.07	0.46	0.00	0.01	0.01
			HC	tons/year	0.27	1.48	9.27	0.01	0.16	0.15
			OFFROAD	tons/year	0.73	3.86	19.40	0.02	0.39	0.36
			ONROAD HD	tons/year	0.05	0.38	2.87	0.04	0.64	0.20
			ONROAD LDV	tons/year	0.00	0.03	0.00	0.00	0.00	0.00
			OFFROAD	tons/year	0.17	1.40	1.19	0.01	0.05	0.05
			HC	tons/year	0.01	0.08	0.48	0.00	0.01	0.01
			OFFROAD	tons/year	0.07	0.53	0.47	0.00	0.02	0.02
			ONROAD HD	tons/year	0.00	0.01	0.06	0.00	0.01	0.00
			ONROAD LDV	tons/year	0.00	0.01	0.00	0.00	0.00	0.00
			OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		)	OFFROAD	tons/year	0.01	0.07	0.06	0.00	0.00	0.00
		)	ONROAD HD	tons/year	0.00	0.02	0.03	0.00	0.01	0.00
		)	ONROAD LDV	tons/year	0.00	0.03	0.00	0.00	0.00	0.00
			OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			HC	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		ails and the three new tracks	OFFROAD	tons/year	0.02	0.10	0.09	0.00	0.00	0.00
		ails and the three new tracks	ONROAD HD	tons/year	0.00	0.00	0.01	0.00	0.00	0.00
		ails and the three new tracks	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		d half of the yard	OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		d half of the yard	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		d half of the yard	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		RMGs operate over the completed half	OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		RMGs operate over the completed half	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		RMGs operate over the completed half	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
					1.42	**8.67**	**35.96**	**0.09**	**1.35**	**0.83**
			HC	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			HC	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			HC	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.25	0.04
			ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			HC	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			OFFROAD	tons/year	0.00	0.04	0.03	0.00	0.00	0.00
			ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		)	OFFROAD	tons/year	0.02	0.19	0.14	0.00	0.01	0.01
		)	ONROAD HD	tons/year	0.00	0.04	0.09	0.00	0.01	0.00
		)	ONROAD LDV	tons/year	0.00	0.07	0.01	0.00	0.00	0.00
			OFFROAD	tons/year	0.00	0.01	0.01	0.00	0.00	0.00
			HC	tons/year	0.00	0.00	0.02	0.00	0.00	0.00
			OFFROAD	tons/year	0.01	0.06	0.05	0.00	0.00	0.00
			OGV	tons/year	0.11	0.24	2.65	0.08	0.04	0.03
			ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		ails and the three new tracks	OFFROAD	tons/year	0.00	0.01	0.01	0.00	0.00	0.00
		ails and the three new tracks	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		ails and the three new tracks	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		d half of the yard	OFFROAD	tons/year	0.01	0.04	0.03	0.00	0.00	0.00
		d half of the yard	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		d half of the yard	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		RMGs operate over the completed half	OFFROAD	tons/year	0.02	0.11	0.10	0.00	0.00	0.00
		RMGs operate over the completed half	ONROAD HD	tons/year	0.00	0.00	0.01	0.00	0.00	0.00
		RMGs operate over the completed half	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
					0.51	**3.23**	**5.02**	**0.09**	**0.42**	**0.17**

			Category	Unit	ROG	CO	NOx	SOx	PM10	PM2.5
		ails and the three new tracks	OFFROAD	lbs/day	3.26	23.04	20.06	0.09	0.92	0.85
		ails and the three new tracks	ONROAD HD	lbs/day	0.00	0.01	0.13	0.00	0.03	0.01
		ails and the three new tracks	ONROAD LDV	lbs/day	0.00	0.17	0.02	0.00	0.02	0.00
		0	0	0	3.27	23.22	20.20	0.09	0.97	0.86
		ails and the three new tracks	OFFROAD	lbs/day	0.47	3.39	2.65	0.01	0.12	0.11
		ails and the three new tracks	ONROAD HD	lbs/day	0.00	0.01	0.02	0.00	0.02	0.00
		ails and the three new tracks	ONROAD LDV	lbs/day	0.00	0.02	0.00	0.00	0.01	0.00
		0	0	0	0.47	3.42	2.68	0.01	0.16	0.12

			ory	Unit	ROG	CO	NOx	SOx	PM10	PM2.5
			HC	tons/year	0.04	0.19	1.17	0.00	0.02	0.02
			OFFROAD	tons/year	0.03	0.35	0.13	0.00	0.01	0.00
			ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			HC	tons/year	0.02	0.07	0.47	0.00	0.01	0.01
			HC	tons/year	0.35	1.48	9.30	0.01	0.17	0.16
			OFFROAD	tons/year	0.12	0.90	0.20	0.00	0.01	0.01
			ONROAD HD	tons/year	0.03	0.25	1.52	0.04	0.62	0.17
			ONROAD LDV	tons/year	0.00	0.03	0.00	0.00	0.00	0.00
			OFFROAD	tons/year	0.11	1.24	0.27	0.01	0.02	0.02
			HC	tons/year	0.02	0.10	0.55	0.00	0.01	0.01
			OFFROAD	tons/year	0.04	0.46	0.10	0.00	0.01	0.01
			ONROAD HD	tons/year	0.00	0.01	0.03	0.00	0.01	0.00
			ONROAD LDV	tons/year	0.00	0.01	0.00	0.00	0.00	0.00
			OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		)	OFFROAD	tons/year	0.01	0.07	0.01	0.00	0.00	0.00
		)	ONROAD HD	tons/year	0.00	0.01	0.02	0.00	0.01	0.00
		)	ONROAD LDV	tons/year	0.00	0.03	0.00	0.00	0.00	0.00
			OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			HC	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		ails and the three new tracks	OFFROAD	tons/year	0.01	0.09	0.02	0.00	0.00	0.00
		ails and the three new tracks	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		ails and the three new tracks	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		d half of the yard	OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		d half of the yard	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		d half of the yard	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		RMGs operate over the completed half	OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		RMGs operate over the completed half	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		RMGs operate over the completed half	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
					0.79	**5.29**	**13.80**	**0.07**	**0.90**	**0.43**
			HC	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			HC	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			HC	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.25	0.04
			ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			HC	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			OFFROAD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			OFFROAD	tons/year	0.00	0.03	0.01	0.00	0.00	0.00
			ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
			ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		)	OFFROAD	tons/year	0.02	0.17	0.03	0.00	0.00	0.00
		)	ONROAD HD	tons/year	0.00	0.02	0.04	0.00	0.01	0.00
		)	ONROAD LDV	tons/year	0.00	0.07	0.01	0.00	0.00	0.00
			OFFROAD	tons/year	0.00	0.01	0.00	0.00	0.00	0.00
			HC	tons/year	0.00	0.00	0.02	0.00	0.00	0.00
			OFFROAD	tons/year	0.01	0.05	0.02	0.00	0.00	0.00
			OGV	tons/year	0.10	0.23	2.60	0.07	0.03	0.03
			ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		ails and the three new tracks	OFFROAD	tons/year	0.00	0.01	0.00	0.00	0.00	0.00
		ails and the three new tracks	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		ails and the three new tracks	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		d half of the yard	OFFROAD	tons/year	0.00	0.03	0.01	0.00	0.00	0.00
		d half of the yard	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		d half of the yard	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		RMGs operate over the completed half	OFFROAD	tons/year	0.01	0.11	0.02	0.00	0.00	0.00
		RMGs operate over the completed half	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
		RMGs operate over the completed half	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
					0.39	**3.04**	**3.28**	**0.09**	**0.35**	**0.11**

		ails and the three new tracks	OFFROAD	lbs/day	2.20	21.78	5.15	0.09	0.31	0.29
		ails and the three new tracks	ONROAD HD	lbs/day	0.00	0.02	0.08	0.00	0.03	0.01
		ails and the three new tracks	ONROAD LDV	lbs/day	0.00	0.17	0.02	0.00	0.02	0.00
		0	0	0	2.21	21.97	5.24	0.09	0.36	0.30
		ails and the three new tracks	OFFROAD	lbs/day	0.33	3.22	0.72	0.01	0.04	0.04
		ails and the three new tracks	ONROAD HD	lbs/day	0.00	0.00	0.01	0.00	0.02	0.00
		ails and the three new tracks	ONROAD LDV	lbs/day	0.00	0.02	0.00	0.00	0.01	0.00
		0	0	0	0.33	3.25	0.73	0.01	0.07	0.05

B121-B131 Construction Annual Emissions - Proposed Project without Mitigation

Year	Sub-Phase	Category	Units	VOC	CO	NOX	PM10	PM2.5	SOX
2026	I,1,a	HC	tons/year	0.03	0.19	1.17	0.02	0.02	0.00
2026	I,1,a	OFFROAD	tons/year	0.05	0.40	0.38	0.02	0.02	0.00
2026	I,1,a	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,2,a	HC	tons/year	0.01	0.07	0.46	0.01	0.01	0.00
2026	I,2,b	HC	tons/year	0.27	1.48	9.27	0.16	0.15	0.01
2026	I,2,b	OFFROAD	tons/year	0.73	3.86	19.40	0.39	0.36	0.02
2026	I,2,b	ONROAD HD	tons/year	0.05	0.38	1.61	0.62	0.18	0.04
2026	I,2,b	ONROAD LDV	tons/year	0.00	0.03	0.00	0.00	0.00	0.00
2026	I,3,a	OFFROAD	tons/year	0.17	1.40	1.19	0.05	0.05	0.01
2026	I,3,b	HC	tons/year	0.01	0.08	0.48	0.01	0.01	0.00
2026	I,3,b	OFFROAD	tons/year	0.07	0.53	0.47	0.02	0.02	0.00
2026	I,3,b	ONROAD HD	tons/year	0.00	0.01	0.03	0.01	0.00	0.00
2026	I,3,b	ONROAD LDV	tons/year	0.00	0.01	0.00	0.00	0.00	0.00
2026	I,3,c	OFFROAD	tons/year	0.01	0.07	0.06	0.00	0.00	0.00
2026	I,3,c	ONROAD HD	tons/year	0.00	0.02	0.02	0.01	0.00	0.00
2026	I,3,c	ONROAD LDV	tons/year	0.00	0.03	0.00	0.00	0.00	0.00
2026	I,3,d	OFFROAD	tons/year	-	-	-	-	-	-
2026	I,3,d	ONROAD HD	tons/year	-	-	-	-	-	-
2026	I,3,d	ONROAD LDV	tons/year	-	-	-	-	-	-
2026	I,4,a	HC	tons/year	-	-	-	-	-	-
2026	I,4,a	OFFROAD	tons/year	-	-	-	-	-	-
2026	I,4,a	ONROAD LDV	tons/year	-	-	-	-	-	-
2026	I,4,b	OFFROAD	tons/year	-	-	-	-	-	-
2026	I,5,a (Stage I)	OFFROAD	tons/year	0.02	0.10	0.09	0.00	0.00	0.00
2026	I,5,a (Stage I)	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,5,a (Stage I)	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,5,a (Stage II)	OFFROAD	tons/year	-	-	-	-	-	-
2026	I,5,a (Stage II)	ONROAD HD	tons/year	-	-	-	-	-	-
2026	I,5,a (Stage II)	ONROAD LDV	tons/year	-	-	-	-	-	-
2026	I,5,a (Stage III)	OFFROAD	tons/year	-	-	-	-	-	-
2026	I,5,a (Stage III)	ONROAD HD	tons/year	-	-	-	-	-	-
2026	I,5,a (Stage III)	ONROAD LDV	tons/year	-	-	-	-	-	-
2026 Total				1.42	8.67	34.65	1.32	0.81	0.09
2027	I,1,a	HC	tons/year	-	-	-	-	-	-
2027	I,1,a	OFFROAD	tons/year	-	-	-	-	-	-
2027	I,1,a	ONROAD HD	tons/year	-	-	-	0.00	0.00	-
2027	I,2,a	HC	tons/year	-	-	-	-	-	-
2027	I,2,b	HC	tons/year	-	-	-	-	-	-
2027	I,2,b	OFFROAD	tons/year	-	-	-	-	-	-
2027	I,2,b	ONROAD HD	tons/year	-	-	-	0.25	0.04	-
2027	I,2,b	ONROAD LDV	tons/year	-	-	-	0.00	0.00	-
2027	I,3,a	OFFROAD	tons/year	-	-	-	-	-	-
2027	I,3,b	HC	tons/year	-	-	-	-	-	-
2027	I,3,b	OFFROAD	tons/year	-	-	-	-	-	-
2027	I,3,b	ONROAD HD	tons/year	-	-	-	0.00	0.00	-
2027	I,3,b	ONROAD LDV	tons/year	-	-	-	0.00	0.00	-
2027	I,3,c	OFFROAD	tons/year	0.02	0.19	0.14	0.01	0.01	0.00
2027	I,3,c	ONROAD HD	tons/year	0.00	0.04	0.05	0.01	0.00	0.00
2027	I,3,c	ONROAD LDV	tons/year	0.00	0.07	0.01	0.00	0.00	0.00
2027	I,3,d	OFFROAD	tons/year	0.00	0.04	0.03	0.00	0.00	0.00
2027	I,3,d	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,3,d	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,4,a	HC	tons/year	0.00	0.00	0.02	0.00	0.00	0.00
2027	I,4,a	OFFROAD	tons/year	0.01	0.06	0.05	0.00	0.00	0.00
2027	I,4,a	OGV	tons/year	0.10	0.23	2.60	0.03	0.03	0.07
2027	I,4,a	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,4,b	OFFROAD	tons/year	0.00	0.01	0.01	0.00	0.00	0.00
2027	I,5,a (Stage I)	OFFROAD	tons/year	0.00	0.01	0.01	0.00	0.00	0.00
2027	I,5,a (Stage I)	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5,a (Stage I)	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5,a (Stage II)	OFFROAD	tons/year	0.01	0.04	0.03	0.00	0.00	0.00
2027	I,5,a (Stage II)	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5,a (Stage II)	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5,a (Stage III)	OFFROAD	tons/year	0.02	0.11	0.10	0.00	0.00	0.00
2027	I,5,a (Stage III)	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5,a (Stage III)	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027 Total				0.17	0.83	3.05	0.33	0.09	0.08

B121-B131 Construction Peak Day, Peak 8-hr and Peak 1-hr Emissions - Proposed Project without Mitigation

Year	Sub-Phase	Category	Units	VOC	CO	NOX	PM10	PM2.5	SOX
2026	I,2,a	HC	lbs/day	2.22	12.31	77.24	1.34	1.23	0.09
2026	I,2,b	HC	lbs/day	4.44	24.62	154.48	2.68	2.46	0.19
2026	I,2,b	OFFROAD	lbs/day	12.14	64.32	323.39	6.46	5.94	0.38
2026	I,2,b	ONROAD HD	lbs/day	0.77	6.30	26.82	10.26	2.92	0.65
2026	I,2,b	ONROAD LDV	lbs/day	0.02	0.52	0.04	0.03	0.01	0.00
2026	I,3,a	OFFROAD	lbs/day	2.87	23.41	19.87	0.91	0.84	0.09
2026	I,3,b	HC	lbs/day	0.34	2.04	11.95	0.21	0.19	0.02
2026	I,3,b	OFFROAD	lbs/day	1.68	13.35	11.71	0.54	0.50	0.05
2026	I,3,b	ONROAD HD	lbs/day	0.04	0.41	0.86	0.29	0.08	0.02
2026	I,3,b	ONROAD LDV	lbs/day	0.00	0.18	0.02	0.01	0.00	0.00
2026	I,3,c	OFFROAD	lbs/day	0.90	9.03	5.82	0.26	0.24	0.03
2026	I,3,c	ONROAD HD	lbs/day	0.29	3.76	4.60	2.83	0.57	0.08
2026	I,3,c	ONROAD LDV	lbs/day	0.00	0.18	0.02	0.04	0.01	0.00
2026	I,5,a (Stage I)	OFFROAD	lbs/day	3.26	23.04	20.06	0.92	0.85	0.09
2026	I,5,a (Stage I)	ONROAD HD	lbs/day	0.00	0.04	0.08	0.03	0.01	0.00
2026	I,5,a (Stage I)	ONROAD LDV	lbs/day	0.00	0.17	0.02	0.02	0.00	0.00
2026 Total				29.0	183.7	657.0	26.8	15.9	1.7
2027	I,4,a	HC	lbs/day	0.33	1.84	11.30	0.20	0.19	0.01
2027	I,4,a	OFFROAD	lbs/day	0.91	6.71	5.62	0.25	0.23	0.03
2027	I,4,a	OGV	lbs/day	49.82	114.12	1,258.57	17.37	15.97	37.84
2027	I,4,a	ONROAD LDV	lbs/day	0.00	0.21	0.02	0.02	0.00	0.00
2027	I,4,b	OFFROAD	lbs/day	0.34	2.98	2.43	0.10	0.09	0.01
2027	I,5,a (Stage III)	OFFROAD	lbs/day	3.66	26.39	20.63	0.97	0.89	0.10
2027	I,5,a (Stage III)	ONROAD HD	lbs/day	0.00	0.04	0.09	0.03	0.01	0.00
2027	I,5,a (Stage III)	ONROAD LDV	lbs/day	0.00	0.18	0.02	0.02	0.00	0.00
2027 Total				55.07	152.47	1,298.68	18.96	17.39	37.99
2026	I,2,a	HC	lbs/8-hr	1.00	5.61	34.92	0.62	0.57	0.04
2026	I,2,b	HC	lbs/8-hr	2.01	11.22	69.84	1.23	1.13	0.08
2026	I,2,b	OFFROAD	lbs/8-hr	4.43	24.40	110.40	2.26	2.08	0.14
2026	I,2,b	ONROAD HD	lbs/8-hr	0.77	6.30	26.82	10.26	2.92	0.65
2026	I,2,b	ONROAD LDV	lbs/8-hr	0.02	0.52	0.04	0.03	0.01	0.00
2026	I,3,a	OFFROAD	lbs/8-hr	2.87	23.41	19.87	0.91	0.84	0.09
2026	I,3,b	HC	lbs/8-hr	0.34	2.04	11.95	0.21	0.19	0.02
2026	I,3,b	OFFROAD	lbs/8-hr	1.68	13.35	11.71	0.54	0.50	0.05
2026	I,3,b	ONROAD HD	lbs/8-hr	0.04	0.41	0.86	0.29	0.08	0.02
2026	I,3,b	ONROAD LDV	lbs/8-hr	0.00	0.18	0.02	0.01	0.00	0.00
2026	I,3,c	OFFROAD	lbs/8-hr	0.90	9.03	5.82	0.26	0.24	0.03
2026	I,3,c	ONROAD HD	lbs/8-hr	0.29	3.76	4.60	2.83	0.57	0.08
2026	I,3,c	ONROAD LDV	lbs/8-hr	0.00	0.18	0.02	0.04	0.01	0.00
2026	I,5,a (Stage I)	OFFROAD	lbs/8-hr	3.26	23.04	20.06	0.92	0.85	0.09
2026	I,5,a (Stage I)	ONROAD HD	lbs/8-hr	0.00	0.04	0.08	0.03	0.01	0.00
2026	I,5,a (Stage I)	ONROAD LDV	lbs/8-hr	0.00	0.17	0.02	0.02	0.00	0.00
2026 Total				17.63	123.65	317.03	20.46	10.00	1.27
2027	I,4,a	HC	lbs/8-hr	0.33	1.84	11.30	0.20	0.19	0.01
2027	I,4,a	OFFROAD	lbs/8-hr	0.91	6.71	5.62	0.25	0.23	0.03
2027	I,4,a	OGV	lbs/8-hr	9.48	20.99	210.26	3.55	3.27	8.23
2027	I,4,a	ONROAD LDV	lbs/8-hr	0.00	0.21	0.02	0.02	0.00	0.00
2027	I,4,b	OFFROAD	lbs/8-hr	0.34	2.98	2.43	0.10	0.09	0.01
2027	I,5,a (Stage III)	OFFROAD	lbs/8-hr	3.66	26.39	20.63	0.97	0.89	0.10
2027	I,5,a (Stage III)	ONROAD HD	lbs/8-hr	0.00	0.04	0.09	0.03	0.01	0.00
2027	I,5,a (Stage III)	ONROAD LDV	lbs/8-hr	0.00	0.18	0.02	0.02	0.00	0.00
2027 Total				14.73	59.34	250.37	5.14	4.69	8.39
2026	I,2,a	HC	lbs/1-hr	0.13	0.71	4.41	0.08	0.07	0.01
2026	I,2,b	HC	lbs/1-hr	0.25	1.42	8.82	0.16	0.14	0.01
2026	I,2,b	OFFROAD	lbs/1-hr	0.59	3.32	14.04	0.29	0.27	0.02
2026	I,2,b	ONROAD HD	lbs/1-hr	0.34	4.39	4.91	1.28	0.37	0.09
2026	I,2,b	ONROAD LDV	lbs/1-hr	0.00	0.07	0.01	0.02	0.00	0.00
2026	I,3,a	OFFROAD	lbs/1-hr	0.36	2.93	2.48	0.11	0.10	0.01
2026	I,3,b	HC	lbs/1-hr	0.21	1.23	7.58	0.12	0.11	0.01
2026	I,3,b	OFFROAD	lbs/1-hr	0.36	2.87	2.51	0.12	0.11	0.01
2026	I,3,b	ONROAD HD	lbs/1-hr	0.03	0.35	0.24	0.04	0.01	0.00
2026	I,3,b	ONROAD LDV	lbs/1-hr	0.00	0.02	0.00	0.01	0.00	0.00
2026	I,3,c	OFFROAD	lbs/1-hr	0.12	1.20	0.81	0.04	0.03	0.00
2026	I,3,c	ONROAD HD	lbs/1-hr	0.24	3.50	1.88	0.35	0.07	0.01
2026	I,3,c	ONROAD LDV	lbs/1-hr	0.00	0.02	0.00	0.04	0.01	0.00
2026	I,5,a (Stage I)	OFFROAD	lbs/1-hr	0.41	2.88	2.51	0.12	0.11	0.01
2026	I,5,a (Stage I)	ONROAD HD	lbs/1-hr	0.00	0.03	0.02	0.00	0.00	0.00
2026	I,5,a (Stage I)	ONROAD LDV	lbs/1-hr	0.00	0.02	0.00	0.01	0.00	0.00
2026 Total				3.05	24.96	50.21	2.80	1.41	0.18
2027	I,4,a	HC	lbs/1-hr	0.25	1.43	8.83	0.16	0.14	0.01
2027	I,4,a	OFFROAD	lbs/1-hr	0.23	1.68	1.41	0.06	0.06	0.01
2027	I,4,a	OGV	lbs/1-hr	0.71	1.82	20.12	0.36	0.33	0.88
2027	I,4,a	ONROAD LDV	lbs/1-hr	0.00	0.03	0.00	0.02	0.00	0.00
2027	I,4,b	OFFROAD	lbs/1-hr	0.06	0.47	0.39	0.01	0.01	0.00
2027	I,5,a (Stage III)	OFFROAD	lbs/1-hr	0.46	3.30	2.58	0.12	0.11	0.01
2027	I,5,a (Stage III)	ONROAD HD	lbs/1-hr	0.00	0.04	0.02	0.00	0.00	0.00
2027	I,5,a (Stage III)	ONROAD LDV	lbs/1-hr	0.00	0.02	0.00	0.01	0.00	0.00
2027 Total				1.71	8.78	33.35	0.75	0.66	0.91

B121-B131 Construction Peak Day, Peak 8-hr and Peak 1-hr Emissions - Proposed Project with Mitigation

Year	Sub-Phase	Category	Units	VOC	CO	NOX	PM10	PM2.5	SOX
2026	I,2,a	HC	lbs/day	2.22	12.31	77.24	1.34	1.23	0.09
2026	I,2,b	HC	lbs/day	4.44	24.62	154.48	2.68	2.46	0.19
2026	I,2,b	OFFROAD	lbs/day	1.97	14.96	3.36	0.23	0.22	0.07
2026	I,2,b	ONROAD HD	lbs/day	0.68	4.44	27.74	10.29	2.95	0.65
2026	I,2,b	ONROAD LDV	lbs/day	0.02	0.52	0.04	0.03	0.01	0.00
2026	I,3,a	OFFROAD	lbs/day	1.55	18.14	4.02	0.26	0.24	0.07
2026	I,3,b	HC	lbs/day	0.34	2.04	11.95	0.21	0.19	0.02
2026	I,3,b	OFFROAD	lbs/day	0.92	10.23	2.30	0.16	0.14	0.05
2026	I,3,b	ONROAD HD	lbs/day	0.03	0.24	0.83	0.29	0.08	0.02
2026	I,3,b	ONROAD LDV	lbs/day	0.00	0.18	0.02	0.01	0.00	0.00
2026	I,3,c	OFFROAD	lbs/day	0.60	8.16	1.57	0.08	0.07	0.03
2026	I,3,c	ONROAD HD	lbs/day	0.18	2.03	4.05	2.83	0.58	0.07
2026	I,3,c	ONROAD LDV	lbs/day	0.00	0.18	0.02	0.04	0.01	0.00
2026	I,5,a (Stage I)	OFFROAD	lbs/day	2.20	21.78	5.15	0.31	0.29	0.09
2026	I,5,a (Stage I)	ONROAD HD	lbs/day	0.00	0.02	0.08	0.03	0.01	0.00
2026	I,5,a (Stage I)	ONROAD LDV	lbs/day	0.00	0.17	0.02	0.02	0.00	0.00
2026 Total				15.15	120.02	292.86	18.81	8.48	1.34
2027	I,4,a	HC	lbs/day	0.33	1.84	11.30	0.20	0.19	0.01
2027	I,4,a	OFFROAD	lbs/day	0.60	5.87	1.67	0.07	0.06	0.03
2027	I,4,a	OGV	lbs/day	49.82	114.12	1,258.57	17.37	15.97	37.84
2027	I,4,a	ONROAD LDV	lbs/day	0.00	0.21	0.02	0.02	0.00	0.00
2027	I,4,b	OFFROAD	lbs/day	0.24	2.56	0.46	0.03	0.03	0.01
2027	I,5,a (Stage III)	OFFROAD	lbs/day	2.60	25.06	5.57	0.35	0.32	0.10
2027	I,5,a (Stage III)	ONROAD HD	lbs/day	0.00	0.03	0.09	0.03	0.01	0.00
2027	I,5,a (Stage III)	ONROAD LDV	lbs/day	0.00	0.18	0.02	0.02	0.00	0.00
2027 Total				53.59	149.87	1,277.69	18.09	16.59	37.99
2026	I,2,a	HC	lbs/8-hr	1.00	5.61	34.92	0.62	0.57	0.04
2026	I,2,b	HC	lbs/8-hr	2.01	11.22	69.84	1.23	1.13	0.08
2026	I,2,b	OFFROAD	lbs/8-hr	0.66	4.99	1.12	0.08	0.07	0.02
2026	I,2,b	ONROAD HD	lbs/8-hr	0.68	4.44	27.74	10.29	2.95	0.65
2026	I,2,b	ONROAD LDV	lbs/8-hr	0.02	0.52	0.04	0.03	0.01	0.00
2026	I,3,a	OFFROAD	lbs/8-hr	1.55	18.14	4.02	0.26	0.24	0.07
2026	I,3,b	HC	lbs/8-hr	0.34	2.04	11.95	0.21	0.19	0.02
2026	I,3,b	OFFROAD	lbs/8-hr	0.92	10.23	2.30	0.16	0.14	0.05
2026	I,3,b	ONROAD HD	lbs/8-hr	0.03	0.24	0.83	0.29	0.08	0.02
2026	I,3,b	ONROAD LDV	lbs/8-hr	0.00	0.18	0.02	0.01	0.00	0.00
2026	I,3,c	OFFROAD	lbs/8-hr	0.60	8.16	1.57	0.08	0.07	0.03
2026	I,3,c	ONROAD HD	lbs/8-hr	0.18	2.03	4.05	2.83	0.58	0.07
2026	I,3,c	ONROAD LDV	lbs/8-hr	0.00	0.18	0.02	0.04	0.01	0.00
2026	I,5,a (Stage I)	OFFROAD	lbs/8-hr	2.20	21.78	5.15	0.31	0.29	0.09
2026	I,5,a (Stage I)	ONROAD HD	lbs/8-hr	0.00	0.02	0.08	0.03	0.01	0.00
2026	I,5,a (Stage I)	ONROAD LDV	lbs/8-hr	0.00	0.17	0.02	0.02	0.00	0.00
2026 Total				10.19	89.95	163.66	16.48	6.34	1.14
2027	I,4,a	HC	lbs/8-hr	0.33	1.84	11.30	0.20	0.19	0.01
2027	I,4,a	OFFROAD	lbs/8-hr	0.60	5.87	1.67	0.07	0.06	0.03
2027	I,4,a	OGV	lbs/8-hr	9.48	20.99	210.26	3.55	3.27	8.23
2027	I,4,a	ONROAD LDV	lbs/8-hr	0.00	0.21	0.02	0.02	0.00	0.00
2027	I,4,b	OFFROAD	lbs/8-hr	0.24	2.56	0.46	0.03	0.03	0.01
2027	I,5,a (Stage III)	OFFROAD	lbs/8-hr	2.60	25.06	5.57	0.35	0.32	0.10
2027	I,5,a (Stage III)	ONROAD HD	lbs/8-hr	0.00	0.03	0.09	0.03	0.01	0.00
2027	I,5,a (Stage III)	ONROAD LDV	lbs/8-hr	0.00	0.18	0.02	0.02	0.00	0.00
2027 Total				13.25	56.74	229.38	4.27	3.89	8.39
2026	I,2,a	HC	lbs/1-hr	0.13	0.71	4.41	0.08	0.07	0.01
2026	I,2,b	HC	lbs/1-hr	0.25	1.42	8.82	0.16	0.14	0.01
2026	I,2,b	OFFROAD	lbs/1-hr	0.08	0.62	0.14	0.01	0.01	0.00
2026	I,2,b	ONROAD HD	lbs/1-hr	0.20	2.32	4.23	1.29	0.37	0.08
2026	I,2,b	ONROAD LDV	lbs/1-hr	0.00	0.07	0.01	0.02	0.00	0.00
2026	I,3,a	OFFROAD	lbs/1-hr	0.19	2.27	0.50	0.03	0.03	0.01
2026	I,3,b	HC	lbs/1-hr	0.21	1.23	7.58	0.12	0.11	0.01
2026	I,3,b	OFFROAD	lbs/1-hr	0.19	2.16	0.49	0.03	0.03	0.01
2026	I,3,b	ONROAD HD	lbs/1-hr	0.01	0.18	0.17	0.04	0.01	0.00
2026	I,3,b	ONROAD LDV	lbs/1-hr	0.00	0.02	0.00	0.01	0.00	0.00
2026	I,3,c	OFFROAD	lbs/1-hr	0.08	1.08	0.21	0.01	0.01	0.00
2026	I,3,c	ONROAD HD	lbs/1-hr	0.12	1.74	1.15	0.35	0.07	0.01
2026	I,3,c	ONROAD LDV	lbs/1-hr	0.00	0.02	0.00	0.04	0.01	0.00
2026	I,5,a (Stage I)	OFFROAD	lbs/1-hr	0.28	2.72	0.64	0.04	0.04	0.01
2026	I,5,a (Stage I)	ONROAD HD	lbs/1-hr	0.00	0.02	0.02	0.00	0.00	0.00
2026	I,5,a (Stage I)	ONROAD LDV	lbs/1-hr	0.00	0.02	0.00	0.01	0.00	0.00
2026 Total				1.76	16.61	28.36	2.25	0.91	0.16
2027	I,4,a	HC	lbs/1-hr	0.25	1.43	8.83	0.16	0.14	0.01
2027	I,4,a	OFFROAD	lbs/1-hr	0.15	1.47	0.42	0.02	0.02	0.01
2027	I,4,a	OGV	lbs/1-hr	0.71	1.82	20.12	0.36	0.33	0.88
2027	I,4,a	ONROAD LDV	lbs/1-hr	0.00	0.03	0.00	0.02	0.00	0.00
2027	I,4,b	OFFROAD	lbs/1-hr	0.04	0.42	0.07	0.01	0.00	0.00
2027	I,5,a (Stage III)	OFFROAD	lbs/1-hr	0.32	3.13	0.70	0.04	0.04	0.01
2027	I,5,a (Stage III)	ONROAD HD	lbs/1-hr	0.00	0.02	0.02	0.00	0.00	0.00
2027	I,5,a (Stage III)	ONROAD LDV	lbs/1-hr	0.00	0.02	0.00	0.01	0.00	0.00
2027 Total				1.48	8.34	30.16	0.61	0.54	0.91

B121-B131 Construction Annual Emissions - Proposed Project with Mitigation

Year	Sub-Phase	Category	Units	VOC	CO	NOX	PM10	PM2.5	SOX
2026	I,1,a	HC	tons/year	0.04	0.19	1.17	0.02	0.02	0.00
2026	I,1,a	OFFROAD	tons/year	0.03	0.35	0.13	0.01	0.00	0.00
2026	I,1,a	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,2,a	HC	tons/year	0.02	0.07	0.47	0.01	0.01	0.00
2026	I,2,b	HC	tons/year	0.35	1.48	9.30	0.17	0.16	0.01
2026	I,2,b	OFFROAD	tons/year	0.12	0.90	0.20	0.01	0.01	0.00
2026	I,2,b	ONROAD HD	tons/year	0.04	0.27	1.66	0.62	0.18	0.04
2026	I,2,b	ONROAD LDV	tons/year	0.00	0.03	0.00	0.00	0.00	0.00
2026	I,3,a	OFFROAD	tons/year	0.09	1.09	0.24	0.02	0.01	0.00
2026	I,3,b	HC	tons/year	0.02	0.10	0.55	0.01	0.01	0.00
2026	I,3,b	OFFROAD	tons/year	0.04	0.41	0.09	0.01	0.01	0.00
2026	I,3,b	ONROAD HD	tons/year	0.00	0.01	0.03	0.01	0.00	0.00
2026	I,3,b	ONROAD LDV	tons/year	0.00	0.01	0.00	0.00	0.00	0.00
2026	I,3,c	OFFROAD	tons/year	0.01	0.07	0.01	0.00	0.00	0.00
2026	I,3,c	ONROAD HD	tons/year	0.00	0.01	0.02	0.01	0.00	0.00
2026	I,3,c	ONROAD LDV	tons/year	0.00	0.03	0.00	0.00	0.00	0.00
2026	I,3,d	OFFROAD	tons/year	-	-	-	-	-	-
2026	I,3,d	ONROAD HD	tons/year	-	-	-	-	-	-
2026	I,3,d	ONROAD LDV	tons/year	-	-	-	-	-	-
2026	I,4,a	HC	tons/year	-	-	-	-	-	-
2026	I,4,a	OFFROAD	tons/year	-	-	-	-	-	-
2026	I,4,a	ONROAD LDV	tons/year	-	-	-	-	-	-
2026	I,4,b	OFFROAD	tons/year	-	-	-	-	-	-
2026	I,5,a (Stage I)	OFFROAD	tons/year	0.01	0.09	0.02	0.00	0.00	0.00
2026	I,5,a (Stage I)	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,5,a (Stage I)	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,5,a (Stage II)	OFFROAD	tons/year	-	-	-	-	-	-
2026	I,5,a (Stage II)	ONROAD HD	tons/year	-	-	-	-	-	-
2026	I,5,a (Stage II)	ONROAD LDV	tons/year	-	-	-	-	-	-
2026	I,5,a (Stage III)	OFFROAD	tons/year	-	-	-	-	-	-
2026	I,5,a (Stage III)	ONROAD HD	tons/year	-	-	-	-	-	-
2026	I,5,a (Stage III)	ONROAD LDV	tons/year	-	-	-	-	-	-
2026 Total				0.77	5.10	13.91	0.90	0.43	0.07
2027	I,1,a	HC	tons/year	-	-	-	-	-	-
2027	I,1,a	OFFROAD	tons/year	-	-	-	-	-	-
2027	I,1,a	ONROAD HD	tons/year	-	-	-	0.00	0.00	-
2027	I,2,a	HC	tons/year	-	-	-	-	-	-
2027	I,2,b	HC	tons/year	-	-	-	-	-	-
2027	I,2,b	OFFROAD	tons/year	-	-	-	-	-	-
2027	I,2,b	ONROAD HD	tons/year	-	-	-	0.25	0.04	-
2027	I,2,b	ONROAD LDV	tons/year	-	-	-	0.00	0.00	-
2027	I,3,a	OFFROAD	tons/year	-	-	-	-	-	-
2027	I,3,b	HC	tons/year	-	-	-	-	-	-
2027	I,3,b	OFFROAD	tons/year	-	-	-	-	-	-
2027	I,3,b	ONROAD HD	tons/year	-	-	-	0.00	0.00	-
2027	I,3,b	ONROAD LDV	tons/year	-	-	-	0.00	0.00	-
2027	I,3,c	OFFROAD	tons/year	0.02	0.17	0.03	0.00	0.00	0.00
2027	I,3,c	ONROAD HD	tons/year	0.00	0.02	0.04	0.01	0.00	0.00
2027	I,3,c	ONROAD LDV	tons/year	0.00	0.07	0.01	0.00	0.00	0.00
2027	I,3,d	OFFROAD	tons/year	0.00	0.03	0.01	0.00	0.00	0.00
2027	I,3,d	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,3,d	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,4,a	HC	tons/year	0.00	0.00	0.02	0.00	0.00	0.00
2027	I,4,a	OFFROAD	tons/year	0.01	0.05	0.02	0.00	0.00	0.00
2027	I,4,a	OGV	tons/year	0.10	0.23	2.60	0.03	0.03	0.07
2027	I,4,a	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,4,b	OFFROAD	tons/year	0.00	0.01	0.00	0.00	0.00	0.00
2027	I,5,a (Stage I)	OFFROAD	tons/year	0.00	0.01	0.00	0.00	0.00	0.00
2027	I,5,a (Stage I)	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5,a (Stage I)	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5,a (Stage II)	OFFROAD	tons/year	0.00	0.03	0.01	0.00	0.00	0.00
2027	I,5,a (Stage II)	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5,a (Stage II)	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5,a (Stage III)	OFFROAD	tons/year	0.01	0.11	0.02	0.00	0.00	0.00
2027	I,5,a (Stage III)	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5,a (Stage III)	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027 Total				0.15	0.77	2.77	0.31	0.08	0.08

B121-B131 Construction Annual Emissions - No Federal Action without Mitigation

Year	Sub-Phase	Category	Units	VOC	CO	NOX	PM10	PM2.5	SOX
2026	I,5,a (Stage I)	OFFROAD	tons/year	0.02	0.10	0.09	0.00	0.00	0.00
2026	I,5,a (Stage I)	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,5,a (Stage I)	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,5,a (Stage II)	OFFROAD	tons/year	-	-	-	-	-	-
2026	I,5,a (Stage II)	ONROAD HD	tons/year	-	-	-	-	-	-
2026	I,5,a (Stage II)	ONROAD LDV	tons/year	-	-	-	-	-	-
2026	I,5,a (Stage III)	OFFROAD	tons/year	-	-	-	-	-	-
2026	I,5,a (Stage III)	ONROAD HD	tons/year	-	-	-	-	-	-
2026	I,5,a (Stage III)	ONROAD LDV	tons/year	-	-	-	-	-	-
2026 Total				0.02	0.10	0.10	0.01	0.00	0.00
2027	I,5,a (Stage I)	OFFROAD	tons/year	0.00	0.01	0.01	0.00	0.00	0.00
2027	I,5,a (Stage I)	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5,a (Stage I)	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5,a (Stage II)	OFFROAD	tons/year	0.01	0.04	0.03	0.00	0.00	0.00
2027	I,5,a (Stage II)	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5,a (Stage II)	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5,a (Stage III)	OFFROAD	tons/year	0.02	0.11	0.10	0.00	0.00	0.00
2027	I,5,a (Stage III)	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5,a (Stage III)	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027 Total				0.03	0.17	0.15	0.01	0.01	0.00

B121-B131 Construction Peak Day Emissions - No Federal Action without Mitigation

Year	Sub-Phase	Category	Units	VOC	CO	NOX	PM10	PM2.5	SOX
2026	I,5,a (Stage I)	OFFROAD	lbs/day	3.26	23.04	20.06	0.92	0.85	0.09
2026	I,5,a (Stage I)	ONROAD HD	lbs/day	0.00	0.04	0.08	0.03	0.01	0.00
2026	I,5,a (Stage I)	ONROAD LDV	lbs/day	0.00	0.17	0.02	0.02	0.00	0.00
2026 Total				3.27	23.25	20.16	0.97	0.86	0.09
2027	I,5,a (Stage I)	OFFROAD	lbs/day	0.47	3.39	2.65	0.12	0.11	0.01
2027	I,5,a (Stage I)	ONROAD HD	lbs/day	0.00	0.01	0.01	0.02	0.00	0.00
2027	I,5,a (Stage I)	ONROAD LDV	lbs/day	0.00	0.02	0.00	0.01	0.00	0.00
2027 Total				0.47	3.42	2.67	0.16	0.12	0.01
2026	I,5,a (Stage I)	OFFROAD	lbs/8-hr	3.26	23.04	20.06	0.92	0.85	0.09
2026	I,5,a (Stage I)	ONROAD HD	lbs/8-hr	0.00	0.04	0.08	0.03	0.01	0.00
2026	I,5,a (Stage I)	ONROAD LDV	lbs/8-hr	0.00	0.17	0.02	0.02	0.00	0.00
2026 Total				3.27	23.25	20.16	0.97	0.86	0.09
2027	I,5,a (Stage I)	OFFROAD	lbs/8-hr	0.47	3.39	2.65	0.12	0.11	0.01
2027	I,5,a (Stage I)	ONROAD HD	lbs/8-hr	0.00	0.01	0.01	0.02	0.00	0.00
2027	I,5,a (Stage I)	ONROAD LDV	lbs/8-hr	0.00	0.02	0.00	0.01	0.00	0.00
2027 Total				0.47	3.42	2.67	0.16	0.12	0.01
2026	I,5,a (Stage I)	OFFROAD	lbs/1-hr	0.41	2.88	2.51	0.12	0.11	0.01
2026	I,5,a (Stage I)	ONROAD HD	lbs/1-hr	0.00	0.00	0.01	0.00	0.00	0.00
2026	I,5,a (Stage I)	ONROAD LDV	lbs/1-hr	0.00	0.02	0.00	0.01	0.00	0.00
2026 Total				0.41	2.91	2.52	0.13	0.11	0.01
2027	I,5,a (Stage I)	OFFROAD	lbs/1-hr	0.06	0.42	0.33	0.02	0.01	0.00
2027	I,5,a (Stage I)	ONROAD HD	lbs/1-hr	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5,a (Stage I)	ONROAD LDV	lbs/1-hr	0.00	0.00	0.00	0.01	0.00	0.00
2027 Total				0.06	0.43	0.33	0.03	0.02	0.00

B121-B131 Construction Annual Emissions - No Federal Action with Mitigation

Year	Sub-Phase	Category	Units	VOC	CO	NOX	PM10	PM2.5	SOX
2026	I,5,a (Stage I)	OFFROAD	tons/year	0.01	0.09	0.02	0.00	0.00	0.00
2026	I,5,a (Stage I)	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,5,a (Stage I)	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2026	I,5,a (Stage II)	OFFROAD	tons/year	-	-	-	-	-	-
2026	I,5,a (Stage II)	ONROAD HD	tons/year	-	-	-	-	-	-
2026	I,5,a (Stage II)	ONROAD LDV	tons/year	-	-	-	-	-	-
2026	I,5,a (Stage III)	OFFROAD	tons/year	-	-	-	-	-	-
2026	I,5,a (Stage III)	ONROAD HD	tons/year	-	-	-	-	-	-
2026	I,5,a (Stage III)	ONROAD LDV	tons/year	-	-	-	-	-	-
2026 Total				0.01	0.10	0.03	0.00	0.00	0.00
2027	I,5,a (Stage I)	OFFROAD	tons/year	0.00	0.01	0.00	0.00	0.00	0.00
2027	I,5,a (Stage I)	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5,a (Stage I)	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5,a (Stage II)	OFFROAD	tons/year	0.00	0.03	0.01	0.00	0.00	0.00
2027	I,5,a (Stage II)	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5,a (Stage II)	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5,a (Stage III)	OFFROAD	tons/year	0.01	0.11	0.02	0.00	0.00	0.00
2027	I,5,a (Stage III)	ONROAD HD	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5,a (Stage III)	ONROAD LDV	tons/year	0.00	0.00	0.00	0.00	0.00	0.00
2027 Total				0.02	0.16	0.04	0.00	0.00	0.00

B121-B131 Construction Peak Day Emissions - No Federal Action with Mitigation

Year	Sub-Phase	Category	Units	VOC	CO	NOX	PM10	PM2.5	SOX
2026	I,5,a (Stage I)	OFFROAD	lbs/day	2.20	21.78	5.15	0.31	0.29	0.09
2026	I,5,a (Stage I)	ONROAD HD	lbs/day	0.00	0.02	0.08	0.03	0.01	0.00
2026	I,5,a (Stage I)	ONROAD LDV	lbs/day	0.00	0.17	0.02	0.02	0.00	0.00
2026 Total				2.21	21.97	5.24	0.36	0.30	0.09
2027	I,5,a (Stage I)	OFFROAD	lbs/day	0.33	3.22	0.72	0.04	0.04	0.01
2027	I,5,a (Stage I)	ONROAD HD	lbs/day	0.00	0.00	0.01	0.02	0.00	0.00
2027	I,5,a (Stage I)	ONROAD LDV	lbs/day	0.00	0.02	0.00	0.01	0.00	0.00
2027 Total				0.33	3.25	0.73	0.07	0.05	0.01
2026	I,5,a (Stage I)	OFFROAD	lbs/8-hr	2.20	21.78	5.15	0.31	0.29	0.09
2026	I,5,a (Stage I)	ONROAD HD	lbs/8-hr	0.00	0.02	0.08	0.03	0.01	0.00
2026	I,5,a (Stage I)	ONROAD LDV	lbs/8-hr	0.00	0.17	0.02	0.02	0.00	0.00
2026 Total				2.21	21.97	5.24	0.36	0.30	0.09
2027	I,5,a (Stage I)	OFFROAD	lbs/8-hr	0.33	3.22	0.72	0.04	0.04	0.01
2027	I,5,a (Stage I)	ONROAD HD	lbs/8-hr	0.00	0.00	0.01	0.02	0.00	0.00
2027	I,5,a (Stage I)	ONROAD LDV	lbs/8-hr	0.00	0.02	0.00	0.01	0.00	0.00
2027 Total				0.33	3.25	0.73	0.07	0.05	0.01
2026	I,5,a (Stage I)	OFFROAD	lbs/1-hr	0.28	2.72	0.64	0.04	0.04	0.01
2026	I,5,a (Stage I)	ONROAD HD	lbs/1-hr	0.00	0.00	0.01	0.00	0.00	0.00
2026	I,5,a (Stage I)	ONROAD LDV	lbs/1-hr	0.00	0.02	0.00	0.01	0.00	0.00
2026 Total				0.28	2.75	0.66	0.06	0.04	0.01
2027	I,5,a (Stage I)	OFFROAD	lbs/1-hr	0.04	0.40	0.09	0.01	0.01	0.00
2027	I,5,a (Stage I)	ONROAD HD	lbs/1-hr	0.00	0.00	0.00	0.00	0.00	0.00
2027	I,5,a (Stage I)	ONROAD LDV	lbs/1-hr	0.00	0.00	0.00	0.01	0.00	0.00
2027 Total				0.04	0.41	0.09	0.02	0.01	0.00

Operational Emission Inventory

Calculation Inputs by Source Category

Cargo Handling Equipment (CHE)

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2019

2019 Baseline Scenario - CHE equipment list

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for YM	Emission Controls (% reduction) PM	HC	CO
Forklift	137	2007	Diesel	0.3	2	DPF (A)	100%	74	85%	0%	0%
Forklift	152	2004	Diesel	0.3	1	DPF (A)	100%	243	85%	0%	0%
Forklift	152	2005	Diesel	0.3	2	DPF (A)	100%	686	85%	0%	0%
Forklift	160	2009	Diesel	0.3	1	DPF (A)	100%	25	85%	0%	0%
Forklift	165	2014	Diesel	0.3	1		0%	463	0%	0%	0%
Forklift	190	2004	Diesel	0.3	1	DPF (A)	100%	238	85%	0%	0%
Forklift	59	2014	LPG	0.3	1		0%	87	0%	0%	0%
Forklift	59	2015	LPG	0.3	1		0%	58	0%	0%	0%
Forklift	160	2005	LPG	0.3	3		0%	117	0%	0%	0%
Forklift	160	2008	LPG	0.3	2		0%	53	0%	0%	0%
Forklift	165	1995	LPG	0.3	1		0%	6	0%	0%	0%
Forklift	165	2002	LPG	0.3	1		0%	1	0%	0%	0%
Forklift	165	2011	LPG	0.3	1		0%	183	0%	0%	0%
Rub-trd Gantry Crane	197	2011	Diesel	0.2	1		0%	448	0%	0%	0%
Rub-trd Gantry Crane	302	2015	Diesel	0.2	5		0%	3,544	0%	0%	0%
Rub-trd Gantry Crane	454	2004	Diesel	0.2	2	DPF Level 2	100%	999	50%	0%	0%
Rub-trd Gantry Crane	612	2003	Diesel	0.2	8	DPF Level 2	100%	2,710	50%	0%	0%
Rub-trd Gantry Crane	685	2005	Diesel	0.2	5	DPF Level 2	100%	2,057	50%	0%	0%
Top handler	250	2002	Diesel	0.59	1	DPF (A)	100%	419	85%	0%	0%
Top handler	260	2006	Diesel	0.59	5	DPF (A)	100%	2,106	85%	0%	0%
Top handler	260	2007	Diesel	0.59	6	DPF (A)	100%	2,524	85%	0%	0%
Top handler	260	2008	Diesel	0.59	15	DPF (A)	100%	9,843	85%	0%	0%
Top handler	335	2011	Diesel	0.59	3		0%	1,347	0%	0%	0%
Top handler	363	2017	Diesel	0.59	6		0%	2,598	0%	0%	0%
Top handler	370	2014	Diesel	0.59	1		0%	393	0%	0%	0%
Top handler	388	2017	Diesel	0.59	2		0%	920	0%	0%	0%
Truck	250	2005	Diesel	0.51	2	DPF (A)	100%	304	85%	0%	0%
Truck	250	2008	Diesel	0.51	2		0%	419	0%	0%	0%
Truck	330	2007	Diesel	0.51	1		0%	135	0%	0%	0%
Truck	350	2013	Diesel	0.51	1		0%	228	0%	0%	0%
Truck	280	1973	LPG	0.51	1		0%	39	0%	0%	0%
Yard tractor	158	2019	Diesel	0.39	30		0%	1,066	0%	0%	0%
Yard tractor	174	2000	LPG	0.39	1		0%	65	0%	0%	0%
Yard tractor	195	2004	LPG	0.39	35		0%	10,715	0%	0%	0%
Yard tractor	195	2007	LPG	0.39	59		0%	26,464	0%	0%	0%
Yard tractor	195	2008	LPG	0.39	40		0%	18,846	0%	0%	0%
Yard tractor	231	2011	LPG	0.39	23		0%	7,900	0%	0%	0%

Notes

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and B121-131 operations

Operating Hours are only for B121-131 operations calculated by applying ratio of B121-131 throughput/total WBCT throughput to average annual hours for WBCT termina

Data obtained: 6/23/2021

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

2019 Baseline Scenario - CHE Emission Factors

	Emission Factors (g/hp-hr)									
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	TOG
Forklift	0.178	2.897	2.811	0.176	0.162	0.005	585.973	0.024	0.005	0.181
Forklift	0.564	3.557	4.639	0.192	0.177	0.005	585.973	0.024	0.005	0.573
Forklift	0.493	3.557	4.332	0.201	0.185	0.005	585.973	0.024	0.005	0.501
Forklift	0.138	2.790	2.568	0.137	0.126	0.005	585.973	0.024	0.005	0.141
Forklift	0.369	3.557	2.059	0.062	0.057	0.005	585.973	0.024	0.005	0.375
Forklift	0.438	1.212	4.837	0.149	0.137	0.005	585.973	0.024	0.005	0.445
Forklift	0.065	8.492	0.401	0.060	0.060	-	674.859	-	-	0.071
Forklift	0.049	5.755	0.362	0.060	0.060	-	674.859	-	-	0.054
Forklift	0.691	21.049	2.962	0.060	0.060	-	674.859	-	-	0.763
Forklift	0.194	2.404	1.069	0.060	0.060	-	674.859	-	-	0.214
Forklift	1.400	17.100	10.583	0.060	0.060	-	674.859	-	-	1.546
Forklift	0.938	16.535	6.545	0.060	0.060	-	674.859	-	-	1.036
Forklift	0.140	21.648	0.589	0.060	0.060	-	674.859	-	-	0.154
Rub-trd Gantry Crane	0.305	1.212	1.664	0.073	0.067	0.005	585.973	0.024	0.005	0.310
Rub-trd Gantry Crane	0.199	1.136	0.893	0.046	0.042	0.005	585.973	0.024	0.005	0.202
Rub-trd Gantry Crane	0.425	1.138	4.498	0.123	0.114	0.005	585.973	0.024	0.005	0.431
Rub-trd Gantry Crane	0.428	1.138	5.932	0.125	0.115	0.005	585.973	0.024	0.005	0.435
Rub-trd Gantry Crane	0.425	1.138	4.222	0.118	0.109	0.005	585.973	0.024	0.005	0.431
Top handler	0.524	1.212	6.571	0.194	0.178	0.005	585.973	0.024	0.005	0.532
Top handler	0.430	1.212	4.450	0.136	0.125	0.005	585.973	0.024	0.005	0.437
Top handler	0.421	1.212	2.961	0.144	0.132	0.005	585.973	0.024	0.005	0.428
Top handler	0.421	1.212	2.836	0.140	0.129	0.005	585.973	0.024	0.005	0.428
Top handler	0.305	1.138	1.356	0.068	0.063	0.005	585.973	0.024	0.005	0.310
Top handler	0.129	1.032	0.237	0.024	0.022	0.005	585.973	0.024	0.005	0.131
Top handler	0.183	1.113	1.053	0.046	0.042	0.005	585.973	0.024	0.005	0.186
Top handler	0.133	1.039	0.238	0.025	0.023	0.005	585.973	0.024	0.005	0.135
Truck	0.386	1.169	4.354	0.128	0.118	0.005	585.973	0.024	0.005	0.392
Truck	0.392	1.185	2.801	0.136	0.125	0.005	585.973	0.024	0.005	0.399
Truck	0.297	1.052	2.669	0.131	0.121	0.005	585.973	0.024	0.005	0.302
Truck	0.128	1.032	0.999	0.040	0.037	0.005	585.973	0.024	0.005	0.130
Truck	1.668	23.362	11.338	0.060	0.060	-	674.859	-	-	1.842
Yard tractor	0.056	2.717	0.721	0.008	0.008	0.005	585.973	0.024	0.005	0.056
Yard tractor	1.589	21.524	11.117	0.060	0.060	-	674.859	-	-	1.755
Yard tractor	1.384	26.826	4.705	0.060	0.060	-	674.859	-	-	1.529
Yard tractor	0.631	2.550	1.215	0.060	0.060	-	674.859	-	-	0.697
Yard tractor	0.628	2.549	1.214	0.060	0.060	-	674.859	-	-	0.693
Yard tractor	0.204	32.975	0.752	0.060	0.060	-	674.859	-	-	0.226

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2026

2026 Proposed Project Scenario - CHE equipment list

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for B121-131	Emission Controls (% reduction) PM	HC	CO
Forklift	137	2023	Diesel	0.3	2	-	0%	57	0%	0%	0%
Forklift	152	2020	Diesel	0.3	1	-	0%	186	0%	0%	0%
Forklift	152	2021	Diesel	0.3	2	-	0%	523	0%	0%	0%
Forklift	160	2025	Diesel	0.3	1	-	0%	19	0%	0%	0%
Forklift	165	2014	Diesel	0.3	1	-	0%	353	0%	0%	0%
Forklift	190	2020	Diesel	0.3	1	-	0%	181	0%	0%	0%
Forklift	59	2014	LPG	0.3	1	-	0%	66	0%	0%	0%
Forklift	59	2015	LPG	0.3	1	-	0%	44	0%	0%	0%
Forklift	160	2021	LPG	0.3	2	-	0%	89	0%	0%	0%
Forklift	160	2024	LPG	0.3	2	-	0%	41	0%	0%	0%
Rub-trd Gantry Crane	197	2011	Diesel	0.2	1	-	0%	342	0%	0%	0%
Rub-trd Gantry Crane	302	2015	Diesel	0.2	5	-	0%	2,704	0%	0%	0%
Rub-trd Gantry Crane	454	2004	Diesel	0.2	2	DPF Level 2	100%	762	50%	0%	0%
Rub-trd Gantry Crane	612	2003	Diesel	0.2	8	DPF Level 2	100%	2,067	50%	0%	0%
Rub-trd Gantry Crane	685	2005	Diesel	0.2	4	DPF Level 2	100%	1,569	50%	0%	0%
Top handler	250	2018	Diesel	0.59	1	-	0%	319	0%	0%	0%
Top handler	260	2022	Diesel	0.59	5	-	0%	1,607	0%	0%	0%
Top handler	260	2023	Diesel	0.59	6	-	0%	1,925	0%	0%	0%
Top handler	260	2024	Diesel	0.59	14	-	0%	7,509	0%	0%	0%
Top handler	335	2011	Diesel	0.59	3	-	0%	1,027	0%	0%	0%
Top handler	363	2017	Diesel	0.59	6	-	0%	1,982	0%	0%	0%
Top handler	370	2014	Diesel	0.59	1	-	0%	300	0%	0%	0%
Top handler	388	2017	Diesel	0.59	2	-	0%	702	0%	0%	0%
Top handler	388	2021	Diesel	0.59	1	-	0%	601	0%	0%	0%
Truck	250	2017	Diesel	0.51	2	-	0%	262	0%	0%	0%
Truck	250	2020	Diesel	0.51	2	-	0%	319	0%	0%	0%
Truck	330	2020	Diesel	0.51	1	-	0%	103	0%	0%	0%
Truck	350	2026	Diesel	0.51	1	-	0%	174	0%	0%	0%
Yard tractor	158	2019	Diesel	0.39	30	-	0%	813	0%	0%	0%
Yard tractor	195	2016	LPG	0.39	16	-	0%	3,759	0%	0%	0%
Yard tractor	195	2019	LPG	0.39	54	-	0%	18,478	0%	0%	0%
Yard tractor	195	2020	LPG	0.39	37	-	0%	13,299	0%	0%	0%
Yard tractor	231	2023	LPG	0.39	20	-	0%	5,240	0%	0%	0%

Notes

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and B121-131 operations.

Operating Hours are only for B121-131 operations calculated by applying ratio of B121-131 throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 12/21/2023

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

2026 Proposed Project Scenario - CHE Emission Factors

	Emission Factors (g/hp-hr)									
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	TOG
2026_Forklift_Diesel_137_2023	0.063	2.761	0.124	0.009	0.008	0.005	585.973	0.024	0.005	0.064
2026_Forklift_Diesel_152_2020	0.147	3.247	0.585	0.011	0.010	0.005	585.973	0.024	0.005	0.149
2026_Forklift_Diesel_152_2021	0.167	3.361	0.386	0.012	0.011	0.005	585.973	0.024	0.005	0.169
2026_Forklift_Diesel_160_2025	0.055	2.716	0.123	0.008	0.008	0.005	585.973	0.024	0.005	0.056
2026_Forklift_Diesel_165_2014	0.369	3.557	2.059	0.062	0.057	0.005	585.973	0.024	0.005	0.375
2026_Forklift_Diesel_190_2020	0.145	1.102	0.126	0.011	0.010	0.005	585.973	0.024	0.005	0.147
2026_Forklift_LPG_59_2014	0.105	15.634	0.503	0.060	0.060	-	674.859	-	-	0.116
2026_Forklift_LPG_59_2015	0.076	10.491	0.430	0.060	0.060	-	674.859	-	-	0.084
2026_Forklift_LPG_160_2021	0.063	8.165	0.396	0.060	0.060	-	674.859	-	-	0.069
2026_Forklift_LPG_160_2024	0.038	3.793	0.334	0.060	0.060	-	674.859	-	-	0.042
2026_Forklift_LPG_165_0	-	-	-	-	-	-	-	-	-	-
2026_Forklift_LPG_165_2011	0.208	33.601	0.761	0.060	0.060	-	674.859	-	-	0.229
2026_Rub-trd Gantry Crane_Diesel_197_2011	0.305	1.212	1.664	0.073	0.067	0.005	585.973	0.024	0.005	0.310
2026_Rub-trd Gantry Crane_Diesel_302_2015	0.200	1.138	0.894	0.046	0.042	0.005	585.973	0.024	0.005	0.204
2026_Rub-trd Gantry Crane_Diesel_454_2004	0.425	1.138	4.498	0.123	0.114	0.005	585.973	0.024	0.005	0.431
2026_Rub-trd Gantry Crane_Diesel_612_2003	0.428	1.138	5.932	0.125	0.115	0.005	585.973	0.024	0.005	0.435
2026_Rub-trd Gantry Crane_Diesel_685_2005	0.425	1.138	4.222	0.118	0.109	0.005	585.973	0.024	0.005	0.431
2026_Top handler_Diesel_250_2018	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2026_Top handler_Diesel_260_2022	0.172	1.156	0.129	0.011	0.010	0.005	585.973	0.024	0.005	0.175
2026_Top handler_Diesel_260_2023	0.150	1.112	0.127	0.011	0.010	0.005	585.973	0.024	0.005	0.153
2026_Top handler_Diesel_260_2024	0.163	1.138	0.128	0.011	0.010	0.005	585.973	0.024	0.005	0.166
2026_Top handler_Diesel_335_2011	0.305	1.138	1.356	0.068	0.063	0.005	585.973	0.024	0.005	0.310
2026_Top handler_Diesel_363_2017	0.200	1.138	0.254	0.029	0.026	0.005	585.973	0.024	0.005	0.203
2026_Top handler_Diesel_370_2014	0.200	1.138	1.070	0.047	0.044	0.005	585.973	0.024	0.005	0.204
2026_Top handler_Diesel_388_2017	0.200	1.138	0.254	0.029	0.026	0.005	585.973	0.024	0.005	0.204
2026_Top handler_Diesel_388_2021	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2026_Truck_Diesel_250_2017	0.150	1.111	0.348	0.017	0.016	0.005	585.973	0.024	0.005	0.152
2026_Truck_Diesel_250_2020	0.136	1.085	0.125	0.010	0.010	0.005	585.973	0.024	0.005	0.138
2026_Truck_Diesel_330_2020	0.105	0.997	0.133	0.010	0.009	0.005	585.973	0.024	0.005	0.107
2026_Truck_Diesel_350_2026	0.065	0.939	0.128	0.009	0.008	0.005	585.973	0.024	0.005	0.066
2026_Truck_LPG_280_0	-	-	-	-	-	-	-	-	-	-
2026_Yard tractor_Diesel_158_2019	0.076	2.834	0.737	0.009	0.008	0.005	585.973	0.024	0.005	0.077
2026_Yard tractor_LPG_195_2016	0.205	33.141	0.754	0.060	0.060	-	674.859	-	-	0.227
2026_Yard tractor_LPG_195_2019	0.207	33.502	0.759	0.060	0.060	-	674.859	-	-	0.229
2026_Yard tractor_LPG_195_2020	0.205	33.049	0.753	0.060	0.060	-	674.859	-	-	0.226
2026_Yard tractor_LPG_231_2023	0.127	19.387	0.557	0.060	0.060	-	674.859	-	-	0.140

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2027

2027 Proposed Project Scenario - CHE equipment list

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for B121-131	Emission Controls (% reduction) PM	HC	CO
Forklift	137	2023	Diesel	0.3	2	-	0%	59	0%	0%	0%
Forklift	152	2020	Diesel	0.3	1	-	0%	191	0%	0%	0%
Forklift	152	2021	Diesel	0.3	2	-	0%	539	0%	0%	0%
Forklift	160	2025	Diesel	0.3	1	-	0%	20	0%	0%	0%
Forklift	165	2014	Diesel	0.3	1	-	0%	364	0%	0%	0%
Forklift	190	2020	Diesel	0.3	1	-	0%	187	0%	0%	0%
Forklift	59	2014	LPG	0.3	1	-	0%	68	0%	0%	0%
Forklift	59	2015	LPG	0.3	1	-	0%	45	0%	0%	0%
Forklift	160	2021	LPG	0.3	2	-	0%	92	0%	0%	0%
Forklift	160	2024	LPG	0.3	2	-	0%	42	0%	0%	0%
Rub-trd Gantry Crane	197	2011	Diesel	0.2	1	-	0%	352	0%	0%	0%
Rub-trd Gantry Crane	302	2015	Diesel	0.2	5	-	0%	2,785	0%	0%	0%
Rub-trd Gantry Crane	454	2004	Diesel	0.2	2	DPF Level 2	100%	785	50%	0%	0%
Rub-trd Gantry Crane	612	2027	Diesel	0.2	8	-	0%	2,129	0%	0%	0%
Rub-trd Gantry Crane	685	2005	Diesel	0.2	4	DPF Level 2	100%	1,616	50%	0%	0%
Top handler	250	2018	Diesel	0.59	1	-	0%	329	0%	0%	0%
Top handler	260	2022	Diesel	0.59	5	-	0%	1,655	0%	0%	0%
Top handler	260	2023	Diesel	0.59	6	-	0%	1,983	0%	0%	0%
Top handler	260	2024	Diesel	0.59	14	-	0%	7,734	0%	0%	0%
Top handler	335	2027	Diesel	0.59	3	-	0%	1,058	0%	0%	0%
Top handler	363	2017	Diesel	0.59	6	-	0%	2,041	0%	0%	0%
Top handler	370	2014	Diesel	0.59	1	-	0%	309	0%	0%	0%
Top handler	388	2017	Diesel	0.59	2	-	0%	723	0%	0%	0%
Top handler	388	2021	Diesel	0.59	1	-	0%	619	0%	0%	0%
Truck	250	2017	Diesel	0.51	2	-	0%	270	0%	0%	0%
Truck	250	2020	Diesel	0.51	2	-	0%	329	0%	0%	0%
Truck	330	2020	Diesel	0.51	1	-	0%	106	0%	0%	0%
Truck	350	2026	Diesel	0.51	1	-	0%	179	0%	0%	0%
Truck	280	0	LPG	0.51	1	-	0%	-	0%	0%	0%
Yard tractor	158	2019	Diesel	0.39	30	-	0%	838	0%	0%	0%
Yard tractor	195	2016	LPG	0.39	16	-	0%	3,872	0%	0%	0%
Yard tractor	195	2019	LPG	0.39	54	-	0%	19,032	0%	0%	0%
Yard tractor	195	2020	LPG	0.39	37	-	0%	13,698	0%	0%	0%
Yard tractor	231	2023	LPG	0.39	20	-	0%	5,398	0%	0%	0%
Yard tractor	195	2023	LPG	0.39	19	-	0%	4,598	0%	0%	0%
Yard tractor	195	2023	LPG	0.39	5	-	0%	1,762	0%	0%	0%
Yard tractor	195	2023	LPG	0.39	3	-	0%	1,111	0%	0%	0%
Yard tractor	231	2023	LPG	0.39	3	-	0%	810	0%	0%	0%

Notes

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and B121-131 operations.

Operating Hours are only for B121-131 operations calculated by applying ratio of B121-131 throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 12/21/2023

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

2027 Proposed Project Scenario - CHE Emission Factors

	Emission Factors (g/hp-hr)									
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	TOG
2027_Forklift_Diesel_137_2023	0.066	2.776	0.124	0.009	0.008	0.005	585.973	0.024	0.005	0.067
2027_Forklift_Diesel_152_2020	0.160	3.325	0.592	0.012	0.011	0.005	585.973	0.024	0.005	0.163
2027_Forklift_Diesel_152_2021	0.186	3.471	0.393	0.012	0.011	0.005	585.973	0.024	0.005	0.189
2027_Forklift_Diesel_160_2025	0.057	2.724	0.123	0.008	0.008	0.005	585.973	0.024	0.005	0.058
2027_Forklift_Diesel_165_2014	0.369	3.557	2.059	0.062	0.057	0.005	585.973	0.024	0.005	0.375
2027_Forklift_Diesel_190_2020	0.158	1.128	0.128	0.011	0.010	0.005	585.973	0.024	0.005	0.161
2027_Forklift_LPG_59_2014	0.111	16.654	0.518	0.060	0.060	-	674.859	-	-	0.123
2027_Forklift_LPG_59_2015	0.080	11.168	0.439	0.060	0.060	-	674.859	-	-	0.088
2027_Forklift_LPG_160_2021	0.068	9.131	0.410	0.060	0.060	-	674.859	-	-	0.075
2027_Forklift_LPG_160_2024	0.040	4.267	0.340	0.060	0.060	-	674.859	-	-	0.045
2027_Forklift_LPG_165_0	-	-	-	-	-	-	-	-	-	-
2027_Forklift_LPG_165_2027	0.042	4.599	0.345	0.060	0.060	-	674.859	-	-	0.047
2027_Rub-trd Gantry Crane_Diesel_197_2011	0.305	1.212	1.664	0.073	0.067	0.005	585.973	0.024	0.005	0.310
2027_Rub-trd Gantry Crane_Diesel_302_2015	0.200	1.138	0.894	0.046	0.042	0.005	585.973	0.024	0.005	0.204
2027_Rub-trd Gantry Crane_Diesel_454_2004	0.425	1.138	4.498	0.123	0.114	0.005	585.973	0.024	0.005	0.431
2027_Rub-trd Gantry Crane_Diesel_612_2027	0.072	0.948	0.150	0.012	0.011	0.005	585.973	0.024	0.005	0.073
2027_Rub-trd Gantry Crane_Diesel_685_2005	0.425	1.138	4.222	0.118	0.109	0.005	585.973	0.024	0.005	0.431
2027_Top handler_Diesel_250_2018	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2027_Top handler_Diesel_260_2022	0.189	1.190	0.132	0.012	0.011	0.005	585.973	0.024	0.005	0.192
2027_Top handler_Diesel_260_2023	0.171	1.154	0.129	0.011	0.010	0.005	585.973	0.024	0.005	0.174
2027_Top handler_Diesel_260_2024	0.194	1.200	0.132	0.012	0.011	0.005	585.973	0.024	0.005	0.198
2027_Top handler_Diesel_335_2027	0.078	0.958	0.129	0.009	0.008	0.005	585.973	0.024	0.005	0.080
2027_Top handler_Diesel_363_2017	0.200	1.138	0.254	0.029	0.026	0.005	585.973	0.024	0.005	0.204
2027_Top handler_Diesel_370_2014	0.200	1.138	1.070	0.047	0.044	0.005	585.973	0.024	0.005	0.204
2027_Top handler_Diesel_388_2017	0.200	1.138	0.254	0.029	0.026	0.005	585.973	0.024	0.005	0.204
2027_Top handler_Diesel_388_2021	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2027_Truck_Diesel_250_2017	0.159	1.130	0.351	0.018	0.016	0.005	585.973	0.024	0.005	0.162
2027_Truck_Diesel_250_2020	0.148	1.109	0.126	0.011	0.010	0.005	585.973	0.024	0.005	0.151
2027_Truck_Diesel_330_2020	0.112	1.008	0.134	0.010	0.009	0.005	585.973	0.024	0.005	0.114
2027_Truck_Diesel_350_2026	0.078	0.957	0.129	0.009	0.008	0.005	585.973	0.024	0.005	0.079
2027_Truck_LPG_280_0	-	-	-	-	-	-	-	-	-	-
2027_Yard tractor_Diesel_158_2019	0.079	2.850	0.739	0.009	0.008	0.005	585.973	0.024	0.005	0.080
2027_Yard tractor_LPG_195_2016	0.206	33.328	0.757	0.060	0.060	-	674.859	-	-	0.228
2027_Yard tractor_LPG_195_2019	0.207	33.556	0.760	0.060	0.060	-	674.859	-	-	0.229
2027_Yard tractor_LPG_195_2020	0.206	33.224	0.755	0.060	0.060	-	674.859	-	-	0.227
2027_Yard tractor_LPG_231_2023	0.151	23.641	0.618	0.060	0.060	-	674.859	-	-	0.167
2027_Yard tractor_LPG_195_2023	0.166	26.214	0.655	0.060	0.060	-	674.859	-	-	0.183
2027_Yard tractor_LPG_195_2023	0.166	26.214	0.655	0.060	0.060	-	674.859	-	-	0.183
2027_Yard tractor_LPG_195_2023	0.166	26.214	0.655	0.060	0.060	-	674.859	-	-	0.183
2027_Yard tractor_LPG_231_2023	0.151	23.641	0.618	0.060	0.060	-	674.859	-	-	0.167

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2028

2028 Proposed Project Scenario - CHE equipment list

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for B121-131	Emission Controls (% reduction) PM	HC	CO
Forklift	137	2023	Diesel	0.3	2	-	0%	189	0%	0%	0%
Forklift	152	2020	Diesel	0.3	1	-	0%	618	0%	0%	0%
Forklift	152	2021	Diesel	0.3	2	-	0%	1,744	0%	0%	0%
Forklift	160	2025	Diesel	0.3	1	-	0%	64	0%	0%	0%
Forklift	165	2014	Diesel	0.3	1	-	0%	1,177	0%	0%	0%
Forklift	190	2020	Diesel	0.3	1	-	0%	604	0%	0%	0%
Forklift	59	2014	LPG	0.3	1	-	0%	222	0%	0%	0%
Forklift	59	2015	LPG	0.3	1	-	0%	147	0%	0%	0%
Forklift	160	2021	LPG	0.3	2	-	0%	297	0%	0%	0%
Forklift	160	2024	LPG	0.3	2	-	0%	135	0%	0%	0%
Rub-trd Gantry Crane	197	2011	Diesel	0.2	1	-	0%	1,139	0%	0%	0%
Rub-trd Gantry Crane	302	2015	Diesel	0.2	5	-	0%	9,012	0%	0%	0%
Rub-trd Gantry Crane	454	2028	Diesel	0.2	2	-	0%	2,539	0%	0%	0%
Rub-trd Gantry Crane	612	2027	Diesel	0.2	8	-	0%	6,891	0%	0%	0%
Rub-trd Gantry Crane	685	2005	Diesel	0.2	4	DPF Level 2	100%	5,230	50%	0%	0%
Top handler	250	2018	Diesel	0.59	1	-	0%	1,065	0%	0%	0%
Top handler	260	2022	Diesel	0.59	5	-	0%	5,356	0%	0%	0%
Top handler	260	2023	Diesel	0.59	6	-	0%	6,417	0%	0%	0%
Top handler	260	2024	Diesel	0.59	14	-	0%	25,030	0%	0%	0%
Top handler	335	2027	Diesel	0.59	3	-	0%	3,424	0%	0%	0%
Top handler	363	2017	Diesel	0.59	6	-	0%	6,606	0%	0%	0%
Top handler	370	2014	Diesel	0.59	1	-	0%	1,000	0%	0%	0%
Top handler	388	2017	Diesel	0.59	2	-	0%	2,340	0%	0%	0%
Top handler	388	2021	Diesel	0.59	1	-	0%	2,004	0%	0%	0%
Truck	250	2017	Diesel	0.51	2	-	0%	872	0%	0%	0%
Truck	250	2020	Diesel	0.51	2	-	0%	1,064	0%	0%	0%
Truck	330	2020	Diesel	0.51	1	-	0%	343	0%	0%	0%
Truck	350	2026	Diesel	0.51	1	-	0%	579	0%	0%	0%
Yard tractor	158	2019	Diesel	0.39	30	-	0%	2,712	0%	0%	0%
Yard tractor	195	2028	LPG	0.39	16	-	0%	12,532	0%	0%	0%
Yard tractor	195	2019	LPG	0.39	54	-	0%	61,593	0%	0%	0%
Yard tractor	195	2020	LPG	0.39	37	-	0%	44,330	0%	0%	0%
Yard tractor	231	2023	LPG	0.39	20	-	0%	17,468	0%	0%	0%
Yard tractor	195	2023	LPG	0.39	19	-	0%	14,881	0%	0%	0%
Yard tractor	195	2023	LPG	0.39	5	-	0%	5,703	0%	0%	0%
Yard tractor	195	2023	LPG	0.39	3	-	0%	3,594	0%	0%	0%
Yard tractor	231	2023	LPG	0.39	3	-	0%	2,620	0%	0%	0%

Notes

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and B121-131 operations.

Operating Hours are only for B121-131 operations calculated by applying ratio of B121-131 throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 12/21/2023

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

2028 Proposed Project Scenario - CHE Emission Factors

	Emission Factors (g/hp-hr)									
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	TOG
2028_Forklift_Diesel_137_2023	0.068	2.791	0.124	0.009	0.008	0.005	585.973	0.024	0.005	0.069
2028_Forklift_Diesel_152_2020	0.174	3.403	0.600	0.012	0.011	0.005	585.973	0.024	0.005	0.177
2028_Forklift_Diesel_152_2021	0.200	3.557	0.398	0.013	0.012	0.005	585.973	0.024	0.005	0.204
2028_Forklift_Diesel_160_2025	0.058	2.733	0.123	0.008	0.008	0.005	585.973	0.024	0.005	0.059
2028_Forklift_Diesel_165_2014	0.369	3.557	2.059	0.062	0.057	0.005	585.973	0.024	0.005	0.375
2028_Forklift_Diesel_190_2020	0.171	1.154	0.129	0.011	0.010	0.005	585.973	0.024	0.005	0.174
2028_Forklift_LPG_59_2014	0.117	17.674	0.532	0.060	0.060	-	674.859	-	-	0.129
2028_Forklift_LPG_59_2015	0.084	11.844	0.449	0.060	0.060	-	674.859	-	-	0.092
2028_Forklift_LPG_160_2021	0.074	10.096	0.424	0.060	0.060	-	674.859	-	-	0.081
2028_Forklift_LPG_160_2024	0.043	4.741	0.347	0.060	0.060	-	674.859	-	-	0.048
2028_Forklift_LPG_165_0	-	-	-	-	-	-	-	-	-	-
2028_Forklift_LPG_165_2027	0.055	6.827	0.377	0.060	0.060	-	674.859	-	-	0.061
2028_Rub-trd Gantry Crane_Diesel_197_2011	0.305	1.212	1.664	0.073	0.067	0.005	585.973	0.024	0.005	0.310
2028_Rub-trd Gantry Crane_Diesel_302_2015	0.200	1.138	0.894	0.046	0.042	0.005	585.973	0.024	0.005	0.204
2028_Rub-trd Gantry Crane_Diesel_454_2028	0.080	0.961	0.130	0.009	0.008	0.005	585.973	0.024	0.005	0.082
2028_Rub-trd Gantry Crane_Diesel_612_2027	0.091	0.977	0.153	0.012	0.011	0.005	585.973	0.024	0.005	0.093
2028_Rub-trd Gantry Crane_Diesel_685_2005	0.425	1.138	4.222	0.118	0.109	0.005	585.973	0.024	0.005	0.431
2028_Top handler_Diesel_250_2018	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2028_Top handler_Diesel_260_2022	0.197	1.205	0.132	0.012	0.011	0.005	585.973	0.024	0.005	0.201
2028_Top handler_Diesel_260_2023	0.187	1.184	0.131	0.012	0.011	0.005	585.973	0.024	0.005	0.190
2028_Top handler_Diesel_260_2024	0.200	1.210	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.203
2028_Top handler_Diesel_335_2027	0.104	0.996	0.133	0.010	0.009	0.005	585.973	0.024	0.005	0.106
2028_Top handler_Diesel_363_2017	0.200	1.138	0.254	0.029	0.026	0.005	585.973	0.024	0.005	0.204
2028_Top handler_Diesel_370_2014	0.200	1.138	1.070	0.047	0.044	0.005	585.973	0.024	0.005	0.204
2028_Top handler_Diesel_388_2017	0.200	1.138	0.254	0.029	0.026	0.005	585.973	0.024	0.005	0.204
2028_Top handler_Diesel_388_2021	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2028_Truck_Diesel_250_2017	0.169	1.150	0.355	0.018	0.017	0.005	585.973	0.024	0.005	0.172
2028_Truck_Diesel_250_2020	0.160	1.132	0.128	0.011	0.010	0.005	585.973	0.024	0.005	0.163
2028_Truck_Diesel_330_2020	0.120	1.019	0.135	0.010	0.009	0.005	585.973	0.024	0.005	0.122
2028_Truck_Diesel_350_2026	0.090	0.976	0.131	0.009	0.009	0.005	585.973	0.024	0.005	0.092
2028_Truck_LPG_280_0	-	-	-	-	-	-	-	-	-	-
2028_Yard tractor_Diesel_158_2019	0.081	2.867	0.741	0.009	0.008	0.005	585.973	0.024	0.005	0.083
2028_Yard tractor_LPG_195_2028	0.053	6.406	0.371	0.060	0.060	-	674.859	-	-	0.058
2028_Yard tractor_LPG_195_2019	0.208	33.588	0.760	0.060	0.060	-	674.859	-	-	0.229
2028_Yard tractor_LPG_195_2020	0.206	33.280	0.756	0.060	0.060	-	674.859	-	-	0.227
2028_Yard tractor_LPG_231_2023	0.175	27.780	0.677	0.060	0.060	-	674.859	-	-	0.193
2028_Yard tractor_LPG_195_2023	0.183	29.270	0.699	0.060	0.060	-	674.859	-	-	0.202
2028_Yard tractor_LPG_195_2023	0.183	29.270	0.699	0.060	0.060	-	674.859	-	-	0.202
2028_Yard tractor_LPG_195_2023	0.183	29.270	0.699	0.060	0.060	-	674.859	-	-	0.202
2028_Yard tractor_LPG_231_2023	0.175	27.780	0.677	0.060	0.060	-	674.859	-	-	0.193

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2036

2036 Proposed Project Scenario - CHE equipment list

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for B121-131	Emission Controls (% reduction) PM	HC	CO
Forklift	137	2023	Diesel	0.3	2	-	0%	257	0%	0%	0%
Forklift	152	2036	Diesel	0.3	1	-	0%	839	0%	0%	0%
Forklift	152	2021	Diesel	0.3	2	-	0%	2,367	0%	0%	0%
Forklift	160	2025	Diesel	0.3	1	-	0%	87	0%	0%	0%
Forklift	165	2030	Diesel	0.3	1	-	0%	1,598	0%	0%	0%
Forklift	190	2036	Diesel	0.3	1	-	0%	820	0%	0%	0%
Forklift	59	2030	LPG	0.3	1	-	0%	301	0%	0%	0%
Forklift	59	2031	LPG	0.3	1	-	0%	199	0%	0%	0%
Forklift	160	2021	LPG	0.3	2	-	0%	403	0%	0%	0%
Forklift	160	2024	LPG	0.3	2	-	0%	183	0%	0%	0%
Rub-trd Gantry Crane	197	2035	Diesel	0.2	1	-	0%	1,546	0%	0%	0%
Rub-trd Gantry Crane	302	2015	Diesel	0.2	5	-	0%	12,231	0%	0%	0%
Rub-trd Gantry Crane	454	2028	Diesel	0.2	2	-	0%	3,446	0%	0%	0%
Rub-trd Gantry Crane	612	2027	Diesel	0.2	8	-	0%	9,352	0%	0%	0%
Rub-trd Gantry Crane	685	2029	Diesel	0.2	4	-	0%	7,097	0%	0%	0%
Top handler	250	2034	Diesel	0.59	1	-	0%	1,445	0%	0%	0%
Top handler	260	2022	Diesel	0.59	5	-	0%	7,268	0%	0%	0%
Top handler	260	2023	Diesel	0.59	6	-	0%	8,709	0%	0%	0%
Top handler	260	2024	Diesel	0.59	14	-	0%	33,969	0%	0%	0%
Top handler	335	2027	Diesel	0.59	3	-	0%	4,647	0%	0%	0%
Top handler	363	2033	Diesel	0.59	6	-	0%	8,965	0%	0%	0%
Top handler	370	2030	Diesel	0.59	1	-	0%	1,357	0%	0%	0%
Top handler	388	2033	Diesel	0.59	2	-	0%	3,176	0%	0%	0%
Top handler	388	2021	Diesel	0.59	1	-	0%	2,719	0%	0%	0%
Truck	250	2029	Diesel	0.51	2	-	0%	1,184	0%	0%	0%
Truck	250	2032	Diesel	0.51	2	-	0%	1,444	0%	0%	0%
Truck	330	2032	Diesel	0.51	1	-	0%	465	0%	0%	0%
Truck	350	2026	Diesel	0.51	1	-	0%	786	0%	0%	0%
Yard tractor	158	2031	Diesel	0.39	30	-	0%	3,680	0%	0%	0%
Yard tractor	195	2031	LPG	0.39	54	-	0%	83,591	0%	0%	0%
Yard tractor	195	2032	LPG	0.39	37	-	0%	60,163	0%	0%	0%
Yard tractor	231	2035	LPG	0.39	20	-	0%	23,707	0%	0%	0%

Notes

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and B121-131 operations.

Operating Hours are only for B121-131 operations calculated by applying ratio of B121-131 throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 12/21/2023

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

2036 Proposed Project Scenario - CHE Emission Factors

	Emission Factors (g/hp-hr)									
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	TOG
2036_Forklift_Diesel_137_2023	0.089	2.912	0.127	0.009	0.009	0.005	585.973	0.024	0.005	0.091
2036_Forklift_Diesel_152_2036	0.066	2.778	0.124	0.009	0.008	0.005	585.973	0.024	0.005	0.067
2036_Forklift_Diesel_152_2021	0.200	3.557	0.398	0.013	0.012	0.005	585.973	0.024	0.005	0.204
2036_Forklift_Diesel_160_2025	0.070	2.798	0.125	0.009	0.008	0.005	585.973	0.024	0.005	0.071
2036_Forklift_Diesel_165_2030	0.200	3.557	0.142	0.013	0.012	0.005	585.973	0.024	0.005	0.204
2036_Forklift_Diesel_190_2036	0.066	0.946	0.116	0.009	0.008	0.005	585.973	0.024	0.005	0.067
2036_Forklift_LPG_59_2030	0.070	9.513	0.416	0.060	0.060	-	674.859	-	-	0.078
2036_Forklift_LPG_59_2031	0.053	6.431	0.371	0.060	0.060	-	674.859	-	-	0.058
2036_Forklift_LPG_160_2021	0.118	17.821	0.535	0.060	0.060	-	674.859	-	-	0.130
2036_Forklift_LPG_160_2024	0.065	8.533	0.401	0.060	0.060	-	674.859	-	-	0.072
2036_Forklift_LPG_165_0	-	-	-	-	-	-	-	-	-	-
2036_Forklift_LPG_165_2027	0.157	24.649	0.632	0.060	0.060	-	674.859	-	-	0.173
2036_Rub-trd Gantry Crane_Diesel_197_2035	0.102	1.018	0.121	0.010	0.009	0.005	585.973	0.024	0.005	0.104
2036_Rub-trd Gantry Crane_Diesel_302_2015	0.200	1.138	0.894	0.046	0.042	0.005	585.973	0.024	0.005	0.204
2036_Rub-trd Gantry Crane_Diesel_454_2028	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2036_Rub-trd Gantry Crane_Diesel_612_2027	0.199	1.137	0.170	0.016	0.015	0.005	585.973	0.024	0.005	0.203
2036_Rub-trd Gantry Crane_Diesel_685_2029	0.192	1.126	0.169	0.016	0.014	0.005	585.973	0.024	0.005	0.195
2036_Top handler_Diesel_250_2034	0.122	1.057	0.123	0.010	0.009	0.005	585.973	0.024	0.005	0.124
2036_Top handler_Diesel_260_2022	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2036_Top handler_Diesel_260_2023	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2036_Top handler_Diesel_260_2024	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2036_Top handler_Diesel_335_2027	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2036_Top handler_Diesel_363_2033	0.154	1.070	0.140	0.011	0.010	0.005	585.973	0.024	0.005	0.157
2036_Top handler_Diesel_370_2030	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2036_Top handler_Diesel_388_2033	0.160	1.078	0.140	0.011	0.010	0.005	585.973	0.024	0.005	0.162
2036_Top handler_Diesel_388_2021	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2036_Truck_Diesel_250_2029	0.130	1.073	0.124	0.010	0.010	0.005	585.973	0.024	0.005	0.132
2036_Truck_Diesel_250_2032	0.112	1.038	0.122	0.010	0.009	0.005	585.973	0.024	0.005	0.114
2036_Truck_Diesel_330_2032	0.090	0.975	0.131	0.009	0.009	0.005	585.973	0.024	0.005	0.091
2036_Truck_Diesel_350_2026	0.191	1.125	0.145	0.012	0.011	0.005	585.973	0.024	0.005	0.195
2036_Truck_LPG_280_0	-	-	-	-	-	-	-	-	-	-
2036_Yard tractor_Diesel_158_2031	0.070	2.800	0.125	0.009	0.008	0.005	585.973	0.024	0.005	0.071
2036_Yard tractor_LPG_195_2028	0.200	32.219	0.741	0.060	0.060	-	674.859	-	-	0.221
2036_Yard tractor_LPG_195_2031	0.201	32.436	0.744	0.060	0.060	-	674.859	-	-	0.222
2036_Yard tractor_LPG_195_2032	0.192	30.925	0.722	0.060	0.060	-	674.859	-	-	0.213
2036_Yard tractor_LPG_231_2035	0.078	10.879	0.435	0.060	0.060	-	674.859	-	-	0.086

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2050

2050 Proposed Project Scenario - CHE equipment list

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for B121-131	Emission Controls (% reduction) PM	HC	CO
Forklift	137	2039	Diesel	0.3	2	-	0%	394	0%	0%	0%
Forklift	152	2036	Diesel	0.3	1	-	0%	1,286	0%	0%	0%
Forklift	152	2037	Diesel	0.3	2	-	0%	3,627	0%	0%	0%
Forklift	160	2041	Diesel	0.3	1	-	0%	134	0%	0%	0%
Forklift	165	2046	Diesel	0.3	1	-	0%	2,448	0%	0%	0%
Forklift	190	2036	Diesel	0.3	1	-	0%	1,256	0%	0%	0%
Forklift	59	2046	LPG	0.3	1	-	0%	461	0%	0%	0%
Forklift	59	2047	LPG	0.3	1	-	0%	306	0%	0%	0%
Forklift	160	2037	LPG	0.3	2	-	0%	617	0%	0%	0%
Forklift	160	2040	LPG	0.3	2	-	0%	281	0%	0%	0%
Rub-trd Gantry Crane	197	2035	Diesel	0.2	1	-	0%	2,368	0%	0%	0%
Rub-trd Gantry Crane	302	2039	Diesel	0.2	5	-	0%	18,740	0%	0%	0%
Rub-trd Gantry Crane	454	2028	Diesel	0.2	2	-	0%	5,280	0%	0%	0%
Rub-trd Gantry Crane	612	2027	Diesel	0.2	8	-	0%	14,329	0%	0%	0%
Rub-trd Gantry Crane	685	2029	Diesel	0.2	4	-	0%	10,874	0%	0%	0%
Top handler	250	2050	Diesel	0.59	1	-	0%	2,214	0%	0%	0%
Top handler	260	2038	Diesel	0.59	5	-	0%	11,136	0%	0%	0%
Top handler	260	2039	Diesel	0.59	6	-	0%	13,344	0%	0%	0%
Top handler	260	2040	Diesel	0.59	14	-	0%	52,046	0%	0%	0%
Top handler	335	2043	Diesel	0.59	3	-	0%	7,120	0%	0%	0%
Top handler	363	2049	Diesel	0.59	6	-	0%	13,736	0%	0%	0%
Top handler	370	2046	Diesel	0.59	1	-	0%	2,079	0%	0%	0%
Top handler	388	2049	Diesel	0.59	2	-	0%	4,866	0%	0%	0%
Top handler	388	2037	Diesel	0.59	1	-	0%	4,167	0%	0%	0%
Truck	250	2041	Diesel	0.51	2	-	0%	1,814	0%	0%	0%
Truck	250	2044	Diesel	0.51	2	-	0%	2,213	0%	0%	0%
Truck	330	2044	Diesel	0.51	1	-	0%	712	0%	0%	0%
Truck	350	2038	Diesel	0.51	1	-	0%	1,204	0%	0%	0%
Yard tractor	158	2043	Diesel	0.39	30	-	0%	5,638	0%	0%	0%
Yard tractor	195	2043	LPG	0.39	54	-	0%	128,074	0%	0%	0%
Yard tractor	195	2044	LPG	0.39	37	-	0%	92,178	0%	0%	0%
Yard tractor	231	2047	LPG	0.39	20	-	0%	36,322	0%	0%	0%

Notes

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and B121-131 operations.

Operating Hours are only for B121-131 operations calculated by applying ratio of B121-131 throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 12/21/2023

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

2050 Proposed Project Scenario - CHE Emission Factors

	Emission Factors (g/hp-hr)									
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	TOG
2050_Forklift_Diesel_137_2039	0.084	2.882	0.126	0.009	0.008	0.005	585.973	0.024	0.005	0.085
2050_Forklift_Diesel_152_2036	0.200	3.557	0.142	0.013	0.012	0.005	585.973	0.024	0.005	0.204
2050_Forklift_Diesel_152_2037	0.200	3.557	0.142	0.013	0.012	0.005	585.973	0.024	0.005	0.204
2050_Forklift_Diesel_160_2041	0.067	2.781	0.124	0.009	0.008	0.005	585.973	0.024	0.005	0.068
2050_Forklift_Diesel_165_2046	0.181	3.444	0.139	0.012	0.011	0.005	585.973	0.024	0.005	0.184
2050_Forklift_Diesel_190_2036	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Forklift_LPG_59_2046	0.059	7.472	0.386	0.060	0.060	-	674.859	-	-	0.065
2050_Forklift_LPG_59_2047	0.045	5.078	0.352	0.060	0.060	-	674.859	-	-	0.050
2050_Forklift_LPG_160_2037	0.107	15.890	0.507	0.060	0.060	-	674.859	-	-	0.118
2050_Forklift_LPG_160_2040	0.059	7.585	0.388	0.060	0.060	-	674.859	-	-	0.066
2050_Forklift_LPG_165_0	-	-	-	-	-	-	-	-	-	-
2050_Forklift_LPG_165_2043	0.131	20.193	0.569	0.060	0.060	-	674.859	-	-	0.145
2050_Rub-trd Gantry Crane_Diesel_197_2035	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Rub-trd Gantry Crane_Diesel_302_2039	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Rub-trd Gantry Crane_Diesel_454_2028	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Rub-trd Gantry Crane_Diesel_612_2027	0.200	1.138	0.170	0.016	0.015	0.005	585.973	0.024	0.005	0.204
2050_Rub-trd Gantry Crane_Diesel_685_2029	0.200	1.138	0.170	0.016	0.015	0.005	585.973	0.024	0.005	0.204
2050_Top handler_Diesel_250_2050	0.076	0.966	0.118	0.009	0.008	0.005	585.973	0.024	0.005	0.077
2050_Top handler_Diesel_260_2038	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Top handler_Diesel_260_2039	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Top handler_Diesel_260_2040	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Top handler_Diesel_335_2043	0.200	1.137	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.203
2050_Top handler_Diesel_363_2049	0.103	0.995	0.133	0.010	0.009	0.005	585.973	0.024	0.005	0.105
2050_Top handler_Diesel_370_2046	0.162	1.081	0.141	0.011	0.010	0.005	585.973	0.024	0.005	0.164
2050_Top handler_Diesel_388_2049	0.106	0.999	0.133	0.010	0.009	0.005	585.973	0.024	0.005	0.108
2050_Top handler_Diesel_388_2037	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Truck_Diesel_250_2041	0.150	1.111	0.127	0.011	0.010	0.005	585.973	0.024	0.005	0.152
2050_Truck_Diesel_250_2044	0.136	1.085	0.125	0.010	0.010	0.005	585.973	0.024	0.005	0.138
2050_Truck_Diesel_330_2044	0.105	0.997	0.133	0.010	0.009	0.005	585.973	0.024	0.005	0.107
2050_Truck_Diesel_350_2038	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Truck_LPG_280_0	-	-	-	-	-	-	-	-	-	-
2050_Yard tractor_Diesel_158_2043	0.076	2.833	0.125	0.009	0.008	0.005	585.973	0.024	0.005	0.077
2050_Yard tractor_LPG_195_2040	0.204	33.016	0.752	0.060	0.060	-	674.859	-	-	0.226
2050_Yard tractor_LPG_195_2043	0.207	33.511	0.759	0.060	0.060	-	674.859	-	-	0.229
2050_Yard tractor_LPG_195_2044	0.205	33.078	0.753	0.060	0.060	-	674.859	-	-	0.226
2050_Yard tractor_LPG_231_2047	0.127	19.387	0.557	0.060	0.060	-	674.859	-	-	0.140

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2026

2026 No Project Scenario - CHE equipment list

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for B121-131	Emission Controls (% reduction)		
									PM	HC	CO
Forklift	137	2023	Diesel	0.3	2	-	0%	94	0%	0%	0%
Forklift	152	2020	Diesel	0.3	1	-	0%	306	0%	0%	0%
Forklift	152	2021	Diesel	0.3	2	-	0%	862	0%	0%	0%
Forklift	160	2025	Diesel	0.3	1	-	0%	32	0%	0%	0%
Forklift	165	2014	Diesel	0.3	1	-	0%	582	0%	0%	0%
Forklift	190	2020	Diesel	0.3	1	-	0%	299	0%	0%	0%
Forklift	59	2014	LPG	0.3	1	-	0%	109	0%	0%	0%
Forklift	59	2015	LPG	0.3	1	-	0%	73	0%	0%	0%
Forklift	160	2021	LPG	0.3	2	-	0%	147	0%	0%	0%
Forklift	160	2024	LPG	0.3	2	-	0%	67	0%	0%	0%
Rub-trd Gantry Crane	197	2011	Diesel	0.2	1	-	0%	563	0%	0%	0%
Rub-trd Gantry Crane	302	2015	Diesel	0.2	5	-	0%	4,454	0%	0%	0%
Rub-trd Gantry Crane	454	2004	Diesel	0.2	2	DPF Level 2	100%	1,255	50%	0%	0%
Rub-trd Gantry Crane	612	2003	Diesel	0.2	8	DPF Level 2	100%	3,405	50%	0%	0%
Rub-trd Gantry Crane	685	2005	Diesel	0.2	4	DPF Level 2	100%	2,584	50%	0%	0%
Top handler	250	2018	Diesel	0.59	1	-	0%	526	0%	0%	0%
Top handler	260	2022	Diesel	0.59	5	-	0%	2,647	0%	0%	0%
Top handler	260	2023	Diesel	0.59	6	-	0%	3,171	0%	0%	0%
Top handler	260	2024	Diesel	0.59	14	-	0%	12,369	0%	0%	0%
Top handler	335	2011	Diesel	0.59	3	-	0%	1,692	0%	0%	0%
Top handler	363	2017	Diesel	0.59	6	-	0%	3,264	0%	0%	0%
Top handler	370	2014	Diesel	0.59	1	-	0%	494	0%	0%	0%
Top handler	388	2017	Diesel	0.59	2	-	0%	1,156	0%	0%	0%
Top handler	388	2021	Diesel	0.59	1	-	0%	990	0%	0%	0%
Truck	250	2017	Diesel	0.51	2	-	0%	431	0%	0%	0%
Truck	250	2020	Diesel	0.51	2	-	0%	526	0%	0%	0%
Truck	330	2020	Diesel	0.51	1	-	0%	169	0%	0%	0%
Truck	350	2026	Diesel	0.51	1	-	0%	286	0%	0%	0%
Yard tractor	158	2019	Diesel	0.39	30	-	0%	1,340	0%	0%	0%
Yard tractor	195	2016	LPG	0.39	16	-	0%	6,193	0%	0%	0%
Yard tractor	195	2019	LPG	0.39	54	-	0%	30,437	0%	0%	0%
Yard tractor	195	2020	LPG	0.39	37	-	0%	21,906	0%	0%	0%
Yard tractor	231	2023	LPG	0.39	20	-	0%	8,632	0%	0%	0%

Notes

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and B121-131 operations.

Operating Hours are only for B121-131 operations calculated by applying ratio of B121-131 throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 12/21/2023

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

2026 No Project Scenario - CHE Emission Factors

	Emission Factors (g/hp-hr)									
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	TOG
2026_Forklift_Diesel_137_2023	0.063	2.761	0.124	0.009	0.008	0.005	585.973	0.024	0.005	0.064
2026_Forklift_Diesel_152_2020	0.147	3.247	0.585	0.011	0.010	0.005	585.973	0.024	0.005	0.149
2026_Forklift_Diesel_152_2021	0.167	3.361	0.386	0.012	0.011	0.005	585.973	0.024	0.005	0.169
2026_Forklift_Diesel_160_2025	0.055	2.716	0.123	0.008	0.008	0.005	585.973	0.024	0.005	0.056
2026_Forklift_Diesel_165_2014	0.369	3.557	2.059	0.062	0.057	0.005	585.973	0.024	0.005	0.375
2026_Forklift_Diesel_190_2020	0.145	1.102	0.126	0.011	0.010	0.005	585.973	0.024	0.005	0.147
2026_Forklift_LPG_59_2014	0.105	15.634	0.503	0.060	0.060	-	674.859	-	-	0.116
2026_Forklift_LPG_59_2015	0.076	10.491	0.430	0.060	0.060	-	674.859	-	-	0.084
2026_Forklift_LPG_160_2021	0.063	8.165	0.396	0.060	0.060	-	674.859	-	-	0.069
2026_Forklift_LPG_160_2024	0.038	3.793	0.334	0.060	0.060	-	674.859	-	-	0.042
2026_Forklift_LPG_165_0	-	-	-	-	-	-	-	-	-	-
2026_Forklift_LPG_165_2011	0.208	33.601	0.761	0.060	0.060	-	674.859	-	-	0.229
2026_Rub-trd Gantry Crane_Diesel_197_2011	0.305	1.212	1.664	0.073	0.067	0.005	585.973	0.024	0.005	0.310
2026_Rub-trd Gantry Crane_Diesel_302_2015	0.200	1.138	0.894	0.046	0.042	0.005	585.973	0.024	0.005	0.204
2026_Rub-trd Gantry Crane_Diesel_454_2004	0.425	1.138	4.498	0.123	0.114	0.005	585.973	0.024	0.005	0.431
2026_Rub-trd Gantry Crane_Diesel_612_2003	0.428	1.138	5.932	0.125	0.115	0.005	585.973	0.024	0.005	0.435
2026_Rub-trd Gantry Crane_Diesel_685_2005	0.425	1.138	4.222	0.118	0.109	0.005	585.973	0.024	0.005	0.431
2026_Top handler_Diesel_250_2018	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2026_Top handler_Diesel_260_2022	0.172	1.156	0.129	0.011	0.010	0.005	585.973	0.024	0.005	0.175
2026_Top handler_Diesel_260_2023	0.150	1.112	0.127	0.011	0.010	0.005	585.973	0.024	0.005	0.153
2026_Top handler_Diesel_260_2024	0.163	1.138	0.128	0.011	0.010	0.005	585.973	0.024	0.005	0.166
2026_Top handler_Diesel_335_2011	0.305	1.138	1.356	0.068	0.063	0.005	585.973	0.024	0.005	0.310
2026_Top handler_Diesel_363_2017	0.200	1.138	0.254	0.029	0.026	0.005	585.973	0.024	0.005	0.203
2026_Top handler_Diesel_370_2014	0.200	1.138	1.070	0.047	0.044	0.005	585.973	0.024	0.005	0.204
2026_Top handler_Diesel_388_2017	0.200	1.138	0.254	0.029	0.026	0.005	585.973	0.024	0.005	0.204
2026_Top handler_Diesel_388_2021	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2026_Truck_Diesel_250_2017	0.150	1.111	0.348	0.017	0.016	0.005	585.973	0.024	0.005	0.152
2026_Truck_Diesel_250_2020	0.136	1.085	0.125	0.010	0.010	0.005	585.973	0.024	0.005	0.138
2026_Truck_Diesel_330_2020	0.105	0.997	0.133	0.010	0.009	0.005	585.973	0.024	0.005	0.107
2026_Truck_Diesel_350_2026	0.065	0.939	0.128	0.009	0.008	0.005	585.973	0.024	0.005	0.066
2026_Truck_LPG_280_0	-	-	-	-	-	-	-	-	-	-
2026_Yard tractor_Diesel_158_2019	0.076	2.834	0.737	0.009	0.008	0.005	585.973	0.024	0.005	0.077
2026_Yard tractor_LPG_195_2016	0.205	33.141	0.754	0.060	0.060	-	674.859	-	-	0.227
2026_Yard tractor_LPG_195_2019	0.207	33.502	0.759	0.060	0.060	-	674.859	-	-	0.229
2026_Yard tractor_LPG_195_2020	0.205	33.049	0.753	0.060	0.060	-	674.859	-	-	0.226
2026_Yard tractor_LPG_231_2023	0.127	19.387	0.557	0.060	0.060	-	674.859	-	-	0.140

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2027

2027 No Project Scenario - CHE equipment list

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for B121-131	Emission Controls (% reduction) PM	HC	CO
Forklift	137	2023	Diesel	0.3	2	-	0%	97	0%	0%	0%
Forklift	152	2020	Diesel	0.3	1	-	0%	316	0%	0%	0%
Forklift	152	2021	Diesel	0.3	2	-	0%	891	0%	0%	0%
Forklift	160	2025	Diesel	0.3	1	-	0%	33	0%	0%	0%
Forklift	165	2014	Diesel	0.3	1	-	0%	601	0%	0%	0%
Forklift	190	2020	Diesel	0.3	1	-	0%	309	0%	0%	0%
Forklift	59	2014	LPG	0.3	1	-	0%	113	0%	0%	0%
Forklift	59	2015	LPG	0.3	1	-	0%	75	0%	0%	0%
Forklift	160	2021	LPG	0.3	2	-	0%	152	0%	0%	0%
Forklift	160	2024	LPG	0.3	2	-	0%	69	0%	0%	0%
Rub-trd Gantry Crane	197	2011	Diesel	0.2	1	-	0%	582	0%	0%	0%
Rub-trd Gantry Crane	302	2015	Diesel	0.2	5	-	0%	4,601	0%	0%	0%
Rub-trd Gantry Crane	454	2004	Diesel	0.2	2	DPF Level 2	100%	1,296	50%	0%	0%
Rub-trd Gantry Crane	612	2027	Diesel	0.2	8	-	0%	3,518	0%	0%	0%
Rub-trd Gantry Crane	685	2005	Diesel	0.2	4	DPF Level 2	100%	2,670	50%	0%	0%
Top handler	250	2018	Diesel	0.59	1	-	0%	544	0%	0%	0%
Top handler	260	2022	Diesel	0.59	5	-	0%	2,734	0%	0%	0%
Top handler	260	2023	Diesel	0.59	6	-	0%	3,276	0%	0%	0%
Top handler	260	2024	Diesel	0.59	14	-	0%	12,779	0%	0%	0%
Top handler	335	2027	Diesel	0.59	3	-	0%	1,748	0%	0%	0%
Top handler	363	2017	Diesel	0.59	6	-	0%	3,373	0%	0%	0%
Top handler	370	2014	Diesel	0.59	1	-	0%	511	0%	0%	0%
Top handler	388	2017	Diesel	0.59	2	-	0%	1,195	0%	0%	0%
Top handler	388	2021	Diesel	0.59	1	-	0%	1,023	0%	0%	0%
Truck	250	2017	Diesel	0.51	2	-	0%	445	0%	0%	0%
Truck	250	2020	Diesel	0.51	2	-	0%	543	0%	0%	0%
Truck	330	2020	Diesel	0.51	1	-	0%	175	0%	0%	0%
Truck	350	2026	Diesel	0.51	1	-	0%	296	0%	0%	0%
Yard tractor	158	2019	Diesel	0.39	30	-	0%	1,384	0%	0%	0%

Notes

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and B121-131 operations.

Operating Hours are only for B121-131 operations calculated by applying ratio of B121-131 throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 12/21/2023

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

2027 No Project Scenario - CHE Emission Factors

	Emission Factors (g/hp-hr)									
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	TOG
2027_Forklift_Diesel_137_2023	0.066	2.776	0.124	0.009	0.008	0.005	585.973	0.024	0.005	0.067
2027_Forklift_Diesel_152_2020	0.160	3.325	0.592	0.012	0.011	0.005	585.973	0.024	0.005	0.163
2027_Forklift_Diesel_152_2021	0.186	3.471	0.393	0.012	0.011	0.005	585.973	0.024	0.005	0.189
2027_Forklift_Diesel_160_2025	0.057	2.724	0.123	0.008	0.008	0.005	585.973	0.024	0.005	0.058
2027_Forklift_Diesel_165_2014	0.369	3.557	2.059	0.062	0.057	0.005	585.973	0.024	0.005	0.375
2027_Forklift_Diesel_190_2020	0.158	1.128	0.128	0.011	0.010	0.005	585.973	0.024	0.005	0.161
2027_Forklift_LPG_59_2014	0.111	16.654	0.518	0.060	0.060	-	674.859	-	-	0.123
2027_Forklift_LPG_59_2015	0.080	11.168	0.439	0.060	0.060	-	674.859	-	-	0.088
2027_Forklift_LPG_160_2021	0.068	9.131	0.410	0.060	0.060	-	674.859	-	-	0.075
2027_Forklift_LPG_160_2024	0.040	4.267	0.340	0.060	0.060	-	674.859	-	-	0.045
2027_Forklift_LPG_165_0	-	-	-	-	-	-	-	-	-	-
2027_Forklift_LPG_165_2027	0.042	4.599	0.345	0.060	0.060	-	674.859	-	-	0.047
2027_Rub-trd Gantry Crane_Diesel_197_2011	0.305	1.212	1.664	0.073	0.067	0.005	585.973	0.024	0.005	0.310
2027_Rub-trd Gantry Crane_Diesel_302_2015	0.200	1.138	0.894	0.046	0.042	0.005	585.973	0.024	0.005	0.204
2027_Rub-trd Gantry Crane_Diesel_454_2004	0.425	1.138	4.498	0.123	0.114	0.005	585.973	0.024	0.005	0.431
2027_Rub-trd Gantry Crane_Diesel_612_2027	0.072	0.948	0.150	0.012	0.011	0.005	585.973	0.024	0.005	0.073
2027_Rub-trd Gantry Crane_Diesel_685_2005	0.425	1.138	4.222	0.118	0.109	0.005	585.973	0.024	0.005	0.431
2027_Top handler_Diesel_250_2018	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2027_Top handler_Diesel_260_2022	0.189	1.190	0.132	0.012	0.011	0.005	585.973	0.024	0.005	0.192
2027_Top handler_Diesel_260_2023	0.171	1.154	0.129	0.011	0.010	0.005	585.973	0.024	0.005	0.174
2027_Top handler_Diesel_260_2024	0.194	1.200	0.132	0.012	0.011	0.005	585.973	0.024	0.005	0.198
2027_Top handler_Diesel_335_2027	0.078	0.958	0.129	0.009	0.008	0.005	585.973	0.024	0.005	0.080
2027_Top handler_Diesel_363_2017	0.200	1.138	0.254	0.029	0.026	0.005	585.973	0.024	0.005	0.204
2027_Top handler_Diesel_370_2014	0.200	1.138	1.070	0.047	0.044	0.005	585.973	0.024	0.005	0.204
2027_Top handler_Diesel_388_2017	0.200	1.138	0.254	0.029	0.026	0.005	585.973	0.024	0.005	0.204
2027_Top handler_Diesel_388_2021	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2027_Truck_Diesel_250_2017	0.159	1.130	0.351	0.018	0.016	0.005	585.973	0.024	0.005	0.162
2027_Truck_Diesel_250_2020	0.148	1.109	0.126	0.011	0.010	0.005	585.973	0.024	0.005	0.151
2027_Truck_Diesel_330_2020	0.112	1.008	0.134	0.010	0.009	0.005	585.973	0.024	0.005	0.114
2027_Truck_Diesel_350_2026	0.078	0.957	0.129	0.009	0.008	0.005	585.973	0.024	0.005	0.079
2027_Truck_LPG_280_0	-	-	-	-	-	-	-	-	-	-
2027_Yard tractor_Diesel_158_2019	0.079	2.850	0.739	0.009	0.008	0.005	585.973	0.024	0.005	0.080

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2028

2028 No Project Scenario - CHE equipment list

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for B121-131	Emission Controls (% reduction) PM	HC	CO
Forklift	137	2023	Diesel	0.3	2	-	0%	101	0%	0%	0%
Forklift	152	2020	Diesel	0.3	1	-	0%	328	0%	0%	0%
Forklift	152	2021	Diesel	0.3	2	-	0%	926	0%	0%	0%
Forklift	160	2025	Diesel	0.3	1	-	0%	34	0%	0%	0%
Forklift	165	2014	Diesel	0.3	1	-	0%	625	0%	0%	0%
Forklift	190	2020	Diesel	0.3	1	-	0%	321	0%	0%	0%
Forklift	59	2014	LPG	0.3	1	-	0%	118	0%	0%	0%
Forklift	59	2015	LPG	0.3	1	-	0%	78	0%	0%	0%
Forklift	160	2021	LPG	0.3	2	-	0%	158	0%	0%	0%
Forklift	160	2024	LPG	0.3	2	-	0%	72	0%	0%	0%
Rub-trd Gantry Crane	197	2011	Diesel	0.2	1	-	0%	605	0%	0%	0%
Rub-trd Gantry Crane	302	2015	Diesel	0.2	5	-	0%	4,784	0%	0%	0%
Rub-trd Gantry Crane	454	2028	Diesel	0.2	2	-	0%	1,348	0%	0%	0%
Rub-trd Gantry Crane	612	2027	Diesel	0.2	8	-	0%	3,658	0%	0%	0%
Rub-trd Gantry Crane	685	2005	Diesel	0.2	4	DPF Level 2	100%	2,776	50%	0%	0%
Top handler	250	2018	Diesel	0.59	1	-	0%	565	0%	0%	0%
Top handler	260	2022	Diesel	0.59	5	-	0%	2,843	0%	0%	0%
Top handler	260	2023	Diesel	0.59	6	-	0%	3,406	0%	0%	0%
Top handler	260	2024	Diesel	0.59	14	-	0%	13,286	0%	0%	0%
Top handler	335	2027	Diesel	0.59	3	-	0%	1,818	0%	0%	0%
Top handler	363	2017	Diesel	0.59	6	-	0%	3,506	0%	0%	0%
Top handler	370	2014	Diesel	0.59	1	-	0%	531	0%	0%	0%
Top handler	388	2017	Diesel	0.59	2	-	0%	1,242	0%	0%	0%
Top handler	388	2021	Diesel	0.59	1	-	0%	1,064	0%	0%	0%
Truck	250	2017	Diesel	0.51	2	-	0%	463	0%	0%	0%
Truck	250	2020	Diesel	0.51	2	-	0%	565	0%	0%	0%

Notes

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and B121-131 operations.

Operating Hours are only for B121-131 operations calculated by applying ratio of B121-131 throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 12/21/2023

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

2028 No Project Scenario - CHE Emission Factors

	Emission Factors (g/hp-hr)									
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	TOG
2028_Forklift_Diesel_137_2023	0.068	2.791	0.124	0.009	0.008	0.005	585.973	0.024	0.005	0.069
2028_Forklift_Diesel_152_2020	0.174	3.403	0.600	0.012	0.011	0.005	585.973	0.024	0.005	0.177
2028_Forklift_Diesel_152_2021	0.200	3.557	0.398	0.013	0.012	0.005	585.973	0.024	0.005	0.204
2028_Forklift_Diesel_160_2025	0.058	2.733	0.123	0.008	0.008	0.005	585.973	0.024	0.005	0.059
2028_Forklift_Diesel_165_2014	0.369	3.557	2.059	0.062	0.057	0.005	585.973	0.024	0.005	0.375
2028_Forklift_Diesel_190_2020	0.171	1.154	0.129	0.011	0.010	0.005	585.973	0.024	0.005	0.174
2028_Forklift_LPG_59_2014	0.117	17.674	0.532	0.060	0.060	-	674.859	-	-	0.129
2028_Forklift_LPG_59_2015	0.084	11.844	0.449	0.060	0.060	-	674.859	-	-	0.092
2028_Forklift_LPG_160_2021	0.074	10.096	0.424	0.060	0.060	-	674.859	-	-	0.081
2028_Forklift_LPG_160_2024	0.043	4.741	0.347	0.060	0.060	-	674.859	-	-	0.048
2028_Forklift_LPG_165_0	-	-	-	-	-	-	-	-	-	-
2028_Forklift_LPG_165_2027	0.055	6.827	0.377	0.060	0.060	-	674.859	-	-	0.061
2028_Rub-trd Gantry Crane_Diesel_197_2011	0.305	1.212	1.664	0.073	0.067	0.005	585.973	0.024	0.005	0.310
2028_Rub-trd Gantry Crane_Diesel_302_2015	0.200	1.138	0.894	0.046	0.042	0.005	585.973	0.024	0.005	0.204
2028_Rub-trd Gantry Crane_Diesel_454_2028	0.080	0.961	0.130	0.009	0.008	0.005	585.973	0.024	0.005	0.082
2028_Rub-trd Gantry Crane_Diesel_612_2027	0.091	0.977	0.153	0.012	0.011	0.005	585.973	0.024	0.005	0.093
2028_Rub-trd Gantry Crane_Diesel_685_2005	0.425	1.138	4.222	0.118	0.109	0.005	585.973	0.024	0.005	0.431
2028_Top handler_Diesel_250_2018	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2028_Top handler_Diesel_260_2022	0.197	1.205	0.132	0.012	0.011	0.005	585.973	0.024	0.005	0.201
2028_Top handler_Diesel_260_2023	0.187	1.184	0.131	0.012	0.011	0.005	585.973	0.024	0.005	0.190
2028_Top handler_Diesel_260_2024	0.200	1.210	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.203
2028_Top handler_Diesel_335_2027	0.104	0.996	0.133	0.010	0.009	0.005	585.973	0.024	0.005	0.106
2028_Top handler_Diesel_363_2017	0.200	1.138	0.254	0.029	0.026	0.005	585.973	0.024	0.005	0.204
2028_Top handler_Diesel_370_2014	0.200	1.138	1.070	0.047	0.044	0.005	585.973	0.024	0.005	0.204
2028_Top handler_Diesel_388_2017	0.200	1.138	0.254	0.029	0.026	0.005	585.973	0.024	0.005	0.204
2028_Top handler_Diesel_388_2021	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2028_Truck_Diesel_250_2017	0.169	1.150	0.355	0.018	0.017	0.005	585.973	0.024	0.005	0.172
2028_Truck_Diesel_250_2020	0.160	1.132	0.128	0.011	0.010	0.005	585.973	0.024	0.005	0.163

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2036

2036 No Project Scenario - CHE equipment list

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for B121-131	Emission Controls (% reduction) PM	HC	CO
Forklift	137	2023	Diesel	0.3	2	-	0%	131	0%	0%	0%
Forklift	152	2036	Diesel	0.3	1	-	0%	428	0%	0%	0%
Forklift	152	2021	Diesel	0.3	2	-	0%	1,208	0%	0%	0%
Forklift	160	2025	Diesel	0.3	1	-	0%	45	0%	0%	0%
Forklift	165	2030	Diesel	0.3	1	-	0%	815	0%	0%	0%
Forklift	190	2036	Diesel	0.3	1	-	0%	418	0%	0%	0%
Forklift	59	2030	LPG	0.3	1	-	0%	153	0%	0%	0%
Forklift	59	2031	LPG	0.3	1	-	0%	102	0%	0%	0%
Forklift	160	2021	LPG	0.3	2	-	0%	206	0%	0%	0%
Forklift	160	2024	LPG	0.3	2	-	0%	94	0%	0%	0%
Rub-trd Gantry Crane	197	2035	Diesel	0.2	1	-	0%	789	0%	0%	0%
Rub-trd Gantry Crane	302	2015	Diesel	0.2	5	-	0%	6,242	0%	0%	0%
Rub-trd Gantry Crane	454	2028	Diesel	0.2	2	-	0%	1,758	0%	0%	0%
Rub-trd Gantry Crane	612	2027	Diesel	0.2	8	-	0%	4,772	0%	0%	0%
Rub-trd Gantry Crane	685	2029	Diesel	0.2	4	-	0%	3,622	0%	0%	0%
Top handler	250	2034	Diesel	0.59	1	-	0%	738	0%	0%	0%
Top handler	260	2022	Diesel	0.59	5	-	0%	3,709	0%	0%	0%
Top handler	260	2023	Diesel	0.59	6	-	0%	4,444	0%	0%	0%
Top handler	260	2024	Diesel	0.59	14	-	0%	17,335	0%	0%	0%
Top handler	335	2027	Diesel	0.59	3	-	0%	2,372	0%	0%	0%
Top handler	363	2033	Diesel	0.59	6	-	0%	4,575	0%	0%	0%
Top handler	370	2030	Diesel	0.59	1	-	0%	693	0%	0%	0%
Top handler	388	2033	Diesel	0.59	2	-	0%	1,621	0%	0%	0%
Top handler	388	2021	Diesel	0.59	1	-	0%	1,388	0%	0%	0%
Truck	250	2029	Diesel	0.51	2	-	0%	604	0%	0%	0%
Truck	250	2032	Diesel	0.51	2	-	0%	737	0%	0%	0%
Truck	330	2032	Diesel	0.51	1	-	0%	237	0%	0%	0%
Truck	350	2026	Diesel	0.51	1	-	0%	401	0%	0%	0%
Yard tractor	158	2031	Diesel	0.39	30	-	0%	1,878	0%	0%	0%
Yard tractor	195	2031	LPG	0.39	54	-	0%	42,657	0%	0%	0%
Yard tractor	195	2032	LPG	0.39	37	-	0%	30,702	0%	0%	0%
Yard tractor	231	2035	LPG	0.39	20	-	0%	12,098	0%	0%	0%

Notes

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and B121-131 operations.

Operating Hours are only for B121-131 operations calculated by applying ratio of B121-131 throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 12/21/2023

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

2036 No Project Scenario - CHE Emission Factors

	Emission Factors (g/hp-hr)									
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	TOG
2036_Forklift_Diesel_137_2023	0.089	2.912	0.127	0.009	0.009	0.005	585.973	0.024	0.005	0.091
2036_Forklift_Diesel_152_2036	0.066	2.778	0.124	0.009	0.008	0.005	585.973	0.024	0.005	0.067
2036_Forklift_Diesel_152_2021	0.200	3.557	0.398	0.013	0.012	0.005	585.973	0.024	0.005	0.204
2036_Forklift_Diesel_160_2025	0.070	2.798	0.125	0.009	0.008	0.005	585.973	0.024	0.005	0.071
2036_Forklift_Diesel_165_2030	0.200	3.557	0.142	0.013	0.012	0.005	585.973	0.024	0.005	0.204
2036_Forklift_Diesel_190_2036	0.066	0.946	0.116	0.009	0.008	0.005	585.973	0.024	0.005	0.067
2036_Forklift_LPG_59_2030	0.070	9.513	0.416	0.060	0.060	-	674.859	-	-	0.078
2036_Forklift_LPG_59_2031	0.053	6.431	0.371	0.060	0.060	-	674.859	-	-	0.058
2036_Forklift_LPG_160_2021	0.118	17.821	0.535	0.060	0.060	-	674.859	-	-	0.130
2036_Forklift_LPG_160_2024	0.065	8.533	0.401	0.060	0.060	-	674.859	-	-	0.072
2036_Forklift_LPG_165_0	-	-	-	-	-	-	-	-	-	-
2036_Forklift_LPG_165_2027	0.157	24.649	0.632	0.060	0.060	-	674.859	-	-	0.173
2036_Rub-trd Gantry Crane_Diesel_197_2035	0.102	1.018	0.121	0.010	0.009	0.005	585.973	0.024	0.005	0.104
2036_Rub-trd Gantry Crane_Diesel_302_2015	0.200	1.138	0.894	0.046	0.042	0.005	585.973	0.024	0.005	0.204
2036_Rub-trd Gantry Crane_Diesel_454_2028	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2036_Rub-trd Gantry Crane_Diesel_612_2027	0.199	1.137	0.170	0.016	0.015	0.005	585.973	0.024	0.005	0.203
2036_Rub-trd Gantry Crane_Diesel_685_2029	0.192	1.126	0.169	0.016	0.014	0.005	585.973	0.024	0.005	0.195
2036_Top handler_Diesel_250_2034	0.122	1.057	0.123	0.010	0.009	0.005	585.973	0.024	0.005	0.124
2036_Top handler_Diesel_260_2022	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2036_Top handler_Diesel_260_2023	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2036_Top handler_Diesel_260_2024	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2036_Top handler_Diesel_335_2027	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2036_Top handler_Diesel_363_2033	0.154	1.070	0.140	0.011	0.010	0.005	585.973	0.024	0.005	0.157
2036_Top handler_Diesel_370_2030	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2036_Top handler_Diesel_388_2033	0.160	1.078	0.140	0.011	0.010	0.005	585.973	0.024	0.005	0.162
2036_Top handler_Diesel_388_2021	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2036_Truck_Diesel_250_2029	0.130	1.073	0.124	0.010	0.010	0.005	585.973	0.024	0.005	0.132
2036_Truck_Diesel_250_2032	0.112	1.038	0.122	0.010	0.009	0.005	585.973	0.024	0.005	0.114
2036_Truck_Diesel_330_2032	0.090	0.975	0.131	0.009	0.009	0.005	585.973	0.024	0.005	0.091
2036_Truck_Diesel_350_2026	0.191	1.125	0.145	0.012	0.011	0.005	585.973	0.024	0.005	0.195
2036_Truck_LPG_280_0	-	-	-	-	-	-	-	-	-	-
2036_Yard tractor_Diesel_158_2031	0.070	2.800	0.125	0.009	0.008	0.005	585.973	0.024	0.005	0.071
2036_Yard tractor_LPG_195_2028	0.200	32.219	0.741	0.060	0.060	-	674.859	-	-	0.221
2036_Yard tractor_LPG_195_2031	0.201	32.436	0.744	0.060	0.060	-	674.859	-	-	0.222
2036_Yard tractor_LPG_195_2032	0.192	30.925	0.722	0.060	0.060	-	674.859	-	-	0.213
2036_Yard tractor_LPG_231_2035	0.078	10.879	0.435	0.060	0.060	-	674.859	-	-	0.086

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2050

2050 No Project Scenario - CHE equipment list

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for B121-131	Emission Controls (% reduction) PM	HC	CO
Forklift	137	2039	Diesel	0.3	2	-	0%	198	0%	0%	0%
Forklift	152	2036	Diesel	0.3	1	-	0%	648	0%	0%	0%
Forklift	152	2037	Diesel	0.3	2	-	0%	1,827	0%	0%	0%
Forklift	160	2041	Diesel	0.3	1	-	0%	68	0%	0%	0%
Forklift	165	2046	Diesel	0.3	1	-	0%	1,233	0%	0%	0%
Forklift	190	2036	Diesel	0.3	1	-	0%	633	0%	0%	0%
Forklift	59	2046	LPG	0.3	1	-	0%	232	0%	0%	0%
Forklift	59	2047	LPG	0.3	1	-	0%	154	0%	0%	0%
Forklift	160	2037	LPG	0.3	2	-	0%	311	0%	0%	0%
Forklift	160	2040	LPG	0.3	2	-	0%	142	0%	0%	0%
Rub-trd Gantry Crane	197	2035	Diesel	0.2	1	-	0%	1,193	0%	0%	0%
Rub-trd Gantry Crane	302	2039	Diesel	0.2	5	-	0%	9,441	0%	0%	0%
Rub-trd Gantry Crane	454	2028	Diesel	0.2	2	-	0%	2,660	0%	0%	0%
Rub-trd Gantry Crane	612	2027	Diesel	0.2	8	-	0%	7,219	0%	0%	0%
Rub-trd Gantry Crane	685	2029	Diesel	0.2	4	-	0%	5,478	0%	0%	0%
Top handler	250	2050	Diesel	0.59	1	-	0%	1,116	0%	0%	0%
Top handler	260	2038	Diesel	0.59	5	-	0%	5,610	0%	0%	0%
Top handler	260	2039	Diesel	0.59	6	-	0%	6,723	0%	0%	0%
Top handler	260	2040	Diesel	0.59	14	-	0%	26,220	0%	0%	0%
Top handler	335	2043	Diesel	0.59	3	-	0%	3,587	0%	0%	0%
Top handler	363	2049	Diesel	0.59	6	-	0%	6,920	0%	0%	0%
Top handler	370	2046	Diesel	0.59	1	-	0%	1,047	0%	0%	0%
Top handler	388	2049	Diesel	0.59	2	-	0%	2,451	0%	0%	0%
Top handler	388	2037	Diesel	0.59	1	-	0%	2,099	0%	0%	0%
Truck	250	2041	Diesel	0.51	2	-	0%	914	0%	0%	0%
Truck	250	2044	Diesel	0.51	2	-	0%	1,115	0%	0%	0%
Truck	330	2044	Diesel	0.51	1	-	0%	359	0%	0%	0%
Truck	350	2038	Diesel	0.51	1	-	0%	606	0%	0%	0%
Yard tractor	158	2043	Diesel	0.39	30	-	0%	2,840	0%	0%	0%
Yard tractor	195	2043	LPG	0.39	54	-	0%	64,523	0%	0%	0%
Yard tractor	195	2044	LPG	0.39	37	-	0%	46,439	0%	0%	0%
Yard tractor	231	2047	LPG	0.39	20	-	0%	18,299	0%	0%	0%

Notes

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and B121-131 operations.

Operating Hours are only for B121-131 operations calculated by applying ratio of B121-131 throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 12/21/2023

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

2050 No Project Scenario - CHE Emission Factors

	Emission Factors (g/hp-hr)									
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	TOG
2050_Forklift_Diesel_137_2039	0.084	2.882	0.126	0.009	0.008	0.005	585.973	0.024	0.005	0.085
2050_Forklift_Diesel_152_2036	0.200	3.557	0.142	0.013	0.012	0.005	585.973	0.024	0.005	0.204
2050_Forklift_Diesel_152_2037	0.200	3.557	0.142	0.013	0.012	0.005	585.973	0.024	0.005	0.204
2050_Forklift_Diesel_160_2041	0.067	2.781	0.124	0.009	0.008	0.005	585.973	0.024	0.005	0.068
2050_Forklift_Diesel_165_2046	0.181	3.444	0.139	0.012	0.011	0.005	585.973	0.024	0.005	0.184
2050_Forklift_Diesel_190_2036	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Forklift_LPG_59_2046	0.059	7.472	0.386	0.060	0.060	-	674.859	-	-	0.065
2050_Forklift_LPG_59_2047	0.045	5.078	0.352	0.060	0.060	-	674.859	-	-	0.050
2050_Forklift_LPG_160_2037	0.107	15.890	0.507	0.060	0.060	-	674.859	-	-	0.118
2050_Forklift_LPG_160_2040	0.059	7.585	0.388	0.060	0.060	-	674.859	-	-	0.066
2050_Forklift_LPG_165_0	-	-	-	-	-	-	-	-	-	-
2050_Forklift_LPG_165_2043	0.131	20.193	0.569	0.060	0.060	-	674.859	-	-	0.145
2050_Rub-trd Gantry Crane_Diesel_197_2035	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Rub-trd Gantry Crane_Diesel_302_2039	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Rub-trd Gantry Crane_Diesel_454_2028	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Rub-trd Gantry Crane_Diesel_612_2027	0.200	1.138	0.170	0.016	0.015	0.005	585.973	0.024	0.005	0.204
2050_Rub-trd Gantry Crane_Diesel_685_2029	0.200	1.138	0.170	0.016	0.015	0.005	585.973	0.024	0.005	0.204
2050_Top handler_Diesel_250_2050	0.076	0.966	0.118	0.009	0.008	0.005	585.973	0.024	0.005	0.077
2050_Top handler_Diesel_260_2038	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Top handler_Diesel_260_2039	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Top handler_Diesel_260_2040	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Top handler_Diesel_335_2043	0.200	1.137	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.203
2050_Top handler_Diesel_363_2049	0.103	0.995	0.133	0.010	0.009	0.005	585.973	0.024	0.005	0.105
2050_Top handler_Diesel_370_2046	0.162	1.081	0.141	0.011	0.010	0.005	585.973	0.024	0.005	0.164
2050_Top handler_Diesel_388_2049	0.106	0.999	0.133	0.010	0.009	0.005	585.973	0.024	0.005	0.108
2050_Top handler_Diesel_388_2037	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Truck_Diesel_250_2041	0.150	1.111	0.127	0.011	0.010	0.005	585.973	0.024	0.005	0.152
2050_Truck_Diesel_250_2044	0.136	1.085	0.125	0.010	0.010	0.005	585.973	0.024	0.005	0.138
2050_Truck_Diesel_330_2044	0.105	0.997	0.133	0.010	0.009	0.005	585.973	0.024	0.005	0.107
2050_Truck_Diesel_350_2038	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Truck_LPG_280_0	-	-	-	-	-	-	-	-	-	-
2050_Yard tractor_Diesel_158_2043	0.076	2.833	0.125	0.009	0.008	0.005	585.973	0.024	0.005	0.077
2050_Yard tractor_LPG_195_2040	0.204	33.016	0.752	0.060	0.060	-	674.859	-	-	0.226
2050_Yard tractor_LPG_195_2043	0.207	33.511	0.759	0.060	0.060	-	674.859	-	-	0.229
2050_Yard tractor_LPG_195_2044	0.205	33.078	0.753	0.060	0.060	-	674.859	-	-	0.226
2050_Yard tractor_LPG_231_2047	0.127	19.387	0.557	0.060	0.060	-	674.859	-	-	0.140

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2026

2026 No Federal Action Scenario - CHE equipment list

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for B121-131	Emission Controls (% reduction) PM	HC	CO
Forklift	137	2023	Diesel	0.3	2	-	0%	94	0%	0%	0%
Forklift	152	2020	Diesel	0.3	1	-	0%	306	0%	0%	0%
Forklift	152	2021	Diesel	0.3	2	-	0%	862	0%	0%	0%
Forklift	160	2025	Diesel	0.3	1	-	0%	32	0%	0%	0%
Forklift	165	2014	Diesel	0.3	1	-	0%	582	0%	0%	0%
Forklift	190	2020	Diesel	0.3	1	-	0%	299	0%	0%	0%
Forklift	59	2014	LPG	0.3	1	-	0%	109	0%	0%	0%
Forklift	59	2015	LPG	0.3	1	-	0%	73	0%	0%	0%
Forklift	160	2021	LPG	0.3	2	-	0%	147	0%	0%	0%
Forklift	160	2024	LPG	0.3	2	-	0%	67	0%	0%	0%
Rub-trd Gantry Crane	197	2011	Diesel	0.2	1	-	0%	563	0%	0%	0%
Rub-trd Gantry Crane	302	2015	Diesel	0.2	5	-	0%	4,454	0%	0%	0%
Rub-trd Gantry Crane	454	2004	Diesel	0.2	2	DPF Level 2	100%	1,255	50%	0%	0%
Rub-trd Gantry Crane	612	2003	Diesel	0.2	8	DPF Level 2	100%	3,405	50%	0%	0%
Rub-trd Gantry Crane	685	2005	Diesel	0.2	4	DPF Level 2	100%	2,584	50%	0%	0%
Top handler	250	2018	Diesel	0.59	1	-	0%	526	0%	0%	0%
Top handler	260	2022	Diesel	0.59	5	-	0%	2,647	0%	0%	0%
Top handler	260	2023	Diesel	0.59	6	-	0%	3,171	0%	0%	0%
Top handler	260	2024	Diesel	0.59	14	-	0%	12,369	0%	0%	0%
Top handler	335	2011	Diesel	0.59	3	-	0%	1,692	0%	0%	0%
Top handler	363	2017	Diesel	0.59	6	-	0%	3,264	0%	0%	0%
Top handler	370	2014	Diesel	0.59	1	-	0%	494	0%	0%	0%
Top handler	388	2017	Diesel	0.59	2	-	0%	1,156	0%	0%	0%
Top handler	388	2021	Diesel	0.59	1	-	0%	990	0%	0%	0%
Truck	250	2017	Diesel	0.51	2	-	0%	431	0%	0%	0%
Truck	250	2020	Diesel	0.51	2	-	0%	526	0%	0%	0%
Truck	330	2020	Diesel	0.51	1	-	0%	169	0%	0%	0%
Truck	350	2026	Diesel	0.51	1	-	0%	286	0%	0%	0%
Yard tractor	158	2019	Diesel	0.39	30	-	0%	1,340	0%	0%	0%
Yard tractor	195	2019	LPG	0.39	54	-	0%	30,437	0%	0%	0%
Yard tractor	195	2020	LPG	0.39	37	-	0%	21,906	0%	0%	0%
Yard tractor	231	2023	LPG	0.39	20	-	0%	8,632	0%	0%	0%
Yard tractor	195	2023	LPG	0.39	19	-	0%	7,354	0%	0%	0%
Yard tractor	195	2023	LPG	0.39	5	-	0%	2,818	0%	0%	0%
Yard tractor	195	2023	LPG	0.39	3	-	0%	1,776	0%	0%	0%
Yard tractor	231	2023	LPG	0.39	3	-	0%	1,295	0%	0%	0%

Notes

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and B121-131 operations.

Operating Hours are only for B121-131 operations calculated by applying ratio of B121-131 throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 12/21/2023

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

2026 No Federal Action Scenario - CHE Emission Factors

	Emission Factors (g/hp-hr)									
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	TOG
2026_Forklift_Diesel_137_2023	0.063	2.761	0.124	0.009	0.008	0.005	585.973	0.024	0.005	0.064
2026_Forklift_Diesel_152_2020	0.147	3.247	0.585	0.011	0.010	0.005	585.973	0.024	0.005	0.149
2026_Forklift_Diesel_152_2021	0.167	3.361	0.386	0.012	0.011	0.005	585.973	0.024	0.005	0.169
2026_Forklift_Diesel_160_2025	0.055	2.716	0.123	0.008	0.008	0.005	585.973	0.024	0.005	0.056
2026_Forklift_Diesel_165_2014	0.369	3.557	2.059	0.062	0.057	0.005	585.973	0.024	0.005	0.375
2026_Forklift_Diesel_190_2020	0.145	1.102	0.126	0.011	0.010	0.005	585.973	0.024	0.005	0.147
2026_Forklift_LPG_59_2014	0.105	15.634	0.503	0.060	0.060	-	674.859	-	-	0.116
2026_Forklift_LPG_59_2015	0.076	10.491	0.430	0.060	0.060	-	674.859	-	-	0.084
2026_Forklift_LPG_160_2021	0.063	8.165	0.396	0.060	0.060	-	674.859	-	-	0.069
2026_Forklift_LPG_160_2024	0.038	3.793	0.334	0.060	0.060	-	674.859	-	-	0.042
2026_Forklift_LPG_165_0	-	-	-	-	-	-	-	-	-	-
2026_Forklift_LPG_165_2011	0.208	33.601	0.761	0.060	0.060	-	674.859	-	-	0.229
2026_Rub-trd Gantry Crane_Diesel_197_2011	0.305	1.212	1.664	0.073	0.067	0.005	585.973	0.024	0.005	0.310
2026_Rub-trd Gantry Crane_Diesel_302_2015	0.200	1.138	0.894	0.046	0.042	0.005	585.973	0.024	0.005	0.204
2026_Rub-trd Gantry Crane_Diesel_454_2004	0.425	1.138	4.498	0.123	0.114	0.005	585.973	0.024	0.005	0.431
2026_Rub-trd Gantry Crane_Diesel_612_2003	0.428	1.138	5.932	0.125	0.115	0.005	585.973	0.024	0.005	0.435
2026_Rub-trd Gantry Crane_Diesel_685_2005	0.425	1.138	4.222	0.118	0.109	0.005	585.973	0.024	0.005	0.431
2026_Top handler_Diesel_250_2018	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2026_Top handler_Diesel_260_2022	0.172	1.156	0.129	0.011	0.010	0.005	585.973	0.024	0.005	0.175
2026_Top handler_Diesel_260_2023	0.150	1.112	0.127	0.011	0.010	0.005	585.973	0.024	0.005	0.153
2026_Top handler_Diesel_260_2024	0.163	1.138	0.128	0.011	0.010	0.005	585.973	0.024	0.005	0.166
2026_Top handler_Diesel_335_2011	0.305	1.138	1.356	0.068	0.063	0.005	585.973	0.024	0.005	0.310
2026_Top handler_Diesel_363_2017	0.200	1.138	0.254	0.029	0.026	0.005	585.973	0.024	0.005	0.203
2026_Top handler_Diesel_370_2014	0.200	1.138	1.070	0.047	0.044	0.005	585.973	0.024	0.005	0.204
2026_Top handler_Diesel_388_2017	0.200	1.138	0.254	0.029	0.026	0.005	585.973	0.024	0.005	0.204
2026_Top handler_Diesel_388_2021	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2026_Truck_Diesel_250_2017	0.150	1.111	0.348	0.017	0.016	0.005	585.973	0.024	0.005	0.152
2026_Truck_Diesel_250_2020	0.136	1.085	0.125	0.010	0.010	0.005	585.973	0.024	0.005	0.138
2026_Truck_Diesel_330_2020	0.105	0.997	0.133	0.010	0.009	0.005	585.973	0.024	0.005	0.107
2026_Truck_Diesel_350_2026	0.065	0.939	0.128	0.009	0.008	0.005	585.973	0.024	0.005	0.066
2026_Truck_LPG_280_0	-	-	-	-	-	-	-	-	-	-
2026_Yard tractor_Diesel_158_2019	0.076	2.834	0.737	0.009	0.008	0.005	585.973	0.024	0.005	0.077
2026_Yard tractor_LPG_195_2016	0.205	33.141	0.754	0.060	0.060	-	674.859	-	-	0.227
2026_Yard tractor_LPG_195_2019	0.207	33.502	0.759	0.060	0.060	-	674.859	-	-	0.229
2026_Yard tractor_LPG_195_2020	0.205	33.049	0.753	0.060	0.060	-	674.859	-	-	0.226
2026_Yard tractor_LPG_231_2023	0.127	19.387	0.557	0.060	0.060	-	674.859	-	-	0.140

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2027

2027 No Federal Action Scenario - CHE equipment list

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for B121-131	Emission Controls (% reduction) PM	HC	CO
Forklift	137	2023	Diesel	0.3	2	-	0%	97	0%	0%	0%
Forklift	152	2020	Diesel	0.3	1	-	0%	316	0%	0%	0%
Forklift	152	2021	Diesel	0.3	2	-	0%	891	0%	0%	0%
Forklift	160	2025	Diesel	0.3	1	-	0%	33	0%	0%	0%
Forklift	165	2014	Diesel	0.3	1	-	0%	601	0%	0%	0%
Forklift	190	2020	Diesel	0.3	1	-	0%	309	0%	0%	0%
Forklift	59	2014	LPG	0.3	1	-	0%	113	0%	0%	0%
Forklift	59	2015	LPG	0.3	1	-	0%	75	0%	0%	0%
Forklift	160	2021	LPG	0.3	2	-	0%	152	0%	0%	0%
Forklift	160	2024	LPG	0.3	2	-	0%	69	0%	0%	0%
Rub-trd Gantry Crane	197	2011	Diesel	0.2	1	-	0%	582	0%	0%	0%
Rub-trd Gantry Crane	302	2015	Diesel	0.2	5	-	0%	4,601	0%	0%	0%
Rub-trd Gantry Crane	454	2004	Diesel	0.2	2	DPF Level 2	100%	1,296	50%	0%	0%
Rub-trd Gantry Crane	612	2027	Diesel	0.2	8	-	0%	3,518	0%	0%	0%
Rub-trd Gantry Crane	685	2005	Diesel	0.2	4	DPF Level 2	100%	2,670	50%	0%	0%
Top handler	250	2018	Diesel	0.59	1	-	0%	544	0%	0%	0%
Top handler	260	2022	Diesel	0.59	5	-	0%	2,734	0%	0%	0%
Top handler	260	2023	Diesel	0.59	6	-	0%	3,276	0%	0%	0%
Top handler	260	2024	Diesel	0.59	14	-	0%	12,779	0%	0%	0%
Top handler	335	2027	Diesel	0.59	3	-	0%	1,748	0%	0%	0%
Top handler	363	2017	Diesel	0.59	6	-	0%	3,373	0%	0%	0%
Top handler	370	2014	Diesel	0.59	1	-	0%	511	0%	0%	0%
Top handler	388	2017	Diesel	0.59	2	-	0%	1,195	0%	0%	0%
Top handler	388	2021	Diesel	0.59	1	-	0%	1,023	0%	0%	0%
Truck	250	2017	Diesel	0.51	2	-	0%	445	0%	0%	0%
Truck	250	2020	Diesel	0.51	2	-	0%	543	0%	0%	0%
Truck	330	2020	Diesel	0.51	1	-	0%	175	0%	0%	0%
Truck	350	2026	Diesel	0.51	1	-	0%	296	0%	0%	0%
Truck	280	0	LPG	0.51	1	-	0%	-	0%	0%	0%
Yard tractor	158	2019	Diesel	0.39	30	-	0%	1,384	0%	0%	0%

Notes

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and B121-131 operations.

Operating Hours are only for B121-131 operations calculated by applying ratio of B121-131 throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 12/21/2023

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

2027 No Federal Action Scenario - CHE Emission Factors

	Emission Factors (g/hp-hr)									
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	TOG
2027_Forklift_Diesel_137_2023	0.066	2.776	0.124	0.009	0.008	0.005	585.973	0.024	0.005	0.067
2027_Forklift_Diesel_152_2020	0.160	3.325	0.592	0.012	0.011	0.005	585.973	0.024	0.005	0.163
2027_Forklift_Diesel_152_2021	0.186	3.471	0.393	0.012	0.011	0.005	585.973	0.024	0.005	0.189
2027_Forklift_Diesel_160_2025	0.057	2.724	0.123	0.008	0.008	0.005	585.973	0.024	0.005	0.058
2027_Forklift_Diesel_165_2014	0.369	3.557	2.059	0.062	0.057	0.005	585.973	0.024	0.005	0.375
2027_Forklift_Diesel_190_2020	0.158	1.128	0.128	0.011	0.010	0.005	585.973	0.024	0.005	0.161
2027_Forklift_LPG_59_2014	0.111	16.654	0.518	0.060	0.060	-	674.859	-	-	0.123
2027_Forklift_LPG_59_2015	0.080	11.168	0.439	0.060	0.060	-	674.859	-	-	0.088
2027_Forklift_LPG_160_2021	0.068	9.131	0.410	0.060	0.060	-	674.859	-	-	0.075
2027_Forklift_LPG_160_2024	0.040	4.267	0.340	0.060	0.060	-	674.859	-	-	0.045
2027_Forklift_LPG_165_0	-	-	-	-	-	-	-	-	-	-
2027_Forklift_LPG_165_2027	0.042	4.599	0.345	0.060	0.060	-	674.859	-	-	0.047
2027_Rub-trd Gantry Crane_Diesel_197_2011	0.305	1.212	1.664	0.073	0.067	0.005	585.973	0.024	0.005	0.310
2027_Rub-trd Gantry Crane_Diesel_302_2015	0.200	1.138	0.894	0.046	0.042	0.005	585.973	0.024	0.005	0.204
2027_Rub-trd Gantry Crane_Diesel_454_2004	0.425	1.138	4.498	0.123	0.114	0.005	585.973	0.024	0.005	0.431
2027_Rub-trd Gantry Crane_Diesel_612_2027	0.072	0.948	0.150	0.012	0.011	0.005	585.973	0.024	0.005	0.073
2027_Rub-trd Gantry Crane_Diesel_685_2005	0.425	1.138	4.222	0.118	0.109	0.005	585.973	0.024	0.005	0.431
2027_Top handler_Diesel_250_2018	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2027_Top handler_Diesel_260_2022	0.189	1.190	0.132	0.012	0.011	0.005	585.973	0.024	0.005	0.192
2027_Top handler_Diesel_260_2023	0.171	1.154	0.129	0.011	0.010	0.005	585.973	0.024	0.005	0.174
2027_Top handler_Diesel_260_2024	0.194	1.200	0.132	0.012	0.011	0.005	585.973	0.024	0.005	0.198
2027_Top handler_Diesel_335_2027	0.078	0.958	0.129	0.009	0.008	0.005	585.973	0.024	0.005	0.080
2027_Top handler_Diesel_363_2017	0.200	1.138	0.254	0.029	0.026	0.005	585.973	0.024	0.005	0.204
2027_Top handler_Diesel_370_2014	0.200	1.138	1.070	0.047	0.044	0.005	585.973	0.024	0.005	0.204
2027_Top handler_Diesel_388_2017	0.200	1.138	0.254	0.029	0.026	0.005	585.973	0.024	0.005	0.204
2027_Top handler_Diesel_388_2021	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2027_Truck_Diesel_250_2017	0.159	1.130	0.351	0.018	0.016	0.005	585.973	0.024	0.005	0.162
2027_Truck_Diesel_250_2020	0.148	1.109	0.126	0.011	0.010	0.005	585.973	0.024	0.005	0.151
2027_Truck_Diesel_330_2020	0.112	1.008	0.134	0.010	0.009	0.005	585.973	0.024	0.005	0.114
2027_Truck_Diesel_350_2026	0.078	0.957	0.129	0.009	0.008	0.005	585.973	0.024	0.005	0.079
2027_Truck_LPG_280_0	-	-	-	-	-	-	-	-	-	-
2027_Yard tractor_Diesel_158_2019	0.079	2.850	0.739	0.009	0.008	0.005	585.973	0.024	0.005	0.080

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2028

2028 No Federal Action Scenario - CHE equipment list

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for B121-131	Emission Controls (% reduction) PM	HC	CO
Forklift	137	2023	Diesel	0.3	2	-	0%	101	0%	0%	0%
Forklift	152	2020	Diesel	0.3	1	-	0%	328	0%	0%	0%
Forklift	152	2021	Diesel	0.3	2	-	0%	926	0%	0%	0%
Forklift	160	2025	Diesel	0.3	1	-	0%	34	0%	0%	0%
Forklift	165	2014	Diesel	0.3	1	-	0%	625	0%	0%	0%
Forklift	190	2020	Diesel	0.3	1	-	0%	321	0%	0%	0%
Forklift	59	2014	LPG	0.3	1	-	0%	118	0%	0%	0%
Forklift	59	2015	LPG	0.3	1	-	0%	78	0%	0%	0%
Forklift	160	2021	LPG	0.3	2	-	0%	158	0%	0%	0%
Forklift	160	2024	LPG	0.3	2	-	0%	72	0%	0%	0%
Rub-trd Gantry Crane	197	2011	Diesel	0.2	1	-	0%	605	0%	0%	0%
Rub-trd Gantry Crane	302	2015	Diesel	0.2	5	-	0%	4,784	0%	0%	0%
Rub-trd Gantry Crane	454	2028	Diesel	0.2	2	-	0%	1,348	0%	0%	0%
Rub-trd Gantry Crane	612	2027	Diesel	0.2	8	-	0%	3,658	0%	0%	0%
Rub-trd Gantry Crane	685	2005	Diesel	0.2	4	DPF Level 2	100%	2,776	50%	0%	0%
Top handler	250	2018	Diesel	0.59	1	-	0%	565	0%	0%	0%
Top handler	260	2022	Diesel	0.59	5	-	0%	2,843	0%	0%	0%
Top handler	260	2023	Diesel	0.59	6	-	0%	3,406	0%	0%	0%
Top handler	260	2024	Diesel	0.59	14	-	0%	13,286	0%	0%	0%
Top handler	335	2027	Diesel	0.59	3	-	0%	1,818	0%	0%	0%
Top handler	363	2017	Diesel	0.59	6	-	0%	3,506	0%	0%	0%
Top handler	370	2014	Diesel	0.59	1	-	0%	531	0%	0%	0%
Top handler	388	2017	Diesel	0.59	2	-	0%	1,242	0%	0%	0%
Top handler	388	2021	Diesel	0.59	1	-	0%	1,064	0%	0%	0%
Truck	250	2017	Diesel	0.51	2	-	0%	463	0%	0%	0%
Truck	250	2020	Diesel	0.51	2	-	0%	565	0%	0%	0%

Notes

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and B121-131 operations.

Operating Hours are only for B121-131 operations calculated by applying ratio of B121-131 throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 12/21/2023

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

2028 No Federal Action Scenario - CHE Emission Factors

	Emission Factors (g/hp-hr)									
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	TOG
2028_Forklift_Diesel_137_2023	0.068	2.791	0.124	0.009	0.008	0.005	585.973	0.024	0.005	0.069
2028_Forklift_Diesel_152_2020	0.174	3.403	0.600	0.012	0.011	0.005	585.973	0.024	0.005	0.177
2028_Forklift_Diesel_152_2021	0.200	3.557	0.398	0.013	0.012	0.005	585.973	0.024	0.005	0.204
2028_Forklift_Diesel_160_2025	0.058	2.733	0.123	0.008	0.008	0.005	585.973	0.024	0.005	0.059
2028_Forklift_Diesel_165_2014	0.369	3.557	2.059	0.062	0.057	0.005	585.973	0.024	0.005	0.375
2028_Forklift_Diesel_190_2020	0.171	1.154	0.129	0.011	0.010	0.005	585.973	0.024	0.005	0.174
2028_Forklift_LPG_59_2014	0.117	17.674	0.532	0.060	0.060	-	674.859	-	-	0.129
2028_Forklift_LPG_59_2015	0.084	11.844	0.449	0.060	0.060	-	674.859	-	-	0.092
2028_Forklift_LPG_160_2021	0.074	10.096	0.424	0.060	0.060	-	674.859	-	-	0.081
2028_Forklift_LPG_160_2024	0.043	4.741	0.347	0.060	0.060	-	674.859	-	-	0.048
2028_Forklift_LPG_165_0	-	-	-	-	-	-	-	-	-	-
2028_Forklift_LPG_165_2027	0.055	6.827	0.377	0.060	0.060	-	674.859	-	-	0.061
2028_Rub-trd Gantry Crane_Diesel_197_2011	0.305	1.212	1.664	0.073	0.067	0.005	585.973	0.024	0.005	0.310
2028_Rub-trd Gantry Crane_Diesel_302_2015	0.200	1.138	0.894	0.046	0.042	0.005	585.973	0.024	0.005	0.204
2028_Rub-trd Gantry Crane_Diesel_454_2028	0.080	0.961	0.130	0.009	0.008	0.005	585.973	0.024	0.005	0.082
2028_Rub-trd Gantry Crane_Diesel_612_2027	0.091	0.977	0.153	0.012	0.011	0.005	585.973	0.024	0.005	0.093
2028_Rub-trd Gantry Crane_Diesel_685_2005	0.425	1.138	4.222	0.118	0.109	0.005	585.973	0.024	0.005	0.431
2028_Top handler_Diesel_250_2018	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2028_Top handler_Diesel_260_2022	0.197	1.205	0.132	0.012	0.011	0.005	585.973	0.024	0.005	0.201
2028_Top handler_Diesel_260_2023	0.187	1.184	0.131	0.012	0.011	0.005	585.973	0.024	0.005	0.190
2028_Top handler_Diesel_260_2024	0.200	1.210	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.203
2028_Top handler_Diesel_335_2027	0.104	0.996	0.133	0.010	0.009	0.005	585.973	0.024	0.005	0.106
2028_Top handler_Diesel_363_2017	0.200	1.138	0.254	0.029	0.026	0.005	585.973	0.024	0.005	0.204
2028_Top handler_Diesel_370_2014	0.200	1.138	1.070	0.047	0.044	0.005	585.973	0.024	0.005	0.204
2028_Top handler_Diesel_388_2017	0.200	1.138	0.254	0.029	0.026	0.005	585.973	0.024	0.005	0.204
2028_Top handler_Diesel_388_2021	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2028_Truck_Diesel_250_2017	0.169	1.150	0.355	0.018	0.017	0.005	585.973	0.024	0.005	0.172
2028_Truck_Diesel_250_2020	0.160	1.132	0.128	0.011	0.010	0.005	585.973	0.024	0.005	0.163

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2036

2036 No Federal Action Scenario - CHE equipment list

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for B121-131	Emission Controls (% reduction) PM	HC	CO
Forklift	137	2023	Diesel	0.3	2	-	0%	131	0%	0%	0%
Forklift	152	2036	Diesel	0.3	1	-	0%	428	0%	0%	0%
Forklift	152	2021	Diesel	0.3	2	-	0%	1,208	0%	0%	0%
Forklift	160	2025	Diesel	0.3	1	-	0%	45	0%	0%	0%
Forklift	165	2030	Diesel	0.3	1	-	0%	815	0%	0%	0%
Forklift	190	2036	Diesel	0.3	1	-	0%	418	0%	0%	0%
Forklift	59	2030	LPG	0.3	1	-	0%	153	0%	0%	0%
Forklift	59	2031	LPG	0.3	1	-	0%	102	0%	0%	0%
Forklift	160	2021	LPG	0.3	2	-	0%	206	0%	0%	0%
Forklift	160	2024	LPG	0.3	2	-	0%	94	0%	0%	0%
Rub-trd Gantry Crane	197	2035	Diesel	0.2	1	-	0%	789	0%	0%	0%
Rub-trd Gantry Crane	302	2015	Diesel	0.2	5	-	0%	6,242	0%	0%	0%
Rub-trd Gantry Crane	454	2028	Diesel	0.2	2	-	0%	1,758	0%	0%	0%
Rub-trd Gantry Crane	612	2027	Diesel	0.2	8	-	0%	4,772	0%	0%	0%
Rub-trd Gantry Crane	685	2029	Diesel	0.2	4	-	0%	3,622	0%	0%	0%
Top handler	250	2034	Diesel	0.59	1	-	0%	738	0%	0%	0%
Top handler	260	2022	Diesel	0.59	5	-	0%	3,709	0%	0%	0%
Top handler	260	2023	Diesel	0.59	6	-	0%	4,444	0%	0%	0%
Top handler	260	2024	Diesel	0.59	14	-	0%	17,335	0%	0%	0%
Top handler	335	2027	Diesel	0.59	3	-	0%	2,372	0%	0%	0%
Top handler	363	2033	Diesel	0.59	6	-	0%	4,575	0%	0%	0%
Top handler	370	2030	Diesel	0.59	1	-	0%	693	0%	0%	0%
Top handler	388	2033	Diesel	0.59	2	-	0%	1,621	0%	0%	0%
Top handler	388	2021	Diesel	0.59	1	-	0%	1,388	0%	0%	0%
Truck	250	2029	Diesel	0.51	2	-	0%	604	0%	0%	0%
Truck	250	2032	Diesel	0.51	2	-	0%	737	0%	0%	0%
Truck	330	2032	Diesel	0.51	1	-	0%	237	0%	0%	0%
Truck	350	2026	Diesel	0.51	1	-	0%	401	0%	0%	0%
Yard tractor	158	2031	Diesel	0.39	30	-	0%	1,878	0%	0%	0%
Yard tractor	195	2031	LPG	0.39	54	-	0%	42,657	0%	0%	0%
Yard tractor	195	2032	LPG	0.39	37	-	0%	30,702	0%	0%	0%
Yard tractor	231	2035	LPG	0.39	20	-	0%	12,098	0%	0%	0%

Notes

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and B121-131 operations.

Operating Hours are only for B121-131 operations calculated by applying ratio of B121-131 throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 12/21/2023

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

2036 No Federal Action Scenario - CHE Emission Factors

	Emission Factors (g/hp-hr)									
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	TOG
2036_Forklift_Diesel_137_2023	0.089	2.912	0.127	0.009	0.009	0.005	585.973	0.024	0.005	0.091
2036_Forklift_Diesel_152_2036	0.066	2.778	0.124	0.009	0.008	0.005	585.973	0.024	0.005	0.067
2036_Forklift_Diesel_152_2021	0.200	3.557	0.398	0.013	0.012	0.005	585.973	0.024	0.005	0.204
2036_Forklift_Diesel_160_2025	0.070	2.798	0.125	0.009	0.008	0.005	585.973	0.024	0.005	0.071
2036_Forklift_Diesel_165_2030	0.200	3.557	0.142	0.013	0.012	0.005	585.973	0.024	0.005	0.204
2036_Forklift_Diesel_190_2036	0.066	0.946	0.116	0.009	0.008	0.005	585.973	0.024	0.005	0.067
2036_Forklift_LPG_59_2030	0.070	9.513	0.416	0.060	0.060	-	674.859	-	-	0.078
2036_Forklift_LPG_59_2031	0.053	6.431	0.371	0.060	0.060	-	674.859	-	-	0.058
2036_Forklift_LPG_160_2021	0.118	17.821	0.535	0.060	0.060	-	674.859	-	-	0.130
2036_Forklift_LPG_160_2024	0.065	8.533	0.401	0.060	0.060	-	674.859	-	-	0.072
2036_Forklift_LPG_165_0	-	-	-	-	-	-	-	-	-	-
2036_Forklift_LPG_165_2027	0.157	24.649	0.632	0.060	0.060	-	674.859	-	-	0.173
2036_Rub-trd Gantry Crane_Diesel_197_2035	0.102	1.018	0.121	0.010	0.009	0.005	585.973	0.024	0.005	0.104
2036_Rub-trd Gantry Crane_Diesel_302_2015	0.200	1.138	0.894	0.046	0.042	0.005	585.973	0.024	0.005	0.204
2036_Rub-trd Gantry Crane_Diesel_454_2028	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2036_Rub-trd Gantry Crane_Diesel_612_2027	0.199	1.137	0.170	0.016	0.015	0.005	585.973	0.024	0.005	0.203
2036_Rub-trd Gantry Crane_Diesel_685_2029	0.192	1.126	0.169	0.016	0.014	0.005	585.973	0.024	0.005	0.195
2036_Top handler_Diesel_250_2034	0.122	1.057	0.123	0.010	0.009	0.005	585.973	0.024	0.005	0.124
2036_Top handler_Diesel_260_2022	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2036_Top handler_Diesel_260_2023	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2036_Top handler_Diesel_260_2024	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2036_Top handler_Diesel_335_2027	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2036_Top handler_Diesel_363_2033	0.154	1.070	0.140	0.011	0.010	0.005	585.973	0.024	0.005	0.157
2036_Top handler_Diesel_370_2030	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2036_Top handler_Diesel_388_2033	0.160	1.078	0.140	0.011	0.010	0.005	585.973	0.024	0.005	0.162
2036_Top handler_Diesel_388_2021	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2036_Truck_Diesel_250_2029	0.130	1.073	0.124	0.010	0.010	0.005	585.973	0.024	0.005	0.132
2036_Truck_Diesel_250_2032	0.112	1.038	0.122	0.010	0.009	0.005	585.973	0.024	0.005	0.114
2036_Truck_Diesel_330_2032	0.090	0.975	0.131	0.009	0.009	0.005	585.973	0.024	0.005	0.091
2036_Truck_Diesel_350_2026	0.191	1.125	0.145	0.012	0.011	0.005	585.973	0.024	0.005	0.195
2036_Truck_LPG_280_0	-	-	-	-	-	-	-	-	-	-
2036_Yard tractor_Diesel_158_2031	0.070	2.800	0.125	0.009	0.008	0.005	585.973	0.024	0.005	0.071
2036_Yard tractor_LPG_195_2028	0.200	32.219	0.741	0.060	0.060	-	674.859	-	-	0.221
2036_Yard tractor_LPG_195_2031	0.201	32.436	0.744	0.060	0.060	-	674.859	-	-	0.222
2036_Yard tractor_LPG_195_2032	0.192	30.925	0.722	0.060	0.060	-	674.859	-	-	0.213
2036_Yard tractor_LPG_231_2035	0.078	10.879	0.435	0.060	0.060	-	674.859	-	-	0.086

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2050

2050 No Federal Action Scenario - CHE equipment list

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for B121-131	Emission Controls (% reduction) PM	HC	CO
Forklift	137	2039	Diesel	0.3	2	-	0%	198	0%	0%	0%
Forklift	152	2036	Diesel	0.3	1	-	0%	648	0%	0%	0%
Forklift	152	2037	Diesel	0.3	2	-	0%	1,827	0%	0%	0%
Forklift	160	2041	Diesel	0.3	1	-	0%	68	0%	0%	0%
Forklift	165	2046	Diesel	0.3	1	-	0%	1,233	0%	0%	0%
Forklift	190	2036	Diesel	0.3	1	-	0%	633	0%	0%	0%
Forklift	59	2046	LPG	0.3	1	-	0%	232	0%	0%	0%
Forklift	59	2047	LPG	0.3	1	-	0%	154	0%	0%	0%
Forklift	160	2037	LPG	0.3	2	-	0%	311	0%	0%	0%
Forklift	160	2040	LPG	0.3	2	-	0%	142	0%	0%	0%
Rub-trd Gantry Crane	197	2035	Diesel	0.2	1	-	0%	1,193	0%	0%	0%
Rub-trd Gantry Crane	302	2039	Diesel	0.2	5	-	0%	9,441	0%	0%	0%
Rub-trd Gantry Crane	454	2028	Diesel	0.2	2	-	0%	2,660	0%	0%	0%
Rub-trd Gantry Crane	612	2027	Diesel	0.2	8	-	0%	7,219	0%	0%	0%
Rub-trd Gantry Crane	685	2029	Diesel	0.2	4	-	0%	5,478	0%	0%	0%
Top handler	250	2050	Diesel	0.59	1	-	0%	1,116	0%	0%	0%
Top handler	260	2038	Diesel	0.59	5	-	0%	5,610	0%	0%	0%
Top handler	260	2039	Diesel	0.59	6	-	0%	6,723	0%	0%	0%
Top handler	260	2040	Diesel	0.59	14	-	0%	26,220	0%	0%	0%
Top handler	335	2043	Diesel	0.59	3	-	0%	3,587	0%	0%	0%
Top handler	363	2049	Diesel	0.59	6	-	0%	6,920	0%	0%	0%
Top handler	370	2046	Diesel	0.59	1	-	0%	1,047	0%	0%	0%
Top handler	388	2049	Diesel	0.59	2	-	0%	2,451	0%	0%	0%
Top handler	388	2037	Diesel	0.59	1	-	0%	2,099	0%	0%	0%
Truck	250	2041	Diesel	0.51	2	-	0%	914	0%	0%	0%
Truck	250	2044	Diesel	0.51	2	-	0%	1,115	0%	0%	0%
Truck	330	2044	Diesel	0.51	1	-	0%	359	0%	0%	0%
Truck	350	2038	Diesel	0.51	1	-	0%	606	0%	0%	0%
Yard tractor	158	2043	Diesel	0.39	30	-	0%	2,840	0%	0%	0%
Yard tractor	195	2040	LPG	0.39	16	-	0%	13,128	0%	0%	0%
Yard tractor	195	2043	LPG	0.39	54	-	0%	64,523	0%	0%	0%
Yard tractor	195	2044	LPG	0.39	37	-	0%	46,439	0%	0%	0%
Yard tractor	231	2047	LPG	0.39	20	-	0%	18,299	0%	0%	0%

Notes

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and B121-131 operations.

Operating Hours are only for B121-131 operations calculated by applying ratio of B121-131 throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 12/21/2023

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

2050 No Federal Action Scenario - CHE Emission Factors

	Emission Factors (g/hp-hr)									
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	TOG
2050_Forklift_Diesel_137_2039	0.084	2.882	0.126	0.009	0.008	0.005	585.973	0.024	0.005	0.085
2050_Forklift_Diesel_152_2036	0.200	3.557	0.142	0.013	0.012	0.005	585.973	0.024	0.005	0.204
2050_Forklift_Diesel_152_2037	0.200	3.557	0.142	0.013	0.012	0.005	585.973	0.024	0.005	0.204
2050_Forklift_Diesel_160_2041	0.067	2.781	0.124	0.009	0.008	0.005	585.973	0.024	0.005	0.068
2050_Forklift_Diesel_165_2046	0.181	3.444	0.139	0.012	0.011	0.005	585.973	0.024	0.005	0.184
2050_Forklift_Diesel_190_2036	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Forklift_LPG_59_2046	0.059	7.472	0.386	0.060	0.060	-	674.859	-	-	0.065
2050_Forklift_LPG_59_2047	0.045	5.078	0.352	0.060	0.060	-	674.859	-	-	0.050
2050_Forklift_LPG_160_2037	0.107	15.890	0.507	0.060	0.060	-	674.859	-	-	0.118
2050_Forklift_LPG_160_2040	0.059	7.585	0.388	0.060	0.060	-	674.859	-	-	0.066
2050_Forklift_LPG_165_0	-	-	-	-	-	-	-	-	-	-
2050_Forklift_LPG_165_2043	0.131	20.193	0.569	0.060	0.060	-	674.859	-	-	0.145
2050_Rub-trd Gantry Crane_Diesel_197_2035	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Rub-trd Gantry Crane_Diesel_302_2039	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Rub-trd Gantry Crane_Diesel_454_2028	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Rub-trd Gantry Crane_Diesel_612_2027	0.200	1.138	0.170	0.016	0.015	0.005	585.973	0.024	0.005	0.204
2050_Rub-trd Gantry Crane_Diesel_685_2029	0.200	1.138	0.170	0.016	0.015	0.005	585.973	0.024	0.005	0.204
2050_Top handler_Diesel_250_2050	0.076	0.966	0.118	0.009	0.008	0.005	585.973	0.024	0.005	0.077
2050_Top handler_Diesel_260_2038	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Top handler_Diesel_260_2039	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Top handler_Diesel_260_2040	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Top handler_Diesel_335_2043	0.200	1.137	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.203
2050_Top handler_Diesel_363_2049	0.103	0.995	0.133	0.010	0.009	0.005	585.973	0.024	0.005	0.105
2050_Top handler_Diesel_370_2046	0.162	1.081	0.141	0.011	0.010	0.005	585.973	0.024	0.005	0.164
2050_Top handler_Diesel_388_2049	0.106	0.999	0.133	0.010	0.009	0.005	585.973	0.024	0.005	0.108
2050_Top handler_Diesel_388_2037	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Truck_Diesel_250_2041	0.150	1.111	0.127	0.011	0.010	0.005	585.973	0.024	0.005	0.152
2050_Truck_Diesel_250_2044	0.136	1.085	0.125	0.010	0.010	0.005	585.973	0.024	0.005	0.138
2050_Truck_Diesel_330_2044	0.105	0.997	0.133	0.010	0.009	0.005	585.973	0.024	0.005	0.107
2050_Truck_Diesel_350_2038	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Truck_LPG_280_0	-	-	-	-	-	-	-	-	-	-
2050_Yard tractor_Diesel_158_2043	0.076	2.833	0.125	0.009	0.008	0.005	585.973	0.024	0.005	0.077
2050_Yard tractor_LPG_195_2040	0.204	33.016	0.752	0.060	0.060	-	674.859	-	-	0.226
2050_Yard tractor_LPG_195_2043	0.207	33.511	0.759	0.060	0.060	-	674.859	-	-	0.229
2050_Yard tractor_LPG_195_2044	0.205	33.078	0.753	0.060	0.060	-	674.859	-	-	0.226
2050_Yard tractor_LPG_231_2047	0.127	19.387	0.557	0.060	0.060	-	674.859	-	-	0.140

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2028

2028 No Federal Action Scenario Mitigated - CHE equipment list

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for B121-131	Emission Controls (% reduction) PM	HC	CO
Forklift	137	2023	Diesel - Renewable	0.3	2	-	0%	101	0%	0%	0%
Forklift	152	2020	Diesel - Renewable	0.3	1	-	0%	328	0%	0%	0%
Forklift	152	2021	Diesel - Renewable	0.3	2	-	0%	926	0%	0%	0%
Forklift	160	2025	Diesel - Renewable	0.3	1	-	0%	34	0%	0%	0%
Forklift	165	2014	Diesel - Renewable	0.3	1	-	0%	625	0%	0%	0%
Forklift	190	2020	Diesel - Renewable	0.3	1	-	0%	321	0%	0%	0%
Forklift	59	Electric	Electric	0.3	1	-	0%	118	0%	0%	0%
Forklift	59	Electric	Electric	0.3	1	-	0%	78	0%	0%	0%
Forklift	160	Electric	Electric	0.3	2	-	0%	158	0%	0%	0%
Forklift	160	Electric	Electric	0.3	2	-	0%	72	0%	0%	0%
Rub-trd Gantry Crane	197	2011	Diesel - Electric - Renewable	0.2	1	-	0%	605	0%	0%	0%
Rub-trd Gantry Crane	302	2015	Diesel - Electric - Renewable	0.2	5	-	0%	4,784	0%	0%	0%
Rub-trd Gantry Crane	302	2028	Diesel - Electric - Renewable	0.2	2	-	0%	1,348	0%	0%	0%
Rub-trd Gantry Crane	302	2028	Diesel - Electric - Renewable	0.2	8	-	0%	3,658	0%	0%	0%
Rub-trd Gantry Crane	302	2028	Diesel - Electric - Renewable	0.2	4	-	0%	2,776	0%	0%	0%
Top handler	250	2018	Diesel - Renewable	0.59	1	-	0%	565	0%	0%	0%
Top handler	260	2022	Diesel - Renewable	0.59	5	-	0%	2,843	0%	0%	0%
Top handler	260	2023	Diesel - Renewable	0.59	6	-	0%	3,406	0%	0%	0%
Top handler	260	2024	Diesel - Renewable	0.59	14	-	0%	13,286	0%	0%	0%
Top handler	335	2027	Diesel - Renewable	0.59	3	-	0%	1,818	0%	0%	0%
Top handler	363	2017	Diesel - Renewable	0.59	6	-	0%	3,506	0%	0%	0%
Top handler	370	2014	Diesel - Renewable	0.59	1	-	0%	531	0%	0%	0%
Top handler	388	2017	Diesel - Renewable	0.59	2	-	0%	1,242	0%	0%	0%
Top handler	388	2021	Diesel - Renewable	0.59	1	-	0%	1,064	0%	0%	0%
Truck	250	2017	Diesel	0.51	2	-	0%	463	0%	0%	0%
Truck	250	2020	Diesel	0.51	2	-	0%	565	0%	0%	0%

Notes

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and B121-131 operations.

Operating Hours are only for B121-131 operations calculated by applying ratio of B121-131 throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 12/21/2023

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

2028 No Federal Action Scenario Mitigated- CHE Emission Factors

	Emission Factors (g/hp-hr)									
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	TOG
2028_Forklift_Diesel - Renewable_137_2023	0.068	2.791	0.124	0.009	0.008	0.005	585.973	0.024	0.005	0.069
2028_Forklift_Diesel - Renewable_152_2020	0.174	3.403	0.600	0.012	0.011	0.005	585.973	0.024	0.005	0.177
2028_Forklift_Diesel - Renewable_152_2021	0.200	3.557	0.398	0.013	0.012	0.005	585.973	0.024	0.005	0.204
2028_Forklift_Diesel - Renewable_160_2025	0.058	2.733	0.123	0.008	0.008	0.005	585.973	0.024	0.005	0.059
2028_Forklift_Diesel - Renewable_165_2014	0.369	3.557	2.059	0.062	0.057	0.005	585.973	0.024	0.005	0.375
2028_Forklift_Diesel - Renewable_190_2020	0.171	1.154	0.129	0.011	0.010	0.005	585.973	0.024	0.005	0.174
2028_Forklift_Electric_59_Electric	-	-	-	-	-	-	-	-	-	-
2028_Forklift_Electric_59_Electric	-	-	-	-	-	-	-	-	-	-
2028_Forklift_Electric_160_Electric	-	-	-	-	-	-	-	-	-	-
2028_Forklift_Electric_160_Electric	-	-	-	-	-	-	-	-	-	-
2028_Forklift_0_165_0	-	-	-	-	-	-	-	-	-	-
2028_Forklift_Electric_165_Electric	-	-	-	-	-	-	-	-	-	-
2028_Rub-trd Gantry Crane_Diesel - Electric - Renewable_197_2011	0.305	1.212	1.664	0.073	0.067	0.005	585.973	0.024	0.005	0.310
2028_Rub-trd Gantry Crane_Diesel - Electric - Renewable_302_2015	0.200	1.138	0.894	0.046	0.042	0.005	585.973	0.024	0.005	0.204
2028_Rub-trd Gantry Crane_Diesel - Electric - Renewable_302_2028	0.080	0.961	0.130	0.009	0.008	0.005	585.973	0.024	0.005	0.082
2028_Rub-trd Gantry Crane_Diesel - Electric - Renewable_302_2028	0.072	0.948	0.129	0.009	0.008	0.005	585.973	0.024	0.005	0.073
2028_Rub-trd Gantry Crane_Diesel - Electric - Renewable_302_2028	0.075	0.953	0.129	0.009	0.008	0.005	585.973	0.024	0.005	0.076
2028_Top handler_Diesel - Renewable_250_2018	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2028_Top handler_Diesel - Renewable_260_2022	0.197	1.205	0.132	0.012	0.011	0.005	585.973	0.024	0.005	0.201
2028_Top handler_Diesel - Renewable_260_2023	0.187	1.184	0.131	0.012	0.011	0.005	585.973	0.024	0.005	0.190
2028_Top handler_Diesel - Renewable_260_2024	0.200	1.210	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.203
2028_Top handler_Diesel - Renewable_335_2027	0.104	0.996	0.133	0.010	0.009	0.005	585.973	0.024	0.005	0.106
2028_Top handler_Diesel - Renewable_363_2017	0.200	1.138	0.254	0.029	0.026	0.005	585.973	0.024	0.005	0.204
2028_Top handler_Diesel - Renewable_370_2014	0.200	1.138	1.070	0.047	0.044	0.005	585.973	0.024	0.005	0.204
2028_Top handler_Diesel - Renewable_388_2017	0.200	1.138	0.254	0.029	0.026	0.005	585.973	0.024	0.005	0.204
2028_Top handler_Diesel - Renewable_388_2021	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2028_Truck_Diesel_250_2017	0.169	1.150	0.355	0.018	0.017	0.005	585.973	0.024	0.005	0.172
2028_Truck_Diesel_250_2020	0.160	1.132	0.128	0.011	0.010	0.005	585.973	0.024	0.005	0.163

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2036

2036 No Federal Action Scenario Mitigated - CHE equipment list

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for B121-131	Emission Controls (% reduction) PM	HC	CO
Forklift	137	Electric	Electric	0.3	2	-	0%	131	0%	0%	0%
Forklift	152	Electric	Electric	0.3	1	-	0%	428	0%	0%	0%
Forklift	152	Electric	Electric	0.3	2	-	0%	1,208	0%	0%	0%
Forklift	160	Electric	Electric	0.3	1	-	0%	45	0%	0%	0%
Forklift	165	Electric	Electric	0.3	1	-	0%	815	0%	0%	0%
Forklift	190	Electric	Electric	0.3	1	-	0%	418	0%	0%	0%
Forklift	59	Electric	Electric	0.3	1	-	0%	153	0%	0%	0%
Forklift	59	Electric	Electric	0.3	1	-	0%	102	0%	0%	0%
Forklift	160	Electric	Electric	0.3	2	-	0%	206	0%	0%	0%
Forklift	160	Electric	Electric	0.3	2	-	0%	94	0%	0%	0%
Rub-trd Gantry Crane	197	2035	Diesel - Electric - Renewable	0.2	1	-	0%	789	0%	0%	0%
Rub-trd Gantry Crane	302	2015	Diesel - Electric - Renewable	0.2	5	-	0%	6,242	0%	0%	0%
Rub-trd Gantry Crane	302	2028	Diesel - Electric - Renewable	0.2	2	-	0%	1,758	0%	0%	0%
Rub-trd Gantry Crane	302	2028	Diesel - Electric - Renewable	0.2	8	-	0%	4,772	0%	0%	0%
Rub-trd Gantry Crane	302	2028	Diesel - Electric - Renewable	0.2	4	-	0%	3,622	0%	0%	0%
Top handler	250	Electric	Electric	0.59	1	-	0%	738	0%	0%	0%
Top handler	260	Electric	Electric	0.59	5	-	0%	3,709	0%	0%	0%
Top handler	260	Electric	Electric	0.59	6	-	0%	4,444	0%	0%	0%
Top handler	260	Electric	Electric	0.59	14	-	0%	17,335	0%	0%	0%
Top handler	335	Electric	Electric	0.59	3	-	0%	2,372	0%	0%	0%
Top handler	363	Electric	Electric	0.59	6	-	0%	4,575	0%	0%	0%
Top handler	370	Electric	Electric	0.59	1	-	0%	693	0%	0%	0%
Top handler	388	Electric	Electric	0.59	2	-	0%	1,621	0%	0%	0%
Top handler	388	Electric	Electric	0.59	1	-	0%	1,388	0%	0%	0%
Truck	250	2029	Diesel	0.51	2	-	0%	604	0%	0%	0%
Truck	250	2032	Diesel	0.51	2	-	0%	737	0%	0%	0%
Truck	330	2032	Diesel	0.51	1	-	0%	237	0%	0%	0%
Truck	350	2026	Diesel	0.51	1	-	0%	401	0%	0%	0%
Yard tractor	158	Electric	Electric	0.39	30	-	0%	1,878	0%	0%	0%
Yard tractor	195	Electric	Electric	0.39	59	-	0%	46,607	0%	0%	0%
Yard tractor	195	Electric	Electric	0.39	40	-	0%	33,191	0%	0%	0%
Yard tractor	231	Electric	Electric	0.39	23	-	0%	13,913	0%	0%	0%

Notes

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and B121-131 operations.

Operating Hours are only for B121-131 operations calculated by applying ratio of B121-131 throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 12/21/2023

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

2036 No Federal Action Scenario Mitigated - CHE Emission Factors

	Emission Factors (g/hp-hr)									
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	TOG
2036_Forklift_Electric_137_Electric	-	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric_152_Electric	-	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric_152_Electric	-	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric_160_Electric	-	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric_165_Electric	-	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric_190_Electric	-	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric_59_Electric	-	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric_59_Electric	-	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric_160_Electric	-	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric_160_Electric	-	-	-	-	-	-	-	-	-	-
2036_Forklift_0_165_0	-	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric_165_Electric	-	-	-	-	-	-	-	-	-	-
2036_Rub-trd Gantry Crane_Diesel - Electric - Rene	0.102	1.018	0.121	0.010	0.009	0.005	585.973	0.024	0.005	0.104
2036_Rub-trd Gantry Crane_Diesel - Electric - Rene	0.200	1.138	0.894	0.046	0.042	0.005	585.973	0.024	0.005	0.204
2036_Rub-trd Gantry Crane_Diesel - Electric - Rene	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2036_Rub-trd Gantry Crane_Diesel - Electric - Rene	0.198	1.134	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.201
2036_Rub-trd Gantry Crane_Diesel - Electric - Rene	0.198	1.134	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.201
2036_Top handler_Electric_250_Electric	-	-	-	-	-	-	-	-	-	-
2036_Top handler_Electric_260_Electric	-	-	-	-	-	-	-	-	-	-
2036_Top handler_Electric_260_Electric	-	-	-	-	-	-	-	-	-	-
2036_Top handler_Electric_260_Electric	-	-	-	-	-	-	-	-	-	-
2036_Top handler_Electric_335_Electric	-	-	-	-	-	-	-	-	-	-
2036_Top handler_Electric_363_Electric	-	-	-	-	-	-	-	-	-	-
2036_Top handler_Electric_370_Electric	-	-	-	-	-	-	-	-	-	-
2036_Top handler_Electric_388_Electric	-	-	-	-	-	-	-	-	-	-
2036_Top handler_Electric_388_Electric	-	-	-	-	-	-	-	-	-	-
2036_Top handler_Electric_388_Electric	-	-	-	-	-	-	-	-	-	-
2036_Truck_Diesel_250_2029	0.130	1.073	0.124	0.010	0.010	0.005	585.973	0.024	0.005	0.132
2036_Truck_Diesel_250_2032	0.112	1.038	0.122	0.010	0.009	0.005	585.973	0.024	0.005	0.114
2036_Truck_Diesel_330_2032	0.090	0.975	0.131	0.009	0.009	0.005	585.973	0.024	0.005	0.091
2036_Truck_Diesel_350_2026	0.191	1.125	0.145	0.012	0.011	0.005	585.973	0.024	0.005	0.195
2036_Truck_0_280_0	-	-	-	-	-	-	-	-	-	-
2036_Yard tractor_Electric_158_Electric	-	-	-	-	-	-	-	-	-	-
2036_Yard tractor_Electric_195_Electric	-	-	-	-	-	-	-	-	-	-
2036_Yard tractor_Electric_195_Electric	-	-	-	-	-	-	-	-	-	-
2036_Yard tractor_Electric_195_Electric	-	-	-	-	-	-	-	-	-	-
2036_Yard tractor_Electric_231_Electric	-	-	-	-	-	-	-	-	-	-

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2050

2050 No Federal Action Scenario Mitigated - CHE equipment list

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for B121-131	Emission Controls (% reduction) PM	HC	CO
Forklift	137	Electric	Electric	0.3	2	-	0%	198	0%	0%	0%
Forklift	152	Electric	Electric	0.3	1	-	0%	648	0%	0%	0%
Forklift	152	Electric	Electric	0.3	2	-	0%	1,827	0%	0%	0%
Forklift	160	Electric	Electric	0.3	1	-	0%	68	0%	0%	0%
Forklift	165	Electric	Electric	0.3	1	-	0%	1,233	0%	0%	0%
Forklift	190	Electric	Electric	0.3	1	-	0%	633	0%	0%	0%
Forklift	59	Electric	Electric	0.3	1	-	0%	232	0%	0%	0%
Forklift	59	Electric	Electric	0.3	1	-	0%	154	0%	0%	0%
Forklift	160	Electric	Electric	0.3	2	-	0%	311	0%	0%	0%
Forklift	160	Electric	Electric	0.3	2	-	0%	142	0%	0%	0%
Rub-trd Gantry Crane	197	2035	Diesel - Electric - Renewable	0.2	1	-	0%	1,193	0%	0%	0%
Rub-trd Gantry Crane	302	2039	Diesel - Electric - Renewable	0.2	5	-	0%	9,441	0%	0%	0%
Rub-trd Gantry Crane	302	2028	Diesel - Electric - Renewable	0.2	2	-	0%	2,660	0%	0%	0%
Rub-trd Gantry Crane	302	2028	Diesel - Electric - Renewable	0.2	8	-	0%	7,219	0%	0%	0%
Rub-trd Gantry Crane	302	2028	Diesel - Electric - Renewable	0.2	4	-	0%	5,478	0%	0%	0%
Top handler	250	Electric	Electric	0.59	1	-	0%	1,116	0%	0%	0%
Top handler	260	Electric	Electric	0.59	5	-	0%	5,610	0%	0%	0%
Top handler	260	Electric	Electric	0.59	6	-	0%	6,723	0%	0%	0%
Top handler	260	Electric	Electric	0.59	14	-	0%	26,220	0%	0%	0%
Top handler	335	Electric	Electric	0.59	3	-	0%	3,587	0%	0%	0%
Top handler	363	Electric	Electric	0.59	6	-	0%	6,920	0%	0%	0%
Top handler	370	Electric	Electric	0.59	1	-	0%	1,047	0%	0%	0%
Top handler	388	Electric	Electric	0.59	2	-	0%	2,451	0%	0%	0%
Top handler	388	Electric	Electric	0.59	1	-	0%	2,099	0%	0%	0%
Truck	250	2041	Diesel	0.51	2	-	0%	914	0%	0%	0%
Truck	250	2044	Diesel	0.51	2	-	0%	1,115	0%	0%	0%
Truck	330	2044	Diesel	0.51	1	-	0%	359	0%	0%	0%
Truck	350	2038	Diesel	0.51	1	-	0%	606	0%	0%	0%
Yard tractor	158	Electric	Electric	0.39	30	-	0%	2,840	0%	0%	0%
Yard tractor	195	Electric	Electric	0.39	35	-	0%	28,717	0%	0%	0%
Yard tractor	195	Electric	Electric	0.39	59	-	0%	70,497	0%	0%	0%
Yard tractor	195	Electric	Electric	0.39	40	-	0%	50,204	0%	0%	0%
Yard tractor	231	Electric	Electric	0.39	23	-	0%	21,044	0%	0%	0%

Notes

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and B121-131 operations.

Operating Hours are only for B121-131 operations calculated by applying ratio of B121-131 throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 12/21/2023

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

2050 No Federal Action Scenario Mitigated - CHE Emission Factors

	Emission Factors (g/hp-hr)									
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	TOG
2050_Forklift_Electric_137_Electric	-	-	-	-	-	-	-	-	-	-
2050_Forklift_Electric_152_Electric	-	-	-	-	-	-	-	-	-	-
2050_Forklift_Electric_152_Electric	-	-	-	-	-	-	-	-	-	-
2050_Forklift_Electric_160_Electric	-	-	-	-	-	-	-	-	-	-
2050_Forklift_Electric_165_Electric	-	-	-	-	-	-	-	-	-	-
2050_Forklift_Electric_190_Electric	-	-	-	-	-	-	-	-	-	-
2050_Forklift_Electric_59_Electric	-	-	-	-	-	-	-	-	-	-
2050_Forklift_Electric_59_Electric	-	-	-	-	-	-	-	-	-	-
2050_Forklift_Electric_160_Electric	-	-	-	-	-	-	-	-	-	-
2050_Forklift_Electric_160_Electric	-	-	-	-	-	-	-	-	-	-
2050_Forklift_0_165_0	-	-	-	-	-	-	-	-	-	-
2050_Forklift_Electric_165_Electric	-	-	-	-	-	-	-	-	-	-
2050_Rub-trd Gantry Crane_Diesel - Electric - Renewable_197_2035	0.200	1.212	0.133	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Rub-trd Gantry Crane_Diesel - Electric - Renewable_302_2039	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Rub-trd Gantry Crane_Diesel - Electric - Renewable_302_2028	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Rub-trd Gantry Crane_Diesel - Electric - Renewable_302_2028	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Rub-trd Gantry Crane_Diesel - Electric - Renewable_302_2028	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Top handler_Electric_250_Electric	-	-	-	-	-	-	-	-	-	-
2050_Top handler_Electric_260_Electric	-	-	-	-	-	-	-	-	-	-
2050_Top handler_Electric_260_Electric	-	-	-	-	-	-	-	-	-	-
2050_Top handler_Electric_260_Electric	-	-	-	-	-	-	-	-	-	-
2050_Top handler_Electric_335_Electric	-	-	-	-	-	-	-	-	-	-
2050_Top handler_Electric_363_Electric	-	-	-	-	-	-	-	-	-	-
2050_Top handler_Electric_370_Electric	-	-	-	-	-	-	-	-	-	-
2050_Top handler_Electric_388_Electric	-	-	-	-	-	-	-	-	-	-
2050_Top handler_Electric_388_Electric	-	-	-	-	-	-	-	-	-	-
2050_Truck_Diesel_250_2041	0.150	1.111	0.127	0.011	0.010	0.005	585.973	0.024	0.005	0.152
2050_Truck_Diesel_250_2044	0.136	1.085	0.125	0.010	0.010	0.005	585.973	0.024	0.005	0.138
2050_Truck_Diesel_330_2044	0.105	0.997	0.133	0.010	0.009	0.005	585.973	0.024	0.005	0.107
2050_Truck_Diesel_350_2038	0.200	1.138	0.146	0.012	0.011	0.005	585.973	0.024	0.005	0.204
2050_Truck_0_280_0	-	-	-	-	-	-	-	-	-	-
2050_Yard tractor_Electric_158_Electric	-	-	-	-	-	-	-	-	-	-
2050_Yard tractor_Electric_195_Electric	-	-	-	-	-	-	-	-	-	-
2050_Yard tractor_Electric_195_Electric	-	-	-	-	-	-	-	-	-	-
2050_Yard tractor_Electric_195_Electric	-	-	-	-	-	-	-	-	-	-
2050_Yard tractor_Electric_231_Electric	-	-	-	-	-	-	-	-	-	-

Ocean-Going Vessels (OGVs)

OGV Vessel Zone Descriptions

Zone	Zone Description
5	Fairway: AQMD Overwater Boundary to 20-Mile
4	Fairway: 20-Mile to Precautionary Area
3	Precautionary Area
2	Manuevering
1	Berth
Anchorage	Anchorage

OGV Emission Factor Adjustment (EFA) for Propulsion Engines

	PM	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	N2O	CH4
Vessels without Slide Valves	1.0	1.0	1.0	1.0	1.0	0.44	1.0	1.0	1.0	1.0	1.0
Vessels with Slide Valves	1.0	1.0	1.0	1.0	1.0	0.59	0.43	0.43	1.0	1.0	1.0

OGV Load Adjustment Factors (LAF) for MAN 2-Stroke Propulsion Engines without Slide Valves

Load	PM	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	N2O	CH4
1%	0.84	0.84	0.84	1.91	1.10	0.61	2.53	2.53	1.10	1.91	2.53
2%	0.83	0.83	0.83	1.86	1.10	0.60	2.45	2.45	1.10	1.86	2.45
3%	0.83	0.83	0.83	1.82	1.09	0.59	2.37	2.37	1.09	1.82	2.37
4%	0.82	0.82	0.82	1.77	1.09	0.59	2.30	2.30	1.09	1.77	2.30
5%	0.82	0.82	0.82	1.72	1.09	0.58	2.23	2.23	1.09	1.72	2.23
6%	0.81	0.81	0.81	1.68	1.08	0.57	2.16	2.16	1.08	1.68	2.16
7%	0.81	0.81	0.81	1.64	1.08	0.56	2.10	2.10	1.08	1.64	2.10
8%	0.80	0.80	0.80	1.60	1.08	0.55	2.03	2.03	1.08	1.60	2.03
9%	0.80	0.80	0.80	1.56	1.07	0.55	1.97	1.97	1.07	1.56	1.97
10%	0.79	0.79	0.79	1.52	1.07	0.55	1.91	1.91	1.07	1.52	1.91
11%	0.79	0.79	0.79	1.49	1.07	0.54	1.86	1.86	1.07	1.49	1.86
12%	0.78	0.78	0.78	1.45	1.07	0.53	1.80	1.80	1.07	1.45	1.80
13%	0.78	0.78	0.78	1.42	1.06	0.53	1.75	1.75	1.06	1.42	1.75
14%	0.78	0.78	0.78	1.39	1.06	0.52	1.70	1.70	1.06	1.39	1.70
15%	0.77	0.77	0.77	1.36	1.06	0.52	1.65	1.65	1.06	1.36	1.65
16%	0.77	0.77	0.77	1.33	1.06	0.51	1.61	1.61	1.06	1.33	1.61
17%	0.77	0.77	0.77	1.30	1.05	0.51	1.56	1.56	1.05	1.30	1.56
18%	0.77	0.77	0.77	1.28	1.05	0.51	1.52	1.52	1.05	1.28	1.52
19%	0.76	0.76	0.76	1.25	1.05	0.50	1.48	1.48	1.05	1.25	1.48
20%	0.76	0.76	0.76	1.23	1.05	0.50	1.44	1.44	1.05	1.23	1.44
21%	0.76	0.76	0.76	1.20	1.04	0.50	1.41	1.41	1.04	1.20	1.41
22%	0.76	0.76	0.76	1.18	1.04	0.49	1.37	1.37	1.04	1.18	1.37
23%	0.76	0.76	0.76	1.16	1.04	0.49	1.34	1.34	1.04	1.16	1.34
24%	0.75	0.75	0.75	1.14	1.04	0.48	1.31	1.31	1.04	1.14	1.31
25%	0.75	0.75	0.75	1.12	1.03	0.48	1.28	1.28	1.03	1.12	1.28
26%	0.75	0.75	0.75	1.11	1.03	0.48	1.25	1.25	1.03	1.11	1.25
27%	0.75	0.75	0.75	1.09	1.03	0.48	1.22	1.22	1.03	1.09	1.22
28%	0.75	0.75	0.75	1.07	1.03	0.48	1.20	1.20	1.03	1.07	1.20
29%	0.75	0.75	0.75	1.06	1.03	0.47	1.17	1.17	1.03	1.06	1.17
30%	0.75	0.75	0.75	1.05	1.02	0.47	1.15	1.15	1.02	1.05	1.15
31%	0.75	0.75	0.75	1.03	1.02	0.47	1.13	1.13	1.02	1.03	1.13
32%	0.75	0.75	0.75	1.02	1.02	0.47	1.11	1.11	1.02	1.02	1.11
33%	0.75	0.75	0.75	1.01	1.02	0.46	1.09	1.09	1.02	1.01	1.09
34%	0.75	0.75	0.75	1.00	1.02	0.46	1.08	1.08	1.02	1.00	1.08
35%	0.76	0.76	0.76	0.99	1.02	0.46	1.06	1.06	1.02	0.99	1.06
36%	0.76	0.76	0.76	0.98	1.01	0.46	1.05	1.05	1.01	0.98	1.05
37%	0.76	0.76	0.76	0.98	1.01	0.45	1.04	1.04	1.01	0.98	1.04
38%	0.76	0.76	0.76	0.97	1.01	0.45	1.02	1.02	1.01	0.97	1.02
39%	0.76	0.76	0.76	0.96	1.01	0.45	1.01	1.01	1.01	0.96	1.01
40%	0.76	0.76	0.76	0.96	1.01	0.45	1.00	1.00	1.01	0.96	1.00
41%	0.77	0.77	0.77	0.95	1.01	0.44	0.99	0.99	1.01	0.95	0.99
42%	0.77	0.77	0.77	0.95	1.01	0.44	0.99	0.99	1.01	0.95	0.99
43%	0.77	0.77	0.77	0.94	1.01	0.44	0.98	0.98	1.01	0.94	0.98
44%	0.78	0.78	0.78	0.94	1.00	0.44	0.97	0.97	1.00	0.94	0.97
45%	0.78	0.78	0.78	0.94	1.00	0.44	0.97	0.97	1.00	0.94	0.97
46%	0.78	0.78	0.78	0.94	1.00	0.44	0.96	0.96	1.00	0.94	0.96
47%	0.79	0.79	0.79	0.94	1.00	0.44	0.96	0.96	1.00	0.94	0.96
48%	0.79	0.79	0.79	0.93	1.00	0.43	0.96	0.96	1.00	0.93	0.96
49%	0.79	0.79	0.79	0.93	1.00	0.43	0.96	0.96	1.00	0.93	0.96
50%	0.80	0.80	0.80	0.93	1.00	0.43	0.96	0.96	1.00	0.93	0.96
51%	0.80	0.80	0.80	0.94	1.00	0.43	0.95	0.95	1.00	0.94	0.95
52%	0.81	0.81	0.81	0.94	1.00	0.43	0.95	0.95	1.00	0.94	0.95
53%	0.81	0.81	0.81	0.94	1.00	0.42	0.95	0.95	1.00	0.94	0.95
54%	0.82	0.82	0.82	0.94	1.00	0.42	0.95	0.95	1.00	0.94	0.95
55%	0.82	0.82	0.82	0.94	0.99	0.42	0.96	0.96	0.99	0.94	0.96
56%	0.83	0.83	0.83	0.94	0.99	0.42	0.96	0.96	0.99	0.94	0.96
57%	0.84	0.84	0.84	0.95	0.99	0.42	0.96	0.96	0.99	0.95	0.96
58%	0.84	0.84	0.84	0.95	0.99	0.42	0.96	0.96	0.99	0.95	0.96
59%	0.85	0.85	0.85	0.95	0.99	0.41	0.96	0.96	0.99	0.95	0.96
60%	0.86	0.86	0.86	0.95	0.99	0.41	0.97	0.97	0.99	0.95	0.97
61%	0.86	0.86	0.86	0.96	0.99	0.41	0.97	0.97	0.99	0.96	0.97
62%	0.87	0.87	0.87	0.96	0.99	0.41	0.97	0.97	0.99	0.96	0.97
63%	0.88	0.88	0.88	0.96	0.99	0.41	0.98	0.98	0.99	0.96	0.98
64%	0.89	0.89	0.89	0.97	0.99	0.41	0.98	0.98	0.99	0.97	0.98
65%	0.89	0.89	0.89	0.97	0.99	0.40	0.98	0.98	0.99	0.97	0.98

66%	0.90	0.90	0.90	0.98	0.99	0.40	0.99	0.99	0.99	0.98	0.99
67%	0.91	0.91	0.91	0.98	0.99	0.40	0.99	0.99	0.99	0.98	0.99
68%	0.92	0.92	0.92	0.98	0.99	0.40	0.99	0.99	0.99	0.98	0.99
69%	0.93	0.93	0.93	0.99	0.99	0.40	1.00	1.00	0.99	0.99	1.00
70%	0.94	0.94	0.94	0.99	0.99	0.40	1.00	1.00	0.99	0.99	1.00
71%	0.94	0.94	0.94	0.99	0.99	0.40	1.00	1.00	0.99	0.99	1.00
72%	0.95	0.95	0.95	1.00	0.99	0.40	1.01	1.01	0.99	1.00	1.01
73%	0.96	0.96	0.96	1.00	0.99	0.40	1.01	1.01	0.99	1.00	1.01
74%	0.97	0.97	0.97	1.00	0.99	0.40	1.01	1.01	0.99	1.00	1.01
75%	0.98	0.98	0.98	1.01	0.99	0.40	1.01	1.01	0.99	1.01	1.01
76%	0.99	0.99	0.99	1.01	0.99	0.40	1.01	1.01	0.99	1.01	1.01
77%	1.00	1.00	1.00	1.01	0.99	0.40	1.01	1.01	0.99	1.01	1.01
78%	1.01	1.01	1.01	1.01	0.99	0.40	1.01	1.01	0.99	1.01	1.01
79%	1.03	1.03	1.03	1.02	0.99	0.40	1.01	1.01	0.99	1.02	1.01
80%	1.04	1.04	1.04	1.02	0.99	0.40	1.01	1.01	0.99	1.02	1.01
81%	1.05	1.05	1.05	1.02	0.99	0.40	1.01	1.01	0.99	1.02	1.01
82%	1.06	1.06	1.06	1.02	0.99	0.40	1.01	1.01	0.99	1.02	1.01
83%	1.07	1.07	1.07	1.02	0.99	0.40	1.01	1.01	0.99	1.02	1.01
84%	1.08	1.08	1.08	1.02	0.99	0.40	1.00	1.00	0.99	1.02	1.00
85%	1.10	1.10	1.10	1.02	0.99	0.40	1.00	1.00	0.99	1.02	1.00
86%	1.11	1.11	1.11	1.02	0.99	0.41	0.99	0.99	0.99	1.02	0.99
87%	1.12	1.12	1.12	1.02	0.99	0.41	0.99	0.99	0.99	1.02	0.99
88%	1.13	1.13	1.13	1.02	0.99	0.41	0.98	0.98	0.99	1.02	0.98
89%	1.15	1.15	1.15	1.01	0.99	0.42	0.97	0.97	0.99	1.01	0.97
90%	1.16	1.16	1.16	1.01	0.99	0.42	0.97	0.97	0.99	1.01	0.97
91%	1.17	1.17	1.17	1.01	1.00	0.42	0.96	0.96	1.00	1.01	0.96
92%	1.19	1.19	1.19	1.00	1.00	0.43	0.94	0.94	1.00	1.00	0.94
93%	1.20	1.20	1.20	1.00	1.00	0.43	0.93	0.93	1.00	1.00	0.93
94%	1.22	1.22	1.22	0.99	1.00	0.44	0.92	0.92	1.00	0.99	0.92
95%	1.23	1.23	1.23	0.99	1.00	0.44	0.91	0.91	1.00	0.99	0.91
96%	1.24	1.24	1.24	0.98	1.00	0.45	0.89	0.89	1.00	0.98	0.89
97%	1.26	1.26	1.26	0.97	1.00	0.45	0.87	0.87	1.00	0.97	0.87
98%	1.28	1.28	1.28	0.97	1.00	0.46	0.86	0.86	1.00	0.97	0.86
99%	1.29	1.29	1.29	0.96	1.00	0.47	0.84	0.84	1.00	0.96	0.84
100%	1.31	1.31	1.31	0.95	1.00	0.48	0.82	0.82	1.00	0.95	0.82

OGV Load Adjustment Factors (LAF) for MAN 2-Stroke Propulsion Engines with Slide Valves

Load	PM	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	N2O	CH4
1%	0.36	0.36	0.36	1.90	1.10	0.07	0.58	0.58	1.10	1.90	1.36
2%	0.37	0.37	0.37	1.86	1.10	0.07	0.57	0.57	1.10	1.86	1.32
3%	0.38	0.38	0.38	1.82	1.09	0.07	0.55	0.55	1.09	1.82	1.28
4%	0.38	0.38	0.38	1.78	1.09	0.07	0.53	0.53	1.09	1.78	1.24
5%	0.39	0.39	0.39	1.74	1.09	0.07	0.52	0.52	1.09	1.74	1.20
6%	0.40	0.40	0.40	1.70	1.08	0.07	0.50	0.50	1.08	1.70	1.17
7%	0.41	0.41	0.41	1.67	1.08	0.07	0.49	0.49	1.08	1.67	1.14
8%	0.41	0.41	0.41	1.63	1.08	0.07	0.48	0.48	1.08	1.63	1.11
9%	0.42	0.42	0.42	1.60	1.07	0.07	0.46	0.46	1.07	1.60	1.08
10%	0.43	0.43	0.43	1.57	1.07	0.07	0.45	0.45	1.07	1.57	1.05
11%	0.44	0.44	0.44	1.53	1.07	0.15	0.44	0.44	1.07	1.53	1.02
12%	0.45	0.45	0.45	1.50	1.07	0.23	0.43	0.43	1.07	1.50	0.99
13%	0.45	0.45	0.45	1.47	1.06	0.31	0.42	0.42	1.06	1.47	0.97
14%	0.46	0.46	0.46	1.45	1.06	0.38	0.40	0.40	1.06	1.45	0.94
15%	0.47	0.47	0.47	1.42	1.06	0.44	0.40	0.40	1.06	1.42	0.92
16%	0.48	0.48	0.48	1.39	1.06	0.50	0.39	0.39	1.06	1.39	0.90
17%	0.49	0.49	0.49	1.37	1.05	0.56	0.38	0.38	1.05	1.37	0.88
18%	0.49	0.49	0.49	1.34	1.05	0.61	0.37	0.37	1.05	1.34	0.86
19%	0.50	0.50	0.50	1.32	1.05	0.66	0.36	0.36	1.05	1.32	0.84
20%	0.51	0.51	0.51	1.30	1.05	0.71	0.35	0.35	1.05	1.30	0.82
21%	0.52	0.52	0.52	1.28	1.04	0.75	0.35	0.35	1.04	1.28	0.81
22%	0.53	0.53	0.53	1.26	1.04	0.79	0.34	0.34	1.04	1.26	0.79
23%	0.54	0.54	0.54	1.24	1.04	0.83	0.34	0.34	1.04	1.24	0.78
24%	0.54	0.54	0.54	1.22	1.04	0.86	0.33	0.33	1.04	1.22	0.76
25%	0.55	0.55	0.55	1.20	1.03	0.89	0.32	0.32	1.03	1.20	0.75
26%	0.56	0.56	0.56	1.19	1.03	0.91	0.32	0.32	1.03	1.19	0.74
27%	0.57	0.57	0.57	1.17	1.03	0.94	0.31	0.31	1.03	1.17	0.73
28%	0.58	0.58	0.58	1.16	1.03	0.96	0.31	0.31	1.03	1.16	0.72
29%	0.59	0.59	0.59	1.14	1.03	0.98	0.31	0.31	1.03	1.14	0.71
30%	0.60	0.60	0.60	1.13	1.02	0.99	0.30	0.30	1.02	1.13	0.70
31%	0.60	0.60	0.60	1.12	1.02	1.00	0.30	0.30	1.02	1.12	0.70
32%	0.61	0.61	0.61	1.10	1.02	1.01	0.30	0.30	1.02	1.10	0.69
33%	0.62	0.62	0.62	1.09	1.02	1.03	0.30	0.30	1.02	1.09	0.69
34%	0.63	0.63	0.63	1.08	1.02	1.03	0.29	0.29	1.02	1.08	0.68

35%	0.64	0.64	0.64	1.07	1.02	1.03	0.29	0.29	1.02	1.07	0.68
36%	0.65	0.65	0.65	1.06	1.01	1.03	0.29	0.29	1.01	1.06	0.68
37%	0.66	0.66	0.66	1.05	1.01	1.03	0.29	0.29	1.01	1.05	0.67
38%	0.67	0.67	0.67	1.05	1.01	1.03	0.29	0.29	1.01	1.05	0.67
39%	0.68	0.68	0.68	1.04	1.01	1.03	0.29	0.29	1.01	1.04	0.67
40%	0.69	0.69	0.69	1.03	1.01	1.02	0.29	0.29	1.01	1.03	0.67
41%	0.70	0.70	0.70	1.03	1.01	1.01	0.29	0.29	1.01	1.03	0.67
42%	0.70	0.70	0.70	1.02	1.01	1.01	0.29	0.29	1.01	1.02	0.68
43%	0.71	0.71	0.71	1.02	1.01	1.00	0.29	0.29	1.01	1.02	0.68
44%	0.72	0.72	0.72	1.01	1.00	0.99	0.29	0.29	1.00	1.01	0.68
45%	0.73	0.73	0.73	1.01	1.00	0.97	0.30	0.30	1.00	1.01	0.69
46%	0.74	0.74	0.74	1.00	1.00	0.96	0.30	0.30	1.00	1.00	0.69
47%	0.75	0.75	0.75	1.00	1.00	0.94	0.30	0.30	1.00	1.00	0.70
48%	0.76	0.76	0.76	1.00	1.00	0.93	0.30	0.30	1.00	1.00	0.70
49%	0.77	0.77	0.77	0.99	1.00	0.91	0.31	0.31	1.00	0.99	0.71
50%	0.78	0.78	0.78	0.99	1.00	0.89	0.31	0.31	1.00	0.99	0.71
51%	0.79	0.79	0.79	0.99	1.00	0.87	0.31	0.31	1.00	0.99	0.72
52%	0.80	0.80	0.80	0.99	1.00	0.86	0.31	0.31	1.00	0.99	0.73
53%	0.81	0.81	0.81	0.99	1.00	0.83	0.32	0.32	1.00	0.99	0.74
54%	0.82	0.82	0.82	0.99	1.00	0.81	0.32	0.32	1.00	0.99	0.75
55%	0.83	0.83	0.83	0.98	0.99	0.80	0.32	0.32	0.99	0.98	0.75
56%	0.84	0.84	0.84	0.98	0.99	0.77	0.33	0.33	0.99	0.98	0.76
57%	0.85	0.85	0.85	0.98	0.99	0.75	0.33	0.33	0.99	0.98	0.77
58%	0.86	0.86	0.86	0.98	0.99	0.73	0.34	0.34	0.99	0.98	0.78
59%	0.87	0.87	0.87	0.98	0.99	0.71	0.34	0.34	0.99	0.98	0.80
60%	0.88	0.88	0.88	0.98	0.99	0.68	0.35	0.35	0.99	0.98	0.81
61%	0.89	0.89	0.89	0.98	0.99	0.67	0.35	0.35	0.99	0.98	0.82
62%	0.90	0.90	0.90	0.98	0.99	0.64	0.36	0.36	0.99	0.98	0.83
63%	0.91	0.91	0.91	0.99	0.99	0.63	0.36	0.36	0.99	0.99	0.84
64%	0.92	0.92	0.92	0.99	0.99	0.60	0.37	0.37	0.99	0.99	0.85
65%	0.93	0.93	0.93	0.99	0.99	0.58	0.37	0.37	0.99	0.99	0.87
66%	0.94	0.94	0.94	0.99	0.99	0.56	0.38	0.38	0.99	0.99	0.88
67%	0.95	0.95	0.95	0.99	0.99	0.54	0.38	0.38	0.99	0.99	0.89
68%	0.97	0.97	0.97	0.99	0.99	0.52	0.39	0.39	0.99	0.99	0.91
69%	0.98	0.98	0.98	0.99	0.99	0.50	0.40	0.40	0.99	0.99	0.92
70%	0.99	0.99	0.99	0.99	0.99	0.48	0.40	0.40	0.99	0.99	0.93
71%	1.00	1.00	1.00	0.99	0.99	0.47	0.41	0.41	0.99	0.99	0.95
72%	1.01	1.01	1.01	0.99	0.99	0.45	0.41	0.41	0.99	0.99	0.96
73%	1.02	1.02	1.02	0.99	0.99	0.44	0.42	0.42	0.99	0.99	0.98
74%	1.03	1.03	1.03	0.99	0.99	0.42	0.43	0.43	0.99	0.99	0.99
75%	1.04	1.04	1.04	0.99	0.99	0.41	0.43	0.43	0.99	0.99	1.00
76%	1.05	1.05	1.05	0.99	0.99	0.39	0.44	0.44	0.99	0.99	1.02
77%	1.06	1.06	1.06	0.99	0.99	0.38	0.44	0.44	0.99	0.99	1.03
78%	1.07	1.07	1.07	0.99	0.99	0.37	0.45	0.45	0.99	0.99	1.05
79%	1.09	1.09	1.09	0.99	0.99	0.36	0.46	0.46	0.99	0.99	1.06
80%	1.10	1.10	1.10	0.99	0.99	0.35	0.46	0.46	0.99	0.99	1.08
81%	1.11	1.11	1.11	0.99	0.99	0.34	0.47	0.47	0.99	0.99	1.09
82%	1.12	1.12	1.12	0.99	0.99	0.34	0.47	0.47	0.99	0.99	1.10
83%	1.13	1.13	1.13	0.98	0.99	0.34	0.48	0.48	0.99	0.98	1.12
84%	1.14	1.14	1.14	0.98	0.99	0.33	0.49	0.49	0.99	0.98	1.13
85%	1.15	1.15	1.15	0.98	0.99	0.33	0.49	0.49	0.99	0.98	1.15
86%	1.16	1.16	1.16	0.98	0.99	0.33	0.50	0.50	0.99	0.98	1.16
87%	1.18	1.18	1.18	0.97	0.99	0.33	0.51	0.51	0.99	0.97	1.18
88%	1.19	1.19	1.19	0.97	0.99	0.34	0.51	0.51	0.99	0.97	1.19
89%	1.20	1.20	1.20	0.96	0.99	0.34	0.52	0.52	0.99	0.96	1.20
90%	1.21	1.21	1.21	0.96	0.99	0.35	0.52	0.52	0.99	0.96	1.22
91%	1.22	1.22	1.22	0.95	1.00	0.36	0.53	0.53	1.00	0.95	1.23
92%	1.23	1.23	1.23	0.95	1.00	0.37	0.53	0.53	1.00	0.95	1.24
93%	1.25	1.25	1.25	0.94	1.00	0.38	0.54	0.54	1.00	0.94	1.25
94%	1.26	1.26	1.26	0.93	1.00	0.40	0.55	0.55	1.00	0.93	1.27
95%	1.27	1.27	1.27	0.93	1.00	0.41	0.55	0.55	1.00	0.93	1.28
96%	1.28	1.28	1.28	0.92	1.00	0.43	0.55	0.55	1.00	0.92	1.29
97%	1.29	1.29	1.29	0.91	1.00	0.45	0.56	0.56	1.00	0.91	1.30
98%	1.31	1.31	1.31	0.90	1.00	0.48	0.56	0.56	1.00	0.90	1.31
99%	1.32	1.32	1.32	0.89	1.00	0.50	0.57	0.57	1.00	0.89	1.32
100%	1.33	1.33	1.33	0.88	1.00	0.53	0.58	0.58	1.00	0.88	1.34

OGV Main Engine Load Defaults, kW

Vessel Type	Year	Age	DWT (tonnes)	Max Speed (knots)	Main Eng (kW)
Auto Carrier	2007	12	21,405	20.0	13,668
Container - 1000	2007	12	28,219	21.3	19,619
Container - 2000	2002	17	35,858	21.6	21,671
Container - 3000	2008	11	42,048	22.0	30,739
Container - 4000	2008	11	63,500	23.8	47,105
Container - 5000	1999	20	66,720	24.6	48,691
Container - 6000	2008	11	78,779	24.9	56,542
Container - 7000	2006	13	82,470	25.0	58,318
Container - 8000	2010	9	101,813	25.1	65,074
Container - 9000	2011	8	109,979	24.0	58,820
Container - 10000	2014	5	121,790	23.6	58,027
Container - 11000	2010	9	123,603	24.3	59,664
Container - 12000	2011	8	146,113	25.3	72,239
Container - 13000	2012	7	147,232	24.2	67,885
Container - 14000	2015	4	153,674	23.8	60,409
Container - 17000	2008	11	156,257	24.5	80,903
Container - 19000	2016	3	201,792	19.0	60,849
Cruise	2004	15	6,642	20.2	46,415
General Cargo	2007	12	45,504	14.9	8,607
Ocean Tugboat (ATB/ITB)	2006	13	2,510	15.0	6,429
Miscellaneous	1985	34	3,697	14.9	9,118
Reefer	1993	26	14,172	20.6	12,351
RoRo	2014	5	24,750	20.0	19,040
Tanker - Chemical	2012	7	45,682	14.6	8,285
Tanker - Handysize	2006	13	46,120	15.1	9,080
Tanker - Panamax	2006	13	71,568	14.9	11,396
Tanker - Aframax	2019	0	na	14.4	13,500

OGV Auxiliary Engine Load Defaults by Mode, kW

Vessel Type	Transit	Maneuvering	Berth Hotelling	Anchorage Hotelling
Auto Carrier	520	1,238	859	622
Container - 1000	545	1,058	429	1,000
Container - 2000	968	2,099	966	942
Container - 3000	602	2,063	516	559
Container - 4000	1,454	2,314	1,148	1,124
Container - 5000	1,811	3,293	945	967
Container - 6000	1,509	2,237	1,039	1,464
Container - 7000	1,498	2,445	1,225	884
Container - 8000	1,544	2,666	980	1,055
Container - 9000	1,514	2,864	1,061	996
Container - 10000	1,757	2,210	1,163	1,051
Container - 11000	2,213	2,944	1,341	1,684
Container - 12000	2,460	3,300	1,780	2,000
Container - 13000	1,664	2,450	1,231	1,224
Container - 14000	1,507	2,076	1,148	1,156
Container - 17000	1,483	1,994	1,000	1,000
Container - 19000	1,933	2,100	1,400	1,600
Cruise	na	na	na	na
General Cargo	516	1,439	722	180
Ocean Tug (ATB/ITB)	79	208	102	79
Miscellaneous	643	597	228	200
Reefer	828	1,534	1,087	828
RoRo	434	1,301	751	434
Tanker - Chemical	658	890	816	402
Tanker - Handysize	537	601	820	560
Tanker - Panamax	561	763	623	379
Tanker - Aframax	576	719	724	474

OGV Auxiliary Boiler Load Defaults by Mode, kW

Vessel Type	Transit	Maneuvering	Berth Hotelling	Anchorage Hotelling
Auto Carrier	87	184	314	305
Container - 1000	106	213	273	270
Container - 2000	149	284	352	350
Container - 3000	164	328	420	416
Container - 4000	179	333	449	446
Container - 5000	247	473	579	572
Container - 6000	206	520	597	595
Container - 7000	412	639	678	677
Container - 8000	253	521	653	703
Container - 9000	341	526	619	618
Container - 10000	314	383	511	511
Container - 11000	315	517	694	694
Container - 12000	330	575	790	790
Container - 13000	227	317	565	560
Container - 14000	251	481	354	495
Container - 17000	216	485	585	585
Container - 19000	460	726	761	761
Cruise	282	361	612	306
General Cargo	56	124	160	160
Ocean Tug (ATB/ITB)	0	0	0	0
Miscellaneous	33	65	96	96
Reefer	95	191	285	285
RoRo	67	148	259	251
Tanker - Chemical	59	136	568	255
Tanker - Handysize	144	144	2,586	144
Tanker - Panamax	167	351	3,421	451
Tanker - Aframax	179	438	5,030	375

OGV Emission Factors in Grams per Kilowatt Hour (g/kW-hr)

Engine Type	Engine	IMO Tier	Model Year	Sulfur%	PM	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Slow Speed Diesel	Tier 0	≤1999	0.1	0.184	0.169	0.184	17.000	0.362	1.400	0.600	0.632	593	0.012	0.029
Main	Medium Speed Diesel	Tier 0	≤1999	0.1	0.187	0.172	0.187	13.200	0.401	1.100	0.500	0.527	657	0.010	0.029
Main	Slow Speed Diesel	Tier 1	2000-2010	0.1	0.184	0.169	0.184	16.000	0.362	1.400	0.600	0.632	593	0.012	0.029
Main	Medium Speed Diesel	Tier 1	2000-2010	0.1	0.187	0.172	0.187	12.200	0.401	1.100	0.500	0.527	657	0.010	0.029
Main	Slow Speed Diesel	Tier 2	2011-2015	0.1	0.184	0.169	0.184	14.400	0.362	1.400	0.600	0.632	593	0.012	0.029
Main	Medium Speed Diesel	Tier 2	2011-2015	0.1	0.187	0.172	0.187	10.500	0.401	1.100	0.500	0.527	657	0.010	0.029
Main	Slow Speed Diesel	Tier 3	≥2016	0.1	0.184	0.169	0.184	3.400	0.362	1.400	0.600	0.632	593	0.012	0.029
Main	Medium Speed Diesel	Tier 3	≥2016	0.1	0.187	0.172	0.187	2.600	0.401	1.100	0.500	0.527	657	0.010	0.029
Boiler	Steam Engine and Boiler	na	all	0.1	0.16	0.147	0	2	0.587	0.200	0.100	0.105	962	0.002	0.075
Aux	High Speed Diesel	Tier 0	≤1999	0.1	0.189	0.174	0.189	10.900	0.424	0.900	0.400	0.421	696	0.008	0.029
Aux	Medium Speed Diesel	Tier 0	≤1999	0.1	0.189	0.174	0.189	13.800	0.424	1.100	0.400	0.421	696	0.008	0.029
Aux	High Speed Diesel	Tier 1	2000-2010	0.1	0.189	0.174	0.189	9.800	0.424	0.900	0.400	0.421	696	0.008	0.029
Aux	Medium Speed Diesel	Tier 1	2000-2010	0.1	0.189	0.174	0.189	12.200	0.424	1.100	0.400	0.421	696	0.008	0.029
Aux	High Speed Diesel	Tier 2	2011-2015	0.1	0.189	0.174	0.189	7.700	0.424	0.900	0.400	0.421	696	0.008	0.029
Aux	Medium Speed Diesel	Tier 2	2011-2015	0.1	0.189	0.174	0.189	10.500	0.424	1.100	0.400	0.421	696	0.008	0.029
Aux	High Speed Diesel	Tier 3	≥2016	0.1	0.189	0.174	0.189	2.000	0.424	0.900	0.400	0.421	696	0.008	0.029
Aux	Medium Speed Diesel	Tier 3	≥2016	0.1	0.189	0.174	0.189	2.600	0.424	1.100	0.400	0.421	696	0.008	0.029

2026 Ocean Going Vessel Call Activity - Proposed Project

Year	Vessel Type	Annual Calls		Annual
		B121	Grand Total	AMP'ed calls
2026	Container5000	71	71	64

2026 Ocean Going Vessel Emission Rates - Proposed Project

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container5000	0.184	0.169	0.184	12.467	0.362	1.400	0.600	0.632	593	0.012	0.029
Aux	Container5000	0.189	0.174	0.189	10.067	0.424	1.100	0.400	0.421	696	0.008	0.029
Boiler	Container5000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075

2027 Ocean Going Vessel Call Activity - Proposed Project

Year	Vessel Type	Annual Calls		Annual
		B121	Grand Total	AMP'ed calls
2027	Container5000	71	71	67

2027 Ocean Going Vessel Emission Rates - Proposed Project

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container5000	0.184	0.169	0.184	11.560	0.362	1.400	0.600	0.632	593	0.012	0.029
Aux	Container5000	0.189	0.174	0.189	9.320	0.424	1.100	0.400	0.421	696	0.008	0.029
Boiler	Container5000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075

2028 Ocean Going Vessel Call Activity - Proposed Project

Year	Vessel Type	Annual Calls			Annual
		B121	B126	Grand Total	AMP'ed calls
2028	Container5000	45	-	45	43
	Container13000	-	45	45	43
	Grand Total	45	45	91	86

2028 Ocean Going Vessel Emission Rates - Proposed Project

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container13000	0.184	0.169	0.184	14.400	0.362	1.400	0.600	0.632	593.000	0.012	0.029
Aux	Container13000	0.189	0.174	0.189	10.500	0.424	1.100	0.400	0.421	696.000	0.008	0.029
Boiler	Container13000	0.160	0.147	-	2.000	0.587	0.200	0.100	0.105	962.000	0.002	0.075
Main	Container5000	0.184	0.169	0.184	10.653	0.362	1.400	0.600	0.632	593.000	0.012	0.029
Aux	Container5000	0.189	0.174	0.189	8.573	0.424	1.100	0.400	0.421	696.000	0.008	0.029
Boiler	Container5000	0.160	0.147	-	2.000	0.587	0.200	0.100	0.105	962.000	0.002	0.075

2036 Ocean Going Vessel Call Activity - Proposed Project

Year	Vessel Type	Annual Calls			Annual
		B121	B126	Grand Total	AMP'ed calls
2045	Container12000	-	42	42	40
	Container14000	-	42	42	40
	Container5000	42	-	42	40
	Grand Total	**42**	**84**	**126**	**120**

2036 Ocean Going Vessel Emission Rates - Proposed Project

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container12000	0.184	0.169	0.184	8.533	0.362	1.400	0.600	0.632	593	0.012	0.029
Main	Container14000	0.184	0.169	0.184	7.800	0.362	1.400	0.600	0.632	593	0.012	0.029
Main	Container5000	0.184	0.169	0.184	3.400	0.362	1.400	0.600	0.632	593	0.012	0.029
Aux	Container12000	0.189	0.174	0.189	6.287	0.424	1.100	0.400	0.421	696	0.008	0.029
Aux	Container14000	0.189	0.174	0.189	5.760	0.424	1.100	0.400	0.421	696	0.008	0.029
Aux	Container5000	0.189	0.174	0.189	2.600	0.424	1.100	0.400	0.421	696	0.008	0.029
Boiler	Container12000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075
Boiler	Container14000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075
Boiler	Container5000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075

2050 Ocean Going Vessel Call Activity - Proposed Project

Year	Vessel Type	Annual Calls			Annual
		B121	B126	Grand Total	AMP'ed calls
2050	Container12000	0	52	52	49
	Container14000	0	52	52	50
	Container5000	52	0	52	50
	Grand Total	**52**	**104**	**156**	**149**

2050 Ocean Going Vessel Emission Rates - Proposed Project

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container12000	0.184	0.169	0.184	3.400	0.362	1.400	0.600	0.632	593	0.012	0.029
Main	Container14000	0.184	0.169	0.184	3.400	0.362	1.400	0.600	0.632	593	0.012	0.029
Main	Container5000	0.184	0.169	0.184	3.400	0.362	1.400	0.600	0.632	593	0.012	0.029
Aux	Container12000	0.189	0.174	0.189	2.600	0.424	1.100	0.400	0.421	696	0.008	0.029
Aux	Container14000	0.189	0.174	0.189	2.600	0.424	1.100	0.400	0.421	696	0.008	0.029
Aux	Container5000	0.189	0.174	0.189	2.600	0.424	1.100	0.400	0.421	696	0.008	0.029
Boiler	Container12000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075
Boiler	Container14000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075
Boiler	Container5000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075

2026 Ocean Going Vessel Call Activity - Proposed Project

Year	Vessel Type	Annual Calls		Annual
		B121	Grand Total	AMP'ed calls
2026	Container5000	71	71	64

2026 Ocean Going Vessel Emission Rates - Proposed Project

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container5000	0.184	0.169	0.184	12.467	0.362	1.400	0.600	0.632	593	0.012	0.029
Aux	Container5000	0.189	0.174	0.189	10.067	0.424	1.100	0.400	0.421	696	0.008	0.029
Boiler	Container5000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075

2027 Ocean Going Vessel Call Activity - Proposed Project

Year	Vessel Type	Annual Calls		Annual
		B121	Grand Total	AMP'ed calls
2027	Container5000	71	71	64

2027 Ocean Going Vessel Emission Rates - Proposed Project

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container5000	0.184	0.169	0.184	11.560	0.362	1.400	0.600	0.632	593	0.012	0.029
Aux	Container5000	0.189	0.174	0.189	9.320	0.424	1.100	0.400	0.421	696	0.008	0.029
Boiler	Container5000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075

2028 Ocean Going Vessel Call Activity - Proposed Project

Year	Vessel Type	Annual Calls			Annual
		B121	B126	Grand Total	AMP'ed calls
2028	Container5000	45	-	45	43
	Container13000	-	45	45	43
	Grand Total	45	45	91	86

2028 Ocean Going Vessel Emission Rates - Proposed Project

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container13000	0.184	0.169	0.184	14.400	0.362	1.400	0.600	0.632	593.000	0.012	0.029
Aux	Container13000	0.189	0.174	0.189	10.500	0.424	1.100	0.400	0.421	696.000	0.008	0.029
Boiler	Container13000	0.160	0.147	-	2.000	0.587	0.200	0.100	0.105	962.000	0.002	0.075
Main	Container5000	0.184	0.169	0.184	10.653	0.362	1.400	0.600	0.632	593.000	0.012	0.029
Aux	Container5000	0.189	0.174	0.189	8.573	0.424	1.100	0.400	0.421	696.000	0.008	0.029
Boiler	Container5000	0.160	0.147	-	2.000	0.587	0.200	0.100	0.105	962.000	0.002	0.075

2036 Ocean Going Vessel Call Activity - Proposed Project

Year	Vessel Type	Annual Calls			Annual
		B121	B126	Grand Total	AMP'ed calls
2045	Container12000	-	42	42	40
	Container14000	-	42	42	40
	Container5000	42	-	42	40
	Grand Total	**42**	**84**	**126**	**120**

2036 Ocean Going Vessel Emission Rates - Proposed Project

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container12000	0.184	0.169	0.184	8.533	0.362	1.400	0.600	0.632	593	0.012	0.029
Main	Container14000	0.184	0.169	0.184	7.800	0.362	1.400	0.600	0.632	593	0.012	0.029
Main	Container5000	0.184	0.169	0.184	3.400	0.362	1.400	0.600	0.632	593	0.012	0.029
Aux	Container12000	0.189	0.174	0.189	6.287	0.424	1.100	0.400	0.421	696	0.008	0.029
Aux	Container14000	0.189	0.174	0.189	5.760	0.424	1.100	0.400	0.421	696	0.008	0.029
Aux	Container5000	0.189	0.174	0.189	2.600	0.424	1.100	0.400	0.421	696	0.008	0.029
Boiler	Container12000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075
Boiler	Container14000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075
Boiler	Container5000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075

2050 Ocean Going Vessel Call Activity - Proposed Project

Year	Vessel Type	Annual Calls			Annual
		B121	B126	Grand Total	AMP'ed calls
2050	Container12000	0	52	52	49
	Container14000	0	52	52	50
	Container5000	52	0	52	50
	Grand Total	**52**	**104**	**156**	**149**

2050 Ocean Going Vessel Emission Rates - Proposed Project

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container12000	0.184	0.169	0.184	3.400	0.362	1.400	0.600	0.632	593	0.012	0.029
Main	Container14000	0.184	0.169	0.184	3.400	0.362	1.400	0.600	0.632	593	0.012	0.029
Main	Container5000	0.184	0.169	0.184	3.400	0.362	1.400	0.600	0.632	593	0.012	0.029
Aux	Container12000	0.189	0.174	0.189	2.600	0.424	1.100	0.400	0.421	696	0.008	0.029
Aux	Container14000	0.189	0.174	0.189	2.600	0.424	1.100	0.400	0.421	696	0.008	0.029
Aux	Container5000	0.189	0.174	0.189	2.600	0.424	1.100	0.400	0.421	696	0.008	0.029
Boiler	Container12000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075
Boiler	Container14000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075
Boiler	Container5000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075

2026 Ocean Going Vessel Call Activity - No Federal Action

Year	Vessel Type	Annual Calls			Annual
		B121	B126	Grand Total	AMP'ed calls
2026	Container5000	67	52	119	113

2026 Ocean Going Vessel Emission Rates - No Federal Action

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container5000	0.184	0.169	0.184	12.467	0.362	1.400	0.600	0.632	593	0.012	0.029
Aux	Container5000	0.189	0.174	0.189	10.067	0.424	1.100	0.400	0.421	696	0.008	0.029
Boiler	Container5000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075

2027 Ocean Going Vessel Call Activity - No Federal Action

Year	Vessel Type	Annual Calls			Annual
		B121	B126	Grand Total	AMP'ed calls
2027	Container5000	66	52	118	112

2027 Ocean Going Vessel Emission Rates - No Federal Action

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container5000	0.184	0.169	0.184	11.560	0.362	1.400	0.600	0.632	593	0.012	0.029
Aux	Container5000	0.189	0.174	0.189	9.320	0.424	1.100	0.400	0.421	696	0.008	0.029
Boiler	Container5000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075

2028 Ocean Going Vessel Call Activity - No Federal Action

Year	Vessel Type	Annual Calls			Annual
		B121	B126	Grand Total	AMP'ed calls
2028	Container5000	65	52	117	111

2028 Ocean Going Vessel Emission Rates - No Federal Action

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container5000	0.184	0.169	0.184	10.653	0.362	1.400	0.600	0.632	593	0.012	0.029
Aux	Container5000	0.189	0.174	0.189	8.573	0.424	1.100	0.400	0.421	696	0.008	0.029
Boiler	Container5000	0.160	0.147	-	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075

2036 Ocean Going Vessel Call Activity - No Federal Action

Year	Vessel Type	Annual Calls			Annual
		B121	B126	Grand Total	AMP'ed calls
2036	Container5000	36	71	107	102

2036 Ocean Going Vessel Emission Rates - No Federal Action

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container5000	0.184	0.169	0.184	3.400	0.362	1.400	0.600	0.632	593	0.012	0.029
Aux	Container5000	0.189	0.174	0.189	2.600	0.424	1.100	0.400	0.421	696	0.008	0.029
Boiler	Container5000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075

2050 Ocean Going Vessel Call Activity - No Project

Year	Vessel Type	Annual Calls			Annual
		B121	B126	Grand Total	AMP'ed calls
2050	Container5000	74	-	74	70
	Container6000	-	74	74	70
	Grand Total	74	74	148	141

2050 Ocean Going Vessel Emission Rates - No Project

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container6000	0.184	0.169	0.184	3.400	0.362	1.400	0.600	0.632	593	0.012	0.029
Main	Container5000	0.184	0.169	0.184	3.400	0.362	1.400	0.600	0.632	593	0.012	0.029
Aux	Container6000	0.189	0.174	0.189	2.600	0.424	1.100	0.400	0.421	696	0.008	0.029
Aux	Container5000	0.189	0.174	0.189	2.600	0.424	1.100	0.400	0.421	696	0.008	0.029
Boiler	Container6000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075
Boiler	Container5000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075

2026 Ocean Going Vessel Call Activity - No Federal Action

Year	Vessel Type	Annual Calls			Annual
		B121	B126	Grand Total	AMP'ed calls
2026	Container5000	67	52	119	113

2026 Ocean Going Vessel Emission Rates - No Federal Action

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container5000	0.184	0.169	0.184	12.467	0.362	1.400	0.600	0.632	593	0.012	0.029
Aux	Container5000	0.189	0.174	0.189	10.067	0.424	1.100	0.400	0.421	696	0.008	0.029
Boiler	Container5000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075

2027 Ocean Going Vessel Call Activity - No Federal Action

Year	Vessel Type	Annual Calls			Annual
		B121	B126	Grand Total	AMP'ed calls
2027	Container5000	66	52	118	112

2027 Ocean Going Vessel Emission Rates - No Federal Action

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container5000	0.184	0.169	0.184	11.560	0.362	1.400	0.600	0.632	593	0.012	0.029
Aux	Container5000	0.189	0.174	0.189	9.320	0.424	1.100	0.400	0.421	696	0.008	0.029
Boiler	Container5000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075

2028 Ocean Going Vessel Call Activity - No Federal Action

Year	Vessel Type	Annual Calls			Annual
		B121	B126	Grand Total	AMP'ed calls
2028	Container5000	65	52	117	111

2028 Ocean Going Vessel Emission Rates - No Federal Action

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container5000	0.184	0.169	0.184	10.653	0.362	1.400	0.600	0.632	593	0.012	0.029
Aux	Container5000	0.189	0.174	0.189	8.573	0.424	1.100	0.400	0.421	696	0.008	0.029
Boiler	Container5000	0.160	0.147	-	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075

2036 Ocean Going Vessel Call Activity - No Federal Action

Year	Vessel Type	Annual Calls			Annual
		B121	B126	Grand Total	AMP'ed calls
2036	Container5000	36	71	107	102

2036 Ocean Going Vessel Emission Rates - No Federal Action

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container5000	0.184	0.169	0.184	3.400	0.362	1.400	0.600	0.632	593	0.012	0.029
Aux	Container5000	0.189	0.174	0.189	2.600	0.424	1.100	0.400	0.421	696	0.008	0.029
Boiler	Container5000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075

2050 Ocean Going Vessel Call Activity - No Project

Year	Vessel Type	Annual Calls			Annual
		B121	B126	Grand Total	AMP'ed calls
2050	Container5000	74	-	74	70
	Container6000	-	74	74	70
	Grand Total	74	74	148	141

2050 Ocean Going Vessel Emission Rates - No Project

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container6000	0.184	0.169	0.184	3.400	0.362	1.400	0.600	0.632	593	0.012	0.029
Main	Container5000	0.184	0.169	0.184	3.400	0.362	1.400	0.600	0.632	593	0.012	0.029
Aux	Container6000	0.189	0.174	0.189	2.600	0.424	1.100	0.400	0.421	696	0.008	0.029
Aux	Container5000	0.189	0.174	0.189	2.600	0.424	1.100	0.400	0.421	696	0.008	0.029
Boiler	Container6000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075
Boiler	Container5000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075

2026 Ocean Going Vessel Call Activity - No Project

Year	Vessel Type	Annual Calls			Annual
		B121	B126	Grand Total	AMP'ed calls
2026	Container5000	67	52	119	113
	Grand Total	**67**	**52**	**119**	**114**

2026 Ocean Going Vessel Emission Rates - No Project

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container5000	0.184	0.169	0.184	12.467	0.362	1.400	0.600	0.632	593	0.012	0.029
Aux	Container5000	0.189	0.174	0.189	10.067	0.424	1.100	0.400	0.421	696	0.008	0.029
Boiler	Container5000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075

2027 Ocean Going Vessel Call Activity - No Project

Year	Vessel Type	Annual Calls			Annual
		B121	B126	Grand Total	AMP'ed calls
2027	Container5000	66	52	118	112

2027 Ocean Going Vessel Emission Rates - No Project

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container5000	0.184	0.169	0.184	11.560	0.362	1.400	0.600	0.632	593	0.012	0.029
Aux	Container5000	0.189	0.174	0.189	9.320	0.424	1.100	0.400	0.421	696	0.008	0.029
Boiler	Container5000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075

2028 Ocean Going Vessel Call Activity - No Project

Year	Vessel Type	Annual Calls			Annual
		B121	B126	Grand Total	AMP'ed calls
2028	Container5000	65	52	117	111

2028 Ocean Going Vessel Emission Rates - No Project

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container13000	0.184	0.169	0.184	14.400	0.362	1.400	0.600	0.632	593	0.012	0.029
Aux	Container13000	0.189	0.174	0.189	10.500	0.424	1.100	0.400	0.421	696	0.008	0.029
Boiler	Container13000	0.160	0.147	-	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075
Main	Container5000	0.184	0.169	0.184	10.653	0.362	1.400	0.600	0.632	593	0.012	0.029
Aux	Container5000	0.189	0.174	0.189	8.573	0.424	1.100	0.400	0.421	696	0.008	0.029
Boiler	Container5000	0.160	0.147	-	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075

2036 Ocean Going Vessel Call Activity - No Federal Action

Year	Vessel Type	Annual Calls			Annual
		B121	B126	Grand Total	AMP'ed calls
2036	Container5000	36	71	107	102
	Grand Total	36	71	107	102

2036 Ocean Going Vessel Emission Rates - No Federal Action

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container5000	0.184	0.169	0.184	3.400	0.362	1.400	0.600	0.632	593	0.012	0.029
Aux	Container5000	0.189	0.174	0.189	2.600	0.424	1.100	0.400	0.421	696	0.008	0.029
Boiler	Container5000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075

2050 Ocean Going Vessel Call Activity - No Project

Year	Vessel Type	Annual Calls			Annual
		B121	B126	Grand Total	AMP'ed calls
2050	Container5000	74	-	74	70
	Container6000	-	74	74	70
	Grand Total	74	74	148	141

2050 Ocean Going Vessel Emission Rates - No Project

Engine	Vessel Type	Emission Factors (g/kW-hr) - Weighted										
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
Main	Container6000	0.184	0.169	0.184	3.400	0.362	1.400	0.600	0.632	593	0.012	0.029
Main	Container5000	0.184	0.169	0.184	3.400	0.362	1.400	0.600	0.632	593	0.012	0.029
Aux	Container6000	0.189	0.174	0.189	2.600	0.424	1.100	0.400	0.421	696	0.008	0.029
Aux	Container5000	0.189	0.174	0.189	2.600	0.424	1.100	0.400	0.421	696	0.008	0.029
Boiler	Container6000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075
Boiler	Container5000	0.160	0.147	0.000	2.000	0.587	0.200	0.100	0.105	962	0.002	0.075

Rail
Locomotives and Switchers

Year	2019

2019 On-site Rail Operations -All Scenarios

Parameters	2019	
	Unit Trains	Partial Trains
Train length (ft)	8,813	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.303	0.285
Average hours of operation per visit	1.7	1.7
Number of locomotives per train	3	1
Average HP of locomotive	4,000	4,000
Average Load Factor	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15

On-site Switchers	WBCT
Average hours of operation per day	8
Average HP of locomotive	2500
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

2019 Berths 121-131 On-site Switching Activity - All Scenarios

Activity	2019
Annual Throughput WBCT	1,592,213
Berths 121-131 Fraction of Throughput	0.22
WBCT Switchers work hours (hp-hrs/day)	1,155
YM Switchers work hours (hp-hrs/day)	**257**

2019 Off-site Rail Operations -All Scenarios

Parameters	2019 Train Length (ft) 12,000	10,000	8,000	8,813	6,000	2,000
Line-Hauls Travelling within SCAB						
Peak Month Daily Train-miles in SCAB Region (miles/day)						
Alameda Corridor		0.8	1.0	13.8	0.8	2.4
East River Bank		0.1	0.2	0.6	0.1	
BNSF San Bernardino		5.9	7.6	27.4	3.6	
BNSF Cajon		3.1	4.0	9.8	1.6	
UP Los Angeles		3.5	4.5	6.9	1.9	
UP Alhambra		4.1	5.2	7.3	2.2	
UP Yuma		4.3	5.5	8.1	2.3	
UP Mojave		0.3	0.4	0.6	0.2	
Locomotives per Train	6	5	3	3	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.1	0.1		0.1	
BNSF Hobart & Commerce Yards		0.1	0.1		0.0	
UP East LA Yard		0.0	0.0		0.0	
UP LATC Yard		0.0	0.0		0.0	
UP COI Yard		0.0	0.0		0.0	
BNSF SB Yard		0.0	0.0		0.0	
BNSF SCIG Yard						
Average hours of operation per visit	1.5	1.5	1.5	1.5	1.5	1.5
Number of locomotives per train	6	5	3	3	3	1
Average HP of locomotive	4,000	4,000	4,000	4,000	4,000	4,000
Average Load Factor	0.28	0.28	0.28	0.28	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.1	0.1	0.4	0.1	na
UP Yuma		0.1	0.1	0.2	0.1	na
UP Mojave		0.0	0.0	0.0	0.0	na
Locomotives per Train	6	5	3	3	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Average travel distance (miles/train)						
BNSF Cajon	191	191	191	191	191	191
UP Yuma	184	184	184	184	184	184
UP Mojave	184	184	184	184	184	184

Off-site Switchers In-yard	
Berths 121-131-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	27,272
BNSF Hobart & Commerce Yards	29,121
UP East LA Yard	9,306
UP LATC Yard	5,261
UP COI Yard	7,051
BNSF SB Yard	8,700
BNSF SCIG Yard	0
Average hours of operation per day	8
Average HP of locomotive	2,500
Average Load Factor	0.083
Fuel Type (diesel S content in ppm)*	15

* Based on EPA Non-Road Diesel Fuel Rule

2019 Berths 121-131 Line-Haul In Yard Activity - All Scenarios

Parameters	2019 Peak Day Work Done by Locomotives (hp-hr/day) *
On-site (In terminal) Activity	2,276
Berths 121-131 Related Off-dock Activity	
UP ICTF Yard	1,139
BNSF Hobart & Commerce Yards	1,120
UP East LA Yard	304
UP LATC Yard	177
UP COI Yard	230
BNSF SB Yard	285
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with Berths 121-131-related TEUs

2019 Berths 121-131 Line-Haul Traveling - All Scenarios

	2019
Fuel Productivity Factor (gross ton-miles/gal)	754

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each year.
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

2019 Line-Haul Travel Within SCAB - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives *
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	147,163	4,061
East River Bank	7,968	220
BNSF San Bernardino	383,379	10,581
BNSF Cajon	159,694	4,407
UP Los Angeles	142,906	3,944
UP Alhambra	160,585	4,432
UP Yuma	172,369	4,757
UP Mojave	12,064	333

*Work from all linehaul locomotives operating with YM-related TEUs

2019 Line-Haul Travel From SCAB Border To Ca Border - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives*
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	1,105,963	30,523
UP Yuma	654,454	18,062
UP Mojave	57,746	1,594

*Work from all linehaul locomotives operating with YM-related TEUs

2019 Berths 121-131 Switchers In Yard Activity -All Scenarios

Activity/Yards	2019 Peak Day Work Done by Switchers (hp-hr/day)*
On-site (In terminal) Activity	257
Berths 121-131-Related Off-dock Activity	
UP ICTF Yard	156
BNSF Hobart & Commerce Yards	167
UP East LA Yard	53
UP LATC Yard	30
UP COI Yard	40
BNSF SB Yard	50
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

Year	2026

2026 On-site Rail Operations - Proposed Project Rail

Parameters	2026	
	Unit Trains	Partial Trains
Train length (ft)	8,813	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.187	0.183
Average hours of operation per visit	1.7	1.7
Number of locomotives per train	3	1
Average HP of locomotive	4,000	4,000
Average Load Factor	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15

On-site Switchers	WBCT
Average hours of operation per day	8
Average HP of locomotive	2500
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

2026 Berths 121-131 On-site Switching Activity - All Scenarios

Activity	2026
Annual Throughput WBCT	1,747,278
Berths 121-131 Fraction of Throughput	0.15
WBCT Switchers work hours (hp-hrs/day)	1,323
YM Switchers work hours (hp-hrs/day)	**204**

2026 Off-site Rail Operations - Proposed Project Rail

Parameters	2026 Train Length (ft) 12,000	10,000	8,000	8,813	6,000	2,000
Line-Hauls Travelling within SCAB						
Peak Month Daily Train-miles in SCAB Region (miles/day						
Alameda Corridor		0.4	0.9	4.8		1.5
East River Bank		0.1	0.1	0.2		
BNSF San Bernardino		2.3	4.7	8.6		
BNSF Cajon		0.9	1.8	3.1		
UP Los Angeles		0.9	1.7	3.0		
UP Alhambra		0.9	1.8	3.1		
UP Yuma		1.0	2.0	3.5		
UP Mojave		0.1	0.1	0.2		
Locomotives per Train	6	5	3	3	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.0	0.1			
BNSF Hobart & Commerce Yards		0.0	0.1			
UP East LA Yard		0.0	0.0			
UP LATC Yard						
UP COI Yard						
BNSF SB Yard						
BNSF SCIG Yard						
Average hours of operation per visit	1.5	1.5	1.5	1.5	1.5	1.5
Number of locomotives per train	6	5	3	3	3	1
Average HP of locomotive	4,000	4,000	4,000	4,000	4,000	4,000
Average Load Factor	0.28	0.28	0.28	0.28	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.0	0.0	0.1	0.0	n/a
UP Yuma		0.0	0.0	0.1	0.0	n/a
UP Mojave		0.0	0.0	0.0	0.0	n/a
Locomotives per Train	6	5	3	3	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Average travel distance (miles/train)						
BNSF Cajon	191	191	191	191	191	191
UP Yuma	184	184	184	184	184	184
UP Mojave	184	184	184	184	184	184

Off-site Switchers In-yard	
Berths 121-131-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	29,719
BNSF Hobart & Commerce Yards	31,283
UP East LA Yard	1,564
UP LATC Yard	0
UP COI Yard	0
BNSF SB Yard	0
BNSF SCIG Yard	0
Average hours of operation per day	8
Average HP of locomotive	2,500
Average Load Factor	0.083
Fuel Type (diesel S content in ppm)*	15

* Based on EPA Non-Road Diesel Fuel Rule

2026 Berths 121-131 Line-Haul In Yard Activity - Proposed Project Rail

	2026
	Peak Day Work Done by Locomotives (hp-hr/day) *
On-site (In terminal) Activity	1,416
Berths 121-131 Related Off-dock Activity	
UP ICTF Yard	590
BNSF Hobart & Commerce Yards	621
UP East LA Yard	31
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with Berths 121-131-related TEUs

2026 Berths 121-131 Line-Haul Traveling - Proposed Project Rail

	2026
Fuel Productivity Factor (gross ton-miles/gal)	808

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each year.
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

2026 Line-Haul Travel Within SCAB - All Scenarios

Parameters	**Peak Day Train Travel**	**Peak Daily Work Done by Line Haul Locomotives ***
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	56,446	1,453
East River Bank	3,777	97
BNSF San Bernardino	137,177	3,531
BNSF Cajon	50,274	1,294
UP Los Angeles	48,508	1,249
UP Alhambra	51,010	1,313
UP Yuma	56,582	1,457
UP Mojave	3,960	102

*Work from all linehaul locomotives operating with YM-related TEUs

2026 Line-Haul Travel From SCAB Border To Ca Border - All Scenarios

Parameters	**Peak Day Train Travel**	**Peak Daily Work Done by Line Haul Locomotives***
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	404,962	10,424
UP Yuma	239,443	6,164
UP Mojave	21,127	544

*Work from all linehaul locomotives operating with YM-related TEUs

2026 Berths 121-131 Switchers In Yard Activity -All Scenarios

	2026
Activity/Yards	**Peak Day Work Done by Switchers (hp-hr/day)***
On-site (In terminal) Activity	204
Berths 121-131-Related Off-dock Activity	
UP ICTF Yard	95
BNSF Hobart & Commerce Yards	100
UP East LA Yard	5
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

Year	2027

2027 On-site Rail Operations - Proposed Project Rail

Parameters	2027	
	Unit Trains	Partial Trains
Train length (ft)	8,813	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.184	0.183
Average hours of operation per visit	1.7	1.7
Number of locomotives per train	3	1
Average HP of locomotive	4,000	4,000
Average Load Factor	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15

On-site Switchers	WBCT
Average hours of operation per day	8
Average HP of locomotive	2500
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

2027 Berths 121-131 On-site Switching Activity - All Scenarios

Activity	2027
Annual Throughput WBCT	1,821,944
Berths 121-131 Fraction of Throughput	0.15
WBCT Switchers work hours (hp-hrs/day)	1,323
YM Switchers work hours (hp-hrs/day)	**202**

2027 Off-site Rail Operations - Proposed Project Rail

Parameters	2027 Train Length (ft) 12,000	10,000	8,000	8,813	6,000	2,000
Line-Hauls Travelling within SCAB						
Peak Month Daily Train-miles in SCAB Region (miles/day						
Alameda Corridor		0.4	0.9	5.0		1.6
East River Bank		0.1	0.1	0.2		
BNSF San Bernardino		2.4	4.8	9.0		
BNSF Cajon		0.9	1.8	3.2		
UP Los Angeles		0.9	1.8	3.1		
UP Alhambra		0.9	1.8	3.3		
UP Yuma		1.0	2.0	3.6		
UP Mojave		0.1	0.1	0.3		
Locomotives per Train	6	5	3	3	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.0	0.1			
BNSF Hobart & Commerce Yards		0.0	0.1			
UP East LA Yard		0.0	0.0			
UP LATC Yard						
UP COI Yard						
BNSF SB Yard						
BNSF SCIG Yard						
Average hours of operation per visit	1.5	1.5	1.5	1.5	1.5	1.5
Number of locomotives per train	6	5	3	3	3	1
Average HP of locomotive	4,000	4,000	4,000	4,000	4,000	4,000
Average Load Factor	0.28	0.28	0.28	0.28	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.0	0.0	0.2	0.0	na
UP Yuma		0.0	0.0	0.1	0.0	na
UP Mojave		0.0	0.0	0.0	0.0	na
Locomotives per Train	6	5	3	3	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Average travel distance (miles/train)						
BNSF Cajon	191	191	191	191	191	191
UP Yuma	184	184	184	184	184	184
UP Mojave	184	184	184	184	184	184

Off-site Switchers In-yard	
Berths 121-131-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	30,060
BNSF Hobart & Commerce Yards	31,642
UP East LA Yard	1,582
UP LATC Yard	0
UP COI Yard	0
BNSF SB Yard	0
BNSF SCIG Yard	0
Average hours of operation per day	8
Average HP of locomotive	2500
Average Load Factor	0.083
Fuel Type (diesel S content in ppm)*	15

* Based on EPA Non-Road Diesel Fuel Rule

2027 Berths 121-131 Line-Haul In Yard Activity - Proposed Project Rail

Parameters	2027 Peak Day Work Done by Locomotives (hp-hr/day) *
On-site (In terminal) Activity	1,399
Berths 121-131 Related Off-dock Activity	
UP ICTF Yard	600
BNSF Hobart & Commerce Yards	632
UP East LA Yard	32
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with Berths 121-131-related TEUs

2027 Berths 121-131 Line-Haul Traveling - Proposed Project Rail

	2027
Fuel Productivity Factor (gross ton-miles/gal)	816

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each year.
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

2027 Line-Haul Travel Within SCAB - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives *
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	58,413	1,489
East River Bank	3,889	99
BNSF San Bernardino	141,240	3,600
BNSF Cajon	51,750	1,319
UP Los Angeles	49,925	1,272
UP Alhambra	52,507	1,338
UP Yuma	58,243	1,484
UP Mojave	4,076	104

*Work from all linehaul locomotives operating with YM-related TEUs

2027 Line-Haul Travel From SCAB Border To Ca Border - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives*
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	416,916	10,626
UP Yuma	246,522	6,283
UP Mojave	21,752	554

*Work from all linehaul locomotives operating with YM-related TEUs

2027 Berths 121-131 Switchers In Yard Activity -All Scenarios

Activity/Yards	2027 Peak Day Work Done by Switchers (hp-hr/day)*
On-site (In terminal) Activity	202
Berths 121-131-Related Off-dock Activity	
UP ICTF Yard	92
BNSF Hobart & Commerce Yards	96
UP East LA Yard	5
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

Year	2028

2028 On-site Rail Operations - Proposed Project Rail

Parameters	2028	
	Unit Trains	Partial Trains
Train length (ft)	8,813	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.707	0.712
Average hours of operation per visit	1.7	1.7
Number of locomotives per train	3	1
Average HP of locomotive	4,000	4,000
Average Load Factor	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15

On-site Switchers	WBCT
Average hours of operation per day	8
Average HP of locomotive	2500
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

2028 Berths 121-131 On-site Switching Activity - Proposed Project Rail

Activity	2028
Annual Throughput WBCT	2,503,675
Berths 121-131 Fraction of Throughput	0.33
WBCT Switchers work hours (hp-hrs/day)	2,365
YM Switchers work hours (hp-hrs/day)	**778**

2028 Off-site Rail Operations - Proposed Project Rail

Parameters	2028 Train Length (ft) 12,000	10,000	8,000	8,813	6,000	2,000
Line-Hauls Travelling within SCAB						
Peak Month Daily Train-miles in SCAB Region (miles/day						
Alameda Corridor		1.7	3.4	11.5		3.8
East River Bank		0.2	0.5	0.6		
BNSF San Bernardino		9.1	18.4	20.8		
BNSF Cajon		3.4	6.9	7.5		
UP Los Angeles		3.3	6.8	7.1		
UP Alhambra		3.5	7.0	7.6		
UP Yuma		3.8	7.8	8.4		
UP Mojave		0.3	0.5	0.6		
Locomotives per Train	6	5	3	3	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.1	0.2			
BNSF Hobart & Commerce Yards		0.1	0.3			
UP East LA Yard		0.0	0.0			
UP LATC Yard						
UP COI Yard						
BNSF SB Yard						
BNSF SCIG Yard						
Average hours of operation per visit	1.5	1.5	1.5	1.5	1.5	1.5
Number of locomotives per train	6	5	3	3	3	1
Average HP of locomotive	4,000	4,000	4,000	4,000	4,000	4,000
Average Load Factor	0.28	0.28	0.28	0.28	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.1	0.2	0.4	0.1	na
UP Yuma		0.1	0.1	0.2	0.1	na
UP Mojave		0.0	0.0	0.0	0.0	na
Locomotives per Train	6	5	3	3	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Average travel distance (miles/train)						
BNSF Cajon	191	191	191	191	191	191
UP Yuma	184	184	184	184	184	184
UP Mojave	184	184	184	184	184	184

Off-site Switchers In-yard	
Berths 121-131-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	90,719
BNSF Hobart & Commerce Yards	95,494
UP East LA Yard	4,775
UP LATC Yard	0
UP COI Yard	0
BNSF SB Yard	0
BNSF SCIG Yard	0
Average hours of operation per day	8
Average HP of locomotive	2500
Average Load Factor	0.083
Fuel Type (diesel S content in ppm)*	15

* Based on EPA Non-Road Diesel Fuel Rule

2028 Berths 121-131 Line-Haul In Yard Activity - Proposed Project Rail

Parameters	2028 Peak Day Work Done by Locomotives (hp-hr/day) *
On-site (In terminal) Activity	5,398
Berths 121-131 Related Off-dock Activity	
UP ICTF Yard	2,296
BNSF Hobart & Commerce Yards	2,417
UP East LA Yard	121
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with Berths 121-131-related TEUs

2028 Berths 121-131 Line-Haul Traveling - Proposed Project Rail

	2028
Fuel Productivity Factor (gross ton-miles/gal)	824

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each year.
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

2028 Line-Haul Travel Within SCAB - Proposed Project Rail

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives *
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	152,959	3,860
East River Bank	11,600	293
BNSF San Bernardino	421,366	10,633
BNSF Cajon	155,341	3,920
UP Los Angeles	150,333	3,794
UP Alhambra	157,614	3,977
UP Yuma	174,832	4,412
UP Mojave	12,236	309

*Work from all linehaul locomotives operating with YM-related TEUs

2028 Line-Haul Travel From SCAB Border To Ca Border - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives*
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	1,210,580	30,548
UP Yuma	715,429	18,053
UP Mojave	63,126	1,593

*Work from all linehaul locomotives operating with YM-related TEUs

2028 Berths 121-131 Switchers In Yard Activity -All Scenarios

Activity/Yards	2028 Peak Day Work Done by Switchers (hp-hr/day)*
On-site (In terminal) Activity	778
Berths 121-131-Related Off-dock Activity	
UP ICTF Yard	355
BNSF Hobart & Commerce Yards	374
UP East LA Yard	19
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

Year	2036

2036 On-site Rail Operations - Proposed Project Rail

Parameters	2036	
	Unit Trains	Partial Trains
Train length (ft)	9,985	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	1.107	1.593
Average hours of operation per visit	1.7	1.7
Number of locomotives per train	5	1
Average HP of locomotive	4,000	4,000
Average Load Factor	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15

On-site Switchers	WBCT
Average hours of operation per day	8
Average HP of locomotive	2,500
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

2036 B121-131 On-site Switching Activity - Proposed Project Rail

Activity	2036
Annual Throughput WBCT	2,891,424
B121-131 Fraction of Throughput	0.41
WBCT Switchers work hours (hp-hrs/day)	3,019
YM Switchers work hours (hp-hrs/day)	**1,250**

2036 Off-Site Rail Operations - Proposed Project Rail

Parameters	2036 Train Length (ft) 12,000	10,000	8,000	9,985	6,000	2,000
Line-Hauls Travelling within SCAB						
Peak Month Daily Train-miles in SCAB Region (miles/day)						
Alameda Corridor		1.1	2.3	30.8		13.9
East River Bank		0.2	0.3	1.6		
BNSF San Bernardino		6.1	12.3	56.7		
BNSF Cajon		2.3	4.6	20.3		
UP Los Angeles		2.2	4.5	19.4		
UP Alhambra		2.3	4.7	20.6		
UP Yuma		2.6	5.2	22.9		
UP Mojave		0.2	0.4	1.6		
Locomotives per Train	6	5	3	5	3	1
Gross Train Weight (ton)	12000	10000	8000	9985	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.1	0.2			
BNSF Hobart & Commerce Yards		0.1	0.2			
UP East LA Yard		0.0	0.0			
UP LATC Yard						
UP COI Yard						
BNSF SB Yard						
BNSF SCIG Yard						
Average hours of operation per visit	1.5	1.5	1.5	1.5	1.5	1.5
Number of locomotives per train	6	5	3	5	3	1
Average HP of locomotive	4,000	4,000	4,000	4,000	4,000	4,000
Average Load Factor	0	0	0	0	0	0
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.1	0.2	0.8		na
UP Yuma		0.1	0.1	0.6		na
UP Mojave		0.0	0.0	0.1		na
Locomotives per Train	6	5	3	5	3	1
Gross Train Weight (ton)	12000	10000	8000	9985	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Average travel distance (miles/train)						
BNSF Cajon	191	191	191	191	191	191
UP Yuma	184	184	184	184	184	184
UP Mojave	184	184	184	184	184	184

Off-site Switchers In-yard	
B121-131-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	66,722
BNSF Hobart & Commerce Yards	70,234
UP East LA Yard	3,512
UP LATC Yard	0
UP COI Yard	0
BNSF SB Yard	0
BNSF SCIG Yard	0
Average hours of operation per day	8
Average HP of locomotive	2,500
Average Load Factor	0.083
Fuel Type (diesel S content in ppm)*	15

* Based on EPA Non-Road Diesel Fuel Rule

2036 B121-131 Line-Haul In Yard Activity - Proposed Project Rail

Parameters	2036 Peak Day Work Done by Locomotives (hp-hr/day) *
On-site (In terminal) Activity	13,578
B121-131 Related Off-dock Activity	
UP ICTF Yard	1,534
BNSF Hobart & Commerce Yards	1,615
UP East LA Yard	81
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with YM-related TEUs

2036 B121-131 Line-Haul Traveling - Proposed Project Rail

	2036
Fuel Productivity Factor (gross ton-miles/gal)	893

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each year.
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

2036 Line-Haul Travel Within SCAB - Proposed Project Rail

Parameters	**Peak Day Train Travel**	**Peak Daily Work Done by Line Haul Locomotives ***
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	364,378	8,491
East River Bank	19,977	466
BNSF San Bernardino	725,207	16,900
BNSF Cajon	262,795	6,124
UP Los Angeles	252,083	5,874
UP Alhambra	266,639	6,214
UP Yuma	295,767	6,892
UP Mojave	20,700	482

*Work from all linehaul locomotives operating with YM-related TEUs

2036 Line-Haul Travel From SCAB Border To Ca Border - Proposed Project Rail

Parameters	**Peak Day Train Travel**	**Peak Daily Work Done by Line Haul Locomotives***
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	2,023,942	47,165
UP Yuma	1,541,676	35,926
UP Mojave	136,030	3,170

*Work from all linehaul locomotives operating with YM-related TEUs

2036 B121-131 Switchers In Yard Activity - Proposed Project Rail

	2036
Activity/Yards	**Peak Day Work Done by Switchers (hp-hr/day)***
On-site (In terminal) Activity	1,250
B121-131-Related Off-dock Activity	
UP ICTF Yard	98
BNSF Hobart & Commerce Yards	103
UP East LA Yard	5
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

Year	2050

2050 On-site Rail Operations - Proposed Project Rail

Parameters	2050	
	Unit Trains	Partial Trains
Train length (ft)	9,985	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	1.746	2.574
Average hours of operation per visit	1.7	1.7
Number of locomotives per train	5	1
Average HP of locomotive	4,000	4,000
Average Load Factor	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15

On-site Switchers	WBCT
Average hours of operation per day	8
Average HP of locomotive	2,500
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

2050 B121-131 On-site Switching Activity - Proposed Project Rail

Activity	2050
Annual Throughput WBCT	3,541,405
B121-131 Fraction of Throughput	0.53
WBCT Switchers work hours (hp-hrs/day)	3,752
YM Switchers work hours (hp-hrs/day)	**1,983**

2050 Off-Site Rail Operations - Proposed Project

Parameters	2050 Train Length (ft) 12,000	10,000	8,000	9,985	6,000	2,000
Line-Hauls Travelling within SCAB						
Peak Month Daily Train-miles in SCAB Region (miles/day						
Alameda Corridor		1.7	3.5	46.5		21.4
East River Bank		0.3	0.5	2.4		
BNSF San Bernardino		9.2	18.6	85.9		
BNSF Cajon		3.5	7.0	30.8		
UP Los Angeles		3.4	6.9	29.4		
UP Alhambra		3.5	7.1	31.2		
UP Yuma		3.9	7.9	34.6		
UP Mojave		0.3	0.6	2.4		
Locomotives per Train	6	5	3	5	3	1
Gross Train Weight (ton)	12000	10000	8000	9985	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.1	0.2			
BNSF Hobart & Commerce Yards		0.1	0.3			
UP East LA Yard		0.0	0.0			
UP LATC Yard						
UP COI Yard						
BNSF SB Yard						
BNSF SCIG Yard						
Average hours of operation per visit	1.5	1.5	1.5	1.5	1.5	1.5
Number of locomotives per train	6	5	3	5	3	1
Average HP of locomotive	4,000	4,000	4,000	4,000	4,000	4,000
Average Load Factor	0.28	0.28	0.28	0.28	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.1	0.3	1.2		na
UP Yuma		0.1	0.2	1.0		na
UP Mojave		0.0	0.0	0.1		na
Locomotives per Train	6	5	3	5	3	1
Gross Train Weight (ton)	12000	10000	8000	9985	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Average travel distance (miles/train)						
BNSF Cajon	191	191	191	191	191	191
UP Yuma	184	184	184	184	184	184
UP Mojave	184	184	184	184	184	184

Off-site Switchers In-yard	
B121-131-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	66,722
BNSF Hobart & Commerce Yards	70,234
UP East LA Yard	3,512
UP LATC Yard	0
UP COI Yard	0
BNSF SB Yard	0
BNSF SCIG Yard	0
Average hours of operation per day	8
Average HP of locomotive	2,500
Average Load Factor	0.083
Fuel Type (diesel S content in ppm)*	15

* Based on EPA Non-Road Diesel Fuel Rule

2050 B121-131 Line-Haul In Yard Activity - Proposed Project Rail

Parameters	2050 Peak Day Work Done by Locomotives (hp-hr/day)
On-site (In terminal) Activity	21,531
B121-131 Related Off-dock Activity	
UP ICTF Yard	2,324
BNSF Hobart & Commerce Yards	2,446
UP East LA Yard	122
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with YM-related TEUs

2050 B121-131 Line-Haul Traveling - Proposed Project Rail

	2050
Fuel Productivity Factor (gross ton-miles/gal)	1026

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each year.
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

2050 Line-Haul Travel Within SCAB - Proposed Project Rail

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives *
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	551,708	11,185
East River Bank	30,254	613
BNSF San Bernardino	1,098,258	22,265
BNSF Cajon	397,978	8,068
UP Los Angeles	381,756	7,739
UP Alhambra	403,800	8,186
UP Yuma	447,912	9,081
UP Mojave	31,349	636

*Work from all linehaul locomotives operating with YM-related TEUs

2050 Line-Haul Travel From SCAB Border To Ca Border - Proposed Project Rail

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives*
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	3,065,073	62,139
UP Yuma	2,334,725	47,332
UP Mojave	206,005	4,176

*Work from all linehaul locomotives operating with YM-related TEUs

2050 B121-131 Switchers In Yard Activity - Proposed Project Rail

	2050
Activity/Yards	Peak Day Work Done by Switchers (hp-hr/day)*
On-site (In terminal) Activity	1,983
B121-131-Related Off-dock Activity	
UP ICTF Yard	122
BNSF Hobart & Commerce Yards	129
UP East LA Yard	6
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

Year	2026

2026 On-site Rail Operations -No Project Rail

Parameters	2026	
	Unit Trains	Partial Trains
Train length (ft)	8,813	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.345	0.337
Average hours of operation per visit	1.7	1.7
Number of locomotives per train	3	1
Average HP of locomotive	4,000	4,000
Average Load Factor	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15

On-site Switchers	WBCT
Average hours of operation per day	8
Average HP of locomotive	2500
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

2026 Berths 121-131 On-site Switching Activity - All Scenarios

Activity	2026
Annual Throughput WBCT	1,922,023
Berths 121-131 Fraction of Throughput	0.26
WBCT Switchers work hours (hp-hrs/day)	1,471
YM Switchers work hours (hp-hrs/day)	**378**

2026 Off-site Rail Operations -No Project Rail

Parameters	2026 Train Length (ft) 12,000	10,000	8,000	8,813	6,000	2,000
Line-Hauls Travelling within SCAB						
Peak Month Daily Train-miles in SCAB Region (miles/day						
Alameda Corridor		0.7	1.4	7.6		2.4
East River Bank		0.1	0.2	0.4		
BNSF San Bernardino		3.7	7.6	13.8		
BNSF Cajon		1.4	2.9	5.0		
UP Los Angeles		1.4	2.8	4.7		
UP Alhambra		1.4	2.9	5.0		
UP Yuma		1.6	3.2	5.6		
UP Mojave		0.1	0.2	0.4		
Locomotives per Train	6	5	3	3	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.1	0.1			
BNSF Hobart & Commerce Yards		0.1	0.1			
UP East LA Yard		0.0	0.0			
UP LATC Yard						
UP COI Yard						
BNSF SB Yard						
BNSF SCIG Yard						
Average hours of operation per visit	1.5	1.5	1.5	1.5	1.5	1.5
Number of locomotives per train	6	5	3	3	3	1
Average HP of locomotive	4,000	4,000	4,000	4,000	4,000	4,000
Average Load Factor	0.28	0.28	0.28	0.28	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.1	0.1	0.2	0.1	na
UP Yuma		0.0	0.0	0.1	0.0	na
UP Mojave		0.0	0.0	0.0	0.0	na
Locomotives per Train	6	5	3	3	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Average travel distance (miles/train)						
BNSF Cajon	191	191	191	191	191	191
UP Yuma	184	184	184	184	184	184
UP Mojave	184	184	184	184	184	184

Off-site Switchers In-yard	
Berths 121-131-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	29,719
BNSF Hobart & Commerce Yards	31,283
UP East LA Yard	1,564
UP LATC Yard	0
UP COI Yard	0
BNSF SB Yard	0
BNSF SCIG Yard	0
Average hours of operation per day	8
Average HP of locomotive	2,009
Average Load Factor	0.083
Fuel Type (diesel S content in ppm)*	15

* Based on EPA Non-Road Diesel Fuel Rule

2026 Berths 121-131 Line-Haul In Yard Activity - No Project Rail

Parameters	2026 Peak Day Work Done by Locomotives (hp-hr/day)
On-site (In terminal) Activity	2,614
Berths 121-131 Related Off-dock Activity	
UP ICTF Yard	946
BNSF Hobart & Commerce Yards	995
UP East LA Yard	50
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with Berths 121-131-related TEUs

2026 Berths 121-131 Line-Haul Traveling - No Project Rail

	2026
Fuel Productivity Factor (gross ton-miles/gal)	808

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each year.
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

2026 Line-Haul Travel Within SCAB - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives *
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	90,477	2,329
East River Bank	6,055	156
BNSF San Bernardino	219,879	5,660
BNSF Cajon	80,584	2,074
UP Los Angeles	77,752	2,001
UP Alhambra	81,763	2,105
UP Yuma	90,695	2,335
UP Mojave	6,348	163

*Work from all linehaul locomotives operating with YM-related TEUs

2026 Line-Haul Travel From SCAB Border To Ca Border - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives*
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	649,107	16,709
UP Yuma	383,800	9,880
UP Mojave	33,865	872

*Work from all linehaul locomotives operating with YM-related TEUs

2026 Berths 121-131 Switchers In Yard Activity -All Scenarios

Activity/Yards	2026 Peak Day Work Done by Switchers (hp-hr/day)*
On-site (In terminal) Activity	378
Berths 121-131-Related Off-dock Activity	
UP ICTF Yard	114
BNSF Hobart & Commerce Yards	120
UP East LA Yard	6
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

Year	2027

2027 On-site Rail Operations -No Project Rail

Parameters	2027	
	Unit Trains	Partial Trains
Train length (ft)	8,813	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.360	0.359
Average hours of operation per visit	1.7	1.7
Number of locomotives per train	3	1
Average HP of locomotive	4,000	4,000
Average Load Factor	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15

On-site Switchers	WBCT
Average hours of operation per day	8
Average HP of locomotive	2500
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

2027 Berths 121-131 On-site Switching Activity - All Scenarios

Activity	2027
Annual Throughput WBCT	2,003,355
Berths 121-131 Fraction of Throughput	0.27
WBCT Switchers work hours (hp-hrs/day)	1,476
YM Switchers work hours (hp-hrs/day)	**395**

2027 Off-site Rail Operations -No Project Rail

Parameters	2027 Train Length (ft) 12,000	10,000	8,000	8,813	6,000	2,000
Line-Hauls Travelling within SCAB						
Peak Month Daily Train-miles in SCAB Region (miles/day						
Alameda Corridor		0.7	1.4	7.9		2.6
East River Bank		0.1	0.2	0.4		
BNSF San Bernardino		3.8	7.6	14.2		
BNSF Cajon		1.4	2.9	5.1		
UP Los Angeles		1.4	2.8	4.9		
UP Alhambra		1.4	2.9	5.2		
UP Yuma		1.6	3.2	5.7		
UP Mojave		0.1	0.2	0.4		
Locomotives per Train	6	5	3	3	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.1	0.1			
BNSF Hobart & Commerce Yards		0.1	0.1			
UP East LA Yard		0.0	0.0			
UP LATC Yard						
UP COI Yard						
BNSF SB Yard						
BNSF SCIG Yard						
Average hours of operation per visit	1.5	1.5	1.5	1.5	1.5	1.5
Number of locomotives per train	6	5	3	3	3	1
Average HP of locomotive	4,000	4,000	4,000	4,000	4,000	4,000
Average Load Factor	0.28	0.28	0.28	0.28	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.1	0.1	0.2	0.1	na
UP Yuma		0.0	0.0	0.1	0.0	na
UP Mojave		0.0	0.0	0.0	0.0	na
Locomotives per Train	6	5	3	3	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Average travel distance (miles/train)						
BNSF Cajon	191	191	191	191	191	191
UP Yuma	184	184	184	184	184	184
UP Mojave	184	184	184	184	184	184

Off-site Switchers In-yard	
Berths 121-131-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	30,060
BNSF Hobart & Commerce Yards	31,642
UP East LA Yard	1,582
UP LATC Yard	0
UP COI Yard	0
BNSF SB Yard	0
BNSF SCIG Yard	0
Average hours of operation per day	8
Average HP of locomotive	2,009
Average Load Factor	0.083
Fuel Type (diesel S content in ppm)*	15

* Based on EPA Non-Road Diesel Fuel Rule

2027 Berths 121-131 Line-Haul In Yard Activity - No Project Rail

Parameters	2027 Peak Day Work Done by Locomotives (hp-hr/day) *
On-site (In terminal) Activity	2,740
Berths 121-131 Related Off-dock Activity	
UP ICTF Yard	953
BNSF Hobart & Commerce Yards	1,003
UP East LA Yard	50
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with Berths 121-131-related TEUs

2027 Berths 121-131 Line-Haul Traveling - No Project Rail

	2027
Fuel Productivity Factor (gross ton-miles/gal)	816

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each year.
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

2027 Line-Haul Travel Within SCAB - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives *
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	92,752	2,364
East River Bank	6,176	157
BNSF San Bernardino	224,269	5,716
BNSF Cajon	82,172	2,094
UP Los Angeles	79,273	2,020
UP Alhambra	83,374	2,125
UP Yuma	92,482	2,357
UP Mojave	6,473	165

*Work from all linehaul locomotives operating with YM-related TEUs

2027 Line-Haul Travel From SCAB Border To Ca Border - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives*
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	662,003	16,872
UP Yuma	391,441	9,977
UP Mojave	34,539	880

*Work from all linehaul locomotives operating with YM-related TEUs

2027 Berths 121-131 Switchers In Yard Activity -All Scenarios

Activity/Yards	2027 Peak Day Work Done by Switchers (hp-hr/day)*
On-site (In terminal) Activity	395
Berths 121-131-Related Off-dock Activity	
UP ICTF Yard	111
BNSF Hobart & Commerce Yards	116
UP East LA Yard	6
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

Year	2028

2028 On-site Rail Operations -No Project Rail

Parameters	2028	
	Unit Trains	Partial Trains
Train length (ft)	8,813	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.375	0.378
Average hours of operation per visit	1.7	1.7
Number of locomotives per train	3	1
Average HP of locomotive	4,000	4,000
Average Load Factor	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15

On-site Switchers	WBCT
Average hours of operation per day	8
Average HP of locomotive	2500
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

2028 Berths 121-131 On-site Switching Activity - No Project Scenario

Activity	2028
Annual Throughput WBCT	2,081,388
Berths 121-131 Fraction of Throughput	0.28
WBCT Switchers work hours (hp-hrs/day)	1,482
YM Switchers work hours (hp-hrs/day)	**413**

2028 Off-site Rail Operations -No Project Rail

Parameters	2028 Train Length (ft) 12,000	10,000	8,000	8,813	6,000	2,000
Line-Hauls Travelling within SCAB						
Peak Month Daily Train-miles in SCAB Region (miles/day						
Alameda Corridor		0.7	1.5	8.2		2.7
East River Bank		0.1	0.2	0.4		
BNSF San Bernardino		3.9	8.0	14.8		
BNSF Cajon		1.5	3.0	5.3		
UP Los Angeles		1.4	2.9	5.1		
UP Alhambra		1.5	3.0	5.4		
UP Yuma		1.7	3.4	6.0		
UP Mojave		0.1	0.2	0.4		
Locomotives per Train	6	5	3	3	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.1	0.1			
BNSF Hobart & Commerce Yards		0.1	0.1			
UP East LA Yard		0.0	0.0			
UP LATC Yard						
UP COI Yard						
BNSF SB Yard						
BNSF SCIG Yard						
Average hours of operation per visit	1.5	1.5	1.5	1.5	1.5	1.5
Number of locomotives per train	6	5	3	3	3	1
Average HP of locomotive	4,000	4,000	4,000	4,000	4,000	4,000
Average Load Factor	0.28	0.28	0.28	0.28	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.1	0.1	0.3	0.1	na
UP Yuma		0.0	0.0	0.1	0.0	na
UP Mojave		0.0	0.0	0.0	0.0	na
Locomotives per Train	6	5	3	3	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Average travel distance (miles/train)						
BNSF Cajon	191	191	191	191	191	191
UP Yuma	184	184	184	184	184	184
UP Mojave	184	184	184	184	184	184

Off-site Switchers In-yard	
Berths 121-131-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	31,425
BNSF Hobart & Commerce Yards	33,079
UP East LA Yard	1,654
UP LATC Yard	0
UP COI Yard	0
BNSF SB Yard	0
BNSF SCIG Yard	0
Average hours of operation per day	8
Average HP of locomotive	2,009
Average Load Factor	0.083
Fuel Type (diesel S content in ppm)*	15

* Based on EPA Non-Road Diesel Fuel Rule

2028 Berths 121-131 Line-Haul In Yard Activity - No Project Rail

Parameters	2028 Peak Day Work Done by Locomotives (hp-hr/day)
On-site (In terminal) Activity	2,865
Berths 121-131 Related Off-dock Activity	
UP ICTF Yard	995
BNSF Hobart & Commerce Yards	1,048
UP East LA Yard	52
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with Berths 121-131-related TEUs

2028 Berths 121-131 Line-Haul Traveling - No Project Rail

	2028
Fuel Productivity Factor (gross ton-miles/gal)	824

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each year.
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

2028 Line-Haul Travel Within SCAB - No Project Scenario

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives *
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	96,458	2,434
East River Bank	6,430	162
BNSF San Bernardino	233,524	5,893
BNSF Cajon	85,568	2,159
UP Los Angeles	82,552	2,083
UP Alhambra	86,820	2,191
UP Yuma	96,304	2,430
UP Mojave	6,740	170

*Work from all linehaul locomotives operating with YM-related TEUs

2028 Line-Haul Travel From SCAB Border To Ca Border - No Project Scenario

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives*
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	684,207	17,265
UP Yuma	404,573	10,209
UP Mojave	35,698	901

*Work from all linehaul locomotives operating with YM-related TEUs

2028 Berths 121-131 Switchers In Yard Activity -No Project Scenario

Activity/Yards	2028 Peak Day Work Done by Switchers (hp-hr/day)*
On-site (In terminal) Activity	413
Berths 121-131-Related Off-dock Activity	
UP ICTF Yard	111
BNSF Hobart & Commerce Yards	117
UP East LA Yard	6
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

Year	2036

2036 On-site Rail Operations - No Project Rail

Parameters	2036	
	Unit Trains	Partial Trains
Train length (ft)	9,985	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.503	0.724
Average hours of operation per visit	1.7	1.7
Number of locomotives per train	5	1
Average HP of locomotive	4,000	4,000
Average Load Factor	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15

On-site Switchers	WBCT
Average hours of operation per day	8
Average HP of locomotive	2,500
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

B121-131 On-site Switching Activity 2036 - No Project Alternative

Activity	2036
Annual Throughput WBCT	2,293,306
B121-131 Fraction of Throughput	0.33
WBCT Switchers work hours (hp-hrs/day)	1,565
YM Switchers work hours (hp-hrs/day)	**521**

2036 Off-Site Rail Operations - No Project Rail

Parameters	2036 Train Length (ft) 12,000	10,000	8,000	9,985	6,000	2,000
Line-Hauls Travelling within SCAB						
Peak Month Daily Train-miles in SCAB Region (miles/day						
Alameda Corridor		0.6	1.1	16.6		7.5
East River Bank		0.1	0.2	0.8		
BNSF San Bernardino		3.0	6.1	30.6		
BNSF Cajon		1.1	2.3	11.0		
UP Los Angeles		1.1	2.2	10.5		
UP Alhambra		1.1	2.3	11.1		
UP Yuma		1.3	2.6	12.3		
UP Mojave		0.1	0.2	0.9		
Locomotives per Train	6	5	4	5	3	1
Gross Train Weight (ton)	12000	10000	8000	9985	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.0	0.1			
BNSF Hobart & Commerce Yards		0.0	0.1			
UP East LA Yard		0.0	0.0			
UP LATC Yard						
UP COI Yard						
BNSF SB Yard						
BNSF SCIG Yard						
Average hours of operation per visit	1.5	1.5	1.5	1.5	1.5	1.5
Number of locomotives per train	6	5	4	5	3	1
Average HP of locomotive	4,000	4,000	4,000	4,000	4,000	4,000
Average Load Factor	0.28	0.28	0.28	0.28	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.0	0.1	0.4		na
UP Yuma		0.0	0.1	0.3		na
UP Mojave		0.0	0.0	0.0		na
Locomotives per Train	6	5	4	5	3	1
Gross Train Weight (ton)	12000	10000	8000	9985	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Average travel distance (miles/train)						
BNSF Cajon	191	191	191	191	191	191
UP Yuma	184	184	184	184	184	184
UP Mojave	184	184	184	184	184	184

Off-site Switchers In-yard	
B121-131-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	30,221
BNSF Hobart & Commerce Yards	31,811
UP East LA Yard	1,591
UP LATC Yard	0
UP COI Yard	0
BNSF SB Yard	0
BNSF SCIG Yard	0
Average hours of operation per day	8
Average HP of locomotive	2,009
Average Load Factor	0.083
Fuel Type (diesel S content in ppm)*	15

* Based on EPA Non-Road Diesel Fuel Rule

2036 B121-131 Line-Haul In Yard Activity - No Project Rail

Parameters	2036 Peak Day Work Done by Locomotives (hp-hr/day) *
On-site (In terminal) Activity	6,170
B121-131 Related Off-dock Activity	
UP ICTF Yard	896
BNSF Hobart & Commerce Yards	943
UP East LA Yard	47
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with YM-related TEUs

2036 B121-131 Line-Haul Traveling - No Project Rail

	2036
Fuel Productivity Factor (gross ton-miles/gal)	893

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each year.
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

2036 Line-Haul Travel Within SCAB - No Project Rail

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives *
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	195,297	4,551
East River Bank	10,580	247
BNSF San Bernardino	384,068	8,950
BNSF Cajon	139,071	3,241
UP Los Angeles	133,350	3,108
UP Alhambra	141,106	3,288
UP Yuma	156,520	3,647
UP Mojave	10,955	255

*Work from all linehaul locomotives operating with YM-related TEUs

2036 Line-Haul Travel From SCAB Border To Ca Border - No Project Rail

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives*
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	1,071,072	24,960
UP Yuma	815,856	19,012
UP Mojave	71,987	1,678

*Work from all linehaul locomotives operating with YM-related TEUs

2036 B121-131 Switchers In Yard Activity - No Project Rail

	2036
Activity/Yards	Peak Day Work Done by Switchers (hp-hr/day)*
On-site (In terminal) Activity	521
B121-131-Related Off-dock Activity	
UP ICTF Yard	46
BNSF Hobart & Commerce Yards	49
UP East LA Yard	2
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

Year	2050

2050 On-site Rail Operations - No Project Rail

Parameters	2050	
	Unit Trains	Partial Trains
Train length (ft)	9,985	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.969	1.428
Average hours of operation per visit	1.5	1.5
Number of locomotives per train	5	1
Average HP of locomotive	4,000	4,000
Average Load Factor	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15

On-site Switchers	WBCT
Average hours of operation per day	8
Average HP of locomotive	2,500
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

2050 B121-131 On-site Switching Activity - No Project Alternative

Activity	2050
Annual Throughput WBCT	2,612,806
B121-131 Fraction of Throughput	0.40
WBCT Switchers work hours (hp-hrs/day)	1,732
YM Switchers work hours (hp-hrs/day)	**689**

2050 Off-Site Rail Operations - No Project Rail

Parameters	2050 Train Length (ft) 12,000	10,000	8,000	9,985	6,000	2,000
Line-Hauls Travelling within SCAB						
Peak Month Daily Train-miles in SCAB Region (miles/day						
Alameda Corridor		0.8	1.6	23.5		10.8
East River Bank		0.1	0.2	1.2		
BNSF San Bernardino		4.2	8.6	43.5		
BNSF Cajon		1.6	3.2	15.6		
UP Los Angeles		1.6	3.2	14.9		
UP Alhambra		1.6	3.3	15.8		
UP Yuma		1.8	3.7	17.5		
UP Mojave		0.1	0.3	1.2		
Locomotives per Train	6	5	4	5	3	1
Gross Train Weight (ton)	12000	10000	8000	9985	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.1	0.1			
BNSF Hobart & Commerce Yards		0.1	0.1			
UP East LA Yard		0.0	0.0			
UP LATC Yard						
UP COI Yard						
BNSF SB Yard						
BNSF SCIG Yard						
Average hours of operation per visit	1.5	1.5	1.5	1.5	1.5	1.5
Number of locomotives per train	6	5	4	5	3	1
Average HP of locomotive	4,000	4,000	4,000	4,000	4,000	4,000
Average Load Factor	0.28	0.28	0.28	0.28	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.1	0.1	0.6		na
UP Yuma		0.1	0.1	0.5		na
UP Mojave		0.0	0.0	0.0		na
Locomotives per Train	6	5	4	5	3	1
Gross Train Weight (ton)	12000	10000	8000	9985	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Average travel distance (miles/train)						
BNSF Cajon	191	191	191	191	191	191
UP Yuma	184	184	184	184	184	184
UP Mojave	184	184	184	184	184	184

Off-site Switchers In-yard	
B121-131-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	44,289
BNSF Hobart & Commerce Yards	46,620
UP East LA Yard	2,331
UP LATC Yard	0
UP COI Yard	0
BNSF SB Yard	0
BNSF SCIG Yard	0
Average hours of operation per day	8
Average HP of locomotive	2,009
Average Load Factor	0.083
Fuel Type (diesel S content in ppm)*	15

* Based on EPA Non-Road Diesel Fuel Rule

2050 B121-131 Line-Haul In Yard Activity - No Project Rail

Parameters	2050 Peak Day Work Done by Locomotives (hp-hr/day)
On-site (In terminal) Activity	10,676
B121-131 Related Off-dock Activity	
UP ICTF Yard	1,273
BNSF Hobart & Commerce Yards	1,340
UP East LA Yard	67
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with YM-related TEUs

2050 B121-131 Line-Haul Traveling - No Project Rail

	2050
Fuel Productivity Factor (gross ton-miles/gal)	1026

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each year.
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

2050 Line-Haul Travel Within SCAB - No Project Alternative

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives *
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	277,471	5,625
East River Bank	15,035	305
BNSF San Bernardino	545,777	11,065
BNSF Cajon	197,626	4,006
UP Los Angeles	189,496	3,842
UP Alhambra	200,517	4,065
UP Yuma	222,422	4,509
UP Mojave	15,567	316

*Work from all linehaul locomotives operating with YM-related TEUs

2050 Line-Haul Travel From SCAB Border To Ca Border - No Project Alternative

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives*
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	1,522,039	30,856
UP Yuma	1,159,367	23,504
UP Mojave	102,297	2,074

*Work from all linehaul locomotives operating with YM-related TEUs

2050 B121-131 Switchers In Yard Activity - No Project Alternative

	2050
Activity/Yards	Peak Day Work Done by Switchers (hp-hr/day)*
On-site (In terminal) Activity	689
B121-131-Related Off-dock Activity	
UP ICTF Yard	61
BNSF Hobart & Commerce Yards	65
UP East LA Yard	3
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

Year	2026

2026 On-site Rail Operations -All Scenarios

Parameters	2026	
	Unit Trains	Partial Trains
Train length (ft)	8,813	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.280	0.273
Average hours of operation per visit	1.7	1.7
Number of locomotives per train	3	1
Average HP of locomotive	4,000	4,000
Average Load Factor	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15

On-site Switchers	WBCT
Average hours of operation per day	8
Average HP of locomotive	2500
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

2026 Berths 121-131 On-site Switching Activity - All Scenarios

Activity	2026
Annual Throughput WBCT	1,922,023
Berths 121-131 Fraction of Throughput	0.23
WBCT Switchers work hours (hp-hrs/day)	1,323
YM Switchers work hours (hp-hrs/day)	**306**

2026 Off-site Rail Operations -All Scenarios

Parameters	2026 Train Length (ft) 12,000	10,000	8,000	8,813	6,000	2,000
Line-Hauls Travelling within SCAB						
Peak Month Daily Train-miles in SCAB Region (miles/day)						
Alameda Corridor		0.7	1.5	8.0		2.6
East River Bank		0.1	0.2	0.4		
BNSF San Bernardino		3.9	7.9	14.5		
BNSF Cajon		1.5	3.0	5.2		
UP Los Angeles		1.4	2.9	5.0		
UP Alhambra		1.5	3.0	5.3		
UP Yuma		1.7	3.4	5.9		
UP Mojave		0.1	0.2	0.4		
Locomotives per Train	6	5	3	3	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.1	0.1			
BNSF Hobart & Commerce Yards		0.1	0.1			
UP East LA Yard		0.0	0.0			
UP LATC Yard						
UP COI Yard						
BNSF SB Yard						
BNSF SCIG Yard						
Average hours of operation per visit	1.5	1.5	1.5	1.5	1.5	1.5
Number of locomotives per train	6	5	3	3	3	1
Average HP of locomotive	4,000	4,000	4,000	4,000	4,000	4,000
Average Load Factor	0.28	0.28	0.28	0.28	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.1	0.1	0.2	0.1	na
UP Yuma		0.0	0.1	0.1	0.0	na
UP Mojave		0.0	0.0	0.0	0.0	na
Locomotives per Train	6	5	3	3	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Average travel distance (miles/train)						
BNSF Cajon	191	191	191	191	191	191
UP Yuma	184	184	184	184	184	184
UP Mojave	184	184	184	184	184	184

Off-site Switchers In-yard	
Berths 121-131-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	29,719
BNSF Hobart & Commerce Yards	31,283
UP East LA Yard	1,564
UP LATC Yard	0
UP COI Yard	0
BNSF SB Yard	0
BNSF SCIG Yard	0
Average hours of operation per day	8
Average HP of locomotive	2500
Average Load Factor	0.083
Fuel Type (diesel S content in ppm)*	15

* Based on EPA Non-Road Diesel Fuel Rule

2026 Berths 121-131 Line-Haul In Yard Activity - All Scenarios

Parameters	2026 Peak Day Work Done by Locomotives (hp-hr/day)
On-site (In terminal) Activity	2,120
Berths 121-131 Related Off-dock Activity	
UP ICTF Yard	991
BNSF Hobart & Commerce Yards	1,044
UP East LA Yard	52
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with Berths 121-131-related TEUs

2026 Berths 121-131 Line-Haul Traveling - All Scenarios

	2026
Fuel Productivity Factor (gross ton-miles/gal)	808

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each year.
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

2026 Line-Haul Travel Within SCAB - All Scenarios

Parameters	**Peak Day Train Travel**	**Peak Daily Work Done by Line Haul Locomotives ***
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	94,854	2,442
East River Bank	6,348	163
BNSF San Bernardino	230,515	5,934
BNSF Cajon	84,482	2,175
UP Los Angeles	81,513	2,098
UP Alhambra	85,718	2,207
UP Yuma	95,082	2,448
UP Mojave	6,655	171

*Work from all linehaul locomotives operating with YM-related TEUs

2026 Line-Haul Travel From SCAB Border To Ca Border - All Scenarios

Parameters	**Peak Day Train Travel**	**Peak Daily Work Done by Line Haul Locomotives***
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	680,508	17,517
UP Yuma	402,366	10,358
UP Mojave	35,503	914

*Work from all linehaul locomotives operating with YM-related TEUs

2026 Berths 121-131 Switchers In Yard Activity -All Scenarios

	2026
Activity/Yards	**Peak Day Work Done by Switchers (hp-hr/day)***
On-site (In terminal) Activity	306
Berths 121-131-Related Off-dock Activity	
UP ICTF Yard	142
BNSF Hobart & Commerce Yards	149
UP East LA Yard	7
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

Year	2027

2027 On-site Rail Operations -All Scenarios

Parameters	2027	
	Unit Trains	Partial Trains
Train length (ft)	8,813	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.276	0.275
Average hours of operation per visit	1.7	1.7
Number of locomotives per train	3	1
Average HP of locomotive	4,000	4,000
Average Load Factor	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15

On-site Switchers	WBCT
Average hours of operation per day	8
Average HP of locomotive	2500
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

2027 Berths 121-131 On-site Switching Activity - All Scenarios

Activity	2027
Annual Throughput WBCT	2,003,355
Berths 121-131 Fraction of Throughput	0.23
WBCT Switchers work hours (hp-hrs/day)	1,323
YM Switchers work hours (hp-hrs/day)	**303**

2027 Off-site Rail Operations -All Scenarios

Parameters	2027 Train Length (ft) 12,000	10,000	8,000	8,813	6,000	2,000
Line-Hauls Travelling within SCAB						
Peak Month Daily Train-miles in SCAB Region (miles/day						
Alameda Corridor		0.7	1.5	8.3		2.7
East River Bank		0.1	0.2	0.4		
BNSF San Bernardino		4.0	8.1	15.1		
BNSF Cajon		1.5	3.1	5.4		
UP Los Angeles		1.5	3.0	5.2		
UP Alhambra		1.5	3.1	5.5		
UP Yuma		1.7	3.4	6.1		
UP Mojave		0.1	0.2	0.4		
Locomotives per Train	6	5	3	3	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.1	0.1			
BNSF Hobart & Commerce Yards		0.1	0.1			
UP East LA Yard		0.0	0.0			
UP LATC Yard						
UP COI Yard						
BNSF SB Yard						
BNSF SCIG Yard						
Average hours of operation per visit	1.5	1.5	1.5	1.5	1.5	1.5
Number of locomotives per train	6	5	3	3	3	1
Average HP of locomotive	4,000	4,000	4,000	4,000	4,000	4,000
Average Load Factor	0.28	0.28	0.28	0.28	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.1	0.1	0.3	0.1	na
UP Yuma		0.0	0.1	0.1	0.0	na
UP Mojave		0.0	0.0	0.0	0.0	na
Locomotives per Train	6	5	3	3	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Average travel distance (miles/train)						
BNSF Cajon	191	191	191	191	191	191
UP Yuma	184	184	184	184	184	184
UP Mojave	184	184	184	184	184	184

Off-site Switchers In-yard	
Berths 121-131-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	30,060
BNSF Hobart & Commerce Yards	31,642
UP East LA Yard	1,582
UP LATC Yard	0
UP COI Yard	0
BNSF SB Yard	0
BNSF SCIG Yard	0
Average hours of operation per day	8
Average HP of locomotive	2500
Average Load Factor	0.083
Fuel Type (diesel S content in ppm)*	15

* Based on EPA Non-Road Diesel Fuel Rule

2027 Berths 121-131 Line-Haul In Yard Activity - All Scenarios

Parameters	2027 Peak Day Work Done by Locomotives (hp-hr/day)
On-site (In terminal) Activity	2,103
Berths 121-131 Related Off-dock Activity	
UP ICTF Yard	1,011
BNSF Hobart & Commerce Yards	1,064
UP East LA Yard	53
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with Berths 121-131-related TEUs

2027 Berths 121-131 Line-Haul Traveling - All Scenarios

	2027
Fuel Productivity Factor (gross ton-miles/gal)	816

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each year.
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

2027 Line-Haul Travel Within SCAB - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives *
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	98,360	2,507
East River Bank	6,549	167
BNSF San Bernardino	237,830	6,061
BNSF Cajon	87,140	2,221
UP Los Angeles	84,067	2,143
UP Alhambra	88,415	2,253
UP Yuma	98,074	2,500
UP Mojave	6,864	175

*Work from all linehaul locomotives operating with YM-related TEUs

2027 Line-Haul Travel From SCAB Border To Ca Border - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives*
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	702,031	17,892
UP Yuma	415,110	10,580
UP Mojave	36,627	934

*Work from all linehaul locomotives operating with YM-related TEUs

2027 Berths 121-131 Switchers In Yard Activity -All Scenarios

Activity/Yards	2027 Peak Day Work Done by Switchers (hp-hr/day)*
On-site (In terminal) Activity	303
Berths 121-131-Related Off-dock Activity	
UP ICTF Yard	138
BNSF Hobart & Commerce Yards	145
UP East LA Yard	7
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

Year	2028

2028 On-site Rail Operations -No Project Scenario

Parameters	2028	
	Unit Trains	Partial Trains
Train length (ft)	8,813	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.375	0.378
Average hours of operation per visit	1.7	1.7
Number of locomotives per train	3	1
Average HP of locomotive	4,000	4,000
Average Load Factor	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15

On-site Switchers	WBCT
Average hours of operation per day	8
Average HP of locomotive	2500
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

2028 Berths 121-131 On-site Switching Activity - No Project Scenario

Activity	2028
Annual Throughput WBCT	2,081,388
Berths 121-131 Fraction of Throughput	0.19
WBCT Switchers work hours (hp-hrs/day)	2,227
YM Switchers work hours (hp-hrs/day)	**413**

2028 Off-site Rail Operations -No Project Scenario

Parameters	2028 Train Length (ft) 12,000	10,000	8,000	8,813	6,000	2,000
Line-Hauls Travelling within SCAB						
Peak Month Daily Train-miles in SCAB Region (miles/day						
Alameda Corridor		0.7	1.5	8.2		2.7
East River Bank		0.1	0.2	0.4		
BNSF San Bernardino		3.9	8.0	14.8		
BNSF Cajon		1.5	3.0	5.3		
UP Los Angeles		1.4	2.9	5.1		
UP Alhambra		1.5	3.0	5.4		
UP Yuma		1.7	3.4	6.0		
UP Mojave		0.1	0.2	0.4		
Locomotives per Train	6	5	3	3	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.1	0.1			
BNSF Hobart & Commerce Yards		0.1	0.1			
UP East LA Yard		0.0	0.0			
UP LATC Yard						
UP COI Yard						
BNSF SB Yard						
BNSF SCIG Yard						
Average hours of operation per visit	1.5	1.5	1.5	1.5	1.5	1.5
Number of locomotives per train	6	5	3	3	3	1
Average HP of locomotive	4,000	4,000	4,000	4,000	4,000	4,000
Average Load Factor	0.28	0.28	0.28	0.28	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.1	0.1	0.3	0.1	na
UP Yuma		0.0	0.0	0.1	0.0	na
UP Mojave		0.0	0.0	0.0	0.0	na
Locomotives per Train	6	5	3	3	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Average travel distance (miles/train)						
BNSF Cajon	191	191	191	191	191	191
UP Yuma	184	184	184	184	184	184
UP Mojave	184	184	184	184	184	184

Off-site Switchers In-yard	
Berths 121-131-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	31,425
BNSF Hobart & Commerce Yards	33,079
UP East LA Yard	1,654
UP LATC Yard	0
UP COI Yard	0
BNSF SB Yard	0
BNSF SCIG Yard	0
Average hours of operation per day	8
Average HP of locomotive	2500
Average Load Factor	0.083
Fuel Type (diesel S content in ppm)*	15

* Based on EPA Non-Road Diesel Fuel Rule

2028 Berths 121-131 Line-Haul In Yard Activity - No Project Scenario

Parameters	2028 Peak Day Work Done by Locomotives (hp-hr/day)
On-site (In terminal) Activity	2,865
Berths 121-131 Related Off-dock Activity	
UP ICTF Yard	995
BNSF Hobart & Commerce Yards	1,048
UP East LA Yard	52
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with Berths 121-131-related TEUs

2028 Berths 121-131 Line-Haul Traveling - No Project Scenario

	2028
Fuel Productivity Factor (gross ton-miles/gal)	824

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each year.
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

2028 Line-Haul Travel Within SCAB - No Project Scenario

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives *
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	96,458	2,434
East River Bank	6,430	162
BNSF San Bernardino	233,524	5,893
BNSF Cajon	85,568	2,159
UP Los Angeles	82,552	2,083
UP Alhambra	86,820	2,191
UP Yuma	96,304	2,430
UP Mojave	6,740	170

*Work from all linehaul locomotives operating with YM-related TEUs

2028 Line-Haul Travel From SCAB Border To Ca Border - No Project Scenario

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives*
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	684,207	17,265
UP Yuma	404,573	10,209
UP Mojave	35,698	901

*Work from all linehaul locomotives operating with YM-related TEUs

2028 Berths 121-131 Switchers In Yard Activity -No Project Scenario

Activity/Yards	2028 Peak Day Work Done by Switchers (hp-hr/day)*
On-site (In terminal) Activity	413
Berths 121-131-Related Off-dock Activity	
UP ICTF Yard	138
BNSF Hobart & Commerce Yards	146
UP East LA Yard	7
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

Year	2036

2036 On-site Rail Operations - No Federal Action Alternative

Parameters	2036	
	Unit Trains	Partial Trains
Train length (ft)	9,985	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.651	0.937
Average hours of operation per visit	1.7	1.7
Number of locomotives per train	5	1
Average HP of locomotive	4,000	4,000
Average Load Factor	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15

On-site Switchers	WBCT
Average hours of operation per day	8
Average HP of locomotive	2,500
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

B121-131 On-site Switching Activity 2036 - No Federal Action Alternative

Activity	2036
Annual Throughput WBCT	2,293,306
B121-131 Fraction of Throughput	0.26
WBCT Switchers work hours (hp-hrs/day)	2,823
YM Switchers work hours (hp-hrs/day)	**735**

2036 Off-Site Rail Operations - No Federal Action Alternative

Parameters	2036 Train Length (ft) 12,000	10,000	8,000	9,985	6,000	2,000
Line-Hauls Travelling within SCAB						
Peak Month Daily Train-miles in SCAB Region (miles/day						
Alameda Corridor		0.5	1.0	15.3		6.9
East River Bank		0.1	0.2	0.8		
BNSF San Bernardino		2.8	5.6	28.2		
BNSF Cajon		1.0	2.1	10.1		
UP Los Angeles		1.0	2.1	9.7		
UP Alhambra		1.1	2.1	10.3		
UP Yuma		1.2	2.4	11.4		
UP Mojave		0.1	0.2	0.8		
Locomotives per Train	6	5	4	5	3	1
Gross Train Weight (ton)	12000	10000	8000	9985	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.0	0.1			
BNSF Hobart & Commerce Yards		0.0	0.1			
UP East LA Yard		0.0	0.0			
UP LATC Yard						
UP COI Yard						
BNSF SB Yard						
BNSF SCIG Yard						
Average hours of operation per visit	1.5	1.5	1.5	1.5	1.5	1.5
Number of locomotives per train	6	5	4	5	3	1
Average HP of locomotive	4,000	4,000	4,000	4,000	4,000	4,000
Average Load Factor	0.28	0.28	0.28	0.28	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.0	0.1	0.4		na
UP Yuma		0.0	0.1	0.3		na
UP Mojave		0.0	0.0	0.0		na
Locomotives per Train	6	5	4	5	3	1
Gross Train Weight (ton)	12000	10000	8000	9985	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Average travel distance (miles/train)						
BNSF Cajon	191	191	191	191	191	191
UP Yuma	184	184	184	184	184	184
UP Mojave	184	184	184	184	184	184

Off-site Switchers In-yard	
B121-131-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	30,221
BNSF Hobart & Commerce Yards	31,811
UP East LA Yard	1,591
UP LATC Yard	0
UP COI Yard	0
BNSF SB Yard	0
BNSF SCIG Yard	0
Average hours of operation per day	8
Average HP of locomotive	2,500
Average Load Factor	0.083
Fuel Type (diesel S content in ppm)*	15

* Based on EPA Non-Road Diesel Fuel Rule

2036 B121-131 Line-Haul In Yard Activity - No Federal Action Alternative

Parameters	2036 Peak Day Work Done by Locomotives (hp-hr/day) *
On-site (In terminal) Activity	7,986
B121-131 Related Off-dock Activity	
UP ICTF Yard	827
BNSF Hobart & Commerce Yards	870
UP East LA Yard	44
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with YM-related TEUs

2036 B121-131 Line-Haul Traveling - No Federal Action Alternative

	2036
Fuel Productivity Factor (gross ton-miles/gal)	893

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each year.
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

2036 Line-Haul Travel Within SCAB - No Federal Action Alternative

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives *
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	180,183	4,199
East River Bank	9,761	227
BNSF San Bernardino	354,345	8,257
BNSF Cajon	128,308	2,990
UP Los Angeles	123,030	2,867
UP Alhambra	130,185	3,034
UP Yuma	144,407	3,365
UP Mojave	10,107	236

*Work from all linehaul locomotives operating with YM-related TEUs

2036 Line-Haul Travel From SCAB Border To Ca Border - No Federal Action Alternative

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives*
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	988,182	23,028
UP Yuma	752,717	17,541
UP Mojave	66,416	1,548

*Work from all linehaul locomotives operating with YM-related TEUs

2036 B121-131 Switchers In Yard Activity - No Federal Action Alternative

	2036
Activity/Yards	Peak Day Work Done by Switchers (hp-hr/day)*
On-site (In terminal) Activity	735
B121-131-Related Off-dock Activity	
UP ICTF Yard	58
BNSF Hobart & Commerce Yards	61
UP East LA Yard	3
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

2050 Off-Site Rail Operations - No Federal Action Alternative

Parameters	2050 Train Length (ft) 12,000	10,000	8,000	9,985	6,000	2,000
Line-Hauls Travelling within SCAB						
Peak Month Daily Train-miles in SCAB Region (miles/day						
Alameda Corridor		0.7	1.5	22.1		10.2
East River Bank		0.1	0.2	1.1		
BNSF San Bernardino		4.0	8.1	40.8		
BNSF Cajon		1.5	3.0	14.6		
UP Los Angeles		1.5	3.0	14.0		
UP Alhambra		1.5	3.1	14.9		
UP Yuma		1.7	3.4	16.5		
UP Mojave		0.1	0.2	1.2		
Locomotives per Train	6	5	4	5	3	1
Gross Train Weight (ton)	12000	10000	8000	9985	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.1	0.1			
BNSF Hobart & Commerce Yards		0.1	0.1			
UP East LA Yard		0.0	0.0			
UP LATC Yard						
UP COI Yard						
BNSF SB Yard						
BNSF SCIG Yard						
Average hours of operation per visit	1.5	1.5	1.5	1.5	1.5	1.5
Number of locomotives per train	6	5	4	5	3	1
Average HP of locomotive	4,000	4,000	4,000	4,000	4,000	4,000
Average Load Factor	0.28	0.28	0.28	0.28	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15	15	15	15	15
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.1	0.1	0.6		na
UP Yuma		0.0	0.1	0.5		na
UP Mojave		0.0	0.0	0.0		na
Locomotives per Train	6	5	4	5	3	1
Gross Train Weight (ton)	12000	10000	8000	9985	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Average travel distance (miles/train)						
BNSF Cajon	191	191	191	191	191	191
UP Yuma	184	184	184	184	184	184
UP Mojave	184	184	184	184	184	184

Off-site Switchers In-yard	
B121-131-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	44,289
BNSF Hobart & Commerce Yards	46,620
UP East LA Yard	2,331
UP LATC Yard	0
UP COI Yard	0
BNSF SB Yard	0
BNSF SCIG Yard	0
Average hours of operation per day	8
Average HP of locomotive	2,500
Average Load Factor	0.083
Fuel Type (diesel S content in ppm)*	15

* Based on EPA Non-Road Diesel Fuel Rule

2050 B121-131 Line-Haul In Yard Activity - No Federal Action Alternative

Parameters	2050 Peak Day Work Done by Locomotives (hp-hr/day) *
On-site (In terminal) Activity	11,992
B121-131 Related Off-dock Activity	
UP ICTF Yard	1,195
BNSF Hobart & Commerce Yards	1,258
UP East LA Yard	63
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with YM-related TEUs

2050 B121-131 Line-Haul Traveling - No Federal Action Alternative

	2050
Fuel Productivity Factor (gross ton-miles/gal)	1026

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each year.
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

2050 Line-Haul Travel Within SCAB - No Federal Action Alternative

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives *
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	260,507	5,281
East River Bank	14,116	286
BNSF San Bernardino	512,411	10,388
BNSF Cajon	185,544	3,762
UP Los Angeles	177,912	3,607
UP Alhambra	188,258	3,817
UP Yuma	208,824	4,234
UP Mojave	14,615	296

*Work from all linehaul locomotives operating with YM-related TEUs

2050 Line-Haul Travel From SCAB Border To Ca Border - No Federal Action Alternative

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives*
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	1,428,990	28,970
UP Yuma	1,088,489	22,067
UP Mojave	96,043	1,947

*Work from all linehaul locomotives operating with YM-related TEUs

2050 B121-131 Switchers In Yard Activity - No Federal Action Alternative

	2050
Activity/Yards	Peak Day Work Done by Switchers (hp-hr/day)*
On-site (In terminal) Activity	1,236
B121-131-Related Off-dock Activity	
UP ICTF Yard	76
BNSF Hobart & Commerce Yards	80
UP East LA Yard	4
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

Line Haul Composite Emission Factors - All Scenarios

2019	Line-Haul	0.224	1.280	5.578	0.005	0.141	0.141	0.132	489.0	0.040	0.013
2026	Line-Haul	0.192	1.280	5.260	0.005	0.119	0.119	0.112	489.0	0.040	0.013
2027	Line-Haul	0.189	1.280	5.237	0.005	0.117	0.117	0.110	489.0	0.040	0.013
2028	Line-Haul	0.187	1.280	5.205	0.005	0.116	0.116	0.109	489.0	0.040	0.013
2036	Line-Haul	0.134	1.280	4.024	0.005	0.079	0.079	0.074	489.0	0.040	0.013
2050	Line-Haul	0.055	1.280	1.498	0.005	0.024	0.024	0.022	489.0	0.040	0.013

Switchers Composite Emission Factors - All Scenarios

2019	Switchers	0.211	1.753	4.089	0.006	0.070	0.070	0.066	654.0	0.050	0.017
2026	Switchers	0.211	1.753	4.089	0.006	0.070	0.070	0.066	654.0	0.050	0.017
2027	Switchers	0.211	1.753	4.089	0.006	0.070	0.070	0.066	654.0	0.050	0.017
2028	Switchers	0.211	1.753	4.089	0.006	0.070	0.070	0.066	654.0	0.050	0.017
2036	Switchers	0.211	1.753	4.089	0.006	0.070	0.070	0.066	654.0	0.050	0.017
2050	Switchers	0.211	1.753	4.089	0.006	0.070	0.070	0.066	654.0	0.050	0.017

Note:
1) Emission Factors represent a composite mix of the various engine tier levels and corresponding tier-specific emission factors, weighted according to the fleet mix percentage of each tier.

Rail Fleet Characteristics & Mix

pre-controlled	0.001	0.000	0.000	0.000	0.000	0.000
Tier 1	0.007	0.001	0.000	0.000	0.000	0.000
Tier 1+	0.296	0.299	0.298	0.298	0.148	0.007
Tier 3	0.206	0.209	0.210	0.211	0.197	0.103
PHL's pre-controlled switchers	--	--	--	--	--	--
pre-controlled	--	--	--	--	--	--
Tier 1	--	--	--	--	--	--
Tier 1+	--	--	--	--	--	--
Tier 3	0.72	0.720	0.720	0.720	0.720	0.720
Gensets	0.24	0.240	0.240	0.240	0.240	0.240

Rail Raw Emission Factors by Tier

pre-controlled	0.51	1.28	13.000	0.005	0.32	0.32	0.3008	489	0.04	0.013
Tier 0	0.51	1.28	8.600	0.005	0.32	0.32	0.3008	489	0.04	0.013
Tier 0+	0.32	1.28	7.200	0.005	0.2	0.2	0.188	489	0.04	0.013
Tier 1	0.49	1.28	6.700	0.005	0.32	0.32	0.3008	489	0.04	0.013
Tier 1+	0.31	1.28	6.700	0.005	0.2	0.2	0.188	489	0.04	0.013
Tier 2	0.27	1.28	4.950	0.005	0.18	0.18	0.1692	489	0.04	0.013
Tier 2+	0.14	1.28	4.950	0.005	0.08	0.08	0.0752	489	0.04	0.013
Tier 3	0.14	1.28	4.950	0.005	0.08	0.08	0.0752	489	0.04	0.013
Tier 4	0.04	1.28	1.000	0.005	0.015	0.015	0.0141	489	0.04	0.013
PHL's pre-controlled switchers*	0.91611	1.83	17.6	0.006	0.38	0.38	0.3572	678	0.05	0.017
pre-controlled	0.91611	1.83	17.6	0.006	0.38	0.38	0.3572	678	0.05	0.017
Tier 0	1.06353	1.83	12.6	0.006	0.44	0.44	0.4136	678	0.05	0.017
Tier 0+	1.06353	1.83	12.6	0.006	0.44	0.44	0.4136	678	0.05	0.017
Tier 1**	0.49491	1.28	6.7	0.006	0.32	0.32	0.3008	678	0.05	0.017
Tier 1+	0.49491	1.28	6.7	0.006	0.32	0.32	0.3008	678	0.05	0.017
Tier 2	0.53703	1.83	7.3	0.006	0.19	0.19	0.1786	678	0.05	0.017
Tier 2+	0.53703	1.83	7.3	0.006	0.19	0.19	0.1786	678	0.05	0.017
Tier 3	0.27378	1.83	4.5	0.006	0.08	0.08	0.0752	678	0.05	0.017
Gensets	0.04212	1.51	3.37	0.005	0.05	0.05	0.047	578	0.05	0.015

* Based on data collected during development of the 2023 POLA emissions inventory

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

Notes:
1. Linehaul emission factors for VOC, NOx, and PM10 were sourced from g/bhp-hr factors published in EPA *Technical Highlights: Emission Factors for Locomotives* , EPA-420-F-09-025, April 2009.
2. Linehaul greenhouse gas (GHG) emission factors (CO2, N2O, and CH4) and SOx are from the POLA 2023 Air Emissions Inventory, Table 6.4.
3. Switcher emission factors are from POLA 2023 Air Emissions Inventory, Table 5.1.
4. VOC emission factors equal 1.053 x HC emission factors, per EPA *Regulatory Impact Analysis: Control of Emissions of Air Pollution from Locomotive Engines and Marine Compression Ignition Engines Less than 30 Liters Per Cylinder* , EPA-420-R-08-001a, May 2008, page 3-77.
5. PM2.5 emissions are assumed to be 94% of PM10 emissions (POLA 2023 Air Emissions Inventory, pg 48.)
6. PM10 and DPM emissions from locomotives are assumed to be equivalent (POLA 2023 Air Emissions Inventory, pg. 48).
7. Emission factors assume a line haul locomotive fuel consumption rate of 20.8 bhp-hr per gallon of fuel, from EPA Technical Highlights: Emission Factors for Locomotives, EPA-420-F-09-025, April 2009.

Worker Vehicles and Drayage Trucks

On-site Drayage Trucks and Passenger Car Annual Trips and Peaking Factors - All Years and Scenarios

Scenario	Year	DayToYear Peaking Factor	DayTo8hr Peaking Factor	DayTo1hr Peaking Factor	Annual Passenger Car Visits	Annual Truck Visits	LNG Fractions
Baseline	2019	263	0.532	0.078	71,799	159,641	0.044
Project	2050	276	0.532	0.078	383,995	801,000	0.044
Project	2036	276	0.532	0.078	250,625	528,000	0.044
Project	2028	276	0.532	0.078	156,268	406,000	0.044
Project	2027	276	0.532	0.078	56,375	122,701	0.044
Project	2026	276	0.532	0.078	55,042	117,395	0.044
No Project	2050	276	0.532	0.078	271,796	441,000	0.044
No Project	2036	276	0.532	0.078	135,573	233,000	0.044
No Project	2028	276	0.532	0.078	96,048	215,500	0.044
No Project	2027	276	0.532	0.078	93,150	207,500	0.044
No Project	2026	276	0.532	0.078	90,666	201,000	0.044
No Federal Action (NFA)	2050	276	0.532	0.078	169,232	399,000	0.044
No Federal Action (NFA)	2036	276	0.532	0.078	135,218	265,000	0.044
No Federal Action (NFA)	2028	276	0.532	0.078	96,048	215,500	0.044
No Federal Action (NFA)	2027	276	0.532	0.078	93,150	209,048	0.044
No Federal Action (NFA)	2026	276	0.532	0.078	90,666	199,763	0.044
Floating Baseline	2026	263	0.532	0.078	71,799	159,641	0.044
Floating Baseline	2027	263	0.532	0.078	71,799	159,641	0.044
Floating Baseline	2028	263	0.532	0.078	71,799	159,641	0.044
Floating Baseline	2036	263	0.532	0.078	71,799	159,641	0.044
Floating Baseline	2050	263	0.532	0.078	71,799	159,641	0.044

Average On Terminal Distance	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/trip)	1.5
Average Idling Time (min/truck trip)	
At in-gate	6
At out-gate	0.9
On-terminal, not including at gate	28.8

Off-site Drayage Trucks and Passenger Car Annual VMT - All Years and Scenarios

Scenario	Year	Annual Truck VMT	Annual Passenger Car VMT
Baseline	2019	8,442,935	5,160,066
Project	2025	5,728,982	3,442,444
Project	2026	5,973,436	3,557,850
Project	2027	18,497,799	9,039,792
Project	2036	24,184,452	4,006,482
Project	2045	37,000,410	6,081,321
Baseline	2019	8,442,935	5,160,066
No Project	2025	9,182,904	5,517,846
No Project	2026	9,484,964	5,649,358
No Project	2027	9,845,116	5,817,973
No Project	2036	12,386,644	2,247,516
No Project	2045	19,103,642	4,247,470
Baseline	2019	8,442,935	5,160,066
No Federal Action (NFA)	2025	9,627,126	5,784,771
No Federal Action (NFA)	2026	10,058,475	5,990,949
No Federal Action (NFA)	2027	9,845,116	5,817,973
No Federal Action (NFA)	2036	11,286,385	2,039,897
No Federal Action (NFA)	2045	16,949,888	2,469,570

Emission Factors for Dragyage Trucks for Diesel Fuel - All Scenario (g/mile)

Year	Speed	ROG	TOG	CO	NOx	CO2	PM10	PM2_5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	SOx	CH4	N2O
2019	5	1.07	1.22	3.55	13.60	3,688.36	0.04	0.04	0.04	0.15	0.01	0.05	0.03	0.05	0.58
2019	10	0.84	0.96	2.68	11.19	3,191.31	0.04	0.04	0.04	0.15	0.01	0.05	0.03	0.04	0.50
2019	15	0.57	0.65	1.78	8.59	2,633.70	0.03	0.03	0.04	0.15	0.01	0.05	0.02	0.03	0.41
2019	20	0.41	0.46	1.26	7.09	2,301.15	0.03	0.03	0.04	0.15	0.01	0.05	0.02	0.02	0.36
2019	25	0.30	0.34	0.94	6.15	2,074.71	0.03	0.03	0.04	0.15	0.01	0.05	0.02	0.01	0.33
2019	30	0.22	0.25	0.70	5.47	1,901.94	0.03	0.02	0.04	0.14	0.01	0.05	0.02	0.01	0.30
2019	35	0.17	0.19	0.52	4.93	1,768.10	0.03	0.02	0.04	0.12	0.01	0.04	0.02	0.01	0.28
2019	40	0.13	0.14	0.39	4.54	1,667.71	0.03	0.02	0.04	0.11	0.01	0.04	0.02	0.01	0.26
2019	45	0.10	0.11	0.30	4.27	1,597.60	0.03	0.03	0.04	0.09	0.01	0.03	0.02	0.00	0.25
2019	50	0.07	0.08	0.23	4.13	1,555.73	0.03	0.03	0.04	0.08	0.01	0.03	0.01	0.00	0.24
2019	55	0.06	0.07	0.18	4.10	1,540.75	0.03	0.03	0.04	0.08	0.01	0.03	0.01	0.00	0.24
2019	60	0.06	0.06	0.17	4.23	1,563.77	0.03	0.03	0.04	0.08	0.01	0.03	0.01	0.00	0.25
2019	65	0.06	0.07	0.18	4.52	1,621.97	0.04	0.04	0.04	0.08	0.01	0.03	0.02	0.00	0.26
2019	70	0.06	0.07	0.18	4.54	1,621.97	0.04	0.04	0.04	0.08	0.01	0.03	0.02	0.00	0.26
2019	75	0.06	0.07	0.18	4.54	1,621.97	0.04	0.04	0.04	0.08	0.01	0.03	0.02	0.00	0.26
2026	5	0.11	0.13	1.30	10.73	3,375.47	0.01	0.01	0.04	0.14	0.01	0.05	0.03	0.01	0.53
2026	10	0.06	0.07	0.80	7.71	2,881.01	0.01	0.01	0.04	0.14	0.01	0.05	0.03	0.00	0.45
2026	15	0.03	0.04	0.44	5.10	2,360.45	0.01	0.01	0.04	0.14	0.01	0.05	0.02	0.00	0.37
2026	20	0.02	0.02	0.29	3.89	2,070.41	0.01	0.01	0.04	0.13	0.01	0.05	0.02	0.00	0.33
2026	25	0.02	0.02	0.23	3.01	1,887.73	0.01	0.01	0.04	0.13	0.01	0.05	0.02	0.00	0.30
2026	30	0.01	0.01	0.18	2.25	1,745.96	0.01	0.01	0.04	0.13	0.01	0.04	0.02	0.00	0.28
2026	35	0.01	0.01	0.14	1.65	1,636.48	0.01	0.01	0.04	0.11	0.01	0.04	0.02	0.00	0.26
2026	40	0.01	0.01	0.11	1.23	1,559.30	0.01	0.01	0.04	0.09	0.01	0.03	0.01	0.00	0.25
2026	45	0.01	0.01	0.08	0.97	1,514.43	0.01	0.01	0.04	0.08	0.01	0.03	0.01	0.00	0.24
2026	50	0.01	0.01	0.06	0.87	1,501.85	0.02	0.02	0.04	0.07	0.01	0.02	0.01	0.00	0.24
2026	55	0.01	0.01	0.05	0.95	1,521.57	0.02	0.02	0.04	0.07	0.01	0.02	0.01	0.00	0.24
2026	60	0.01	0.01	0.05	1.19	1,573.59	0.03	0.03	0.04	0.07	0.01	0.02	0.01	0.00	0.25
2026	65	0.01	0.01	0.05	1.60	1,657.90	0.04	0.03	0.04	0.07	0.01	0.02	0.02	0.00	0.26
2026	70	0.01	0.01	0.05	1.60	1,657.90	0.04	0.03	0.04	0.07	0.01	0.02	0.02	0.00	0.26
2026	75	0.01	0.01	0.05	1.60	1,657.90	0.04	0.03	0.04	0.07	0.01	0.02	0.02	0.00	0.26
2027	5	0.11	0.13	1.27	10.78	3,346.25	0.01	0.01	0.04	0.14	0.01	0.05	0.03	0.01	0.53
2027	10	0.06	0.07	0.79	7.72	2,858.27	0.01	0.01	0.04	0.14	0.01	0.05	0.03	0.00	0.45
2027	15	0.03	0.04	0.43	5.09	2,344.05	0.01	0.01	0.04	0.14	0.01	0.05	0.02	0.00	0.37
2027	20	0.02	0.02	0.29	3.88	2,057.29	0.01	0.01	0.04	0.13	0.01	0.05	0.02	0.00	0.32
2027	25	0.02	0.02	0.23	2.99	1,877.77	0.01	0.01	0.04	0.13	0.01	0.05	0.02	0.00	0.30
2027	30	0.01	0.01	0.18	2.23	1,738.94	0.01	0.01	0.04	0.13	0.01	0.04	0.02	0.00	0.27
2027	35	0.01	0.01	0.14	1.64	1,631.83	0.01	0.01	0.04	0.11	0.01	0.04	0.02	0.00	0.26
2027	40	0.01	0.01	0.10	1.22	1,556.45	0.01	0.01	0.04	0.09	0.01	0.03	0.01	0.00	0.25
2027	45	0.01	0.01	0.08	0.96	1,512.79	0.01	0.01	0.04	0.08	0.01	0.03	0.01	0.00	0.24
2027	50	0.01	0.01	0.06	0.86	1,500.86	0.02	0.02	0.04	0.07	0.01	0.02	0.01	0.00	0.24
2027	55	0.01	0.01	0.05	0.93	1,520.66	0.02	0.02	0.04	0.07	0.01	0.02	0.01	0.00	0.24
2027	60	0.01	0.01	0.05	1.17	1,572.19	0.03	0.03	0.04	0.07	0.01	0.02	0.01	0.00	0.25
2027	65	0.01	0.01	0.05	1.57	1,655.44	0.04	0.03	0.04	0.07	0.01	0.02	0.02	0.00	0.26
2027	70	0.01	0.01	0.05	1.58	1,655.44	0.04	0.03	0.04	0.07	0.01	0.02	0.02	0.00	0.26
2027	75	0.01	0.01	0.05	1.58	1,655.44	0.04	0.03	0.04	0.07	0.01	0.02	0.02	0.00	0.26
2036	5	0.11	0.12	0.98	10.12	2,860.64	0.01	0.01	0.04	0.14	0.01	0.05	0.03	0.00	0.45
2036	10	0.06	0.07	0.60	7.14	2,456.89	0.01	0.01	0.04	0.14	0.01	0.05	0.02	0.00	0.39
2036	15	0.03	0.03	0.33	4.60	2,028.48	0.01	0.01	0.04	0.14	0.01	0.05	0.02	0.00	0.32
2036	20	0.02	0.02	0.22	3.45	1,788.04	0.01	0.01	0.04	0.14	0.01	0.05	0.02	0.00	0.28
2036	25	0.01	0.01	0.17	2.64	1,645.06	0.01	0.00	0.04	0.14	0.01	0.05	0.02	0.00	0.26
2036	30	0.01	0.01	0.14	1.96	1,538.09	0.01	0.01	0.04	0.13	0.01	0.05	0.01	0.00	0.24
2036	35	0.01	0.01	0.10	1.43	1,456.64	0.01	0.01	0.04	0.11	0.01	0.04	0.01	0.00	0.23
2036	40	0.01	0.01	0.08	1.04	1,400.70	0.01	0.01	0.04	0.10	0.01	0.03	0.01	0.00	0.22
2036	45	0.01	0.01	0.06	0.80	1,370.28	0.01	0.01	0.04	0.08	0.01	0.03	0.01	0.00	0.22
2036	50	0.01	0.01	0.04	0.70	1,365.37	0.02	0.02	0.04	0.07	0.01	0.03	0.01	0.00	0.22
2036	55	0.01	0.01	0.03	0.74	1,385.99	0.02	0.02	0.04	0.07	0.01	0.03	0.01	0.00	0.22
2036	60	0.01	0.01	0.03	0.94	1,432.12	0.03	0.03	0.04	0.07	0.01	0.03	0.01	0.00	0.23
2036	65	0.01	0.01	0.03	1.27	1,503.77	0.03	0.03	0.04	0.07	0.01	0.03	0.01	0.00	0.24
2036	70	0.01	0.01	0.03	1.28	1,503.77	0.03	0.03	0.04	0.07	0.01	0.03	0.01	0.00	0.24
2036	75	0.01	0.01	0.03	1.28	1,503.77	0.03	0.03	0.04	0.07	0.01	0.03	0.01	0.00	0.24
2050	5	0.10	0.12	0.86	9.56	2,547.24	0.01	0.01	0.04	0.15	0.01	0.05	0.02	0.00	0.40
2050	10	0.06	0.06	0.53	6.71	2,192.18	0.01	0.01	0.04	0.15	0.01	0.05	0.02	0.00	0.35
2050	15	0.03	0.03	0.29	4.30	1,814.45	0.01	0.01	0.04	0.15	0.01	0.05	0.02	0.00	0.29
2050	20	0.02	0.02	0.19	3.20	1,601.93	0.01	0.01	0.04	0.15	0.01	0.05	0.02	0.00	0.25
2050	25	0.01	0.01	0.15	2.45	1,478.37	0.00	0.00	0.04	0.14	0.01	0.05	0.01	0.00	0.23
2050	30	0.01	0.01	0.12	1.82	1,387.41	0.00	0.00	0.04	0.14	0.01	0.05	0.01	0.00	0.22
2050	35	0.01	0.01	0.09	1.32	1,318.69	0.01	0.01	0.04	0.12	0.01	0.04	0.01	0.00	0.21
2050	40	0.01	0.01	0.07	0.96	1,272.22	0.01	0.01	0.04	0.10	0.01	0.04	0.01	0.00	0.20
2050	45	0.01	0.01	0.05	0.73	1,247.98	0.01	0.01	0.04	0.09	0.01	0.03	0.01	0.00	0.20
2050	50	0.01	0.01	0.04	0.63	1,245.99	0.01	0.01	0.04	0.08	0.01	0.03	0.01	0.00	0.20
2050	55	0.01	0.01	0.03	0.67	1,266.24	0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.20
2050	60	0.01	0.01	0.02	0.84	1,308.74	0.02	0.02	0.04	0.08	0.01	0.03	0.01	0.00	0.21
2050	65	0.01	0.01	0.02	1.15	1,373.47	0.03	0.03	0.04	0.08	0.01	0.03	0.01	0.00	0.22
2050	70	0.01	0.01	0.02	1.15	1,373.47	0.03	0.03	0.04	0.08	0.01	0.03	0.01	0.00	0.22
2050	75	0.01	0.01	0.02	1.15	1,373.47	0.03	0.03	0.04	0.08	0.01	0.03	0.01	0.00	0.22
2028	5	0.11	0.13	1.25	10.79	3,311.58	0.01	0.01	0.04	0.14	0.01	0.05	0.03	0.01	0.52
2028	10	0.06	0.07	0.77	7.71	2,830.67	0.01	0.01	0.04	0.14	0.01	0.05	0.03	0.00	0.45
2028	15	0.03	0.04	0.42	5.06	2,323.45	0.01	0.01	0.04	0.14	0.01	0.05	0.02	0.00	0.37
2028	20	0.02	0.02	0.28	3.85	2,040.35	0.01	0.01	0.04	0.13	0.01	0.05	0.02	0.00	0.32
2028	25	0.02	0.02	0.22	2.97	1,864.17	0.01	0.01	0.04	0.13	0.01	0.05	0.02	0.00	0.29
2028	30	0.01	0.01	0.17	2.22	1,728.38	0.01	0.01	0.04	0.13	0.01	0.04	0.02	0.00	0.27
2028	35	0.01	0.01	0.13	1.63	1,623.73	0.01	0.01	0.04	0.11	0.01	0.04	0.02	0.00	0.26
2028	40	0.01	0.01	0.10	1.20	1,550.21	0.01	0.01	0.04	0.09	0.01	0.03	0.01	0.00	0.24
2028	45	0.01	0.01	0.08	0.94	1,507.84	0.01	0.01	0.04	0.08	0.01	0.03	0.01	0.00	0.24
2028	50	0.01	0.01	0.06	0.84	1,496.59	0.02	0.02	0.04	0.07	0.01	0.02	0.01	0.00	0.24
2028	55	0.01	0.01	0.05	0.91	1,516.49	0.02	0.02	0.04	0.07	0.01	0.02	0.01	0.00	0.24
2028	60	0.01	0.01	0.04	1.14	1,567.52	0.03	0.03	0.04	0.07	0.01	0.02	0.01	0.00	0.25
2028	65	0.01	0.01	0.05	1.54	1,649.68	0.04	0.03	0.04	0.07	0.01	0.02	0.02	0.00	0.26
2028	70	0.01	0.01	0.05	1.55	1,649.68	0.04	0.03	0.04	0.07	0.01	0.02	0.02	0.00	0.26
2028	75	0.01	0.01	0.05	1.55	1,649.68	0.04	0.03	0.04	0.07	0.01	0.02	0.02	0.00	0.26
2019	idling	3.44	3.92	33.35	64.22	9,926.95	0.03	0.02	-	-	-	-	0.09	0.16	1.56
2026	idling	3.42	3.89	50.51	39.53	8,331.71	0.01	0.01	-	-	-	-	0.08	0.16	1.31
2027	idling	3.42	3.89	50.51	39.10	8,274.62	0.01	0.01	-	-	-	-	0.08	0.16	1.30
2028	idling	3.42	3.89	50.51	38.66	8,205.26	0.01	0.01	-	-	-	-	0.08	0.16	1.29
2036	idling	3.42	3.89	50.51	33.86	7,241.96	0.01	0.01	-	-	-	-	0.07	0.16	1.14
2050	idling	2.90	3.30	42.83	27.52	5,510.20	0.01	0.01	-	-	-	-	0.05	0.13	0.87

Emission Factors for Dragyage Trucks for LNG Fuel - All Scenarios (g/mile)

Year	Speed	ROG	TOG	CO	NOx	CO2	PM10	PM2_5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	SOx	CH4	N2O
2019	5	0.15	10.57	24.66	5.74	4,605.75	0.01	0.01	0.04	0.15	0.01	0.05	-	10.36	0.94
2019	10	0.09	6.73	23.02	3.69	3,672.40	0.00	0.00	0.04	0.15	0.01	0.05	-	6.59	0.75
2019	15	0.05	3.81	20.02	2.11	2,760.87	0.00	0.00	0.04	0.15	0.01	0.05	-	3.73	0.56
2019	20	0.04	2.62	17.38	1.46	2,287.88	0.00	0.00	0.04	0.15	0.01	0.05	-	2.56	0.47
2019	25	0.03	1.98	15.11	1.11	1,988.27	0.00	0.00	0.04	0.15	0.01	0.05	-	1.94	0.41
2019	30	0.02	1.58	13.21	0.89	1,777.47	0.00	0.00	0.04	0.14	0.01	0.05	-	1.55	0.36
2019	35	0.02	1.31	11.67	0.75	1,619.13	0.00	0.00	0.04	0.12	0.01	0.04	-	1.29	0.33
2019	40	0.02	1.12	10.49	0.64	1,494.76	0.00	0.00	0.04	0.11	0.01	0.04	-	1.10	0.30
2019	45	0.01	0.97	9.68	0.56	1,393.84	0.00	0.00	0.04	0.09	0.01	0.03	-	0.95	0.28
2019	50	0.01	0.86	9.24	0.49	1,309.89	0.00	0.00	0.04	0.08	0.01	0.03	-	0.84	0.27
2019	55	0.01	0.77	9.17	0.44	1,238.68	0.00	0.00	0.04	0.08	0.01	0.03	-	0.75	0.25
2019	60	0.01	0.77	9.17	0.44	1,238.68	0.00	0.00	0.04	0.08	0.01	0.03	-	0.75	0.25
2019	65	0.01	0.77	9.17	0.44	1,238.68	0.00	0.00	0.04	0.08	0.01	0.03	-	0.75	0.25
2019	70	0.01	0.77	9.17	0.44	1,238.68	0.00	0.00	0.04	0.08	0.01	0.03	-	0.75	0.25
2019	75	0.01	0.77	9.17	0.44	1,238.68	0.00	0.00	0.04	0.08	0.01	0.03	-	0.75	0.25
2026	5	0.12	8.66	23.62	2.67	4,039.40	0.01	0.01	0.04	0.14	0.01	0.05	-	8.48	0.82
2026	10	0.08	5.74	21.91	1.77	3,232.52	0.01	0.01	0.04	0.14	0.01	0.05	-	5.62	0.66
2026	15	0.05	3.43	18.74	1.06	2,441.33	0.01	0.01	0.04	0.14	0.01	0.05	-	3.36	0.50
2026	20	0.03	2.44	15.88	0.76	2,029.21	0.00	0.00	0.04	0.13	0.01	0.05	-	2.39	0.41
2026	25	0.03	1.90	13.35	0.59	1,767.47	0.00	0.00	0.04	0.13	0.01	0.05	-	1.86	0.36
2026	30	0.02	1.55	11.14	0.49	1,582.94	0.00	0.00	0.04	0.13	0.01	0.04	-	1.52	0.32
2026	35	0.02	1.31	9.25	0.42	1,444.11	0.00	0.00	0.04	0.11	0.01	0.04	-	1.29	0.29
2026	40	0.02	1.14	7.69	0.36	1,334.92	0.00	0.00	0.04	0.09	0.01	0.03	-	1.12	0.27
2026	45	0.01	1.01	6.45	0.32	1,246.20	0.00	0.00	0.04	0.08	0.01	0.03	-	0.99	0.25
2026	50	0.01	0.90	5.52	0.29	1,172.32	0.00	0.00	0.04	0.07	0.01	0.02	-	0.88	0.24
2026	55	0.01	0.82	4.92	0.27	1,109.60	0.00	0.00	0.04	0.07	0.01	0.02	-	0.80	0.23
2026	60	0.01	0.82	4.92	0.27	1,109.60	0.00	0.00	0.04	0.07	0.01	0.02	-	0.80	0.23
2026	65	0.01	0.82	4.92	0.27	1,109.60	0.00	0.00	0.04	0.07	0.01	0.02	-	0.80	0.23
2026	70	0.01	0.82	4.92	0.27	1,109.60	0.00	0.00	0.04	0.07	0.01	0.02	-	0.80	0.23
2026	75	0.01	0.82	4.92	0.27	1,109.60	0.00	0.00	0.04	0.07	0.01	0.02	-	0.80	0.23
2027	5	0.12	8.41	23.48	2.27	3,978.22	0.01	0.01	0.04	0.14	0.01	0.05	-	8.24	0.81
2027	10	0.08	5.61	21.77	1.51	3,185.28	0.01	0.01	0.04	0.14	0.01	0.05	-	5.50	0.65
2027	15	0.05	3.38	18.57	0.92	2,407.28	0.01	0.01	0.04	0.14	0.01	0.05	-	3.31	0.49
2027	20	0.03	2.42	15.69	0.67	2,001.81	0.00	0.00	0.04	0.13	0.01	0.05	-	2.37	0.41
2027	25	0.03	1.89	13.12	0.52	1,744.19	0.00	0.00	0.04	0.13	0.01	0.05	-	1.85	0.36
2027	30	0.02	1.55	10.87	0.44	1,562.51	0.00	0.00	0.04	0.13	0.01	0.04	-	1.52	0.32
2027	35	0.02	1.32	8.94	0.37	1,425.78	0.00	0.00	0.04	0.11	0.01	0.04	-	1.29	0.29
2027	40	0.02	1.14	7.32	0.33	1,318.22	0.00	0.00	0.04	0.09	0.01	0.03	-	1.12	0.27
2027	45	0.01	1.01	6.02	0.29	1,230.82	0.00	0.00	0.04	0.08	0.01	0.03	-	0.99	0.25
2027	50	0.01	0.91	5.04	0.27	1,158.03	0.00	0.00	0.04	0.07	0.01	0.02	-	0.89	0.24
2027	55	0.01	0.82	4.37	0.24	1,096.21	0.00	0.00	0.04	0.07	0.01	0.02	-	0.81	0.22
2027	60	0.01	0.82	4.37	0.24	1,096.21	0.00	0.00	0.04	0.07	0.01	0.02	-	0.81	0.22
2027	65	0.01	0.82	4.37	0.24	1,096.21	0.00	0.00	0.04	0.07	0.01	0.02	-	0.81	0.22
2027	70	0.01	0.82	4.37	0.24	1,096.21	0.00	0.00	0.04	0.07	0.01	0.02	-	0.81	0.22
2027	75	0.01	0.82	4.37	0.24	1,096.21	0.00	0.00	0.04	0.07	0.01	0.02	-	0.81	0.22
2028	5	0.11	8.19	23.36	1.93	3,913.74	0.01	0.01	0.04	0.15	0.01	0.05	-	8.03	0.80
2028	10	0.08	5.50	21.64	1.30	3,135.14	0.01	0.01	0.04	0.15	0.01	0.05	-	5.39	0.64
2028	15	0.05	3.33	18.42	0.80	2,370.80	0.01	0.01	0.04	0.15	0.01	0.05	-	3.27	0.48
2028	20	0.03	2.40	15.52	0.59	1,972.24	0.01	0.00	0.04	0.15	0.01	0.05	-	2.35	0.40
2028	25	0.03	1.88	12.92	0.47	1,718.93	0.00	0.00	0.04	0.14	0.01	0.05	-	1.84	0.35
2028	30	0.02	1.55	10.64	0.39	1,540.24	0.00	0.00	0.04	0.14	0.01	0.05	-	1.52	0.31
2028	35	0.02	1.32	8.67	0.34	1,405.74	0.00	0.00	0.04	0.12	0.01	0.04	-	1.29	0.29
2028	40	0.02	1.15	7.01	0.30	1,299.90	0.00	0.00	0.04	0.10	0.01	0.04	-	1.12	0.26
2028	45	0.01	1.01	5.66	0.27	1,213.89	0.00	0.00	0.04	0.09	0.01	0.03	-	0.99	0.25
2028	50	0.01	0.91	4.62	0.24	1,142.24	0.00	0.00	0.04	0.08	0.01	0.03	-	0.89	0.23
2028	55	0.01	0.83	3.89	0.22	1,081.40	0.00	0.00	0.04	0.08	0.01	0.03	-	0.81	0.22
2028	60	0.01	0.83	3.89	0.22	1,081.40	0.00	0.00	0.04	0.08	0.01	0.03	-	0.81	0.22
2028	65	0.01	0.83	3.89	0.22	1,081.40	0.00	0.00	0.04	0.08	0.01	0.03	-	0.81	0.22
2028	70	0.01	0.83	3.89	0.22	1,081.40	0.00	0.00	0.04	0.08	0.01	0.03	-	0.81	0.22
2028	75	0.01	0.83	3.89	0.22	1,081.40	0.00	0.00	0.04	0.08	0.01	0.03	-	0.81	0.22
2036	5	0.10	7.42	22.94	0.69	3,552.56	0.01	0.01	0.04	0.14	0.01	0.05	-	7.27	0.72
2036	10	0.07	5.10	21.19	0.53	2,850.95	0.01	0.01	0.04	0.14	0.01	0.05	-	5.00	0.58
2036	15	0.04	3.18	17.90	0.37	2,160.77	0.01	0.01	0.04	0.14	0.01	0.05	-	3.12	0.44
2036	20	0.03	2.33	14.91	0.30	1,800.18	0.01	0.01	0.04	0.14	0.01	0.05	-	2.28	0.37
2036	25	0.03	1.85	12.21	0.26	1,570.70	0.00	0.00	0.04	0.14	0.01	0.05	-	1.81	0.32
2036	30	0.02	1.54	9.81	0.23	1,408.65	0.00	0.00	0.04	0.13	0.01	0.05	-	1.50	0.29
2036	35	0.02	1.32	7.70	0.20	1,286.58	0.00	0.00	0.04	0.11	0.01	0.04	-	1.29	0.26
2036	40	0.02	1.15	5.88	0.19	1,190.46	0.00	0.00	0.04	0.10	0.01	0.03	-	1.13	0.24
2036	45	0.01	1.03	4.35	0.17	1,112.30	0.00	0.00	0.04	0.08	0.01	0.03	-	1.01	0.23
2036	50	0.01	0.93	3.12	0.16	1,047.15	0.00	0.00	0.04	0.07	0.01	0.03	-	0.91	0.21
2036	55	0.01	0.85	2.18	0.15	991.80	0.00	0.00	0.04	0.07	0.01	0.03	-	0.83	0.20
2036	60	0.01	0.85	2.18	0.15	991.80	0.00	0.00	0.04	0.07	0.01	0.03	-	0.83	0.20
2036	65	0.01	0.85	2.18	0.15	991.80	0.00	0.00	0.04	0.07	0.01	0.03	-	0.83	0.20
2036	70	0.01	0.85	2.18	0.15	991.80	0.00	0.00	0.04	0.07	0.01	0.03	-	0.83	0.20
2036	75	0.01	0.85	2.18	0.15	991.80	0.00	0.00	0.04	0.07	0.01	0.03	-	0.83	0.20
2050	5	0.10	6.90	21.58	0.51	3,259.72	0.01	0.01	0.04	0.15	0.01	0.05	-	6.77	0.66
2050	10	0.07	4.76	19.92	0.40	2,616.60	0.01	0.01	0.04	0.15	0.01	0.05	-	4.66	0.53
2050	15	0.04	2.98	16.82	0.30	1,983.77	0.01	0.01	0.04	0.15	0.01	0.05	-	2.92	0.40
2050	20	0.03	2.19	13.99	0.25	1,653.06	0.01	0.01	0.04	0.15	0.01	0.05	-	2.14	0.34
2050	25	0.02	1.74	11.43	0.22	1,442.55	0.00	0.00	0.04	0.14	0.01	0.05	-	1.70	0.29
2050	30	0.02	1.45	9.15	0.19	1,293.88	0.00	0.00	0.04	0.14	0.01	0.05	-	1.42	0.26
2050	35	0.02	1.24	7.14	0.18	1,181.87	0.00	0.00	0.04	0.12	0.01	0.04	-	1.22	0.24
2050	40	0.02	1.09	5.41	0.16	1,093.67	0.00	0.00	0.04	0.10	0.01	0.04	-	1.07	0.22
2050	45	0.01	0.97	3.95	0.15	1,021.93	0.00	0.00	0.04	0.09	0.01	0.03	-	0.95	0.21
2050	50	0.01	0.88	2.77	0.14	962.15	0.00	0.00	0.04	0.08	0.01	0.03	-	0.86	0.20
2050	55	0.01	0.80	1.86	0.13	911.34	0.00	0.00	0.04	0.08	0.01	0.03	-	0.78	0.19
2050	60	0.01	0.80	1.86	0.13	911.34	0.00	0.00	0.04	0.08	0.01	0.03	-	0.78	0.19
2050	65	0.01	0.80	1.86	0.13	911.34	0.00	0.00	0.04	0.08	0.01	0.03	-	0.78	0.19
2050	70	0.01	0.80	1.86	0.14	911.34	0.00	0.00	0.04	0.08	0.01	0.03	-	0.78	0.19
2050	75	0.01	0.80	1.86	0.14	911.34	0.00	0.00	0.04	0.08	0.01	0.03	-	0.78	0.19
2019	idling	0.96	68.72	72.34	22.37	17,269.95	0.04	0.04	-	-	-	-	-	67.33	3.52
2026	idling	0.80	56.99	122.39	21.44	16,892.49	0.07	0.06	-	-	-	-	-	55.84	3.44
2027	idling	0.78	55.46	128.93	21.32	16,893.47	0.07	0.07	-	-	-	-	-	54.34	3.44
2028	idling	0.76	54.13	134.59	21.22	16,841.73	0.07	0.07	-	-	-	-	-	53.04	3.43
2036	idling	0.69	49.41	154.74	20.84	16,053.74	0.08	0.08	-	-	-	-	-	48.41	3.27
2050	idling	0.68	48.82	157.26	20.79	15,727.61	0.09	0.08	-	-	-	-	-	47.84	3.21

On-site Passenger Car Trips and Peaking Factors - All Years and All Scenarios

Year	Speed	ROG	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	SOx	CH4	N2O
2019	5	0.12	0.17	2.11	0.13	725.85	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.03	0.01
2019	10	0.07	0.11	1.86	0.11	587.19	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.02	0.01
2019	15	0.05	0.07	1.69	0.10	480.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
2019	20	0.04	0.05	1.54	0.09	399.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
2019	25	0.03	0.04	1.41	0.08	342.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
2019	30	0.02	0.03	1.29	0.07	303.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
2019	35	0.02	0.02	1.19	0.07	281.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
2019	40	0.01	0.02	1.10	0.07	272.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
2019	45	0.01	0.02	1.02	0.06	273.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
2019	50	0.01	0.02	0.95	0.06	281.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
2019	55	0.01	0.02	0.90	0.06	292.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
2019	60	0.01	0.02	0.85	0.07	304.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
2019	65	0.02	0.02	0.81	0.07	315.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
2019	70	0.02	0.02	0.76	0.07	313.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
2019	75	0.02	0.02	0.76	0.07	313.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
2026	5	0.05	0.08	1.35	0.06	647.11	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01
2026	10	0.03	0.05	1.20	0.05	523.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01
2026	15	0.02	0.03	1.09	0.05	427.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
2026	20	0.02	0.02	1.00	0.04	355.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
2026	25	0.01	0.02	0.92	0.04	304.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	30	0.01	0.01	0.85	0.04	270.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	35	0.01	0.01	0.78	0.03	250.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	40	0.01	0.01	0.72	0.03	242.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	45	0.01	0.01	0.67	0.03	243.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	50	0.01	0.01	0.62	0.03	250.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	55	0.01	0.01	0.58	0.03	260.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	60	0.01	0.01	0.55	0.03	271.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	65	0.01	0.01	0.52	0.03	280.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	70	0.01	0.01	0.48	0.04	279.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	75	0.01	0.01	0.48	0.04	279.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027	5	0.05	0.07	1.29	0.06	635.35	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01
2027	10	0.03	0.04	1.15	0.05	512.98	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
2027	15	0.02	0.03	1.04	0.04	419.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
2027	20	0.01	0.02	0.96	0.04	349.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
2027	25	0.01	0.02	0.88	0.04	298.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027	30	0.01	0.01	0.81	0.03	265.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027	35	0.01	0.01	0.74	0.03	245.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027	40	0.01	0.01	0.69	0.03	238.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027	45	0.01	0.01	0.64	0.03	238.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027	50	0.01	0.01	0.60	0.03	245.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027	55	0.01	0.01	0.56	0.03	255.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027	60	0.01	0.01	0.52	0.03	266.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027	65	0.01	0.01	0.50	0.03	275.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027	70	0.01	0.01	0.46	0.03	274.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027	75	0.01	0.01	0.46	0.03	274.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2028	5	0.04	0.07	1.24	0.06	624.04	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01
2028	10	0.03	0.04	1.10	0.05	503.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
2028	15	0.02	0.03	1.00	0.04	411.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
2028	20	0.01	0.02	0.92	0.04	342.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2028	25	0.01	0.01	0.85	0.03	293.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2028	30	0.01	0.01	0.78	0.03	260.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2028	35	0.01	0.01	0.72	0.03	241.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2028	40	0.01	0.01	0.66	0.03	233.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2028	45	0.00	0.01	0.61	0.03	234.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2028	50	0.00	0.01	0.57	0.03	241.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2028	55	0.00	0.01	0.54	0.03	250.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2028	60	0.01	0.01	0.50	0.03	261.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2028	65	0.01	0.01	0.48	0.03	270.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2028	70	0.01	0.01	0.45	0.03	269.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2028	75	0.01	0.01	0.45	0.03	269.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2036	5	0.03	0.04	1.00	0.04	563.37	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
2036	10	0.02	0.02	0.90	0.03	455.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
2036	15	0.01	0.02	0.82	0.03	372.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2036	20	0.01	0.01	0.75	0.03	309.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2036	25	0.01	0.01	0.69	0.02	265.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2036	30	0.00	0.01	0.64	0.02	235.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2036	35	0.00	0.01	0.59	0.02	218.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2036	40	0.00	0.00	0.55	0.02	211.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2036	45	0.00	0.00	0.50	0.02	211.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2036	50	0.00	0.00	0.47	0.02	218.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2036	55	0.00	0.00	0.44	0.02	226.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2036	60	0.00	0.00	0.41	0.02	236.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2036	65	0.00	0.01	0.39	0.02	244.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2036	70	0.00	0.01	0.37	0.02	243.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2036	75	0.00	0.01	0.37	0.02	243.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2050	5	0.02	0.03	0.92	0.03	541.20	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
2050	10	0.01	0.02	0.83	0.03	438.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2050	15	0.01	0.01	0.76	0.03	358.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2050	20	0.01	0.01	0.69	0.02	298.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2050	25	0.00	0.01	0.64	0.02	255.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2050	30	0.00	0.00	0.59	0.02	226.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2050	35	0.00	0.00	0.54	0.02	209.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2050	40	0.00	0.00	0.51	0.02	203.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2050	45	0.00	0.00	0.47	0.02	203.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2050	50	0.00	0.00	0.44	0.02	209.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2050	55	0.00	0.00	0.41	0.02	218.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2050	60	0.00	0.00	0.38	0.02	227.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2050	65	0.00	0.00	0.36	0.02	234.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2050	70	0.00	0.00	0.34	0.02	234.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2050	75	0.00	0.00	0.34	0.02	234.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Heavy Duty Inspection and Maintenance Program - Correction Factors

Calendar Year	Air Basin	Vehicle Category	Fuel	Pollutant Process	Heavy Duty Inspection and Maintenance Program	Clean Truck Program
2026	South Coast	T7 POLA Class 8	DSL	NOx_TOTEX	0.54	1.00
2026	South Coast	T7 POLA Class 8	DSL	PM2.5_TOTEX	0.56	1.00
2026	South Coast	T7 Tractor Class 8	DSL	NOx_TOTEX	0.56	1.00
2026	South Coast	T7 Tractor Class 8	DSL	PM2.5_TOTEX	0.60	1.00
2027	South Coast	T7 POLA Class 8	DSL	NOx_TOTEX	0.51	1.00
2027	South Coast	T7 POLA Class 8	DSL	PM2.5_TOTEX	0.54	1.00
2027	South Coast	T7 Tractor Class 8	DSL	NOx_TOTEX	0.53	1.00
2027	South Coast	T7 Tractor Class 8	DSL	PM2.5_TOTEX	0.59	1.00
2028	South Coast	T7 POLA Class 8	DSL	NOx_TOTEX	0.48	1.00
2028	South Coast	T7 POLA Class 8	DSL	PM2.5_TOTEX	0.53	1.00
2028	South Coast	T7 Tractor Class 8	DSL	NOx_TOTEX	0.49	1.00
2028	South Coast	T7 Tractor Class 8	DSL	PM2.5_TOTEX	0.58	1.00
2036	South Coast	T7 POLA Class 8	DSL	NOx_TOTEX	0.37	0.93
2036	South Coast	T7 POLA Class 8	DSL	PM2.5_TOTEX	0.53	1.00
2036	South Coast	T7 Tractor Class 8	DSL	NOx_TOTEX	0.37	0.89
2036	South Coast	T7 Tractor Class 8	DSL	PM2.5_TOTEX	0.56	1.00
2050	South Coast	T7 POLA Class 8	DSL	NOx_TOTEX	0.33	0.70
2050	South Coast	T7 POLA Class 8	DSL	PM2.5_TOTEX	0.55	0.99
2050	South Coast	T7 Tractor Class 8	DSL	NOx_TOTEX	0.34	0.67
2050	South Coast	T7 Tractor Class 8	DSL	PM2.5_TOTEX	0.57	0.99

Source:

[1] CARB. 2024. Email communication from Sara Forestieri to Ramboll. May 31, 2024.

Harbor Craft/Tugs

Analysis Year	2019

2019 Tug Characteristics - Baseline

Tug	MY	# of Engines	HP per Engine	Load Factor
Average Tug - Main Engine	2007	2	2,004	0.33
Average Tug - Auxiliary Engine	2011	2	184	0.37

2019 Harbor Craft Emission Factors - Baseline

Tug Engine	Composite EF (g/HP-hr)									
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Main	0.08	0.08	0.08	4.87	0.005	0.76	0.16	486.20	0.02	0.01
Auxiliary	0.10	0.09	0.10	2.88	0.005	0.93	0.11	486.20	0.02	0.01

2026 Annual Activity - Proposed Project

Project Scenario/Ship Type	*Transits*	*No. of tugs per call*	*Assist duration per tug for all transits (hr)*
Project Year 2026			
Containerships 13,000 - 14,000 TEU	-	-	-
Containerships 9,000 - 10,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	146	2	123.4
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**146**		

2026 Peak Day Activity _ Proposed Project

Project Scenario/Ship Type	*Transits*	*No. of tugs per transit*	*Assist duration per tug for all transits (hr)*
Project Year 2026			
Containerships 13,000 - 14,000 TEU	-	-	-
Containerships 9,000 - 10,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	4	2	3.7
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**4**		

B121-131 Operations Data Needs

Analysis Year	2026

2026 Tug Characteristics - Baseline

Tug	MY	# of Engines	HP per Engine	Load Factor
Average Tug Main	2020	2	2,004	0.33
Average Tug Auxiliary	2011	2	184	0.37

Tug Engine	Composite EF (g/HP-hr)									
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Main	0.0242	0.0232	0.0242	0.9943	0.0047	0.5065	0.0300	500.4560	0.0012	0.0023
Auxiliary	0.0999	0.0955	0.0999	2.8898	0.0050	0.9354	0.1011	535.4734	0.0012	0.0025

2027 Annual Activity - Proposed Project

Project Scenario/Ship Type	*Transits*	*No. of tugs per call*	*Assist duration per tug for all transits (hr)*
Project Year 2027			
Containerships 13,000 - 14,000 TEU	-	-	-
Containerships 9,000 - 10,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	149	2	128.0
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**149**		**128**

2027 Peak Day Activity _ Proposed Project

Project Scenario/Ship Type	*Transits*	*No. of tugs per transit*	*Assist duration per tug for all transits (hr)*
Project Year 2027			
Containerships 13,000 - 14,000 TEU	-	-	-
Containerships 9,000 - 10,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	4	2	3.7
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**4**		

B121-131 Operations Data Needs

Analysis Year	2027

2027 Tug Characteristics - Baseline

Tug	MY	# of Engines	HP per Engine	Load Factor
Average Tug Main	2020	2	2,004	0.33
Average Tug Auxiliary	2011	2	184	0.37

Tug Engine	Composite EF (g/HP-hr)									
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Main	0.0243	0.0232	0.0243	0.9950	0.0047	0.5070	0.0301	500.4560	0.0012	0.0023
Auxiliary	0.1000	0.0956	0.1000	2.8909	0.0050	0.9359	0.1012	535.4734	0.0012	0.0025

2028 Annual Activity - Proposed Project

Project Scenario/Ship Type	*Transits*	*No. of tugs per call*	*Assist duration per tug for all transits (hr)*
Project Year 2028			
Containerships 13,000 - 14,000 TEU	94	2	80.1
Containerships 9,000 - 10,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	91	2	75.0
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**185**		

2028 Peak Day Activity _ Proposed Project

Project Scenario/Ship Type	*Transits*	*No. of tugs per transit*	*Assist duration per tug for all transits (hr)*
Project Year 2028			
Containerships 13,000 - 14,000 TEU	1	2	0.6
Containerships 9,000 - 10,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	3	2	2.7
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**4**		

B121-131 Operations Data Needs

Analysis Year	2028

2028 Tug Characteristics - Baseline

Tug	MY	# of Engines	HP per Engine	Load Factor
Average Tug Main	2020	2	2,004	0.33
Average Tug Auxiliary	2011	2	184	0.37

Tug Engine	Composite EF (g/HP-hr)									
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Main	0.0243	0.0233	0.0243	0.9957	0.0047	0.5074	0.0301	500.4560	0.0012	0.0023
Auxiliary	0.1001	0.0957	0.1001	2.8920	0.0050	0.9363	0.1013	535.4734	0.0012	0.0025

2036 Annual Activity - Proposed Project

Project Scenario/Ship Type	*Transits*	*No. of tugs per call*	*Assist duration per tug for all transits (hr)*
Project Year 2036			
Containerships 14,000 - 15,000 TEU	87	2	74.2
Containerships 12,000 - 13,000 TEU	86	2	73.0
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	84	2	69.2
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**258**		

2036 Peak Day Activity - Proposed Project

Project Scenario/Ship Type	*Transits*	*No. of tugs per transit*	*Assist duration per tug for all transits (hr)*
Project Year 2036			
Containerships 14,000 - 15,000 TEU	1	2	0.6
Containerships 12,000 - 13,000 TEU	2	2	2.1
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	1	2	0.6
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**4**		

B121-131 Operations Data Needs

Analysis Year	2036

2036 Tug Characteristics - Baseline

Tug	MY	# of Engines	HP per Engine	Load Factor
Average Tug Main	2020	2	2,004	0.33
Average Tug Auxiliary	2034	2	184	0.37

Tug Engine	Composite EF (g/HP-hr)									
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Main	0.0248	0.0237	0.0248	1.0014	0.0047	0.5108	0.0305	500.4560	0.0012	0.0023
Auxiliary	0.0655	0.0626	0.0655	3.0634	0.0050	0.7792	0.0956	534.0143	0.0012	0.0025

2050 Annual Activity - Proposed Project

Project Scenario/Ship Type	*Transits*	*No. of tugs per call*	*Assist duration per tug for all transits (hr)*
Project Year 2050			
Containerships 14,000 - 15,000 TEU	108	2	91.9
Containerships 12,000 - 13,000 TEU	107	2	90.3
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	104	2	85.7
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**319**		

2050 Peak Day Activity - Proposed Project

Project Scenario/Ship Type	*Transits*	*No. of tugs per transit*	*Assist duration per tug for all transits (hr)*
Project Year 2050			
Containerships 14,000 - 15,000 TEU	1	2	0.6
Containerships 12,000 - 13,000 TEU	2	2	2.1
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	1	2	0.6
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**4**		

B121-131 Operations Data Needs

Analysis Year	2050

2050 Tug Characteristics - Baseline

Tug	MY	# of Engines	HP per Engine	Load Factor
Average Tug Main	2041	2	2,004	0.33
Average Tug Auxiliary	2034	2	184	0.37

Tug Engine	Composite EF (g/HP-hr)									
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Main	0.0244	0.0233	0.0244	0.9964	0.0047	0.5078	0.0302	500.4560	0.0012	0.0023
Auxiliary	0.0666	0.0637	0.0666	3.0797	0.0050	0.7840	0.0966	534.0143	0.0012	0.0025

2026 Annual Activity - No Project

Project Scenario/Ship Type	*Transits*	*No. of tugs per call*	*Assist duration per tug for all transits (hr)*
Project Year 2026			
Containerships 13,000 - 14,000 TEU	-	-	-
Containerships 9,000 - 10,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	242	2	202.3
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**242**		

2026 Peak Day Activity _ No Project

Project Scenario/Ship Type	*Transits*	*No. of tugs per transit*	*Assist duration per tug for all transits (hr)*
Project Year 2026			
Containerships 13,000 - 14,000 TEU	-	-	-
Containerships 9,000 - 10,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	3	2	2.6
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**3**		

B121-131 Operations Data Needs

Analysis Year	2026

2026 Tug Characteristics - Baseline

Tug	MY	# of Engines	HP per Engine	Load Factor
Average Tug Main	2020	2	2,004	0.33
Average Tug Auxiliary	2011	2	184	0.37

Tug Engine	Composite EF (g/HP-hr)									
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Main	0.0242	0.0232	0.0242	0.9943	0.0047	0.5065	0.0300	500.4560	0.0012	0.0023
Auxiliary	0.0999	0.0955	0.0999	2.8898	0.0050	0.9354	0.1011	535.4734	0.0012	0.0025

2027 Annual Activity - No Project

Project Scenario/Ship Type	*Transits*	*No. of tugs per call*	*Assist duration per tug for all transits (hr)*
Project Year 2027			
Containerships 13,000 - 14,000 TEU	-	-	-
Containerships 9,000 - 10,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	240	2	200.7
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**240**		**201**

2027 Peak Day Activity _ No Project

Project Scenario/Ship Type	*Transits*	*No. of tugs per transit*	*Assist duration per tug for all transits (hr)*
Project Year 2027			
Containerships 13,000 - 14,000 TEU	-	-	-
Containerships 9,000 - 10,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	5	2	4.7
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**5**		

B121-131 Operations Data Needs

Analysis Year	2027

2027 Tug Characteristics - Baseline

Tug	MY	# of Engines	HP per Engine	Load Factor
Average Tug Main	2020	2	2,004	0.33
Average Tug Auxiliary	2011	2	184	0.37

Tug Engine	Composite EF (g/HP-hr)									
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Main	0.0243	0.0232	0.0243	0.9950	0.0047	0.5070	0.0301	500.4560	0.0012	0.0023
Auxiliary	0.1000	0.0956	0.1000	2.8909	0.0050	0.9359	0.1012	535.4734	0.0012	0.0025

2028 Annual Activity - No Project

Project Scenario/Ship Type	*Transits*	*No. of tugs per call*	*Assist duration per tug for all transits (hr)*
Project Year 2028			
Containerships 13,000 - 14,000 TEU	-	-	-
Containerships 9,000 - 10,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	238	2	199.0
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**238**		

2028 Peak Day Activity _ No Project

Project Scenario/Ship Type	*Transits*	*No. of tugs per transit*	*Assist duration per tug for all transits (hr)*
Project Year 2028			
Containerships 13,000 - 14,000 TEU	-	-	-
Containerships 9,000 - 10,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	3	2	2.7
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**3**		

B121-131 Operations Data Needs

Analysis Year	2028

2028 Tug Characteristics - Baseline

Tug	MY	# of Engines	HP per Engine	Load Factor
Average Tug Main	2020	2	2,004	0.33
Average Tug Auxiliary	2011	2	184	0.37

Tug Engine	Composite EF (g/HP-hr)									
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Main	0.0243	0.0233	0.0243	0.9957	0.0047	0.5074	0.0301	500.4560	0.0012	0.0023
Auxiliary	0.1001	0.0957	0.1001	2.8920	0.0050	0.9363	0.1013	535.4734	0.0012	0.0025

2036 Annual Activity - No Project

Project Scenario/Ship Type	*Transits*	*No. of tugs per call*	*Assist duration per tug for all transits (hr)*
Project Year 2036			
Containerships 14,000 - 15,000 TEU	-	-	-
Containerships 12,000 - 13,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	217	2	181.7
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**217**		

2036 Peak Day Activity - No Project

Project Scenario/Ship Type	*Transits*	*No. of tugs per transit*	*Assist duration per tug for all transits (hr)*
Project Year 2036			
Containerships 14,000 - 15,000 TEU	-	-	-
Containerships 12,000 - 13,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	4	2	3.3
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**4**		

B121-131 Operations Data Needs

Analysis Year	2036

2036 Tug Characteristics - Baseline

Tug	MY	# of Engines	HP per Engine	Load Factor
Average Tug Main	2020	2	2,004	0.33
Average Tug Auxiliary	2034	2	184	0.37

Tug Engine	Composite EF (g/HP-hr)									
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Main	0.0248	0.0237	0.0248	1.0014	0.0047	0.5108	0.0305	500.4560	0.0012	0.0023
Auxiliary	0.0655	0.0626	0.0655	3.0634	0.0050	0.7792	0.0956	534.0143	0.0012	0.0025

2050 Annual Activity - No Project

Project Scenario/Ship Type	*Transits*	*No. of tugs per call*	*Assist duration per tug for all transits (hr)*
Project Year 2050			
Containerships 14,000 - 15,000 TEU	-	-	-
Containerships 12,000 - 13,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	154	2	130.8
Containerships 5,000 - 6,000 TEU	149	2	123.1
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**302**		

2050 Peak Day Activity - No Project

Project Scenario/Ship Type	*Transits*	*No. of tugs per transit*	*Assist duration per tug for all transits (hr)*
Project Year 2050			
Containerships 14,000 - 15,000 TEU	-	-	-
Containerships 12,000 - 13,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	3	2	2.7
Containerships 5,000 - 6,000 TEU	1	2	0.6
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**4**		

B121-131 Operations Data Needs

Analysis Year	2050

2050 Tug Characteristics - Baseline

Tug	MY	# of Engines	HP per Engine	Load Factor
Average Tug Main	2041	2	2,004	0.33
Average Tug Auxiliary	2034	2	184	0.37

Tug Engine	Composite EF (g/HP-hr)									
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Main	0.0244	0.0233	0.0244	0.9964	0.0047	0.5078	0.0302	500.4560	0.0012	0.0023
Auxiliary	0.0666	0.0637	0.0666	3.0797	0.0050	0.7840	0.0966	534.0143	0.0012	0.0025

2026 Annual Activity - No Federal Action

Project Scenario/Ship Type	*Transits*	*No. of tugs per call*	*Assist duration per tug for all transits (hr)*
Project Year 2026			
Containerships 13,000 - 14,000 TEU	-	-	-
Containerships 9,000 - 10,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	242	2	202.3
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**242**		

2026 Peak Day Activity _ No Federal Action

Project Scenario/Ship Type	*Transits*	*No. of tugs per transit*	*Assist duration per tug for all transits (hr)*
Project Year 2026			
Containerships 13,000 - 14,000 TEU	-	-	-
Containerships 9,000 - 10,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	3	2	2.6
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**3**		

B121-131 Operations Data Needs

Analysis Year	2026

2026 Tug Characteristics - Baseline

Tug	MY	# of Engines	HP per Engine	Load Factor
Average Tug Main	2020	2	2,004	0.33
Average Tug Auxiliary	2011	2	184	0.37

Tug Engine	Composite EF (g/HP-hr)									
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Main	0.0242	0.0232	0.0242	0.9943	0.0047	0.5065	0.0300	500.4560	0.0012	0.0023
Auxiliary	0.0999	0.0955	0.0999	2.8898	0.0050	0.9354	0.1011	535.4734	0.0012	0.0025

2027 Annual Activity - No Federal Action

Project Scenario/Ship Type	*Transits*	*No. of tugs per call*	*Assist duration per tug for all transits (hr)*
Project Year 2027			
Containerships 13,000 - 14,000 TEU	-	-	-
Containerships 9,000 - 10,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	240	2	200.7
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**240**		**201**

2027 Peak Day Activity _ No Federal Action

Project Scenario/Ship Type	*Transits*	*No. of tugs per transit*	*Assist duration per tug for all transits (hr)*
Project Year 2027			
Containerships 13,000 - 14,000 TEU	-	-	-
Containerships 9,000 - 10,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	5	2	4.7
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**5**		

B121-131 Operations Data Needs

Analysis Year	2027

2027 Tug Characteristics - Baseline

Tug	MY	# of Engines	HP per Engine	Load Factor
Average Tug Main	2020	2	2,004	0.33
Average Tug Auxiliary	2011	2	184	0.37

Tug Engine	Composite EF (g/HP-hr)									
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Main	0.0243	0.0232	0.0243	0.9950	0.0047	0.5070	0.0301	500.4560	0.0012	0.0023
Auxiliary	0.1000	0.0956	0.1000	2.8909	0.0050	0.9359	0.1012	535.4734	0.0012	0.0025

2028 Annual Activity - No Federal Action

Project Scenario/Ship Type	*Transits*	*No. of tugs per call*	*Assist duration per tug for all transits (hr)*
Project Year 2028			
Containerships 13,000 - 14,000 TEU	-	-	-
Containerships 9,000 - 10,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	238	2	199.0
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**238**		

2028 Peak Day Activity _ No Federal Action

Project Scenario/Ship Type	*Transits*	*No. of tugs per transit*	*Assist duration per tug for all transits (hr)*
Project Year 2028			
Containerships 13,000 - 14,000 TEU	-	-	-
Containerships 9,000 - 10,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	3	2	2.7
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**3**		

B121-131 Operations Data Needs

Analysis Year	2028

2028 Tug Characteristics - Baseline

Tug	MY	# of Engines	HP per Engine	Load Factor
Average Tug Main	2020	2	2,004	0.33
Average Tug Auxiliary	2011	2	184	0.37

Tug Engine	Composite EF (g/HP-hr)									
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Main	0.0243	0.0233	0.0243	0.9957	0.0047	0.5074	0.0301	500.4560	0.0012	0.0023
Auxiliary	0.1001	0.0957	0.1001	2.8920	0.0050	0.9363	0.1013	535.4734	0.0012	0.0025

2036 Annual Activity - No Federal Action

Project Scenario/Ship Type	*Transits*	*No. of tugs per call*	*Assist duration per tug for all transits (hr)*
Project Year 2036			
Containerships 14,000 - 15,000 TEU	-	-	-
Containerships 12,000 - 13,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	217	2	181.7
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**217**		

2036 Peak Day Activity - No Federal Action

Project Scenario/Ship Type	*Transits*	*No. of tugs per transit*	*Assist duration per tug for all transits (hr)*
Project Year 2036			
Containerships 14,000 - 15,000 TEU	-	-	-
Containerships 12,000 - 13,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-
Containerships 5,000 - 6,000 TEU	4	2	3.3
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**4**		

B121-131 Operations Data Needs

Analysis Year	2036

2036 Tug Characteristics - Baseline

Tug	MY	# of Engines	HP per Engine	Load Factor
Average Tug Main	2020	2	2,004	0.33
Average Tug Auxiliary	2034	2	184	0.37

Tug Engine	Composite EF (g/HP-hr)									
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Main	0.0248	0.0237	0.0248	1.0014	0.0047	0.5108	0.0305	500.4560	0.0012	0.0023
Auxiliary	0.0655	0.0626	0.0655	3.0634	0.0050	0.7792	0.0956	534.0143	0.0012	0.0025

2050 Annual Activity - No Federal Action

Project Scenario/Ship Type	*Transits*	*No. of tugs per call*	*Assist duration per tug for all transits (hr)*
Project Year 2050			
Containerships 14,000 - 15,000 TEU	-	-	-
Containerships 12,000 - 13,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	154	2	130.8
Containerships 5,000 - 6,000 TEU	149	2	123.1
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**302**		

2050 Peak Day Activity - No Federal Action

Project Scenario/Ship Type	*Transits*	*No. of tugs per transit*	*Assist duration per tug for all transits (hr)*
Project Year 2050			
Containerships 14,000 - 15,000 TEU	-	-	-
Containerships 12,000 - 13,000 TEU	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-
Containerships 6,000 - 7,000 TEU	3	2	2.7
Containerships 5,000 - 6,000 TEU	1	2	0.6
Containerships 4,000 - 5,000 TEU	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-
General Cargo Vessels	-	-	-
Total	**4**		

B121-131 Operations Data Needs

Analysis Year	2050

2050 Tug Characteristics - Baseline

Tug	MY	# of Engines	HP per Engine	Load Factor
Average Tug Main	2041	2	2,004	0.33
Average Tug Auxiliary	2034	2	184	0.37

Tug Engine	Composite EF (g/HP-hr)									
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Main	0.0244	0.0233	0.0244	0.9964	0.0047	0.5078	0.0302	500.4560	0.0012	0.0023
Auxiliary	0.0666	0.0637	0.0666	3.0797	0.0050	0.7840	0.0966	534.0143	0.0012	0.0025

Emissions Summaries by Scenario and by Year

B121-131 Annual Emissions Inventory by Source Category, by Scenario, Mitigation and Analysis Period

Period	id_Scenario	Year	Source_category	UOM	VOC	NOx	CO	PM10total	PM25total	CO2	N2O	CH4
Annual	Baseline	2019	CHE	tons	5.59	23.33	66.49	0.50	0.49	6,719.05	0.02	0.12
Annual	Baseline	2019	HarborCraft	tons	0.07	1.94	0.32	0.03	0.03	201.17	0.01	0.00
Annual	Baseline	2019	OGV	tons	3.66	268.88	13.41	3.09	2.84	12,565.92	0.68	0.17
Annual	Baseline	2019	PC	tons	0.09	0.39	6.06	0.41	0.08	1,682.13	0.04	0.02
Annual	Baseline	2019	PC offsite	tons	0.01	0.05	0.74	0.06	0.01	206.12	0.00	0.00
Annual	Baseline	2019	PC onsite	tons	0.01	0.01	0.20	0.05	0.01	57.01	0.00	0.00
Annual	Baseline	2019	Rail offsite	tons	5.15	128.08	29.50	3.22	3.03	11,268.11	0.30	0.92
Annual	Baseline	2019	Rail onsite	tons	0.15	3.65	0.89	0.09	0.08	339.91	0.01	0.03
Annual	Baseline	2019	Truck	tons	1.14	42.07	7.88	2.14	0.75	15,684.72	2.50	0.51
Annual	Baseline	2019	Trucks offsite	tons	0.22	7.30	1.44	0.39	0.13	2,673.70	0.43	0.09
Annual	Baseline	2019	Trucks onsite	tons	0.14	2.19	0.68	0.91	0.15	696.67	0.11	0.05
Annual	Baseline	2019	Trucks onsite idling	tons	0.35	6.59	3.70	0.00	0.00	1,082.24	0.17	0.33
Annual	Baseline	2019 Total			16.58	484.47	131.31	10.90	7.62	53,176.77	4.27	2.25
Annual	Project_Unmitigated	2026	CHE	tons	1.66	7.07	129.01	0.36	0.35	5,214.27	0.02	0.10
Annual	Project_Unmitigated	2026	HarborCraft	tons	0.02	0.47	0.22	0.01	0.01	202.05	0.00	0.00
Annual	Project_Unmitigated	2026	OGV	tons	2.09	94.74	4.00	1.05	0.97	5,249.14	0.32	0.07
Annual	Project_Unmitigated	2026	PC	tons	0.03	0.14	2.92	0.30	0.06	1,116.79	0.02	0.01
Annual	Project_Unmitigated	2026	PC offsite	tons	0.01	0.03	0.61	0.07	0.01	235.73	0.00	0.00
Annual	Project_Unmitigated	2026	PC onsite	tons	0.00	0.00	0.10	0.04	0.01	38.93	0.00	0.00
Annual	Project_Unmitigated	2026	Rail offsite	tons	1.47	40.33	9.85	0.91	0.85	3,763.58	0.10	0.31
Annual	Project_Unmitigated	2026	Rail onsite	tons	0.08	2.19	0.57	0.05	0.05	218.16	0.01	0.02
Annual	Project_Unmitigated	2026	Truck	tons	0.07	4.98	2.70	1.28	0.38	10,319.78	1.64	0.32
Annual	Project_Unmitigated	2026	Trucks offsite	tons	0.03	2.05	1.06	0.51	0.15	3,826.18	0.61	0.12
Annual	Project_Unmitigated	2026	Trucks onsite	tons	0.01	0.52	0.24	0.66	0.11	458.88	0.07	0.03
Annual	Project_Unmitigated	2026	Trucks onsite idling	tons	0.26	1.66	4.17	0.00	0.00	676.15	0.11	0.20
Annual	Project_Unmitigated	2026 Total			5.72	154.18	155.46	5.24	2.94	31,319.64	2.91	1.17
Annual	Project_Unmitigated	2027	CHE	tons	1.64	5.43	138.61	0.34	0.34	5,370.70	0.02	0.10
Annual	Project_Unmitigated	2027	HarborCraft	tons	0.02	0.49	0.23	0.01	0.01	209.69	0.00	0.00
Annual	Project_Unmitigated	2027	OGV	tons	2.12	88.61	4.06	1.07	0.99	5,336.53	0.33	0.07
Annual	Project_Unmitigated	2027	PC	tons	0.03	0.13	2.86	0.31	0.06	1,121.44	0.02	0.01
Annual	Project_Unmitigated	2027	PC offsite	tons	0.01	0.03	0.60	0.07	0.01	236.74	0.00	0.00
Annual	Project_Unmitigated	2027	PC onsite	tons	0.00	0.00	0.10	0.04	0.01	39.10	0.00	0.00
Annual	Project_Unmitigated	2027	Rail offsite	tons	1.48	40.93	10.04	0.92	0.86	3,835.15	0.10	0.31
Annual	Project_Unmitigated	2027	Rail onsite	tons	0.08	2.15	0.57	0.05	0.04	215.65	0.01	0.02
Annual	Project_Unmitigated	2027	Truck	tons	0.07	4.89	2.68	1.34	0.39	10,760.54	1.71	0.33
Annual	Project_Unmitigated	2027	Trucks offsite	tons	0.03	2.02	1.06	0.53	0.15	3,988.02	0.63	0.13
Annual	Project_Unmitigated	2027	Trucks onsite	tons	0.01	0.51	0.25	0.69	0.11	476.13	0.08	0.03
Annual	Project_Unmitigated	2027	Trucks onsite idling	tons	0.27	1.63	4.38	0.00	0.00	702.29	0.11	0.21
Annual	Project_Unmitigated	2027 Total			5.76	146.83	165.43	5.37	2.98	32,291.99	3.02	1.21
Annual	Project_Unmitigated	2028	CHE	tons	5.24	16.28	435.34	1.10	1.08	17,380.91	0.06	0.32
Annual	Project_Unmitigated	2028	HarborCraft	tons	0.02	0.59	0.28	0.02	0.02	253.93	0.00	0.00
Annual	Project_Unmitigated	2028	OGV	tons	3.13	147.92	5.71	1.62	1.49	8,233.58	0.52	0.11
Annual	Project_Unmitigated	2028	PC	tons	0.07	0.35	7.63	0.85	0.17	3,054.50	0.05	0.02
Annual	Project_Unmitigated	2028	PC offsite	tons	0.02	0.07	1.59	0.20	0.04	644.84	0.01	0.00
Annual	Project_Unmitigated	2028	PC onsite	tons	0.00	0.01	0.26	0.10	0.02	106.45	0.00	0.00
Annual	Project_Unmitigated	2028	Rail offsite	tons	4.30	119.37	29.50	2.65	2.49	11,267.22	0.30	0.92
Annual	Project_Unmitigated	2028	Rail onsite	tons	0.31	8.26	2.19	0.18	0.17	831.69	0.02	0.07
Annual	Project_Unmitigated	2028	Truck	tons	0.24	14.94	8.44	4.44	1.30	35,444.07	5.64	1.10
Annual	Project_Unmitigated	2028	Trucks offsite	tons	0.09	6.17	3.36	1.76	0.50	13,131.27	2.09	0.42
Annual	Project_Unmitigated	2028	Trucks onsite	tons	0.02	1.58	0.81	2.29	0.37	1,561.15	0.25	0.10
Annual	Project_Unmitigated	2028	Trucks onsite idling	tons	0.89	5.02	14.56	0.00	0.00	2,305.34	0.37	0.67
Annual	Project_Unmitigated	2028 Total			14.33	320.57	509.66	15.21	7.65	94,214.95	9.32	3.73
Annual	Project_Unmitigated	2036	CHE	tons	6.54	15.59	515.10	1.39	1.37	23,588.29	0.09	0.44
Annual	Project_Unmitigated	2036	HarborCraft	tons	0.03	0.84	0.38	0.02	0.02	354.36	0.00	0.00
Annual	Project_Unmitigated	2036	OGV	tons	4.53	116.21	8.55	2.36	2.17	11,966.68	0.76	0.15
Annual	Project_Unmitigated	2036	PC	tons	0.02	0.11	2.74	0.42	0.08	1,133.27	0.02	0.01
Annual	Project_Unmitigated	2036	PC offsite	tons	0.01	0.07	1.87	0.31	0.06	780.76	0.01	0.00
Annual	Project_Unmitigated	2036	PC onsite	tons	0.00	0.01	0.34	0.16	0.03	154.46	0.00	0.00
Annual	Project_Unmitigated	2036	Rail offsite	tons	5.16	154.61	49.21	3.02	2.84	18,797.17	0.50	1.54
Annual	Project_Unmitigated	2036	Rail onsite	tons	0.57	16.26	5.33	0.31	0.30	2,029.87	0.05	0.16
Annual	Project_Unmitigated	2036	Truck	tons	0.27	11.58	8.38	5.80	1.68	41,289.49	6.57	1.41
Annual	Project_Unmitigated	2036	Trucks offsite	tons	0.10	4.71	3.17	2.21	0.63	14,823.33	2.36	0.51
Annual	Project_Unmitigated	2036	Trucks onsite	tons	0.02	1.32	0.96	2.99	0.48	1,776.01	0.28	0.12
Annual	Project_Unmitigated	2036	Trucks onsite idling	tons	1.15	4.17	19.24	0.00	0.00	2,664.37	0.43	0.80
Annual	Project_Unmitigated	2036 Total			18.41	325.49	615.25	19.01	9.66	119,358.07	11.08	5.14
Annual	Project_Unmitigated	2050	CHE	tons	10.37	24.26	885.29	2.08	2.05	36,140.80	0.13	0.67
Annual	Project_Unmitigated	2050	HarborCraft	tons	0.03	1.04	0.46	0.02	0.02	438.73	0.00	0.00
Annual	Project_Unmitigated	2050	OGV	tons	5.60	75.66	10.58	2.92	2.68	14,815.89	0.94	0.19
Annual	Project_Unmitigated	2050	PC	tons	0.02	0.14	3.99	0.65	0.12	1,689.98	0.02	0.01
Annual	Project_Unmitigated	2050	PC offsite	tons	0.02	0.10	2.67	0.48	0.09	1,150.46	0.02	0.01
Annual	Project_Unmitigated	2050	PC onsite	tons	0.01	0.02	0.48	0.25	0.04	227.55	0.00	0.00
Annual	Project_Unmitigated	2050	Rail offsite	tons	2.81	76.29	65.04	1.22	1.14	24,846.81	0.66	2.03
Annual	Project_Unmitigated	2050	Rail onsite	tons	0.44	10.99	8.45	0.18	0.17	3,219.15	0.09	0.26
Annual	Project_Unmitigated	2050	Truck	tons	0.40	12.19	13.71	9.33	2.67	57,767.28	9.20	2.19
Annual	Project_Unmitigated	2050	Trucks offsite	tons	0.15	4.52	4.47	3.43	0.98	20,420.35	3.25	0.74
Annual	Project_Unmitigated	2050	Trucks onsite	tons	0.04	1.27	1.35	4.54	0.73	2,412.97	0.39	0.17
Annual	Project_Unmitigated	2050	Trucks onsite idling	tons	1.48	3.70	25.36	0.01	0.01	3,157.31	0.51	1.18
Annual	Project_Unmitigated	2050 Total			21.36	210.17	1,021.86	25.11	10.71	166,287.27	15.21	7.45
Annual	Project_Unmitigated	2055	CHE	tons	10.37	24.26	885.29	2.08	2.05	36,140.80	0.13	0.67
Annual	Project_Unmitigated	2055	HarborCraft	tons	0.03	1.04	0.46	0.02	0.02	438.73	0.00	0.00
Annual	Project_Unmitigated	2055	OGV	tons	5.60	75.66	10.58	2.92	2.68	14,815.89	0.94	0.19
Annual	Project_Unmitigated	2055	PC	tons	0.02	0.14	3.99	0.65	0.12	1,689.98	0.02	0.01
Annual	Project_Unmitigated	2055	PC offsite	tons	0.02	0.10	2.67	0.48	0.09	1,150.46	0.02	0.01
Annual	Project_Unmitigated	2055	PC onsite	tons	0.01	0.02	0.48	0.25	0.04	227.55	0.00	0.00
Annual	Project_Unmitigated	2055	Rail offsite	tons	2.81	76.29	65.04	1.22	1.14	24,846.81	0.66	2.03
Annual	Project_Unmitigated	2055	Rail onsite	tons	0.44	10.99	8.45	0.18	0.17	3,219.15	0.09	0.26
Annual	Project_Unmitigated	2055	Truck	tons	0.40	12.19	13.71	9.33	2.67	57,767.28	9.20	2.19
Annual	Project_Unmitigated	2055	Trucks offsite	tons	0.15	4.52	4.47	3.43	0.98	20,420.35	3.25	0.74
Annual	Project_Unmitigated	2055	Trucks onsite	tons	0.04	1.27	1.35	4.54	0.73	2,412.97	0.39	0.17
Annual	Project_Unmitigated	2055	Trucks onsite idling	tons	1.48	3.70	25.36	0.01	0.01	3,157.31	0.51	1.18
Annual	Project_Unmitigated	2055 Total			21.36	210.17	1,021.86	25.11	10.71	166,287.27	15.21	7.45
Annual	Project_Unmitigated	2062	CHE	tons	10.37	24.26	885.29	2.08	2.05	36,140.80	0.13	0.67
Annual	Project_Unmitigated	2062	HarborCraft	tons	0.03	1.04	0.46	0.02	0.02	438.73	0.00	0.00
Annual	Project_Unmitigated	2062	OGV	tons	5.60	75.66	10.58	2.92	2.68	14,815.89	0.94	0.19
Annual	Project_Unmitigated	2062	PC	tons	0.02	0.14	3.99	0.65	0.12	1,689.98	0.02	0.01
Annual	Project_Unmitigated	2062	PC offsite	tons	0.02	0.10	2.67	0.48	0.09	1,150.46	0.02	0.01
Annual	Project_Unmitigated	2062	PC onsite	tons	0.01	0.02	0.48	0.25	0.04	227.55	0.00	0.00
Annual	Project_Unmitigated	2062	Rail offsite	tons	2.81	76.29	65.04	1.22	1.14	24,846.81	0.66	2.03
Annual	Project_Unmitigated	2062	Rail onsite	tons	0.44	10.99	8.45	0.18	0.17	3,219.15	0.09	0.26
Annual	Project_Unmitigated	2062	Truck	tons	0.40	12.19	13.71	9.33	2.67	57,767.28	9.20	2.19
Annual	Project_Unmitigated	2062	Trucks offsite	tons	0.15	4.52	4.47	3.43	0.98	20,420.35	3.25	0.74
Annual	Project_Unmitigated	2062	Trucks onsite	tons	0.04	1.27	1.35	4.54	0.73	2,412.97	0.39	0.17
Annual	Project_Unmitigated	2062	Trucks onsite idling	tons	1.48	3.70	25.36	0.01	0.01	3,157.31	0.51	1.18
Annual	Project_Unmitigated	2062 Total			21.36	210.17	1,021.86	25.11	10.71	166,287.27	15.21	7.45
Annual	NoProject_Unmitigated	2026	CHE	tons	2.73	11.65	212.51	0.59	0.58	8,588.97	0.03	0.16
Annual	NoProject_Unmitigated	2026	HarborCraft	tons	0.03	0.77	0.36	0.02	0.02	331.38	0.00	0.00
Annual	NoProject_Unmitigated	2026	OGV	tons	3.47	157.89	6.60	1.74	1.60	8,661.34	0.54	0.12
Annual	NoProject_Unmitigated	2026	PC	tons	0.05	0.23	4.81	0.49	0.10	1,839.58	0.03	0.01

B121-131 Annual Emissions Inventory by Source Category, by Scenario, Mitigation and Analysis Period

Period	id_Scenario	Year	Source_category	UOM	VOC	NOx	CO	PM10total	PM25total	CO2	N2O	CH4
Annual	NoProject_Unmitigated	2026	PC offsite	tons	0.01	0.02	0.50	0.06	0.01	194.15	0.00	0.00
Annual	NoProject_Unmitigated	2026	PC onsite	tons	0.00	0.01	0.16	0.06	0.01	64.12	0.00	0.00
Annual	NoProject_Unmitigated	2026	Rail offsite	tons	2.36	64.56	15.76	1.46	1.37	6,018.82	0.16	0.49
Annual	NoProject_Unmitigated	2026	Rail onsite	tons	0.15	4.04	1.06	0.09	0.08	402.93	0.01	0.03
Annual	NoProject_Unmitigated	2026	Truck	tons	0.12	8.53	4.62	2.19	0.65	17,669.20	2.81	0.54
Annual	NoProject_Unmitigated	2026	Trucks offsite	tons	0.02	1.76	0.91	0.43	0.12	3,275.53	0.52	0.10
Annual	NoProject_Unmitigated	2026	Trucks onsite	tons	0.01	0.89	0.41	1.14	0.18	785.67	0.13	0.05
Annual	NoProject_Unmitigated	2026	Trucks onsite idling	tons	0.44	2.83	7.14	0.00	0.00	1,157.68	0.19	0.35
Annual	NoProject_Unmitigated	2026 Total			9.39	253.18	254.84	8.27	4.72	48,989.36	4.42	1.86
Annual	NoProject_Unmitigated	2027	CHE	tons	2.71	8.97	229.03	0.57	0.56	8,874.13	0.03	0.16
Annual	NoProject_Unmitigated	2027	HarborCraft	tons	0.03	0.76	0.36	0.02	0.02	328.68	0.00	0.00
Annual	NoProject_Unmitigated	2027	OGV	tons	3.46	146.05	6.61	1.74	1.60	8,699.66	0.54	0.12
Annual	NoProject_Unmitigated	2027	PC	tons	0.05	0.22	4.73	0.51	0.10	1,852.99	0.03	0.01
Annual	NoProject_Unmitigated	2027	PC offsite	tons	0.01	0.02	0.49	0.06	0.01	195.59	0.00	0.00
Annual	NoProject_Unmitigated	2027	PC onsite	tons	0.00	0.01	0.16	0.06	0.01	64.61	0.00	0.00
Annual	NoProject_Unmitigated	2027	Rail offsite	tons	2.35	64.91	15.91	1.45	1.37	6,077.00	0.16	0.50
Annual	NoProject_Unmitigated	2027	Rail onsite	tons	0.16	4.22	1.11	0.09	0.09	422.26	0.01	0.03
Annual	NoProject_Unmitigated	2027	Truck	tons	0.12	8.27	4.53	2.26	0.67	18,197.12	2.90	0.56
Annual	NoProject_Unmitigated	2027	Trucks offsite	tons	0.02	1.71	0.90	0.45	0.13	3,372.06	0.54	0.11
Annual	NoProject_Unmitigated	2027	Trucks onsite	tons	0.01	0.87	0.42	1.17	0.19	805.19	0.13	0.05
Annual	NoProject_Unmitigated	2027	Trucks onsite idling	tons	0.45	2.76	7.41	0.00	0.00	1,187.63	0.19	0.35
Annual	NoProject_Unmitigated	2027 Total			9.38	238.77	271.65	8.39	4.74	50,076.92	4.53	1.89
Annual	NoProject_Unmitigated	2028	CHE	tons	2.78	8.64	231.07	0.59	0.57	9,225.65	0.03	0.17
Annual	NoProject_Unmitigated	2028	HarborCraft	tons	0.03	0.76	0.35	0.02	0.02	325.98	0.00	0.00
Annual	NoProject_Unmitigated	2028	OGV	tons	3.44	133.77	6.55	1.74	1.60	8,681.28	0.54	0.11
Annual	NoProject_Unmitigated	2028	PC	tons	0.04	0.21	4.68	0.52	0.11	1,876.02	0.03	0.01
Annual	NoProject_Unmitigated	2028	PC offsite	tons	0.00	0.02	0.49	0.06	0.01	198.02	0.00	0.00
Annual	NoProject_Unmitigated	2028	PC onsite	tons	0.00	0.01	0.16	0.06	0.01	65.43	0.00	0.00
Annual	NoProject_Unmitigated	2028	Rail offsite	tons	2.38	66.24	16.34	1.47	1.38	6,239.82	0.17	0.51
Annual	NoProject_Unmitigated	2028	Rail onsite	tons	0.16	4.39	1.16	0.10	0.09	441.46	0.01	0.04
Annual	NoProject_Unmitigated	2028	Truck	tons	0.13	7.93	4.48	2.35	0.69	18,808.01	2.99	0.58
Annual	NoProject_Unmitigated	2028	Trucks offsite	tons	0.02	1.64	0.89	0.47	0.13	3,483.98	0.55	0.11
Annual	NoProject_Unmitigated	2028	Trucks onsite	tons	0.01	0.84	0.43	1.22	0.19	828.64	0.13	0.05
Annual	NoProject_Unmitigated	2028	Trucks onsite idling	tons	0.47	2.66	7.73	0.00	0.00	1,223.65	0.20	0.35
Annual	NoProject_Unmitigated	2028 Total			9.47	227.12	274.33	8.60	4.81	51,397.93	4.66	1.95
Annual	NoProject_Unmitigated	2036	CHE	tons	3.34	7.96	262.86	0.71	0.70	12,037.36	0.04	0.22
Annual	NoProject_Unmitigated	2036	HarborCraft	tons	0.02	0.70	0.32	0.02	0.02	297.46	0.00	0.00
Annual	NoProject_Unmitigated	2036	OGV	tons	3.18	42.24	6.05	1.65	1.51	8,313.92	0.52	0.10
Annual	NoProject_Unmitigated	2036	PC	tons	0.01	0.06	1.48	0.23	0.04	612.39	0.01	0.00
Annual	NoProject_Unmitigated	2036	PC offsite	tons	0.00	0.02	0.50	0.09	0.02	210.92	0.00	0.00
Annual	NoProject_Unmitigated	2036	PC onsite	tons	0.00	0.01	0.18	0.09	0.01	83.55	0.00	0.00
Annual	NoProject_Unmitigated	2036	Rail offsite	tons	2.74	82.07	26.12	1.61	1.51	9,977.34	0.27	0.82
Annual	NoProject_Unmitigated	2036	Rail onsite	tons	0.26	7.34	2.40	0.14	0.13	914.03	0.02	0.07
Annual	NoProject_Unmitigated	2036	Truck	tons	0.11	4.88	3.54	2.44	0.71	17,329.07	2.76	0.59
Annual	NoProject_Unmitigated	2036	Trucks offsite	tons	0.02	1.05	0.72	0.50	0.14	3,342.57	0.53	0.11
Annual	NoProject_Unmitigated	2036	Trucks onsite	tons	0.01	0.58	0.42	1.32	0.21	783.73	0.13	0.05
Annual	NoProject_Unmitigated	2036	Trucks onsite idling	tons	0.51	1.84	8.49	0.00	0.00	1,175.76	0.19	0.35
Annual	NoProject_Unmitigated	2036 Total			10.21	148.75	313.08	8.79	5.01	55,078.10	4.48	2.34
Annual	NoProject_Unmitigated	2050	CHE	tons	5.22	12.22	446.01	1.05	1.03	18,207.58	0.07	0.34
Annual	NoProject_Unmitigated	2050	HarborCraft	tons	0.03	0.98	0.44	0.02	0.02	415.63	0.00	0.00
Annual	NoProject_Unmitigated	2050	OGV	tons	4.49	61.21	8.18	2.33	2.14	11,961.10	0.76	0.15
Annual	NoProject_Unmitigated	2050	PC	tons	0.02	0.10	2.84	0.47	0.09	1,199.15	0.02	0.01
Annual	NoProject_Unmitigated	2050	PC offsite	tons	0.01	0.03	0.95	0.17	0.03	406.95	0.01	0.00
Annual	NoProject_Unmitigated	2050	PC onsite	tons	0.00	0.01	0.34	0.18	0.03	161.06	0.00	0.00
Annual	NoProject_Unmitigated	2050	Rail offsite	tons	1.70	49.85	32.41	0.81	0.76	12,382.35	0.33	1.01
Annual	NoProject_Unmitigated	2050	Rail onsite	tons	0.23	6.48	4.05	0.11	0.10	1,543.71	0.04	0.13
Annual	NoProject_Unmitigated	2050	Truck	tons	0.21	6.53	7.41	4.92	1.40	30,253.00	4.82	1.17
Annual	NoProject_Unmitigated	2050	Trucks offsite	tons	0.04	1.26	1.27	0.97	0.28	5,713.93	0.91	0.21
Annual	NoProject_Unmitigated	2050	Trucks onsite	tons	0.02	0.70	0.74	2.50	0.40	1,328.49	0.21	0.09
Annual	NoProject_Unmitigated	2050	Trucks onsite idling	tons	0.82	2.04	13.96	0.00	0.00	1,738.29	0.28	0.65
Annual	NoProject_Unmitigated	2050 Total			12.79	141.43	518.60	13.52	6.29	85,311.25	7.45	3.76
Annual	NoProject_Unmitigated	2055	CHE	tons	6.06	14.17	517.04	1.21	1.20	21,107.59	0.08	0.39
Annual	NoProject_Unmitigated	2055	HarborCraft	tons	0.04	1.14	0.51	0.03	0.03	481.83	0.00	0.00
Annual	NoProject_Unmitigated	2055	OGV	tons	5.20	70.96	9.48	2.70	2.48	13,866.20	0.88	0.17
Annual	NoProject_Unmitigated	2055	PC	tons	0.02	0.12	3.29	0.54	0.10	1,390.14	0.02	0.01
Annual	NoProject_Unmitigated	2055	PC offsite	tons	0.01	0.04	1.10	0.20	0.04	471.77	0.01	0.00
Annual	NoProject_Unmitigated	2055	PC onsite	tons	0.00	0.01	0.39	0.21	0.03	186.71	0.00	0.00
Annual	NoProject_Unmitigated	2055	Rail offsite	tons	1.97	57.79	37.58	0.94	0.89	14,354.55	0.38	1.17
Annual	NoProject_Unmitigated	2055	Rail onsite	tons	0.27	7.51	4.69	0.12	0.12	1,789.58	0.05	0.15
Annual	NoProject_Unmitigated	2055	Truck	tons	0.24	7.57	8.59	5.70	1.63	35,071.53	5.59	1.35
Annual	NoProject_Unmitigated	2055	Trucks offsite	tons	0.05	1.46	1.48	1.12	0.32	6,624.02	1.05	0.24
Annual	NoProject_Unmitigated	2055	Trucks onsite	tons	0.02	0.81	0.86	2.90	0.47	1,540.08	0.25	0.11
Annual	NoProject_Unmitigated	2055	Trucks onsite idling	tons	0.95	2.36	16.19	0.00	0.00	2,015.16	0.33	0.76
Annual	NoProject_Unmitigated	2055 Total			14.82	163.95	601.20	15.67	7.29	98,899.16	8.64	4.35
Annual	NoProject_Unmitigated	2062	CHE	tons	7.38	17.27	630.12	1.48	1.46	25,723.74	0.10	0.48
Annual	NoProject_Unmitigated	2062	HarborCraft	tons	0.04	1.39	0.62	0.03	0.03	587.20	0.00	0.00
Annual	NoProject_Unmitigated	2062	OGV	tons	6.34	86.47	11.55	3.29	3.02	16,898.69	1.08	0.21
Annual	NoProject_Unmitigated	2062	PC	tons	0.02	0.14	4.01	0.66	0.12	1,694.16	0.02	0.01
Annual	NoProject_Unmitigated	2062	PC offsite	tons	0.01	0.05	1.34	0.24	0.05	574.95	0.01	0.00
Annual	NoProject_Unmitigated	2062	PC onsite	tons	0.01	0.02	0.48	0.25	0.04	227.55	0.00	0.00
Annual	NoProject_Unmitigated	2062	Rail offsite	tons	2.40	70.43	45.79	1.15	1.08	17,493.84	0.47	1.43
Annual	NoProject_Unmitigated	2062	Rail onsite	tons	0.33	9.16	5.72	0.15	0.14	2,180.96	0.06	0.18
Annual	NoProject_Unmitigated	2062	Truck	tons	0.30	9.23	10.47	6.95	1.98	42,741.55	6.81	1.65
Annual	NoProject_Unmitigated	2062	Trucks offsite	tons	0.06	1.78	1.80	1.37	0.39	8,072.66	1.29	0.29
Annual	NoProject_Unmitigated	2062	Trucks onsite	tons	0.03	0.99	1.05	3.53	0.57	1,876.89	0.30	0.13
Annual	NoProject_Unmitigated	2062	Trucks onsite idling	tons	1.15	2.88	19.73	0.00	0.00	2,455.87	0.40	0.92
Annual	NoProject_Unmitigated	2062 Total			18.07	199.81	732.68	19.10	8.89	120,528.06	10.53	5.31
Annual	NoFedAction_Unmitigated	2026	CHE	tons	2.73	11.65	212.51	0.59	0.58	8,588.97	0.03	0.16
Annual	NoFedAction_Unmitigated	2026	HarborCraft	tons	0.03	0.77	0.36	0.02	0.02	331.38	0.00	0.00
Annual	NoFedAction_Unmitigated	2026	OGV	tons	3.47	157.89	6.60	1.74	1.60	8,661.34	0.54	0.12
Annual	NoFedAction_Unmitigated	2026	PC	tons	0.05	0.23	4.81	0.49	0.10	1,839.58	0.03	0.01
Annual	NoFedAction_Unmitigated	2026	PC offsite	tons	0.01	0.05	1.00	0.12	0.02	388.30	0.01	0.00
Annual	NoFedAction_Unmitigated	2026	PC onsite	tons	0.00	0.01	0.16	0.06	0.01	64.12	0.00	0.00
Annual	NoFedAction_Unmitigated	2026	Rail offsite	tons	2.47	67.73	16.54	1.53	1.44	6,318.11	0.17	0.52
Annual	NoFedAction_Unmitigated	2026	Rail onsite	tons	0.12	3.28	0.86	0.07	0.07	326.68	0.01	0.03
Annual	NoFedAction_Unmitigated	2026	Truck	tons	0.12	8.47	4.59	2.18	0.64	17,560.42	2.80	0.54
Annual	NoFedAction_Unmitigated	2026	Trucks offsite	tons	0.05	3.49	1.81	0.86	0.25	6,510.73	1.04	0.21
Annual	NoFedAction_Unmitigated	2026	Trucks onsite	tons	0.01	0.88	0.41	1.13	0.18	780.84	0.12	0.05
Annual	NoFedAction_Unmitigated	2026	Trucks onsite idling	tons	0.44	2.82	7.09	0.00	0.00	1,150.55	0.19	0.34
Annual	NoFedAction_Unmitigated	2026 Total			9.50	257.27	256.75	8.79	4.90	52,521.02	4.92	1.98
Annual	NoFedAction_Unmitigated	2027	CHE	tons	2.71	8.97	229.03	0.57	0.56	8,874.13	0.03	0.16
Annual	NoFedAction_Unmitigated	2027	HarborCraft	tons	0.03	0.76	0.36	0.02	0.02	328.68	0.00	0.00
Annual	NoFedAction_Unmitigated	2027	OGV	tons	3.46	146.05	6.61	1.74	1.60	8,699.66	0.54	0.12
Annual	NoFedAction_Unmitigated	2027	PC	tons	0.05	0.22	4.73	0.51	0.10	1,852.99	0.03	0.01
Annual	NoFedAction_Unmitigated	2027	PC offsite	tons	0.01	0.05	0.98	0.12	0.02	391.17	0.01	0.00
Annual	NoFedAction_Unmitigated	2027	PC onsite	tons	0.00	0.01	0.16	0.06	0.01	64.61	0.00	0.00
Annual	NoFedAction_Unmitigated	2027	Rail offsite	tons	2.50	68.88	16.89	1.54	1.45	6,451.86	0.17	0.53
Annual	NoFedAction_Unmitigated	2027	Rail onsite	tons	0.12	3.24	0.85	0.07	0.07	324.06	0.01	0.03

B121-131 Annual Emissions Inventory by Source Category, by Scenario, Mitigation and Analysis Period

Period	id_Scenario	Year	Source_category	UOM	VOC	NOx	CO	PM10total	PM25total	CO2	N2O	CH4
Annual	NoFedAction_Unmitigated	2027	Truck	tons	0.12	8.33	4.56	2.28	0.67	18,332.89	2.92	0.56
Annual	NoFedAction_Unmitigated	2027	Trucks offsite	tons	0.05	3.44	1.81	0.90	0.26	6,794.44	1.08	0.22
Annual	NoFedAction_Unmitigated	2027	Trucks onsite	tons	0.01	0.88	0.42	1.18	0.19	811.19	0.13	0.05
Annual	NoFedAction_Unmitigated	2027	Trucks onsite idling	tons	0.46	2.78	7.46	0.00	0.00	1,196.49	0.19	0.35
Annual	NoFedAction_Unmitigated	2027 Total			9.52	243.60	273.87	9.00	4.95	54,122.18	5.11	2.04
Annual	NoFedAction_Unmitigated	2028	CHE	tons	2.78	8.64	231.07	0.59	0.57	9,225.65	0.03	0.17
Annual	NoFedAction_Unmitigated	2028	HarborCraft	tons	0.03	0.76	0.35	0.02	0.02	325.98	0.00	0.00
Annual	NoFedAction_Unmitigated	2028	OGV	tons	3.44	133.77	6.55	1.74	1.60	8,681.28	0.54	0.11
Annual	NoFedAction_Unmitigated	2028	PC	tons	0.04	0.21	4.68	0.52	0.11	1,876.02	0.03	0.01
Annual	NoFedAction_Unmitigated	2028	PC offsite	tons	0.01	0.05	0.98	0.12	0.02	396.05	0.01	0.00
Annual	NoFedAction_Unmitigated	2028	PC onsite	tons	0.00	0.01	0.16	0.06	0.01	65.43	0.00	0.00
Annual	NoFedAction_Unmitigated	2028	Rail offsite	tons	2.39	66.30	16.36	1.47	1.38	6,249.71	0.17	0.51
Annual	NoFedAction_Unmitigated	2028	Rail onsite	tons	0.16	4.39	1.16	0.10	0.09	441.46	0.01	0.04
Annual	NoFedAction_Unmitigated	2028	Truck	tons	0.13	7.93	4.48	2.35	0.69	18,808.01	2.99	0.58
Annual	NoFedAction_Unmitigated	2028	Trucks offsite	tons	0.05	3.28	1.78	0.93	0.27	6,967.97	1.11	0.22
Annual	NoFedAction_Unmitigated	2028	Trucks onsite	tons	0.01	0.84	0.43	1.22	0.19	828.64	0.13	0.05
Annual	NoFedAction_Unmitigated	2028	Trucks onsite idling	tons	0.47	2.66	7.73	0.00	0.00	1,223.65	0.20	0.35
Annual	NoFedAction_Unmitigated	2028 Total			9.51	228.84	275.74	9.13	4.96	55,089.83	5.22	2.06
Annual	NoFedAction_Unmitigated	2036	CHE	tons	3.34	7.96	262.86	0.71	0.70	12,037.36	0.04	0.22
Annual	NoFedAction_Unmitigated	2036	HarborCraft	tons	0.02	0.70	0.32	0.02	0.02	297.46	0.00	0.00
Annual	NoFedAction_Unmitigated	2036	OGV	tons	3.18	42.24	6.05	1.65	1.51	8,313.92	0.52	0.10
Annual	NoFedAction_Unmitigated	2036	PC	tons	0.01	0.06	1.45	0.22	0.04	602.90	0.01	0.00
Annual	NoFedAction_Unmitigated	2036	PC offsite	tons	0.01	0.04	0.99	0.17	0.03	415.85	0.01	0.00
Annual	NoFedAction_Unmitigated	2036	PC onsite	tons	0.00	0.01	0.18	0.09	0.01	83.33	0.00	0.00
Annual	NoFedAction_Unmitigated	2036	Rail offsite	tons	2.53	75.76	24.11	1.48	1.39	9,210.77	0.24	0.75
Annual	NoFedAction_Unmitigated	2036	Rail onsite	tons	0.33	9.57	3.13	0.19	0.17	1,193.92	0.03	0.10
Annual	NoFedAction_Unmitigated	2036	Truck	tons	0.13	5.59	4.04	2.80	0.81	19,881.42	3.17	0.68
Annual	NoFedAction_Unmitigated	2036	Trucks offsite	tons	0.05	2.42	1.65	1.14	0.33	7,609.65	1.21	0.26
Annual	NoFedAction_Unmitigated	2036	Trucks onsite	tons	0.01	0.66	0.48	1.50	0.24	891.37	0.14	0.06
Annual	NoFedAction_Unmitigated	2036	Trucks onsite idling	tons	0.58	2.09	9.66	0.00	0.00	1,337.23	0.22	0.40
Annual	NoFedAction_Unmitigated	2036 Total			10.20	147.08	314.94	9.96	5.26	61,875.17	5.60	2.59
Annual	NoFedAction_Unmitigated	2050	CHE	tons	5.22	12.22	446.01	1.05	1.03	18,207.58	0.07	0.34
Annual	NoFedAction_Unmitigated	2050	HarborCraft	tons	0.03	0.98	0.44	0.02	0.02	415.63	0.00	0.00
Annual	NoFedAction_Unmitigated	2050	OGV	tons	4.49	61.21	8.18	2.33	2.14	11,961.10	0.76	0.15
Annual	NoFedAction_Unmitigated	2050	PC	tons	0.01	0.06	1.76	0.29	0.05	742.74	0.01	0.00
Annual	NoFedAction_Unmitigated	2050	PC offsite	tons	0.01	0.04	1.17	0.21	0.04	504.25	0.01	0.00
Annual	NoFedAction_Unmitigated	2050	PC onsite	tons	0.00	0.01	0.21	0.11	0.02	100.28	0.00	0.00
Annual	NoFedAction_Unmitigated	2050	Rail offsite	tons	1.32	35.74	30.45	0.57	0.54	11,632.39	0.31	0.95
Annual	NoFedAction_Unmitigated	2050	Rail onsite	tons	0.25	6.27	4.77	0.10	0.10	1,816.27	0.05	0.15
Annual	NoFedAction_Unmitigated	2050	Truck	tons	0.20	6.14	6.96	4.62	1.32	28,479.10	4.54	1.10
Annual	NoFedAction_Unmitigated	2050	Trucks offsite	tons	0.07	2.26	2.25	1.73	0.49	10,229.79	1.63	0.37
Annual	NoFedAction_Unmitigated	2050	Trucks onsite	tons	0.02	0.63	0.67	2.26	0.36	1,201.97	0.19	0.09
Annual	NoFedAction_Unmitigated	2050	Trucks onsite idling	tons	0.74	1.84	12.63	0.00	0.00	1,572.74	0.26	0.59
Annual	NoFedAction_Unmitigated	2050 Total			12.36	127.40	515.50	13.29	6.11	86,863.84	7.82	3.74
Annual	NoFedAction_Unmitigated	2055	CHE	tons	6.06	14.17	517.04	1.21	1.20	21,107.59	0.08	0.39
Annual	NoFedAction_Unmitigated	2055	HarborCraft	tons	0.04	1.14	0.51	0.03	0.03	481.83	0.00	0.00
Annual	NoFedAction_Unmitigated	2055	OGV	tons	5.20	70.96	9.48	2.70	2.48	13,866.20	0.88	0.17
Annual	NoFedAction_Unmitigated	2055	PC	tons	0.01	0.07	2.04	0.33	0.06	861.04	0.01	0.00
Annual	NoFedAction_Unmitigated	2055	PC offsite	tons	0.01	0.05	1.36	0.24	0.05	584.56	0.01	0.00
Annual	NoFedAction_Unmitigated	2055	PC onsite	tons	0.00	0.01	0.25	0.13	0.02	116.26	0.00	0.00
Annual	NoFedAction_Unmitigated	2055	Rail offsite	tons	1.52	41.43	35.30	0.66	0.62	13,485.13	0.36	1.10
Annual	NoFedAction_Unmitigated	2055	Rail onsite	tons	0.29	7.27	5.53	0.12	0.11	2,105.56	0.06	0.17
Annual	NoFedAction_Unmitigated	2055	Truck	tons	0.23	7.12	8.07	5.36	1.53	33,015.10	5.26	1.27
Annual	NoFedAction_Unmitigated	2055	Trucks offsite	tons	0.09	2.62	2.61	2.00	0.57	11,859.13	1.89	0.43
Annual	NoFedAction_Unmitigated	2055	Trucks onsite	tons	0.02	0.74	0.78	2.62	0.42	1,393.41	0.22	0.10
Annual	NoFedAction_Unmitigated	2055	Trucks onsite idling	tons	0.86	2.14	14.64	0.00	0.00	1,823.24	0.30	0.68
Annual	NoFedAction_Unmitigated	2055 Total			14.32	147.70	597.60	15.41	7.09	100,699.04	9.07	4.33
Annual	NoFedAction_Unmitigated	2062	CHE	tons	7.38	17.27	630.12	1.48	1.46	25,723.74	0.10	0.48
Annual	NoFedAction_Unmitigated	2062	HarborCraft	tons	0.04	1.39	0.62	0.03	0.03	587.20	0.00	0.00
Annual	NoFedAction_Unmitigated	2062	OGV	tons	6.34	86.47	11.55	3.29	3.02	16,898.69	1.08	0.21
Annual	NoFedAction_Unmitigated	2062	PC	tons	0.01	0.09	2.48	0.41	0.08	1,049.34	0.01	0.00
Annual	NoFedAction_Unmitigated	2062	PC offsite	tons	0.01	0.06	1.65	0.30	0.06	712.40	0.01	0.00
Annual	NoFedAction_Unmitigated	2062	PC onsite	tons	0.00	0.01	0.30	0.16	0.03	141.68	0.00	0.00
Annual	NoFedAction_Unmitigated	2062	Rail offsite	tons	1.86	50.49	43.02	0.81	0.76	16,434.29	0.44	1.34
Annual	NoFedAction_Unmitigated	2062	Rail onsite	tons	0.35	8.85	6.74	0.14	0.13	2,566.04	0.07	0.21
Annual	NoFedAction_Unmitigated	2062	Truck	tons	0.28	8.68	9.84	6.53	1.87	40,235.39	6.41	1.55
Annual	NoFedAction_Unmitigated	2062	Trucks offsite	tons	0.10	3.19	3.18	2.44	0.70	14,452.69	2.30	0.52
Annual	NoFedAction_Unmitigated	2062	Trucks onsite	tons	0.02	0.90	0.95	3.20	0.51	1,698.14	0.27	0.12
Annual	NoFedAction_Unmitigated	2062	Trucks onsite idling	tons	1.04	2.61	17.85	0.00	0.00	2,221.97	0.36	0.83
Annual	NoFedAction_Unmitigated	2062 Total			17.46	180.00	728.30	18.77	8.64	122,721.57	11.05	5.28
Annual	Mitigated Project	2026	CHE	tons	1.66	7.07	129.01	0.36	0.35	5,214.27	0.02	0.10
Annual	Mitigated Project	2026	HarborCraft	tons	0.02	0.47	0.22	0.01	0.01	202.05	0.00	0.00
Annual	Mitigated Project	2026	OGV	tons	1.89	86.70	3.39	0.86	0.79	4,788.92	0.31	0.06
Annual	Mitigated Project	2026	PC	tons	0.03	0.14	2.92	0.30	0.06	1,116.79	0.02	0.01
Annual	Mitigated Project	2026	PC onsite	tons	0.00	0.00	0.10	0.04	0.01	38.93	0.00	0.00
Annual	Mitigated Project	2026	Rail offsite	tons	1.47	40.33	9.85	0.91	0.85	3,763.58	0.10	0.31
Annual	Mitigated Project	2026	Rail onsite	tons	0.08	2.19	0.57	0.05	0.05	218.16	0.01	0.02
Annual	Mitigated Project	2026	Truck	tons	0.07	4.98	2.70	1.28	0.38	10,319.78	1.64	0.32
Annual	Mitigated Project	2026	Trucks onsite	tons	0.01	0.52	0.24	0.66	0.11	458.88	0.07	0.03
Annual	Mitigated Project	2026	Trucks onsite idling	tons	0.26	1.66	4.17	0.00	0.00	676.15	0.11	0.20
Annual	Mitigated Project	2026 Total			5.48	144.06	153.17	4.47	2.61	26,797.51	2.28	1.04
Annual	Mitigated Project	2027	CHE	tons	1.64	5.43	138.61	0.34	0.34	5,370.70	0.02	0.10
Annual	Mitigated Project	2027	HarborCraft	tons	0.02	0.49	0.23	0.01	0.01	209.69	0.00	0.00
Annual	Mitigated Project	2027	OGV	tons	1.91	81.05	3.45	0.88	0.81	4,871.49	0.31	0.06
Annual	Mitigated Project	2027	PC	tons	0.03	0.13	2.86	0.31	0.06	1,121.44	0.02	0.01
Annual	Mitigated Project	2027	PC onsite	tons	0.00	0.00	0.10	0.04	0.01	39.10	0.00	0.00
Annual	Mitigated Project	2027	Rail offsite	tons	1.48	40.93	10.04	0.92	0.86	3,835.15	0.10	0.31
Annual	Mitigated Project	2027	Rail onsite	tons	0.08	2.15	0.57	0.05	0.04	215.65	0.01	0.02
Annual	Mitigated Project	2027	Truck	tons	0.07	4.89	2.68	1.34	0.39	10,760.54	1.71	0.33
Annual	Mitigated Project	2027	Trucks onsite	tons	0.01	0.51	0.25	0.69	0.11	476.13	0.08	0.03
Annual	Mitigated Project	2027	Trucks onsite idling	tons	0.27	1.63	4.38	0.00	0.00	702.29	0.11	0.21
Annual	Mitigated Project	2027 Total			5.51	137.22	163.16	4.57	2.64	27,602.19	2.36	1.07
Annual	Mitigated Project	2028	CHE	tons	2.38	2.99	35.83	0.24	0.23	13,808.05	0.34	8.21
Annual	Mitigated Project	2028	HarborCraft	tons	0.02	0.59	0.28	0.02	0.02	253.93	0.00	0.00
Annual	Mitigated Project	2028	OGV	tons	2.79	134.73	4.82	1.31	1.21	7,511.48	0.49	0.09
Annual	Mitigated Project	2028	PC	tons	0.07	0.35	7.63	0.85	0.17	3,054.50	0.05	0.02
Annual	Mitigated Project	2028	PC onsite	tons	0.00	0.01	0.26	0.10	0.02	106.45	0.00	0.00
Annual	Mitigated Project	2028	Rail offsite	tons	4.30	119.37	29.50	2.65	2.49	11,267.22	0.30	0.92
Annual	Mitigated Project	2028	Rail onsite	tons	0.31	8.26	2.19	0.18	0.17	831.69	0.02	0.07
Annual	Mitigated Project	2028	Truck	tons	0.24	14.94	8.44	4.44	1.30	35,444.07	5.64	1.10
Annual	Mitigated Project	2028	Trucks onsite	tons	0.02	1.58	0.81	2.29	0.37	1,561.15	0.25	0.10
Annual	Mitigated Project	2028	Trucks onsite idling	tons	0.89	5.02	14.56	0.00	0.00	2,305.34	0.37	0.67
Annual	Mitigated Project	2028 Total			11.02	287.84	104.32	12.09	5.97	76,143.88	7.47	11.17
Annual	Mitigated Project	2036	CHE	tons	0.51	1.01	3.15	0.06	0.06	1,650.23	0.01	0.07
Annual	Mitigated Project	2036	HarborCraft	tons	0.03	0.84	0.38	0.02	0.02	354.36	0.00	0.00
Annual	Mitigated Project	2036	OGV	tons	4.08	105.92	7.15	1.94	1.78	10,970.75	0.72	0.13
Annual	Mitigated Project	2036	PC	tons	0.02	0.11	2.74	0.42	0.08	1,133.27	0.02	0.01
Annual	Mitigated Project	2036	PC onsite	tons	0.00	0.01	0.34	0.16	0.03	154.46	0.00	0.00

B121-131 Annual Emissions Inventory by Source Category, by Scenario, Mitigation and Analysis Period

Period	id_Scenario	Year	Source_category	UOM	VOC	NOx	CO	PM10total	PM25total	CO2	N2O	CH4
Annual	Mitigated Project	2036	Rail offsite	tons	5.16	154.61	49.21	3.02	2.84	18,797.17	0.50	1.54
Annual	Mitigated Project	2036	Rail onsite	tons	0.57	16.26	5.33	0.31	0.30	2,029.87	0.05	0.16
Annual	Mitigated Project	2036	Truck	tons	0.27	11.58	8.38	5.80	1.68	41,289.49	6.57	1.41
Annual	Mitigated Project	2036	Trucks onsite	tons	0.02	1.32	0.96	2.99	0.48	1,776.01	0.28	0.12
Annual	Mitigated Project	2036	Trucks onsite idling	tons	1.15	4.17	19.24	0.00	0.00	2,664.37	0.43	0.80
Annual	Mitigated Project	2036 Total			11.82	295.84	96.86	14.74	7.27	80,819.98	8.59	4.23
Annual	Mitigated Project	2050	CHE	tons	0.82	0.62	4.88	0.05	0.05	2,528.41	0.02	0.10
Annual	Mitigated Project	2050	HarborCraft	tons	0.03	1.04	0.46	0.02	0.02	438.73	0.00	0.00
Annual	Mitigated Project	2050	OGV	tons	5.05	69.83	8.85	2.40	2.21	13,582.83	0.89	0.16
Annual	Mitigated Project	2050	PC	tons	0.02	0.14	3.99	0.65	0.12	1,689.98	0.02	0.01
Annual	Mitigated Project	2050	PC onsite	tons	0.01	0.02	0.48	0.25	0.04	227.55	0.00	0.00
Annual	Mitigated Project	2050	Rail offsite	tons	2.81	76.29	65.04	1.22	1.14	24,846.81	0.66	2.03
Annual	Mitigated Project	2050	Rail onsite	tons	0.44	10.99	8.45	0.18	0.17	3,219.15	0.09	0.26
Annual	Mitigated Project	2050	Truck	tons	0.40	12.19	13.71	9.33	2.67	57,767.28	9.20	2.19
Annual	Mitigated Project	2050	Trucks onsite	tons	0.04	1.27	1.35	4.54	0.73	2,412.97	0.39	0.17
Annual	Mitigated Project	2050	Trucks onsite idling	tons	1.48	3.70	25.36	0.01	0.01	3,157.31	0.51	1.18
Annual	Mitigated Project	2050 Total			11.10	176.08	132.57	18.65	7.16	109,871.00	11.79	6.12
Annual	Mitigated Project	2055	CHE	tons	0.82	0.62	4.88	0.05	0.05	2,528.41	0.02	0.10
Annual	Mitigated Project	2055	HarborCraft	tons	0.03	1.04	0.46	0.02	0.02	438.73	0.00	0.00
Annual	Mitigated Project	2055	OGV	tons	5.05	69.83	8.85	2.40	2.21	13,582.83	0.89	0.16
Annual	Mitigated Project	2055	PC	tons	0.02	0.14	3.99	0.65	0.12	1,689.98	0.02	0.01
Annual	Mitigated Project	2055	PC onsite	tons	0.01	0.02	0.48	0.25	0.04	227.55	0.00	0.00
Annual	Mitigated Project	2055	Rail offsite	tons	2.81	76.29	65.04	1.22	1.14	24,846.81	0.66	2.03
Annual	Mitigated Project	2055	Rail onsite	tons	0.44	10.99	8.45	0.18	0.17	3,219.15	0.09	0.26
Annual	Mitigated Project	2055	Truck	tons	0.40	12.19	13.71	9.33	2.67	57,767.28	9.20	2.19
Annual	Mitigated Project	2055	Trucks onsite	tons	0.04	1.27	1.35	4.54	0.73	2,412.97	0.39	0.17
Annual	Mitigated Project	2055	Trucks onsite idling	tons	1.48	3.70	25.36	0.01	0.01	3,157.31	0.51	1.18
Annual	Mitigated Project	2055 Total			11.10	176.08	132.57	18.65	7.16	109,871.00	11.79	6.12
Annual	Mitigated Project	2062	CHE	tons	0.82	0.62	4.88	0.05	0.05	2,528.41	0.02	0.10
Annual	Mitigated Project	2062	HarborCraft	tons	0.03	1.04	0.46	0.02	0.02	438.73	0.00	0.00
Annual	Mitigated Project	2062	OGV	tons	5.05	69.83	8.85	2.40	2.21	13,582.83	0.89	0.16
Annual	Mitigated Project	2062	PC	tons	0.02	0.14	3.99	0.65	0.12	1,689.98	0.02	0.01
Annual	Mitigated Project	2062	PC onsite	tons	0.01	0.02	0.48	0.25	0.04	227.55	0.00	0.00
Annual	Mitigated Project	2062	Rail offsite	tons	2.81	76.29	65.04	1.22	1.14	24,846.81	0.66	2.03
Annual	Mitigated Project	2062	Rail onsite	tons	0.44	10.99	8.45	0.18	0.17	3,219.15	0.09	0.26
Annual	Mitigated Project	2062	Truck	tons	0.40	12.19	13.71	9.33	2.67	57,767.28	9.20	2.19
Annual	Mitigated Project	2062	Trucks onsite	tons	0.04	1.27	1.35	4.54	0.73	2,412.97	0.39	0.17
Annual	Mitigated Project	2062	Trucks onsite idling	tons	1.48	3.70	25.36	0.01	0.01	3,157.31	0.51	1.18
Annual	Mitigated Project	2062 Total			11.10	176.08	132.57	18.65	7.16	109,871.00	11.79	6.12
Annual	Mitigated No Federal Action	2026	CHE	tons	2.73	11.65	212.51	0.59	0.58	8,588.97	0.03	0.16
Annual	Mitigated No Federal Action	2026	HarborCraft	tons	0.03	0.77	0.36	0.02	0.02	331.38	0.00	0.00
Annual	Mitigated No Federal Action	2026	OGV	tons	3.13	144.62	5.59	1.42	1.30	7,901.61	0.51	0.10
Annual	Mitigated No Federal Action	2026	PC	tons	0.05	0.23	4.81	0.49	0.10	1,839.58	0.03	0.01
Annual	Mitigated No Federal Action	2026	PC onsite	tons	0.00	0.01	0.16	0.06	0.01	64.12	0.00	0.00
Annual	Mitigated No Federal Action	2026	Rail offsite	tons	2.47	67.73	16.54	1.53	1.44	6,318.11	0.17	0.52
Annual	Mitigated No Federal Action	2026	Rail onsite	tons	0.12	3.28	0.86	0.07	0.07	326.68	0.01	0.03
Annual	Mitigated No Federal Action	2026	Truck	tons	0.12	8.47	4.59	2.18	0.64	17,560.42	2.80	0.54
Annual	Mitigated No Federal Action	2026	Trucks onsite	tons	0.01	0.88	0.41	1.13	0.18	780.84	0.12	0.05
Annual	Mitigated No Federal Action	2026	Trucks onsite idling	tons	0.44	2.82	7.09	0.00	0.00	1,150.55	0.19	0.34
Annual	Mitigated No Federal Action	2026 Total			9.10	240.46	252.92	7.49	4.34	44,862.26	3.85	1.75
Annual	Mitigated No Federal Action	2027	CHE	tons	2.71	8.97	229.03	0.57	0.56	8,874.13	0.03	0.16
Annual	Mitigated No Federal Action	2027	HarborCraft	tons	0.03	0.76	0.36	0.02	0.02	328.68	0.00	0.00
Annual	Mitigated No Federal Action	2027	OGV	tons	3.13	133.75	5.59	1.42	1.31	7,939.93	0.51	0.10
Annual	Mitigated No Federal Action	2027	PC	tons	0.05	0.22	4.73	0.51	0.10	1,852.99	0.03	0.01
Annual	Mitigated No Federal Action	2027	PC onsite	tons	0.00	0.01	0.16	0.06	0.01	64.61	0.00	0.00
Annual	Mitigated No Federal Action	2027	Rail offsite	tons	2.50	68.88	16.89	1.54	1.45	6,451.86	0.17	0.53
Annual	Mitigated No Federal Action	2027	Rail onsite	tons	0.12	3.24	0.85	0.07	0.07	324.06	0.01	0.03
Annual	Mitigated No Federal Action	2027	Truck	tons	0.12	8.33	4.56	2.28	0.67	18,332.89	2.92	0.56
Annual	Mitigated No Federal Action	2027	Trucks onsite	tons	0.01	0.88	0.42	1.18	0.19	811.19	0.13	0.05
Annual	Mitigated No Federal Action	2027	Trucks onsite idling	tons	0.46	2.78	7.46	0.00	0.00	1,196.49	0.19	0.35
Annual	Mitigated No Federal Action	2027 Total			9.12	227.81	270.06	7.66	4.38	46,176.84	3.99	1.80
Annual	Mitigated No Federal Action	2028	CHE	tons	1.26	1.59	19.02	0.13	0.12	7,329.20	0.18	4.36
Annual	Mitigated No Federal Action	2028	HarborCraft	tons	0.03	0.76	0.35	0.02	0.02	325.98	0.00	0.00
Annual	Mitigated No Federal Action	2028	OGV	tons	3.10	122.44	5.53	1.42	1.30	7,921.56	0.51	0.10
Annual	Mitigated No Federal Action	2028	PC	tons	0.04	0.21	4.68	0.52	0.11	1,876.02	0.03	0.01
Annual	Mitigated No Federal Action	2028	PC onsite	tons	0.00	0.01	0.16	0.06	0.01	65.43	0.00	0.00
Annual	Mitigated No Federal Action	2028	Rail offsite	tons	2.39	66.30	16.36	1.47	1.38	6,249.71	0.17	0.51
Annual	Mitigated No Federal Action	2028	Rail onsite	tons	0.16	4.39	1.16	0.10	0.09	441.46	0.01	0.04
Annual	Mitigated No Federal Action	2028	Truck	tons	0.13	7.93	4.48	2.35	0.69	18,808.01	2.99	0.58
Annual	Mitigated No Federal Action	2028	Trucks onsite	tons	0.01	0.84	0.43	1.22	0.19	828.64	0.13	0.05
Annual	Mitigated No Federal Action	2028	Trucks onsite idling	tons	0.47	2.66	7.73	0.00	0.00	1,223.65	0.20	0.35
Annual	Mitigated No Federal Action	2028 Total			7.59	207.12	59.91	7.29	3.92	45,069.65	4.22	6.00
Annual	Mitigated No Federal Action	2036	CHE	tons	0.26	0.51	1.61	0.03	0.03	842.13	0.01	0.03
Annual	Mitigated No Federal Action	2036	HarborCraft	tons	0.02	0.70	0.32	0.02	0.02	297.46	0.00	0.00
Annual	Mitigated No Federal Action	2036	OGV	tons	2.89	39.16	5.19	1.38	1.26	7,667.49	0.50	0.09
Annual	Mitigated No Federal Action	2036	PC	tons	0.01	0.06	1.45	0.22	0.04	602.90	0.01	0.00
Annual	Mitigated No Federal Action	2036	PC onsite	tons	0.00	0.01	0.18	0.09	0.01	83.33	0.00	0.00
Annual	Mitigated No Federal Action	2036	Rail offsite	tons	2.53	75.76	24.11	1.48	1.39	9,210.77	0.24	0.75
Annual	Mitigated No Federal Action	2036	Rail onsite	tons	0.33	9.57	3.13	0.19	0.17	1,193.92	0.03	0.10
Annual	Mitigated No Federal Action	2036	Truck	tons	0.13	5.59	4.04	2.80	0.81	19,881.42	3.17	0.68
Annual	Mitigated No Federal Action	2036	Trucks onsite	tons	0.01	0.66	0.48	1.50	0.24	891.37	0.14	0.06
Annual	Mitigated No Federal Action	2036	Trucks onsite idling	tons	0.58	2.09	9.66	0.00	0.00	1,337.23	0.22	0.40
Annual	Mitigated No Federal Action	2036 Total			6.77	134.11	50.18	7.70	3.99	42,008.02	4.32	2.12
Annual	Mitigated No Federal Action	2050	CHE	tons	0.41	0.31	2.46	0.03	0.02	1,273.80	0.01	0.05
Annual	Mitigated No Federal Action	2050	HarborCraft	tons	0.03	0.98	0.44	0.02	0.02	415.63	0.00	0.00
Annual	Mitigated No Federal Action	2050	OGV	tons	4.07	56.62	6.72	1.93	1.77	10,984.40	0.73	0.13
Annual	Mitigated No Federal Action	2050	PC	tons	0.01	0.06	1.76	0.29	0.05	742.74	0.01	0.00
Annual	Mitigated No Federal Action	2050	PC onsite	tons	0.00	0.01	0.21	0.11	0.02	100.28	0.00	0.00
Annual	Mitigated No Federal Action	2050	Rail offsite	tons	1.32	35.74	30.45	0.57	0.54	11,632.39	0.31	0.95
Annual	Mitigated No Federal Action	2050	Rail onsite	tons	0.25	6.27	4.77	0.10	0.10	1,816.27	0.05	0.15
Annual	Mitigated No Federal Action	2050	Truck	tons	0.20	6.14	6.96	4.62	1.32	28,479.10	4.54	1.10
Annual	Mitigated No Federal Action	2050	Trucks onsite	tons	0.02	0.63	0.67	2.26	0.36	1,201.97	0.19	0.09
Annual	Mitigated No Federal Action	2050	Trucks onsite idling	tons	0.74	1.84	12.63	0.00	0.00	1,572.74	0.26	0.59
Annual	Mitigated No Federal Action	2050 Total			7.05	108.61	67.07	9.93	4.21	58,219.33	6.09	3.06
Annual	Mitigated No Federal Action	2055	CHE	tons	0.48	0.36	2.85	0.03	0.03	1,476.68	0.01	0.06
Annual	Mitigated No Federal Action	2055	HarborCraft	tons	0.04	1.14	0.51	0.03	0.03	481.83	0.00	0.00
Annual	Mitigated No Federal Action	2055	OGV	tons	4.71	65.64	7.80	2.23	2.05	12,733.94	0.84	0.15
Annual	Mitigated No Federal Action	2055	PC	tons	0.01	0.07	2.04	0.33	0.06	861.04	0.01	0.00
Annual	Mitigated No Federal Action	2055	PC onsite	tons	0.00	0.01	0.25	0.13	0.02	116.26	0.00	0.00
Annual	Mitigated No Federal Action	2055	Rail offsite	tons	1.52	41.43	35.30	0.66	0.62	13,485.13	0.36	1.10
Annual	Mitigated No Federal Action	2055	Rail onsite	tons	0.29	7.27	5.53	0.12	0.11	2,105.56	0.06	0.17
Annual	Mitigated No Federal Action	2055	Truck	tons	0.23	7.12	8.07	5.36	1.53	33,015.10	5.26	1.27
Annual	Mitigated No Federal Action	2055	Trucks onsite	tons	0.02	0.74	0.78	2.62	0.42	1,393.41	0.22	0.10
Annual	Mitigated No Federal Action	2055	Trucks onsite idling	tons	0.86	2.14	14.64	0.00	0.00	1,823.24	0.30	0.68
Annual	Mitigated No Federal Action	2055 Total			8.17	125.90	77.76	11.51	4.88	67,492.18	7.06	3.55
Annual	Mitigated No Federal Action	2062	CHE	tons	0.58	0.44	3.47	0.04	0.03	1,799.63	0.01	0.07
Annual	Mitigated No Federal Action	2062	HarborCraft	tons	0.04	1.39	0.62	0.03	0.03	587.20	0.00	0.00
Annual	Mitigated No Federal Action	2062	OGV	tons	5.75	79.99	9.50	2.72	2.50	15,518.81	1.02	0.18

B121-131 Annual Emissions Inventory by Source Category, by Scenario, Mitigation and Analysis Period

Period	id_Scenario	Year	Source_category	UOM	VOC	NOx	CO	PM10total	PM25total	CO2	N2O	CH4
Annual	**Mitigated No Federal Action**	2062	**PC**	tons	0.01	0.09	2.48	0.41	0.08	1,049.34	0.01	0.00
Annual	**Mitigated No Federal Action**	2062	**PC onsite**	tons	0.00	0.01	0.30	0.16	0.03	141.68	0.00	0.00
Annual	**Mitigated No Federal Action**	2062	**Rail offsite**	tons	1.86	50.49	43.02	0.81	0.76	16,434.29	0.44	1.34
Annual	**Mitigated No Federal Action**	2062	**Rail onsite**	tons	0.35	8.85	6.74	0.14	0.13	2,566.04	0.07	0.21
Annual	**Mitigated No Federal Action**	2062	**Truck**	tons	0.28	8.68	9.84	6.53	1.87	40,235.39	6.41	1.55
Annual	**Mitigated No Federal Action**	2062	**Trucks onsite**	tons	0.02	0.90	0.95	3.20	0.51	1,698.14	0.27	0.12
Annual	**Mitigated No Federal Action**	2062	**Trucks onsite idling**	tons	1.04	2.61	17.85	0.00	0.00	2,221.97	0.36	0.83
Annual	**Mitigated No Federal Action**	2062 Total			9.95	153.44	94.76	14.03	5.94	82,252.49	8.60	4.32

Greenhouse Gas Emissions by Year

Greenhouse Gas Emissions (tons) for all Years

Key Notes:

[1] Greenhouse gas emissions are inclusive of Rail and OGV emissions up to California border

[2] CO_2e totals may not sum exactly, as AMP and backlands emissions are incorporated directly into the CO_2e values.

[3] CO2 emissions includes and accounts for amortized construction emissions

RSEIR Emissions:

Project	Year	Emissions (tons)				Method Source
		CO2	CH4	N2O	100-Year GWP - CO2e	
Baseline	2019	74,812	3	5	77,537	Based on Calculations
Revised_Project	2020	70,223	2	4	72,868	Interpolation
Revised_Project	2021	65,635	2	4	68,199	Interpolation
Revised_Project	2022	61,046	2	4	63,530	Interpolation
Revised_Project	2023	56,457	2	3	58,860	Interpolation
Revised_Project	2024	51,868	1	3	54,191	Interpolation
Revised_Project	2025	47,280	1	2	49,522	Interpolation
Revised_Project	2026	42,691	1	2	44,853	Based on Calculations
Revised_Project	2027	43,421	1	3	45,791	Based on Calculations
Revised_Project	2028	99,136	11	7	105,770	Based on Calculations
Revised_Project	2029	100,955	10	7	108,790	Interpolation
Revised_Project	2030	102,775	10	8	111,810	Interpolation
Revised_Project	2031	104,594	9	8	114,829	Interpolation
Revised_Project	2032	106,414	8	8	117,849	Interpolation
Revised_Project	2033	108,233	7	8	120,869	Interpolation
Revised_Project	2034	110,052	7	9	123,889	Interpolation
Revised_Project	2035	111,872	6	9	126,908	Interpolation
Revised_Project	2036	113,691	5	9	129,928	Based on Calculations
Revised_Project	2037	116,252	5	9	133,021	Interpolation
Revised_Project	2038	118,814	5	9	136,115	Interpolation
Revised_Project	2039	121,375	5	10	139,208	Interpolation
Revised_Project	2040	123,936	6	10	142,301	Interpolation
Revised_Project	2041	126,498	6	10	145,394	Interpolation
Revised_Project	2042	129,059	6	10	148,488	Interpolation
Revised_Project	2043	131,621	6	11	151,581	Interpolation
Revised_Project	2044	134,182	6	11	154,674	Interpolation
Revised_Project	2045	136,743	6	11	157,768	Interpolation
Revised_Project	2046	139,305	6	11	160,861	Interpolation
Revised_Project	2047	141,866	7	11	163,954	Interpolation
Revised_Project	2048	144,427	7	12	167,047	Interpolation
Revised_Project	2049	146,989	7	12	170,141	Interpolation
Revised_Project	2050	149,550	7	12	173,234	Based on Calculations
Revised_Project	2051	149,550	7	12	173,234	Interpolation
Revised_Project	2052	149,550	7	12	173,234	Interpolation
Revised_Project	2053	149,550	7	12	173,234	Interpolation
Revised_Project	2054	149,550	7	12	173,234	Interpolation
Revised_Project	2055	149,550	7	12	173,234	Based on Calculations
Revised_Project	2056	149,550	7	12	173,234	Interpolation
Revised_Project	2057	149,550	7	12	173,234	Interpolation
Revised_Project	2058	149,550	7	12	173,234	Interpolation
Revised_Project	2059	149,550	7	12	173,234	Interpolation
Revised_Project	2060	149,550	7	12	173,234	Interpolation
Revised_Project	2061	149,550	7	12	173,234	Interpolation
Revised_Project	2062	149,550	7	12	173,234	Based on Calculations

Global Warming Potentials:

GHG	100-Year AR6 2021 Value
CO2	1
CH4 (fossil origin)	29.8
N2O	273

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