Appendix B1
Air Emissions

Contents

Air Emissions 1
1.0 Emissions Methodology – Models and Tools 1
2.0 Emissions Methodology – Scenarios 3
3.0 Methodology for Determining Operational Emissions 4
3.1 Container Ships 6
Emission Factor Assumptions: 7
Engine and Boiler Load Assumptions: 8
3.1.2 VSRP Assumptions: 9
Hoteling Assumptions: 9
AMP Assumptions: 9
Additional Assumptions: 10
3.2 Tugboats (Harbor Craft) 11
3.3 Drayage Trucks 12
3.4 Cargo Handling Equipment (CHE) 14
Equipment and Activity Assumptions: 15
Emission Factors Assumptions: 15
3.5 Rail – Switchers and Line haul Locomotives 20
3.6 Worker Commute Trips 22
4.0 References 23
5.0 Emissions Calculations and Input Data 25

China Shipping Air Emissions Calculations List of Figures and Tables

Category	Name	Page No.
Methodology Tables	Table B1-A: Draft RSEIR Analysis Years and Scenarios for Air Quality Analysis	B1-4
	Table B1-B: Regulations and Agreements Assumed as Part of the Operational Emissions	B1-5
	Table B1-C. Assumptions about Slide Valves and MAN/Non-MAN engines based on ship TEU category	B1-8
	Table B1-D: 2008 EIR/EIS Mitigation Replacement Schedule for CHE (FEIR Mitigated)	B1-17
	Table B1-E: Proposed Mitigation Replacement Schedule for CHE (Revised Project)	B1-18
Methodology Figure	Figure B1-A. China Shipping Truck Trips Time-of-Day Distribution for Year 2014.	B1-14
Cargo Handling Equipment	2008 Baseline Scenario - CHE equipment list	B1-27 - B1-62
	2008 Baseline Scenario - CHE Emission Factor	
	2012 Revised Project Scenario - CHE equipment list	
	2012 CHE Emission Factor - Revised Project	
	2014 CHE equipment list - Revised Project	

Category	Name	Page No.
	2014 CHE Emission Factor - Revised Project	
	2018 CHE Equipment List and Emission Factor - Revised Project	
	2019 CHE Equipment List and Emission Factor - Revised Project	
	2020 CHE Equipment List and Emission Factor - Revised Project	
	2021 CHE Equipment List and Emission Factor - Revised Project	
	2022 CHE Equipment List and Emission Factor - Revised Project	
	2023 CHE Equipment List and Emission Factor - Revised Project	
	2026 CHE equipment list - Revised Project	
	2026 CHE Emission Factor - Revised Project	
	2036 CHE equipment list - Revised Project	
	2036 CHE Emission Factor - Revised Project	
	2045 CHE equipment list - Revised Project	
	2045 CHE Emission Factor - Revised Project	
	2012 FEIR Mitigated Scenario - CHE equipment list	
	2012 FEIR Mitigated Scenario - CHE Emission Factor	
	2014 FEIR mitigated Scenario - CHE equipment list	
	2014 FEIR mitigated Scenario - CHE emission factor	
	2018 equipment list and emission factors - FEIR Mitigated Scenario	
	2019 equipment list and emission factors - FEIR Mitigated Scenario	
	2020 equipment list and emission factors - FEIR Mitigated Scenario	
	2021 equipment list and emission factors - FEIR Mitigated Scenario	
	2022 equipment list and emission factors - FEIR Mitigated Scenario	
	2023 equipment list and emission factors - FEIR Mitigated Scenario	
	2026 FEIR Mitigated Scenario - CHE equipment list	
	2026 FEIR Mitigated Scenario - CHE Emission Factor	
	2036 FEIR Mitigated Scenario - CHE equipment list	
	2036 FEIR Mitigated Scenario - CHE Emission Factor	
	2045 FEIR Mitigated Scenario - CHE equipment list	
	2045 FEIR Mitigated Scenario - CHE Emission Factor	
	CHE Peaking Factors - All Years and Scenarios	
Ocean Going Vessels	2008, 2012 and 2014 Ocean Going Vessel Criteria Pollutant Emission Factors by Tier Level For Main Engines and Boilers - All Scenarios	B1-63 - B1-112
	2008, 2012 and 2014 Ocean Going Vessel Greenhouse Gas Emission Factors by Tier Level for Main Engine and Boilers - All Scenarios	
	2008, 2012, 2014 Ocean Going Vessel Criteria Emission Factors by Tier Level for Auxiliary Engines - All Scenarios	
	2008, 2012, 2014 Ocean Going Vessel Criteria Emission Factors by Tier Level for Auxiliary Engines - All Scenarios	
	2008, 2012, 2014 Emission Rates Adjustment Factors for MAN Propulsion Engine without Slide Valves	
	2008, 2012, 2014 Emission Rates Adjustment Factors for MAN Propulsion Engine with Slide Valves	
	2008, 2012, 2014 Non-MAN Engine Low-Load Adjustments for Emission Factors of OGV Main Propulsion Engines	

Category	Name	Page No.
	Vessel Transit Zones and Locations - All Scenarios	
	Annual Average Cargo Vessel Activities - FEIR Mitigated	
	Transit Parameters - FEIR Mitigated	
	2008, 2012 and 2014 Peak Day Activity for Ocean Going Vessels - FEIR Mitigated	
	Engine Loads by Zone for 2008 - FEIR Mitigated	
	Engine Loads by Zone for 2012 - FEIR Mitigated	
	Engine Loads by Zone for 2014 - FEIR Mitigated	
	Vessel Transit Zones and Locations - Revised Project	
	2008, 2012 and 2014 Annual Average Cargo Vessel Activities - Revised Project	
	2008, 2012 and 2014 Transit Parameters - Revised Project	
	2008, 2012 and 2014 Peak Day Activity for Ocean Going Vessels during - Revised Project	
	2008 Engine Loads by Zone - Revised Project	
	2012 Engine Loads by Zone - Revised Project	
	Engine Loads by Zone for 2014 - Revised Project	
	2018- 2045 Main Engines and Boiler OGV Emission Factors (g/kW-hrs) - All Scenarios	
	2018- 2045 Auxiliary Engines OGV Emission Factors (g/kW-hrs) - All Scenarios	
	2018-2045 Emission Rate Adjustment Factor for MAN Propulsion Engine with Slide Valves - All Scenarios	
	2018-2045 Emission Rate Adjustment Factor for MAN Propulsion Engine with Slide Valves - All Scenarios	
	2018-2045 Emission Rates Adjustment Factors for MAN Propulsion Engine without Slide Valves - All Scenarios	
	2018-2045 Emission Rates Adjustment Factors for MAN Propulsion Engine without Slide Valves - All Scenarios	
	2018-2045 Emission Rates Adjustment Factors for Non-MAN Propulsion Engines - All Scenarios	
	2018-2045 Emission Rates Adjustment Factors for Non-MAN Propulsion Engines - All Scenarios	
	2018- 2045 Emission Factor Adjustment (EFA) for Main Engines - All Scenarios	
	2018 through 2023 OGV Annual Activity and Vessel Load Data - Revised Project	
	2018-2023 OGV Peak-Day Activities - Revised Project	
	2018-2023 OGV Peak-Day Activities - Revised Project	
	2018 through 2023 OGV Main Engine Load by Zone- Revised Project	
	2018 through 2023 Transit Parameters - Revised Project	
	2026-2045 Annual Average Cargo Vessels Activity - Revised Project	
	2026 - 2045 Peak Day Cargo Vessels Activities - Revised Project	
	2026 - 2045 Peak Day Cargo Vessels Activities - Revised Project	
	2026-2045 Main Engine Load (KW) - Revised Project	
	2026-2045 Annual Average Cargo Vessels Activity - Revised Project	
	2026-2045 Main Engine Load (KW) - Revised Project	
	2026- 2045 Transit Parameters - Revised Project	
	2018- 2023 OGV Annual Activity and Vessel Load Data - FEIR Mitigated Scenario	
	2018- 2023 Peak Day Cargo Vessels Activities - FEIR Mitigated Scenario	
	2018- 2023 Peak Day Cargo Vessels Activities - FEIR Mitigated Scenario	

Category	Name	Page No.
	2018-2023 Main Engine Load (KW) - FEIR Mitigated Scenario	
	2018-2023 Main Engine Load (KW) - FEIR Mitigated Scenario	
	2026- 2045 OGV Annual Activity and Vessel Load Data - FEIR Mitigated Scenario	
	2026- 2045 OGV Peak-Day Activity - FEIR Mitigated Scenario	
	2026-2045 Main Engine Load (KW) - FEIR Mitigated Scenario	
	2026- 2045 Transit Parameters - FEIR Mitigated Scenario	
Rail - Locomotives and Switchers	On-site Rail Operations 2008 - All Scenarios	B1-113 - B1-141
	Offsite Rail Operations 2008 - All Scenarios	
	China Shipping Line -haul In Yard Activity 2008 - All Scenarios	
	China Shipping Line-haul Traveling 2008 - All Scenarios	
	On-site Rail Operations 2012 - All Scenarios	
	Offsite Rail Operations 2012 - All Scenarios	
	China Shipping Line -haul In Yard Activity 2012 - All Scenarios	
	China Shipping Line-haul Traveling 2012 - All Scenarios	
	China Shipping Operations Data Needs 2014	
	Off-site Rail Operations 2014	
	China Shipping Line-haul In Yard Activity 2014	
	China Shipping Line-haul Traveling 2014	
	2026 On-site Rail Operations -All Scenarios	
	2026 Off-site Rail Operations -All Scenarios	
	2026 China Shipping Line-Haul In Yard Activity - All Scenarios	
	2026 China Shipping Line-Haul Traveling - All Scenarios	
	2036 On-site Rail Operations -All Scenarios	
	2036 Off-site Rail Operations -All Scenarios	
	2036 China Shipping Line-Haul In Yard Activity - All Scenarios	
	2036 China Shipping Line-Haul Traveling - All Scenarios	
	2045 On-site Rail Operations -All Scenarios	
	2045 Off-site Rail Operations -All Scenarios	
	2045 China Shipping Line-Haul In Yard Activity - All Scenarios	
	2045 China Shipping Line-Haul Traveling - All Scenarios	
	Line-Haul Composite Emission Factors - All Scenarios	
	Rail Fleet Characteristics & Mix	
	Rail Peaking Factors - All Years and Scenarios	
Harbor Craft/Tugs	2008 Harbor Craft Activity and Emission Factors - Baseline	B1-142 - B1-227
	2008 Harbor Craft Activity and Emission Factors - Baseline - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - Revised Project	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - Revised Project - Continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - Revised Project - Continued	

Category	Name	Page No.
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - Revised Project - Continued	

Category	Name	Page No.
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project - continued	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR	

Category	Name	Page No.
	Mitigated - continued	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued	
	2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued	
Drayage Trucks and Worker Vehicles	On-site Drayage Trucks Annual Trips and Peaking Factors - All Years and Scenarios	B1-228 - B1-246
	Off-site VMT from transportation study for China Shipping terminal vehicles	
	Drayage Truck Fleet Distribution for Diesel Fuel - All Scenarios	
	Drayage Truck Fleet Distribution for Diesel Fuel - All Scenarios	
	Emission Factors for Drayage Trucks for Diesel Fuel - All Scenario (g/mile)	
	Emission Factors for Drayage Trucks for Diesel Fuel - All Scenario (g/mile)	
	Emission Factors for Drayage Trucks for Diesel Fuel - All Scenario (g/mile)	
	Emission Factors for Drayage Trucks for Diesel Fuel - All Scenario (g/mile)	

Category	Name	Page No.
	Idling Emission Factors for Drayage Trucks for Diesel and LNG Fuel - All Scenario (g/hr)	
	Drayage Truck Fleet Distribution for LNG Fuel - All Scenarios	
	Emission Factors for Drayage Trucks for LNG Fuel - All Scenarios (g/mile)	
	Emission Factors for Drayage Trucks for LNG Fuel - All Scenarios (g/mile)	
	EMFAC2021 Off-model Adjustment Factors for Drayage Trucks	
	Fugitive Dust Parameters and Emission Factors	
	On-site Passenger Car Trips and Peaking Factors - All Years and All Scenarios	
	Emission Factors for Worker Vehicles for Gasoline Fuel - All Scenario (g/mile)	
	Emission Factors for Worker Vehicles for Gasoline Fuel - All Scenario (g/mile)	
	Emission Factors for Worker Vehicles for Gasoline Fuel - All Scenario (g/mile)	
Emissions Inventory	China Shipping Emissions Inventory by Source Category, by Scenario, and Analysis Period	B1-247 - B1-257

1.0 Emissions Methodology – Models and Tools

This Draft RSEIR (RSEIR) represents an analysis of the emissions from continued operation of the CS Terminal at Berths 97-109 using the latest tools and models available. The 2008 EIS/EIR emissions analysis utilized tools and models, activity data, and forecasts of throughput and activity that are out of date and cannot be replicated, as described further below. In addition, the baseline for this Draft RSEIR for air quality cannot use the direct quantitative results of the 2008 EIS/EIR as these can no longer be replicated.

The AQ/HRA analysis relies on three primary steps: (1) the development of emissions from all source categories; (2) the use of those emissions as inputs to dispersion modeling to predict pollutant concentrations; and (3) the use of the predicted pollutant concentrations to estimate health risk impacts. Since the analysis conducted as part of the 2008 EIR/EIS, substantial revisions have been made to all of the tools used in these three steps. These revisions are substantial enough that it is not possible to recreate the results of the 2008 EIR/EIS analysis.

1) Emissions analysis relies on a variety of models that are used to estimate emissions from specific source categories. For all on-road vehicles (diesel, LNG, and gasoline), the current CARB release of the EMFAC model is EMFAC2021 (CARB, 2021). This EPA-approved model replaces previous EMFAC models, including EMFAC 2007, which was used in the 2008 EIR/EIS and EMFAC 2017, which was used in the 2019 SEIR. As the latest version of the model, EMFAC2021 represents CARB's current understanding of motor vehicle travel activities and their associated emission levels. As part of CARB's Technical Documentation for the EMFAC2021 model, CARB has identified the following overview of major changes to the EMFAC model with release of EMFAC2021 (CARB, 2021a):

    - For the first time, EMFAC2021 models emissions from natural gas trucks in the default emission inventory and incorporates natural gas vehicle emission rates based on real-world emissions testing. As in previous versions, EMFAC2021 estimates natural gas vehicle activities based on historical vehicle registration database.
    - Updates to EMFAC2021 vehicle population data using the most recent Department of Motor Vehicle (DMV) registration data and other sources.
    - EMFAC2021 incorporates emissions reductions from recent CARB regulations, including the Advanced Clean Truck (ACT), Innovative Clean Transit (ICT), Heavy-Duty Omnibus, and Periodic Smoke Inspection Programs.
    - EMFAC2021 has substantial updates regarding light-duty vehicle emission rates, including running and start exhaust emission rates for Low Emission Vehicle 1 (LEV1) through

LEV3 vehicles, speed dependent PM brake wear emission rates as well as updates to motorcycle emission rates.

- EMFAC2021 implemented major updates on activity profiles for both light-duty and heavy-duty vehicles using the latest vehicle data.
- For EMFAC2021, CARB staff created new models for estimation of light-duty VMT and new vehicle sales. Unlike previous versions, EMFAC2021 benefits from models that are created dynamically by searching through a large pool of various combinations of economic indicators and optimizing the parameter selection based on the performance of the model in predicting the historical data. To do that, staff used the latest available socioeconomic data from UCLA Anderson Forecast (UCLA), California Department of Finance (DOF), California Board of Equalization (BOE), California Energy Commission (CEC), and Federal Reserve Bank of St. Louis.
- As for the light-duty ZEV market share, EMFAC2021 projects the shares based on consumer choice models rather than a most likely compliance scenario used in the previous version (EMFAC2017). As a result, the future ZEV market share projected by EMFAC2021 is higher than that predicted by the EMFAC2017 model. Specifically, the ZEV market share in light-duty vehicle new sales increase from approximately 8 percent in EMFAC2017 to 12 percent of EMFAC2021 for the model year 2030 passenger vehicles.

In addition to the EMFAC2021 model, CARB has released specific inventory tools for several source categories that were not available at the time of the 2008 EIR/EIS. These include the OFFROAD2021 inventory model for Cargo-Handling Equipment and Harbor Craft Inventory Model (CARB, 2021b), and the 2021 emission inventory methodology with the updated fleet forecast for locomotives (CARB, 2021c). The OFFROAD2021 inventory model replaced the use of CARB's OFFROAD2007 to estimate emissions from CHE (CARB, 2021b). Major updates included in the OFFROAD 2021 CHE Inventory Model include:

- Updated population, model year, horsepower, and activity data – based on data received from Port of Los Angeles and Long Beach, Port of Oakland, and CARB's CHE reporting database;
- Growth factors based on forecasting reports from Mercator for Port of Los Angeles and Long Beach, the Tioga Report for Port of Oakland, and Freight Analysis Framework for rest of the state;
- Emission factors updated using CARB's 2017 updates to diesel emission factors and 2016 update to propane and gasoline off-road emission factors.

2.0 Emissions Methodology – Scenarios

This Draft RSEIR employs one baseline scenario: 2008 actual activity and actual compliance with 2008 EIS/EIR mitigations (the "2008 Actual Baseline"). This Draft RSEIR uses the 2008 Actual Baseline in determining the significance of incremental changes (impacts) of operational emissions and pollutant concentrations.

Two future conditions (2026 to 2045) scenarios are analyzed in comparison to the 2008 Actual Baseline:

1. Revised Project Scenario: future conditions assuming increases in terminal throughput as shown in Table 2-2 of Chapter 2 and implementation of the modified mitigation measures under the Revised Project);

2. FEIR Mitigated Scenario: future conditions assuming increases in terminal throughput as shown in Table 2-2 and timely implementation of the 2008 EIS/EIR mitigation measures (for informational purposes only);

In addition, in this Draft RSEIR analysis, two past conditions representing periods of non-compliance with the 2008 EIS/EIR mitigation measures are analyzed in four scenarios in comparison to the 2008 Actual Baseline:

1. First period of non-compliance (2012-2017), assuming actual activity represented by interim years 2012 and 2014 (for informational purposes only).

2. First period of non-compliance, assuming actual activity but also assuming that implementation of all mitigation measures required by the 2008 EIS/EIR had occurred in a timely fashion (for informational purposes only).

3. Additional period of non-compliance (2018 through 2023), assuming actual activity and analyzing each year from 2018 to 2023 (for informational purposes only).

4. Additional period of non-compliance, assuming actual activity but also assuming that implementation of all mitigation measures required by the 2008 EIS/EIR had occurred in a timely fashion (for informational purposes only).

Table B1-A summarizes the study years and characteristics of the scenarios analyzed in this Draft REIR, the "Revised Project", and the "FEIR Mitigated".

Table B1-.: Draft RSEIR Analysis Years and Scenarios for Air Quality Analysis

Scenario Referred to as	Study Year	Revised Project		FEIR Mitigated (information only)	
		Activity	Mitigation	Activity	Mitigation
Actual Baseline	2008	Actual activity, and actual compliance of 2008 EIS/EIR mitigations			
First Period of non-compliance	2012	actual	Actual compliance level of 2008 EIS/EIR Mitigations	actual	Full compliance with 2008 EIS/EIR Mitigations
	2014				
Additional Period of non-compliance	2018				
	2019				
	2020				
	2021				
	2022				
	2023				
Future Years	2026	projected	As required by the Writ, Draft RSEIR mitigation measures except with MM AQ-9 and MM AQ-10 per 2008 EIS/EIR	projected	
	2036				
	2045				

In addition, as described in Appendix B3, a Floating Future Baseline emissions inventory was developed to assess cancer risk (cancer risk is the only analysis that uses this baseline). The Floating Future Baseline uses 2008 activity levels, but uses emission factors, projected over the 25-, 30-, and 70-year exposure periods, that incorporate the effects of existing air quality regulations. The floating baseline does not include effects of mitigation measures from either the Revised Project or FEIR Mitigated Scenario; rather, it includes solely the future effects of existing air quality regulations.

3.0 Methodology for Determining Operational Emissions

Operational emission sources are represented by five major sources: (1) container ships (referred to as Ocean Going Vessels, or OGVs); (2) 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 China Shipping (CS) terminal. These sources generate emissions in the form of CO, VOC, NO_X, SO_X, PM_{10}, $PM_{2.5}$, and diesel PM (DPM); the latter is produced by diesel-fueled sources. In addition, minor sources such as worker commute vehicles, are included. When ships are using shore power (AMP), indirect emissions would be created by regional power plants burning fossil fuels to generate the electricity consumed by the hoteling ships; electricity consumption emissions are also estimated for on-site power demand such as lighting and

buildings. Terminal electricity consumption emissions are evaluated for greenhouse gases only. Finally, on- road sources like trucks and commuter vehicles contribute to estimated paved road dust emissions.

Information regarding the activity and characteristics of proposed operational emission sources was obtained primarily from POLA staff, WBCT staff, a traffic study conducted as part of this Draft RSEIR and the 2019 SEIR, the annual published 2013-2023 Port of Los Angeles Emissions Inventories. Emission Inventories for 2024 and 2025 were not available at the time of this analysis. 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 B1-B 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 Draft RSEIR analysis and planned for future implementation at the Project level were treated as mitigation.

Table B1-B. Regulations and Agreements Assumed as Part of the 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). NOX engine emission limits for new engines.[a]	**EPA Engine Standards for Marine Diesel Engines:** NOX, HC, and CO engine emission standards for new engines.	**EPA Emission Standards for Non-road Diesel Engines**: Engine standards for newly built engines.	**EPA Emission Standards for On-road Trucks:** Tiered standards gradually phased in over all years due to normal truck fleet turnover.	**EPA Emission Standards for Locomotives:** Tier 0 through Tier 4 standards gradually phased in over all years due to normal locomotive fleet turnover.
EPA Engine Standards for Marine Diesel Engines: NOX, HC, and CO engine 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**	**CARB Regulation to Reduce Emissions from Diesel Engines on Commercial Harbor Craft:** Requires that harbor craft engines meet EPA's most stringent emission standards per an accelerated, rule-specified compliance schedule. **California Diesel Fuel Regulation:** 15 ppm sulfur.	**California Diesel Fuel Regulation**: 15- ppm sulfur.	**California Diesel Fuel Regulation:** 15- ppm sulfur. **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.	**CARB 1998 South Coast Locomotive Emissions Agreement:** Cleaner NOX Class I locomotives. **CARB 2005 Railroad Statewide Agreement:** Reduce rail-yard operational impacts through various statewide programs **CAAP PHL Rail**

Container Ships	Tugboats	Terminal Equipment	Trucks	Trains
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. **CAAP Vessel Speed Reduction Program:** 90% compliance to 20 nm. **CARB OGV At-Berth Regulation:** Requires controlling emissions from auxiliary engines while hoteling at-berth by 2025 for POLA and POLB.			**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. **CARB Heavy Duty Diesel Vehicle Idling Emission Reduction**: Diesel trucks are subject to idling limits when not being used to power concrete mixing, water pumps, etc.	**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 3.2.3.
[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.

Emissions for every pollutant by source category, by analysis year, by averaging period (annual, 24hr, 1hr, 8hr), and for every scenario studied in this Draft RSEIR are summarized in Appendix B1.

3.1 Container Ships

Emissions of ocean-going vessels were calculated for each engine type (boiler, main propulsion engine, and auxiliary engine) and by activity and location where emissions take place. Emissions were calculated during transit, hoteling at berth, and anchorage of container vessels. Activity assumptions for the 2008 baseline, 2012, 2014, 2018 through 2023 analysis years were based on actual vessel call

records for vessels visiting China Shipping terminal in each of those years. Records provide vessel characteristics, including TEU category of vessels, main engine horsepower, engine tier levels, etc. For future years, peak day vessel call activity was developed by the Port using the BERTHA model for the 2019 SEIR, which simulated peak day scenarios for vessel activity at China Shipping. Annual vessel calls data were updated by LAHD staff to account for change in throughput form the 2019 SEIR for future years. The assumptions below were applied to estimate OGV emissions.

Emission Factor Assumptions:

- Emission factors for propulsion engines, auxiliary engines, and auxiliary boilers were obtained from the Port Emissions Inventories (LAHD 2025). The Port Emissions Inventories provided emission factors by Tier level which were combined to reflect the age mix of vessels in each analysis years for operations.
- Based on the POLA inventories, 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 2008, 2012, 2014, 2018 through 2023 calculations, the mix of vessels by age, i.e., vessel fleet mix, for each ship TEU category was determined from keel dates in vessel call data records for China Shipping terminal in those years. Emissions factors by tier were combined into fleet-wide average based on the fleet mix for each ship TEU category.
- The mix of older and newer ships calling at CS in future years (2026-2045) was predicted using POLA's CEQA Terminal Level Container Ship Forecast for Tier 3 Engines (POLA 2015). A fleet mix baseline based on 2023, the last year of actual activity, was established for OGVs calling in the future:
    - Vessels of size bins calling in the future which also appeared in 2023 (e.g. 8000 TEU and 9000 TEU) were assumed to be the same vessels, thus predicting their age in future years by the POLA forecasting method.
- In 2008, 2012 and 2014 calculations, emission factors were adjusted for the appropriate sulfur fuel content determined by vessel call records. In 2018 through 2023 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 2011).
- Correction factors by percentile load of propulsion were applied to the Main Engine emission factors to account for low loads and different engine manufacturing brand, i.e., MAN B&W versus Non-MAN B&W engines. MAN B&W engines consider the effects of slide

valves on emissions. These correction factors were obtained from the POLA Emissions Inventories.

Table B1-C. Assumptions about Slide Valves and MAN/Non-MAN engines based on ship TEU category

TEU Category	Main Engine Type	Assumption
1,000-2,000	Non-MAN	Non-MAN is a conservative assumption.
2,000-3,000	Non-MAN	Non-MAN is a conservative assumption.
3,000-4,000	Non-MAN	Non-MAN is a conservative assumption.
4,000-5,000	Non-MAN	Same as 2014
5,000-6,000	MAN	Cross-referenced with IHS Ship Registry and historical CS call data. 16/18 vessels have MAN engines.
7,000-8,000	Non-MAN	No historical call data for this capacity. Non-MAN is a conservative assumption.
8,000-9,000	MAN	Same as 2014
9,000-10,0000	Non-MAN	Same as 2014
10,000-11,0000	MAN	Same as 2014
12,0000-16,000	Non-MAN	Assumed that engines are non-MAN
TEU Category	**Has slide valve?**	**Assumption**
1,000-2,000	No	Conservative assumption.
2,000-3,000	No	Conservative assumption.
3,000-4,000	No	Conservative assumption.
4,000-5,000	No	Same as 2014
5,000-6,000	Yes	Based on keel laid year from historical call data. All newer ships have slide valves.
7,000-8,000	Yes	Assuming that newer ships have slide valves.
8,000-9,000	Yes	Same as 2014
9,000-10,0000	No	Same as 2014
12,0000-16,000	Yes	Assuming that newer ships have slide valves.

Engine and Boiler Load Assumptions:

- For the 2008, 2012, 2014, and 2018 through 2023 calculations, auxiliary engine and boiler loads by TEU ship category were obtained from the Port Inventories (LAHD 2025).
- For the future year calculations, auxiliary engine and boiler loads by TEU ship category were obtained from the latest available Port Inventory for 2023 (LAHD 2023).
- During transit, main engine load factors were determined using the propeller law, which states that the engine load factor is proportional to the speed of the ship cubed.
- For the baseline and past years (2012, 2014) calculations, speeds by transit zone were obtained from 2008, 2012 and 2014 call records.
- For 2018 through 2023, average speeds by transit zone were assumed

the same as in 2014. VSRP compliance percent was obtained from annual vessel call data.

- For future years, the BERTHA model provided estimated transit speed by zone, including annual percent compliance with VSRP.

3.1.2 VSRP Assumptions:

- Vessel speed reduction program (VSRP) compliance in the baseline and past years (2012-2023) were determined from actual vessel call records for the Revised Project.
- Annual VSRP compliance between the precautionary zone and 20 nm (zone 4) and 20 nm and 40 nm (zone 5) in all future analysis years was assumed to be 99.6% and 99.2% respectively under the Revised Project per the proposed mitigations, and 100% under the FEIR Mitigated Scenario, per 2008 EIS/EIR mitigations.
- Per the Bertha model, during future-year peak days, all vessels are assumed to travel through the fairway at VSR-compliant speed.

Hoteling Assumptions:

- During hoteling (without AMP), ships were assumed to turn off main engines but leave the auxiliary engines and boilers running.
- Hoteling times used in annual calculations during 2008, 2012 and 2014 were obtained from the POLA inventories. Hoteling duration used in annual calculations during 2018 through 2023 were based on the actual call records for the China Shipping terminal. The average hoteling time per call for future analysis years (2026-2045) was determined by the BERTHA model and was based on anticipated shipping schedules, future projected lifts per call, ship work rates, and crane productivity.
- Peak day hoteling times for past years 2008, 2012, 2014, 2018-2023 were derived from actual terminal call records. Future peak day hoteling times were determined by BERTHA model for each future analysis year (2026-2045) and ship size category, and were based on anticipated shipping schedules, future projected lifts per call, ship work rates, and crane productivity.

AMP Assumptions:

- With AMP, the auxiliary engines would be turned off, 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 2021d). 2008, 2012 and 2014 connection time for AMP plug-in is based on the Port Inventories (LAHD 2025). AMP connection time for 2018 through 2023 were based on the actual call records for the China Shipping terminal.
- Future years connection time for AMP plug-in is assumed three hours

per CARB's At-Berth regulation (CARB, 2021d).

- Annual AMP utilization is assumed to be 97% of annual calls in the Revised Project for years 2026 through 2045 (to reflect the probable actual attainment rate); and 100% of annual calls per EIR/EIS mitigations in the FEIR Mitigated Scenario for years 2012 through 2045.
- Peak day emissions represent the day of highest in-harbor emissions from OGVs depending on compliance and activity conditions for each year, and therefore, it may involve no AMP usage during hotelling when applicable, according to call data. That may be, for example, a day with high in-harbor activity and no usage of shorepower. Peak day of OGV emissions for years 2008-2014 assumes no AMP usage for all peak day berthing vessels under the Revised Project based on actual call data records. Peak day emissions under the FEIR Mitigated scenario for years 2008-2014 assume AMP usage for all berthing vessels during the peak day based on the 100% annual compliance requirement of 2008 EIR/EIS mitigation.
- Peak day of OGV emissions for years 2018-2023 assume usage of AMP for most of the vessels at berth during the peak day under the Revised Project based on actual call data records. Peak day emissions under the FEIR Mitigated scenario for year 2018 – 2023 assume AMP usage for all berthing vessels during the peak day based on the 100% annual compliance requirement of 2008 EIR/EIS mitigation.
- Peak day of OGV emissions for years 2023-2045 assume usage of AMP for all vessels at berth during the peak day, based on mitigation requirements from both the Revised Project and FEIR Mitigated Scenario.

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).
- 2008, 2012, 2014 and 2018 through 2023 peak day emissions are derived from analyzing emissions from days of highest 24hr consecutive activity within harbor in 2008, 2012, 2014 and 2018 through 2023 vessel call records respectively, and selecting the 24hr period with highest in-harbor emissions. In-harbor activity consists of hoteling at berth, maneuvering within harbor, and anchorage.
- Once the peak day is selected, the 8-hr period within the peak day with the highest in-harbor NOx and PM emissions is selected as the peak 8-hr period. Similarly, the highest 1-hr of NOx and PM emissions within harbor is selected as the 1hr peak period.
- Future year project peak day emissions profiles are from the BERTHA model. 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 either inside or outside the breakwater until given clearance to proceed to the berth. Average anchorage frequency and duration for each container ship size were obtained from the POLA inventories, based on data for China Shipping ship visits. 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, anchorage frequency for annual calls was assumed to be nearly 8%, based on average of historical data on anchorage frequency for CS terminal. Anchorage duration for any particular anchorage episode was assumed to last 7.39 hours, derived from average across anchorage durations of events recorded in historical data for CS terminal.
- For future-year peak days, one instance of anchorage and one of transit to anchorage were added for vessel calls predicted in the peak day scenario from the BERTHA model. Historical averages of anchorage duration were assumed for peak day event.
- This Draft RSEIR analyzes two different scenarios, which affect OGV emissions, 1) scenario in which baseline, past years, and future years 2026- 2045 are subject to 2008 FEIR/EIS mitigations, i.e. the FEIR Mitigated scenario; 2) scenario in which future years 2026-2045 are subject to proposed mitigations in the RSEIR, i.e. the Revised Project.

The following revisions to OGV assumptions were made to reflect the Revised Project and the FEIR Mitigated Scenario.

- FEIR Mitigated Scenario:
  - 2005-2009: 70 percent of annual ship calls use AMP
  - 2010: 90 percent of annual ship calls use AMP
  - 2011, and thereafter: 100 percent of annual ship calls use AMP
  - 2009 and thereafter: 100 percent of annual vessel calls comply with VSRP.
- Revised Project Scenario: From 2026 onward
  - 97 percent of annual vessel calls use AMP when hoteling at berth;
  - 99.6 percent and 99.2 percent of annual vessels calls comply with VSRP of 12 knots between the precautionary zone and 20 nm (zone 4) and 20 nm and 40 nm (zone 5) respectively.

3.2 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. Harbor craft emissions are not subject to mitigation in any scenario; and thus, there is no variation between the Revised

Project and the FEIR Mitigated Scenarios.

- 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 2025).
- Tugboat main and auxiliary engine sizes and load factors were obtained from the Port Emissions Inventories (LAHD 2025).
- Tugboat emission factors were derived from the CARB Commercial Harbor Craft Model (CARB 2021f). The turnover rate of the average engine was determined according to the CARB harbor craft useful life schedule and consequently was applied to zero-hour emission factors by model year and deterioration rates from the CARB Harbor Craft Model to obtain composite emission rates for every future year analyzed.
- The fuel sulfur content was assumed to be 15 ppm for all analysis years, in accordance with California Diesel Fuel Regulation (CARB 2005).
- Peak activity for daily, hourly, and 8hr periods are based on vessel maneuvering transit durations for peak periods.

3.3 Drayage Trucks

The assumptions below were applied to estimate peak day and annual emissions for drayage trucks handling cargo for the China Shipping terminal. 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 trucks were calculated using emission factors generated by the EMFAC2021 Version 1.0.2 on-road mobile source emission factor model (CARB, 2022g).
- Emission factors by model year were aggregated into composite fleet-wide emission factors using the Port drayage truck fleet mix for the baseline.
- The Port's truck fleet mix reflects the Clean Truck Program, which banned pre- 1989 trucks from Port services in October 2008 and all trucks that did not meet 2007 and newer on-road heavy duty truck standards by January 1, 2012.
- The predicted future mix was assumed to be same as EMFAC2021 default POLA T7 drayage truck.
- 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.

- LNG truck fleet fractions for 2008, 2012, 2014 and 2018 through 2023 were provided by LAHD staff. Trucks fueled with liquefied natural gas (LNG) comprised 8.2% of the POLA truck calls in the year 2014 (LAHD 2015). Although the percentage of alternative-fueled drayage trucks is likely to increase in future years, the fleet was conservatively assumed to remain 8.2% LNG trucks for the Revised Project scenario.
- 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 (USEPA 2011) and CARB silt loading values for California roadways in its March 2021 guidance document for estimating entrained road dust emissions from paved roads (CARB 2021h).
- On-site activity including idling times and on-site driving distance was obtained from the Port Inventories (LAHD 2025).
- The baseline 2008, 2012 and 2014 off-site driving activity in the form of traffic flows and miles traveled by link for China Shipping servicing trucks were obtained through traffic modeling as part of the 2019 SEIR transportation modeling study. 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 emissions from all links composing the off-site traffic network are summarized as "off-site truck" emissions in Appendix B1. For future years (2026- 2045), the 2019 SEIR off-site driving miles were adjusted based on the new trip information from the LAHD staff and the traffic consultant. Traffic modeling was not performed for the study years 2018 through 2023; instead, off-site driving miles were based on the average distance and trip count data from the LAHD staff for each off-terminal truck loading locations.
- 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 8hr and 1hr periods with highest truck trips at the terminal. Hourly profiles were available for the 2008 baseline analysis, 2012, 2014, 2018 through 2023 and for future scenarios. Sample distribution is shown in Figure B1-A below.

Figure B1-A. China Shipping Truck Trips Time-of-Day Distribution for Year 2014.

The following revisions to truck assumptions were made to reflect the FEIR Mitigated Scenario.

- FEIR Mitigated scenario includes a mitigation for drayage trucks from the 2008 EIR/EIS document which expected that trucks entering the Berth 97-109 Terminal would be LNG fueled in the following percentages:
  - 50 percent in 2012 and 2013
  - 70 percent in 2014 through 2017
  - 100 percent in 2018 and thereafter
- The FEIR Mitigated scenarios and baseline assume the amount of truck trips and off-site VMT travel as a would-be Revised Project scenario with the variation of the percentage of LNG trucks in the fleet to represent the mitigation measure from the previous CS 2008 EIR/EIS.
- The Revised Project Scenario does not include any quantified mitigation for drayage trucks emissions.

3.4 Cargo Handling Equipment (CHE)

CHE includes yard tractors, RTG cranes, top handlers, forklifts, off-road fueling 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 GHG emissions). The CHE equipment list corresponds to entire CHE fleet at WBCT since the CHE equipment at WBCT is shared between the Berth 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:

Equipment and Activity Assumptions:

- 2008 baseline, 2012 and 2014 activity consisting of equipment inventory, specifications and annual hours of operation by piece for entire WBCT were provided by Starcrest from the Port Inventories (LAHD 2025). Baseline actual equipment inventory is summarized for FEIR Mitigated and Revised Project in Appendix B1.
- For the study years 2018 through 2023, equipment type, number of equipment, average-hours of usage by type, average engine tier level and number of controlled equipment data were provided by WBCT staff.
- Future year equipment list is based on 2023 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.
- CHE hours of operation in future analysis years were scaled using on projected terminal throughput changes in every future analysis year and year 2023 hours-per- TEU ratios.
- CHE model year and load factors for the 2008 baseline, 2012 and 2014 were obtained from the Port Inventories. 2023 analysis year load factors were assumed constant in future years analyzed.
- Emission controls in 2008 baseline, 2012 and 2014 equipment were obtained from the Port Inventories (LAHD 2025).
- 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.

Emission Factors Assumptions:

- Emission factors used to estimate emissions for CHE equipment are selected based on the equipment description, horsepower range, model year and age of equipment at analyzed year and fuel type. CHE is grouped in these characteristics or bins, and thus emission rates are found for each bin 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, 2021) for diesel equipment. Because CHE model only provides rates for VOC, CO, NOX, PM10, and PM25; emission factors for N_2O and CH_4 are based off the ratio of gram per gallon emission factors to the CO_2 gram per gallon emission factor from the inventory of U.S. Greenhouse Gas Emissions and Sinks (EPA, 2024).

- For LPG-fueled equipment, zero hour and deterioration rate emission factors were obtained from CARB.
- 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 Revised Project.
- For electric CHE equipment, on-site exhaust emissions were assumed zero emissions 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.
- The fuel sulfur content was assumed to be 15 ppm for all analysis years, in accordance with California Diesel Fuel Regulation (CARB 2005).

The following additional revisions to CHE assumptions were made to reflect the Revised Project mitigations and the FEIR Mitigated Scenario.

- FEIR Mitigated scenario assumes the growth in hours of operation and equipment list following the annual throughput forecast for the terminal but equipment characteristics such as model year and fuel type, and therefore, emission rates are updated based on mitigation measures from the previous CS 2008 EIR/EIS. Specifically following the mitigation requirement shown below in Table B1-D.

Table B1-D. 2008 EIR/EIS Mitigation Replacement Schedule for CHE (FEIR Mitigated)

2008 EIR/EIS Measure Name	Mitigation Language
MM AQ-15: Yard Tractor Emission Standards	All yard tractors operated at the Berth 97-109 terminal shall run on alternative fuel (LPG) beginning September 30, 2004, until December 31, 2014 (ASJ Requirement). Beginning in January 1, 2015, all yard tractors operated at the Berth 97-109 terminal shall be the cleanest available NOX alternative-fueled engine meeting 0.015 gm/hp-hr for PM.
MM AQ-16. Cargo-Handling Equipment Emission Standards. (	All diesel-powered equipment operated at the Berth 121-131 terminal rail yard that handles containers moving through the Berth 97-109 terminal shall implement the following measures: Beginning January 1, 2009, all equipment purchases shall be either (1) the cleanest available NOX alternative-fueled engine meeting 0.015 gm/hp-hr for PM or (2) the cleanest available NOX diesel-fueled engine meeting 0.015 gm/hp-hr for PM. If there are no engines available that meet 0.0150 gm/hp-hr for PM, the new engines shall be the cleanest available (either fuel type) and will have the cleanest VDECS. By the end of 2012, all equipment less than 750 hp shall meet the USEPA Tier 4 on-road or Tier 4 non-road engine standards. By the end of 2014, all equipment shall meet USEPA Tier 4 non-road engine standards.
MM AQ-17. Cargo-Handling Equipment Emission Standards.	September 30, 2004: All diesel-powered toppicks and sidepicks operated at the Berth 97-109 terminal shall run on emulsified diesel fuel plus a DOC (ASJ Requirement). January 1, 2009: All RTGs shall be electric. All toppicks shall have the cleanest available NOX alternative fueled engines meeting 0.015 gm/hp-hr for PM. All equipment purchases other than yard tractors, RTGs, and toppicks shall be either (1) the cleanest available NOX alternative-fueled engine meeting 0.015 gm/hp-hr for PM or (2) the cleanest available NOX diesel-fueled engine meeting 0.015 gm/hp-hr for PM. If there are no engines available that meet 0.015 gm/hp-hr for PM, the new engines shall be the cleanest available (either fuel type) and will have the cleanest VDEC. By the end of 2012: all terminal equipment less than 750 hp other than yard tractors, RTGs, and toppicks shall meet the USEPA Tier 4 on-road or Tier 4 non-road engine standards. By the end of 2014: all terminal equipment other than yard tractors, RTGs, and top-picks shall meet USEPA Tier 4 non-road engine standards. In addition to the above requirements, the tenant at Berth 97-109 shall participate in a 1-year electric yard tractor [truck] pilot project. As part of the pilot project, two electric tractors will be deployed at the terminal within 1 year of lease approval. If the pilot project is successful in terms of operation, costs and availability, the tenant shall replace half of the Berth 97-109 yard tractors with electric tractors within 5 years of the feasibility determination.

After FEIR mitigation-related replacements, CHE characteristics (age/model years) analyzed in future years are based on turnover based on mean useful life assumptions from CARB.

- Revised Project Scenario assumes the growth in hours of operation and equipment list following the annual throughput forecast for the terminal but includes effects of Revised Project mitigations from current Draft RSEIR. Specifically following the replacement schedule shown below.

Table B1-E. Proposed Mitigation Replacement Schedule for CHE (Revised Project)

Equipment Inventory in 2023	HP	Fuel Type	Model Year	Quantity (WBCT)	Proposed Mitigation Replacement	Replacement Scheduled for
Forklift up to 18 tons	137	Diesel	2007	1	Tier 4 diesel, or potentially any alternative fuel meeting Tier 4	2028
Forklift up to 18 tons	152	Diesel	2004	2	Tier 4 diesel, or potentially any alternative fuel meeting Tier 4	2026
Forklift up to 18 tons	152	Diesel	2005	2	Tier 4 diesel, or potentially any alternative fuel meeting Tier 4	2027
Forklift up to 18 tons	160	Diesel	2009	1	no additional mitigation required, assumed to turn over by end of life	2025
Forklift up to 18 tons	165	Diesel	2014	1	no additional mitigation required, assumed to turn over by end of life	2030
Forklift up to 18 tons	190	Diesel	2004	1	Tier 4 diesel, or potentially any alternative fuel meeting Tier 4	2026
Forklift up to 5 tons	59	LPG	2014	1	no additional mitigation required, assumed to turn over by end of life	2030
Forklift up to 5 tons	59	LPG	2015	1	no additional mitigation required, assumed to turn over by end of life	2031
Forklift up to 5 tons	160	LPG	2005	2	Upgrade to electric	2026
Forklift up to 5 tons	160	LPG	2008	2	Upgrade to electric	2026
Forklift up to 5 tons	165	LPG	1995	1	Upgrade to electric	2026
Forklift up to 5 tons	165	LPG	2011	1	Upgrade to electric	2026
Rub-trd Gantry Crane	197	Diesel	2011	1	no additional mitigation required, assumed to turn over by end of life	2035
Rub-trd Gantry Crane	302	Diesel	2022	4	no additional mitigation required, no turnover required by 2045	na

Equipment Inventory in 2023	HP	Fuel Type	Model Year	Quantity (WBCT)	Proposed Mitigation Replacement	Replacement Scheduled for
Rub-trd Gantry Crane	302	Diesel	2015	4	no additional mitigation required, assumed to turn over by end of life	2039
Rub-trd Gantry Crane	302	Diesel	2015	1	no additional mitigation required, assumed to turn over by end of life	2039
Rub-trd Gantry Crane	454	Hybrid	2004	2	Tier 4 Hybrid	2030
Rub-trd Gantry Crane	612	Hybrid	2003	8	Tier 4 Hybrid	2028
Top handler	250	Diesel	2002	1	Tier 4 diesel	2026
Top handler	260	Diesel	2006	5	Tier 4 diesel	2026
Top handler	260	Diesel	2007	6	Tier 4 diesel	2028
Top handler	335	Diesel	2008	14	Tier 4 diesel	2030
Top handler	363	Diesel	2011	3	Tier 4 diesel	2030
Top handler	370	Diesel	2017	6	no additional mitigation required, assumed to turn over by end of life	2033
Top handler	388	Diesel	2014	1	Tier 4 diesel	2030
Top handler	388	Diesel	2017	2	no additional mitigation required, assumed to turn over by end of life	2033
Top handler	370	Diesel	2021	1	no additional mitigation required, assumed to turn over by end of life	2037
Truck	350	Diesel	2013	1	no additional mitigation required, assumed to turn over by end of life	2025
Yard tractor	158	Diesel	2019	30	no additional mitigation required, assumed to turn over by end of life	2031
Yard tractor	160	Diesel	2021	20	no additional mitigation required, assumed to turn over by end of life	2033
Yard tractor	Na	Electric	2023	6	no additional mitigation required, assumed to turn over by end of life	Na

Equipment Inventory in 2023	HP	Fuel Type	Model Year	Quantity (WBCT)	Proposed Mitigation Replacement	Replacement Scheduled for
Yard tractor	195	LPG	2004	16	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	2026
Yard tractor	195	LPG	2007	54	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	2026
Yard tractor	195	LPG	2008	37	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	2030
Yard tractor	201	LPG	2021	80	no additional mitigation required, assumed to turn over by end of life	2033
Yard tractor	231	LPG	2011	20	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	2030

3.5 Rail – Switchers and Line haul Locomotives

China Shipping 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 rail yard by drayage trucks. Emissions associated with hauling containers by rail include diesel exhaust from 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 SCAB and idling at the rail yards. No other activities within the near-dock or off-dock railyards were included in

the emission analysis.

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

- Line haul locomotive emission factors for VOC, NOx, and PM10 are sourced from EPA technical document (EPA 2009).
- Line haul locomotive greenhouse gas and SOx emission factors and switcher emission factors are sourced from the POLA 2023 Air Emissions Inventory (LAHD 2023).
- Emission factors by engine tier were combined into composite fleetwide averages using the fleet mix percentages forecasts by year obtained through CARB Locomotive Inventory (CARB 2021e). The 2014 fleet mix for the line-haul locomotive fleet was obtained from the Port 2014 Inventory (LAHD 2015) and baseline 2008, 2012, 2018 through 2023 and all future years used CARB Locomotive Inventory fleet mix for each year. The baseline, 2012, 2014, 2018 through 2023 fleet mix for PHL switchers were obtained from the Port Inventories (LAHD 2025) and it was conservatively assumed to remain constant as 2023 through 2045 since the 2023 fleet mix indicated the engines were composed of Tier 3 and Genset switcher engines; it is likely these would not be replaced by 2045 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 line-haul and switcher activity data for 2008, 2012, and 2014 were assumed to be same as activity used in the 2019 SEIR analysis.
- For the analysis years 2018 through 2023, detailed rail modeling was not conducted. Emissions were calculated based on representative activities such as the number of trains, average hours of operation, typical load factors, etc., provided by the traffic consultant, LAHD staff, and Starcrest.
- For the future years, the transportation study for this Draft RSEIR provides the train and locomotive activity data used in the emission calculations based on annual throughput and mode splits for China Shipping railyard. The data includes average daily train counts, train length, number of locomotives per train, and average daily train-miles within the SCAB.
- Line haul locomotives were assumed to operate at the EPA line haul duty cycle, which reflects an average engine load factor.
- Switch engine locomotives were assumed to operate at the EPA switch locomotive duty cycle, which reflects an average engine load factor.
- Peak activity periods of cargo loading in the railyard and in the container yard (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 8-hr and 1-hr peaks for rail activity.

3.6 Worker Commute Trips

Worker vehicle emissions consist of light duty on-road vehicles used for workers commuting to and from the China Shipping terminal. Activities tracked consist of off-site driving to/from terminal, 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 provided by the traffic consultant.
- 2008, 2012, and 2014 off-site traffic flows by link were assumed to be the same as in the 2019 SEIR. For future years (2026-2045), off-site traffic flows by link from the 2019 SEIR were adjusted in this Draft RSEIR based on the new trip data provided by the LAHD staff and traffic consultant. Detailed traffic modeling was not conducted for the years 2018 through 2023; instead, average off-site trips provided by Starcrest were used for the study years 2018 through 2023.
- Emission factors from EMFAC2021 v1.0.2 for gasoline light duty vehicles were used to represent worker vehicle emissions (CARB, 2021g). 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 (USEPA 2011) and CARB silt loading values for California roadways in its April 2021 guidance document for estimating entrained road dust emissions from paved roads (CARB 2021h).

4.0 References

CARB, 2005. Final Regulation Order. Proposed Extension of the California Standards for Motor Vehicle Diesel Fuel to Diesel Fuel Used for Intrastate Diesel-Electric Locomotives and Harbor Craft. August.

CARB, 2011. Rulemaking to Consider Proposed Amendments to the Regulations for Fuel Sulfur and Other Operational Requirements for Ocean-going Vessels Within California Waters and 24 Nautical Miles of the California Baseline. May. Available in https://www.arb.ca.gov/regact/2008/fuelogv08/fro13.pdf

CARB, 2012. Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards. Mat. Available at: https://www3.epa.gov/region9/CA-Air-SIP/California%20Code%20of%20Regulations/Title%2013,%20Division%203,%20Chapter%209,%20Article%208,%20Section%202479,%20effective%2014%20Nov%202012.pdf

CARB, 2021. EMFAC2021 v1.0.2. Mobile Source Emission Inventory. Available at https://arb.ca.gov/emfac/emissions-inventory/2b238129718aa8f82ce1c9fe9ad1984b86be258d

CARB, 2021a. "EMFAC2021 Volume III – Technical Documentation v1.0.0" California Air Resources Board, March 31. https://ww2.arb.ca.gov/sites/default/files/2021-03/emfac2021_volume_3_technical_document.pdf

CARB, 2021b. OFFROAD2021. Off-Road Emissions Inventory. Available at https://arb.ca.gov/emfac/offroad/emissions-inventory

CARB, 2021c. 2021 Line-Haul Locomotive Emission Inventory. https://ww2.arb.ca.gov/sites/default/files/2021-02/2021_line_haul_locomotive_emission_inventory_final.pdf

CARB, 2021d. Ocean Going Vessels at Berth Regulatory Documents. Available at https://ww2.arb.ca.gov/our-work/programs/ocean-going-vessels-berth-regulation/ocean-going-vessels-berth-regulatory

CARB, 2021f. 2021 Commercial Harbor Craft Model. https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2021/chc2021/apph.pd

CARB, 2021g. MISCELLANEOUS PROCESS METHODOLOGY 7.9 Entrained Road Travel, Paved Road Dust. Available at http://ww3.arb.ca.gov/ei/areasrc/fullpdf/2021_paved_roads_7_9.pdf

CARB, 2024. Off-Model Adjustment Factors. Email communication from Sara Forestieri to Ramboll. December 12, 2024.

LAHD 2015. Port of Los Angeles Inventory of Air Emissions – 2015. July. Prepared by Starcrest Consulting Group, LLC. Available at https://kentico.portoflosangeles.org/getmedia/dfa9ca66-0f23-40ce-9430-6e95440f8de2/2015_air_emissions_inventory

LAHD, 2023. Port of Los Angeles Inventory of Air Emissions – 2023. August. Prepared by Starcrest Consulting Group, LLC. Available at https://kentico.portoflosangeles.org/getmedia/3fad9979-f2cb-4b3d-bf82-687434cbd628/2023-Air-Emissions-Inventory

LAHD, 2025. Port of Los Angeles Inventories of Air Emissions Prepared by Starcrest Consulting Group, LLC. Available: https://www.portoflosangeles.org/environment/air-quality/air-emissions-inventory

POLA, 2015. *POLA CEQA Terminal Level Container Ship Forecast for Tier 3 Engines – Final.* August.

USEPA 2011. AP-42 Compilation of Air Pollutant Emission Factors, Chapter 13.2.1 Miscellaneous Sources - Fugitive Dust Sources - Paved Roads. Available at http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s0201.pdf.

USEPA, 2024. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2022. May. Available at: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2022

5.0 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:

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

Emissions summaries by Scenario and by Year

- Baseline
- Revised Project
- FEIR Mitigated

Appendix B1
Air Emissions

Cargo Handling Equipment (CHE)

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2008

2008 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 CS	Emission Controls (% reduction) PM	HC	CO
Electric Wharf Crane	(blank)	(blank)	Electric	(blank)	9		0%	-	0%	0%	0%
Forklift	160	2005	LPG	0.3	3		0%	366	0%	0%	0%
Forklift	160	2008	LPG	0.3	2		0%	176	0%	0%	0%
Forklift	165	1995	LPG	0.3	2		0%	17	0%	0%	0%
Forklift	165	2002	LPG	0.3	2		0%	138	0%	0%	0%
Forklift	152	1994	Diesel	0.3	1		0%	83	0%	0%	0%
Forklift	152	2004	Diesel	0.3	1		0%	363	0%	0%	0%
Forklift	152	2005	Diesel	0.3	2		0%	726	0%	0%	0%
Forklift	190	1997	Diesel	0.3	1		0%	363	0%	0%	0%
Forklift	190	1999	Diesel	0.3	1		0%	363	0%	0%	0%
Forklift	190	2004	Diesel	0.3	1		0%	363	0%	0%	0%
Forklift	215	1993	Diesel	0.3	1		0%	363	0%	0%	0%
Rub-trd Gantry Crane	454	2004	Diesel	0.2	2		0%	1,150	0%	0%	0%
Rub-trd Gantry Crane	612	2003	Diesel	0.2	8		0%	2,023	0%	0%	0%
Rub-trd Gantry Crane	685	1999	Diesel	0.2	1		0%	12	0%	0%	0%
Rub-trd Gantry Crane	685	2005	Diesel	0.2	6		0%	4,015	0%	0%	0%
Rub-trd Gantry Crane	180	1983	Diesel	0.2	2		0%	7	0%	0%	0%
Rub-trd Gantry Crane	180	1984	Diesel	0.2	1		0%	1	0%	0%	0%
Top handler	250	1997	Diesel	0.59	5	DOC	100%	778	30%	70%	70%
Top handler	250	2002	Diesel	0.59	9	DOC	100%	6,556	30%	70%	70%
Top handler	250	1990	Diesel	0.59	4	DOC	100%	1,786	30%	70%	70%
Top handler	260	2006	Diesel	0.59	6	DOC	100%	5,484	30%	70%	70%
Yard tractor	174	2000	LPG	0.39	2		0%	92	0%	0%	0%
Yard tractor	195	2004	LPG	0.39	53		0%	21,671	0%	0%	0%
Yard tractor	195	2007	LPG	0.39	59		0%	31,225	0%	0%	0%
Yard tractor	195	2008	LPG	0.39	43		0%	19,704	0%	0%	0%
Truck	250	2005	Diesel	0.51	2		0%	516	0%	0%	0%
Truck	250	2008	Diesel	0.51	1		0%	138	0%	0%	0%
Sweeper	100	1995	Diesel	0.68	1		0%	32	0%	0%	0%
Sweeper	100	2005	Diesel	0.68	1		0%	83	0%	0%	0%
Man Lift	80	1995	Diesel	0.51	2		0%	148	0%	0%	0%
Side pick	152	1990	Diesel	0.59	1	DOC	100%	0	30%	70%	70%
Side pick	152	1996	Diesel	0.59	1	DOC	100%	0	30%	70%	70%

Notes

NA: not available

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping andB121-131 operations.

Operating Hours are only for China Shipping operations calculated by applying ratio

of China Shipping throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 3/2/2016

Emissions Control Data

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

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

2008 Baseline Scenario - CHE Emission Factor

	Emission Factors (g/hp-hr)								
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**
2008_Electric Wharf Crane_Electric_0_0	-	-	-	-	-	-	-	-	-
2008_Forklift_Diesel_152_1994	0.830	2.945	9.644	0.390	0.359	0.005	585.973	0.024	0.005
2008_Forklift_Diesel_152_2004	0.370	3.057	4.205	0.141	0.129	0.005	585.973	0.024	0.005
2008_Forklift_Diesel_152_2005	0.277	2.986	3.903	0.138	0.127	0.005	585.973	0.024	0.005
2008_Forklift_LPG_160_2005	0.286	17.683	1.946	0.060	0.060	-	674.859	0.032	0.006
2008_Forklift_LPG_160_2008	0.108	2.375	1.040	0.060	0.060	-	674.859	0.032	0.006
2008_Forklift_LPG_165_1995	1.397	17.030	10.574	0.060	0.060	-	674.859	0.032	0.006
2008_Forklift_LPG_165_2002	0.985	17.636	6.640	0.060	0.060	-	674.859	0.032	0.006
2008_Forklift_Diesel_190_1997	0.524	1.212	6.823	0.218	0.200	0.005	585.973	0.024	0.005
2008_Forklift_Diesel_190_1999	0.493	1.163	6.826	0.201	0.185	0.005	585.973	0.024	0.005
2008_Forklift_Diesel_190_2004	0.269	1.042	4.388	0.115	0.105	0.005	585.973	0.024	0.005
2008_Forklift_Diesel_215_1993	1.247	3.842	9.351	0.568	0.523	0.005	585.973	0.024	0.005
2008_Man Lift_Diesel_80_1995	1.182	3.757	8.236	0.621	0.571	0.005	527.088	0.021	0.004
2008_Rub-trd Gantry Crane_Diesel_180_1983	1.006	4.340	10.314	0.401	0.368	0.005	585.973	0.024	0.005
2008_Rub-trd Gantry Crane_Diesel_180_1984	0.994	4.311	10.254	0.393	0.362	0.005	585.973	0.024	0.005
2008_Rub-trd Gantry Crane_Diesel_454_2004	0.323	1.064	4.284	0.107	0.099	0.005	585.973	0.024	0.005
2008_Rub-trd Gantry Crane_Diesel_612_2003	0.253	1.002	5.400	0.094	0.086	0.005	585.973	0.024	0.005
2008_Rub-trd Gantry Crane_Diesel_685_1999	0.341	0.926	5.798	0.106	0.097	0.005	585.973	0.024	0.005
2008_Rub-trd Gantry Crane_Diesel_685_2005	0.313	1.057	4.002	0.101	0.093	0.005	585.973	0.024	0.005
2008_Side pick_Diesel_152_1990	0.717	2.701	8.938	0.313	0.288	0.005	585.973	0.024	0.005
2008_Side pick_Diesel_152_1996	0.716	2.701	8.937	0.313	0.288	0.005	585.973	0.024	0.005
2008_Sweeper_Diesel_100_1995	1.102	3.604	7.940	0.559	0.514	0.005	527.088	0.021	0.004
2008_Sweeper_Diesel_100_2005	0.323	3.216	4.296	0.142	0.131	0.005	527.088	0.021	0.004
2008_Top handler_Diesel_250_1997	0.507	1.185	6.689	0.210	0.193	0.005	585.973	0.024	0.005
2008_Top handler_Diesel_250_2002	0.557	1.263	6.823	0.207	0.191	0.005	585.973	0.024	0.005
2008_Top handler_Diesel_250_1990	2.016	5.498	13.013	1.011	0.930	0.005	585.973	0.024	0.005
2008_Top handler_Diesel_260_2006	0.319	1.106	4.210	0.116	0.107	0.005	585.973	0.024	0.005
2008_Truck_Diesel_250_2005	0.201	0.991	3.953	0.096	0.088	0.005	585.973	0.024	0.005
2008_Truck_Diesel_250_2008	0.115	0.929	2.466	0.089	0.082	0.005	585.973	0.024	0.005
2008_Yard tractor_LPG_174_2000	1.417	17.506	10.632	0.060	0.060	-	674.859	0.032	0.006
2008_Yard tractor_LPG_195_2004	0.801	21.968	3.239	0.060	0.060	-	674.859	0.032	0.006
2008_Yard tractor_LPG_195_2007	0.229	2.416	1.081	0.060	0.060	-	674.859	0.032	0.006
2008_Yard tractor_LPG_195_2008	0.158	2.392	1.057	0.060	0.060	-	674.859	0.032	0.006

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2012

2012 Revised 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 CS	Emission Controls (% reduction) PM	HC	CO
Electric Wharf Crane					13		0%	-	0%	0%	0%
Forklift	160	2005	LPG	0.3	3		0%	300	0%	0%	0%
Forklift	160	2008	LPG	0.3	2		0%	226	0%	0%	0%
Forklift	160	2011	LPG	0.3	1		0%	69	0%	0%	0%
Forklift	165	1995	LPG	0.3	1		0%	8	0%	0%	0%
Forklift	165	2002	LPG	0.3	2		0%	405	0%	0%	0%
Forklift	152	1994	Diesel	0.3	1		0%	113	0%	0%	0%
Forklift	152	2004	Diesel	0.3	1		0%	855	0%	0%	0%
Forklift	152	2005	Diesel	0.3	2		0%	1,005	0%	0%	0%
Forklift	153	1979	Diesel	0.3	1		0%	80	0%	0%	0%
Forklift	153	1988	Diesel	0.3	1		0%	-	0%	0%	0%
Forklift	153	2009	Diesel	0.3	1		0%	101	0%	0%	0%
Forklift	190	2004	Diesel	0.3	1		0%	447	0%	0%	0%
Forklift	137	2007	Diesel	0.3	2		0%	1,000	0%	0%	0%
Rub-trd Gantry Crane	685	2005	Diesel	0.2	5		0%	5,015	0%	0%	0%
Rub-trd Gantry Crane	685	1999	Diesel	0.2	3		0%	1,230	0%	0%	0%
Rub-trd Gantry Crane	612	2003	Diesel	0.2	8		0%	8,877	0%	0%	0%
Rub-trd Gantry Crane	454	2004	Diesel	0.2	2		0%	1,479	0%	0%	0%
Rub-trd Gantry Crane	197	2011	Diesel	0.2	1		0%	422	0%	0%	0%
Top handler	250	2002	Diesel	0.59	9	DOC	100%	7,016	30%	70%	70%
Top handler	260	2007	Diesel	0.59	6	DOC	100%	4,931	30%	70%	70%
Top handler	260	2008	Diesel	0.59	15		0%	18,722	0%	0%	0%
Top handler	260	2006	Diesel	0.59	6	DOC	100%	5,131	30%	70%	70%
Top handler	335	2011	Diesel	0.59	3		0%	2,109	0%	0%	0%
Yard tractor	174	2000	LPG	0.39	2		0%	344	0%	0%	0%
Yard tractor	195	2004	LPG	0.39	53		0%	37,114	0%	0%	0%
Yard tractor	195	2007	LPG	0.39	59		0%	50,429	0%	0%	0%
Yard tractor	195	2008	LPG	0.39	43		0%	40,350	0%	0%	0%
Yard tractor	231	2011	LPG	0.39	23		0%	12,319	0%	0%	0%
Sweeper	100	1995	Diesel	0.68	1		0%	-	0%	0%	0%
Sweeper	100	2005	Diesel	0.68	1		0%	604	0%	0%	0%
Truck	250	2005	Diesel	0.51	2		0%	678	0%	0%	0%
Truck	250	2008	Diesel	0.51	2		0%	1,089	0%	0%	0%
Truck	275	1993	Diesel	0.51	1		0%	-	0%	0%	0%
Truck	275	2001	Diesel	0.51	1		0%	179	0%	0%	0%

2012 CHE Emission Factor - Revised Project

	Emission Factors (g/hp-hr)								
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**
2012_Electric Wharf Crane_Electric_0_0	-	-	-	-	-	-	-	-	-
2012_Forklift_Diesel_137_2007	0.266	3.135	2.929	0.211	0.194	0.005	585.973	0.024	0.005
2012_Forklift_Diesel_152_1994	0.856	3.001	9.806	0.408	0.375	0.005	585.973	0.024	0.005
2012_Forklift_Diesel_152_2004	0.650	3.780	4.833	0.215	0.198	0.005	585.973	0.024	0.005
2012_Forklift_Diesel_152_2005	0.384	3.268	4.116	0.169	0.156	0.005	585.973	0.024	0.005
2012_Forklift_Diesel_153_2009	0.126	2.757	2.553	0.133	0.122	0.005	585.973	0.024	0.005
2012_Forklift_Diesel_153_1979	1.234	4.909	11.491	0.542	0.499	0.005	585.973	0.024	0.005
2012_Forklift_Diesel_153_1988	0.716	2.700	8.934	0.312	0.287	0.005	585.973	0.024	0.005
2012_Forklift_LPG_160_2005	0.371	18.388	2.159	0.060	0.060	-	674.859	0.032	0.006
2012_Forklift_LPG_160_2008	0.185	2.401	1.066	0.060	0.060	-	674.859	0.032	0.006
2012_Forklift_LPG_160_2011	0.034	3.079	0.323	0.060	0.060	-	674.859	0.032	0.006
2012_Forklift_LPG_165_1995	1.383	16.706	10.535	0.060	0.060	-	674.859	0.032	0.006
2012_Forklift_LPG_165_2002	1.098	20.279	6.868	0.060	0.060	-	674.859	0.032	0.006
2012_Forklift_Diesel_190_2004	0.339	1.112	4.574	0.129	0.119	0.005	585.973	0.024	0.005
2012_Rub-trd Gantry Crane_Diesel_197_20	0.106	0.960	1.471	0.054	0.049	0.005	585.973	0.024	0.005
2012_Rub-trd Gantry Crane_Diesel_454_20	0.451	1.158	4.555	0.128	0.118	0.005	585.973	0.024	0.005
2012_Rub-trd Gantry Crane_Diesel_612_20	0.701	1.351	6.763	0.173	0.159	0.005	585.973	0.024	0.005
2012_Rub-trd Gantry Crane_Diesel_685_19	0.538	1.230	7.397	0.198	0.182	0.005	585.973	0.024	0.005
2012_Rub-trd Gantry Crane_Diesel_685_20	0.559	1.237	4.488	0.139	0.128	0.005	585.973	0.024	0.005
2012_Sweeper_Diesel_100_1995	1.042	3.490	7.721	0.513	0.472	0.005	527.088	0.021	0.004
2012_Sweeper_Diesel_100_2005	0.587	3.930	4.881	0.225	0.207	0.005	527.088	0.021	0.004
2012_Top handler_Diesel_250_2002	0.650	1.408	7.534	0.245	0.225	0.005	585.973	0.024	0.005
2012_Top handler_Diesel_260_2006	0.433	1.215	4.456	0.136	0.125	0.005	585.973	0.024	0.005
2012_Top handler_Diesel_260_2007	0.397	1.189	2.931	0.140	0.128	0.005	585.973	0.024	0.005
2012_Top handler_Diesel_260_2008	0.437	1.226	2.855	0.143	0.132	0.005	585.973	0.024	0.005
2012_Top handler_Diesel_335_2011	0.131	0.974	1.218	0.053	0.048	0.005	585.973	0.024	0.005
2012_Truck_Diesel_250_2005	0.261	1.050	4.085	0.106	0.098	0.005	585.973	0.024	0.005
2012_Truck_Diesel_250_2008	0.264	1.066	2.646	0.114	0.105	0.005	585.973	0.024	0.005
2012_Truck_Diesel_275_2001	0.403	1.022	5.815	0.141	0.130	0.005	585.973	0.024	0.005
2012_Truck_Diesel_275_1993	0.716	2.700	6.825	0.263	0.242	0.005	585.973	0.024	0.005
2012_Yard tractor_LPG_174_2000	1.536	20.278	10.966	0.060	0.060	-	674.859	0.032	0.006
2012_Yard tractor_LPG_195_2004	1.506	27.841	5.011	0.060	0.060	-	674.859	0.032	0.006
2012_Yard tractor_LPG_195_2007	0.552	2.524	1.189	0.060	0.060	-	674.859	0.032	0.006
2012_Yard tractor_LPG_195_2008	0.521	2.514	1.179	0.060	0.060	-	674.859	0.032	0.006
2012_Yard tractor_LPG_231_2011	0.063	8.265	0.398	0.060	0.060	-	674.859	0.032	0.006

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2014

2014 CHE equipment list - Revised Project

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for CS	Emission Controls (% reduction) PM	HC	CO
Electric Wharf Crane	0	1997	Electric	na	16		0%	-	0%	0%	0%
Forklift	160	2005	LPG	0.3	3		0%	597	0%	0%	0%
Forklift	160	2008	LPG	0.3	2		0%	232	0%	0%	0%
Forklift	165	1995	LPG	0.3	1		0%	1	0%	0%	0%
Forklift	165	2002	LPG	0.3	2		0%	627	0%	0%	0%
Forklift	75	2011	LPG	0.3	1		0%	55	0%	0%	0%
Forklift	152	1994	Diesel	0.3	1		0%	-	0%	0%	0%
Forklift	152	2004	Diesel	0.3	2	DPF	50%	1,109	85%	93%	90%
Forklift	152	2005	Diesel	0.3	3	DPF	67%	896	85%	93%	90%
Forklift	165	2014	Diesel	0.3	1		0%	43	0%	0%	0%
Forklift	190	2004	Diesel	0.3	2	DPF	50%	1,022	85%	93%	90%
Forklift	137	2007	Diesel	0.3	3	DPF	67%	785	85%	93%	90%
Forklift	164	2009	Diesel	0.3	1	DPF	100%	72	85%	93%	90%
Rub-trd Gantry Crane	685	2005	Diesel	0.2	5	Rypos,ULSD	100%	10,707	50%	78%	98%
Rub-trd Gantry Crane	685	1999	Diesel	0.2	1	Rypos,ULSD	100%	1,306	50%	78%	98%
Rub-trd Gantry Crane	612	2003	Diesel	0.2	8	Rypos,ULSD	100%	15,784	50%	78%	98%
Rub-trd Gantry Crane	454	2004	Diesel	0.2	2	Rypos,ULSD	100%	2,701	50%	78%	98%
Rub-trd Gantry Crane	197	2011	Diesel	0.2	1		0%	1,636	0%	0%	0%
Rub-trd Gantry Crane	600	2013	Diesel	0.2	1		0%	1,629	0%	0%	0%
Top handler	250	2002	Diesel	0.59	8	DPF	100%	11,823	85%	93%	90%
Top handler	260	2007	Diesel	0.59	6	DPF	100%	8,789	85%	93%	90%
Top handler	260	2008	Diesel	0.59	15	DPF	100%	32,431	85%	93%	90%
Top handler	260	2006	Diesel	0.59	6	DPF	100%	9,613	85%	93%	90%
Top handler	335	2011	Diesel	0.59	3		0%	4,262	0%	0%	0%
Top handler	370	2014	Diesel	0.59	1		0%	971	0%	0%	0%
Yard tractor	174	2000	LPG	0.39	2		0%	449	0%	0%	0%
Yard tractor	195	2004	LPG	0.39	53		0%	63,798	0%	0%	0%
Yard tractor	195	2007	LPG	0.39	59		0%	88,949	0%	0%	0%
Yard tractor	195	2008	LPG	0.39	43		0%	67,604	0%	0%	0%
Yard tractor	231	2011	LPG	0.39	23		0%	17,903	0%	0%	0%
Sweeper	100	2005	Diesel	0.68	1		0%	-	0%	0%	0%
Truck	250	2005	Diesel	0.51	2	DPF	100%	1,161	85%	93%	90%
Truck	250	2008	Diesel	0.51	2		0%	1,676	0%	0%	0%
Truck	275	2001	Diesel	0.51	1	DPF	100%	650	85%	93%	90%

Notes
NA: not available
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 China Shipping operations calculated by applying ratio
of China Shipping throughput/total WBCT throughput to average annual hours for WBCT terminal
Data obtained: 3/2/2016

Emissions Control Data
http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf
http://www.epa.gov/cleandiesel/verification/verif-list.htm

2014 CHE Emission Factor - Revised Project

	Emission Factors (g/hp-hr)								
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O
Electric Wharf Crane_Electric_0_0	0.063	8.265	0.398	0.060	0.060	-	674.859	0.032	0.006
2014_Forklift_LPG_75_2011	0.034	3.215	0.325	0.060	0.060	-	674.859	0.032	0.006
2014_Forklift_Diesel_137_2007	0.324	3.293	3.007	0.234	0.215	0.005	585.973	0.024	0.005
2014_Forklift_Diesel_152_1994	0.716	2.700	8.934	0.312	0.287	0.005	585.973	0.024	0.005
2014_Forklift_Diesel_152_2004	0.497	3.385	4.489	0.175	0.161	0.005	585.973	0.024	0.005
2014_Forklift_Diesel_152_2005	0.301	3.049	3.951	0.145	0.134	0.005	585.973	0.024	0.005
2014_Forklift_LPG_160_2005	0.561	19.972	2.637	0.060	0.060	-	674.859	0.032	0.006
2014_Forklift_LPG_160_2008	0.193	2.404	1.069	0.060	0.060	-	674.859	0.032	0.006
2014_Forklift_Diesel_164_2009	0.122	2.746	2.547	0.131	0.121	0.005	585.973	0.024	0.005
2014_Forklift_LPG_165_1995	1.373	16.490	10.509	0.060	0.060	-	674.859	0.032	0.006
2014_Forklift_LPG_165_2002	1.171	21.981	7.015	0.060	0.060	-	674.859	0.032	0.006
2014_Forklift_Diesel_165_2014	0.096	2.705	1.782	0.040	0.037	0.005	585.973	0.024	0.005
2014_Forklift_Diesel_190_2004	0.520	1.294	5.053	0.166	0.153	0.005	585.973	0.024	0.005
2014_Rub-trd Gantry Crane_Diesel_197_20	0.260	1.155	1.620	0.069	0.063	0.005	585.973	0.024	0.005
2014_Rub-trd Gantry Crane_Diesel_454_20	0.672	1.320	5.020	0.163	0.150	0.005	585.973	0.024	0.005
2014_Rub-trd Gantry Crane_Diesel_600_20	0.166	1.008	1.511	0.048	0.044	0.005	585.973	0.024	0.005
2014_Rub-trd Gantry Crane_Diesel_612_20	0.992	1.577	7.648	0.224	0.206	0.005	585.973	0.024	0.005
2014_Rub-trd Gantry Crane_Diesel_685_19	0.701	1.481	8.724	0.274	0.252	0.005	585.973	0.024	0.005
2014_Rub-trd Gantry Crane_Diesel_685_20	0.918	1.500	5.199	0.194	0.178	0.005	585.973	0.024	0.005
2014_Sweeper_Diesel_100_2005	0.295	3.140	4.234	0.133	0.122	0.005	527.088	0.021	0.004
2014_Top handler_Diesel_250_2002	0.782	1.614	8.545	0.298	0.274	0.005	585.973	0.024	0.005
2014_Top handler_Diesel_260_2006	0.672	1.445	4.975	0.178	0.163	0.005	585.973	0.024	0.005
2014_Top handler_Diesel_260_2007	0.602	1.378	3.189	0.175	0.161	0.005	585.973	0.024	0.005
2014_Top handler_Diesel_260_2008	0.696	1.465	3.168	0.186	0.172	0.005	585.973	0.024	0.005
2014_Top handler_Diesel_335_2011	0.236	1.073	1.301	0.062	0.057	0.005	585.973	0.024	0.005
2014_Top handler_Diesel_370_2014	0.070	0.946	0.941	0.035	0.032	0.005	585.973	0.024	0.005
2014_Truck_Diesel_250_2005	0.343	1.128	4.262	0.121	0.111	0.005	585.973	0.024	0.005
2014_Truck_Diesel_250_2008	0.358	1.153	2.760	0.130	0.119	0.005	585.973	0.024	0.005
2014_Truck_Diesel_275_2001	0.546	1.247	6.949	0.198	0.182	0.005	585.973	0.024	0.005
2014_Yard tractor_LPG_174_2000	1.557	20.773	11.026	0.060	0.060	-	674.859	0.032	0.006
2014_Yard tractor_LPG_195_2004	2.362	34.964	7.160	0.060	0.060	-	674.859	0.032	0.006
2014_Yard tractor_LPG_195_2007	0.908	2.643	1.308	0.060	0.060	-	674.859	0.032	0.006
2014_Yard tractor_LPG_195_2008	0.837	2.620	1.285	0.060	0.060	-	674.859	0.032	0.006
2014_Yard tractor_LPG_231_2011	0.119	17.961	0.537	0.060	0.060	-	674.859	0.032	0.006

Note: Emissions factors for equipment from CARB's OFFROAD2021 Model

2018 CHE Equipment List and Emission Factor - Revised Project

			Engine HP	Hours	Model Year	Load Factor	Emission Factors VOC	CO	NOX	PM10	PM25	SOX	CO2	CH4	N2O	DPM	
Equipment Type	Fuel Type	Count	Average	Average	Average		g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	Percent Controlled
Forklift	Propane	7	162	148	2006	0.30	0.34	18.14	2.08	0.06	0.06	0.00	674.86	0	0.01	0.00	0%
Yard tractor	Propane	178	199	627	2006	0.39	0.99	23.52	3.71	0.06	0.06	0.00	674.86	0	0.01	0.00	0%
Forklift	Diesel	5	157	428	2005	0.30	0.33	3.13	4.01	0.15	0.14	0.01	585.97	0	0.00	0.15	100%
Rub-trd Gantry Crane	Diesel	21	521	776	2006	0.20	0.37	1.10	4.25	0.11	0.10	0.01	585.97	0	0.00	0.11	71%
Top handler	Diesel	38	267	823	2006	0.59	0.40	1.18	4.38	0.13	0.12	0.01	585.97	0	0.00	0.13	49%
Total- All Fuel Types		**249**															

2019 CHE Equipment List and Emission Factor - Revised Project

								Emission Factors								
			Engine HP	Hours	Model Year	Load Factor	VOC	CO	NOX	PM10	PM25	SOX	CO2	CH4	N2O	DPM	
Equipment Type	Fuel Type	Count	Average	Average	Average		g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	Percent Controlled
Forklift	Propane	10	141	77	2006	0.30	0.25	17.40	1.86	0.06	0.06	0.00	674.86	0	0.01	0.00	0%
Truck	Propane	1	280	60	1975	0.51	1.47	18.80	10.79	0.06	0.06	0.00	674.86	0	0.01	0.00	0%
Yard tractor	Propane	158	200	624	2007	0.39	0.46	2.49	1.16	0.06	0.06	0.00	674.86	0	0.01	0.00	0%
Forklift	Diesel	8	156	329	2006	0.30	0.29	3.03	3.94	0.14	0.13	0.01	585.97	0	0.00	0.14	88%
Rub-trd Gantry Crane	Diesel	21	521	707	2006	0.20	0.37	1.10	4.24	0.11	0.10	0.01	585.97	0	0.00	0.11	71%
Top handler	Diesel	39	291	786	2009	0.59	0.33	1.13	2.72	0.12	0.11	0.01	585.97	0	0.00	0.12	69%
Truck	Diesel	6	280	275	2008	0.51	0.19	1.00	2.56	0.10	0.09	0.01	585.97	0	0.00	0.10	33%
Yard tractor	Diesel	30	158	54	2019	0.39	0.05	2.70	0.72	0.01	0.01	0.01	585.97	0	0.00	0.01	0%
Total- All Fuel Types		**273**															

2020 CHE Equipment List and Emission Factor - Revised Project

			Engine HP	Hours	Model Year	Load Factor	Emission Factors									
							VOC	CO	NOX	PM10	PM25	SOX	CO2	CH4	N2O	DPM	
Equipment Type	Fuel Type	Count	Average	Average	Average		g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	Percent Controlled
Electric Wharf Crane	Electric	16	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0%
Forklift	Propane	10	138.7	90	2006	0.30	0.28	17.64	1.93	0.06	0.06	0.00	674.86	0	0.01	0.00	0%
Truck	Propane	1	0.0	80	1975	0.51	1.92	8.77	13.24	0.06	0.06	0.00	674.86	0	0.01	0.00	0%
Yard tractor	Propane	158	200.1	770	2007	0.39	0.58	2.53	1.20	0.06	0.06	0.00	674.86	0	0.01	0.00	0%
Forklift	Diesel	8	155.0	433	2006	0.30	0.34	3.16	4.04	0.16	0.15	0.01	585.97	0	0.00	0.16	88%
Hybrid RTG	Diesel	6	284.5	1,811	2014	0.20	0.21	1.23	0.93	0.04	0.04	0.01	585.97	0	0.00	0.04	0%
Rub-trd Gantry Crane	Diesel	15	615.3	1,052	2006	0.20	0.52	1.21	4.37	0.13	0.12	0.01	585.97	0	0.00	0.13	100%
Top handler	Diesel	39	290.7	1,163	2009	0.59	0.47	1.26	2.89	0.15	0.13	0.01	585.97	0	0.00	0.15	69%
Truck	Diesel	6	280.0	353	2008	0.51	0.23	1.03	2.60	0.11	0.10	0.01	585.97	0	0.00	0.11	33%
Yard tractor	Diesel	30	158.0	841	2019	0.39	0.07	2.82	0.74	0.01	0.01	0.01	585.97	0	0.00	0.01	0%
Total- All Fuel Types		**289**															

2021 CHE Equipment List and Emission Factor - Revised Project

7

							Emission Factors									
			Engine HP	Hours	Model Year	Load Factor	VOC	CO	NOX	PM10	PM25	SOX	CO2	CH4	N2O	DPM	
Equipment Type	**Fuel Type**	**Count**	**Average**	**Average**	**Average**		**g/hp-hr**	**g/hp-hr**	**g/hp-hr**	**g/hp-hr**	**g/hp-hr**	**g/hp-hr**	**g/hp-hr**	**g/hp-hr**	**g/hp-hr**	**g/hp-hr**	**Percent Controlled**
Electric Wharf Crane	Electric	16	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0%
Forklift	Propane	10	131.9	169	2007	0.30	0.21	2.41	1.07	0.06	0.06	0.00	674.86	0	0.01	0.00	0%
Truck	Propane	1	0.0	181	1975	0.51	2.63	11.07	13.57	0.06	0.06	0.00	674.86	0	0.01	0.00	0%
Yard tractor	Propane	158	200.2	1,265	2007	0.39	0.94	2.65	1.32	0.06	0.06	0.00	674.86	0	0.01	0.00	0%
Forklift	Diesel	8	155.0	602	2006	0.30	0.43	3.39	4.21	0.18	0.17	0.01	585.97	0	0.00	0.18	88%
Hybrid RTG	Diesel	6	284.5	2,745	2014	0.20	0.32	1.45	1.02	0.05	0.05	0.01	585.97	0	0.00	0.05	0%
Rub-trd Gantry Crane	Diesel	15	610.3	2,392	2003	0.20	1.21	1.75	8.31	0.26	0.24	0.01	585.97	0	0.00	0.26	100%
Top handler	Diesel	40	290.7	1,821	2009	0.59	0.73	1.50	3.20	0.19	0.17	0.01	585.97	0	0.00	0.19	69%
Truck	Diesel	6	280.0	509	2007	0.51	0.31	1.11	2.82	0.12	0.11	0.01	585.97	0	0.00	0.12	33%
Yard tractor	Diesel	30	158.0	1,302	2019	0.39	0.10	2.98	0.76	0.01	0.01	0.01	585.97	0	0.00	0.01	0%
Total- All Fuel Types		**290**															

2022 CHE Equipment List and Emission Factor - Revised Project

			Engine HP	Hours	Model Year	Load Factor	Emission Factors VOC	CO	NOX	PM10	PM25	SOX	CO2	CH4	N2O	DPM	
Equipment Type	Fuel Type	Count	Average	Average	Average		g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	Percent Controlled
Electric Wharf Crane	Electric	16	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0%
Forklift	Propane	8	131.9	176	2007	0.30	0.22	2.41	1.08	0.06	0.06	0.00	674.86	0	0.01	0.00	0%
Truck	Propane	1	0.0	231	1975	0.51	3.02	12.30	13.74	0.06	0.06	0.00	674.86	0	0.01	0.00	0%
Yard tractor	Propane	127	200.7	1,418	2007	0.39	1.11	2.71	1.37	0.06	0.06	0.00	674.86	0	0.01	0.00	0%
Forklift	Diesel	8	155.0	545	2006	0.30	0.42	3.36	4.19	0.18	0.17	0.01	585.97	0	0.00	0.18	88%
Hybrid RTG	Diesel	6	284.5	3,017	2014	0.20	0.39	1.58	1.08	0.06	0.06	0.01	585.97	0	0.00	0.06	0%
Rub-trd Gantry Crane	Diesel	14	610.3	2,351	2003	0.20	1.25	1.78	8.42	0.27	0.25	0.01	585.97	0	0.00	0.27	100%
Top handler	Diesel	39	291.6	1,969	2010	0.59	0.78	1.54	3.38	0.20	0.19	0.01	585.97	0	0.00	0.20	67%
Truck	Diesel	6	280.0	489	2007	0.51	0.31	1.11	2.82	0.12	0.11	0.01	585.97	0	0.00	0.12	33%
Yard tractor	Diesel	30	158.0	1,410	2019	0.39	0.12	3.10	0.77	0.01	0.01	0.01	585.97	0	0.00	0.01	0%
Total- All Fuel Types		**255**															

2023 CHE Equipment List and Emission Factor - Revised Project

			Engine HP	Hours	Model Year	Load Factor	Emission Factors VOC	CO	NOX	PM10	PM25	SOX	CO2	CH4	N2O	DPM	
Equipment Type	**Fuel Type**	**Count**	**Average**	**Average**	**Average**		**g/hp-hr**	**g/hp-hr**	**g/hp-hr**	**g/hp-hr**	**g/hp-hr**	**g/hp-hr**	**g/hp-hr**	**g/hp-hr**	**g/hp-hr**	**g/hp-hr**	**Percent Controlled**
Electric Wharf Crane	Electric	16	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0%
Electric Yard Tractor	Electric	6	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0%
Forklift	Propane	8	132	172	2007	0.30	0.23	2.42	1.08	0.06	0.06	0.00	674.86	0	0.01	0.00	0%
Yard tractor	Propane	207	201	1,387	2007	0.39	1.15	2.72	1.39	0.06	0.06	0.00	674.86	0	0.01	0.00	0%
Forklift	Diesel	8	155	534	2006	0.30	0.43	3.39	4.20	0.18	0.17	0.01	585.97	0	0.00	0.18	88%
Hybrid RTG	Diesel	10	292	2,007	2017	0.20	0.23	1.26	0.37	0.02	0.02	0.01	585.97	0	0.00	0.02	0%
Rub-trd Gantry Crane	Diesel	10	580	2,217	2003	0.20	1.28	1.77	8.00	0.26	0.24	0.01	585.97	0	0.00	0.26	100%
Top handler	Diesel	39	294	1,927	2010	0.59	0.82	1.58	3.43	0.21	0.19	0.01	585.97	0	0.00	0.21	67%
Truck	Diesel	6	350	762	2019	0.51	0.10	0.99	0.13	0.01	0.01	0.01	585.97	0	0.00	0.01	33%
Yard tractor	Diesel	50	158	1,379	2019	0.39	0.14	3.19	0.78	0.01	0.01	0.01	585.97	0	0.00	0.01	0%
Total- All Fuel Types		**360**															

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2026

2026 CHE equipment list - Revised Project

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for CS	Emission Controls (% reduction) PM	HC	CO
Electric wharf crane	0	0	Electric	0	16		0%	-	0%	0%	0%
Forklift	137	2007	Diesel	0.3	2	DPF	100%	152	85%	0%	0%
Forklift	152	2026	Diesel	0.3	1		0%	716	0%	0%	0%
Forklift	152	2005	Diesel	0.3	2	DPF	100%	2,478	85%	0%	0%
Forklift	160	2025	Diesel	0.3	1		0%	200	0%	0%	0%
Forklift	165	2014	Diesel	0.3	1		0%	188	0%	0%	0%
Forklift	190	2020	Diesel	0.3	1		0%	859	0%	0%	0%
Forklift	59	2014	LPG	0.3	1		0%	224	0%	0%	0%
Forklift	59	2015	LPG	0.3	1		0%	148	0%	0%	0%
Forklift	160	Electric	Electric	0.3	2		0%	200	0%	0%	0%
Forklift	160	Electric	Electric	0.3	2		0%	479	0%	0%	0%
Forklift	165	Electric	Electric	0.3	1		0%	32	0%	0%	0%
Forklift	165	Electric	Electric	0.3	1		0%	401	0%	0%	0%
Hybrid RTG	197	2011	Diesel	0.2	1		0%	1,771	0%	0%	0%
Hybrid RTG	302	2022	Diesel	0.2	4		0%	2,537	0%	0%	0%
Hybrid RTG	302	2015	Diesel	0.2	4		0%	13,395	0%	0%	0%
Hybrid RTG	302	2015	Diesel	0.2	1		0%	3,891	0%	0%	0%
Rub-trd Gantry Crane	454	2004	Diesel	0.2	2	DPF	100%	4,522	85%	0%	0%
Rub-trd Gantry Crane	612	2003	Diesel	0.2	8	DPF	100%	19,335	85%	0%	0%
Top handler	250	2026	Diesel	0.59	1		0%	1,657	0%	0%	0%
Top handler	260	2026	Diesel	0.59	5		0%	9,470	0%	0%	0%
Top handler	260	2007	Diesel	0.59	6	DPF	100%	10,821	85%	0%	0%
Top handler	260	2008	Diesel	0.59	14	DPF	100%	33,046	85%	0%	0%
Top handler	335	2011	Diesel	0.59	3		0%	7,563	0%	0%	0%
Top handler	363	2017	Diesel	0.59	6		0%	9,549	0%	0%	0%
Top handler	370	2014	Diesel	0.59	1		0%	1,587	0%	0%	0%
Top handler	388	2017	Diesel	0.59	2		0%	4,265	0%	0%	0%
Top handler	388	2021	Diesel	0.59	1		0%	2,901	0%	0%	0%
Truck	350	2025	Diesel	0.51	1		0%	820	0%	0%	0%
Yard tractor	158	2019	Diesel	0.39	30		0%	44,524	0%	0%	0%
Yard tractor	160	2021	Diesel	0.39	20		0%	-	0%	0%	0%
Yard tractor	0	0	Electric	0.39	6		0%	-	0%	0%	0%
Yard tractor	195	2026	CNG	0.39	16		0%	13,794	0%	0%	0%
Yard tractor	195	2026	CNG	0.39	54		0%	90,055	0%	0%	0%
Yard tractor	195	2008	LPG	0.39	37		0%	63,437	0%	0%	0%
Yard tractor	201	2021	LPG	0.39	80		0%	-	0%	0%	0%
Yard tractor	231	2011	LPG	0.39	20		0%	22,271	0%	0%	0%

Notes

NA: not available

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 China Shipping operations calculated by applying ratio

of China Shipping throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: September, 2024

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 CHE Emission Factor - Revised Project

	Emission Factors (g/hp-hr)								
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O
2026_Electric wharf crane_Electric_0_0	-	-	-	-	-	-	-	-	-
2026_Forklift_Diesel_137_2007	0.155	2.835	2.780	0.167	0.154	0.005	585.973	0.024	0.005
2026_Forklift_Diesel_152_2026	0.063	2.762	0.124	0.009	0.008	0.005	585.973	0.024	0.005
2026_Forklift_Diesel_152_2005	1.109	5.180	5.553	0.380	0.350	0.005	585.973	0.024	0.005
2026_Forklift_Diesel_160_2025	0.059	2.735	0.123	0.008	0.008	0.005	585.973	0.024	0.005
2026_Forklift_Diesel_165_2014	0.163	2.913	1.850	0.045	0.042	0.005	585.973	0.024	0.005
2026_Forklift_Diesel_190_2020	0.143	1.099	0.126	0.011	0.010	0.005	585.973	0.024	0.005
2026_Forklift_LPG_59_2014	0.083	11.641	0.446	0.060	0.060	-	674.859	0.032	0.006
2026_Forklift_LPG_59_2015	0.062	8.024	0.394	0.060	0.060	-	674.859	0.032	0.006
2026_Forklift_Electric_160_Electric	-	-	-	-	-	-	-	-	-
2026_Forklift_Electric_160_Electric	-	-	-	-	-	-	-	-	-
2026_Forklift_Electric_165_Electric	-	-	-	-	-	-	-	-	-
2026_Forklift_Electric_165_Electric	-	-	-	-	-	-	-	-	-
2026_Hybrid RTG_Diesel_197_2011	0.741	1.762	2.088	0.115	0.106	0.005	585.973	0.024	0.005
2026_Hybrid RTG_Diesel_302_2022	0.108	1.002	0.134	0.010	0.009	0.005	585.973	0.024	0.005
2026_Hybrid RTG_Diesel_302_2015	0.685	1.854	1.293	0.092	0.085	0.005	585.973	0.024	0.005
2026_Hybrid RTG_Diesel_302_2015	0.685	1.854	1.293	0.092	0.085	0.005	585.973	0.024	0.005
2026_Rub-trd Gantry Crane_Diesel_454_2004	1.728	2.093	7.245	0.332	0.306	0.005	585.973	0.024	0.005
2026_Rub-trd Gantry Crane_Diesel_612_2003	1.858	2.252	10.283	0.376	0.346	0.005	585.973	0.024	0.005
2026_Top handler_Diesel_250_2026	0.078	0.969	0.118	0.009	0.008	0.005	585.973	0.024	0.005
2026_Top handler_Diesel_260_2026	0.083	0.980	0.118	0.009	0.008	0.005	585.973	0.024	0.005
2026_Top handler_Diesel_260_2007	1.348	2.067	4.131	0.303	0.278	0.005	585.973	0.024	0.005
2026_Top handler_Diesel_260_2008	1.651	2.347	4.323	0.347	0.319	0.005	585.973	0.024	0.005
2026_Top handler_Diesel_335_2011	1.032	1.825	1.933	0.135	0.124	0.005	585.973	0.024	0.005
2026_Top handler_Diesel_363_2017	0.306	1.294	0.279	0.035	0.032	0.005	585.973	0.024	0.005
2026_Top handler_Diesel_370_2014	0.363	1.379	1.231	0.063	0.058	0.005	585.973	0.024	0.005
2026_Top handler_Diesel_388_2017	0.374	1.395	0.295	0.039	0.036	0.005	585.973	0.024	0.005
2026_Top handler_Diesel_388_2021	0.315	1.307	0.161	0.015	0.014	0.005	585.973	0.024	0.005
2026_Truck_Diesel_350_2025	0.077	0.956	0.129	0.009	0.008	0.005	585.973	0.024	0.005
2026_Yard tractor_Diesel_158_2019	0.249	3.839	0.870	0.014	0.013	0.005	585.973	0.024	0.005
2026_Yard tractor_Diesel_160_2021	-	-	-	-	-	-	-	-	-
2026_Yard tractor_Electric_0_0	-	-	-	-	-	-	-	-	-
2026_Yard tractor_CNG_195_2026	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	0.020
2026_Yard tractor_CNG_195_2026	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	0.020
2026_Yard tractor_LPG_195_2008	2.122	3.050	1.715	0.060	0.060	-	674.859	0.032	0.006
2026_Yard tractor_LPG_201_2021	-	-	-	-	-	-	-	-	-
2026_Yard tractor_LPG_231_2011	0.437	73.762	1.336	0.060	0.060	-	674.859	0.032	0.006

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2036

2036 CHE equipment list - Revised Project

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for CS	Emission Controls (% reduction) PM	HC	CO
Electric wharf crane	0	0	Electric	0	16		0%	-	0%	0%	0%
Forklift	137	2028	Diesel	0.3	2		0%	107	0%	0%	0%
Forklift	152	2026	Diesel	0.3	1		0%	505	0%	0%	0%
Forklift	152	2027	Diesel	0.3	2		0%	1,749	0%	0%	0%
Forklift	160	2025	Diesel	0.3	1		0%	142	0%	0%	0%
Forklift	165	2030	Diesel	0.3	1		0%	133	0%	0%	0%
Forklift	190	2036	Diesel	0.3	1		0%	606	0%	0%	0%
Forklift	59	2030	LPG	0.3	1		0%	158	0%	0%	0%
Forklift	59	2031	LPG	0.3	1		0%	105	0%	0%	0%
Forklift	160	Electric	Electric	0.3	2		0%	142	0%	0%	0%
Forklift	160	Electric	Electric	0.3	2		0%	338	0%	0%	0%
Forklift	165	Electric	Electric	0.3	1		0%	23	0%	0%	0%
Forklift	165	Electric	Electric	0.3	1		0%	283	0%	0%	0%
Hybrid RTG	197	2035	Diesel	0.2	1		0%	1,250	0%	0%	0%
Hybrid RTG	302	2022	Diesel	0.2	4		0%	1,791	0%	0%	0%
Hybrid RTG	302	2015	Diesel	0.2	4		0%	9,455	0%	0%	0%
Hybrid RTG	302	2015	Diesel	0.2	1		0%	2,746	0%	0%	0%
Rub-trd Gantry Crane	302	2030	Diesel	0.2	2		0%	3,192	0%	0%	0%
Rub-trd Gantry Crane	302	2028	Diesel	0.2	8		0%	13,649	0%	0%	0%
Top handler	250	2026	Diesel	0.59	1		0%	1,170	0%	0%	0%
Top handler	260	2026	Diesel	0.59	5		0%	6,685	0%	0%	0%
Top handler	260	2028	Diesel	0.59	6		0%	7,638	0%	0%	0%
Top handler	260	2030	Diesel	0.59	14		0%	23,327	0%	0%	0%
Top handler	335	2030	Diesel	0.59	3		0%	5,338	0%	0%	0%
Top handler	363	2033	Diesel	0.59	6		0%	6,740	0%	0%	0%
Top handler	370	2030	Diesel	0.59	1		0%	1,120	0%	0%	0%
Top handler	388	2033	Diesel	0.59	2		0%	3,010	0%	0%	0%
Top handler	388	2021	Diesel	0.59	1		0%	2,047	0%	0%	0%
Truck	350	2025	Diesel	0.51	1		0%	579	0%	0%	0%
Yard tractor	158	2031	Diesel	0.39	30		0%	31,429	0%	0%	0%
Yard tractor	160	2033	Diesel	0.39	20		0%	-	0%	0%	0%
Yard tractor	0	0	Electric	0.39	6		0%	-	0%	0%	0%
Yard tractor	195	2026	CNG	0.39	16		0%	9,737	0%	0%	0%
Yard tractor	195	2026	CNG	0.39	54		0%	63,569	0%	0%	0%
Yard tractor	195	2030	CNG	0.39	37		0%	44,779	0%	0%	0%
Yard tractor	201	2033	LPG	0.39	80		0%	-	0%	0%	0%
Yard tractor	231	2030	CNG	0.39	20		0%	15,721	0%	0%	0%

Notes

NA: not available

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 China Shipping operations calculated by applying ratio

of China Shipping throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: September 2024

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 CHE Emission Factor - Revised Project

	Emission Factors (g/hp-hr)								
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O
2036_Electric wharf crane_Electric_0_0	-	-	-	-	-	-	-	-	-
2036_Forklift_Diesel_137_2028	0.063	2.761	0.124	0.009	0.008	0.005	585.973	0.024	0.005
2036_Forklift_Diesel_152_2026	0.171	3.387	0.138	0.012	0.011	0.005	585.973	0.024	0.005
2036_Forklift_Diesel_152_2027	0.247	3.827	0.148	0.014	0.013	0.005	585.973	0.024	0.005
2036_Forklift_Diesel_160_2025	0.089	2.910	0.127	0.009	0.009	0.005	585.973	0.024	0.005
2036_Forklift_Diesel_165_2030	0.072	2.815	0.125	0.009	0.008	0.005	585.973	0.024	0.005
2036_Forklift_Diesel_190_2036	0.066	0.946	0.116	0.009	0.008	0.005	585.973	0.024	0.005
2036_Forklift_LPG_59_2030	0.058	7.363	0.385	0.060	0.060	-	674.859	0.032	0.006
2036_Forklift_LPG_59_2031	0.046	5.198	0.354	0.060	0.060	-	674.859	0.032	0.006
2036_Forklift_Electric_160_Electric	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric_160_Electric	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric_165_Electric	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric_165_Electric	-	-	-	-	-	-	-	-	-
2036_Hybrid RTG_Diesel_197_2035	0.106	1.025	0.121	0.010	0.009	0.005	585.973	0.024	0.005
2036_Hybrid RTG_Diesel_302_2022	0.220	1.167	0.149	0.013	0.012	0.005	585.973	0.024	0.005
2036_Hybrid RTG_Diesel_302_2015	1.211	2.632	1.728	0.143	0.131	0.005	585.973	0.024	0.005
2036_Hybrid RTG_Diesel_302_2015	1.211	2.632	1.728	0.143	0.131	0.005	585.973	0.024	0.005
2036_Rub-trd Gantry Crane_Diesel_454_2030	0.294	1.277	0.159	0.014	0.013	0.005	585.973	0.024	0.005
2036_Rub-trd Gantry Crane_Diesel_612_2028	0.391	1.419	0.172	0.017	0.016	0.005	585.973	0.024	0.005
2036_Top handler_Diesel_250_2026	0.327	1.461	0.148	0.015	0.014	0.005	585.973	0.024	0.005
2036_Top handler_Diesel_260_2026	0.389	1.582	0.156	0.017	0.016	0.005	585.973	0.024	0.005
2036_Top handler_Diesel_260_2028	0.314	1.436	0.147	0.015	0.014	0.005	585.973	0.024	0.005
2036_Top handler_Diesel_260_2030	0.319	1.446	0.147	0.015	0.014	0.005	585.973	0.024	0.005
2036_Top handler_Diesel_335_2030	0.321	1.316	0.162	0.015	0.014	0.005	585.973	0.024	0.005
2036_Top handler_Diesel_363_2033	0.154	1.069	0.140	0.011	0.010	0.005	585.973	0.024	0.005
2036_Top handler_Diesel_370_2030	0.220	1.167	0.149	0.013	0.012	0.005	585.973	0.024	0.005
2036_Top handler_Diesel_388_2033	0.181	1.110	0.143	0.012	0.011	0.005	585.973	0.024	0.005
2036_Top handler_Diesel_388_2021	0.751	1.952	0.220	0.026	0.024	0.005	585.973	0.024	0.005
2036_Truck_Diesel_350_2025	0.201	1.139	0.146	0.012	0.011	0.005	585.973	0.024	0.005
2036_Yard tractor_Diesel_158_2031	0.200	3.554	0.142	0.013	0.012	0.005	585.973	0.024	0.005
2036_Yard tractor_Diesel_160_2033	-	-	-	-	-	-	-	-	-
2036_Yard tractor_Electric_0_0	-	-	-	-	-	-	-	-	-
2036_Yard tractor_CNG_195_2026	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	0.020
2036_Yard tractor_CNG_195_2026	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	0.020
2036_Yard tractor_CNG_195_2030	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	0.020
2036_Yard tractor_LPG_201_2033	-	-	-	-	-	-	-	-	-
2036_Yard tractor_CNG_231_2030	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	0.020

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2045

2045 CHE equipment list - Revised Project

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for CS	Emission Controls (% reduction) PM	HC	CO
Electric wharf crane	0	0	Electric	0	16		0%	-	0%	0%	0%
Forklift	137	2044	Diesel	0.3	2		0%	94	0%	0%	0%
Forklift	152	2042	Diesel	0.3	1		0%	442	0%	0%	0%
Forklift	152	2043	Diesel	0.3	2		0%	1,529	0%	0%	0%
Forklift	160	2041	Diesel	0.3	1		0%	124	0%	0%	0%
Forklift	165	2030	Diesel	0.3	1		0%	116	0%	0%	0%
Forklift	190	2036	Diesel	0.3	1		0%	530	0%	0%	0%
Forklift	59	2030	LPG	0.3	1		0%	138	0%	0%	0%
Forklift	59	2031	LPG	0.3	1		0%	91	0%	0%	0%
Forklift	160	Electric	Electric	0.3	2		0%	124	0%	0%	0%
Forklift	160	Electric	Electric	0.3	2		0%	296	0%	0%	0%
Forklift	165	Electric	Electric	0.3	1		0%	20	0%	0%	0%
Forklift	165	Electric	Electric	0.3	1		0%	247	0%	0%	0%
Hybrid RTG	197	2035	Diesel	0.2	1		0%	1,093	0%	0%	0%
Hybrid RTG	302	2022	Diesel	0.2	4		0%	1,565	0%	0%	0%
Hybrid RTG	302	2039	Diesel	0.2	4		0%	8,262	0%	0%	0%
Hybrid RTG	302	2039	Diesel	0.2	1		0%	2,400	0%	0%	0%
Rub-trd Gantry Crane	302	2030	Diesel	0.2	2		0%	2,789	0%	0%	0%
Rub-trd Gantry Crane	302	2028	Diesel	0.2	8		0%	11,925	0%	0%	0%
Top handler	250	2042	Diesel	0.59	1		0%	1,022	0%	0%	0%
Top handler	260	2042	Diesel	0.59	5		0%	5,841	0%	0%	0%
Top handler	260	2044	Diesel	0.59	6		0%	6,674	0%	0%	0%
Top handler	260	2030	Diesel	0.59	14		0%	20,382	0%	0%	0%
Top handler	335	2030	Diesel	0.59	3		0%	4,664	0%	0%	0%
Top handler	363	2033	Diesel	0.59	6		0%	5,889	0%	0%	0%
Top handler	370	2030	Diesel	0.59	1		0%	979	0%	0%	0%
Top handler	388	2033	Diesel	0.59	2		0%	2,630	0%	0%	0%
Top handler	388	2037	Diesel	0.59	1		0%	1,789	0%	0%	0%
Truck	350	2037	Diesel	0.51	1		0%	506	0%	0%	0%
Yard tractor	158	2043	Diesel	0.39	30		0%	27,461	0%	0%	0%
Yard tractor	160	2045	Diesel	0.39	20		0%	-	0%	0%	0%
Yard tractor	0	0	Electric	0.39	6		0%	-	0%	0%	0%
Yard tractor	195	2038	CNG	0.39	16		0%	8,508	0%	0%	0%
Yard tractor	195	2038	CNG	0.39	54		0%	55,542	0%	0%	0%
Yard tractor	195	2042	CNG	0.39	37		0%	39,125	0%	0%	0%
Yard tractor	201	2045	LPG	0.39	80		0%	-	0%	0%	0%
Yard tractor	231	2042	CNG	0.39	20		0%	13,736	0%	0%	0%

Notes

NA: not available

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 China Shipping operations calculated by applying ratio

of China Shipping throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: September 2024

Emissions Control Data

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

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

2045 CHE Emission Factor - Revised Project

	Emission Factors (g/hp-hr)								
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**
2045_Electric wharf crane_Electric_0_0	-	-	-	-	-	-	-	-	-
2045_Forklift_Diesel_137_2044	0.055	2.714	0.123	0.008	0.008	0.005	585.973	0.024	0.005
2045_Forklift_Diesel_152_2042	0.096	2.950	0.128	0.010	0.009	0.005	585.973	0.024	0.005
2045_Forklift_Diesel_152_2043	0.111	3.038	0.130	0.010	0.009	0.005	585.973	0.024	0.005
2045_Forklift_Diesel_160_2041	0.068	2.787	0.124	0.009	0.008	0.005	585.973	0.024	0.005
2045_Forklift_Diesel_165_2030	0.098	2.963	0.128	0.010	0.009	0.005	585.973	0.024	0.005
2045_Forklift_Diesel_190_2036	0.182	1.175	0.131	0.012	0.011	0.005	585.973	0.024	0.005
2045_Forklift_LPG_59_2030	0.095	13.781	0.477	0.060	0.060	-	674.859	0.032	0.006
2045_Forklift_LPG_59_2031	0.070	9.437	0.414	0.060	0.060	-	674.859	0.032	0.006
2045_Forklift_Electric_160_Electric	-	-	-	-	-	-	-	-	-
2045_Forklift_Electric_160_Electric	-	-	-	-	-	-	-	-	-
2045_Forklift_Electric_165_Electric	-	-	-	-	-	-	-	-	-
2045_Forklift_Electric_165_Electric	-	-	-	-	-	-	-	-	-
2045_Hybrid RTG_Diesel_197_2035	0.346	1.499	0.151	0.016	0.015	0.005	585.973	0.024	0.005
2045_Hybrid RTG_Diesel_302_2022	0.320	1.315	0.162	0.015	0.014	0.005	585.973	0.024	0.005
2045_Hybrid RTG_Diesel_302_2039	0.421	1.465	0.176	0.018	0.016	0.005	585.973	0.024	0.005
2045_Hybrid RTG_Diesel_302_2039	0.421	1.465	0.176	0.018	0.016	0.005	585.973	0.024	0.005
2045_Rub-trd Gantry Crane_Diesel_454_2030	0.605	1.736	0.201	0.022	0.020	0.005	585.973	0.024	0.005
2045_Rub-trd Gantry Crane_Diesel_612_2028	0.729	1.919	0.217	0.025	0.023	0.005	585.973	0.024	0.005
2045_Top handler_Diesel_250_2042	0.152	1.117	0.127	0.011	0.010	0.005	585.973	0.024	0.005
2045_Top handler_Diesel_260_2042	0.175	1.161	0.130	0.011	0.011	0.005	585.973	0.024	0.005
2045_Top handler_Diesel_260_2044	0.111	1.035	0.122	0.010	0.009	0.005	585.973	0.024	0.005
2045_Top handler_Diesel_260_2030	0.662	2.122	0.189	0.024	0.022	0.005	585.973	0.024	0.005
2045_Top handler_Diesel_335_2030	0.665	1.825	0.209	0.024	0.022	0.005	585.973	0.024	0.005
2045_Top handler_Diesel_363_2033	0.381	1.406	0.170	0.017	0.015	0.005	585.973	0.024	0.005
2045_Top handler_Diesel_370_2030	0.435	1.485	0.178	0.018	0.017	0.005	585.973	0.024	0.005
2045_Top handler_Diesel_388_2033	0.471	1.538	0.182	0.019	0.017	0.005	585.973	0.024	0.005
2045_Top handler_Diesel_388_2037	0.446	1.501	0.179	0.018	0.017	0.005	585.973	0.024	0.005
2045_Truck_Diesel_350_2037	0.164	1.084	0.141	0.011	0.010	0.005	585.973	0.024	0.005
2045_Yard tractor_Diesel_158_2043	0.126	3.127	0.132	0.011	0.010	0.005	585.973	0.024	0.005
2045_Yard tractor_Diesel_160_2045	-	-	-	-	-	-	-	-	-
2045_Yard tractor_Electric_0_0	-	-	-	-	-	-	-	-	-
2045_Yard tractor_CNG_195_2038	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	0.020
2045_Yard tractor_CNG_195_2038	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	0.020
2045_Yard tractor_CNG_195_2042	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	0.020
2045_Yard tractor_LPG_201_2045	-	-	-	-	-	-	-	-	-
2045_Yard tractor_CNG_231_2042	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	0.020

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2012

2012 FEIR Mitigated 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 CS	Emission Controls (% reduction) PM	HC	CO
Electric Wharf Crane		Electric			13		0%	-	0%	0%	0%
Forklift	160	2012	LPG	0.3	3		0%	300	0%	0%	0%
Forklift	160	2012	LPG	0.3	2		0%	226	0%	0%	0%
Forklift	160	2012	LPG	0.3	1		0%	69	0%	0%	0%
Forklift	165	2012	LPG	0.3	1		0%	8	0%	0%	0%
Forklift	165	2012	LPG	0.3	2		0%	405	0%	0%	0%
Forklift	152	2012	Diesel	0.3	1		0%	113	0%	0%	0%
Forklift	152	2012	Diesel	0.3	1		0%	855	0%	0%	0%
Forklift	152	2012	Diesel	0.3	2		0%	1,005	0%	0%	0%
Forklift	153	2009	Diesel	0.3	1		0%	80	0%	0%	0%
Forklift	153	2009	Diesel	0.3	1		0%	-	0%	0%	0%
Forklift	153	2012	Diesel	0.3	1		0%	101	0%	0%	0%
Forklift	190	2012	Diesel	0.3	1		0%	447	0%	0%	0%
Forklift	137	2009	Diesel	0.3	2		0%	1,000	0%	0%	0%
Rub-trd Gantry Crane	685	electric	electric	0.2	5		0%	5,015	0%	0%	0%
Rub-trd Gantry Crane	685	electric	electric	0.2	3		0%	1,230	0%	0%	0%
Rub-trd Gantry Crane	612	electric	electric	0.2	8		0%	8,877	0%	0%	0%
Rub-trd Gantry Crane	454	electric	electric	0.2	2		0%	1,479	0%	0%	0%
Rub-trd Gantry Crane	197	electric	electric	0.2	1		0%	422	0%	0%	0%
Top handler	250	2009	Diesel	0.59	9	DOC	100%	7,016	30%	70%	70%
Top handler	260	2009	Diesel	0.59	6	DOC	100%	4,931	30%	70%	70%
Top handler	260	2009	Diesel	0.59	15		0%	18,722	0%	0%	0%
Top handler	260	2009	Diesel	0.59	6	DOC	100%	5,131	30%	70%	70%
Top handler	335	2011	Diesel	0.59	3		0%	2,109	0%	0%	0%
Yard tractor	174	2000	LPG	0.39	2		0%	344	0%	0%	0%
Yard tractor	195	2004	LPG	0.39	53		0%	37,114	0%	0%	0%
Yard tractor	195	2007	LPG	0.39	59		0%	50,429	0%	0%	0%
Yard tractor	195	2008	LPG	0.39	43		0%	40,350	0%	0%	0%
Yard tractor	231	2011	LPG	0.39	23		0%	12,319	0%	0%	0%
Sweeper	100	2012	Diesel	0.68	1		0%	-	0%	0%	0%
Sweeper	100	2012	Diesel	0.68	1		0%	604	0%	0%	0%
Truck	250	2012	Diesel	0.51	2		0%	678	0%	0%	0%
Truck	250	2012	Diesel	0.51	2		0%	1,089	0%	0%	0%
Truck	275	2009	Diesel	0.51	1		0%	-	0%	0%	0%
Truck	275	2009	Diesel	0.51	1		0%	179	0%	0%	0%

Notes
NA: not available
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 China Shipping operations calculated by applying ratio
of China Shipping throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: September 2024

Emissions Control Data
http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf
http://www.epa.gov/cleandiesel/verification/verif-list.htm

2012 FEIR Mitigated Scenario - CHE Emission Factor

	Emission Factors (g/hp-hr)								
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O
2012_Electric Wharf Crane_Electric_0_0	-	-	-	-	-	-	-	-	-
2012_Forklift_Diesel_137_2007	0.212	2.990	2.660	0.162	0.149	0.005	585.973	0.024	0.005
2012_Forklift_Diesel_152_1994	0.100	2.716	2.546	0.109	0.100	0.005	585.973	0.024	0.005
2012_Forklift_Diesel_152_2004	0.133	2.820	2.595	0.116	0.107	0.005	585.973	0.024	0.005
2012_Forklift_Diesel_152_2005	0.118	2.771	2.572	0.113	0.104	0.005	585.973	0.024	0.005
2012_Forklift_Diesel_153_1979	0.122	2.745	2.547	0.131	0.121	0.005	585.973	0.024	0.005
2012_Forklift_Diesel_153_1988	0.105	2.700	2.526	0.126	0.116	0.005	585.973	0.024	0.005
2012_Forklift_Diesel_153_2009	0.099	2.714	2.546	0.109	0.100	0.005	585.973	0.024	0.005
2012_Forklift_LPG_160_2005	0.034	3.092	0.324	0.060	0.060	-	674.859	0.032	0.006
2012_Forklift_LPG_160_2008	0.036	3.409	0.328	0.060	0.060	-	674.859	0.032	0.006
2012_Forklift_LPG_160_2011	0.032	2.725	0.318	0.060	0.060	-	674.859	0.032	0.006
2012_Forklift_LPG_165_1995	0.030	2.410	0.314	0.060	0.060	-	674.859	0.032	0.006
2012_Forklift_LPG_165_2002	0.036	3.412	0.328	0.060	0.060	-	674.859	0.032	0.006
2012_Forklift_Diesel_190_2004	0.091	0.941	1.456	0.052	0.048	0.005	585.973	0.024	0.005
2012_Rub-trd Gantry Crane_Diesel_197_2011	-	-	-	-	-	-	-	-	-
2012_Rub-trd Gantry Crane_Diesel_454_2004	-	-	-	-	-	-	-	-	-
2012_Rub-trd Gantry Crane_Diesel_612_2003	-	-	-	-	-	-	-	-	-
2012_Rub-trd Gantry Crane_Diesel_685_1999	-	-	-	-	-	-	-	-	-
2012_Rub-trd Gantry Crane_Diesel_685_2005	-	-	-	-	-	-	-	-	-
2012_Sweeper_Diesel_100_1995	0.095	3.050	2.646	0.169	0.155	0.005	527.088	0.021	0.004
2012_Sweeper_Diesel_100_2005	0.122	3.146	2.688	0.178	0.164	0.005	527.088	0.021	0.004
2012_Top handler_Diesel_250_2002	0.297	1.097	2.682	0.117	0.107	0.005	585.973	0.024	0.005
2012_Top handler_Diesel_260_2006	0.288	1.088	2.670	0.115	0.106	0.005	585.973	0.024	0.005
2012_Top handler_Diesel_260_2007	0.300	1.100	2.685	0.117	0.108	0.005	585.973	0.024	0.005
2012_Top handler_Diesel_260_2008	0.370	1.165	2.770	0.129	0.118	0.005	585.973	0.024	0.005
2012_Top handler_Diesel_335_2011	0.131	0.974	1.218	0.053	0.048	0.005	585.973	0.024	0.005
2012_Truck_Diesel_250_2005	0.087	0.936	1.452	0.052	0.048	0.005	585.973	0.024	0.005
2012_Truck_Diesel_250_2008	0.097	0.949	1.462	0.053	0.049	0.005	585.973	0.024	0.005
2012_Truck_Diesel_275_1993	0.105	0.920	2.450	0.085	0.079	0.005	585.973	0.024	0.005
2012_Truck_Diesel_275_2001	0.142	0.954	2.494	0.091	0.084	0.005	585.973	0.024	0.005
2012_Yard tractor_LPG_174_2000	1.536	20.278	10.966	0.060	0.060	-	674.859	0.032	0.006
2012_Yard tractor_LPG_195_2004	1.506	27.841	5.011	0.060	0.060	-	674.859	0.032	0.006
2012_Yard tractor_LPG_195_2007	0.552	2.524	1.189	0.060	0.060	-	674.859	0.032	0.006
2012_Yard tractor_LPG_195_2008	0.521	2.514	1.179	0.060	0.060	-	674.859	0.032	0.006
2012_Yard tractor_LPG_231_2011	0.063	8.265	0.398	0.060	0.060	-	674.859	0.032	0.006

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2014

2014 FEIR mitigated 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 CS	Emission Controls (% reduction) PM	HC	CO
Electric Wharf Crane	0	2014	Electric	na	16		0%	-	0%	0%	0%
Forklift	160	2014	LPG	0.3	3		0%	597	0%	0%	0%
Forklift	160	2014	LPG	0.3	2		0%	232	0%	0%	0%
Forklift	165	2014	LPG	0.3	1		0%	1	0%	0%	0%
Forklift	165	2014	LPG	0.3	2		0%	627	0%	0%	0%
Forklift	75	2014	LPG	0.3	1		0%	55	0%	0%	0%
Forklift	152	2014	D	0.3	1		0%	-	0%	0%	0%
Forklift	152	2014	D	0.3	2	DPF	100%	1,109	85%	0%	0%
Forklift	152	2014	D	0.3	3	DPF	100%	896	85%	0%	0%
Forklift	165	2014	D	0.3	1		0%	43	0%	0%	0%
Forklift	190	2014	D	0.3	2	DPF	100%	1,022	85%	0%	0%
Forklift	137	2014	D	0.3	3	DPF	100%	785	85%	0%	0%
Forklift	164	2014	D	0.3	1	DPF	100%	72	85%	0%	0%
Rub-trd Gantry Crane	685	electric	electric	0.2	5	Rypos,ULSD	100%	10,707	50%	78%	98%
Rub-trd Gantry Crane	685	electric	electric	0.2	1	Rypos,ULSD	100%	1,306	50%	78%	98%
Rub-trd Gantry Crane	612	electric	electric	0.2	8	Rypos,ULSD	100%	15,784	50%	78%	98%
Rub-trd Gantry Crane	454	electric	electric	0.2	2	Rypos,ULSD	100%	2,701	50%	78%	98%
Rub-trd Gantry Crane	197	electric	electric	0.2	1		0%	1,636	0%	0%	0%
Rub-trd Gantry Crane	600	electric	electric	0.2	1		0%	1,629	0%	0%	0%
Top handler	250	2014	D	0.59	8	DPF	100%	11,823	85%	0%	0%
Top handler	260	2014	D	0.59	6	DPF	100%	8,789	85%	0%	0%
Top handler	260	2014	D	0.59	15	DPF	100%	32,431	85%	0%	0%
Top handler	260	2014	D	0.59	6	DPF	100%	9,613	85%	0%	0%
Top handler	335	2011	D	0.59	3		0%	4,262	0%	0%	0%
Top handler	370	2014	D	0.59	1		0%	971	0%	0%	0%
Yard tractor	174	2000	LPG	0.39	2		0%	449	0%	0%	0%
Yard tractor	195	2004	LPG	0.39	53		0%	63,798	0%	0%	0%
Yard tractor	195	2007	LPG	0.39	59		0%	88,949	0%	0%	0%
Yard tractor	195	2008	LPG	0.39	43		0%	67,604	0%	0%	0%
Yard tractor	231	2011	LPG	0.39	23		0%	17,903	0%	0%	0%
Sweeper	100	2014	D	0.68	1		0%	-	0%	0%	0%
Truck	250	2014	D	0.51	2	DPF	100%	1,161	85%	0%	0%
Truck	250	2014	D	0.51	2		0%	1,676	0%	0%	0%
Truck	275	2014	D	0.51	1		100%	650	0%	0%	0%

Notes
NA: not available
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 China Shipping operations calculated by applying ratio
of China Shipping throughput/total WBCT throughput to average annual hours for WBCT terminal
Data obtained: September 2024

Emissions Control Data
http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf
http://www.epa.gov/cleandiesel/verification/verif-list.htm

2014 FEIR mitigated Scenario - CHE emission factor

	Emission Factors (g/hp-hr)								
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O
2014_Electric Wharf Crane_Electric_0_199	-	-	-	-	-	-	-	-	-
2014_Forklift_LPG_75_2011	0.031	2.582	0.316	0.060	0.060	-	674.859	0.032	0.006
2014_Forklift_Diesel_137_2007	0.118	2.774	1.804	0.042	0.038	0.005	585.973	0.024	0.005
2014_Forklift_Diesel_152_1994	0.095	2.700	1.780	0.040	0.037	0.005	585.973	0.024	0.005
2014_Forklift_Diesel_152_2004	0.115	2.762	1.801	0.041	0.038	0.005	585.973	0.024	0.005
2014_Forklift_Diesel_152_2005	0.106	2.735	1.792	0.041	0.037	0.005	585.973	0.024	0.005
2014_Forklift_LPG_160_2005	0.036	3.424	0.328	0.060	0.060	-	674.859	0.032	0.006
2014_Forklift_LPG_160_2008	0.034	3.180	0.325	0.060	0.060	-	674.859	0.032	0.006
2014_Forklift_Diesel_164_2009	0.097	2.708	1.783	0.040	0.037	0.005	585.973	0.024	0.005
2014_Forklift_LPG_165_1995	0.030	2.374	0.313	0.060	0.060	-	674.859	0.032	0.006
2014_Forklift_LPG_165_2002	0.037	3.646	0.331	0.060	0.060	-	674.859	0.032	0.006
2014_Forklift_Diesel_165_2014	0.096	2.705	1.782	0.040	0.037	0.005	585.973	0.024	0.005
2014_Forklift_Diesel_190_2004	0.070	0.954	0.809	0.032	0.029	0.005	585.973	0.024	0.005
2014_Rub-trd Gantry Crane_Diesel_197_20	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Diesel_454_20	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Diesel_600_20	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Diesel_612_20	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Diesel_685_19	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Diesel_685_20	-	-	-	-	-	-	-	-	-
2014_Sweeper_Diesel_100_2005	0.095	3.050	2.366	0.089	0.082	0.005	527.088	0.021	0.004
2014_Top handler_Diesel_250_2002	0.080	0.973	0.818	0.033	0.030	0.005	585.973	0.024	0.005
2014_Top handler_Diesel_260_2006	0.082	0.978	0.820	0.033	0.030	0.005	585.973	0.024	0.005
2014_Top handler_Diesel_260_2007	0.082	0.977	0.819	0.033	0.030	0.005	585.973	0.024	0.005
2014_Top handler_Diesel_260_2008	0.092	0.998	0.828	0.034	0.031	0.005	585.973	0.024	0.005
2014_Top handler_Diesel_335_2011	0.236	1.073	1.301	0.062	0.057	0.005	585.973	0.024	0.005
2014_Top handler_Diesel_370_2014	0.070	0.946	0.941	0.035	0.032	0.005	585.973	0.024	0.005
2014_Truck_Diesel_250_2005	0.063	0.941	0.804	0.031	0.029	0.005	585.973	0.024	0.005
2014_Truck_Diesel_250_2008	0.070	0.953	0.809	0.032	0.029	0.005	585.973	0.024	0.005
2014_Truck_Diesel_275_2001	0.064	0.943	0.805	0.031	0.029	0.005	585.973	0.024	0.005
2014_Yard tractor_LPG_174_2000	1.557	20.773	11.026	0.060	0.060	-	674.859	0.032	0.006
2014_Yard tractor_LPG_195_2004	2.362	34.964	7.160	0.060	0.060	-	674.859	0.032	0.006
2014_Yard tractor_LPG_195_2007	0.908	2.643	1.308	0.060	0.060	-	674.859	0.032	0.006
2014_Yard tractor_LPG_195_2008	0.837	2.620	1.285	0.060	0.060	-	674.859	0.032	0.006
2014_Yard tractor_LPG_231_2011	0.119	17.961	0.537	0.060	0.060	-	674.859	0.032	0.006

Note: Emissions factors for equipment from CARB's OFFROAD2021 Model

0

2018 equipment list and emission factors - FEIR Mitigated Scenario

							Emission Factors									
			Engine HP	Hours	Model Year	Load Factor	VOC	CO	NOX	PM10	PM25	SOX	CO2	CH4	N2O	DPM
Equipment Type	Fuel Type	Count	Average	Average	Average		g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr
Forklift	Diesel	7	162	148	2014	0.30	0.11	2.75	1.80	0.04	0.04	0.01	585.97	0.02	0.00	0.04
Yard tractor	LNG	178	199	627	2014	0.39	0.01	1.50	0.01	0.00	0.00	0.00	465.00	0.56	0.02	0.00
Forklift	Diesel	5	157	428	2014	0.30	0.14	2.85	1.83	0.04	0.04	0.01	585.97	0.02	0.00	0.04
Rub-trd Gantry Crane	Electric	21	521	776	electric	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Top handler	Diesel	38	267	823	2014	0.59	0.10	1.02	0.84	0.03	0.03	0.01	585.97	0.02	0.00	0.03

2019 equipment list and emission factors - FEIR Mitigated Scenario

							Emission Factors									
Equipment Type	Fuel Type	Count	Engine HP Average	Hours Average	Model Year Average	Load Factor	VOC g/hp-hr	CO g/hp-hr	NOX g/hp-hr	PM10 g/hp-hr	PM25 g/hp-hr	SOX g/hp-hr	CO2 g/hp-hr	CH4 g/hp-hr	N2O g/hp-hr	DPM g/hp-hr
Forklift	Diesel	10	141	77	2014	0.30	0.11	2.73	1.79	0.04	0.04	0.01	585.97	0	0.00	0.04
Truck	Diesel	1	280	60	2014	0.51	0.06	0.93	0.80	0.03	0.03	0.01	585.97	0	0.00	0.03
Yard tractor	LNG	158	200	624	2014	0.39	0.01	1.50	0.01	0.00	0.00	0.00	465.00	1	0.02	0.00
Forklift	Diesel	8	156	329	2014	0.30	0.14	2.84	1.83	0.04	0.04	0.01	585.97	0	0.00	0.04
Rub-trd Gantry Crane	Electric	21	521	707	electric	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00
Top handler	Diesel	39	291	786	2014	0.59	0.11	1.03	0.84	0.04	0.03	0.01	585.97	0	0.00	0.04
Truck	Diesel	6	280	275	2014	0.51	0.07	0.96	0.81	0.03	0.03	0.01	585.97	0	0.00	0.03
Yard tractor	Diesel	30	158	54	2019	0.39	0.05	2.70	0.72	0.01	0.01	0.01	585.97	0	0.00	0.01

2020 equipment list and emission factors - FEIR Mitigated Scenario

							Emission Factors									
Equipment Type	Fuel Type	Count	Engine HP Average	Hours Average	Model Year Average	Load Factor	VOC g/hp-hr	CO g/hp-hr	NOX g/hp-hr	PM10 g/hp-hr	PM25 g/hp-hr	SOX g/hp-hr	CO2 g/hp-hr	CH4 g/hp-hr	N2O g/hp-hr	DPM g/hp-hr
Electric Wharf Crane	Electric	16	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00
Forklift	Diesel	10	138.7	90	2014	0.30	0.03	2.37	0.31	0.06	0.06	0.00	0.00	0	0.00	0.06
Truck	Diesel	1	280.0	80	2014	0.51	0.06	0.93	0.80	0.03	0.03	0.01	585.97	0	0.00	0.03
Yard tractor	LNG	158	200.1	770	2014	0.39	0.12	1.05	0.85	0.04	0.03	0.01	585.97	0	0.00	0.00
Forklift	Diesel	8	155.0	433	2014	0.30	0.01	1.50	0.01	0.00	0.00	0.00	465.00	1	0.02	0.00
Hybrid RTG	Diesel	6	284.5	1,811	electric	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00
Rub-trd Gantry Crane	Diesel	15	615.3	1,052	electric	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00
Top handler	Diesel	39	290.7	1,163	2014	0.59	0.15	1.12	0.88	0.04	0.04	0.01	585.97	0	0.00	0.04
Truck	Diesel	6	280.0	353	2014	0.51	0.08	0.98	0.82	0.03	0.03	0.01	585.97	0	0.00	0.03
Yard tractor	Diesel	30	158.0	841	2019	0.39	0.07	2.82	0.74	0.01	0.01	0.01	585.97	0	0.00	0.01
Total- All Fuel Types		**289**														

2021 equipment list and emission factors - FEIR Mitigated Scenario

							Emission Factors								
Equipment Type	Fuel Type	Count	Engine HP Average	Hours Average	Model Year Average	Load Factor	VOC g/hp-hr	CO g/hp-hr	NOX g/hp-hr	PM10 g/hp-hr	PM25 g/hp-hr	SOX g/hp-hr	CO2 g/hp-hr	CH4 g/hp-hr	N2O g/hp-hr	DPM g/hp-hr
Electric Wharf Crane	Electric	16	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00
Forklift	Diesel	10	131.9	169	2014	0.30	0.13	2.80	1.81	0.04	0.04	0.01	585.97	0	0.00	0.04
Truck	Diesel	1	280.0	181	2014	0.51	0.07	0.96	0.81	0.03	0.03	0.01	585.97	0	0.00	0.03
Yard tractor	LNG	158	200.2	1,265	2014	0.39	0.01	1.50	0.01	0.00	0.00	0.00	465.00	1	0.02	0.00
Forklift	Diesel	8	155.0	602	2014	0.30	0.20	3.04	1.89	0.05	0.04	0.01	585.97	0	0.00	0.05
Hybrid RTG	Electric	6	284.5	2,745	electric	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00
Rub-trd Gantry Crane	Electric	15	610.3	2,392	electric	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00
Top handler	Diesel	40	290.7	1,821	2014	0.59	0.23	1.27	0.95	0.05	0.04	0.01	585.97	0	0.00	0.05
Truck	Diesel	6	280.0	509	2014	0.51	0.10	1.02	0.84	0.03	0.03	0.01	585.97	0	0.00	0.03
Yard tractor	Diesel	30	158.0	1,302	2019	0.39	0.10	2.98	0.76	0.01	0.01	0.01	585.97	0	0.00	0.01
Total- All Fuel Types		**290**														

2022 equipment list and emission factors - FEIR Mitigated Scenario

							Emission Factors									
Equipment Type	Fuel Type	Count	Engine HP Average	Hours Average	odel Year Average	ad Factor	VOC g/hp-hr	CO g/hp-hr	NOX g/hp-hr	PM10 g/hp-hr	PM25 g/hp-hr	SOX g/hp-hr	CO2 g/hp-hr	CH4 g/hp-hr	N2O g/hp-hr	DPM g/hp-hr
Electric Wharf Crane	Electric	16	0.0	0	electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00
Forklift	Diesel	8	131.9	176	2014	0.30	0.13	2.81	1.82	0.04	0.04	0.01	585.97	0	0.00	0.04
Truck	Diesel	1	280.0	231	2014	0.51	0.08	0.97	0.82	0.03	0.03	0.01	585.97	0	0.00	0.03
Yard tractor	LNG	127	200.7	1,418	2014	0.39	0.01	1.50	0.01	0.00	0.00	0.00	465.00	1	0.02	0.00
Forklift	Diesel	8	155.0	545	2014	0.30	0.21	3.05	1.89	0.05	0.05	0.01	585.97	0	0.00	0.05
Hybrid RTG	Electric	6	284.5	3,017	electric	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00
Rub-trd Gantry Crane	Electric	14	610.3	2,351	electric	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00
Top handler	Diesel	39	291.6	1,969	2014	0.59	0.27	1.35	0.98	0.05	0.05	0.01	585.97	0	0.00	0.05
Truck	Diesel	6	280.0	489	2014	0.51	0.11	1.03	0.84	0.04	0.03	0.01	585.97	0	0.00	0.04
Yard tractor	Diesel	30	158.0	1,410	2019	0.39	0.12	3.10	0.77	0.01	0.01	0.01	585.97	0	0.00	0.01
Total- All Fuel Types		**255**														

2023 equipment list and emission factors - FEIR Mitigated Scenario

							Emission Factors									
Equipment Type	Fuel Type	Count	Engine HP Average	Hours Average	Model Year Average	Load Factor	VOC g/hp-hr	CO g/hp-hr	NOX g/hp-hr	PM10 g/hp-hr	PM25 g/hp-hr	SOX g/hp-hr	CO2 g/hp-hr	CH4 g/hp-hr	N2O g/hp-hr	DPM g/hp-hr
Electric Wharf Crane	Electric	16	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00
Electric Yard Tractor	Electric	6	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00
Forklift	Diesel	8	132	172	2014	0.30	0.13	2.82	1.82	0.04	0.04	0.01	585.97	0	0.00	0.04
Yard tractor	LNG	207	201	1,387	2014	0.39	0.01	1.50	0.01	0.00	0.00	0.00	465.00	1	0.02	0.00
Forklift	Diesel	8	155	534	2014	0.30	0.22	3.08	1.90	0.05	0.05	0.01	585.97	0	0.00	0.05
Hybrid RTG	Electric	10	292	2,007	electric	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00
Rub-trd Gantry Crane	Electric	10	580	2,217	electric	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00
Top handler	Diesel	39	294	1,927	2014	0.59	0.29	1.39	1.00	0.05	0.05	0.01	585.97	0	0.00	0.05
Truck	Diesel	6	350	762	2019	0.51	0.10	0.99	0.13	0.01	0.01	0.01	585.97	0	0.00	0.01
Yard tractor	Diesel	50	158	1,379	2019	0.39	0.14	3.19	0.78	0.01	0.01	0.01	585.97	0	0.00	0.01

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2026

2026 FEIR Mitigated 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 CS	Emission Controls (% reduction) PM	HC	CO
Electric wharf crane	0	0	Electric	0	16		0%	-	0%	0%	0%
Forklift	137	2014	Diesel	0.3	2		0%	152	0%	0%	0%
Forklift	152	2014	Diesel	0.3	1		0%	716	0%	0%	0%
Forklift	152	2014	Diesel	0.3	2		0%	2,478	0%	0%	0%
Forklift	160	2014	Diesel	0.3	1		0%	200	0%	0%	0%
Forklift	165	2014	Diesel	0.3	1		0%	188	0%	0%	0%
Forklift	190	2014	Diesel	0.3	1		0%	859	0%	0%	0%
Forklift	59	2014	Diesel	0.3	1		0%	224	0%	0%	0%
Forklift	59	2015	Diesel	0.3	1		0%	148	0%	0%	0%
Forklift	160	2014	Diesel	0.3	2		0%	200	0%	0%	0%
Forklift	160	2014	Diesel	0.3	2		0%	479	0%	0%	0%
Forklift	165	2014	Diesel	0.3	1		0%	32	0%	0%	0%
Forklift	165	2014	Diesel	0.3	1		0%	401	0%	0%	0%
Hybrid RTG	197	0	Electric	0.2	1		0%	1,771	0%	0%	0%
Hybrid RTG	302	0	Electric	0.2	4		0%	2,537	0%	0%	0%
Hybrid RTG	302	0	Electric	0.2	4		0%	13,395	0%	0%	0%
Hybrid RTG	302	0	Electric	0.2	1		0%	3,891	0%	0%	0%
Rub-trd Gantry Crane	454	0	Electric	0.2	2		0%	4,522	0%	0%	0%
Rub-trd Gantry Crane	612	0	Electric	0.2	8		0%	19,335	0%	0%	0%
Top handler	250	2014	Diesel	0.59	1		0%	1,657	0%	0%	0%
Top handler	260	2014	Diesel	0.59	5		0%	9,470	0%	0%	0%
Top handler	260	2014	Diesel	0.59	6		0%	10,821	0%	0%	0%
Top handler	260	2014	Diesel	0.59	14		0%	33,046	0%	0%	0%
Top handler	335	2011	Diesel	0.59	3		0%	7,563	0%	0%	0%
Top handler	363	2017	Diesel	0.59	6		0%	9,549	0%	0%	0%
Top handler	370	2014	Diesel	0.59	1		0%	1,587	0%	0%	0%
Top handler	388	2017	Diesel	0.59	2		0%	4,265	0%	0%	0%
Top handler	388	2021	Diesel	0.59	1		0%	2,901	0%	0%	0%
Truck	350	2026	Diesel	0.51	1		0%	820	0%	0%	0%
Yard tractor	158	2019	Diesel	0.39	30		0%	44,524	0%	0%	0%
Yard tractor	160	2021	Diesel	0.39	20		0%	-	0%	0%	0%
Yard tractor	0	0	Electric	0.39	6		0%	-	0%	0%	0%
Yard tractor	195	2026	LNG	0.39	16		0%	13,794	0%	0%	0%
Yard tractor	195	2026	LNG	0.39	54		0%	90,055	0%	0%	0%
Yard tractor	195	2026	LNG	0.39	37		0%	63,437	0%	0%	0%
Yard tractor	201	2021	LPG	0.39	80		0%	-	0%	0%	0%
Yard tractor	231	2026	LNG	0.39	20		0%	22,271	0%	0%	0%

Notes

NA: not available

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 China Shipping operations calculated by applying ratio

of China Shipping throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: September 2024

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 FEIR Mitigated Scenario - CHE Emission Factor

	Emission Factors (g/hp-hr)								
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**
2026_Electric wharf crane_Electric_0_0	-	-	-	-	-	-	-	-	-
2026_Forklift_Diesel_137_2014	0.123	2.788	1.809	0.042	0.039	0.005	585.973	0.024	0.005
2026_Forklift_Diesel_152_2014	0.517	4.019	2.209	0.074	0.068	0.005	585.973	0.024	0.005
2026_Forklift_Diesel_152_2014	0.517	4.019	2.209	0.074	0.068	0.005	585.973	0.024	0.005
2026_Forklift_Diesel_160_2014	0.168	2.927	1.854	0.046	0.042	0.005	585.973	0.024	0.005
2026_Forklift_Diesel_165_2014	0.163	2.913	1.850	0.045	0.042	0.005	585.973	0.024	0.005
2026_Forklift_Diesel_190_2014	0.221	1.252	0.937	0.045	0.042	0.005	585.973	0.024	0.005
2026_Forklift_Diesel_59_2014	0.199	3.339	2.673	0.046	0.042	0.005	527.088	0.021	0.004
2026_Forklift_Diesel_59_2015	0.162	3.226	2.634	0.038	0.035	0.005	527.088	0.021	0.004
2026_Forklift_Diesel_160_2014	0.215	3.074	1.902	0.050	0.046	0.005	585.973	0.024	0.005
2026_Forklift_Diesel_160_2014	0.215	3.074	1.902	0.050	0.046	0.005	585.973	0.024	0.005
2026_Forklift_Diesel_165_2014	0.230	3.124	1.918	0.051	0.047	0.005	585.973	0.024	0.005
2026_Forklift_Diesel_165_2014	0.230	3.124	1.918	0.051	0.047	0.005	585.973	0.024	0.005
2026_Hybrid RTG_Electric_197_0	-	-	-	-	-	-	-	-	-
2026_Hybrid RTG_Electric_302_0	-	-	-	-	-	-	-	-	-
2026_Hybrid RTG_Electric_302_0	-	-	-	-	-	-	-	-	-
2026_Hybrid RTG_Electric_302_0	-	-	-	-	-	-	-	-	-
2026_Rub-trd Gantry Crane_Electric_454_0	-	-	-	-	-	-	-	-	-
2026_Rub-trd Gantry Crane_Electric_612_0	-	-	-	-	-	-	-	-	-
2026_Top handler_Diesel_250_2014	0.377	1.560	1.070	0.060	0.055	0.005	585.973	0.024	0.005
2026_Top handler_Diesel_260_2014	0.506	1.815	1.180	0.071	0.066	0.005	585.973	0.024	0.005
2026_Top handler_Diesel_260_2014	0.506	1.815	1.180	0.071	0.066	0.005	585.973	0.024	0.005
2026_Top handler_Diesel_260_2014	0.506	1.815	1.180	0.071	0.066	0.005	585.973	0.024	0.005
2026_Top handler_Diesel_335_2011	1.032	1.825	1.933	0.135	0.124	0.005	585.973	0.024	0.005
2026_Top handler_Diesel_363_2017	0.306	1.294	0.279	0.035	0.032	0.005	585.973	0.024	0.005
2026_Top handler_Diesel_370_2014	0.363	1.379	1.231	0.063	0.058	0.005	585.973	0.024	0.005
2026_Top handler_Diesel_388_2017	0.374	1.395	0.295	0.039	0.036	0.005	585.973	0.024	0.005
2026_Top handler_Diesel_388_2021	0.315	1.307	0.161	0.015	0.014	0.005	585.973	0.024	0.005
2026_Truck_Diesel_350_2026	0.065	0.938	0.128	0.009	0.008	0.005	585.973	0.024	0.005
2026_Yard tractor_Diesel_158_2019	0.249	3.839	0.870	0.014	0.013	0.005	585.973	0.024	0.005
2026_Yard tractor_Diesel_160_2021	-	-	-	-	-	-	-	-	-
2026_Yard tractor_Electric_0_0	-	-	-	-	-	-	-	-	-
2026_Yard tractor_LNG_195_2026	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	0.020
2026_Yard tractor_LNG_195_2026	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	0.020
2026_Yard tractor_LNG_195_2026	0.0093	1.5	0.01	0.002	0.002	0	465	1	0.02
2026_Yard tractor_LPG_201_2021	0	0	0	0	0	0	0	0	0
2026_Yard tractor_LNG_231_2026	0.0093	1.5	0.01	0.002	0.002	0	465	1	0.02

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2036

2036 FEIR Mitigated 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 CS	Emission Controls (% reduction) PM	HC	CO
Electric wharf crane	0	0	Electric	0	16		0%	-	0%	0%	0%
Forklift	137	2030	Diesel	0.3	2		0%	107	0%	0%	0%
Forklift	152	2030	Diesel	0.3	1		0%	505	0%	0%	0%
Forklift	152	2030	Diesel	0.3	2		0%	1,749	0%	0%	0%
Forklift	160	2030	Diesel	0.3	1		0%	142	0%	0%	0%
Forklift	165	2030	Diesel	0.3	1		0%	133	0%	0%	0%
Forklift	190	2030	Diesel	0.3	1		0%	606	0%	0%	0%
Forklift	59	2030	Diesel	0.3	1		0%	158	0%	0%	0%
Forklift	59	2031	Diesel	0.3	1		0%	105	0%	0%	0%
Forklift	160	2030	Diesel	0.3	2		0%	142	0%	0%	0%
Forklift	160	2030	Diesel	0.3	2		0%	338	0%	0%	0%
Forklift	165	2030	Diesel	0.3	1		0%	23	0%	0%	0%
Forklift	165	2030	Diesel	0.3	1		0%	283	0%	0%	0%
Hybrid RTG	197	0	Electric	0.2	1		0%	1,250	0%	0%	0%
Hybrid RTG	302	0	Electric	0.2	4		0%	1,791	0%	0%	0%
Hybrid RTG	302	0	Electric	0.2	4		0%	9,455	0%	0%	0%
Hybrid RTG	302	0	Electric	0.2	1		0%	2,746	0%	0%	0%
Rub-trd Gantry Crane	454	0	Electric	0.2	2		0%	3,192	0%	0%	0%
Rub-trd Gantry Crane	612	0	Electric	0.2	8		0%	13,649	0%	0%	0%
Top handler	250	2030	Diesel	0.59	1		0%	1,170	0%	0%	0%
Top handler	260	2030	Diesel	0.59	5		0%	6,685	0%	0%	0%
Top handler	260	2030	Diesel	0.59	6		0%	7,638	0%	0%	0%
Top handler	260	2030	Diesel	0.59	14		0%	23,327	0%	0%	0%
Top handler	335	2027	Diesel	0.59	3		0%	5,338	0%	0%	0%
Top handler	363	2033	Diesel	0.59	6		0%	6,740	0%	0%	0%
Top handler	370	2030	Diesel	0.59	1		0%	1,120	0%	0%	0%
Top handler	388	2033	Diesel	0.59	2		0%	3,010	0%	0%	0%
Top handler	388	2021	Diesel	0.59	1		0%	2,047	0%	0%	0%
Truck	350	2026	Diesel	0.51	1		0%	579	0%	0%	0%
Yard tractor	158	2031	Diesel	0.39	30		0%	31,429	0%	0%	0%
Yard tractor	160	2033	Diesel	0.39	20		0%	-	0%	0%	0%
Yard tractor	0	0	Electric	0.39	6		0%	-	0%	0%	0%
Yard tractor	195	2026	LNG	0.39	16		0%	9,737	0%	0%	0%
Yard tractor	195	2026	LNG	0.39	54		0%	63,569	0%	0%	0%
Yard tractor	195	2026	LNG	0.39	37		0%	44,779	0%	0%	0%
Yard tractor	201	2033	LPG	0.39	80		0%	-	0%	0%	0%
Yard tractor	231	2026	LNG	0.39	20		0%	15,721	0%	0%	0%

Notes

NA: not available

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 China Shipping operations calculated by applying ratio

of China Shipping throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: September 2024

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 FEIR Mitigated Scenario - CHE Emission Factor

	Emission Factors (g/hp-hr)								
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**
2036_Electric wharf crane_Electric_0_0	-	-	-	-	-	-	-	-	-
2036_Forklift_Diesel_137_2030	0.061	2.747	0.123	0.008	0.008	0.005	585.973	0.024	0.005
2036_Forklift_Diesel_152_2030	0.175	3.410	0.138	0.012	0.011	0.005	585.973	0.024	0.005
2036_Forklift_Diesel_152_2030	0.175	3.410	0.138	0.012	0.011	0.005	585.973	0.024	0.005
2036_Forklift_Diesel_160_2030	0.074	2.822	0.125	0.009	0.008	0.005	585.973	0.024	0.005
2036_Forklift_Diesel_165_2030	0.072	2.815	0.125	0.009	0.008	0.005	585.973	0.024	0.005
2036_Forklift_Diesel_190_2030	0.143	1.099	0.126	0.011	0.010	0.005	585.973	0.024	0.005
2036_Forklift_Diesel_59_2030	0.156	3.205	2.686	0.014	0.013	0.005	527.088	0.021	0.004
2036_Forklift_Diesel_59_2031	0.134	3.138	2.657	0.013	0.012	0.005	527.088	0.021	0.004
2036_Forklift_Diesel_160_2030	0.087	2.902	0.127	0.009	0.009	0.005	585.973	0.024	0.005
2036_Forklift_Diesel_160_2030	0.087	2.902	0.127	0.009	0.009	0.005	585.973	0.024	0.005
2036_Forklift_Diesel_165_2030	0.092	2.928	0.128	0.009	0.009	0.005	585.973	0.024	0.005
2036_Forklift_Diesel_165_2030	0.092	2.928	0.128	0.009	0.009	0.005	585.973	0.024	0.005
2036_Hybrid RTG_Electric_197_0	-	-	-	-	-	-	-	-	-
2036_Hybrid RTG_Electric_302_0	-	-	-	-	-	-	-	-	-
2036_Hybrid RTG_Electric_302_0	-	-	-	-	-	-	-	-	-
2036_Hybrid RTG_Electric_302_0	-	-	-	-	-	-	-	-	-
2036_Rub-trd Gantry Crane_Electric_454_0	-	-	-	-	-	-	-	-	-
2036_Rub-trd Gantry Crane_Electric_612_0	-	-	-	-	-	-	-	-	-
2036_Top handler_Diesel_250_2030	0.227	1.264	0.136	0.013	0.012	0.005	585.973	0.024	0.005
2036_Top handler_Diesel_260_2030	0.297	1.402	0.145	0.015	0.013	0.005	585.973	0.024	0.005
2036_Top handler_Diesel_260_2030	0.297	1.402	0.145	0.015	0.013	0.005	585.973	0.024	0.005
2036_Top handler_Diesel_260_2030	0.297	1.402	0.145	0.015	0.013	0.005	585.973	0.024	0.005
2036_Top handler_Diesel_335_2027	0.435	1.485	0.178	0.018	0.017	0.005	585.973	0.024	0.005
2036_Top handler_Diesel_363_2033	0.154	1.069	0.140	0.011	0.010	0.005	585.973	0.024	0.005
2036_Top handler_Diesel_370_2030	0.220	1.167	0.149	0.013	0.012	0.005	585.973	0.024	0.005
2036_Top handler_Diesel_388_2033	0.181	1.110	0.143	0.012	0.011	0.005	585.973	0.024	0.005
2036_Top handler_Diesel_388_2021	0.751	1.952	0.220	0.026	0.024	0.005	585.973	0.024	0.005
2036_Truck_Diesel_350_2026	0.188	1.121	0.144	0.012	0.011	0.005	585.973	0.024	0.005
2036_Yard tractor_Diesel_158_2031	0.200	3.554	0.142	0.013	0.012	0.005	585.973	0.024	0.005
2036_Yard tractor_Diesel_160_2033	-	-	-	-	-	-	-	-	-
2036_Yard tractor_Electric_0_0	-	-	-	-	-	-	-	-	-
2036_Yard tractor_LNG_195_2026	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	0.020
2036_Yard tractor_LNG_195_2026	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	0.020
2036_Yard tractor_LNG_195_2026	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	0.020
2036_Yard tractor_LPG_201_2033	-	-	-	-	-	-	-	-	-
2036_Yard tractor_LNG_231_2026	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	0.020

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2045

2045 FEIR Mitigated 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 CS	Emission Controls (% reduction) PM	HC	CO
Electric wharf crane	0	0	Electric	0	16		0%	-	0%	0%	0%
Forklift	137	2030	Diesel	0.3	2		0%	94	0%	0%	0%
Forklift	152	2030	Diesel	0.3	1		0%	442	0%	0%	0%
Forklift	152	2030	Diesel	0.3	2		0%	1,529	0%	0%	0%
Forklift	160	2030	Diesel	0.3	1		0%	124	0%	0%	0%
Forklift	165	2030	Diesel	0.3	1		0%	116	0%	0%	0%
Forklift	190	2030	Diesel	0.3	1		0%	530	0%	0%	0%
Forklift	59	2030	Diesel	0.3	1		0%	138	0%	0%	0%
Forklift	59	2031	Diesel	0.3	1		0%	91	0%	0%	0%
Forklift	160	2030	Diesel	0.3	2		0%	124	0%	0%	0%
Forklift	160	2030	Diesel	0.3	2		0%	296	0%	0%	0%
Forklift	165	2030	Diesel	0.3	1		0%	20	0%	0%	0%
Forklift	165	2030	Diesel	0.3	1		0%	247	0%	0%	0%
Hybrid RTG	197	0	Electric	0.2	1		0%	1,093	0%	0%	0%
Hybrid RTG	302	0	Electric	0.2	4		0%	1,565	0%	0%	0%
Hybrid RTG	302	0	Electric	0.2	4		0%	8,262	0%	0%	0%
Hybrid RTG	302	0	Electric	0.2	1		0%	2,400	0%	0%	0%
Rub-trd Gantry Crane	454	0	Electric	0.2	2		0%	2,789	0%	0%	0%
Rub-trd Gantry Crane	612	0	Electric	0.2	8		0%	11,925	0%	0%	0%
Top handler	250	2030	Diesel	0.59	1		0%	1,022	0%	0%	0%
Top handler	260	2030	Diesel	0.59	5		0%	5,841	0%	0%	0%
Top handler	260	2030	Diesel	0.59	6		0%	6,674	0%	0%	0%
Top handler	260	2030	Diesel	0.59	14		0%	20,382	0%	0%	0%
Top handler	335	2043	Diesel	0.59	3		0%	4,664	0%	0%	0%
Top handler	363	2033	Diesel	0.59	6		0%	5,889	0%	0%	0%
Top handler	370	2030	Diesel	0.59	1		0%	979	0%	0%	0%
Top handler	388	2033	Diesel	0.59	2		0%	2,630	0%	0%	0%
Top handler	388	2037	Diesel	0.59	1		0%	1,789	0%	0%	0%
Truck	350	2038	Diesel	0.51	1		0%	506	0%	0%	0%
Yard tractor	158	2043	Diesel	0.39	30		0%	27,461	0%	0%	0%
Yard tractor	160	2045	Diesel	0.39	20		0%	-	0%	0%	0%
Yard tractor	0	0	Electric	0.39	6		0%	-	0%	0%	0%
Yard tractor	195	2038	LNG	0.39	16		0%	8,508	0%	0%	0%
Yard tractor	195	2038	LNG	0.39	54		0%	55,542	0%	0%	0%
Yard tractor	195	2038	LNG	0.39	37		0%	39,125	0%	0%	0%
Yard tractor	201	2045	LPG	0.39	80		0%	-	0%	0%	0%
Yard tractor	231	2038	LNG	0.39	20		0%	13,736	0%	0%	0%

Notes

NA: not available

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 China Shipping operations calculated by applying ratio
of China Shipping throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: September 2024

Emissions Control Data

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

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

2045 FEIR Mitigated Scenario - CHE Emission Factor

	Emission Factors (g/hp-hr)								
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**
2045_Electric wharf crane_Electric_0_0	-	-	-	-	-	-	-	-	-
2045_Forklift_Diesel_137_2030	0.071	2.808	0.125	0.009	0.008	0.005	585.973	0.024	0.005
2045_Forklift_Diesel_152_2030	0.333	4.324	0.159	0.017	0.016	0.005	585.973	0.024	0.005
2045_Forklift_Diesel_152_2030	0.333	4.324	0.159	0.017	0.016	0.005	585.973	0.024	0.005
2045_Forklift_Diesel_160_2030	0.101	2.980	0.129	0.010	0.009	0.005	585.973	0.024	0.005
2045_Forklift_Diesel_165_2030	0.098	2.963	0.128	0.010	0.009	0.005	585.973	0.024	0.005
2045_Forklift_Diesel_190_2030	0.260	1.328	0.140	0.014	0.013	0.005	585.973	0.024	0.005
2045_Forklift_Diesel_59_2030	0.221	3.405	2.770	0.017	0.015	0.005	527.088	0.021	0.004
2045_Forklift_Diesel_59_2031	0.177	3.270	2.713	0.015	0.014	0.005	527.088	0.021	0.004
2045_Forklift_Diesel_160_2030	0.132	3.161	0.133	0.011	0.010	0.005	585.973	0.024	0.005
2045_Forklift_Diesel_160_2030	0.132	3.161	0.133	0.011	0.010	0.005	585.973	0.024	0.005
2045_Forklift_Diesel_165_2030	0.143	3.222	0.134	0.011	0.010	0.005	585.973	0.024	0.005
2045_Forklift_Diesel_165_2030	0.143	3.222	0.134	0.011	0.010	0.005	585.973	0.024	0.005
2045_Hybrid RTG_Electric_197_0	-	-	-	-	-	-	-	-	-
2045_Hybrid RTG_Electric_302_0	-	-	-	-	-	-	-	-	-
2045_Hybrid RTG_Electric_302_0	-	-	-	-	-	-	-	-	-
2045_Hybrid RTG_Electric_302_0	-	-	-	-	-	-	-	-	-
2045_Rub-trd Gantry Crane_Electric_454_0	-	-	-	-	-	-	-	-	-
2045_Rub-trd Gantry Crane_Electric_612_0	-	-	-	-	-	-	-	-	-
2045_Top handler_Diesel_250_2030	0.452	1.707	0.164	0.018	0.017	0.005	585.973	0.024	0.005
2045_Top handler_Diesel_260_2030	0.611	2.022	0.183	0.022	0.021	0.005	585.973	0.024	0.005
2045_Top handler_Diesel_260_2030	0.611	2.022	0.183	0.022	0.021	0.005	585.973	0.024	0.005
2045_Top handler_Diesel_260_2030	0.611	2.022	0.183	0.022	0.021	0.005	585.973	0.024	0.005
2045_Top handler_Diesel_335_2043	0.167	1.090	0.142	0.011	0.010	0.005	585.973	0.024	0.005
2045_Top handler_Diesel_363_2033	0.381	1.406	0.170	0.017	0.015	0.005	585.973	0.024	0.005
2045_Top handler_Diesel_370_2030	0.435	1.485	0.178	0.018	0.017	0.005	585.973	0.024	0.005
2045_Top handler_Diesel_388_2033	0.471	1.538	0.182	0.019	0.017	0.005	585.973	0.024	0.005
2045_Top handler_Diesel_388_2037	0.446	1.501	0.179	0.018	0.017	0.005	585.973	0.024	0.005
2045_Truck_Diesel_350_2038	0.151	1.066	0.139	0.011	0.010	0.005	585.973	0.024	0.005
2045_Yard tractor_Diesel_158_2043	0.126	3.127	0.132	0.011	0.010	0.005	585.973	0.024	0.005
2045_Yard tractor_Diesel_160_2045	-	-	-	-	-	-	-	-	-
2045_Yard tractor_Electric_0_0	-	-	-	-	-	-	-	-	-
2045_Yard tractor_LNG_195_2038	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	0.020
2045_Yard tractor_LNG_195_2038	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	0.020
2045_Yard tractor_LNG_195_2038	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	0.020
2045_Yard tractor_LPG_201_2045	-	-	-	-	-	-	-	-	-
2045_Yard tractor_LNG_231_2038	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	0.020

CHE Peaking Factors - All Years and Scenarios

Year	Scenario	DayToYear Peaking Factor	DayTo8hr Peaking Factor	DayTo1hr Peaking Factor
2008	Baseline	234	0.619	0.089
2012	Revised Project	250	0.492	0.070
2012	FEIR Mitigated	250	0.492	0.070
2014	Revised Project	241	0.490	0.070
2014	FEIR Mitigated	241	0.490	0.070
2018	Revised Project	245	0.528	0.081
2018	FEIR Mitigated	245	0.528	0.081
2019	Revised Project	245	0.531	0.078
2019	FEIR Mitigated	245	0.531	0.078
2020	Revised Project	248	0.556	0.080
2020	FEIR Mitigated	248	0.556	0.080
2021	Revised Project	250	0.554	0.085
2021	FEIR Mitigated	250	0.554	0.085
2022	Revised Project	246	0.542	0.083
2022	FEIR Mitigated	246	0.542	0.083
2023	Revised Project	245	0.575	0.081
2023	FEIR Mitigated	245	0.575	0.081
2026	Revised Project	253	0.530	0.074
2026	FEIR Mitigated	253	0.530	0.074
2036	Revised Project	253	0.530	0.074
2036	FEIR Mitigated	253	0.530	0.074
2045	Revised Project	253	0.530	0.074
2045	FEIR Mitigated	253	0.530	0.074

Ocean-Going Vessels (OGVs)

2008, 2012 and 2014 Ocean Going Vessel Criteria Pollutant Emission Factors by Tier Level For Main Engines and Boilers - All Scenarios

Main Engine, Gas Turbine and Boilers	IMO Tier	Model Year	PM10	PM2.5	DPM	NOx	SOx	CO	HC
			gm/kw-hr	gm/kw-hr	gm/kw-hr	gm/kw-hr	gm/kw-hr	gm/kw-hr	gm/kw-hr
MDO/MGO 0.1% Sulfur									
Slow speed diesel	Tier 0	≤ 1999	0.26	0.24	0.26	17.0	0.39	1.4	0.6
Medium speed diesel	Tier 0	≤ 1999	0.26	0.24	0.26	13.2	0.43	1.1	0.5
Slow speed diesel	Tier 1	2000 – 2010	0.26	0.24	0.26	16.0	0.39	1.4	0.6
Medium speed diesel	Tier 1	2000 – 2010	0.26	0.24	0.26	12.2	0.43	1.1	0.5
Slow speed diesel	Tier 2	2011 – 2015	0.26	0.24	0.26	14.4	0.39	1.4	0.6
Medium speed diesel	Tier 2	2011 – 2015	0.26	0.24	0.26	10.5	0.43	1.1	0.5
Slow speed diesel	Tier 3	≥ 2016	0.26	0.24	0.26	3.4	0.39	1.4	0.6
Medium speed diesel	Tier 3	≥ 2016	0.26	0.24	0.26	2.6	0.43	1.1	0.5
Gas turbine	na	all	0.01	0.01	0.00	5.7	0.61	0.2	0.1
Steamship	na	all	0.14	0.13	0.00	2.0	0.61	0.2	0.1
MDO/MGO 0.08% Sulfur									
Slow speed diesel	Tier 0	≤ 1999	0.255	0.228	0.255	17.0	0.315	1.4	0.6
Medium speed diesel	Tier 0	≤ 1999	0.255	0.228	0.255	13.2	0.345	1.1	0.5
Slow speed diesel	Tier 1	2000 – 2010	0.255	0.228	0.255	16.0	0.315	1.4	0.6
Medium speed diesel	Tier 1	2000 – 2010	0.255	0.228	0.255	12.2	0.345	1.1	0.5
Slow speed diesel	Tier 2	2011 – 2015	0.255	0.228	0.255	14.4	0.315	1.4	0.6
Medium speed diesel	Tier 2	2011 – 2015	0.255	0.228	0.255	10.5	0.345	1.1	0.5
Slow speed diesel	Tier 3	≥ 2016	0.255	0.228	0.255	3.4	0.315	1.4	0.6
Medium speed diesel	Tier 3	≥ 2016	0.255	0.228	0.255	2.6	0.345	1.1	0.5
Gas turbine	na	all	0.01	0.01	0.000	5.7	0.495	0.2	0.1
Steamship	na	all	0.14	0.12	0.000	2.0	0.495	0.2	0.1
MDO/MGO 0.05% Sulfur									
Slow speed diesel	Tier 0	≤ 1999	0.240	0.216	0.240	17.0	0.200	1.4	0.6
Medium speed diesel	Tier 0	≤ 1999	0.240	0.216	0.240	13.2	0.220	1.1	0.5
Slow speed diesel	Tier 1	2000 – 2010	0.240	0.216	0.240	16.0	0.200	1.4	0.6
Medium speed diesel	Tier 1	2000 – 2010	0.240	0.216	0.240	12.2	0.220	1.1	0.5
Slow speed diesel	Tier 2	2011 – 2015	0.240	0.216	0.240	14.4	0.200	1.4	0.6
Medium speed diesel	Tier 2	2011 – 2015	0.240	0.216	0.240	10.5	0.220	1.1	0.5
Slow speed diesel	Tier 3	≥ 2016	0.240	0.216	0.240	3.4	0.200	1.4	0.6
Medium speed diesel	Tier 3	≥ 2016	0.240	0.216	0.240	2.6	0.220	1.1	0.5
Gas turbine	na	all	0.008	0.007	0.000	5.7	0.310	0.2	0.1
Steamship	na	all	0.128	0.115	0.000	2.0	0.310	0.2	0.1
MDO/MGO 0.04% Sulfur									
Slow speed diesel	Tier 0	≤ 1999	0.240	0.216	0.240	17.0	0.160	1.4	0.6
Medium speed diesel	Tier 0	≤ 1999	0.240	0.216	0.240	13.2	0.170	1.1	0.5
Slow speed diesel	Tier 1	2000 – 2010	0.240	0.216	0.240	16.0	0.160	1.4	0.6
Medium speed diesel	Tier 1	2000 – 2010	0.240	0.216	0.240	12.2	0.170	1.1	0.5
Slow speed diesel	Tier 2	2011 – 2015	0.240	0.216	0.240	14.4	0.160	1.4	0.6
Medium speed diesel	Tier 2	2011 – 2015	0.240	0.216	0.240	10.5	0.170	1.1	0.5
Slow speed diesel	Tier 3	≥ 2016	0.240	0.216	0.240	3.4	0.160	1.4	0.6
Medium speed diesel	Tier 3	≥ 2016	0.240	0.216	0.240	2.6	0.170	1.1	0.5
Gas turbine	na	all	0.008	0.007	0.000	5.7	0.250	0.2	0.1
Steamship	na	all	0.128	0.115	0.000	2.0	0.250	0.2	0.1
MDO/MGO 0.03% Sulfur									
Slow speed diesel	Tier 0	≤ 1999	0.240	0.216	0.240	17.0	0.116	1.4	0.6
Medium speed diesel	Tier 0	≤ 1999	0.240	0.216	0.240	13.2	0.127	1.1	0.5
Slow speed diesel	Tier 1	2000 – 2010	0.240	0.216	0.240	16.0	0.116	1.4	0.6
Medium speed diesel	Tier 1	2000 – 2010	0.240	0.216	0.240	12.2	0.127	1.1	0.5
Slow speed diesel	Tier 2	2011 – 2015	0.240	0.216	0.240	14.4	0.116	1.4	0.6
Medium speed diesel	Tier 2	2011 – 2015	0.240	0.216	0.240	10.5	0.127	1.1	0.5
Slow speed diesel	Tier 3	≥ 2016	0.240	0.216	0.240	3.4	0.116	1.4	0.6
Medium speed diesel	Tier 3	≥ 2016	0.240	0.216	0.240	2.6	0.127	1.1	0.5
Gas turbine	na	all	0.008	0.01	0.000	5.7	0.182	0.2	0.1
Steamship	na	all	0.128	0.12	0.000	2.0	0.182	0.2	0.1

Source: https://kentico.portoflosangeles.org/getmedia/8066ecf3-86a1-4fa8-b1c9-f9726b92be67/2014_air_emissions_inventory_full_report

2008, 2012 and 2014 Ocean Going Vessel Greenhouse Gas Emission Factors by Tier Level for Main Engine and Boilers - All Scenarios

Main Engine, Gas Turbine and Boilers

MDO/MGO 0.1%, 0.05%, 0.04% and 0.03% Sulfur

	IMO Tier	Model Year	CO2 gm/kw-hr	N2O gm/kw-hr	CH4 gm/kw-hr
Slow speed diesel	Tier 0	≤ 1999	589	0.029	0.012
Medium speed diesel	Tier 0	≤ 1999	649	0.029	0.01
Slow speed diesel	Tier 1	2000 – 2010	589	0.029	0.012
Medium speed diesel	Tier 1	2000 – 2010	649	0.029	0.01
Slow speed diesel	Tier 2	2011 – 2015	589	0.029	0.012
Medium speed diesel	Tier 2	2011 – 2015	649	0.029	0.01
Slow speed diesel	Tier 3	≥ 2016	589	0.029	0.012
Medium speed diesel	Tier 3	≥ 2016	649	0.029	0.01
Gas turbine	na	all	922	0.075	0.002
Steamship	na	all	922	0.075	0.002

Source: https://kentico.portoflosangeles.org/getmedia/8066ecf3-86a1-4fa8-b1c9-f9726b92be67/2014_air_emissions_inventory_full_report

2008, 2012, 2014 Ocean Going Vessel Criteria Emission Factors by Tier Level for Axiliary Engines - All Scenarios

Auxiliary Engine	IMO Tier	Model Year	PM10	PM2.5	DPM	NOx	SOx	CO	HC
			gm/kw-hr	gm/kw-hr	gm/kw-hr	gm/kw-hr	gm/kw-hr	gm/kw-hr	gm/kw-hr
MDO/MGO 0.1% Sulfur									
High speed diesel	Tier 0	≤ 1999	0.26	0.24	0.26	10.90	0.46	0.90	0.40
Medium speed diesel	Tier 0	≤ 1999	0.26	0.24	0.26	13.80	0.46	1.10	0.40
High speed diesel	Tier 1	2000 – 2010	0.26	0.24	0.26	9.80	0.46	0.90	0.40
Medium speed diesel	Tier 1	2000 – 2010	0.26	0.24	0.26	12.20	0.46	1.10	0.40
High speed diesel	Tier 2	2011 – 2015	0.26	0.24	0.26	7.70	0.46	0.90	0.40
Medium speed diesel	Tier 2	2011 – 2015	0.26	0.24	0.26	10.50	0.46	1.10	0.40
High speed diesel	Tier 3	≥ 2016	0.26	0.24	0.26	2.00	0.46	0.90	0.40
Medium speed diesel	Tier 3	≥ 2016	0.26	0.24	0.26	2.60	0.46	1.10	0.40
MDO/MGO 0.08% Sulfur									
High speed diesel	Tier 0	≤ 1999	0.255	0.228	0.255	10.9	0.369	0.9	0.4
Medium speed diesel	Tier 0	≤ 1999	0.255	0.228	0.255	13.8	0.369	1.1	0.4
High speed diesel	Tier 1	2000 – 2010	0.255	0.228	0.255	9.8	0.369	0.9	0.4
Medium speed diesel	Tier 1	2000 – 2010	0.255	0.228	0.255	12.2	0.369	1.1	0.4
High speed diesel	Tier 2	2011 – 2015	0.255	0.228	0.255	7.7	0.369	0.9	0.4
Medium speed diesel	Tier 2	2011 – 2015	0.255	0.228	0.255	10.5	0.369	1.1	0.4
High speed diesel	Tier 3	≥ 2016	0.255	0.228	0.255	2.0	0.369	0.9	0.4
Medium speed diesel	Tier 3	≥ 2016	0.255	0.228	0.255	2.6	0.369	1.1	0.4
MDO/MGO 0.05% Sulfur									
High speed diesel	Tier 0	≤ 1999	0.240	0.216	0.240	10.9	0.234	0.9	0.4
Medium speed diesel	Tier 0	≤ 1999	0.24	0.216	0.240	13.8	0.234	1.1	0.4
High speed diesel	Tier 1	2000 – 2010	0.24	0.216	0.240	9.8	0.234	0.9	0.4
Medium speed diesel	Tier 1	2000 – 2010	0.24	0.216	0.240	12.2	0.234	1.1	0.4
High speed diesel	Tier 2	2011 – 2015	0.24	0.216	0.240	7.7	0.234	0.9	0.4
Medium speed diesel	Tier 2	2011 – 2015	0.24	0.216	0.240	10.5	0.234	1.1	0.4
High speed diesel	Tier 3	≥ 2016	0.24	0.216	0.240	2.0	0.234	0.9	0.4
Medium speed diesel	Tier 3	≥ 2016	0.24	0.216	0.240	2.6	0.234	1.1	0.4
MDO/MGO 0.04% Sulfur									
High speed diesel	Tier 0	≤ 1999	0.240	0.216	0.240	10.9	0.185	0.9	0.4
Medium speed diesel	Tier 0	≤ 1999	0.24	0.216	0.240	13.8	0.185	1.1	0.4
High speed diesel	Tier 1	2000 – 2010	0.24	0.216	0.240	9.8	0.185	0.9	0.4
Medium speed diesel	Tier 1	2000 – 2010	0.24	0.216	0.240	12.2	0.185	1.1	0.4
High speed diesel	Tier 2	2011 – 2015	0.24	0.216	0.240	7.7	0.185	0.9	0.4
Medium speed diesel	Tier 2	2011 – 2015	0.24	0.216	0.240	10.5	0.185	1.1	0.4
High speed diesel	Tier 3	≥ 2016	0.24	0.216	0.240	2.0	0.185	0.9	0.4
Medium speed diesel	Tier 3	≥ 2016	0.24	0.216	0.240	2.6	0.185	1.1	0.4
MDO/MGO 0.03% Sulfur									
High speed diesel	Tier 0	≤ 1999	0.240	0.216	0.240	10.9	0.135	0.9	0.4
Medium speed diesel	Tier 0	≤ 1999	0.24	0.216	0.240	13.8	0.135	1.1	0.4
High speed diesel	Tier 1	2000 – 2010	0.24	0.216	0.240	9.8	0.135	0.9	0.4
Medium speed diesel	Tier 1	2000 – 2010	0.24	0.216	0.240	12.2	0.135	1.1	0.4
High speed diesel	Tier 2	2011 – 2015	0.24	0.216	0.240	7.7	0.135	0.9	0.4
Medium speed diesel	Tier 2	2011 – 2015	0.24	0.216	0.240	10.5	0.135	1.1	0.4
High speed diesel	Tier 3	≥ 2016	0.24	0.216	0.240	2.0	0.135	0.9	0.4
Medium speed diesel	Tier 3	≥ 2016	0.24	0.216	0.240	2.6	0.135	1.1	0.4

Source: https://kentico.portoflosangeles.org/getmedia/8066ecf3-86a1-4fa8-b1c9-f9726b92be67/2014_air_emissions_inventory_full_report

2008, 2012, 2014 Ocean Going Vessel Criteria Emission Factors by Tier Level for Axiliary Engines - All Scenarios

MDO/MGO 0.1%, 0.05%, 0.04% and 0.03% Sulfur

Auxiliary Engine	IMO Tier	Model Year	CO2 gm/kw-hr	N2O gm/kw-hr	CH4 gm/kw-
MDO/MGO 0.1%, 0.05%, 0.04% and 0.03% Sulfur					
High speed diesel	Tier 0	≤ 1999	656	0.029	0.008
Medium speed diesel	Tier 0	≤ 1999	686	0.029	0.008
High speed diesel	Tier 1	2000 – 2010	656	0.029	0.008
Medium speed diesel	Tier 1	2000 – 2010	686	0.029	0.008
High speed diesel	Tier 2	2011 – 2015	656	0.029	0.008
Medium speed diesel	Tier 2	2011 – 2015	686	0.029	0.008
High speed diesel	Tier 3	≥ 2016	656	0.029	0.008
Medium speed diesel	Tier 3	≥ 2016	686	0.029	0.008

Source: https://kentico.portoflosangeles.org/getmedia/8066ecf3-86a1-4fa8-b1c9-f9726b92be67/2014_air_emissions_inventory_full_report

2008, 2012, 2014 Emission Rates Adjustment Factors for MAN Propulsion Engine without Slide Valves

MAN Engines without Slide Valves										
Load	PM	PM2.5	DPM	NOx	SOx	HC	CO	CH4	CO2	N2O
2%	0.83	0.83	0.83	1.86	1.00	2.45	1.36	2.45	1.00	1.86
3%	0.83	0.83	0.83	1.82	1.00	2.37	1.34	2.37	1.00	1.82
4%	0.82	0.82	0.82	1.77	1.00	2.30	1.33	2.30	1.00	1.77
5%	0.82	0.82	0.82	1.72	1.00	2.23	1.31	2.23	1.00	1.72
6%	0.81	0.81	0.81	1.68	1.00	2.16	1.29	2.16	1.00	1.68
7%	0.81	0.81	0.81	1.64	1.00	2.10	1.28	2.10	1.00	1.64
8%	0.80	0.80	0.80	1.60	1.00	2.03	1.26	2.03	1.00	1.60
9%	0.80	0.80	0.80	1.56	1.00	1.97	1.25	1.97	1.00	1.56
10%	0.79	0.79	0.79	1.52	1.00	1.91	1.24	1.91	1.00	1.52
11%	0.79	0.79	0.79	1.49	1.00	1.86	1.22	1.86	1.00	1.49
12%	0.78	0.78	0.78	1.45	1.00	1.80	1.21	1.80	1.00	1.45
13%	0.78	0.78	0.78	1.42	1.00	1.75	1.20	1.75	1.00	1.42
14%	0.78	0.78	0.78	1.39	1.00	1.70	1.19	1.70	1.00	1.39
15%	0.77	0.77	0.77	1.36	1.00	1.65	1.18	1.65	1.00	1.36
16%	0.77	0.77	0.77	1.33	1.00	1.61	1.17	1.61	1.00	1.33
17%	0.77	0.77	0.77	1.30	1.00	1.56	1.16	1.56	1.00	1.30
18%	0.77	0.77	0.77	1.28	1.00	1.52	1.15	1.52	1.00	1.28
19%	0.76	0.76	0.76	1.25	1.00	1.48	1.14	1.48	1.00	1.25
20%	0.76	0.76	0.76	1.23	1.00	1.44	1.13	1.44	1.00	1.23
21%	0.76	0.76	0.76	1.20	1.00	1.41	1.13	1.41	1.00	1.20
22%	0.76	0.76	0.76	1.18	1.00	1.37	1.12	1.37	1.00	1.18
23%	0.76	0.76	0.76	1.16	1.00	1.34	1.11	1.34	1.00	1.16
24%	0.75	0.75	0.75	1.14	1.00	1.31	1.10	1.31	1.00	1.14
25%	0.75	0.75	0.75	1.12	1.00	1.28	1.10	1.28	1.00	1.12
26%	0.75	0.75	0.75	1.11	1.00	1.25	1.09	1.25	1.00	1.11
27%	0.75	0.75	0.75	1.09	1.00	1.22	1.08	1.22	1.00	1.09
28%	0.75	0.75	0.75	1.07	1.00	1.20	1.08	1.20	1.00	1.07
29%	0.75	0.75	0.75	1.06	1.00	1.17	1.07	1.17	1.00	1.06
30%	0.75	0.75	0.75	1.05	1.00	1.15	1.07	1.15	1.00	1.05
31%	0.75	0.75	0.75	1.03	1.00	1.13	1.06	1.13	1.00	1.03
32%	0.75	0.75	0.75	1.02	1.00	1.11	1.06	1.11	1.00	1.02
33%	0.75	0.75	0.75	1.01	1.00	1.09	1.05	1.09	1.00	1.01
34%	0.75	0.75	0.75	1.00	1.00	1.08	1.05	1.08	1.00	1.00
35%	0.76	0.76	0.76	0.99	1.00	1.06	1.04	1.06	1.00	0.99
36%	0.76	0.76	0.76	0.98	1.00	1.05	1.04	1.05	1.00	0.98
37%	0.76	0.76	0.76	0.98	1.00	1.04	1.03	1.04	1.00	0.98
38%	0.76	0.76	0.76	0.97	1.00	1.02	1.03	1.02	1.00	0.97
39%	0.76	0.76	0.76	0.96	1.00	1.01	1.02	1.01	1.00	0.96
40%	0.76	0.76	0.76	0.96	1.00	1.00	1.02	1.00	1.00	0.96
41%	0.77	0.77	0.77	0.95	1.00	0.99	1.01	0.99	1.00	0.95
42%	0.77	0.77	0.77	0.95	1.00	0.99	1.01	0.99	1.00	0.95
43%	0.77	0.77	0.77	0.94	1.00	0.98	1.01	0.98	1.00	0.94
44%	0.78	0.78	0.78	0.94	1.00	0.97	1.00	0.97	1.00	0.94
45%	0.78	0.78	0.78	0.94	1.00	0.97	1.00	0.97	1.00	0.94
46%	0.78	0.78	0.78	0.94	1.00	0.96	0.99	0.96	1.00	0.94
47%	0.79	0.79	0.79	0.94	1.00	0.96	0.99	0.96	1.00	0.94
48%	0.79	0.79	0.79	0.93	1.00	0.96	0.98	0.96	1.00	0.93
49%	0.79	0.79	0.79	0.93	1.00	0.96	0.98	0.96	1.00	0.93
50%	0.80	0.80	0.80	0.93	1.00	0.96	0.98	0.96	1.00	0.93
51%	0.80	0.80	0.80	0.94	1.00	0.95	0.97	0.95	1.00	0.94
52%	0.81	0.81	0.81	0.94	1.00	0.95	0.97	0.95	1.00	0.94
53%	0.81	0.81	0.81	0.94	1.00	0.95	0.96	0.95	1.00	0.94
54%	0.82	0.82	0.82	0.94	1.00	0.95	0.96	0.95	1.00	0.94
55%	0.82	0.82	0.82	0.94	1.00	0.96	0.96	0.96	1.00	0.94
56%	0.83	0.83	0.83	0.94	1.00	0.96	0.95	0.96	1.00	0.94
57%	0.84	0.84	0.84	0.95	1.00	0.96	0.95	0.96	1.00	0.95
58%	0.84	0.84	0.84	0.95	1.00	0.96	0.95	0.96	1.00	0.95
59%	0.85	0.85	0.85	0.95	1.00	0.96	0.94	0.96	1.00	0.95
60%	0.86	0.86	0.86	0.95	1.00	0.97	0.94	0.97	1.00	0.95
61%	0.86	0.86	0.86	0.96	1.00	0.97	0.93	0.97	1.00	0.96
62%	0.87	0.87	0.87	0.96	1.00	0.97	0.93	0.97	1.00	0.96
63%	0.88	0.88	0.88	0.96	1.00	0.98	0.93	0.98	1.00	0.96
64%	0.89	0.89	0.89	0.97	1.00	0.98	0.93	0.98	1.00	0.97
65%	0.89	0.89	0.89	0.97	1.00	0.98	0.92	0.98	1.00	0.97
66%	0.90	0.90	0.90	0.98	1.00	0.99	0.92	0.99	1.00	0.98
67%	0.91	0.91	0.91	0.98	1.00	0.99	0.92	0.99	1.00	0.98
68%	0.92	0.92	0.92	0.98	1.00	0.99	0.91	0.99	1.00	0.98
69%	0.93	0.93	0.93	0.99	1.00	1.00	0.91	1.00	1.00	0.99
70%	0.94	0.94	0.94	0.99	1.00	1.00	0.91	1.00	1.00	0.99
71%	0.94	0.94	0.94	0.99	1.00	1.00	0.91	1.00	1.00	0.99
72%	0.95	0.95	0.95	1.00	1.00	1.01	0.91	1.01	1.00	1.00
73%	0.96	0.96	0.96	1.00	1.00	1.01	0.91	1.01	1.00	1.00
74%	0.97	0.97	0.97	1.00	1.00	1.01	0.91	1.01	1.00	1.00
75%	0.98	0.98	0.98	1.01	1.00	1.01	0.90	1.01	1.00	1.01
76%	0.99	0.99	0.99	1.01	1.00	1.01	0.90	1.01	1.00	1.01
77%	1.00	1.00	1.00	1.01	1.00	1.01	0.90	1.01	1.00	1.01
78%	1.01	1.01	1.01	1.01	1.00	1.01	0.91	1.01	1.00	1.01
79%	1.03	1.03	1.03	1.02	1.00	1.01	0.91	1.01	1.00	1.02
80%	1.04	1.04	1.04	1.02	1.00	1.01	0.91	1.01	1.00	1.02
81%	1.05	1.05	1.05	1.02	1.00	1.01	0.91	1.01	1.00	1.02
82%	1.06	1.06	1.06	1.02	1.00	1.01	0.91	1.01	1.00	1.02
83%	1.07	1.07	1.07	1.02	1.00	1.01	0.92	1.01	1.00	1.02
84%	1.08	1.08	1.08	1.02	1.00	1.00	0.92	1.00	1.00	1.02
85%	1.10	1.10	1.10	1.02	1.00	1.00	0.92	1.00	1.00	1.02
86%	1.11	1.11	1.11	1.02	1.00	0.99	0.93	0.99	1.00	1.02
87%	1.12	1.12	1.12	1.02	1.00	0.99	0.93	0.99	1.00	1.02
88%	1.13	1.13	1.13	1.02	1.00	0.98	0.94	0.98	1.00	1.02
89%	1.15	1.15	1.15	1.01	1.00	0.97	0.95	0.97	1.00	1.01
90%	1.16	1.16	1.16	1.01	1.00	0.97	0.95	0.97	1.00	1.01
91%	1.17	1.17	1.17	1.01	1.00	0.96	0.96	0.96	1.00	1.01
92%	1.19	1.19	1.19	1.00	1.00	0.94	0.97	0.94	1.00	1.00
93%	1.20	1.20	1.20	1.00	1.00	0.93	0.98	0.93	1.00	1.00
94%	1.22	1.22	1.22	0.99	1.00	0.92	0.99	0.92	1.00	0.99
95%	1.23	1.23	1.23	0.99	1.00	0.91	1.01	0.91	1.00	0.99
96%	1.24	1.24	1.24	0.98	1.00	0.89	1.02	0.89	1.00	0.98
97%	1.26	1.26	1.26	0.97	1.00	0.87	1.03	0.87	1.00	0.97
98%	1.28	1.28	1.28	0.97	1.00	0.86	1.05	0.86	1.00	0.97
99%	1.29	1.29	1.29	0.96	1.00	0.84	1.07	0.84	1.00	0.96
100%	1.31	1.31	1.31	0.95	1.00	0.82	1.08	0.82	1.00	0.95

Source: https://kentico.portoflosangeles.org/getmedia/8066ecf3-86a1-4fa8-b1c9-f9726b92be67/2014_air_emissions_inventory_full_report

2008, 2012, 2014 Emission Rates Adjustment Factors for MAN Propulsion Engine with Slide Valves

MAN Engines with Slide Valves										
Load	PM	PM2.5	DPM	NOx	SOx	HC	CO	CH4	CO2	N2O
2%	0.37	0.37	0.37	1.86	1.00	1.32	0.12	1.32	1.00	1.86
3%	0.38	0.38	0.38	1.82	1.00	1.28	0.12	1.28	1.00	1.82
4%	0.38	0.38	0.38	1.78	1.00	1.24	0.12	1.24	1.00	1.78
5%	0.39	0.39	0.39	1.74	1.00	1.20	0.12	1.20	1.00	1.74
6%	0.40	0.40	0.40	1.70	1.00	1.17	0.12	1.17	1.00	1.70
7%	0.41	0.41	0.41	1.67	1.00	1.14	0.12	1.14	1.00	1.67
8%	0.41	0.41	0.41	1.63	1.00	1.11	0.12	1.11	1.00	1.63
9%	0.42	0.42	0.42	1.60	1.00	1.08	0.12	1.08	1.00	1.60
10%	0.43	0.43	0.43	1.57	1.00	1.05	0.12	1.05	1.00	1.57
11%	0.44	0.44	0.44	1.53	1.00	1.02	0.26	1.02	1.00	1.53
12%	0.45	0.45	0.45	1.50	1.00	0.99	0.39	0.99	1.00	1.50
13%	0.45	0.45	0.45	1.47	1.00	0.97	0.52	0.97	1.00	1.47
14%	0.46	0.46	0.46	1.45	1.00	0.94	0.64	0.94	1.00	1.45
15%	0.47	0.47	0.47	1.42	1.00	0.92	0.75	0.92	1.00	1.42
16%	0.48	0.48	0.48	1.39	1.00	0.90	0.85	0.90	1.00	1.39
17%	0.49	0.49	0.49	1.37	1.00	0.88	0.95	0.88	1.00	1.37
18%	0.49	0.49	0.49	1.34	1.00	0.86	1.04	0.86	1.00	1.34
19%	0.50	0.50	0.50	1.32	1.00	0.84	1.12	0.84	1.00	1.32
20%	0.51	0.51	0.51	1.30	1.00	0.82	1.20	0.82	1.00	1.30
21%	0.52	0.52	0.52	1.28	1.00	0.81	1.27	0.81	1.00	1.28
22%	0.53	0.53	0.53	1.26	1.00	0.79	1.34	0.79	1.00	1.26
23%	0.54	0.54	0.54	1.24	1.00	0.78	1.40	0.78	1.00	1.24
24%	0.54	0.54	0.54	1.22	1.00	0.76	1.46	0.76	1.00	1.22
25%	0.55	0.55	0.55	1.20	1.00	0.75	1.51	0.75	1.00	1.20
26%	0.56	0.56	0.56	1.19	1.00	0.74	1.55	0.74	1.00	1.19
27%	0.57	0.57	0.57	1.17	1.00	0.73	1.59	0.73	1.00	1.17
28%	0.58	0.58	0.58	1.16	1.00	0.72	1.63	0.72	1.00	1.16
29%	0.59	0.59	0.59	1.14	1.00	0.71	1.66	0.71	1.00	1.14
30%	0.60	0.60	0.60	1.13	1.00	0.70	1.68	0.70	1.00	1.13
31%	0.60	0.60	0.60	1.12	1.00	0.70	1.70	0.70	1.00	1.12
32%	0.61	0.61	0.61	1.10	1.00	0.69	1.72	0.69	1.00	1.10
33%	0.62	0.62	0.62	1.09	1.00	0.69	1.74	0.69	1.00	1.09
34%	0.63	0.63	0.63	1.08	1.00	0.68	1.75	0.68	1.00	1.08
35%	0.64	0.64	0.64	1.07	1.00	0.68	1.75	0.68	1.00	1.07
36%	0.65	0.65	0.65	1.06	1.00	0.68	1.75	0.68	1.00	1.06
37%	0.66	0.66	0.66	1.05	1.00	0.67	1.75	0.67	1.00	1.05
38%	0.67	0.67	0.67	1.05	1.00	0.67	1.75	0.67	1.00	1.05
39%	0.68	0.68	0.68	1.04	1.00	0.67	1.74	0.67	1.00	1.04
40%	0.69	0.69	0.69	1.03	1.00	0.67	1.73	0.67	1.00	1.03
41%	0.70	0.70	0.70	1.03	1.00	0.67	1.72	0.67	1.00	1.03
42%	0.70	0.70	0.70	1.02	1.00	0.68	1.71	0.68	1.00	1.02
43%	0.71	0.71	0.71	1.02	1.00	0.68	1.69	0.68	1.00	1.02
44%	0.72	0.72	0.72	1.01	1.00	0.68	1.67	0.68	1.00	1.01
45%	0.73	0.73	0.73	1.01	1.00	0.69	1.65	0.69	1.00	1.01
46%	0.74	0.74	0.74	1.00	1.00	0.69	1.62	0.69	1.00	1.00
47%	0.75	0.75	0.75	1.00	1.00	0.70	1.60	0.70	1.00	1.00
48%	0.76	0.76	0.76	1.00	1.00	0.70	1.57	0.70	1.00	1.00
49%	0.77	0.77	0.77	0.99	1.00	0.71	1.54	0.71	1.00	0.99
50%	0.78	0.78	0.78	0.99	1.00	0.71	1.51	0.71	1.00	0.99
51%	0.79	0.79	0.79	0.99	1.00	0.72	1.48	0.72	1.00	0.99
52%	0.80	0.80	0.80	0.99	1.00	0.73	1.45	0.73	1.00	0.99
53%	0.81	0.81	0.81	0.99	1.00	0.74	1.41	0.74	1.00	0.99
54%	0.82	0.82	0.82	0.99	1.00	0.75	1.38	0.75	1.00	0.99
55%	0.83	0.83	0.83	0.98	1.00	0.75	1.35	0.75	1.00	0.98
56%	0.84	0.84	0.84	0.98	1.00	0.76	1.31	0.76	1.00	0.98
57%	0.85	0.85	0.85	0.98	1.00	0.77	1.27	0.77	1.00	0.98
58%	0.86	0.86	0.86	0.98	1.00	0.78	1.24	0.78	1.00	0.98
59%	0.87	0.87	0.87	0.98	1.00	0.80	1.20	0.80	1.00	0.98
60%	0.88	0.88	0.88	0.98	1.00	0.81	1.16	0.81	1.00	0.98
61%	0.89	0.89	0.89	0.98	1.00	0.82	1.13	0.82	1.00	0.98
62%	0.90	0.90	0.90	0.98	1.00	0.83	1.09	0.83	1.00	0.98
63%	0.91	0.91	0.91	0.99	1.00	0.84	1.06	0.84	1.00	0.99
64%	0.92	0.92	0.92	0.99	1.00	0.85	1.02	0.85	1.00	0.99
65%	0.93	0.93	0.93	0.99	1.00	0.87	0.98	0.87	1.00	0.99
66%	0.94	0.94	0.94	0.99	1.00	0.88	0.95	0.88	1.00	0.99
67%	0.95	0.95	0.95	0.99	1.00	0.89	0.92	0.89	1.00	0.99
68%	0.97	0.97	0.97	0.99	1.00	0.91	0.88	0.91	1.00	0.99
69%	0.98	0.98	0.98	0.99	1.00	0.92	0.85	0.92	1.00	0.99
70%	0.99	0.99	0.99	0.99	1.00	0.93	0.82	0.93	1.00	0.99
71%	1.00	1.00	1.00	0.99	1.00	0.95	0.79	0.95	1.00	0.99
72%	1.01	1.01	1.01	0.99	1.00	0.96	0.76	0.96	1.00	0.99
73%	1.02	1.02	1.02	0.99	1.00	0.98	0.74	0.98	1.00	0.99
74%	1.03	1.03	1.03	0.99	1.00	0.99	0.71	0.99	1.00	0.99
75%	1.04	1.04	1.04	0.99	1.00	1.00	0.69	1.00	1.00	0.99
76%	1.05	1.05	1.05	0.99	1.00	1.02	0.66	1.02	1.00	0.99
77%	1.06	1.06	1.06	0.99	1.00	1.03	0.64	1.03	1.00	0.99
78%	1.07	1.07	1.07	0.99	1.00	1.05	0.63	1.05	1.00	0.99
79%	1.09	1.09	1.09	0.99	1.00	1.06	0.61	1.06	1.00	0.99
80%	1.10	1.10	1.10	0.99	1.00	1.08	0.60	1.08	1.00	0.99
81%	1.11	1.11	1.11	0.99	1.00	1.09	0.58	1.09	1.00	0.99
82%	1.12	1.12	1.12	0.99	1.00	1.10	0.57	1.10	1.00	0.99
83%	1.13	1.13	1.13	0.98	1.00	1.12	0.57	1.12	1.00	0.98
84%	1.14	1.14	1.14	0.98	1.00	1.13	0.56	1.13	1.00	0.98
85%	1.15	1.15	1.15	0.98	1.00	1.15	0.56	1.15	1.00	0.98
86%	1.16	1.16	1.16	0.98	1.00	1.16	0.56	1.16	1.00	0.98
87%	1.18	1.18	1.18	0.97	1.00	1.18	0.56	1.18	1.00	0.97
88%	1.19	1.19	1.19	0.97	1.00	1.19	0.57	1.19	1.00	0.97
89%	1.20	1.20	1.20	0.96	1.00	1.20	0.58	1.20	1.00	0.96
90%	1.21	1.21	1.21	0.96	1.00	1.22	0.59	1.22	1.00	0.96
91%	1.22	1.22	1.22	0.95	1.00	1.23	0.61	1.23	1.00	0.95
92%	1.23	1.23	1.23	0.95	1.00	1.24	0.63	1.24	1.00	0.95
93%	1.25	1.25	1.25	0.94	1.00	1.25	0.65	1.25	1.00	0.94
94%	1.26	1.26	1.26	0.93	1.00	1.27	0.67	1.27	1.00	0.93
95%	1.27	1.27	1.27	0.93	1.00	1.28	0.70	1.28	1.00	0.93
96%	1.28	1.28	1.28	0.92	1.00	1.29	0.73	1.29	1.00	0.92
97%	1.29	1.29	1.29	0.91	1.00	1.30	0.77	1.30	1.00	0.91
98%	1.31	1.31	1.31	0.90	1.00	1.31	0.81	1.31	1.00	0.90
99%	1.32	1.32	1.32	0.89	1.00	1.32	0.85	1.32	1.00	0.89
100%	1.33	1.33	1.33	0.88	1.00	1.34	0.90	1.34	1.00	0.88

Source: https://kentico.portoflosangeles.org/getmedia/8066ecf3-86a1-4fa8-b1c9-f9726b92be67/2014_air_emissions_invent

Emission Factors Fuel Adjustment

Slide Valve	PM	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Yes	1	1	1	1	1	0.59	0.43	1	1	1
No	1	1	1	1	1	0.44	1	1	1	1

Source: https://kentico.portoflosangeles.org/getmedia/8066ecf3-86a1-4fa8-b1c9-f9726b92be67/2014_air_emissions_inventory_full_report

2008, 2012, 2014 Non-MAN Engine Low-Load Adjusments for Emission Factors of OGV Main Propulsion Engines

Variable	PM10	PM2.5	DPM	NOx	SOx	HC	CO
Exponent	1.5	1.5	1.5	1.5	0	1.5	1
Intercept	0.25	0.25	0.25	10.45	0	0.39	0.15
Coefficient	0.006	0.006	0.006	0.126	1.000	0.067	0.838
Ref. EF @ 20% Load	0.316	0.316	0.316	11.853	1.000	1.136	4.339

Factor = Coefficient x Load Factor^-Exponent + Intercept. Factors are normalized by dividing by the factor @ 20% load.
Source: https://kentico.portoflosangeles.org/getmedia/8066ecf3-86a1-4fa8-b1c9-f9726b92be67/2014_air_emissions_inventory_full_report

Vessel Transit Zones and Locations - All Scenarios		
Transit Zones	Short Reference	Description
1	Berth	Vessel at Berth
2	Maneuvering	Maneuvering/transit within Harbor
3	PZ	Transit within Precautionary Area
4	20nm	Fairway transit between end of PZ and 20-Mile Boundary
5	40nm	Fairway transit between 20-Mile to Overwater Boundary
Anchorage	Anchorage	Anchorage

Annual Average Cargo Vessel Activities - FEIR Mitigated

Project Scenario/Ship Type	Annual total transits	No. of tugs per call	Number of Arrivals	Number of Departures	Number of Anchorage Calls	Anchorage Time (hr/call)	NonAMP'd Vessel Hotelling Time (hr/call)	% Calls using AMP	AMP'd vessels Auxiliary Engine Hours Runtime
Base Year 2008	-	-	-	-	-	-	-	-	-
Containerships 10,000 - 11,000 TEU	-	-	-	-	-	-	-	0%	-
Containerships 9,000 - 10,000 TEU	-	-	-	-	-	-	-		
Containerships 8,000 - 9,000 TEU	4	2.0	2	2	1	2	84	100%	5.14
Containerships 6,000 - 7,000 TEU	-	-	-	-	-	-	-		
Containerships 5,000 - 6,000 TEU	28	2.0	14	14	-	-	61	89%	3.42
Containerships 4,000 - 5,000 TEU	18	2.0	9	9	2	6	58	0.89	
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	1	2.0	0.5	0.5	-	-	54.5	-	3.0
Containerships 1,000 - 2,000 TEU	0	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-
Total	**51**	**-**	**26**	**26**	**3**	**-**	**-**	**0.9**	**-**
Project Year 2012	-	-	-	-	-	-	-	-	-
Containerships 10,000 - 11,000 TEU	-	-	-	-	-	-	-	0%	-
Containerships 9,000 - 10,000 TEU	42	2.0	21	21	2	22	75		
Containerships 8,000 - 9,000 TEU	9	2.0	5	5	-	-	73	100%	3.94
Containerships 6,000 - 7,000 TEU	-	-	-	-	-	-	-		
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	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	0	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-
Total	**1**	**2.0**	**-**	**1**	**-**	**-**	**-**	**-**	**-**
Project Year 2014	-	-	-	-	-	-	-	-	-
Containerships 10,000 - 11,000 TEU	63	2.0	31	32	7	146	109	100%	6.30
Containerships 9,000 - 10,000 TEU	14	2.0	7	7	2	45	99	100%	-
Containerships 8,000 - 9,000 TEU	67	2.0	33	34	6	95	61	100%	6.00
Containerships 6,000 - 7,000 TEU	17	2.0	8	9	-	-	49	100%	3.40
Containerships 5,000 - 6,000 TEU	-	2.0	-	-	-	-	-		-
Containerships 4,000 - 5,000 TEU	2	2.0	1	1	-	-	34	100%	2.80
Containerships 3,000 - 4,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	0	2.0	-	-	-	-	-	-	-
General Cargo Vessels	-	2.0	-	-	-	-	-	-	-
Total	**-**	-	**-**	**-**	**-**	-	-	-	-

Transit Parameters - FEIR Mitigated				
	Maneuvering	PZ	20nm	40nm
Parameter	2	3	4	5
Base Year 2008				
Average Speed	5	11	10.96	15.38
AverageTime	1.1	0.7	2.0	1.4
VRSP Compliant Average Speed (knots)	NA	NA	10.76	10.88
VRSP Non-Compliant Average Speed (knots)	NA	NA	13.65	17.60
VSRP Compliance Rate (% transits)	NA	NA	97%	24%
Distance in miles (from CS DEIR 2008)	3.9	8.2	15.8	24.1
Project Year 2012				
Average Speed	5	11	11.04	14.30
AverageTime	1.1	0.8	1.9	1.6
VRSP Compliant Average Speed (knots)	NA	NA	10.64	10.31
VRSP Non-Compliant Average Speed (knots)	NA	NA	13.00	16.58
VSRP Compliance Rate (% transits)	NA	NA	100%	100%
Distance in miles (from CS DEIR 2008)	3.9	8.2	15.8	24.1
Project Year 2014				
Average Speed	7.5	11	11.02	11.15
AverageTime	1.0	0.7	0.7	0.5
VRSP Compliant Average Speed (knots)	NA	NA	11.00	11.00
VRSP Non-Compliant Average Speed (knots)	NA	NA	15.00	15.00
VSRP Compliance Rate (% transits)	NA	NA	100%	100%
distance in miles (from CS DEIR 2008)	3.5	10.4	22.4	17.1

2008, 2012 and 2014 Peak Day Activity for Ocean Going Vessels - FEIR Mitigated

			Peak Day	Peak Day	Total	Peak Day Berthing		Anchorage	
Vessel Bin	**Vessel Type**	**Year**	**Arrival**	**Departure**	**Transits in 24hr**	**Hotelling Hrs (no AMP)**	**Berthing Hrs (mitigated w/ AMP)**	**Anchorage_Hotelling**	**Shift**
Base Year 2008									
Containerships 5,000 - 6,000 TEU	5000	2008	0	1	1	23	23	0	0
Project Year 2012									
Containerships 9,000 - 10,000 TEU	9000	2012	0	1	1	23	1.97	0	0
Project Year 2014									
Containerships 10,000 - 11,000 TEU	10000	2014	1	1	2	6.3	17.5	0	0
Containerships 9,000 - 10,000 TEU	9000	2014	0	0	0	24	0	24	0

Engine Loads by Zone for 2008 - FEIR Mitigated

Zone Description	Vessel Size	Propulsion Engine (kW)	Auxiliary Engines (kW)	Boiler (kW)
Berthing	Containerships 2,000 - 3,000 TEU	-	937	393
	Containerships 4,000 - 5,000 TEU	-	1,188	519
	Containerships 5,000 - 6,000 TEU	-	991	590
	Containerships 8,000 - 9,000 TEU	-	1,080	586
Manuevering	Containerships 2,000 - 3,000 TEU	861	1,973	393
	Containerships 4,000 - 5,000 TEU	1,082	2,524	519
	Containerships 5,000 - 6,000 TEU	1,329	3,427	590
	Containerships 8,000 - 9,000 TEU	1,652	3,480	586
Precautionary Area	Containerships 2,000 - 3,000 TEU	2,680	888	393
	Containerships 4,000 - 5,000 TEU	3,477	1,410	519
	Containerships 5,000 - 6,000 TEU	4,237	1,029	590
	Containerships 8,000 - 9,000 TEU	5,836	1,560	586
Fairway: 20-Mile to Precautionary Area - With VSR	Containerships 2,000 - 3,000 TEU	2,506	888	262
	Containerships 4,000 - 5,000 TEU	3,251	1,410	502
	Containerships 5,000 - 6,000 TEU	3,962	1,029	587
	Containerships 8,000 - 9,000 TEU	5,457	1,560	586
Fairway: 20-Mile to Precautionary Area - Without VSR	Containerships 2,000 - 3,000 TEU	5,121	888	262
	Containerships 4,000 - 5,000 TEU	6,644	1,410	502
	Containerships 5,000 - 6,000 TEU	8,096	1,029	587
	Containerships 8,000 - 9,000 TEU	11,152	1,560	586
Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	Containerships 2,000 - 3,000 TEU	2,590	888	49
	Containerships 4,000 - 5,000 TEU	3,360	1,410	260
	Containerships 5,000 - 6,000 TEU	4,094	1,029	387
	Containerships 8,000 - 9,000 TEU	5,639	1,560	410
Fairway: AQMD Overwater Boundary to 20-Mile - Without VSR	Containerships 2,000 - 3,000 TEU	10,976	888	49
	Containerships 4,000 - 5,000 TEU	14,240	1,410	260
	Containerships 5,000 - 6,000 TEU	17,352	1,029	387
	Containerships 8,000 - 9,000 TEU	23,901	1,560	410
Anchorage	Containerships 2,000 - 3,000 TEU	-	-	-
	Containerships 4,000 - 5,000 TEU	-	1,292	519
	Containerships 5,000 - 6,000 TEU	-	-	-
	Containerships 8,000 - 9,000 TEU	-	1,560	586

Engine Loads by Zone for 2012 - FEIR Mitigated

Zone Description	Vessel Size	Propulsion Engine (kW)	Auxiliary Engines (kW)	Boiler (kW)
Berthing	Containerships 8,000 - 9,000 TEU	-	927	525
	Containerships 9,000 - 10,000 TEU	-	1,040	547
Manuevering	Containerships 8,000 - 9,000 TEU	1,860	2,785	525
	Containerships 9,000 - 10,000 TEU	1,822	3,350	547
Precautionary Area	Containerships 8,000 - 9,000 TEU	5,790	1,515	525
	Containerships 9,000 - 10,000 TEU	5,699	1,502	547
Fairway: 20-Mile to Precautionary Area - With VSR	Containerships 8,000 - 9,000 TEU	5,237	1,515	525
	Containerships 9,000 - 10,000 TEU	5,155	1,502	532
Fairway: 20-Mile to Precautionary Area - Without VSR	Containerships 8,000 - 9,000 TEU	5,237	1,515	525
	Containerships 9,000 - 10,000 TEU	5,155	1,502	532
Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	Containerships 8,000 - 9,000 TEU	4,771	1,515	225
	Containerships 9,000 - 10,000 TEU	4,696	1,502	321
Fairway: AQMD Overwater Boundary to 20-Mile - Without VSR	Containerships 8,000 - 9,000 TEU	4,771	1,515	225
	Containerships 9,000 - 10,000 TEU	4,696	1,502	321
Anchorage	Containerships 8,000 - 9,000 TEU	-	-	-
	Containerships 9,000 - 10,000 TEU	-	1,502	547

Engine Loads by Zone for 2014 - FEIR Mitigated

Zone Description	Vessel Size	Propulsion Engine (kW)	Auxiliary Engines (kW)	Boiler (kW)
Berthing	Containerships 10,000 - 11,000 TEU	-	1,131	708
	Containerships 4,000 - 5,000 TEU	-	1,161	492
	Containerships 6,000 - 7,000 TEU	-	990	573
	Containerships 8,000 - 9,000 TEU	-	1,453	531
	Containerships 9,000 - 10,000 TEU	-	1,037	475
Manuevering	Containerships 10,000 - 11,000 TEU	1,868	2,105	708
	Containerships 4,000 - 5,000 TEU	1,122	2,526	492
	Containerships 6,000 - 7,000 TEU	1,604	2,197	573
	Containerships 8,000 - 9,000 TEU	1,783	2,993	531
	Containerships 9,000 - 10,000 TEU	1,805	2,942	475
Precautionary Area	Containerships 10,000 - 11,000 TEU	5,836	1,730	708
	Containerships 4,000 - 5,000 TEU	3,494	1,434	492
	Containerships 6,000 - 7,000 TEU	5,039	1,453	573
	Containerships 8,000 - 9,000 TEU	5,515	1,597	531
	Containerships 9,000 - 10,000 TEU	5,619	1,501	475
Fairway: 20-Mile to Precautionary Area - With VSR	Containerships 10,000 - 11,000 TEU	5,836	1,730	708
	Containerships 4,000 - 5,000 TEU	3,494	1,434	492
	Containerships 6,000 - 7,000 TEU	5,039	1,453	573
	Containerships 8,000 - 9,000 TEU	5,515	1,597	531
	Containerships 9,000 - 10,000 TEU	5,619	1,501	475
Fairway: 20-Mile to Precautionary Area - Without VSR	Containerships 10,000 - 11,000 TEU	5,836	1,730	708
	Containerships 4,000 - 5,000 TEU	3,494	1,434	492
	Containerships 6,000 - 7,000 TEU	5,039	1,453	573
	Containerships 8,000 - 9,000 TEU	5,515	1,597	531
	Containerships 9,000 - 10,000 TEU	5,619	1,501	475
Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	Containerships 10,000 - 11,000 TEU	5,836	1,730	708
	Containerships 4,000 - 5,000 TEU	3,494	1,434	492
	Containerships 6,000 - 7,000 TEU	5,039	1,453	573
	Containerships 8,000 - 9,000 TEU	5,515	1,597	531
	Containerships 9,000 - 10,000 TEU	5,619	1,501	475
Fairway: AQMD Overwater Boundary to 20-Mile - Without VSR	Containerships 10,000 - 11,000 TEU	5,836	1,730	708
	Containerships 4,000 - 5,000 TEU	3,494	1,434	492
	Containerships 6,000 - 7,000 TEU	5,039	1,453	573
	Containerships 8,000 - 9,000 TEU	5,515	1,597	531
	Containerships 9,000 - 10,000 TEU	5,619	1,501	475
Anchorage	Containerships 10,000 - 11,000 TEU	-	1,557	708
	Containerships 4,000 - 5,000 TEU	-	-	-
	Containerships 6,000 - 7,000 TEU	-	-	-
	Containerships 8,000 - 9,000 TEU	-	1,470	531
	Containerships 9,000 - 10,000 TEU	-	1,501	475

Vessel Transit Zones and Locations - Revised Project

Transit Zones	Short Reference	Description
1	Berth	Vessel at Berth
2	Maneuvering	Maneuvering/transit within Harbor
3	PZ	Transit within Precautionary Area
4	20nm	Fairway transit between end of PZ and 20-Mile Boundary
5	40nm	Fairway transit between 20-Mile to Overwater Boundary
Anchorage	Anchorage	Anchorage

2008, 2012 and 2014 Annual Average Cargo Vessel Activities - Revised Project

Project Scenario/Ship Type	Annual total transits	No. of tugs per call	Number of Arrivals	Number of Departures	Number of Anchorage Calls	Anchorage Time (hr/call)	NonAMP'd Vessel Hotelling Time (hr/call)	% Calls using AMP	AMP'd vessels Auxiliary Engine Hours Runtime
Project Year 2008	-	-	-	-	-	-	-	-	-
Containerships 10,000 - 11,000	-	-	-	-	-	-	-	0%	-
Containerships 9,000 - 10,000 TEU	-	-	-	-	-	-	-		
Containerships 8,000 - 9,000 TEU	4	2.0	2	2	1	2	84	100%	5.14
Containerships 6,000 - 7,000 TEU	-	-	-	-	-	-	-		
Containerships 5,000 - 6,000 TEU	28	2.0	14	14	-	-	61	89%	3.42
Containerships 4,000 - 5,000 TEU	18	2.0	9	9	2	6	59	0.89	
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	1	2.0	0.5	0.5	-	-	54.5	-	-
Containerships 1,000 - 2,000 TEU	0	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-
Total	**51**	**-**	**26**	**26**	**3**	**-**	**-**	**0.9**	**-**
Project Year 2012	-	-	-	-	-	-	-	-	-
Containerships 10,000 - 11,000	-	-	-	-	-	-	-	0%	-
Containerships 9,000 - 10,000 TEU	42	2.0	21	21	2	22	75		
Containerships 8,000 - 9,000 TEU	9	2.0	5	5	-	-	73	67%	3.94
Containerships 6,000 - 7,000 TEU	-	-	-	-	-	-	-		
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	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	0	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-
Total	**1**	**2.0**	**-**	**1**	**-**	**-**	**-**	**-**	**-**
Project Year 2014	-	-	-	-	-	-	-	-	-
Containerships 10,000 - 11,000	63	2.0	31	32	7	146	109	91%	6.30
Containerships 9,000 - 10,000 TEU	14	2.0	7	7	2	45	99	0%	-
Containerships 8,000 - 9,000 TEU	67	2.0	33	34	6	95	61	97%	6.00
Containerships 6,000 - 7,000 TEU	17	2.0	8	9	-	-	49	33%	3.40
Containerships 5,000 - 6,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	2	2.0	1	1	-	-	34	100%	2.80
Containerships 3,000 - 4,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	0	2.0	-	-	-	-	-	-	-
General Cargo Vessels	-	2.0	-	-	-	-	-	-	-
Total	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

2008, 2012 and 2014 Transit Parameters - Revised Project

	Maneuvering	PZ	20nm	40nm
Parameter	**2**	**3**	**4**	**5**
Project Year 2008				
Average Speed	5	11	10.96	15.38
AverageTime	1.1	0.7	2.0	1.4
VRSP Compliant Average Speed (knots)	NA	NA	10.76	10.88
VRSP Non-Compliant Average Speed (kno	NA	NA	13.65	17.60
VSRP Compliance Rate (% transits)	NA	NA	97%	24%
Distance in miles (from CS DEIR 2008)	3.9	8.2	15.8	24.1
Project Year 2012				
Average Speed	5	11	11.04	14.30
AverageTime	1.1	0.8	1.9	1.6
VRSP Compliant Average Speed (knots)	NA	NA	10.64	10.31
VRSP Non-Compliant Average Speed (kno	NA	NA	13.00	16.58
VSRP Compliance Rate (% transits)	NA	NA	93%	47%
Distance in miles (from CS DEIR 2008)	3.9	8.2	15.8	24.1
Project Year 2014				
Average Speed	7.5	11	11.02	11.15
AverageTime	1.0	0.7	0.7	0.5
VRSP Compliant Average Speed (knots)	NA	NA	11.00	11.00
VRSP Non-Compliant Average Speed (kno	NA	NA	15.00	15.00
VSRP Compliance Rate (% transits)	NA	NA	99%	96%
distance in miles (from CS DEIR 2008)	3.5	10.4	22.4	17.1

2008, 2012 and 2014 Peak Day Activity for Ocean Going Vessels during - Revised Project

			Peak Day	Peak Day	Total	Peak Day Berthing		Anchorage	
Vessel Bin	Vessel Type	Year	Arrival	Departure	Transits in 24hr	Hotelling Hrs (no AMP)	Berthing Hrs (mitigated w/ AMP)	Anchorage_Hotelling	Shift
Project Year 2008									
Containerships 5,000 - 6,000 TEU	5000	2008	0	1	1	23	23	0	0
Project Year 2012									
Containerships 9,000 - 10,000 TEU	9000	2012	0	1	1	23	23	0	0
Project Year 2014									
Containerships 10,000 - 11,000 TEU	10000	0	1	1	2	6.3	17.5	0	0
Containerships 9,000 - 10,000 TEU	9000	0	0	0	0	24	0	24	0

2008 Engine Loads by Zone - Revised Project

Zone Description	Vessel Size	Propulsion Engine (kW)	Auxiliary Engines (kW)	Boiler (kW)
Berthing	Containerships 2,000 - 3,000 TEU	-	937	393
	Containerships 4,000 - 5,000 TEU	-	1,188	519
	Containerships 5,000 - 6,000 TEU	-	991	590
	Containerships 8,000 - 9,000 TEU	-	1,080	586
Manuevering	Containerships 2,000 - 3,000 TEU	861	1,973	393
	Containerships 4,000 - 5,000 TEU	1,082	2,524	519
	Containerships 5,000 - 6,000 TEU	1,329	3,427	590
	Containerships 8,000 - 9,000 TEU	1,652	3,480	586
Precautionary Area	Containerships 2,000 - 3,000 TEU	2,680	888	393
	Containerships 4,000 - 5,000 TEU	3,477	1,410	519
	Containerships 5,000 - 6,000 TEU	4,237	1,029	590
	Containerships 8,000 - 9,000 TEU	5,836	1,560	586
Fairway: 20-Mile to Precautionary Area - With VSR	Containerships 2,000 - 3,000 TEU	2,506	888	262
	Containerships 4,000 - 5,000 TEU	3,251	1,410	502
	Containerships 5,000 - 6,000 TEU	3,962	1,029	587
	Containerships 8,000 - 9,000 TEU	5,457	1,560	586
Fairway: 20-Mile to Precautionary Area - Without VSR	Containerships 2,000 - 3,000 TEU	5,121	888	262
	Containerships 4,000 - 5,000 TEU	6,644	1,410	502
	Containerships 5,000 - 6,000 TEU	8,096	1,029	587
	Containerships 8,000 - 9,000 TEU	11,152	1,560	586
Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	Containerships 2,000 - 3,000 TEU	2,590	888	49
	Containerships 4,000 - 5,000 TEU	3,360	1,410	260
	Containerships 5,000 - 6,000 TEU	4,094	1,029	387
	Containerships 8,000 - 9,000 TEU	5,639	1,560	410
Fairway: AQMD Overwater Boundary to 20-Mile - Without VSR	Containerships 2,000 - 3,000 TEU	10,976	888	49
	Containerships 4,000 - 5,000 TEU	14,240	1,410	260
	Containerships 5,000 - 6,000 TEU	17,352	1,029	387
	Containerships 8,000 - 9,000 TEU	23,901	1,560	410
Anchorage	Containerships 2,000 - 3,000 TEU	-	-	-
	Containerships 4,000 - 5,000 TEU	-	1,292	519
	Containerships 5,000 - 6,000 TEU	-	-	-
	Containerships 8,000 - 9,000 TEU	-	1,560	586

2012 Engine Loads by Zone - Revised Project

Zone Description	Vessel Size	Propulsion Engine (kW)	Auxiliary Engines (kW)	Boiler (kW)
Berthing	Containerships 8,000 - 9,000 TEU	-	927	525
	Containerships 9,000 - 10,000 TEU	-	1,040	547
Manuevering	Containerships 8,000 - 9,000 TEU	1,860	2,785	525
	Containerships 9,000 - 10,000 TEU	1,822	3,350	547
Precautionary Area	Containerships 8,000 - 9,000 TEU	5,790	1,515	525
	Containerships 9,000 - 10,000 TEU	5,699	1,502	547
Fairway: 20-Mile to Precautionary Area - With VSR	Containerships 8,000 - 9,000 TEU	5,237	1,515	525
	Containerships 9,000 - 10,000 TEU	5,155	1,502	532
Fairway: 20-Mile to Precautionary Area - Without VSR	Containerships 8,000 - 9,000 TEU	9,557	1,515	525
	Containerships 9,000 - 10,000 TEU	9,407	1,502	532
Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	Containerships 8,000 - 9,000 TEU	4,771	1,515	225
	Containerships 9,000 - 10,000 TEU	4,696	1,502	321
Fairway: AQMD Overwater Boundary to 20-Mile - Without VSR	Containerships 8,000 - 9,000 TEU	19,843	1,515	225
	Containerships 9,000 - 10,000 TEU	19,531	1,502	321
Anchorage	Containerships 8,000 - 9,000 TEU	-	-	-
	Containerships 9,000 - 10,000 TEU	-	1,502	547

Engine Loads by Zone for 2014 - Revised Project

Zone Description	Vessel Size	Propulsion Engine (kW)	Auxiliary Engines (kW)	Boiler (kW)
Berthing	Containerships 10,000 - 11,000 TEU	-	1,131	708
	Containerships 4,000 - 5,000 TEU	-	1,161	492
	Containerships 6,000 - 7,000 TEU	-	990	573
	Containerships 8,000 - 9,000 TEU	-	1,453	531
	Containerships 9,000 - 10,000 TEU	-	1,037	475
Manuevering	Containerships 10,000 - 11,000 TEU	1,868	2,105	708
	Containerships 4,000 - 5,000 TEU	1,122	2,526	492
	Containerships 6,000 - 7,000 TEU	1,604	2,197	573
	Containerships 8,000 - 9,000 TEU	1,783	2,993	531
	Containerships 9,000 - 10,000 TEU	1,805	2,942	475
Precautionary Area	Containerships 10,000 - 11,000 TEU	5,836	1,730	708
	Containerships 4,000 - 5,000 TEU	3,494	1,434	492
	Containerships 6,000 - 7,000 TEU	5,039	1,453	573
	Containerships 8,000 - 9,000 TEU	5,515	1,597	531
	Containerships 9,000 - 10,000 TEU	5,619	1,501	475
Fairway: 20-Mile to Precautionary Area - With VSR	Containerships 10,000 - 11,000 TEU	5,836	1,730	708
	Containerships 4,000 - 5,000 TEU	3,494	1,434	492
	Containerships 6,000 - 7,000 TEU	5,039	1,453	573
	Containerships 8,000 - 9,000 TEU	5,515	1,597	531
	Containerships 9,000 - 10,000 TEU	5,619	1,501	475
Fairway: 20-Mile to Precautionary Area - Without VSR	Containerships 10,000 - 11,000 TEU	14,798	1,730	708
	Containerships 4,000 - 5,000 TEU	8,859	1,434	492
	Containerships 6,000 - 7,000 TEU	12,776	1,453	573
	Containerships 8,000 - 9,000 TEU	13,985	1,597	531
	Containerships 9,000 - 10,000 TEU	14,249	1,501	475
Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	Containerships 10,000 - 11,000 TEU	5,836	1,730	708
	Containerships 4,000 - 5,000 TEU	3,494	1,434	492
	Containerships 6,000 - 7,000 TEU	5,039	1,453	573
	Containerships 8,000 - 9,000 TEU	5,515	1,597	531
	Containerships 9,000 - 10,000 TEU	5,619	1,501	475
Fairway: AQMD Overwater Boundary to 20-Mile - Without VSR	Containerships 10,000 - 11,000 TEU	14,798	1,730	708
	Containerships 4,000 - 5,000 TEU	8,859	1,434	492
	Containerships 6,000 - 7,000 TEU	12,776	1,453	573
	Containerships 8,000 - 9,000 TEU	13,985	1,597	531
	Containerships 9,000 - 10,000 TEU	14,249	1,501	475
Anchorage	Containerships 10,000 - 11,000 TEU	-	1,557	708
	Containerships 4,000 - 5,000 TEU	-	-	-
	Containerships 6,000 - 7,000 TEU	-	-	-
	Containerships 8,000 - 9,000 TEU	-	1,470	531
	Containerships 9,000 - 10,000 TEU	-	1,501	475

2018- 2045 Main Engines and Boiler OGV Emission Factors (g/kW-hrs) - All Scenarios

Engine Category	IMO Tier	Model Year Range	Model Year Bin	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Slow speed propulsion	Tier 0	1999 and older	1	0.184	0.169	0.184	17.000	0.362	1.400	0.600	593.00	0.029	0.012
Slow speed propulsion	Tier I	2000 to 2011	2	0.184	0.169	0.184	16.000	0.362	1.400	0.600	593.00	0.029	0.012
Slow speed propulsion	Tier II	2011 to 2016	3	0.184	0.169	0.184	14.400	0.362	1.400	0.600	593.00	0.029	0.012
Slow speed propulsion	Tier III	2016 and newer	4	0.184	0.169	0.184	3.400	0.362	1.400	0.600	593.00	0.029	0.012
Medium speed propulsion	Tier 0	1999 and older	1	0.187	0.172	0.187	13.200	0.401	1.100	0.500	657.00	0.029	0.010
Medium speed propulsion	Tier I	2000 to 2011	2	0.187	0.172	0.187	12.200	0.401	1.100	0.500	657.00	0.029	0.010
Medium speed propulsion	Tier II	2011 to 2016	3	0.187	0.172	0.187	10.500	0.401	1.100	0.500	657.00	0.029	0.010
Medium speed propulsion	Tier III	2016 and newer	4	0.187	0.172	0.187	2.600	0.401	1.100	0.500	657.00	0.029	0.010
Gas turbine	na	All	na	0.010	0.009	0.000	5.700	0.587	0.200	0.100	962.00	0.075	0.002
Steam propulsion	na	All	na	0.160	0.147	0.000	2.000	0.587	0.200	0.100	962.00	0.075	0.002

Notes:

[1] Slow speed diesel: engine speed < 150 rpm; assumed as default for propulsion engines.

Source:

[1] San Pedro Bay Ports Emission Inventory Methodology Report Version 5-2023, August 2024. Table 2-3

2018- 2045 Auxiliary Engines OGV Emission Factors (g/kW-hrs) - All Scenarios

Engine Category	IMO Tier	Model Year Range	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Medium speed auxiliary	Tier 0	1999 and older	0.19	0.17	0.19	13.80	0.42	1.10	0.40	696	0.029	0.008
Medium speed auxiliary	Tier I	2000 to 2011	0.19	0.17	0.19	12.20	0.42	1.10	0.40	696	0.029	0.008
Medium speed auxiliary	Tier II	2011 to 2016	0.19	0.17	0.19	10.50	0.42	1.10	0.40	696	0.029	0.008
Medium speed auxiliary	Tier III	2016 and newer	0.19	0.17	0.19	2.60	0.42	1.10	0.40	696	0.029	0.008
High speed auxiliary	Tier 0	1999 and older	0.19	0.17	0.19	10.90	0.42	0.90	0.40	696	0.029	0.008
High speed auxiliary	Tier I	2000 to 2011	0.19	0.17	0.19	9.80	0.42	0.90	0.40	696	0.029	0.008
High speed auxiliary	Tier II	2011 to 2016	0.19	0.17	0.19	7.70	0.42	0.90	0.40	696	0.029	0.008
High speed auxiliary	Tier III	2016 and newer	0.19	0.17	0.19	2.00	0.42	0.90	0.40	696	0.029	0.008

Notes:

[1] Tanker auxiliary engines are medium speed.

Source:

[1] San Pedro Bay Ports Emission Inventory Methodology Report Version 5-2023, August 2024. Table 2-12

2018-2045 Emission Rate Adjustment Factor for MAN Propulsion Engine with Slide Valves - All Scenarios

Load	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	CH4	N2O
1%	0.360	0.360	0.360	1.900	1.100	0.071	0.585	0.473	1.360	1.900
2%	0.370	0.370	0.370	1.860	1.100	0.071	0.568	0.473	1.320	1.860
3%	0.380	0.380	0.380	1.820	1.090	0.071	0.550	0.469	1.280	1.820
4%	0.380	0.380	0.380	1.780	1.090	0.071	0.533	0.469	1.240	1.780
5%	0.390	0.390	0.390	1.740	1.090	0.071	0.516	0.469	1.200	1.740
6%	0.400	0.400	0.400	1.700	1.080	0.071	0.503	0.464	1.170	1.700
7%	0.410	0.410	0.410	1.670	1.080	0.071	0.490	0.464	1.140	1.670
8%	0.410	0.410	0.410	1.630	1.080	0.071	0.477	0.464	1.110	1.630
9%	0.420	0.420	0.420	1.600	1.070	0.071	0.464	0.460	1.080	1.600
10%	0.430	0.430	0.430	1.570	1.070	0.071	0.452	0.460	1.050	1.570
11%	0.440	0.440	0.440	1.530	1.070	0.153	0.439	0.460	1.020	1.530
12%	0.450	0.450	0.450	1.500	1.070	0.230	0.426	0.460	0.990	1.500
13%	0.450	0.450	0.450	1.470	1.060	0.307	0.417	0.456	0.970	1.470
14%	0.460	0.460	0.460	1.450	1.060	0.378	0.404	0.456	0.940	1.450
15%	0.470	0.470	0.470	1.420	1.060	0.443	0.396	0.456	0.920	1.420
16%	0.480	0.480	0.480	1.390	1.060	0.502	0.387	0.456	0.900	1.390
17%	0.490	0.490	0.490	1.370	1.050	0.561	0.378	0.452	0.880	1.370
18%	0.490	0.490	0.490	1.340	1.050	0.614	0.370	0.452	0.860	1.340
19%	0.500	0.500	0.500	1.320	1.050	0.661	0.361	0.452	0.840	1.320
20%	0.510	0.510	0.510	1.300	1.050	0.708	0.353	0.452	0.820	1.300
21%	0.520	0.520	0.520	1.280	1.040	0.749	0.348	0.447	0.810	1.280
22%	0.530	0.530	0.530	1.260	1.040	0.791	0.340	0.447	0.790	1.260
23%	0.540	0.540	0.540	1.240	1.040	0.826	0.335	0.447	0.780	1.240
24%	0.540	0.540	0.540	1.220	1.040	0.861	0.327	0.447	0.760	1.220
25%	0.550	0.550	0.550	1.200	1.030	0.891	0.323	0.443	0.750	1.200
26%	0.560	0.560	0.560	1.190	1.030	0.915	0.318	0.443	0.740	1.190
27%	0.570	0.570	0.570	1.170	1.030	0.938	0.314	0.443	0.730	1.170
28%	0.580	0.580	0.580	1.160	1.030	0.962	0.310	0.443	0.720	1.160
29%	0.590	0.590	0.590	1.140	1.030	0.979	0.305	0.443	0.710	1.140
30%	0.600	0.600	0.600	1.130	1.020	0.991	0.301	0.439	0.700	1.130
31%	0.600	0.600	0.600	1.120	1.020	1.003	0.301	0.439	0.700	1.120
32%	0.610	0.610	0.610	1.100	1.020	1.015	0.297	0.439	0.690	1.100
33%	0.620	0.620	0.620	1.090	1.020	1.027	0.297	0.439	0.690	1.090
34%	0.630	0.630	0.630	1.080	1.020	1.033	0.292	0.439	0.680	1.080
35%	0.640	0.640	0.640	1.070	1.020	1.033	0.292	0.439	0.680	1.070
36%	0.650	0.650	0.650	1.060	1.010	1.033	0.292	0.434	0.680	1.060
37%	0.660	0.660	0.660	1.050	1.010	1.033	0.288	0.434	0.670	1.050
38%	0.670	0.670	0.670	1.050	1.010	1.033	0.288	0.434	0.670	1.050
39%	0.680	0.680	0.680	1.040	1.010	1.027	0.288	0.434	0.670	1.040
40%	0.690	0.690	0.690	1.030	1.010	1.021	0.288	0.434	0.670	1.030
41%	0.700	0.700	0.700	1.030	1.010	1.015	0.288	0.434	0.670	1.030
42%	0.700	0.700	0.700	1.020	1.010	1.009	0.292	0.434	0.680	1.020
43%	0.710	0.710	0.710	1.020	1.010	0.997	0.292	0.434	0.680	1.020
44%	0.720	0.720	0.720	1.010	1.000	0.985	0.292	0.430	0.680	1.010
45%	0.730	0.730	0.730	1.010	1.000	0.974	0.297	0.430	0.690	1.010
46%	0.740	0.740	0.740	1.000	1.000	0.956	0.297	0.430	0.690	1.000
47%	0.750	0.750	0.750	1.000	1.000	0.944	0.301	0.430	0.700	1.000
48%	0.760	0.760	0.760	1.000	1.000	0.926	0.301	0.430	0.700	1.000
49%	0.770	0.770	0.770	0.990	1.000	0.909	0.305	0.430	0.710	0.990
50%	0.780	0.780	0.780	0.990	1.000	0.891	0.305	0.430	0.710	0.990
51%	0.790	0.790	0.790	0.990	1.000	0.873	0.310	0.430	0.720	0.990
52%	0.800	0.800	0.800	0.990	1.000	0.856	0.314	0.430	0.730	0.990
53%	0.810	0.810	0.810	0.990	1.000	0.832	0.318	0.430	0.740	0.990
54%	0.820	0.820	0.820	0.990	1.000	0.814	0.323	0.430	0.750	0.990

2018-2045 Emission Rate Adjustment Factor for MAN Propulsion Engine with Slide Valves - All Scenarios

Load	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	CH4	N2O
55%	0.830	0.830	0.830	0.980	0.990	0.797	0.323	0.426	0.750	0.980
56%	0.840	0.840	0.840	0.980	0.990	0.773	0.327	0.426	0.760	0.980
57%	0.850	0.850	0.850	0.980	0.990	0.749	0.331	0.426	0.770	0.980
58%	0.860	0.860	0.860	0.980	0.990	0.732	0.335	0.426	0.780	0.980
59%	0.870	0.870	0.870	0.980	0.990	0.708	0.344	0.426	0.800	0.980
60%	0.880	0.880	0.880	0.980	0.990	0.684	0.348	0.426	0.810	0.980
61%	0.890	0.890	0.890	0.980	0.990	0.667	0.353	0.426	0.820	0.980
62%	0.900	0.900	0.900	0.980	0.990	0.643	0.357	0.426	0.830	0.980
63%	0.910	0.910	0.910	0.990	0.990	0.625	0.361	0.426	0.840	0.990
64%	0.920	0.920	0.920	0.990	0.990	0.602	0.366	0.426	0.850	0.990
65%	0.930	0.930	0.930	0.990	0.990	0.578	0.374	0.426	0.870	0.990
66%	0.940	0.940	0.940	0.990	0.990	0.561	0.378	0.426	0.880	0.990
67%	0.950	0.950	0.950	0.990	0.990	0.543	0.383	0.426	0.890	0.990
68%	0.970	0.970	0.970	0.990	0.990	0.519	0.391	0.426	0.910	0.990
69%	0.980	0.980	0.980	0.990	0.990	0.502	0.396	0.426	0.920	0.990
70%	0.990	0.990	0.990	0.990	0.990	0.484	0.400	0.426	0.930	0.990
71%	1.000	1.000	1.000	0.990	0.990	0.466	0.409	0.426	0.950	0.990
72%	1.010	1.010	1.010	0.990	0.990	0.448	0.413	0.426	0.960	0.990
73%	1.020	1.020	1.020	0.990	0.990	0.437	0.421	0.426	0.980	0.990
74%	1.030	1.030	1.030	0.990	0.990	0.419	0.426	0.426	0.990	0.990
75%	1.040	1.040	1.040	0.990	0.990	0.407	0.430	0.426	1.000	0.990
76%	1.050	1.050	1.050	0.990	0.990	0.389	0.439	0.426	1.020	0.990
77%	1.060	1.060	1.060	0.990	0.990	0.378	0.443	0.426	1.030	0.990
78%	1.070	1.070	1.070	0.990	0.990	0.372	0.452	0.426	1.050	0.990
79%	1.090	1.090	1.090	0.990	0.990	0.360	0.456	0.426	1.060	0.990
80%	1.100	1.100	1.100	0.990	0.990	0.354	0.464	0.426	1.080	0.990
81%	1.110	1.110	1.110	0.990	0.990	0.342	0.469	0.426	1.090	0.990
82%	1.120	1.120	1.120	0.990	0.990	0.336	0.473	0.426	1.100	0.990
83%	1.130	1.130	1.130	0.980	0.990	0.336	0.482	0.426	1.120	0.980
84%	1.140	1.140	1.140	0.980	0.990	0.330	0.486	0.426	1.130	0.980
85%	1.150	1.150	1.150	0.980	0.990	0.330	0.495	0.426	1.150	0.980
86%	1.160	1.160	1.160	0.980	0.990	0.330	0.499	0.426	1.160	0.980
87%	1.180	1.180	1.180	0.970	0.990	0.330	0.507	0.426	1.180	0.970
88%	1.190	1.190	1.190	0.970	0.990	0.336	0.512	0.426	1.190	0.970
89%	1.200	1.200	1.200	0.960	0.990	0.342	0.516	0.426	1.200	0.960
90%	1.210	1.210	1.210	0.960	0.990	0.348	0.525	0.426	1.220	0.960
91%	1.220	1.220	1.220	0.950	1.000	0.360	0.529	0.430	1.230	0.950
92%	1.230	1.230	1.230	0.950	1.000	0.372	0.533	0.430	1.240	0.950
93%	1.250	1.250	1.250	0.940	1.000	0.384	0.538	0.430	1.250	0.940
94%	1.260	1.260	1.260	0.930	1.000	0.395	0.546	0.430	1.270	0.930
95%	1.270	1.270	1.270	0.930	1.000	0.413	0.550	0.430	1.280	0.930
96%	1.280	1.280	1.280	0.920	1.000	0.431	0.555	0.430	1.290	0.920
97%	1.290	1.290	1.290	0.910	1.000	0.454	0.559	0.430	1.300	0.910
98%	1.310	1.310	1.310	0.900	1.000	0.478	0.563	0.430	1.310	0.900
99%	1.320	1.320	1.320	0.890	1.000	0.502	0.568	0.430	1.320	0.890
100%	1.330	1.330	1.330	0.880	1.000	0.531	0.576	0.430	1.340	0.880

Source:

[1] San Pedro Bay Ports Emission Inventory Methodology Report Version 5-2023, August 2024. Table 2-10; Multiplied by EEA

2018-2045 Emission Rates Adjustment Factors for MAN Propulsion Engine without Slide Valves - All Scenarios

Load	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	CH4	N2O
1%	0.840	0.840	0.840	1.910	1.100	0.607	2.530	1.100	2.530	1.910
2%	0.830	0.830	0.830	1.860	1.100	0.598	2.450	1.100	2.450	1.860
3%	0.830	0.830	0.830	1.820	1.090	0.590	2.370	1.090	2.370	1.820
4%	0.820	0.820	0.820	1.770	1.090	0.585	2.300	1.090	2.300	1.770
5%	0.820	0.820	0.820	1.720	1.090	0.576	2.230	1.090	2.230	1.720
6%	0.810	0.810	0.810	1.680	1.080	0.568	2.160	1.080	2.160	1.680
7%	0.810	0.810	0.810	1.640	1.080	0.563	2.100	1.080	2.100	1.640
8%	0.800	0.800	0.800	1.600	1.080	0.554	2.030	1.080	2.030	1.600
9%	0.800	0.800	0.800	1.560	1.070	0.550	1.970	1.070	1.970	1.560
10%	0.790	0.790	0.790	1.520	1.070	0.546	1.910	1.070	1.910	1.520
11%	0.790	0.790	0.790	1.490	1.070	0.537	1.860	1.070	1.860	1.490
12%	0.780	0.780	0.780	1.450	1.070	0.532	1.800	1.070	1.800	1.450
13%	0.780	0.780	0.780	1.420	1.060	0.528	1.750	1.060	1.750	1.420
14%	0.780	0.780	0.780	1.390	1.060	0.524	1.700	1.060	1.700	1.390
15%	0.770	0.770	0.770	1.360	1.060	0.519	1.650	1.060	1.650	1.360
16%	0.770	0.770	0.770	1.330	1.060	0.515	1.610	1.060	1.610	1.330
17%	0.770	0.770	0.770	1.300	1.050	0.510	1.560	1.050	1.560	1.300
18%	0.770	0.770	0.770	1.280	1.050	0.506	1.520	1.050	1.520	1.280
19%	0.760	0.760	0.760	1.250	1.050	0.502	1.480	1.050	1.480	1.250
20%	0.760	0.760	0.760	1.230	1.050	0.497	1.440	1.050	1.440	1.230
21%	0.760	0.760	0.760	1.200	1.040	0.497	1.410	1.040	1.410	1.200
22%	0.760	0.760	0.760	1.180	1.040	0.493	1.370	1.040	1.370	1.180
23%	0.760	0.760	0.760	1.160	1.040	0.488	1.340	1.040	1.340	1.160
24%	0.750	0.750	0.750	1.140	1.040	0.484	1.310	1.040	1.310	1.140
25%	0.750	0.750	0.750	1.120	1.030	0.484	1.280	1.030	1.280	1.120
26%	0.750	0.750	0.750	1.110	1.030	0.480	1.250	1.030	1.250	1.110
27%	0.750	0.750	0.750	1.090	1.030	0.475	1.220	1.030	1.220	1.090
28%	0.750	0.750	0.750	1.070	1.030	0.475	1.200	1.030	1.200	1.070
29%	0.750	0.750	0.750	1.060	1.030	0.471	1.170	1.030	1.170	1.060
30%	0.750	0.750	0.750	1.050	1.020	0.471	1.150	1.020	1.150	1.050
31%	0.750	0.750	0.750	1.030	1.020	0.466	1.130	1.020	1.130	1.030
32%	0.750	0.750	0.750	1.020	1.020	0.466	1.110	1.020	1.110	1.020
33%	0.750	0.750	0.750	1.010	1.020	0.462	1.090	1.020	1.090	1.010
34%	0.750	0.750	0.750	1.000	1.020	0.462	1.080	1.020	1.080	1.000
35%	0.760	0.760	0.760	0.990	1.020	0.458	1.060	1.020	1.060	0.990
36%	0.760	0.760	0.760	0.980	1.010	0.458	1.050	1.010	1.050	0.980
37%	0.760	0.760	0.760	0.980	1.010	0.453	1.040	1.010	1.040	0.980
38%	0.760	0.760	0.760	0.970	1.010	0.453	1.020	1.010	1.020	0.970
39%	0.760	0.760	0.760	0.960	1.010	0.449	1.010	1.010	1.010	0.960
40%	0.760	0.760	0.760	0.960	1.010	0.449	1.000	1.010	1.000	0.960
41%	0.770	0.770	0.770	0.950	1.010	0.444	0.990	1.010	0.990	0.950
42%	0.770	0.770	0.770	0.950	1.010	0.444	0.990	1.010	0.990	0.950
43%	0.770	0.770	0.770	0.940	1.010	0.444	0.980	1.010	0.980	0.940
44%	0.780	0.780	0.780	0.940	1.000	0.440	0.970	1.000	0.970	0.940
45%	0.780	0.780	0.780	0.940	1.000	0.440	0.970	1.000	0.970	0.940
46%	0.780	0.780	0.780	0.940	1.000	0.436	0.960	1.000	0.960	0.940
47%	0.790	0.790	0.790	0.940	1.000	0.436	0.960	1.000	0.960	0.940
48%	0.790	0.790	0.790	0.930	1.000	0.431	0.960	1.000	0.960	0.930
49%	0.790	0.790	0.790	0.930	1.000	0.431	0.960	1.000	0.960	0.930
50%	0.800	0.800	0.800	0.930	1.000	0.431	0.960	1.000	0.960	0.930
51%	0.800	0.800	0.800	0.940	1.000	0.427	0.950	1.000	0.950	0.940
52%	0.810	0.810	0.810	0.940	1.000	0.427	0.950	1.000	0.950	0.940
53%	0.810	0.810	0.810	0.940	1.000	0.422	0.950	1.000	0.950	0.940

2018-2045 Emission Rates Adjustment Factors for MAN Propulsion Engine without Slide Valves - All Scenarios

Load	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	CH4	N2O
54%	0.820	0.820	0.820	0.940	1.000	0.422	0.950	1.000	0.950	0.940
55%	0.820	0.820	0.820	0.940	0.990	0.422	0.960	0.990	0.960	0.940
56%	0.830	0.830	0.830	0.940	0.990	0.418	0.960	0.990	0.960	0.940
57%	0.840	0.840	0.840	0.950	0.990	0.418	0.960	0.990	0.960	0.950
58%	0.840	0.840	0.840	0.950	0.990	0.418	0.960	0.990	0.960	0.950
59%	0.850	0.850	0.850	0.950	0.990	0.414	0.960	0.990	0.960	0.950
60%	0.860	0.860	0.860	0.950	0.990	0.414	0.970	0.990	0.970	0.950
61%	0.860	0.860	0.860	0.960	0.990	0.409	0.970	0.990	0.970	0.960
62%	0.870	0.870	0.870	0.960	0.990	0.409	0.970	0.990	0.970	0.960
63%	0.880	0.880	0.880	0.960	0.990	0.409	0.980	0.990	0.980	0.960
64%	0.890	0.890	0.890	0.970	0.990	0.409	0.980	0.990	0.980	0.970
65%	0.890	0.890	0.890	0.970	0.990	0.405	0.980	0.990	0.980	0.970
66%	0.900	0.900	0.900	0.980	0.990	0.405	0.990	0.990	0.990	0.980
67%	0.910	0.910	0.910	0.980	0.990	0.405	0.990	0.990	0.990	0.980
68%	0.920	0.920	0.920	0.980	0.990	0.400	0.990	0.990	0.990	0.980
69%	0.930	0.930	0.930	0.990	0.990	0.400	1.000	0.990	1.000	0.990
70%	0.940	0.940	0.940	0.990	0.990	0.400	1.000	0.990	1.000	0.990
71%	0.940	0.940	0.940	0.990	0.990	0.400	1.000	0.990	1.000	0.990
72%	0.950	0.950	0.950	1.000	0.990	0.400	1.010	0.990	1.010	1.000
73%	0.960	0.960	0.960	1.000	0.990	0.400	1.010	0.990	1.010	1.000
74%	0.970	0.970	0.970	1.000	0.990	0.400	1.010	0.990	1.010	1.000
75%	0.980	0.980	0.980	1.010	0.990	0.396	1.010	0.990	1.010	1.010
76%	0.990	0.990	0.990	1.010	0.990	0.396	1.010	0.990	1.010	1.010
77%	1.000	1.000	1.000	1.010	0.990	0.396	1.010	0.990	1.010	1.010
78%	1.010	1.010	1.010	1.010	0.990	0.400	1.010	0.990	1.010	1.010
79%	1.030	1.030	1.030	1.020	0.990	0.400	1.010	0.990	1.010	1.020
80%	1.040	1.040	1.040	1.020	0.990	0.400	1.010	0.990	1.010	1.020
81%	1.050	1.050	1.050	1.020	0.990	0.400	1.010	0.990	1.010	1.020
82%	1.060	1.060	1.060	1.020	0.990	0.400	1.010	0.990	1.010	1.020
83%	1.070	1.070	1.070	1.020	0.990	0.405	1.010	0.990	1.010	1.020
84%	1.080	1.080	1.080	1.020	0.990	0.405	1.000	0.990	1.000	1.020
85%	1.100	1.100	1.100	1.020	0.990	0.405	1.000	0.990	1.000	1.020
86%	1.110	1.110	1.110	1.020	0.990	0.409	0.990	0.990	0.990	1.020
87%	1.120	1.120	1.120	1.020	0.990	0.409	0.990	0.990	0.990	1.020
88%	1.130	1.130	1.130	1.020	0.990	0.414	0.980	0.990	0.980	1.020
89%	1.150	1.150	1.150	1.010	0.990	0.418	0.970	0.990	0.970	1.010
90%	1.160	1.160	1.160	1.010	0.990	0.418	0.970	0.990	0.970	1.010
91%	1.170	1.170	1.170	1.010	1.000	0.422	0.960	1.000	0.960	1.010
92%	1.190	1.190	1.190	1.000	1.000	0.427	0.940	1.000	0.940	1.000
93%	1.200	1.200	1.200	1.000	1.000	0.431	0.930	1.000	0.930	1.000
94%	1.220	1.220	1.220	0.990	1.000	0.436	0.920	1.000	0.920	0.990
95%	1.230	1.230	1.230	0.990	1.000	0.444	0.910	1.000	0.910	0.990
96%	1.240	1.240	1.240	0.980	1.000	0.449	0.890	1.000	0.890	0.980
97%	1.260	1.260	1.260	0.970	1.000	0.453	0.870	1.000	0.870	0.970
98%	1.280	1.280	1.280	0.970	1.000	0.462	0.860	1.000	0.860	0.970
99%	1.290	1.290	1.290	0.960	1.000	0.471	0.840	1.000	0.840	0.960
100%	1.310	1.310	1.310	0.950	1.000	0.475	0.820	1.000	0.820	0.950

Source:

[1] San Pedro Bay Ports Emission Inventory Methodology Report Version 5-2023, August 2024. Table 2-11; Multiplied by EEA

2018-2045 Emission Rates Adjustment Factors for Non-MAN Propulsion Engines - All Scenarios

Load	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	CH4	N2O
1%	7.290	7.290	7.290	4.630	3.300	9.680	21.180	3.280	21.180	4.630
2%	7.290	7.290	7.290	4.630	3.300	9.680	21.180	3.280	21.180	4.630
3%	4.330	4.330	4.330	2.920	2.450	6.460	11.680	2.440	11.680	2.920
4%	3.090	3.090	3.090	2.210	2.020	4.860	7.710	2.010	7.710	2.210
5%	2.440	2.440	2.440	1.830	1.770	3.890	5.610	1.760	5.610	1.830
6%	2.040	2.040	2.040	1.600	1.600	3.250	4.350	1.590	4.350	1.600
7%	1.790	1.790	1.790	1.450	1.470	2.790	3.520	1.470	3.520	1.450
8%	1.610	1.610	1.610	1.350	1.380	2.450	2.950	1.380	2.950	1.350
9%	1.480	1.480	1.480	1.270	1.310	2.180	2.520	1.310	2.520	1.270
10%	1.380	1.380	1.380	1.220	1.260	1.960	2.180	1.250	2.180	1.220
11%	1.300	1.300	1.300	1.170	1.210	1.790	1.960	1.210	1.960	1.170
12%	1.240	1.240	1.240	1.140	1.170	1.640	1.760	1.170	1.760	1.140
13%	1.190	1.190	1.190	1.110	1.140	1.520	1.600	1.140	1.600	1.110
14%	1.150	1.150	1.150	1.080	1.110	1.410	1.470	1.110	1.470	1.080
15%	1.110	1.110	1.110	1.060	1.090	1.320	1.360	1.080	1.360	1.060
16%	1.080	1.080	1.080	1.050	1.060	1.240	1.260	1.060	1.260	1.050
17%	1.060	1.060	1.060	1.030	1.050	1.170	1.180	1.040	1.180	1.030
18%	1.040	1.040	1.040	1.020	1.030	1.110	1.110	1.030	1.110	1.020
19%	1.020	1.020	1.020	1.010	1.010	1.050	1.050	1.010	1.050	1.010
20%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
21%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
22%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
23%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
24%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
26%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
27%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
28%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
29%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
30%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
31%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
32%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
33%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
34%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
35%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
36%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
37%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
38%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
39%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
40%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
41%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
42%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
43%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
44%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
45%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
46%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
47%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
48%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
49%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

2018-2045 Emission Rates Adjustment Factors for Non-MAN Propulsion Engines - All Scenarios

Load	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	CH4	N2O
51%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
52%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
53%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
54%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
55%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
56%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
57%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
58%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
59%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
60%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
61%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
62%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
63%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
64%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
65%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
66%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
67%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
68%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
69%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
70%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
71%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
72%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
73%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
74%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
75%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
76%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
77%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
78%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
79%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
80%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
81%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
82%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
83%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
84%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
85%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
86%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
87%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
88%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
89%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
90%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
91%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
92%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
93%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
94%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
95%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
96%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
97%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
98%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
99%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100%	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

2018- 2045 Emission Factor Adjustment (EFA) for Main Engines - All Scenarios

Vessel Category	PM	PM2.5	DPM	NOx	SOx	CO	HC	VOC	CO2	CH4	N2O
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	0.4	1.0	1.0	1.0

Source:

[1] San Pedro Bay Ports Emission Inventory Methodology Report Version 5-2023, pg 20. August 2024.

2018 through 2023 OGV Annual Activity and Vessel Load Data - Revised Project

			Annual							Calls by Tier Level				Vessel Load Information								
Calendar Year	Project Scenario/Ship Type	Weighted Average Model Year	Annual total transits	No. of tugs per call	Number of Anchorage Calls	Anchorage Time (hr/call)	NonAMP'd Vessel Hotelling Time (hr/call)	% Calls using AMP	AMP'd vessels Auxiliary Engine Hours Runtime	Tier 0	Tier 1	Tier 2	Tier 3	Weighted Average Main Engine Max Load (kW)	Aux Engine Transit Load (kW)	Aux Engine Maneuvering Load (kW)	Aux Engine Berth Load (kW)	Aux Engine Anchorage Load (kW)	Boiler Engine Transit Load (kW)	Boiler Engine Maneuvering Load (kW)	Boiler Engine Berth Load (kW)	Boiler Engine Anchorage Load (kW)
2018	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2018	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2018	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2018	Containerships 4,000 - 5,000 TEU	2008	48	2	0	-	25.1	96%	5.0	0%	100%	0%	0%	50299	1454	2314	1148	1124	179	333	449	446
2018	Containerships 5,000 - 6,000 TEU			--	--	--				--												
2018	Containerships 6,000 - 7,000 TEU	2010	128	2	2	72.49	70.3	97%	5.4	0%	65%	35%	0%	54814	1509	2237	1039	1464	206	520	597	595
2018	Containerships 7,000 - 8,000 TEU	2006	4	2	0	-	79.3	100%	1.8	0%	100%	0%	0%	68640	1498	2445	1225	884	412	639	678	677
2018	Containerships 8,000 - 9,000 TEU	2007	44	2	0	-	78.5	100%	5.0	0%	100%	0%	0%	68263	1544	2666	980	1055	253	521	653	703
2018	Containerships 9,000 - 10,000 TEU			--	--	--				--												
2018	Containerships 10,000 - 11,000 TEU	2013	32	2	1	42.72	83.0	100%	2.3	0%	0%	100%	0%	58100	1757	2210	1163	1051	314	383	511	511
2018	Containerships 11,000 - 12,000 TEU	2015	2	2	0	-	120.7	100%	27.7	0%	0%	100%	0%	42350	2213	2944	1341	1684	315	517	694	694
2018	Containerships 12,000 - 13,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2018	Containerships 13,000 - 14,000 TEU	2012	8	2	0	-	97.4	100%	9.1	0%	50%	50%	0%	72240	1678	2418	1234	1220	186	253	522	511
2018	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2018	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2018	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2018	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2018	General Cargo Vessels	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2018	RoRo	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2019	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2019	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2019	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2019	Containerships 4,000 - 5,000 TEU	2008	56	2	1	3.82	25.3	96%	5.8	0%	100%	0%	0%	51390	1454	2314	1148	1124	179	333	449	446
2019	Containerships 5,000 - 6,000 TEU	2003	2	2	0	-	65.9	0%	0.0	0%	100%	0%	0%	57075	1811	3293	945	967	247	473	579	572
2019	Containerships 6,000 - 7,000 TEU	2010	87	2	2	4.30	69.7	100%	11.4	0%	100%	0%	0%	57018	1509	2237	1039	1464	206	520	597	595
2019	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2019	Containerships 8,000 - 9,000 TEU	2007	18	2	1	34.50	93.6	100%	8.7	0%	100%	0%	0%	68640	1544	2666	980	1055	253	521	653	703
2019	Containerships 9,000 - 10,000 TEU	2009	26	2	0	-	91.2	100%	9.5	0%	100%	0%	0%	60917	1514	2864	1061	996	341	526	619	618
2019	Containerships 10,000 - 11,000 TEU	2013	36	2	0	-	76.2	100%	1.8	0%	0%	100%	0%	58100	1757	2210	1163	1051	314	383	511	511
2019	Containerships 11,000 - 12,000 TEU	2006	4	2	0	-	72.2	100%	37.9	50%	0%	50%	0%	29175	2213	2944	1341	1684	315	517	694	694
2019	Containerships 12,000 - 13,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2019	Containerships 13,000 - 14,000 TEU	2012	46	2	1	5.37	75.6	96%	10.6	0%	83%	17%	0%	70184	1664	2450	1231	1224	227	317	565	560
2019	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2019	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2019	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2019	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2019	General Cargo Vessels	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2019	RoRo	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2020	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2020	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2020	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2020	Containerships 4,000 - 5,000 TEU	2007	30	2	4	66.45	35.6	93%	6.7	0%	93%	7%	0%	47911	1419	2526	1073	1056	180	351	457	453
2020	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2020	Containerships 6,000 - 7,000 TEU	2010	56	2	3	122.22	71.2	81%	8.6	0%	100%	0%	0%	57874	1558	2477	1083	1266	248	471	616	612
2020	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2020	Containerships 8,000 - 9,000 TEU	2008	77	2	8	68.06	103.4	97%	9.3	0%	97%	3%	0%	71188	1635	2519	1161	1052	210	446	561	588
2020	Containerships 9,000 - 10,000 TEU	2012	11	2	2	92.08	86.6	100%	9.7	0%	17%	83%	0%	56905	1634	3335	1071	1174	448	559	737	722
2020	Containerships 10,000 - 11,000 TEU	2013	28	2	4	88.15	89.0	93%	9.0	0%	14%	86%	0%	54491	1634	2003	1130	1181	368	473	656	656
2020	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2020	Containerships 12,000 - 13,000 TEU	2010	5	2	1	119.08	150.4	100%	3.1	0%	100%	0%	0%	72240	2048	2634	1786	1724	349	602	687	687
2020	Containerships 13,000 - 14,000 TEU	2011	22	2	1	24.97	76.6	100%	1.9	0%	82%	18%	0%	72240	1589	2136	1346	1319	241	306	559	558
2020	Containerships 14,000 - 15,000 TEU	2010	4	2	2	53.45	146.9	100%	1.0	0%	100%	0%	0%	72240	1553	2042	1152	1155	266	481	402	532
2020	Containerships 15,000 - 16,000 TEU	2020	3	2	1	94.75	161.3	100%	2.3	0%	0%	0%	100%	43505	1850	2200	850	1100	259	395	402	402
2020	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2020	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2020	General Cargo Vessels	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2020	RoRo	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2021	Containerships 1,000 - 2,000 TEU	2015	4	2	2	474.94	139.1	0%	0.0	0%	0%	100%	0%	13920	913	1108	571	1000	90	181	437	230
2021	Containerships 2,000 - 3,000 TEU	2009	14	2	6	197.21	139.1	0%	0.0	0%	71%	29%	0%	19264	1287	1887	694	528	188	359	444	441
2021	Containerships 3,000 - 4,000 TEU	2007	2	2	0	-	139.1	0%	0.0	0%	100%	0%	0%	28880	920	1673	758	559	203	408	552	517
2021	Containerships 4,000 - 5,000 TEU	2010	42	2	18	176.99	136.8	18%	10.0	0%	57%	43%	0%	37324	1419	2526	1073	1056	180	351	457	453
2021	Containerships 5,000 - 6,000 TEU	2005	14	2	3	310.32	134.6	43%	1.6	0%	86%	14%	0%	43122	1594	2504	1047	900	266	496	606	601
2021	Containerships 6,000 - 7,000 TEU	2008	22	2	10	179.72	102.8	73%	13.5	0%	100%	0%	0%	61330	1558	2477	1083	1266	248	471	616	612
2021	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2021	Containerships 8,000 - 9,000 TEU	2009	58	2	26	204.34	156.8	97%	21.9	0%	93%	7%	0%	68042	1635	2519	1161	1052	210	446	561	588
2021	Containerships 9,000 - 10,000 TEU	2011	8	2	3	192.36	126.7	100%	4.0	0%	25%	75%	0%	59213	1634	3335	1071	1174	448	559	737	722
2021	Containerships 10,000 - 11,000 TEU	2012	65	2	25	248.57	161.9	100%	2.0	0%	22%	78%	0%	60406	1634	2003	1130	1181	368	473	656	656
2021	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2021	Containerships 12,000 - 13,000 TEU	2012	8	2	2	116.98	149.3	75%	2.1	0%	75%	25%	0%	64785	1740	2124	1285	1275	127	272	455	455
2021	Containerships 13,000 - 14,000 TEU	2009	6	2	1	118.30	76.1	100%	4.6	0%	100%	0%	0%	72240	1589	2136	1346	1319	241	306	559	558
2021	Containerships 14,000 - 15,000 TEU	2013	4	2	2	126.99	53.8	100%	2.9	0%	50%	50%	0%	60620	1553	2042	1152	1155	266	481	402	532
2021	Containerships 15,000 - 16,000 TEU	2020	8	2	2	92.25	112.2	100%	2.0	0%	0%	0%	100%	43505	1850	2200	850	1100	259	395	402	402
2021	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2021	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2021	General Cargo Vessels	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2021	RoRo	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2022	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2022	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2022	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2022	Containerships 4,000 - 5,000 TEU	2008	2	2	0	-	69.8	100%	2.8	0%	100%	0%	0%	40040	1419	2526	1073	1056	180	351	457	453
2022	Containerships 5,000 - 6,000 TEU	2005	14	2	4	67.09	94.5	100%	24.1	0%	100%	0%	0%	44613	1594	2504	1047	900	266	496	606	601
2022	Containerships 6,000 - 7,000 TEU	2006	4	2	2	10.43	101.8	100%	6.3	0%	100%	0%	0%	68520	1558	2477	1083	1266	248	471	616	612
2022	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2022	Containerships 8,000 - 9,000 TEU	2010	105	2	0	-	133.1	96%	11.4	0%	91%	9%	0%	67080	1635	2519	1161	1052	210	446	561	588
2022	Containerships 9,000 - 10,000 TEU	2015	4	2	0	-	78.4	100%	1.9	0%	0%	100%	0%	51250	1634	3335	1071	1174	448	559	737	722
2022	Containerships 10,000 - 11,000 TEU	2013	41	2	3	26.99	180.1	100%	2.2	0%	5%	95%	0%	58602	1634	2003	1130	1181	368	473	656	656
2022	Containerships 11,000 - 12,000 TEU	2014	18	2	1	49.17	89.3	100%	2.7	0%	11%	89%	0%	45363	1771	2429	991	1134	187	309	452	452
2022	Containerships 12,000 - 13,000 TEU	2012	6	2	0	-	171.1	100%	2.2	0%	67%	33%	0%	61560	1661	2146	1216	1212	108	236	374	374
2022	Containerships 13,000 - 14,000 TEU	2011	2	2	0	-	143.0	100%	2.1	0%	100%	0%	0%	72240	1589	2136	1346	1319	241	306	559	558
2022	Containerships 14,000 - 15,000 TEU	2011	4	2	1	20.20	162.5	100%	3.7	0%	100%	0%	0%	72240	1553	2042	1152	1155	266	481	402	532
2022	Containerships 15,000 - 16,000 TEU	2019	2	2	0	-	132.4	100%	3.7	0%	0%	0%	100%	43505	1850	2200	850	1100	259	395	402	402
2022	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2022	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2022	General Cargo Vessels	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2022	RoRo	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2023	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2023	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2023	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2023	Containerships 4,000 - 5,000 TEU	2003	2	2	0	-	61.0	100%	3.4	0%	100%	0%	0%	41107	1419	2526	1073	1056	180	351	457	453
2023	Containerships 5,000 - 6,000 TEU	2004	2	2	0	-	47.7	100%	4.1	0%	100%	0%	0%	41107	1594	2504	1047	900	266	496	606	601
2023	Containerships 6,000 - 7,000 TEU	2005	4	2	0	-	101.5	100%	4.7	0%	100%	0%	0%	62135	1558	2477	1083	1266	248	471	616	612
2023	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2023	Containerships 8,000 - 9,000 TEU	2011	185	2	8	36.48	66.4	99%	5.6	0%	56%	44%	0%	59305	1635	2519	1161	1052	210	446	561	588
2023	Containerships 9,000 - 10,000 TEU	2013	46	2	5	34.02	38.8	91%	4.5	0%	17%	83%	0%	51147	1634	3335	1071	1174	448	559	737	722
2023	Containerships 10,000 - 11,000 TEU	2009	7	2	0	-	51.7	100%	17.3	0%	75%	25%	0%	66005	1634	2003	1130	1181	368	473	656	656
2023	Containerships 11,000 - 12,000 TEU	2015	58	2	3	44.59	50.3	93%	6.1	0%	3%	97%	0%	44579	1771	2429	991	1134	187	309	452	452
2023	Containerships 12,000 - 13,000 TEU	2014	8	2	0	-	104.1	100%	3.2	0%	25%	75%	0%	49320	1661	2146	1216	1212	108	236	374	374
2023	Containerships 13,000 - 14,000 TEU	2011	2	2	0	-	142.0	100%	6.0	0%	100%	0%	0%	72240	1589	2136	1346	1319	241	306	559	558
2023	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2023	Containerships 15,000 - 16,000 TEU	2022	2	2	0	-	34.6	100%	6.7	0%	0%	0%	100%	46000	1850	2200	850	1100	259	395	402	402
2023	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2023	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2023	General Cargo Vessels	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2023	RoRo	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

2018-2023 OGV Peak-Day Activities - Revised Project

		Peak-Day					
Calendar Year	Project Scenario/Ship Type	Totak Peakday Calls	Number of Anchorage Calls	Anchorage Time (hr/call)	NonAMP'd Vessel Hotelling Time (hr/call)	% Calls using AMP	AMP'd vessels Auxiliary Engine Hours Runtime
2018	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2018	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2018	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2018	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--
2018	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--
2018	Containerships 6,000 - 7,000 TEU	1	0	0	24	100%	5.8
2018	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2018	Containerships 8,000 - 9,000 TEU	--	--	--	--	--	--
2018	Containerships 9,000 - 10,000 TEU	--	--	--	--	--	--
2018	Containerships 10,000 - 11,000 TEU	--	--	--	--	--	--
2018	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--
2018	Containerships 12,000 - 13,000 TEU	--	--	--	--	--	--
2018	Containerships 13,000 - 14,000 TEU	1	0	0	22.67	100%	22.7
2018	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2018	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2018	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2018	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2018	General Cargo Vessels	--	--	--	--	--	--
2018	RoRo	--	--	--	--	--	--
2019	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2019	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2019	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2019	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--
2019	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--
2019	Containerships 6,000 - 7,000 TEU	1	1	4	19.55	100%	19.6
2019	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2019	Containerships 8,000 - 9,000 TEU	--	--	--	--	--	--
2019	Containerships 9,000 - 10,000 TEU	--	--	--	--	--	--
2019	Containerships 10,000 - 11,000 TEU	--	--	--	--	--	--
2019	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--
2019	Containerships 12,000 - 13,000 TEU	--	--	--	--	--	--
2019	Containerships 13,000 - 14,000 TEU	1	1	5.367	16.22	100%	1.4
2019	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2019	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2019	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2019	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2019	General Cargo Vessels	--	--	--	--	--	--
2019	RoRo	--	--	--	--	--	--
2020	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2020	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2020	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2020	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--
2020	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--
2020	Containerships 6,000 - 7,000 TEU	1	0	0	12.93	0%	12.9
2020	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2020	Containerships 8,000 - 9,000 TEU	1	0	0	2.08	0%	2.1
2020	Containerships 9,000 - 10,000 TEU	--	--	--	--	--	--
2020	Containerships 10,000 - 11,000 TEU	1	0	0	24.00	0%	24.0
2020	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--
2020	Containerships 12,000 - 13,000 TEU	--	--	--	--	--	--
2020	Containerships 13,000 - 14,000 TEU	--	--	--	--	--	--
2020	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2020	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2020	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2020	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2020	General Cargo Vessels	--	--	--	--	--	--
2020	RoRo	--	--	--	--	--	--
2021	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2021	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2021	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2021	Containerships 4,000 - 5,000 TEU	1	0	0	24	0%	24.0
2021	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--
2021	Containerships 6,000 - 7,000 TEU	1	0	0	1	0%	1.0
2021	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2021	Containerships 8,000 - 9,000 TEU	--	--	--	--	--	--
2021	Containerships 9,000 - 10,000 TEU	--	--	--	--	--	--
2021	Containerships 10,000 - 11,000 TEU	--	--	--	--	--	--
2021	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--
2021	Containerships 12,000 - 13,000 TEU	--	--	--	--	--	--
2021	Containerships 13,000 - 14,000 TEU	--	--	--	--	--	--
2021	Containerships 14,000 - 15,000 TEU	1	1	4.9	19.1	100%	1.4
2021	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2021	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2021	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2021	General Cargo Vessels	--	--	--	--	--	--
2021	RoRo	--	--	--	--	--	--

2018-2023 OGV Peak-Day Activities - Revised Project

		Peak-Day					
Calendar Year	Project Scenario/Ship Type	Totak Peakday Calls	Number of Anchorage Calls	Anchorage Time (hr/call)	NonAMP'd Vessel Hotelling Time (hr/call)	% Calls using AMP	AMP'd vessels Auxiliary Engine Hours Runtime
2022	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2022	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2022	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2022	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--
2022	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--
2022	Containerships 6,000 - 7,000 TEU	--	--	--	--	--	--
2022	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2022	Containerships 8,000 - 9,000 TEU	2	0	0	9.375	100%	3.0
2022	Containerships 9,000 - 10,000 TEU	--	--	--	--	--	--
2022	Containerships 10,000 - 11,000 TEU	1	0	0	24	100%	0.0
2022	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--
2022	Containerships 12,000 - 13,000 TEU	--	--	--	--	--	--
2022	Containerships 13,000 - 14,000 TEU	--	--	--	--	--	--
2022	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2022	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2022	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2022	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2022	General Cargo Vessels	--	--	--	--	--	--
2022	RoRo	--	--	--	--	--	--
2023	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2023	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2023	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2023	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--
2023	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--
2023	Containerships 6,000 - 7,000 TEU	--	--	--	--	--	--
2023	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2023	Containerships 8,000 - 9,000 TEU	1	0	0	24	100%	0.0
2023	Containerships 9,000 - 10,000 TEU	--	--	--	--	--	--
2023	Containerships 10,000 - 11,000 TEU	--	--	--	--	--	--
2023	Containerships 11,000 - 12,000 TEU	2	0	0	10.55	0%	10.6
2023	Containerships 12,000 - 13,000 TEU	--	--	--	--	--	--
2023	Containerships 13,000 - 14,000 TEU	--	--	--	--	--	--
2023	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2023	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2023	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2023	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2023	General Cargo Vessels	--	--	--	--	--	--
2023	RoRo	--	--	--	--	--	--
	Total						

2018 through 2023 OGV Main Engine Load by Zone- Revised Project

		Load					
Calendar Year	Type	Zone 5	Zone 4	Zone 3	Zone 2	Zone 1	Anchorage
2018	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2018	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2018	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2018	Containerships 4,000 - 5,000 TEU	4764	4302	3221	1021	0	0
2018	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--
2018	Containerships 6,000 - 7,000 TEU	6339	5724	4285	1358	0	0
2018	Containerships 7,000 - 8,000 TEU	8056	7274	5445	1726	0	0
2018	Containerships 8,000 - 9,000 TEU	7943	7173	5370	1702	0	0
2018	Containerships 9,000 - 10,000 TEU	--	--	--	--	--	--
2018	Containerships 10,000 - 11,000 TEU	8669	7828	5860	1857	0	0
2018	Containerships 11,000 - 12,000 TEU	6032	5447	4078	1292	0	0
2018	Containerships 12,000 - 13,000 TEU	--	--	--	--	--	--
2018	Containerships 13,000 - 14,000 TEU	9913	8951	6701	2124	0	0
2018	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2018	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2018	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2018	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2018	General Cargo Vessels	--	--	--	--	--	--
2018	RoRo	--	--	--	--	--	--
2019	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2019	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2019	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2019	Containerships 4,000 - 5,000 TEU	4573	4334	3248	1030	0	0
2019	Containerships 5,000 - 6,000 TEU	6085	5766	4322	1370	0	0
2019	Containerships 6,000 - 7,000 TEU	5831	5525	4142	1313	0	0
2019	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2019	Containerships 8,000 - 9,000 TEU	8037	7616	5709	1810	0	0
2019	Containerships 9,000 - 10,000 TEU	5291	5014	3758	1191	0	0
2019	Containerships 10,000 - 11,000 TEU	8213	7783	5834	1849	0	0
2019	Containerships 11,000 - 12,000 TEU	4799	4548	3409	1081	0	0
2019	Containerships 12,000 - 13,000 TEU	--	--	--	--	--	--
2019	Containerships 13,000 - 14,000 TEU	8695	8240	6176	1958	0	0
2019	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2019	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2019	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2019	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2019	General Cargo Vessels	--	--	--	--	--	--
2019	RoRo	--	--	--	--	--	--
2020	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2020	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2020	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2020	Containerships 4,000 - 5,000 TEU	4799	4598	3463	1098	0	0
2020	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--
2020	Containerships 6,000 - 7,000 TEU	5656	5418	4081	1294	0	0
2020	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2020	Containerships 8,000 - 9,000 TEU	7468	7154	5389	1708	0	0
2020	Containerships 9,000 - 10,000 TEU	8334	7984	6013	1906	0	0
2020	Containerships 10,000 - 11,000 TEU	7376	7066	5322	1687	0	0
2020	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--
2020	Containerships 12,000 - 13,000 TEU	8326	7977	6008	1904	0	0
2020	Containerships 13,000 - 14,000 TEU	8363	8011	6034	1913	0	0
2020	Containerships 14,000 - 15,000 TEU	9639	9234	6955	2205	0	0
2020	Containerships 15,000 - 16,000 TEU	5952	5702	4295	1361	0	0
2020	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2020	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2020	General Cargo Vessels	--	--	--	--	--	--
2020	RoRo	--	--	--	--	--	--
2021	Containerships 1,000 - 2,000 TEU	3463	3317	2499	792	0	0
2021	Containerships 2,000 - 3,000 TEU	3611	3460	2606	826	0	0
2021	Containerships 3,000 - 4,000 TEU	4740	4541	3420	1084	0	0
2021	Containerships 4,000 - 5,000 TEU	4698	4501	3390	1074	0	0
2021	Containerships 5,000 - 6,000 TEU	5297	5074	3822	1211	0	0
2021	Containerships 6,000 - 7,000 TEU	6329	6064	4567	1448	0	0
2021	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2021	Containerships 8,000 - 9,000 TEU	7415	7104	5351	1696	0	0
2021	Containerships 9,000 - 10,000 TEU	8076	7737	5828	1847	0	0
2021	Containerships 10,000 - 11,000 TEU	7954	7620	5739	1819	0	0
2021	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--
2021	Containerships 12,000 - 13,000 TEU	8226	7881	5936	1881	0	0
2021	Containerships 13,000 - 14,000 TEU	7819	7491	5642	1788	0	0
2021	Containerships 14,000 - 15,000 TEU	8088	7749	5837	1850	0	0
2021	Containerships 15,000 - 16,000 TEU	5952	5702	4295	1361	0	0
2021	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2021	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2021	General Cargo Vessels	--	--	--	--	--	--
2021	RoRo	--	--	--	--	--	--
2022	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2022	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2022	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2022	Containerships 4,000 - 5,000 TEU	3881	3751	2708	858	0	0
2022	Containerships 5,000 - 6,000 TEU	5678	5487	3961	1255	0	0
2022	Containerships 6,000 - 7,000 TEU	6946	6712	4846	1536	0	0
2022	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2022	Containerships 8,000 - 9,000 TEU	7848	7584	5475	1735	0	0
2022	Containerships 9,000 - 10,000 TEU	8037	7766	5606	1777	0	0
2022	Containerships 10,000 - 11,000 TEU	8389	8106	5852	1855	0	0
2022	Containerships 11,000 - 12,000 TEU	6961	6727	4856	1539	0	0
2022	Containerships 12,000 - 13,000 TEU	8742	8447	6098	1933	0	0
2022	Containerships 13,000 - 14,000 TEU	7664	7406	5346	1695	0	0
2022	Containerships 14,000 - 15,000 TEU	9372	9057	6538	2072	0	0
2022	Containerships 15,000 - 16,000 TEU	6157	5950	4295	1361	0	0
2022	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2022	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2022	General Cargo Vessels	--	--	--	--	--	--
2022	RoRo	--	--	--	--	--	--
2023	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2023	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2023	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2023	Containerships 4,000 - 5,000 TEU	5268	5203	3958	1254	0	0
2023	Containerships 5,000 - 6,000 TEU	5075	5012	3813	1209	0	0
2023	Containerships 6,000 - 7,000 TEU	4961	4900	3727	1181	0	0
2023	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2023	Containerships 8,000 - 9,000 TEU	7452	7361	5599	1775	0	0
2023	Containerships 9,000 - 10,000 TEU	7139	7051	5364	1700	0	0
2023	Containerships 10,000 - 11,000 TEU	7285	7195	5473	1735	0	0
2023	Containerships 11,000 - 12,000 TEU	6962	6876	5231	1658	0	0
2023	Containerships 12,000 - 13,000 TEU	7640	7546	5740	1819	0	0
2023	Containerships 13,000 - 14,000 TEU	7116	7028	5346	1695	0	0
2023	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2023	Containerships 15,000 - 16,000 TEU	7154	7066	5375	1704	0	0
2023	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2023	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2023	General Cargo Vessels	--	--	--	--	--	--
2023	RoRo	--	--	--	--	--	--

2018 through 2023 Transit Parameters - Revised Project

Calendar Year	Parameter	Zone 5	Zone 4	Zone 3	Zone 2	Zone 1
2018	Average Speed	12.5	12.11	11.00	7.5	0
2018	Distance in Miles	17.10	22.40	10.4	3.50	
2018	VRSP Compliant Average Speed (knots)	12	12	11	7.5	0
2018	VRSP Non-Compliant Average Speed (knots)	22.00	22.00	NA	NA	NA
2018	VSRP Compliance Rate (% transits)	95%	99%	NA	NA	NA
2019	Average Speed	12.33	12.11	11.00	7.5	0
2019	Distance in Miles	17.10	22.40	10.4	3.50	
2019	VRSP Compliant Average Speed (knots)	12	12	11	7.5	0
2019	VRSP Non-Compliant Average Speed (knots)	22.00	22.00	NA	NA	NA
2019	VSRP Compliance Rate (% transits)	97%	99%	NA	NA	NA
2020	Average Speed	12.26	12.09	11.00	7.5	0
2020	Distance in Miles	17.10	22.40	10.4	3.50	
2020	VRSP Compliant Average Speed (knots)	12	12	11	7.5	0
2020	VRSP Non-Compliant Average Speed (knots)	22.00	22.00	NA	NA	NA
2020	VSRP Compliance Rate (% transits)	97%	99%	NA	NA	NA
2021	Average Speed	12.26	12.09	11.00	7.5	0
2021	Distance in Miles	17.10	22.40	10.4	3.50	
2021	VRSP Compliant Average Speed (knots)	12	12	11	7.5	0
2021	VRSP Non-Compliant Average Speed (knots)	22.00	22.00	NA	NA	NA
2021	VSRP Compliance Rate (% transits)	97%	99%	NA	NA	NA
2022	Average Speed	12.40	12.26	11.00	7.5	0
2022	Distance in Miles	17.10	22.40	10.4	3.50	
2022	VRSP Compliant Average Speed (knots)	12	12	11	7.5	0
2022	VRSP Non-Compliant Average Speed (knots)	22.00	22.00	NA	NA	NA
2022	VSRP Compliance Rate (% transits)	96%	97%	NA	NA	NA
2023	Average Speed	12.10	12.05	11.00	7.5	0
2023	Distance in Miles	17.10	22.40	10.4	3.50	
2023	VRSP Compliant Average Speed (knots)	12	12	11	7.5	0
2023	VRSP Non-Compliant Average Speed (knots)	22.00	22.00	NA	NA	NA
2023	VSRP Compliance Rate (% transits)	99%	100%	NA	NA	NA

2026-2045 Annual Average Cargo Vessels Activity - Revised Project

		Annual							Calls by Tier Level				Vessel Load Information									
Calendar Year	Project Scenario/Ship Type	Weighted Average Model Year	Annual total transits	Number of Anchorage Calls	Anchorage Time (hr/call)	NonAMP'd Vessel Hotelling Time (hr/call)	% Calls using AMP	AMP'd vessels Auxiliary Engine Hours Runtime	Tier 0	Tier 1	Tier 2	Tier 3	Weighted Average Max Speed	Weighted Average Main Engine Max Load (kW)	Aux Engine Transit Load (kW)	Aux Engine Maneuvering Load (kW)	Aux Engine Berth Load (kW)	Aux Engine Anchorage Load (kW)	Boiler Engine Transit Load (kW)	Boiler Engine Maneuvering Load (kW)	Boiler Engine Berth Load (kW)	Boiler Engine Anchorage Load (kW)
2026	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 5,000 - 6,000 TEU	2007	68	3	7.392307692	31	97%	3.1	0%	100%	0%	0%	25	49000	1594	2504	1047	900	266	496	606	601
2026	Containerships 6,000 - 7,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 8,000 - 9,000 TEU	2011	68	3	7.392307692	35.0	97%	6.0	0%	56%	44%	0%	25.5	62000	1635	2519	1161	1052	210	446	561	588
2026	Containerships 9,000 - 10,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 10,000 - 11,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 12,000 - 13,000 TEU	2019	68	3	7.392307692	41	97%	6.3	0%	25%	75%	0%	23.2	70000	2048	2634	1786	1724	349	602	687	687
2026	Containerships 13,000 - 14,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	General Cargo Vessels	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	RoRo	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 6,000 - 7,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 7,000 - 8,000 TEU	2007	102	4	7.392307692	34	97%	3.4	0%	16%	0%	84%	25.2	60000	1580	2530	1024	826	345	549	596	594
2036	Containerships 8,000 - 9,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 9,000 - 10,000 TEU	2012	102	4	7.392307692	34.0	97%	6.2	0%	0%	49%	51%	24.8	62000	1634	3335	1071	1174	448	559	737	722
2036	Containerships 10,000 - 11,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 12,000 - 13,000 TEU	2019	102	4	7.392307692	40	97%	6.3	0%	6%	56%	37%	23.2	70000	1661	2146	1216	1212	108	236	374	374
2036	Containerships 13,000 - 14,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	General Cargo Vessels	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	RoRo	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 6,000 - 7,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 7,000 - 8,000 TEU	2007	102	4	7.392307692	34	97%	3.4	0%	0%	0%	100%	25.2	60000	1580	2530	1024	826	345	549	596	594
2045	Containerships 8,000 - 9,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 9,000 - 10,000 TEU	2012	102	4	7.392307692	34.0	97%	6.2	0%	0%	0%	100%	24.8	62000	1634	3335	1071	1174	448	559	737	722
2045	Containerships 10,000 - 11,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 12,000 - 13,000 TEU	2019	102	4	7.392307692	40.0	97%	6.3	0%	0%	0%	100%	23.2	70000	1661	2146	1216	1212	108	236	374	374
2045	Containerships 13,000 - 14,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	General Cargo Vessels	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	RoRo	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Total																					

2026 - 2045 Peak Day Cargo Vessels Activities - Revised Project

		Peak Day				
Calendar Year	Project Scenario/Ship Type	Peak-Day transits	Number of Anchorage Calls	Anchorage Time (hr/call)	NonAMP'd Vessel Hotelling Time (hr/call)	% Calls using AMP
2026	Containerships 1,000 - 2,000 TEU	--	--	--	--	--
2026	Containerships 2,000 - 3,000 TEU	--	--	--	--	--
2026	Containerships 3,000 - 4,000 TEU	--	--	--	--	--
2026	Containerships 4,000 - 5,000 TEU	--	--	--	--	--
2026	Containerships 5,000 - 6,000 TEU	1	0	0	18.3	0%
2026	Containerships 6,000 - 7,000 TEU	--	--	--	--	--
2026	Containerships 7,000 - 8,000 TEU	--	--	--	--	--
2026	Containerships 8,000 - 9,000 TEU	1	1	7.392307692	3	0%
2026	Containerships 9,000 - 10,000 TEU	--	--	--	--	--
2026	Containerships 10,000 - 11,000 TEU	--	--	--	--	--
2026	Containerships 11,000 - 12,000 TEU	--	--	--	--	--
2026	Containerships 12,000 - 13,000 TEU	1	0	0	18	0%
2026	Containerships 13,000 - 14,000 TEU	--	--	--	--	--
2026	Containerships 14,000 - 15,000 TEU	--	--	--	--	--
2026	Containerships 15,000 - 16,000 TEU	--	--	--	--	--
2026	Containerships 16,000 - 17,000 TEU	--	--	--	--	--
2026	Containerships 19,000 - 20,000 TEU	--	--	--	--	--
2026	General Cargo Vessels	--	--	--	--	--
2026	RoRo	--	--	--	--	--
2036	Containerships 1,000 - 2,000 TEU	--	--	--	--	--
2036	Containerships 2,000 - 3,000 TEU	--	--	--	--	--
2036	Containerships 3,000 - 4,000 TEU	--	--	--	--	--
2036	Containerships 4,000 - 5,000 TEU	--	--	--	--	--
2036	Containerships 5,000 - 6,000 TEU	--	--	--	--	--
2036	Containerships 6,000 - 7,000 TEU	--	--	--	--	--
2036	Containerships 7,000 - 8,000 TEU	1	0	0	12.1	0%
2036	Containerships 8,000 - 9,000 TEU	--	--	--	--	--
2036	Containerships 9,000 - 10,000 TEU	1	1	7.392307692	6.3	0%
2036	Containerships 10,000 - 11,000 TEU	--	--	--	--	--
2036	Containerships 11,000 - 12,000 TEU	--	--	--	--	--
2036	Containerships 12,000 - 13,000 TEU	1	0	0	18	0%
2036	Containerships 13,000 - 14,000 TEU	--	--	--	--	--
2036	Containerships 14,000 - 15,000 TEU	--	--	--	--	--
2036	Containerships 15,000 - 16,000 TEU	--	--	--	--	--
2036	Containerships 16,000 - 17,000 TEU	--	--	--	--	--
2036	Containerships 19,000 - 20,000 TEU	--	--	--	--	--
2036	General Cargo Vessels	--	--	--	--	--
2036	RoRo	--	--	--	--	--
2045	Containerships 1,000 - 2,000 TEU	--	--	--	--	--
2045	Containerships 2,000 - 3,000 TEU	--	--	--	--	--
2045	Containerships 3,000 - 4,000 TEU	--	--	--	--	--
2045	Containerships 4,000 - 5,000 TEU	--	--	--	--	--
2045	Containerships 5,000 - 6,000 TEU	--	--	--	--	--
2045	Containerships 6,000 - 7,000 TEU	--	--	--	--	--
2045	Containerships 7,000 - 8,000 TEU	1	0	0	12.1	0%
2045	Containerships 8,000 - 9,000 TEU	--	--	--	--	--
2045	Containerships 9,000 - 10,000 TEU	1	1	7.392307692	6.3	0%
2045	Containerships 10,000 - 11,000 TEU	--	--	--	--	--
2045	Containerships 11,000 - 12,000 TEU	--	--	--	--	--
2045	Containerships 12,000 - 13,000 TEU	1	0	0	18	0%
2045	Containerships 13,000 - 14,000 TEU	--	--	--	--	--
2045	Containerships 14,000 - 15,000 TEU	--	--	--	--	--
2045	Containerships 15,000 - 16,000 TEU	--	--	--	--	--
2045	Containerships 16,000 - 17,000 TEU	--	--	--	--	--

2026 - 2045 Peak Day Cargo Vessels Activities - Revised Project

		Peak Day				
Calendar Year	Project Scenario/Ship Type	Peak-Day transits	Number of Anchorage Calls	Anchorage Time (hr/call)	NonAMP'd Vessel Hotelling Time (hr/call)	% Calls using AMP
2045	Containerships 19,000 - 20,000 TEU	--	--	--	--	--
2045	General Cargo Vessels	--	--	--	--	--
2045	RoRo	--	--	--	--	--
	Total					

2026-2045 Main Engine Load (KW) - Revised Project

		Load					
Calendar Year	**Type**	**Zone 5**	**Zone 4**	**Zone 3**	**Zone 2**	**Zone 1**	**Anchorage**
2026	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2026	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2026	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2026	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--
2026	Containerships 5,000 - 6,000 TEU	5528	5473	4174	1323	0	0
2026	Containerships 6,000 - 7,000 TEU	--	--	--	--	--	--
2026	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2026	Containerships 8,000 - 9,000 TEU	6591	6526	4977	1577	0	0
2026	Containerships 9,000 - 10,000 TEU	--	--	--	--	--	--
2026	Containerships 10,000 - 11,000 TEU	--	--	--	--	--	--
2026	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--
2026	Containerships 12,000 - 13,000 TEU	9882	9784	7461	2365	0	0
2026	Containerships 13,000 - 14,000 TEU	--	--	--	--	--	--
2026	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2026	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2026	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2026	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2026	General Cargo Vessels	--	--	--	--	--	--
2026	RoRo	--	--	--	--	--	--
2036	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2036	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2036	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2036	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--
2036	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--
2036	Containerships 6,000 - 7,000 TEU	--	--	--	--	--	--
2036	Containerships 7,000 - 8,000 TEU	6609	6544	4990	1582	0	0
2036	Containerships 8,000 - 9,000 TEU	--	--	--	--	--	--
2036	Containerships 9,000 - 10,000 TEU	7165	7094	5410	1715	0	0
2036	Containerships 10,000 - 11,000 TEU	--	--	--	--	--	--
2036	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--
2036	Containerships 12,000 - 13,000 TEU	9882	9784	7461	2365	0	0
2036	Containerships 13,000 - 14,000 TEU	--	--	--	--	--	--
2036	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2036	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2036	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2036	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2036	General Cargo Vessels	--	--	--	--	--	--
2036	RoRo	--	--	--	--	--	--
2045	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2045	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2045	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2045	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--
2045	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--
2045	Containerships 6,000 - 7,000 TEU	--	--	--	--	--	--
2045	Containerships 7,000 - 8,000 TEU	6609	6544	4990	1582	0	0
2045	Containerships 8,000 - 9,000 TEU	--	--	--	--	--	--
2045	Containerships 9,000 - 10,000 TEU	7165	7094	5410	1715	0	0
2045	Containerships 10,000 - 11,000 TEU	--	--	--	--	--	--
2045	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--
2045	Containerships 12,000 - 13,000 TEU	9882	9784	7461	2365	0	0
2045	Containerships 13,000 - 14,000 TEU	--	--	--	--	--	--
2045	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2045	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2045	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2045	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2045	General Cargo Vessels	--	--	--	--	--	--
2045	RoRo	--	--	--	--	--	--

2026- 2045 Transit Parameters - Revised Project

Calendar Year	Parameter	Zone 5	Zone 4	Zone 3	Zone 2	Zone 1
2026	Average Speed	12.08	12.04	11	7.5	0
2026	Distance in Miles	17.10	22.40	10.4	3.50	
2026	VRSP Compliant Average Speed (knots)	12	12	11	7.5	0
2026	VRSP Non-Compliant Average Speed (knots)	22.00	22.00	NA	NA	NA
2026	VSRP Compliance Rate (% transits)	99%	100%	NA	NA	NA
2036	Average Speed	12.08	12.04	11	7.5	0
2036	Distance in Miles	17.10	22.40	10.4	3.50	
2036	VRSP Compliant Average Speed (knots)	12	12	11	7.5	0
2036	VRSP Non-Compliant Average Speed (knots)	22.00	22.00	NA	NA	NA
2036	VSRP Compliance Rate (% transits)	99%	100%	NA	NA	NA
2045	Average Speed	12.08	12.04	11	7.5	0
2045	Distance in Miles	17.10	22.40	10.4	3.50	
2045	VRSP Compliant Average Speed (knots)	12	12	11	7.5	0
2045	VRSP Non-Compliant Average Speed (knots)	22.00	22.00	NA	NA	NA
2045	VSRP Compliance Rate (% transits)	99%	100%	NA	NA	NA

2018- 2023 OGV Annual Activity and Vessel Load Data - FEIR Mitigated Scenario

		Annual					Calls by Tier Level				Vessel Load Information									
Calendar Year	Project Scenario/Ship Type	Annual total transits	Number of Anchorage Calls	Anchorage Time (hr/call)	% Calls using AMP	AMP'd vessels Auxiliary Engine Hours Runtime	Tier 0	Tier 1	Tier 2	Tier 3	Weighted Average Max Speed	Weighted Average Main Engine Max Load (kW)	Aux Engine Transit Load (kW)	Aux Engine Maneuvering Load (kW)	Aux Engine Berth Load (kW)	Aux Engine Anchorage Load (kW)	Boiler Engine Transit Load (kW)	Boiler Engine Maneuvering Load (kW)	Boiler Engine Berth Load (kW)	Boiler Engine Anchorage Load (kW)
2018	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2018	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2018	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2018	Containerships 4,000 - 5,000 TEU	48	0	-	100%	5.0	0%	100%	0%	0%	27.5	50299	1454	2314	1148	1124	179	333	449	446
2018	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2018	Containerships 6,000 - 7,000 TEU	128	2	72.49	100%	5.4	0%	65%	35%	0%	25.7	54814	1509	2237	1039	1464	206	520	597	595
2018	Containerships 7,000 - 8,000 TEU	4	0	-	100%	1.8	0%	100%	0%	0%	25.6	68640	1498	2445	1225	884	412	639	678	677
2018	Containerships 8,000 - 9,000 TEU	44	0	-	100%	5.0	0%	100%	0%	0%	25.7	68263	1544	2666	980	1055	253	521	653	703
2018	Containerships 9,000 - 10,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2018	Containerships 10,000 - 11,000 TEU	32	1	42.72	100%	2.3	0%	0%	100%	0%	23.6	58100	1757	2210	1163	1051	314	383	511	511
2018	Containerships 11,000 - 12,000 TEU	2	0	-	100%	27.7	0%	0%	100%	0%	24.0	42350	2213	2944	1341	1684	315	517	694	694
2018	Containerships 12,000 - 13,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2018	Containerships 13,000 - 14,000 TEU	8	0	-	100%	9.1	0%	50%	50%	0%	24.3	72240	1678	2418	1234	1220	186	253	522	511
2018	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2018	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2018	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2018	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2018	General Cargo Vessels	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2018	RoRo	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2019	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2019	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2019	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2019	Containerships 4,000 - 5,000 TEU	56	1	3.82	100%	5.8	0%	100%	0%	0%	27.6	51390	1454	2314	1148	1124	179	333	449	446
2019	Containerships 5,000 - 6,000 TEU	2	0	-	100%	8.9	0%	100%	0%	0%	26.0	57075	1811	3293	945	967	247	473	579	572
2019	Containerships 6,000 - 7,000 TEU	87	2	4.30	100%	11.4	0%	100%	0%	0%	26.4	57018	1509	2237	1039	1464	206	520	597	595
2019	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2019	Containerships 8,000 - 9,000 TEU	18	1	34.50	100%	8.7	0%	100%	0%	0%	25.2	68640	1544	2666	980	1055	253	521	653	703
2019	Containerships 9,000 - 10,000 TEU	26	0	-	100%	9.5	0%	100%	0%	0%	27.8	60917	1514	2864	1061	996	341	526	619	618
2019	Containerships 10,000 - 11,000 TEU	36	0	-	100%	1.8	0%	0%	100%	0%	23.7	58100	1757	2210	1163	1051	314	383	511	511
2019	Containerships 11,000 - 12,000 TEU	4	0	-	100%	37.9	50%	0%	50%	0%	22.5	29175	2213	2944	1341	1684	315	517	694	694
2019	Containerships 12,000 - 13,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2019	Containerships 13,000 - 14,000 TEU	46	1	5.37	100%	10.6	0%	83%	17%	0%	24.7	70184	1664	2450	1231	1224	227	317	565	560
2019	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2019	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2019	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2019	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2019	General Cargo Vessels	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2019	RoRo	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2020	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2020	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2020	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2020	Containerships 4,000 - 5,000 TEU	30	4	66.45	100%	6.7	0%	93%	7%	0%	26.4	47911	1419	2526	1073	1056	180	351	457	453
2020	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2020	Containerships 6,000 - 7,000 TEU	56	3	122.22	100%	8.6	0%	100%	0%	0%	26.6	57874	1558	2477	1083	1266	248	471	616	612
2020	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2020	Containerships 8,000 - 9,000 TEU	77	8	68.06	100%	9.3	0%	97%	3%	0%	26.0	71188	1635	2519	1161	1052	210	446	561	588
2020	Containerships 9,000 - 10,000 TEU	11	2	92.08	100%	9.7	0%	17%	83%	0%	23.3	56905	1634	3335	1071	1174	448	559	737	722
2020	Containerships 10,000 - 11,000 TEU	28	4	88.15	100%	9.0	0%	14%	86%	0%	23.9	54491	1634	2003	1130	1181	368	473	656	656
2020	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2020	Containerships 12,000 - 13,000 TEU	5	1	119.08	100%	3.1	0%	100%	0%	0%	25.2	72240	2048	2634	1786	1724	349	602	687	687
2020	Containerships 13,000 - 14,000 TEU	22	1	24.97	100%	1.9	0%	82%	18%	0%	25.2	72240	1589	2136	1346	1319	241	306	559	558
2020	Containerships 14,000 - 15,000 TEU	4	2	53.45	100%	1.0	0%	100%	0%	0%	24.0	72240	1553	2042	1152	1155	266	481	402	532
2020	Containerships 15,000 - 16,000 TEU	3	1	94.75	100%	2.3	0%	0%	0%	100%	23.8	43505	1850	2200	850	1100	259	395	402	402
2020	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2020	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2020	General Cargo Vessels	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2020	RoRo	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2021	Containerships 1,000 - 2,000 TEU	4	2	474.94	100%	9.6	0%	0%	100%	0%	19.5	13920	913	1106	571	1000	90	181	437	230
2021	Containerships 2,000 - 3,000 TEU	14	6	197.21	100%	9.6	0%	71%	29%	0%	21.4	19264	1287	1887	694	528	188	359	444	441
2021	Containerships 3,000 - 4,000 TEU	2	0	-	100%	9.6	0%	100%	0%	0%	22.4	28880	920	1673	758	559	203	408	552	517
2021	Containerships 4,000 - 5,000 TEU	42	18	176.99	100%	10.0	0%	57%	43%	0%	24.5	37324	1419	2526	1073	1056	180	351	457	453
2021	Containerships 5,000 - 6,000 TEU	14	3	310.32	100%	1.6	0%	86%	14%	0%	24.7	43122	1594	2504	1047	900	266	496	606	601
2021	Containerships 6,000 - 7,000 TEU	22	10	179.72	100%	13.5	0%	100%	0%	0%	26.1	61330	1558	2477	1083	1266	248	471	616	612
2021	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2021	Containerships 8,000 - 9,000 TEU	58	26	204.34	100%	21.9	0%	93%	7%	0%	25.7	68042	1635	2519	1161	1052	210	446	561	588
2021	Containerships 9,000 - 10,000 TEU	8	3	192.36	100%	4.0	0%	25%	75%	0%	23.8	59213	1634	3335	1071	1174	448	559	737	722
2021	Containerships 10,000 - 11,000 TEU	65	25	248.57	100%	2.0	0%	22%	78%	0%	24.1	60406	1634	2003	1130	1181	368	473	656	656
2021	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2021	Containerships 12,000 - 13,000 TEU	8	2	116.98	100%	2.1	0%	75%	25%	0%	24.4	64785	1740	2124	1285	1275	127	272	455	455
2021	Containerships 13,000 - 14,000 TEU	6	1	118.30	100%	4.6	0%	100%	0%	0%	25.7	72240	1589	2136	1346	1319	241	306	559	558
2021	Containerships 14,000 - 15,000 TEU	4	2	126.99	100%	2.9	0%	50%	50%	0%	24	60620	1553	2042	1152	1155	266	481	402	532
2021	Containerships 15,000 - 16,000 TEU	8	2	92.25	100%	2.0	0%	0%	0%	100%	23.8	43505	1850	2200	850	1100	259	395	402	402
2021	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2021	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2021	General Cargo Vessels	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2021	RoRo	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2022	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2022	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2022	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2022	Containerships 4,000 - 5,000 TEU	2	0	-	100%	2.8	0%	100%	0%	0%	27.0	40040	1419	2526	1073	1056	180	351	457	453
2022	Containerships 5,000 - 6,000 TEU	14	4	67.09	100%	24.1	0%	100%	0%	0%	24.7	44613	1594	2504	1047	900	266	496	606	601
2022	Containerships 6,000 - 7,000 TEU	4	2	10.43	100%	6.3	0%	100%	0%	0%	26.6	68520	1558	2477	1083	1266	248	471	616	612
2022	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2022	Containerships 8,000 - 9,000 TEU	105	0	-	100%	11.4	0%	91%	9%	0%	25.4	67080	1635	2519	1161	1052	210	446	561	588
2022	Containerships 9,000 - 10,000 TEU	4	0	-	100%	1.9	0%	0%	100%	0%	23.0	51250	1634	3335	1071	1174	448	559	737	722
2022	Containerships 10,000 - 11,000 TEU	41	3	26.99	100%	2.2	0%	5%	95%	0%	23.7	58602	1634	2003	1130	1181	368	473	656	656
2022	Containerships 11,000 - 12,000 TEU	18	1	49.17	100%	2.7	0%	11%	89%	0%	23.2	45363	1771	2429	991	1134	187	309	452	452
2022	Containerships 12,000 - 13,000 TEU	6	0	-	100%	2.2	0%	67%	33%	0%	23.8	61568	1661	2146	1216	1212	108	236	374	374
2022	Containerships 13,000 - 14,000 TEU	2	0	-	100%	2.1	0%	100%	0%	0%	26.2	72240	1589	2136	1346	1319	241	306	559	558
2022	Containerships 14,000 - 15,000 TEU	4	1	20.20	100%	3.7	0%	100%	0%	0%	24.5	72240	1553	2042	1152	1155	266	481	402	532
2022	Containerships 15,000 - 16,000 TEU	2	0	-	100%	3.7	0%	0%	0%	100%	23.8	43505	1850	2200	850	1100	259	395	402	402
2022	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2022	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2022	General Cargo Vessels	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2022	RoRo	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2023	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2023	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2023	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2023	Containerships 4,000 - 5,000 TEU	2	0	-	100%	3.4	0%	100%	0%	0%	24	41107	1419	2526	1073	1056	180	351	457	453
2023	Containerships 5,000 - 6,000 TEU	2	0	-	100%	4.1	0%	100%	0%	0%	24.3	41107	1594	2504	1047	900	266	496	606	601
2023	Containerships 6,000 - 7,000 TEU	4	0	-	100%	4.7	0%	100%	0%	0%	28.1	62135	1558	2477	1083	1266	248	471	616	612
2023	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2023	Containerships 8,000 - 9,000 TEU	185	8	36.48	100%	5.6	0%	56%	44%	0%	24.2	59305	1635	2519	1161	1052	210	446	561	588
2023	Containerships 9,000 - 10,000 TEU	46	5	34.02	100%	4.5	0%	17%	83%	0%	23.3	51147	1634	3335	1071	1174	448	559	737	722
2023	Containerships 10,000 - 11,000 TEU	7	0	-	100%	17.3	0%	75%	25%	0%	25.2	66005	1634	2003	1130	1181	368	473	656	656
2023	Containerships 11,000 - 12,000 TEU	58	3	44.59	100%	6.1	0%	3%	97%	0%	22.5	44579	1771	2429	991	1134	187	309	452	452
2023	Containerships 12,000 - 13,000 TEU	8	0	-	100%	3.2	0%	25%	75%	0%	22.5	49320	1661	2146	1216	1212	108	236	374	374
2023	Containerships 13,000 - 14,000 TEU	2	0	-	100%	6.0	0%	100%	0%	0%	26.2	72240	1589	2136	1346	1319	241	306	559	558
2023	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2023	Containerships 15,000 - 16,000 TEU	2	0	-	100%	6.7	0%	0%	0%	100%	22.5	46000	1850	2200	850	1100	259	395	402	402
2023	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2023	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2023	General Cargo Vessels	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
2023	RoRo	--	--	--	--	--	-	--	--	--	-	--	--	--	--	--	--	--	--	-
	Total																			

2018- 2023 Peak Day Cargo Vessels Activities - FEIR Mitigated Scenario

			Peak Day				
Calendar Year	Project Scenario/Ship Type	Weighted Average Model Year	Totak Peakday Calls	Number of Anchorage Calls	Anchorage Time (hr/call)	% Calls using AMP	AMP'd vessels Auxiliary Engine Hours Runtime
2018	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2018	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2018	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2018	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--
2018	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--
2018	Containerships 6,000 - 7,000 TEU	2010	1	0	0	100%	5.4
2018	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2018	Containerships 8,000 - 9,000 TEU	--	--	--	--	--	--
2018	Containerships 9,000 - 10,000 TEU	--	--	--	--	--	--
2018	Containerships 10,000 - 11,000 TEU	--	--	--	--	--	--
2018	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--
2018	Containerships 12,000 - 13,000 TEU	--	--	--	--	--	--
2018	Containerships 13,000 - 14,000 TEU	2012	1	0	0	100%	9.1
2018	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2018	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2018	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2018	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2018	General Cargo Vessels	--	--	--	--	--	--
2018	RoRo	--	--	--	--	--	--
2019	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2019	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2019	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2019	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--
2019	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--
2019	Containerships 6,000 - 7,000 TEU	2010	1	1	4	100%	11.4
2019	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2019	Containerships 8,000 - 9,000 TEU	--	--	--	--	--	--
2019	Containerships 9,000 - 10,000 TEU	--	--	--	--	--	--
2019	Containerships 10,000 - 11,000 TEU	--	--	--	--	--	--
2019	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--
2019	Containerships 12,000 - 13,000 TEU	--	--	--	--	--	--
2019	Containerships 13,000 - 14,000 TEU	2012	1	1	5.37	100%	1.4
2019	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2019	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2019	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2019	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2019	General Cargo Vessels	--	--	--	--	--	--
2019	RoRo	--	--	--	--	--	--
2020	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2020	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2020	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2020	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--
2020	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--
2020	Containerships 6,000 - 7,000 TEU	2010	1	0	0	100%	8.6
2020	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2020	Containerships 8,000 - 9,000 TEU	2008	1	0	0	100%	2.1
2020	Containerships 9,000 - 10,000 TEU	--	--	--	--	--	--
2020	Containerships 10,000 - 11,000 TEU	2013	1	0	0	100%	9.0
2020	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--
2020	Containerships 12,000 - 13,000 TEU	--	--	--	--	--	--
2020	Containerships 13,000 - 14,000 TEU	--	--	--	--	--	--
2020	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2020	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2020	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2020	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2020	General Cargo Vessels	--	--	--	--	--	--
2020	RoRo	--	--	--	--	--	--
2021	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2021	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2021	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2021	Containerships 4,000 - 5,000 TEU	2010	1	0	0	100%	10.0
2021	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--
2021	Containerships 6,000 - 7,000 TEU	2008	1	0	0	100%	1.0
2021	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2021	Containerships 8,000 - 9,000 TEU	--	--	--	--	--	--
2021	Containerships 9,000 - 10,000 TEU	--	--	--	--	--	--
2021	Containerships 10,000 - 11,000 TEU	--	--	--	--	--	--
2021	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--
2021	Containerships 12,000 - 13,000 TEU	--	--	--	--	--	--
2021	Containerships 13,000 - 14,000 TEU	--	--	--	--	--	--
2021	Containerships 14,000 - 15,000 TEU	2013	1	1	4.9	100%	1.4
2021	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2021	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2021	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2021	General Cargo Vessels	--	--	--	--	--	--
2021	RoRo	--	--	--	--	--	--
2022	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2022	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2022	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2022	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--
2022	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--
2022	Containerships 6,000 - 7,000 TEU	--	--	--	--	--	--
2022	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2022	Containerships 8,000 - 9,000 TEU	2010	2	0	0	100%	3.0
2022	Containerships 9,000 - 10,000 TEU	--	--	--	--	--	--
2022	Containerships 10,000 - 11,000 TEU	2013	1	0	0	100%	0.0

2018- 2023 Peak Day Cargo Vessels Activities - FEIR Mitigated Scenario

			Peak Day				
Calendar Year	Project Scenario/Ship Type	Weighted Average Model Year	Totak Peakday Calls	Number of Anchorage Calls	Anchorage Time (hr/call)	% Calls using AMP	AMP'd vessels Auxiliary Engine Hours Runtime
2022	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--
2022	Containerships 12,000 - 13,000 TEU	--	--	--	--	--	--
2022	Containerships 13,000 - 14,000 TEU	--	--	--	--	--	--
2022	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2022	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2022	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2022	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2022	General Cargo Vessels	--	--	--	--	--	--
2022	RoRo	--	--	--	--	--	--
2023	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2023	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2023	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2023	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--
2023	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--
2023	Containerships 6,000 - 7,000 TEU	--	--	--	--	--	--
2023	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2023	Containerships 8,000 - 9,000 TEU	2011	1	0	0	100%	0.0
2023	Containerships 9,000 - 10,000 TEU	--	--	--	--	--	--
2023	Containerships 10,000 - 11,000 TEU	--	--	--	--	--	--
2023	Containerships 11,000 - 12,000 TEU	2015	2	0	0	100%	6.1
2023	Containerships 12,000 - 13,000 TEU	--	--	--	--	--	--
2023	Containerships 13,000 - 14,000 TEU	--	--	--	--	--	--
2023	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2023	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2023	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2023	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2023	General Cargo Vessels	--	--	--	--	--	--
2023	RoRo	--	--	--	--	--	--
	Total						

2018-2023 Main Engine Load (KW) - FEIR Mitigated Scenario

		Load					
Calendar Year	**Type**	**Zone 5**	**Zone 4**	**Zone 3**	**Zone 2**	**Zone 1**	**Anchorage**
2018	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2018	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2018	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2018	Containerships 4,000 - 5,000 TEU	4181	4181	3221	1021	0	0
2018	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--
2018	Containerships 6,000 - 7,000 TEU	5563	5563	4285	1358	0	0
2018	Containerships 7,000 - 8,000 TEU	7070	7070	5445	1726	0	0
2018	Containerships 8,000 - 9,000 TEU	6971	6971	5370	1702	0	0
2018	Containerships 9,000 - 10,000 TEU	--	--	--	--	--	--
2018	Containerships 10,000 - 11,000 TEU	7608	7608	5860	1857	0	0
2018	Containerships 11,000 - 12,000 TEU	5294	5294	4078	1292	0	0
2018	Containerships 12,000 - 13,000 TEU	--	--	--	--	--	--
2018	Containerships 13,000 - 14,000 TEU	8700	8700	6701	2124	0	0
2018	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2018	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2018	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2018	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2018	General Cargo Vessels	--	--	--	--	--	--
2018	RoRo	--	--	--	--	--	--
2019	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2019	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2019	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2019	Containerships 4,000 - 5,000 TEU	4217	4217	3248	1030	0	0
2019	Containerships 5,000 - 6,000 TEU	5611	5611	4322	1370	0	0
2019	Containerships 6,000 - 7,000 TEU	5377	5377	4142	1313	0	0
2019	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2019	Containerships 8,000 - 9,000 TEU	7412	7412	5709	1810	0	0
2019	Containerships 9,000 - 10,000 TEU	4879	4879	3758	1191	0	0
2019	Containerships 10,000 - 11,000 TEU	7574	7574	5834	1849	0	0
2019	Containerships 11,000 - 12,000 TEU	4426	4426	3409	1081	0	0
2019	Containerships 12,000 - 13,000 TEU	--	--	--	--	--	--
2019	Containerships 13,000 - 14,000 TEU	8018	8018	6176	1958	0	0
2019	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2019	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2019	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2019	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2019	General Cargo Vessels	--	--	--	--	--	--
2019	RoRo	--	--	--	--	--	--
2020	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2020	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2020	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2020	Containerships 4,000 - 5,000 TEU	4496	4496	3463	1098	0	0
2020	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--
2020	Containerships 6,000 - 7,000 TEU	5299	5299	4081	1294	0	0
2020	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2020	Containerships 8,000 - 9,000 TEU	6996	6996	5389	1708	0	0
2020	Containerships 9,000 - 10,000 TEU	7807	7807	6013	1906	0	0
2020	Containerships 10,000 - 11,000 TEU	6910	6910	5322	1687	0	0
2020	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--
2020	Containerships 12,000 - 13,000 TEU	7800	7800	6008	1904	0	0
2020	Containerships 13,000 - 14,000 TEU	7834	7834	6034	1913	0	0
2020	Containerships 14,000 - 15,000 TEU	9030	9030	6955	2205	0	0
2020	Containerships 15,000 - 16,000 TEU	5576	5576	4295	1361	0	0
2020	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2020	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2020	General Cargo Vessels	--	--	--	--	--	--
2020	RoRo	--	--	--	--	--	--
2021	Containerships 1,000 - 2,000 TEU	3244	3244	2499	792	0	0
2021	Containerships 2,000 - 3,000 TEU	3383	3383	2606	826	0	0
2021	Containerships 3,000 - 4,000 TEU	4440	4440	3420	1084	0	0
2021	Containerships 4,000 - 5,000 TEU	4401	4401	3390	1074	0	0
2021	Containerships 5,000 - 6,000 TEU	4962	4962	3822	1211	0	0
2021	Containerships 6,000 - 7,000 TEU	5930	5930	4567	1448	0	0
2021	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2021	Containerships 8,000 - 9,000 TEU	6947	6947	5351	1696	0	0
2021	Containerships 9,000 - 10,000 TEU	7566	7566	5828	1847	0	0
2021	Containerships 10,000 - 11,000 TEU	7451	7451	5739	1819	0	0
2021	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--
2021	Containerships 12,000 - 13,000 TEU	7706	7706	5936	1881	0	0
2021	Containerships 13,000 - 14,000 TEU	7325	7325	5642	1788	0	0
2021	Containerships 14,000 - 15,000 TEU	7578	7578	5837	1850	0	0
2021	Containerships 15,000 - 16,000 TEU	5576	5576	4295	1361	0	0
2021	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2021	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2021	General Cargo Vessels	--	--	--	--	--	--
2021	RoRo	--	--	--	--	--	--
2022	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2022	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2022	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2022	Containerships 4,000 - 5,000 TEU	3515	3515	2708	858	0	0
2022	Containerships 5,000 - 6,000 TEU	5142	5142	3961	1255	0	0
2022	Containerships 6,000 - 7,000 TEU	6291	6291	4846	1536	0	0
2022	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2022	Containerships 8,000 - 9,000 TEU	7108	7108	5475	1735	0	0
2022	Containerships 9,000 - 10,000 TEU	7279	7279	5606	1777	0	0
2022	Containerships 10,000 - 11,000 TEU	7598	7598	5852	1855	0	0
2022	Containerships 11,000 - 12,000 TEU	6305	6305	4856	1539	0	0
2022	Containerships 12,000 - 13,000 TEU	7917	7917	6098	1933	0	0
2022	Containerships 13,000 - 14,000 TEU	6941	6941	5346	1695	0	0
2022	Containerships 14,000 - 15,000 TEU	8488	8488	6538	2072	0	0
2022	Containerships 15,000 - 16,000 TEU	5576	5576	4295	1361	0	0
2022	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2022	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2022	General Cargo Vessels	--	--	--	--	--	--
2022	RoRo	--	--	--	--	--	--
2023	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2023	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2023	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2023	Containerships 4,000 - 5,000 TEU	5138	5138	3958	1254	0	0
2023	Containerships 5,000 - 6,000 TEU	4950	4950	3813	1209	0	0
2023	Containerships 6,000 - 7,000 TEU	4839	4839	3727	1181	0	0
2023	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2023	Containerships 8,000 - 9,000 TEU	7269	7269	5599	1775	0	0
2023	Containerships 9,000 - 10,000 TEU	6964	6964	5364	1700	0	0
2023	Containerships 10,000 - 11,000 TEU	7106	7106	5473	1735	0	0
2023	Containerships 11,000 - 12,000 TEU	6791	6791	5231	1658	0	0
2023	Containerships 12,000 - 13,000 TEU	7452	7452	5740	1819	0	0
2023	Containerships 13,000 - 14,000 TEU	6941	6941	5346	1695	0	0
2023	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2023	Containerships 15,000 - 16,000 TEU	6978	6978	5375	1704	0	0
2023	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2023	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2023	General Cargo Vessels	--	--	--	--	--	--
2023	RoRo	--	--	--	--	--	--

2018- 2023 Transit Parameters - FEIR Mitigated Scenario

Calendar Year	Parameter	Zone 5	Zone 4	Zone 3	Zone 2	Zone 1
2018	Average Speed	12	12	11	7.5	0
2018	Distance in Miles	17.10	22.40	10.4	3.50	
2018	VRSP Compliant Average Speed (knots)	12	12	11	7.5	0
2018	VRSP Non-Compliant Average Speed (knots)	22.00	22.00	NA	NA	NA
2018	VSRP Compliance Rate (% transits)	100%	100%	NA	NA	NA
2019	Average Speed	12	12	11	7.5	0
2019	Distance in Miles	17.10	22.40	10.4	3.50	
2019	VRSP Compliant Average Speed (knots)	12	12	11	7.5	0
2019	VRSP Non-Compliant Average Speed (knots)	22.00	22.00	NA	NA	NA
2019	VSRP Compliance Rate (% transits)	100%	100%	NA	NA	NA
2020	Average Speed	12	12	11	7.5	0
2020	Distance in Miles	17.10	22.40	10.4	3.50	
2020	VRSP Compliant Average Speed (knots)	12	12	11	7.5	0
2020	VRSP Non-Compliant Average Speed (knots)	22.00	22.00	NA	NA	NA
2020	VSRP Compliance Rate (% transits)	100%	100%	NA	NA	NA
2021	Average Speed	12	12	11	7.5	0
2021	Distance in Miles	17.10	22.40	10.4	3.50	
2021	VRSP Compliant Average Speed (knots)	12	12	11	7.5	0
2021	VRSP Non-Compliant Average Speed (knots)	22.00	22.00	NA	NA	NA
2021	VSRP Compliance Rate (% transits)	100%	100%	NA	NA	NA
2022	Average Speed	12	12	11	7.5	0
2022	Distance in Miles	17.10	22.40	10.4	3.50	
2022	VRSP Compliant Average Speed (knots)	12	12	11	7.5	0
2022	VRSP Non-Compliant Average Speed (knots)	22.00	22.00	NA	NA	NA
2022	VSRP Compliance Rate (% transits)	100%	100%	NA	NA	NA
2023	Average Speed	12	12	11	7.5	0
2023	Distance in Miles	17.10	22.40	10.4	3.50	
2023	VRSP Compliant Average Speed (knots)	12	12	11	7.5	0
2023	VRSP Non-Compliant Average Speed (knots)	22.00	22.00	NA	NA	NA
2023	VSRP Compliance Rate (% transits)	100%	100%	NA	NA	NA

2026- 2045 OGV Annual Activity and Vessel Load Data - FEIR Mitigated Scenario

			Annual						Calls by Tier Level				Vessel Load Information									
Calendar Year	Project Scenario/Ship Type	Weighted Average Model Year	Annual total transits	Number of Anchorage Calls	Anchorage Time (hr/call)	% Calls using AMP	AMP'd vessels Auxiliary Engine Hours Runtime	Tier 0	Tier 1	Tier 2	Tier 3	Weighted Average Max Speed	Weighted Average Main Engine Max Load (kW)	Aux Engine Transit Load (kW)	Aux Engine Maneuvering Load (kW)	Aux Engine Berth Load (kW)	Aux Engine Anchorage Load (kW)	Boiler Engine Transit Load (kW)	Boiler Engine Maneuvering Load (kW)	Boiler Engine Berth Load (kW)	Boiler Engine Anchorage Load (kW)
2026	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 5,000 - 6,000 TEU	2007	68	3	7.39	100%	3.1	0%	100%	0%	0%	25	49000	1594	2504	1047	900	266	496	606	601
2026	Containerships 6,000 - 7,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 8,000 - 9,000 TEU	2011	68	3	7.39	100%	6.0	0%	56%	44%	0%	25.5	62000	1635	2519	1161	1052	210	446	561	588
2026	Containerships 9,000 - 10,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 10,000 - 11,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 12,000 - 13,000 TEU	2019	68	3	7.39	100%	6.3	0%	25%	75%	0%	23.2	70000	2048	2634	1786	1724	349	602	687	687
2026	Containerships 13,000 - 14,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	General Cargo Vessels	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2026	RoRo	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 6,000 - 7,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 7,000 - 8,000 TEU	2007	102	4	7.39	100%	3.4	0%	16%	0%	84%	25.2	60000	1580	2530	1024	826	345	549	596	594
2036	Containerships 8,000 - 9,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 9,000 - 10,000 TEU	2012	102	4	7.39	100%	6.2	0%	0%	49%	51%	24.8	62000	1634	3335	1071	1174	448	559	737	722
2036	Containerships 10,000 - 11,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 12,000 - 13,000 TEU	2019	102	4	7.39	100%	6.3	0%	6%	56%	37%	23.2	70000	1661	2146	1216	1212	108	236	374	374
2036	Containerships 13,000 - 14,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	General Cargo Vessels	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2036	RoRo	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 6,000 - 7,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 7,000 - 8,000 TEU	2007	102	4	7.39	100%	3.4	0%	0%	0%	100%	25.2	60000	1580	2530	1024	826	345	549	596	594
2045	Containerships 8,000 - 9,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 9,000 - 10,000 TEU	2012	102	4	7.39	100%	6.2	0%	0%	0%	100%	24.8	62000	1634	3335	1071	1174	448	559	737	722
2045	Containerships 10,000 - 11,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 12,000 - 13,000 TEU	2019	102	4	7.39	100%	6.3	0%	0%	0%	100%	23.2	70000	1661	2146	1216	1212	108	236	374	374
2045	Containerships 13,000 - 14,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	General Cargo Vessels	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2045	RoRo	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Total																				

2026- 2045 OGV Peak-Day Activity - FEIR Mitigated Scenario

			Peak Day				
Calendar Year	Project Scenario/Ship Type	Weighted Average Model Year	Peakday total transits	Number of Anchorage Calls	Anchorage Time (hr/call)	% Calls using AMP	AMP'd vessels Auxiliary Engine Hours Runtime
2026	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2026	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2026	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2026	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--
2026	Containerships 5,000 - 6,000 TEU	2007	1	0	0	100%	3.1
2026	Containerships 6,000 - 7,000 TEU	--	--	--	--	--	--
2026	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2026	Containerships 8,000 - 9,000 TEU	2011	1	1	7.39	100%	6
2026	Containerships 9,000 - 10,000 TEU	--	--	--	--	--	--
2026	Containerships 10,000 - 11,000 TEU	--	--	--	--	--	--
2026	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--
2026	Containerships 12,000 - 13,000 TEU	2019	1	0	0	100%	6.3
2026	Containerships 13,000 - 14,000 TEU	--	--	--	--	--	--
2026	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2026	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2026	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2026	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2026	General Cargo Vessels	--	--	--	--	--	--
2026	RoRo	--	--	--	--	--	--
2036	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2036	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2036	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2036	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--
2036	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--
2036	Containerships 6,000 - 7,000 TEU	--	--	--	--	--	--
2036	Containerships 7,000 - 8,000 TEU	2007	1	0	0	100%	3.4
2036	Containerships 8,000 - 9,000 TEU	--	--	--	--	--	--
2036	Containerships 9,000 - 10,000 TEU	2012	1	1	7.39	100%	6.15
2036	Containerships 10,000 - 11,000 TEU	--	--	--	--	--	--
2036	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--
2036	Containerships 12,000 - 13,000 TEU	2019	1	0	0	100%	6.3
2036	Containerships 13,000 - 14,000 TEU	--	--	--	--	--	--
2036	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2036	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2036	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2036	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2036	General Cargo Vessels	--	--	--	--	--	--
2036	RoRo	--	--	--	--	--	--
2045	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2045	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2045	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2045	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--
2045	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--
2045	Containerships 6,000 - 7,000 TEU	--	--	--	--	--	--
2045	Containerships 7,000 - 8,000 TEU	2007	1	0	0	100%	3.4
2045	Containerships 8,000 - 9,000 TEU	--	--	--	--	--	--
2045	Containerships 9,000 - 10,000 TEU	2012	1	1	7.39	100%	6.15
2045	Containerships 10,000 - 11,000 TEU	--	--	--	--	--	--
2045	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--
2045	Containerships 12,000 - 13,000 TEU	2019	1	0	0	100%	6.3
2045	Containerships 13,000 - 14,000 TEU	--	--	--	--	--	--
2045	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2045	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2045	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2045	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2045	General Cargo Vessels	--	--	--	--	--	--
2045	RoRo	--	--	--	--	--	--
	Total						

2026-2045 Main Engine Load (KW) - FEIR Mitigated Scenario

		Load					
Calendar Year	Type	Zone 5	Zone 4	Zone 3	Zone 2	Zone 1	Anchorage
2026	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2026	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2026	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2026	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--
2026	Containerships 5,000 - 6,000 TEU	5419	5419	4174	1323	0	0
2026	Containerships 6,000 - 7,000 TEU	--	--	--	--	--	--
2026	Containerships 7,000 - 8,000 TEU	--	--	--	--	--	--
2026	Containerships 8,000 - 9,000 TEU	6461	6461	4977	1577	0	0
2026	Containerships 9,000 - 10,000 TEU	--	--	--	--	--	--
2026	Containerships 10,000 - 11,000 TEU	--	--	--	--	--	--
2026	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--
2026	Containerships 12,000 - 13,000 TEU	9687	9687	7461	2365	0	0
2026	Containerships 13,000 - 14,000 TEU	--	--	--	--	--	--
2026	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2026	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2026	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2026	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2026	General Cargo Vessels	--	--	--	--	--	--
2026	RoRo	--	--	--	--	--	--
2036	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2036	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2036	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2036	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--
2036	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--
2036	Containerships 6,000 - 7,000 TEU	--	--	--	--	--	--
2036	Containerships 7,000 - 8,000 TEU	6479	6479	4990	1582	0	0
2036	Containerships 8,000 - 9,000 TEU	--	--	--	--	--	--
2036	Containerships 9,000 - 10,000 TEU	7024	7024	5410	1715	0	0
2036	Containerships 10,000 - 11,000 TEU	--	--	--	--	--	--
2036	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--
2036	Containerships 12,000 - 13,000 TEU	9687	9687	7461	2365	0	0
2036	Containerships 13,000 - 14,000 TEU	--	--	--	--	--	--
2036	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2036	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2036	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2036	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2036	General Cargo Vessels	--	--	--	--	--	--
2036	RoRo	--	--	--	--	--	--
2045	Containerships 1,000 - 2,000 TEU	--	--	--	--	--	--
2045	Containerships 2,000 - 3,000 TEU	--	--	--	--	--	--
2045	Containerships 3,000 - 4,000 TEU	--	--	--	--	--	--
2045	Containerships 4,000 - 5,000 TEU	--	--	--	--	--	--
2045	Containerships 5,000 - 6,000 TEU	--	--	--	--	--	--
2045	Containerships 6,000 - 7,000 TEU	--	--	--	--	--	--
2045	Containerships 7,000 - 8,000 TEU	6479	6479	4990	1582	0	0
2045	Containerships 8,000 - 9,000 TEU	--	--	--	--	--	--
2045	Containerships 9,000 - 10,000 TEU	7024	7024	5410	1715	0	0
2045	Containerships 10,000 - 11,000 TEU	--	--	--	--	--	--
2045	Containerships 11,000 - 12,000 TEU	--	--	--	--	--	--
2045	Containerships 12,000 - 13,000 TEU	9687	9687	7461	2365	0	0
2045	Containerships 13,000 - 14,000 TEU	--	--	--	--	--	--
2045	Containerships 14,000 - 15,000 TEU	--	--	--	--	--	--
2045	Containerships 15,000 - 16,000 TEU	--	--	--	--	--	--
2045	Containerships 16,000 - 17,000 TEU	--	--	--	--	--	--
2045	Containerships 19,000 - 20,000 TEU	--	--	--	--	--	--
2045	General Cargo Vessels	--	--	--	--	--	--
2045	RoRo	--	--	--	--	--	--

2026- 2045 Transit Parameters - FEIR Mitigated Scenario

Calendar Year	Parameter	Zone 5	Zone 4	Zone 3	Zone 2	Zone 1
2026	Average Speed	12	12	11	7.5	0
2026	Distance in Miles	17.10	22.40	10.4	3.50	
2026	VRSP Compliant Average Speed (knots)	12	12	11	7.5	0
2026	VSRP Non-Compliant Average Speed (knots)	22.00	22.00	NA	NA	NA
2026	VSRP Compliance Rate (% transits)	100%	100%	NA	NA	NA
2036	Average Speed	12	12	11	7.5	0
2036	Distance in Miles	17.10	22.40	10.4	3.50	
2036	VRSP Compliant Average Speed (knots)	12	12	11	7.5	0
2036	VSRP Non-Compliant Average Speed (knots)	22.00	22.00	NA	NA	NA
2036	VSRP Compliance Rate (% transits)	100%	100%	NA	NA	NA
2045	Average Speed	12	12	11	7.5	0
2045	Distance in Miles	17.10	22.40	10.4	3.50	
2045	VRSP Compliant Average Speed (knots)	12	12	11	7.5	0
2045	VSRP Non-Compliant Average Speed (knots)	22.00	22.00	NA	NA	NA
2045	VSRP Compliance Rate (% transits)	100%	100%	NA	NA	NA

Rail
Locomotives and Switchers

Year	2008

On-site Rail Operations 2008 - All Scenarios

Parameters	2008	
	Unit Trains	Partial Trains
Train length (ft)	8,813	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.797	0.695
Average hours of operation per visit	1.5	1.5
Number of locomotives per train	4	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	2,009
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

China Shipping On-site Switching Activity 2008 - All Scenarios

Activity	2008
Annual Throughput WBCT	1,374,855
China Shipping Fraction of Throughput	0.30
WBCT Switchers work hours (hp-hrs/day)	1,329
CS Switchers work hours (hp-hrs/day)	**399**

Offsite Rail Operations 2008 - All Scenarios

Parameters	2008 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		0.6	0.7	20.2	0.6	5.8
East River Bank		0.1	0.1	0.8	0.1	
BNSF San Bernardino		3.7	5.0	41.9	3.7	
BNSF Cajon		1.4	1.9	15.0	1.4	
UP Los Angeles		1.2	1.6	10.2	1.2	
UP Alhambra		1.3	1.7	10.8	1.3	
UP Yuma		1.4	1.9	12.0	1.4	
UP Mojave		0.1	0.1	0.8	0.1	
Locomotives per Train	6	5	4	4	4	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.0	0.1		0.0	
BNSF Hobart & Commerce Yards		0.1	0.1		0.1	
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						
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	4	4	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	16	17	18
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.1	0.1	0.6	0.1	na
UP Yuma		0.0	0.1	0.3	0.0	na
UP Mojave		0.0	0.0	0.0	0.0	na
Locomotives per Train	6	5	4	4	4	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	
China Shipping-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	20,649
BNSF Hobart & Commerce Yards	27,244
UP East LA Yard	2,549
UP LATC Yard	512
UP COI Yard	3
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 data collected during development of the 2001 POLA emissions inventory

China Shipping Line -haul In Yard Activity 2008 - All Scenarios

Parameters	2008 Peak Day Work Done by Locomotives (hp-hr/day) *
On-site (In terminal) Activity	6,614
China Shipping Related Off-dock Activity	
UP ICTF Yard	984
BNSF Hobart & Commerce Yards	1,298
UP East LA Yard	121
UP LATC Yard	24
UP COI Yard	0
BNSF SB Yard	-
BNSF SCIG Yard	-

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

China Shipping Line-haul Traveling 2008 - All Scenarios

	2008
Fuel Productivity Factor (gross ton-miles/gal)	676

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% eac
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.

Line-haul Travel within SCAB 2008 - 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	204,844	6,307
East River Bank	9,436	291
BNSF San Bernardino	468,059	14,412
BNSF Cajon	170,071	5,237
UP Los Angeles	122,464	3,771
UP Alhambra	129,227	3,979
UP Yuma	142,896	4,400
UP Mojave	10,001	308

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

Line-haul Travel from SCAB Border to CA Border 2008 - 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	1,309,821	40,330
UP Yuma	744,839	22,934
UP Mojave	65,721	2,024

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

China Shipping Switchers In Yard Activity 2008 - All Scenarios

	2008
Activity/Yards	Peak Day Work Done by Switchers (hp-hr/day)*
On-site (In terminal) Activity	399
China Shipping-Related Off-dock Activity	
UP ICTF Yard	61
BNSF Hobart & Commerce Yards	80
UP East LA Yard	8
UP LATC Yard	2
UP COI Yard	0
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

Year	2012

On-site Rail Operations 2012 - All Scenarios

Parameters	2012	
	Unit Trains	Partial Trains
Train length (ft)	8,813	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.808	0.745
Average hours of operation per visit	1.5	1.5
Number of locomotives per train	4	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	2,009
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

China Shipping On-site Switching Activity 2012 - All Scenarios

Activity	2012
Annual Throughput WBCT	1,374,855
China Shipping Fraction of Throughput	0.51
WBCT Switchers work hours (hp-hrs/day)	1,329
CS Switchers work hours (hp-hrs/day)	**676**

Offsite Rail Operations 2012 - All Scenarios

Parameters	2012 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	0.9	20.6	0.7	6.3
East River Bank		0.1	0.1	0.8	0.1	
BNSF San Bernardino		3.8	5.0	43.9	3.8	
BNSF Cajon		1.4	1.9	15.8	1.4	
UP Los Angeles		1.4	1.8	10.0	1.4	
UP Alhambra		1.5	2.0	10.6	1.5	
UP Yuma		1.6	2.1	11.8	1.6	
UP Mojave		0.1	0.1	0.8	0.1	
Locomotives per Train	6	5	4	4	4	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.0	0.1		0.0	
BNSF Hobart & Commerce Yards		0.1	0.1		0.1	
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	4	4	4	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	16	17	18
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.1	0.1	0.6	0.1	na
UP Yuma		0.0	0.1	0.3	0.0	na
UP Mojave		0.0	0.0	0.0	0.0	na
Locomotives per Train	6	5	4	4	4	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	
China Shipping-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	27,181
BNSF Hobart & Commerce Yards	29,264
UP East LA Yard	1,491
UP LATC Yard	621
UP COI Yard	1
BNSF SB Yard	43
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 data collected during development of the 2001 POLA emissions inventory

China Shipping Line -haul In Yard Activity 2012 - All Scenarios

Parameters	2012 Peak Day Work Done by Locomotives (hp-hr/day) *
On-site (In terminal) Activity	6,769
China Shipping Related Off-dock Activity	
UP ICTF Yard	1,211
BNSF Hobart & Commerce Yards	1,304
UP East LA Yard	66
UP LATC Yard	28
UP COI Yard	0
BNSF SB Yard	2
BNSF SCIG Yard	-

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

China Shipping Line-haul Traveling 2012 - All Scenarios

	2012
Fuel Productivity Factor (gross ton-miles/gal)	703

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.

Line-haul Travel within SCAB 2012 - 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	212,724	6,294
East River Bank	9,819	291
BNSF San Bernardino	487,594	14,427
BNSF Cajon	177,128	5,241
UP Los Angeles	124,946	3,697
UP Alhambra	132,803	3,930
UP Yuma	146,802	4,344
UP Mojave	10,274	304

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

Line-haul Travel from SCAB Border to CA Border 2012 - 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	1,364,167	40,365
UP Yuma	765,200	22,642
UP Mojave	67,518	1,998

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

China Shipping Switchers In Yard Activity 2012 - All Scenarios

Activity/Yards	2012 Peak Day Work Done by Switchers (hp-hr/day)*
On-site (In terminal) Activity	676
China Shipping-Related Off-dock Activity	
UP ICTF Yard	96
BNSF Hobart & Commerce Yards	104
UP East LA Yard	5
UP LATC Yard	2
UP COI Yard	0
BNSF SB Yard	0
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

China Shipping Operations Data Needs

Year	2014

On-site Rail Operations

Parameters	2014	
	Unit Trains	Partial Trains
Train length (ft)	8,813	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.918	0.818
Average hours of operation per visit	1.5	1.5
Number of locomotives per train	4	1
Average HP of locomotive	4,000	4,000
Average Load Factor	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	16

On-site Switchers	WBCT
Average hours of operation per day	8
Average HP of locomotive	2,009
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

China Shipping On-site Switching Activity

Activity	2014
Annual Throughput WBCT	1,606,707
China Shipping Fraction of Throughput	0.68
WBCT Switchers work hours (hp-hrs/day)	1,329
CS Switchers work hours (hp-hrs/day)	**901**

Off-site Rail Operations

Parameters	2014 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	23.4	0.8	6.9
East River Bank		0.1	0.2	0.9	0.1	
BNSF San Bernardino		3.5	4.7	48.8	3.5	
BNSF Cajon		1.3	1.7	17.5	1.3	
UP Los Angeles		1.4	1.9	11.6	1.4	
UP Alhambra		1.5	2.0	12.4	1.5	
UP Yuma		1.7	2.2	13.7	1.7	
UP Mojave		0.1	0.2	1.0	0.1	
Locomotives per Train	6	5	4	4	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	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		0.0	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						
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	4	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	16	17	18
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.1	0.1	0.7	0.1	na
UP Yuma		0.0	0.1	0.4	0.0	na
UP Mojave		0.0	0.0	0.0	0.0	na
Locomotives per Train	6	5	4	4	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	
China Shipping-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	29,001
BNSF Hobart & Commerce Yards	25,606
UP East LA Yard	114
UP LATC Yard	249
UP COI Yard	6
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 data collected during development of the 2001 POLA emissions inventory

China Shipping Line-haul In Yard Activity

Parameters	2014 Peak Day Work Done by Locomotives (hp-hr/day) *
On-site (In terminal) Activity	7,647
China Shipping Related Off-dock Activity	
UP ICTF Yard	1,252
BNSF Hobart & Commerce Yards	1,105
UP East LA Yard	5
UP LATC Yard	11
UP COI Yard	0
BNSF SB Yard	-
BNSF SCIG Yard	-

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

China Shipping Line-haul Traveling

	2014
Fuel Productivity Factor (gross ton-miles/gal)	717

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.

Line-haul Travel within SCAB

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives *
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	239,987	6,961
East River Bank	11,264	327
BNSF San Bernardino	523,123	15,174
BNSF Cajon	189,550	5,498
UP Los Angeles	140,090	4,063
UP Alhambra	149,333	4,332
UP Yuma	165,435	4,799
UP Mojave	11,579	336

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

Line-haul Travel from SCAB Border to CA Border

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives*
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	1,459,841	42,344
UP Yuma	862,325	25,013
UP Mojave	76,087	2,207

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

China Shipping Switchers In Yard Activity

	2014
Activity/Yards	Peak Day Work Done by Switchers (hp-hr/day)*
On-site (In terminal) Activity	901
China Shipping-Related Off-dock Activity	
UP ICTF Yard	126
BNSF Hobart & Commerce Yards	111
UP East LA Yard	0
UP LATC Yard	1
UP COI Yard	0
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)	1.005	1.119
Average hours of operation per visit	1.7	1.7
Number of locomotives per train	1	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	3.1
Average HP of locomotive	2500
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

2026 China Shipping On-site Switching Activity - All Scenarios

Activity	2026
Annual Throughput WBCT-IY (lifts)	182,233
China Shipping Fraction of Throughput	0.81
WBCT Switchers work hours (hp-hrs/day)	637
China Shipping Switchers work hours (hp-hrs/day)	**517**

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			5 locos	5 locos		
Peak Month Daily Train-miles in SCAB Region (miles/day)						
Alameda Corridor		0.4	0.8	26.4		9.4
East River Bank		0.1	0.1	1.3		
BNSF San Bernardino		2.2	4.5	48.1		
BNSF Cajon		0.8	1.7	17.3		
UP Los Angeles		0.8	1.7	16.5		
UP Alhambra		0.8	1.7	17.5		
UP Yuma		0.9	1.9	19.4		
UP Mojave		0.1	0.1	1.4		
Locomotives per Train	6	5	5	5	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	5	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	0.3	0.1	na
UP Yuma		0.0	0.0	0.2	0.0	na
UP Mojave		0.0	0.0	0.0	0.0	na
Locomotives per Train	6	5	5	5	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	
China Shipping-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	17,182
BNSF Hobart & Commerce Yards	18,087
UP East LA Yard	904
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 data collected during development of the 2001 POLA emissions inventory

2026 China Shipping Line-Haul In Yard Activity - All Scenarios

Parameters	2026 Peak Day Work Done by Locomotives (hp-hr/day) *
On-site (In terminal) Activity	4,047
China Shipping Related Off-dock Activity	
UP ICTF Yard	769
BNSF Hobart & Commerce Yards	809
UP East LA Yard	40
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with China Shipping-related TEUs

2026 China Shipping 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	262,038	6,745
East River Bank	13,294	342
BNSF San Bernardino	482,527	12,421
BNSF Cajon	173,990	4,479
UP Los Angeles	166,466	4,285
UP Alhambra	176,535	4,544
UP Yuma	195,820	5,041
UP Mojave	13,705	353

*Work from all linehaul locomotives operating with China Shipping-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	745,807	19,198
UP Yuma	437,103	11,252
UP Mojave	38,568	993

*Work from all linehaul locomotives operating with China Shipping-related TEUs

2026 China Shipping Switchers In Yard Activity -All Scenarios

	2026
Activity/Yards	**Peak Day Work Done by Switchers (hp-hr/day)***
On-site (In terminal) Activity	517
China Shipping-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 -All Scenarios

Parameters	2036	
	Unit Trains	Partial Trains
Train length (ft)	8,813	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	1.087	1.304
Average hours of operation per visit	1.7	1.7
Number of locomotives per train	1	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	5.0
Average HP of locomotive	2500
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

2036 China Shipping On-site Switching Activity - All Scenarios

Activity	2036
Annual Throughput WBCT-IY (lifts)	296,789
China Shipping Fraction of Throughput	0.57
WBCT Switchers work hours (hp-hrs/day)	1,037
China Shipping Switchers work hours (hp-hrs/day)	**588**

2036 Off-site Rail Operations -All Scenarios

Parameters	2036 Train Length (ft) 12,000	10,000	8,000	8,813	6,000	2,000
Line-Hauls Travelling within SCAB			5 locos	3 locos		
Peak Month Daily Train-miles in SCAB Region (miles/day)						
Alameda Corridor		0.6	1.2	28.9		11.0
East River Bank		0.1	0.2	1.5		
BNSF San Bernardino		3.1	6.2	53.0		
BNSF Cajon		1.1	2.3	19.0		
UP Los Angeles		1.1	2.3	18.1		
UP Alhambra		1.2	2.4	19.3		
UP Yuma		1.3	2.6	21.4		
UP Mojave		0.1	0.2	1.5		
Locomotives per Train	6	5	5	5	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	5	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	0.3	0.1	na
UP Yuma		0.0	0.0	0.2	0.0	na
UP Mojave		0.0	0.0	0.0	0.0	na
Locomotives per Train	6	5	5	5	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	
China Shipping-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	23,611
BNSF Hobart & Commerce Yards	24,853
UP East LA Yard	1,243
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 data collected during development of the 2001 POLA emissions inventory

2036 China Shipping Line-Haul In Yard Activity - All Scenarios

Parameters	2036 Peak Day Work Done by Locomotives (hp-hr/day) *
On-site (In terminal) Activity	4,555
China Shipping Related Off-dock Activity	
UP ICTF Yard	1,056
BNSF Hobart & Commerce Yards	1,112
UP East LA Yard	56
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with China Shipping-related TEUs

2036 China Shipping Line-Haul Traveling - All Scenarios

	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 - 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	291,085	6,783
East River Bank	15,065	351
BNSF San Bernardino	546,822	12,743
BNSF Cajon	197,429	4,601
UP Los Angeles	189,020	4,405
UP Alhambra	200,318	4,668
UP Yuma	222,201	5,178
UP Mojave	15,551	362

*Work from all linehaul locomotives operating with China Shipping-related TEUs

2036 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	745,807	17,380
UP Yuma	437,103	10,186
UP Mojave	38,568	899

*Work from all linehaul locomotives operating with China Shipping-related TEUs

2036 China Shipping Switchers In Yard Activity -All Scenarios

	2036
Activity/Yards	**Peak Day Work Done by Switchers (hp-hr/day)***
On-site (In terminal) Activity	588
China Shipping-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	2045

2045 On-site Rail Operations -All Scenarios

Parameters	2045	
	Unit Trains	Partial Trains
Train length (ft)	8,813	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.933	1.141
Average hours of operation per visit	1.7	1.7
Number of locomotives per train	1	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	10.3
Average HP of locomotive	2500
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

2045 China Shipping On-site Switching Activity - All Scenarios

Activity	2045
Annual Throughput WBCT-IY (lifts)	609,767
China Shipping Fraction of Throughput	0.49
WBCT Switchers work hours (hp-hrs/day)	2,131
China Shipping Switchers work hours (hp-hrs/day)	**1,047**

2045 Off-site Rail Operations -All Scenarios

Parameters	2045 Train Length (ft) 12,000	10,000	8,000	8,813	6,000	2,000
Line-Hauls Travelling within SCAB			5 locos	5 locos		
Peak Month Daily Train-miles in SCAB Region (miles/day)						
Alameda Corridor		3.7	7.6	24.8		9.6
East River Bank		0.6	1.1	1.3		
BNSF San Bernardino		20.1	40.8	45.7		
BNSF Cajon		7.6	15.4	16.4		
UP Los Angeles		7.4	15.0	15.6		
UP Alhambra		7.7	15.6	16.6		
UP Yuma		8.5	17.3	18.4		
UP Mojave		0.6	1.2	1.3		
Locomotives per Train	6	5	5	5	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		0.3	0.5			
BNSF Hobart & Commerce Yards		0.3	0.6			
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	5	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	0.3	0.1	na
UP Yuma		0.0	0.0	0.2	0.0	na
UP Mojave		0.0	0.0	0.0	0.0	na
Locomotives per Train	6	5	5	5	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	
China Shipping-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	155,367
BNSF Hobart & Commerce Yards	163,545
UP East LA Yard	8,177
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 data collected during development of the 2001 POLA emissions inventory

2045 China Shipping Line-Haul In Yard Activity - All Scenarios

Parameters	2045 Peak Day Work Done by Locomotives (hp-hr/day) *
On-site (In terminal) Activity	3,951
China Shipping Related Off-dock Activity	
UP ICTF Yard	6,951
BNSF Hobart & Commerce Yards	7,316
UP East LA Yard	366
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with China Shipping-related TEUs

2045 China Shipping Line-Haul Traveling - All Scenarios

	2045
Fuel Productivity Factor (gross ton-miles/gal)	976

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.

2045 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	336,000	7,159
East River Bank	25,584	545
BNSF San Bernardino	929,309	19,801
BNSF Cajon	342,644	7,301
UP Los Angeles	331,619	7,066
UP Alhambra	347,656	7,408
UP Yuma	385,635	8,217
UP Mojave	26,990	575

*Work from all linehaul locomotives operating with China Shipping-related TEUs

2045 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	745,807	15,891
UP Yuma	437,103	9,313
UP Mojave	38,568	822

*Work from all linehaul locomotives operating with China Shipping-related TEUs

2045 China Shipping Switchers In Yard Activity -All Scenarios

	2045
Activity/Yards	Peak Day Work Done by Switchers (hp-hr/day)*
On-site (In terminal) Activity	1,047
China Shipping-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

Line-Haul Composite Emission Factors - All Scenarios

Year	Type	Emission Factors[1] (g/bhp-hr)									
		VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2008	Line-Haul	0.399	1.280	7.252	0.005	0.256	0.256	0.241	489.0	0.040	0.013
2012	Line-Haul	0.318	1.280	5.961	0.005	0.205	0.205	0.193	489.0	0.040	0.013
2014	Line-Haul	0.284	1.280	5.811	0.005	0.182	0.182	0.171	489.0	0.040	0.013
2018	Line-Haul	0.242	1.280	5.620	0.005	0.145	0.145	0.136	489.0	0.040	0.013
2019	Line-Haul	0.236	1.280	5.578	0.005	0.141	0.141	0.132	489.0	0.040	0.013
2020	Line-Haul	0.230	1.280	5.540	0.005	0.137	0.137	0.129	489.0	0.040	0.013
2021	Line-Haul	0.226	1.280	5.506	0.005	0.134	0.134	0.126	489.0	0.040	0.013
2022	Line-Haul	0.222	1.280	5.475	0.005	0.131	0.131	0.124	489.0	0.040	0.013
2023	Line-Haul	0.218	1.280	5.447	0.005	0.129	0.129	0.122	489.0	0.040	0.013
2026	Line-Haul	0.202	1.280	5.260	0.005	0.119	0.119	0.112	489.0	0.040	0.013
2036	Line-Haul	0.141	1.280	4.024	0.005	0.079	0.079	0.074	489.0	0.040	0.013
2045	Line-Haul	0.070	1.280	1.967	0.005	0.032	0.032	0.030	489.0	0.040	0.013

Switchers Composite Emission Factors - All Scenarios

Year	Type	Emission Factors[1] (g/bhp-hr)									
		VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2008	Switchers	0.445	1.779	6.969	0.006	0.173	0.173	0.156	662.0	0.050	0.017
2012	Switchers	0.241	1.803	4.404	0.006	0.077	0.077	0.068	669.5	0.050	0.017
2014	Switchers	0.241	1.802	4.403	0.006	0.077	0.077	0.068	669.4	0.050	0.017
2018	Switchers	0.208	1.750	4.072	0.006	0.070	0.070	0.066	653.0	0.050	0.017
2019	Switchers	0.208	1.750	4.072	0.006	0.070	0.070	0.066	653.0	0.050	0.017
2020	Switchers	0.208	1.750	4.072	0.006	0.070	0.070	0.066	653.0	0.050	0.017
2021	Switchers	0.208	1.750	4.072	0.006	0.070	0.070	0.066	653.0	0.050	0.017
2022	Switchers	0.208	1.750	4.072	0.006	0.070	0.070	0.066	653.0	0.050	0.017
2023	Switchers	0.208	1.750	4.072	0.006	0.070	0.070	0.066	653.0	0.050	0.017
2026	Switchers	0.208	1.750	4.072	0.006	0.070	0.070	0.066	653.0	0.050	0.017
2036	Switchers	0.208	1.750	4.072	0.006	0.070	0.070	0.066	653.0	0.050	0.017
2045	Switchers	0.208	1.750	4.072	0.006	0.070	0.070	0.066	653.0	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

Train Description	% of Fleet Mix											
	2008	2012	2014	2018	2019	2020	2021	2022	2023	2026	2036	2045
Line-Haul												
pre-controlled	0.078	0.001	0.004	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000
Tier 0	0.387	0.142	0.115	0.061	0.055	0.051	0.046	0.043	0.039	0.014	0.000	0.000
Tier 0+	0.057	0.062	0.048	0.051	0.050	0.049	0.048	0.047	0.047	0.020	0.001	--
Tier 1	0.068	0.089	0.030	0.010	0.007	0.005	0.004	0.003	0.002	0.001	0.000	0.000
Tier 1+	0.010	0.107	0.140	0.298	0.296	0.293	0.291	0.289	0.287	0.299	0.148	0.012
Tier 2	0.401	0.488	0.437	0.092	0.075	0.062	0.052	0.043	0.036	0.020	0.003	0.001
Tier 2+	--	0.007	0.094	0.225	0.253	0.275	0.293	0.308	0.320	0.358	0.350	0.121
Tier 3	--	0.103	0.131	0.208	0.206	0.205	0.204	0.204	0.204	0.209	0.197	0.107
Tier 4	0.000	--	0.000	0.055	0.057	0.059	0.061	0.064	0.066	0.079	0.301	0.760
Switchers												
PHL's pre-controlled switchers	--	--	--							--	--	--
pre-controlled	0.029	--	--	--	--	--	--	--	--	--	--	--
Tier 0	--	--	--	--	--	--	--	--	--	--	--	--
Tier 0+	--	--	--	--	--	--	--	--	--	--	--	--
Tier 1	--	--	--	--	--	--	--	--	--	--	--	--
Tier 1+	--	--	--	--	--	--	--	--	--	--	--	--
Tier 2	0.812	--	--	--	--	--	--	--	--	--	--	--
Tier 2+	--	--	--	--	--	--	--	--	--	--	--	--
Tier 3	--	0.915	0.914	0.708	0.708	0.708	0.708	0.708	0.708	0.708	0.708	0.708
Tier 4	--	--	--	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042
Gensets	0.160	0.085	0.086	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250

Rail Raw Emission Factors by Tier

Locomotive Type	EF (g/bhp-hr)									
	VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
Line Hauls										
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
Switchers										
PHL's pre-controlled switchers*	0.87	1.83	17.6	0.006	0.38	0.38	0.3572	678	0.05	0.017
pre-controlled	0.87	1.83	17.6	0.006	0.38	0.38	0.3572	678	0.05	0.017
Tier 0	1.01	1.83	12.6	0.006	0.44	0.44	0.4	678	0.05	0.017
Tier 0+	1.01	1.83	12.6	0.006	0.44	0.44	0.4	678	0.05	0.017
Tier 1**	0.47	1.28	6.7	0.006	0.32	0.32	0.29	678	0.05	0.017
Tier 1+	0.47	1.28	6.7	0.006	0.32	0.32	0.29	678	0.05	0.017
Tier 1	0.51	1.83	7.3	0.006	0.19	0.19	0.17	678	0.05	0.017
Tier 2+	0.51	1.83	7.3	0.006	0.19	0.19	0.17	678	0.05	0.017
Tier 3	0.26	1.83	4.5	0.006	0.08	0.08	0.07	678	0.05	0.017
Tier 4	0.08	1.83	1	0.006	0.015	0.015	0.014	678	0.05	0.017
Gensets	0.04	1.51	3.37	0.005	0.05	0.05	0.05	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.

Rail Peaking Factors - All Years and Scenarios

Year	Scenario	DayToYear Peaking Factor	DayTo8hr Peaking Factor	DayTo1hr Peaking Factor
2008	Baseline	234	0.619	0.089
2012	Revised Project	250	0.492	0.070
2012	FEIR Mitigated	250	0.492	0.070
2014	Revised Project	241	0.490	0.070
2014	FEIR Mitigated	241	0.490	0.070
2018	Revised Project	245	0.528	0.081
2018	FEIR Mitigated	245	0.528	0.081
2019	Revised Project	245	0.531	0.078
2019	FEIR Mitigated	245	0.531	0.078
2020	Revised Project	248	0.556	0.080
2020	FEIR Mitigated	248	0.556	0.080
2021	Revised Project	250	0.554	0.085
2021	FEIR Mitigated	250	0.554	0.085
2022	Revised Project	246	0.542	0.083
2022	FEIR Mitigated	246	0.542	0.083
2023	Revised Project	245	0.575	0.081
2023	FEIR Mitigated	245	0.575	0.081
2026	Revised Project	253	0.530	0.074
2026	FEIR Mitigated	253	0.530	0.074
2036	Revised Project	253	0.530	0.074
2036	FEIR Mitigated	253	0.530	0.074
2045	Revised Project	253	0.530	0.074
2045	FEIR Mitigated	253	0.530	0.074

Harbor Craft/Tugs

2008 Harbor Craft Annual Emissions - Baseline

Engine Type: Main

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Baseline	Annual	tons/year	2008	Containerships 1,000 - 2,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Annual	tons/year	2008	Containerships 2,000 - 3,000 TEU	1	2	0.606666667	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Annual	tons/year	2008	Containerships 3,000 - 4,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Annual	tons/year	2008	Containerships 4,000 - 5,000 TEU	18	2	10.92	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Annual	tons/year	2008	Containerships 5,000 - 6,000 TEU	28	2	16.98666667	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Annual	tons/year	2008	Containerships 6,000 - 7,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Annual	tons/year	2008	Containerships 8,000 - 9,000 TEU	4	2	2.426666667	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Annual	tons/year	2008	Containerships 9,000 - 10,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Annual	tons/year	2008	Containerships 10,000 - 11,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peakday	lbs/day	2008	Containerships 1,000 - 2,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peakday	lbs/day	2008	Containerships 2,000 - 3,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peakday	lbs/day	2008	Containerships 3,000 - 4,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peakday	lbs/day	2008	Containerships 4,000 - 5,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peakday	lbs/day	2008	Containerships 5,000 - 6,000 TEU	1	2	0.606666667	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peakday	lbs/day	2008	Containerships 6,000 - 7,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peakday	lbs/day	2008	Containerships 8,000 - 9,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peakday	lbs/day	2008	Containerships 9,000 - 10,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peakday	lbs/day	2008	Containerships 10,000 - 11,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peak 8hr	lbs/8hr	2008	Containerships 1,000 - 2,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peak 8hr	lbs/8hr	2008	Containerships 2,000 - 3,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peak 8hr	lbs/8hr	2008	Containerships 3,000 - 4,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peak 8hr	lbs/8hr	2008	Containerships 4,000 - 5,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peak 8hr	lbs/8hr	2008	Containerships 5,000 - 6,000 TEU	1	2	0.606666667	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peak 8hr	lbs/8hr	2008	Containerships 6,000 - 7,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peak 8hr	lbs/8hr	2008	Containerships 8,000 - 9,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peak 8hr	lbs/8hr	2008	Containerships 9,000 - 10,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peak 8hr	lbs/8hr	2008	Containerships 10,000 - 11,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peak 1hr	lbs/1hr	2008	Containerships 1,000 - 2,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peak 1hr	lbs/1hr	2008	Containerships 2,000 - 3,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peak 1hr	lbs/1hr	2008	Containerships 3,000 - 4,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peak 1hr	lbs/1hr	2008	Containerships 4,000 - 5,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peak 1hr	lbs/1hr	2008	Containerships 5,000 - 6,000 TEU	0	2	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peak 1hr	lbs/1hr	2008	Containerships 6,000 - 7,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peak 1hr	lbs/1hr	2008	Containerships 8,000 - 9,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peak 1hr	lbs/1hr	2008	Containerships 9,000 - 10,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Baseline	Peak 1hr	lbs/1hr	2008	Containerships 10,000 - 11,000 TEU	0	0	0	2	1951	0.31	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01

2008 Harbor Craft Annual Emissions - Baseline - continued

Engine Type: Auxiliary

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Baseline	Annual	tons/year	2008	Containerships 1,000 - 2,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Annual	tons/year	2008	Containerships 2,000 - 3,000 TEU	1	2	0.606666667	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Annual	tons/year	2008	Containerships 3,000 - 4,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Annual	tons/year	2008	Containerships 4,000 - 5,000 TEU	18	2	10.92	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Annual	tons/year	2008	Containerships 5,000 - 6,000 TEU	28	2	16.98666667	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Annual	tons/year	2008	Containerships 6,000 - 7,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Annual	tons/year	2008	Containerships 8,000 - 9,000 TEU	4	2	2.426666667	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Annual	tons/year	2008	Containerships 9,000 - 10,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Annual	tons/year	2008	Containerships 10,000 - 11,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peakday	lbs/day	2008	Containerships 1,000 - 2,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peakday	lbs/day	2008	Containerships 2,000 - 3,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peakday	lbs/day	2008	Containerships 3,000 - 4,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peakday	lbs/day	2008	Containerships 4,000 - 5,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peakday	lbs/day	2008	Containerships 5,000 - 6,000 TEU	1	2	0.606666667	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peakday	lbs/day	2008	Containerships 6,000 - 7,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peakday	lbs/day	2008	Containerships 8,000 - 9,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peakday	lbs/day	2008	Containerships 9,000 - 10,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peakday	lbs/day	2008	Containerships 10,000 - 11,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peak 8hr	lbs/8hr	2008	Containerships 1,000 - 2,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peak 8hr	lbs/8hr	2008	Containerships 2,000 - 3,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peak 8hr	lbs/8hr	2008	Containerships 3,000 - 4,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peak 8hr	lbs/8hr	2008	Containerships 4,000 - 5,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peak 8hr	lbs/8hr	2008	Containerships 5,000 - 6,000 TEU	1	2	0.606666667	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peak 8hr	lbs/8hr	2008	Containerships 6,000 - 7,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peak 8hr	lbs/8hr	2008	Containerships 8,000 - 9,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peak 8hr	lbs/8hr	2008	Containerships 9,000 - 10,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peak 8hr	lbs/8hr	2008	Containerships 10,000 - 11,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peak 1hr	lbs/1hr	2008	Containerships 1,000 - 2,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peak 1hr	lbs/1hr	2008	Containerships 2,000 - 3,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peak 1hr	lbs/1hr	2008	Containerships 3,000 - 4,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peak 1hr	lbs/1hr	2008	Containerships 4,000 - 5,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peak 1hr	lbs/1hr	2008	Containerships 5,000 - 6,000 TEU	0	2	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peak 1hr	lbs/1hr	2008	Containerships 6,000 - 7,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peak 1hr	lbs/1hr	2008	Containerships 8,000 - 9,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peak 1hr	lbs/1hr	2008	Containerships 9,000 - 10,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01
Baseline	Peak 1hr	lbs/1hr	2008	Containerships 10,000 - 11,000 TEU	0	0	0	2	138	0.43	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - Revised Project

Engine Type:	Main										Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Annual	tons/year	2012	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Annual	tons/year	2012	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Annual	tons/year	2012	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Annual	tons/year	2012	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Annual	tons/year	2012	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Annual	tons/year	2012	Containerships 6,000 - 7,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Annual	tons/year	2012	Containerships 8,000 - 9,000 TEU	9.00	2.00	5.46	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Annual	tons/year	2012	Containerships 9,000 - 10,000 TEU	42.00	2.00	25.48	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Annual	tons/year	2012	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 4,000 - 5,000 TEU	2.00	2.00	1.21	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 6,000 - 7,000 TEU	17.00	2.00	10.31	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 8,000 - 9,000 TEU	67.00	2.00	40.65	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 9,000 - 10,000 TEU	14.00	2.00	8.49	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 10,000 - 11,000 TEU	63.00	2.00	38.22	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Annual	tons/year	2018	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2018	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2018	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2018	Containerships 4,000 - 5,000 TEU	48.00	2.00	29.12	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2018	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2018	Containerships 6,000 - 7,000 TEU	128.00	2.00	77.65	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2018	Containerships 7,000 - 8,000 TEU	4.00	2.00	2.43	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2018	Containerships 8,000 - 9,000 TEU	44.00	2.00	26.69	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2018	Containerships 9,000 - 10,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2018	Containerships 10,000 - 11,000 TEU	32.00	2.00	19.41	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2018	Containerships 11,000 - 12,000 TEU	2.00	2.00	1.21	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2018	Containerships 12,000 - 13,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2018	Containerships 13,000 - 14,000 TEU	8.00	2.00	4.85	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2018	Containerships 14,000 - 15,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2018	Containerships 15,000 - 16,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2018	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2018	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2018	General Cargo Vessels	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2018	RoRo	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2019	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2019	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2019	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2019	Containerships 4,000 - 5,000 TEU	56.00	2.00	33.97	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2019	Containerships 5,000 - 6,000 TEU	2.00	2.00	1.21	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2019	Containerships 6,000 - 7,000 TEU	87.00	2.00	52.78	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2019	Containerships 7,000 - 8,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2019	Containerships 8,000 - 9,000 TEU	18.00	2.00	10.92	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2019	Containerships 9,000 - 10,000 TEU	26.00	2.00	15.77	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2019	Containerships 10,000 - 11,000 TEU	36.00	2.00	21.84	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2019	Containerships 11,000 - 12,000 TEU	4.00	2.00	2.43	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2019	Containerships 12,000 - 13,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2019	Containerships 13,000 - 14,000 TEU	46.00	2.00	27.91	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2019	Containerships 14,000 - 15,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2019	Containerships 15,000 - 16,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2019	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2019	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2019	General Cargo Vessels	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2019	RoRo	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2020	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2020	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2020	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2020	Containerships 4,000 - 5,000 TEU	30.00	2.00	18.20	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2020	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2020	Containerships 6,000 - 7,000 TEU	56.00	2.00	33.97	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2020	Containerships 7,000 - 8,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2020	Containerships 8,000 - 9,000 TEU	77.00	2.00	46.71	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2020	Containerships 9,000 - 10,000 TEU	11.00	2.00	6.67	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2020	Containerships 10,000 - 11,000 TEU	28.00	2.00	16.99	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2020	Containerships 11,000 - 12,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2020	Containerships 12,000 - 13,000 TEU	5.00	2.00	3.03	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2020	Containerships 13,000 - 14,000 TEU	22.00	2.00	13.35	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - Revised Project - Continued

Engine Type:	Main										Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Annual	tons/year	2020	Containerships 14,000 - 15,000 TEU	4.00	2.00	2.43	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2020	Containerships 15,000 - 16,000 TEU	3.00	2.00	1.82	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2020	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2020	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2020	General Cargo Vessels	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2020	RoRo	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2021	Containerships 1,000 - 2,000 TEU	4.00	2.00	2.43	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2021	Containerships 2,000 - 3,000 TEU	14.00	2.00	8.49	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2021	Containerships 3,000 - 4,000 TEU	2.00	2.00	1.21	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2021	Containerships 4,000 - 5,000 TEU	42.00	2.00	25.48	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2021	Containerships 5,000 - 6,000 TEU	14.00	2.00	8.49	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2021	Containerships 6,000 - 7,000 TEU	22.00	2.00	13.35	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2021	Containerships 7,000 - 8,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2021	Containerships 8,000 - 9,000 TEU	58.00	2.00	35.19	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2021	Containerships 9,000 - 10,000 TEU	8.00	2.00	4.85	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2021	Containerships 10,000 - 11,000 TEU	65.00	2.00	39.43	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2021	Containerships 11,000 - 12,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2021	Containerships 12,000 - 13,000 TEU	8.00	2.00	4.85	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2021	Containerships 13,000 - 14,000 TEU	6.00	2.00	3.64	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2021	Containerships 14,000 - 15,000 TEU	4.00	2.00	2.43	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2021	Containerships 15,000 - 16,000 TEU	8.00	2.00	4.85	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2021	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2021	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2021	General Cargo Vessels	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2021	RoRo	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2022	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2022	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2022	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2022	Containerships 4,000 - 5,000 TEU	2.00	2.00	1.21	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2022	Containerships 5,000 - 6,000 TEU	14.00	2.00	8.49	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2022	Containerships 6,000 - 7,000 TEU	4.00	2.00	2.43	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2022	Containerships 7,000 - 8,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2022	Containerships 8,000 - 9,000 TEU	105.00	2.00	63.70	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2022	Containerships 9,000 - 10,000 TEU	4.00	2.00	2.43	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2022	Containerships 10,000 - 11,000 TEU	41.00	2.00	24.87	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2022	Containerships 11,000 - 12,000 TEU	18.00	2.00	10.92	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2022	Containerships 12,000 - 13,000 TEU	6.00	2.00	3.64	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2022	Containerships 13,000 - 14,000 TEU	2.00	2.00	1.21	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2022	Containerships 14,000 - 15,000 TEU	4.00	2.00	2.43	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2022	Containerships 15,000 - 16,000 TEU	2.00	2.00	1.21	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2022	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2022	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2022	General Cargo Vessels	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2022	RoRo	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2023	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2023	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2023	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2023	Containerships 4,000 - 5,000 TEU	2.00	2.00	1.21	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2023	Containerships 5,000 - 6,000 TEU	2.00	2.00	1.21	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2023	Containerships 6,000 - 7,000 TEU	4.00	2.00	2.43	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2023	Containerships 7,000 - 8,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2023	Containerships 8,000 - 9,000 TEU	185.00	2.00	112.23	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2023	Containerships 9,000 - 10,000 TEU	46.00	2.00	27.91	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2023	Containerships 10,000 - 11,000 TEU	7.00	2.00	4.25	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2023	Containerships 11,000 - 12,000 TEU	58.00	2.00	35.19	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2023	Containerships 12,000 - 13,000 TEU	8.00	2.00	4.85	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2023	Containerships 13,000 - 14,000 TEU	2.00	2.00	1.21	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2023	Containerships 14,000 - 15,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2023	Containerships 15,000 - 16,000 TEU	2.00	2.00	1.21	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2023	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2023	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2023	General Cargo Vessels	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2023	RoRo	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Annual	tons/year	2026	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2026	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2026	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2026	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2026	Containerships 5,000 - 6,000 TEU	68.00	2.00	41.25	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2026	Containerships 6,000 - 7,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - Revised Project - Continued

Engine Type:	Main										Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Annual	tons/year	2026	Containerships 7,000 - 8,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2026	Containerships 8,000 - 9,000 TEU	68.00	2.00	41.25	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2026	Containerships 9,000 - 10,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2026	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2026	Containerships 11,000 - 12,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2026	Containerships 12,000 - 13,000 TEU	68.00	2.00	41.25	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2026	Containerships 13,000 - 14,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2026	Containerships 14,000 - 15,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2026	Containerships 15,000 - 16,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2026	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2026	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2026	General Cargo Vessels	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2026	RoRo	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Annual	tons/year	2036	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2036	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2036	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2036	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2036	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2036	Containerships 6,000 - 7,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2036	Containerships 7,000 - 8,000 TEU	102.00	2.00	61.88	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2036	Containerships 8,000 - 9,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2036	Containerships 9,000 - 10,000 TEU	102.00	2.00	61.88	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2036	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2036	Containerships 11,000 - 12,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2036	Containerships 12,000 - 13,000 TEU	102.00	2.00	61.88	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2036	Containerships 13,000 - 14,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2036	Containerships 14,000 - 15,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2036	Containerships 15,000 - 16,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2036	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2036	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2036	General Cargo Vessels	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2036	RoRo	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2045	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2045	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2045	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2045	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2045	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2045	Containerships 6,000 - 7,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2045	Containerships 7,000 - 8,000 TEU	102.00	2.00	61.88	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2045	Containerships 8,000 - 9,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2045	Containerships 9,000 - 10,000 TEU	102.00	2.00	61.88	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2045	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2045	Containerships 11,000 - 12,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2045	Containerships 12,000 - 13,000 TEU	102.00	2.00	61.88	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2045	Containerships 13,000 - 14,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2045	Containerships 14,000 - 15,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2045	Containerships 15,000 - 16,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2045	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2045	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2045	General Cargo Vessels	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Annual	tons/year	2045	RoRo	0.00	0.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2012	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peakday	lbs/day	2012	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peakday	lbs/day	2012	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peakday	lbs/day	2012	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peakday	lbs/day	2012	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peakday	lbs/day	2012	Containerships 6,000 - 7,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peakday	lbs/day	2012	Containerships 8,000 - 9,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peakday	lbs/day	2012	Containerships 9,000 - 10,000 TEU	1.00	2.00	0.61	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peakday	lbs/day	2012	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 6,000 - 7,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 8,000 - 9,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 9,000 - 10,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 10,000 - 11,000 TEU	1.00	2.00	0.61	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - Revised Project - Continued

Engine Type:	Main										Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peakday	lbs/day	2018	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 6,000 - 7,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 7,000 - 8,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 8,000 - 9,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 9,000 - 10,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 11,000 - 12,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 12,000 - 13,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 13,000 - 14,000 TEU	1.00	2.00	0.61	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 14,000 - 15,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 15,000 - 16,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2018	General Cargo Vessels	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2018	RoRo	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 6,000 - 7,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 7,000 - 8,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 8,000 - 9,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 9,000 - 10,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 11,000 - 12,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 12,000 - 13,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 13,000 - 14,000 TEU	1.00	2.00	0.61	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 14,000 - 15,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 15,000 - 16,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2019	General Cargo Vessels	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2019	RoRo	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 6,000 - 7,000 TEU	1.00	2.00	0.61	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 7,000 - 8,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 8,000 - 9,000 TEU	1.00	2.00	0.61	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 9,000 - 10,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 11,000 - 12,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 12,000 - 13,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 13,000 - 14,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 14,000 - 15,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 15,000 - 16,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2020	General Cargo Vessels	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2020	RoRo	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 6,000 - 7,000 TEU	1.00	2.00	0.61	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 7,000 - 8,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 8,000 - 9,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 9,000 - 10,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 11,000 - 12,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 12,000 - 13,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - Revised Project - Continued

Engine Type:	Main										Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peakday	lbs/day	2021	Containerships 13,000 - 14,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 14,000 - 15,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 15,000 - 16,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2021	General Cargo Vessels	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2021	RoRo	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 6,000 - 7,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 7,000 - 8,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 8,000 - 9,000 TEU	2.00	2.00	1.21	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 9,000 - 10,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 11,000 - 12,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 12,000 - 13,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 13,000 - 14,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 14,000 - 15,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 15,000 - 16,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2022	General Cargo Vessels	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2022	RoRo	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 6,000 - 7,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 7,000 - 8,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 8,000 - 9,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 9,000 - 10,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 11,000 - 12,000 TEU	2.00	2.00	1.21	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 12,000 - 13,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 13,000 - 14,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 14,000 - 15,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 15,000 - 16,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2023	General Cargo Vessels	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2023	RoRo	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 1,000 - 2,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 2,000 - 3,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 3,000 - 4,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 4,000 - 5,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 5,000 - 6,000 TEU	1.00	2.00	0.61	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 6,000 - 7,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 7,000 - 8,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 8,000 - 9,000 TEU	1.00	2.00	0.61	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 9,000 - 10,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 10,000 - 11,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 11,000 - 12,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 12,000 - 13,000 TEU	1.00	2.00	0.61	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 13,000 - 14,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 14,000 - 15,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 15,000 - 16,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 16,000 - 17,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 19,000 - 20,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2026	General Cargo Vessels	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2026	RoRo	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 1,000 - 2,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 2,000 - 3,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 3,000 - 4,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 4,000 - 5,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 5,000 - 6,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - Revised Project - Continued

Engine Type:	Main									Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peakday	lbs/day	2036	Containerships 6,000 - 7,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 7,000 - 8,000 TEU	1.00	2.00	0.61	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 8,000 - 9,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 9,000 - 10,000 TEU	1.00	2.00	0.61	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 10,000 - 11,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 11,000 - 12,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 12,000 - 13,000 TEU	1.00	2.00	0.61	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 13,000 - 14,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 14,000 - 15,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 15,000 - 16,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 16,000 - 17,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 19,000 - 20,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2036	General Cargo Vessels	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2036	RoRo	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 1,000 - 2,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 2,000 - 3,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 3,000 - 4,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 4,000 - 5,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 5,000 - 6,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 6,000 - 7,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 7,000 - 8,000 TEU	1.00	2.00	0.61	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 8,000 - 9,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 9,000 - 10,000 TEU	1.00	2.00	0.61	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 10,000 - 11,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 11,000 - 12,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 12,000 - 13,000 TEU	1.00	2.00	0.61	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 13,000 - 14,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 14,000 - 15,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 15,000 - 16,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 16,000 - 17,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 19,000 - 20,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2045	General Cargo Vessels	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peakday	lbs/day	2045	RoRo	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 6,000 - 7,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 8,000 - 9,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 9,000 - 10,000 TEU	1.00	2.00	0.61	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 6,000 - 7,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 8,000 - 9,000 TEU	1.00	2.00	0.61	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 9,000 - 10,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 10,000 - 11,000 TEU	1.00	2.00	0.61	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 6,000 - 7,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 7,000 - 8,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 8,000 - 9,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 9,000 - 10,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 11,000 - 12,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 12,000 - 13,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 13,000 - 14,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 14,000 - 15,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 15,000 - 16,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	General Cargo Vessels	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - Revised Project - Continued

Engine Type:	Main										Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peak 8hr	lbs/8hr	2018	RoRo	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 6,000 - 7,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 7,000 - 8,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 8,000 - 9,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 9,000 - 10,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 11,000 - 12,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 12,000 - 13,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 13,000 - 14,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 14,000 - 15,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 15,000 - 16,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	General Cargo Vessels	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	RoRo	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 6,000 - 7,000 TEU	1.00	2.00	0.61	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 7,000 - 8,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 8,000 - 9,000 TEU	1.00	2.00	0.61	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 9,000 - 10,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 11,000 - 12,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 12,000 - 13,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 13,000 - 14,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 14,000 - 15,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 15,000 - 16,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	General Cargo Vessels	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	RoRo	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 6,000 - 7,000 TEU	1.00	2.00	0.61	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 7,000 - 8,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 8,000 - 9,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 9,000 - 10,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 11,000 - 12,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 12,000 - 13,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 13,000 - 14,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 14,000 - 15,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 15,000 - 16,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	General Cargo Vessels	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	RoRo	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 6,000 - 7,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 7,000 - 8,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 8,000 - 9,000 TEU	2.00	2.00	1.21	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 9,000 - 10,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 11,000 - 12,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - Revised Project - Continued

Engine Type:	Main										Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 12,000 - 13,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 13,000 - 14,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 14,000 - 15,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 15,000 - 16,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	General Cargo Vessels	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	RoRo	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 6,000 - 7,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 7,000 - 8,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 8,000 - 9,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 9,000 - 10,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 11,000 - 12,000 TEU	2.00	2.00	1.21	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 12,000 - 13,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 13,000 - 14,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 14,000 - 15,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 15,000 - 16,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	General Cargo Vessels	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	RoRo	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 1,000 - 2,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 2,000 - 3,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 3,000 - 4,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 4,000 - 5,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 5,000 - 6,000 TEU	1.00	2.00	0.61	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 6,000 - 7,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 7,000 - 8,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 8,000 - 9,000 TEU	1.00	2.00	0.61	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 9,000 - 10,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 10,000 - 11,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 11,000 - 12,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 12,000 - 13,000 TEU	1.00	2.00	0.61	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 13,000 - 14,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 14,000 - 15,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 15,000 - 16,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 16,000 - 17,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 19,000 - 20,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	General Cargo Vessels	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	RoRo	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 1,000 - 2,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 2,000 - 3,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 3,000 - 4,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 4,000 - 5,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 5,000 - 6,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 6,000 - 7,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 7,000 - 8,000 TEU	1.00	2.00	0.61	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 8,000 - 9,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 9,000 - 10,000 TEU	1.00	2.00	0.61	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 10,000 - 11,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 11,000 - 12,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 12,000 - 13,000 TEU	1.00	2.00	0.61	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 13,000 - 14,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 14,000 - 15,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 15,000 - 16,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 16,000 - 17,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 19,000 - 20,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	General Cargo Vessels	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	RoRo	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 1,000 - 2,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 2,000 - 3,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 3,000 - 4,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 4,000 - 5,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - Revised Project - Continued

Engine Type:	Main									Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 5,000 - 6,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 6,000 - 7,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 7,000 - 8,000 TEU	1.00	2.00	0.61	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 8,000 - 9,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 9,000 - 10,000 TEU	1.00	2.00	0.61	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 10,000 - 11,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 11,000 - 12,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 12,000 - 13,000 TEU	1.00	2.00	0.61	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 13,000 - 14,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 14,000 - 15,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 15,000 - 16,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 16,000 - 17,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 19,000 - 20,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	General Cargo Vessels	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	RoRo	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 6,000 - 7,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 8,000 - 9,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 9,000 - 10,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.21	2069.00	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 6,000 - 7,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 8,000 - 9,000 TEU	1.00	2.00	0.61	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 9,000 - 10,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.00	1908.00	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 6,000 - 7,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 7,000 - 8,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 8,000 - 9,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 9,000 - 10,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 11,000 - 12,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 12,000 - 13,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 13,000 - 14,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 14,000 - 15,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 15,000 - 16,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	General Cargo Vessels	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	RoRo	0.00	0.00	0.00	2.00	2046.00	0.16	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 6,000 - 7,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 7,000 - 8,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 8,000 - 9,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 9,000 - 10,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 11,000 - 12,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 12,000 - 13,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 13,000 - 14,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 14,000 - 15,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 15,000 - 16,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - Revised Project - Continued

Engine Type:	Main										Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peak 1hr	lbs/1hr	2019	General Cargo Vessels	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	RoRo	0.00	0.00	0.00	2.00	2004.00	0.16	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 6,000 - 7,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 7,000 - 8,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 8,000 - 9,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 9,000 - 10,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 11,000 - 12,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 12,000 - 13,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 13,000 - 14,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 14,000 - 15,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 15,000 - 16,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	General Cargo Vessels	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	RoRo	0.00	0.00	0.00	2.00	2419.00	0.16	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 6,000 - 7,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 7,000 - 8,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 8,000 - 9,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 9,000 - 10,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 11,000 - 12,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 12,000 - 13,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 13,000 - 14,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 14,000 - 15,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 15,000 - 16,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	General Cargo Vessels	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	RoRo	0.00	0.00	0.00	2.00	2675.00	0.16	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 6,000 - 7,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 7,000 - 8,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 8,000 - 9,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 9,000 - 10,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 11,000 - 12,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 12,000 - 13,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 13,000 - 14,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 14,000 - 15,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 15,000 - 16,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	General Cargo Vessels	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	RoRo	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 1,000 - 2,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 2,000 - 3,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 3,000 - 4,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 4,000 - 5,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 6,000 - 7,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 7,000 - 8,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 8,000 - 9,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 9,000 - 10,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 10,000 - 11,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - Revised Project - Continued

Engine Type:	Main										Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 11,000 - 12,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 12,000 - 13,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 13,000 - 14,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 14,000 - 15,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 15,000 - 16,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 16,000 - 17,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 19,000 - 20,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	General Cargo Vessels	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	RoRo	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 1,000 - 2,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 2,000 - 3,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 3,000 - 4,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 4,000 - 5,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 5,000 - 6,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 6,000 - 7,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 7,000 - 8,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 8,000 - 9,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 9,000 - 10,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 10,000 - 11,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 11,000 - 12,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 12,000 - 13,000 TEU	0.00	0.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 13,000 - 14,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 14,000 - 15,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 15,000 - 16,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 16,000 - 17,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 19,000 - 20,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	General Cargo Vessels	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	RoRo	--	2.00	0.00	2.00	2651.00	0.16	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 1,000 - 2,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 2,000 - 3,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 3,000 - 4,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 4,000 - 5,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 5,000 - 6,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 6,000 - 7,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 7,000 - 8,000 TEU	1.00	2.00	0.61	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 8,000 - 9,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 9,000 - 10,000 TEU	1.00	2.00	0.61	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 10,000 - 11,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 11,000 - 12,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 12,000 - 13,000 TEU	1.00	2.00	0.61	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 13,000 - 14,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 14,000 - 15,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 15,000 - 16,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 16,000 - 17,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 19,000 - 20,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	General Cargo Vessels	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	RoRo	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 1,000 - 2,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 2,000 - 3,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 3,000 - 4,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 4,000 - 5,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 5,000 - 6,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 6,000 - 7,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 7,000 - 8,000 TEU	1.00	2.00	0.61	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 8,000 - 9,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 9,000 - 10,000 TEU	1.00	2.00	0.61	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 10,000 - 11,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 11,000 - 12,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 12,000 - 13,000 TEU	1.00	2.00	0.61	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 13,000 - 14,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 14,000 - 15,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 15,000 - 16,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 16,000 - 17,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 19,000 - 20,000 TEU	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	General Cargo Vessels	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	RoRo	--	2.00	0.00	2.00	2651.00	0.16	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project

Engine Type: Auxiliary

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Annual	tons/year	2012	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Annual	tons/year	2012	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Annual	tons/year	2012	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Annual	tons/year	2012	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Annual	tons/year	2012	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Annual	tons/year	2012	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Annual	tons/year	2012	Containerships 8,000 - 9,000 TEU	9	2	5.460	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Annual	tons/year	2012	Containerships 9,000 - 10,000 TEU	42	2	25.480	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Annual	tons/year	2012	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 4,000 - 5,000 TEU	2	2	1.213	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 6,000 - 7,000 TEU	17	2	10.313	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 8,000 - 9,000 TEU	67	2	40.647	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 9,000 - 10,000 TEU	14	2	8.493	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 10,000 - 11,000 TEU	63	2	38.220	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Annual	tons/year	2018	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 4,000 - 5,000 TEU	48	2	29.120	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 6,000 - 7,000 TEU	128	2	77.653	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 7,000 - 8,000 TEU	4	2	2.427	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 8,000 - 9,000 TEU	44	2	26.693	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 10,000 - 11,000 TEU	32	2	19.413	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 11,000 - 12,000 TEU	2	2	1.213	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 13,000 - 14,000 TEU	8	2	4.853	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	General Cargo Vessels	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	RoRo	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 4,000 - 5,000 TEU	56	2	33.973	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 5,000 - 6,000 TEU	2	2	1.213	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 6,000 - 7,000 TEU	87	2	52.780	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 8,000 - 9,000 TEU	18	2	10.920	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 9,000 - 10,000 TEU	26	2	15.773	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 10,000 - 11,000 TEU	36	2	21.840	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 11,000 - 12,000 TEU	4	2	2.427	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 13,000 - 14,000 TEU	46	2	27.907	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	General Cargo Vessels	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	RoRo	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 4,000 - 5,000 TEU	30	2	18.200	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 6,000 - 7,000 TEU	56	2	33.973	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 8,000 - 9,000 TEU	77	2	46.713	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 9,000 - 10,000 TEU	11	2	6.673	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 10,000 - 11,000 TEU	28	2	16.987	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project - Continue

Engine Type: Auxiliary

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Annual	tons/year	2020	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 12,000 - 13,000 TEU	5	2	3.033	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 13,000 - 14,000 TEU	22	2	13.347	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 14,000 - 15,000 TEU	4	2	2.427	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 15,000 - 16,000 TEU	3	2	1.820	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	General Cargo Vessels	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	RoRo	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 1,000 - 2,000 TEU	4	2	2.427	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 2,000 - 3,000 TEU	14	2	8.493	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 3,000 - 4,000 TEU	2	2	1.213	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 4,000 - 5,000 TEU	42	2	25.480	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 5,000 - 6,000 TEU	14	2	8.493	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 6,000 - 7,000 TEU	22	2	13.347	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 8,000 - 9,000 TEU	58	2	35.187	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 9,000 - 10,000 TEU	8	2	4.853	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 10,000 - 11,000 TEU	65	2	39.433	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 12,000 - 13,000 TEU	8	2	4.853	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 13,000 - 14,000 TEU	6	2	3.640	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 14,000 - 15,000 TEU	4	2	2.427	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 15,000 - 16,000 TEU	8	2	4.853	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	General Cargo Vessels	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	RoRo	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 4,000 - 5,000 TEU	2	2	1.213	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 5,000 - 6,000 TEU	14	2	8.493	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 6,000 - 7,000 TEU	4	2	2.427	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 8,000 - 9,000 TEU	105	2	63.700	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 9,000 - 10,000 TEU	4	2	2.427	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 10,000 - 11,000 TEU	41	2	24.873	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 11,000 - 12,000 TEU	18	2	10.920	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 12,000 - 13,000 TEU	6	2	3.640	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 13,000 - 14,000 TEU	2	2	1.213	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 14,000 - 15,000 TEU	4	2	2.427	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 15,000 - 16,000 TEU	2	2	1.213	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	General Cargo Vessels	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	RoRo	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 4,000 - 5,000 TEU	2	2	1.213	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 5,000 - 6,000 TEU	2	2	1.213	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 6,000 - 7,000 TEU	4	2	2.427	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 8,000 - 9,000 TEU	185	2	112.233	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 9,000 - 10,000 TEU	46	2	27.907	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 10,000 - 11,000 TEU	7	2	4.247	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 11,000 - 12,000 TEU	58	2	35.187	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 12,000 - 13,000 TEU	8	2	4.853	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 13,000 - 14,000 TEU	2	2	1.213	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 15,000 - 16,000 TEU	2	2	1.213	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	General Cargo Vessels	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	RoRo	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project - Continue

Engine Type: Auxiliary

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Annual	tons/year	2026	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 5,000 - 6,000 TEU	68	2	41.253	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 8,000 - 9,000 TEU	68	2	41.253	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 12,000 - 13,000 TEU	68	2	41.253	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	General Cargo Vessels	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	RoRo	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 7,000 - 8,000 TEU	102	2	61.880	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 9,000 - 10,000 TEU	102	2	61.880	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 12,000 - 13,000 TEU	102	2	61.880	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	General Cargo Vessels	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	RoRo	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 7,000 - 8,000 TEU	102	2	61.880	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 9,000 - 10,000 TEU	102	2	61.880	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 12,000 - 13,000 TEU	102	2	61.880	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	General Cargo Vessels	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	RoRo	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2012	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peakday	lbs/day	2012	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peakday	lbs/day	2012	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peakday	lbs/day	2012	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peakday	lbs/day	2012	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peakday	lbs/day	2012	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peakday	lbs/day	2012	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peakday	lbs/day	2012	Containerships 9,000 - 10,000 TEU	1	2	0.607	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peakday	lbs/day	2012	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project - Continue

Engine Type: Auxiliary

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peakday	lbs/day	2014	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 10,000 - 11,000 TEU	1	2	0.607	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2018	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 13,000 - 14,000 TEU	1	2	0.607	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	General Cargo Vessels	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	RoRo	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 13,000 - 14,000 TEU	1	2	0.607	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	General Cargo Vessels	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	RoRo	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 6,000 - 7,000 TEU	1	2	0.607	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 8,000 - 9,000 TEU	1	2	0.607	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	General Cargo Vessels	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	RoRo	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project - Continue

Engine Type: Auxiliary

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peakday	lbs/day	2021	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 6,000 - 7,000 TEU	1	2	0.607	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	General Cargo Vessels	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	RoRo	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 8,000 - 9,000 TEU	2	2	1.213	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	General Cargo Vessels	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	RoRo	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 11,000 - 12,000 TEU	2	2	1.213	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	General Cargo Vessels	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	RoRo	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 5,000 - 6,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 8,000 - 9,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project - Continue

Engine Type: Auxiliary

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peakday	lbs/day	2026	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 12,000 - 13,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 7,000 - 8,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 9,000 - 10,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 12,000 - 13,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 7,000 - 8,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 9,000 - 10,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 12,000 - 13,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 9,000 - 10,000 TEU	1	2	0.607	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 8,000 - 9,000 TEU	1	2	0.607	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 10,000 - 11,000 TEU	1	2	0.607	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project - Continue

Engine Type: Auxiliary

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	General Cargo Vessels	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	RoRo	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	General Cargo Vessels	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	RoRo	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 6,000 - 7,000 TEU	1	2	0.607	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 8,000 - 9,000 TEU	1	2	0.607	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	General Cargo Vessels	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	RoRo	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 6,000 - 7,000 TEU	1	2	0.607	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project - Continue

Engine Type: Auxiliary

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	General Cargo Vessels	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	RoRo	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 8,000 - 9,000 TEU	2	2	1.213	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	General Cargo Vessels	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	RoRo	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 11,000 - 12,000 TEU	2	2	1.213	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	General Cargo Vessels	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	RoRo	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 5,000 - 6,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 8,000 - 9,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 12,000 - 13,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project - Continue

Engine Type: Auxiliary

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peak 8hr	lbs/8hr	2026	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 7,000 - 8,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 9,000 - 10,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 12,000 - 13,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 7,000 - 8,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 9,000 - 10,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 12,000 - 13,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 8,000 - 9,000 TEU	1	2	0.607	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project - Continue

Engine Type: Auxiliary

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	General Cargo Vessels	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	RoRo	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	General Cargo Vessels	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	RoRo	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	General Cargo Vessels	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	RoRo	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	General Cargo Vessels	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project - Continue

Engine Type: Auxiliary

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peak 1hr	lbs/1hr	2021	RoRo	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	General Cargo Vessels	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	RoRo	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	General Cargo Vessels	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	RoRo	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 7,000 - 8,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project - Continue

Engine Type: Auxiliary

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 9,000 - 10,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 12,000 - 13,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 7,000 - 8,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 9,000 - 10,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 12,000 - 13,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02

Anchorage

Project Type	Period	Units	alendar Yea	Vessel Type	al One-Way Tra	mber of Tugs per	tion per tug for all t	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Annual	tons/year	2012	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Annual	tons/year	2012	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Annual	tons/year	2012	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Annual	tons/year	2012	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Annual	tons/year	2012	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Annual	tons/year	2012	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Annual	tons/year	2012	Containerships 8,000 - 9,000 TEU	0	2	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Annual	tons/year	2012	Containerships 9,000 - 10,000 TEU	2	2	0.542	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Annual	tons/year	2012	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 4,000 - 5,000 TEU	0	2	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 6,000 - 7,000 TEU	0	2	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 8,000 - 9,000 TEU	6	2	1.627	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 9,000 - 10,000 TEU	2	2	0.542	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Annual	tons/year	2014	Containerships 10,000 - 11,000 TEU	7	2	1.898	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Annual	tons/year	2018	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 4,000 - 5,000 TEU	0	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 5,000 - 6,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 6,000 - 7,000 TEU	2	2	0.542	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 7,000 - 8,000 TEU	0	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 8,000 - 9,000 TEU	0	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 9,000 - 10,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 10,000 - 11,000 TEU	1	2	0.271	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 11,000 - 12,000 TEU	0	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 12,000 - 13,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 13,000 - 14,000 TEU	0	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 14,000 - 15,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 15,000 - 16,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project - Continue

Engine Type: Auxiliary

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Annual	tons/year	2018	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	General Cargo Vessels	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2018	RoRo	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 4,000 - 5,000 TEU	1	2	0.271	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 5,000 - 6,000 TEU	0	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 6,000 - 7,000 TEU	2	2	0.542	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 7,000 - 8,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 8,000 - 9,000 TEU	1	2	0.271	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 9,000 - 10,000 TEU	0	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 10,000 - 11,000 TEU	0	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 11,000 - 12,000 TEU	0	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 12,000 - 13,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 13,000 - 14,000 TEU	1	2	0.271	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 14,000 - 15,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 15,000 - 16,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	General Cargo Vessels	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2019	RoRo	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 4,000 - 5,000 TEU	4	2	1.084	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 5,000 - 6,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 6,000 - 7,000 TEU	3	2	0.813	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 7,000 - 8,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 8,000 - 9,000 TEU	8	2	2.169	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 9,000 - 10,000 TEU	2	2	0.542	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 10,000 - 11,000 TEU	4	2	1.084	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 11,000 - 12,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 12,000 - 13,000 TEU	1	2	0.271	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 13,000 - 14,000 TEU	1	2	0.271	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 14,000 - 15,000 TEU	2	2	0.542	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 15,000 - 16,000 TEU	1	2	0.271	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	General Cargo Vessels	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2020	RoRo	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 1,000 - 2,000 TEU	2	2	0.542	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 2,000 - 3,000 TEU	6	2	1.627	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 3,000 - 4,000 TEU	0	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 4,000 - 5,000 TEU	18	2	4.880	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 5,000 - 6,000 TEU	3	2	0.813	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 6,000 - 7,000 TEU	10	2	2.711	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 7,000 - 8,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 8,000 - 9,000 TEU	26	2	7.049	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 9,000 - 10,000 TEU	3	2	0.813	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 10,000 - 11,000 TEU	25	2	6.778	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 11,000 - 12,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 12,000 - 13,000 TEU	2	2	0.542	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 13,000 - 14,000 TEU	1	2	0.271	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 14,000 - 15,000 TEU	2	2	0.542	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 15,000 - 16,000 TEU	2	2	0.542	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	General Cargo Vessels	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2021	RoRo	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 4,000 - 5,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 5,000 - 6,000 TEU	4	2	1.084	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project - Continue

Engine Type: Auxiliary

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Annual	tons/year	2022	Containerships 6,000 - 7,000 TEU	2	2	0.542	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 7,000 - 8,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 8,000 - 9,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 9,000 - 10,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 10,000 - 11,000 TEU	3	2	0.813	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 11,000 - 12,000 TEU	1	2	0.271	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 12,000 - 13,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 13,000 - 14,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 14,000 - 15,000 TEU	1	2	0.271	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 15,000 - 16,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	General Cargo Vessels	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2022	RoRo	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 4,000 - 5,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 5,000 - 6,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 6,000 - 7,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 7,000 - 8,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 8,000 - 9,000 TEU	8	2	2.169	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 9,000 - 10,000 TEU	5	2	1.356	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 10,000 - 11,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 11,000 - 12,000 TEU	3	2	0.813	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 12,000 - 13,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 13,000 - 14,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 14,000 - 15,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 15,000 - 16,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	General Cargo Vessels	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2023	RoRo	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 4,000 - 5,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 5,000 - 6,000 TEU	3	2	0.813	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 6,000 - 7,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 7,000 - 8,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 8,000 - 9,000 TEU	3	2	0.813	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 9,000 - 10,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 10,000 - 11,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 11,000 - 12,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 12,000 - 13,000 TEU	3	2	0.813	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 13,000 - 14,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 14,000 - 15,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 15,000 - 16,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	General Cargo Vessels	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2026	RoRo	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 4,000 - 5,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 5,000 - 6,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 6,000 - 7,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 7,000 - 8,000 TEU	4	2	1.084	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 8,000 - 9,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 9,000 - 10,000 TEU	4	2	1.084	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 10,000 - 11,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 11,000 - 12,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 12,000 - 13,000 TEU	4	2	1.084	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 13,000 - 14,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 14,000 - 15,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project - Continue

Engine Type: Auxiliary

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Annual	tons/year	2036	Containerships 15,000 - 16,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	General Cargo Vessels	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2036	RoRo	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 4,000 - 5,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 5,000 - 6,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 6,000 - 7,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 7,000 - 8,000 TEU	4	2	1.084	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 8,000 - 9,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 9,000 - 10,000 TEU	4	2	1.084	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 10,000 - 11,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 11,000 - 12,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 12,000 - 13,000 TEU	4	2	1.084	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 13,000 - 14,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 14,000 - 15,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 15,000 - 16,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	General Cargo Vessels	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Annual	tons/year	2045	RoRo	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2012	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peakday	lbs/day	2012	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peakday	lbs/day	2012	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peakday	lbs/day	2012	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peakday	lbs/day	2012	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peakday	lbs/day	2012	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peakday	lbs/day	2012	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peakday	lbs/day	2012	Containerships 9,000 - 10,000 TEU	0	2	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peakday	lbs/day	2012	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2014	Containerships 10,000 - 11,000 TEU	0	2	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peakday	lbs/day	2018	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 4,000 - 5,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 5,000 - 6,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 7,000 - 8,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 8,000 - 9,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 9,000 - 10,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 10,000 - 11,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 11,000 - 12,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 12,000 - 13,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 13,000 - 14,000 TEU	0	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 14,000 - 15,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 15,000 - 16,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	General Cargo Vessels	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2018	RoRo	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 4,000 - 5,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 5,000 - 6,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project - Continue

Engine Type: Auxiliary

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peakday	lbs/day	2019	Containerships 6,000 - 7,000 TEU	1	0	0.271	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 7,000 - 8,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 8,000 - 9,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 9,000 - 10,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 10,000 - 11,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 11,000 - 12,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 12,000 - 13,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 13,000 - 14,000 TEU	1	2	0.271	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 14,000 - 15,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 15,000 - 16,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	General Cargo Vessels	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2019	RoRo	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 4,000 - 5,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 5,000 - 6,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 6,000 - 7,000 TEU	0	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 7,000 - 8,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 8,000 - 9,000 TEU	0	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 9,000 - 10,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 11,000 - 12,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 12,000 - 13,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 13,000 - 14,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 14,000 - 15,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 15,000 - 16,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	General Cargo Vessels	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2020	RoRo	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 5,000 - 6,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 6,000 - 7,000 TEU	0	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 7,000 - 8,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 8,000 - 9,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 9,000 - 10,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 10,000 - 11,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 11,000 - 12,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 12,000 - 13,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 13,000 - 14,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 14,000 - 15,000 TEU	1	0	0.271	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 15,000 - 16,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	General Cargo Vessels	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2021	RoRo	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 4,000 - 5,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 5,000 - 6,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 6,000 - 7,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 7,000 - 8,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 8,000 - 9,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 9,000 - 10,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 11,000 - 12,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 12,000 - 13,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 13,000 - 14,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 14,000 - 15,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project - Continue

Engine Type: Auxiliary

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peakday	lbs/day	2022	Containerships 15,000 - 16,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	General Cargo Vessels	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2022	RoRo	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 4,000 - 5,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 5,000 - 6,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 6,000 - 7,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 7,000 - 8,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 9,000 - 10,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 10,000 - 11,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 11,000 - 12,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 12,000 - 13,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 13,000 - 14,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 14,000 - 15,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 15,000 - 16,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	General Cargo Vessels	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2023	RoRo	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 5,000 - 6,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 8,000 - 9,000 TEU	1	2	0.271	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 12,000 - 13,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2026	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 7,000 - 8,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 9,000 - 10,000 TEU	1	2	0.271	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 12,000 - 13,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2036	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project - Continue

Engine Type: Auxiliary

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peakday	lbs/day	2045	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 7,000 - 8,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 9,000 - 10,000 TEU	1	2	0.271	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 12,000 - 13,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peakday	lbs/day	2045	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 9,000 - 10,000 TEU	0	2	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2012	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 8,000 - 9,000 TEU	0	2	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2014	Containerships 10,000 - 11,000 TEU	0	2	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 4,000 - 5,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 5,000 - 6,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 7,000 - 8,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 8,000 - 9,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 9,000 - 10,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 10,000 - 11,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 11,000 - 12,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 12,000 - 13,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 14,000 - 15,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 15,000 - 16,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	General Cargo Vessels	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2018	RoRo	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 4,000 - 5,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 5,000 - 6,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 7,000 - 8,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 8,000 - 9,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 9,000 - 10,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 10,000 - 11,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 11,000 - 12,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 12,000 - 13,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 14,000 - 15,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project - Continue

Engine Type: Auxiliary

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 15,000 - 16,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	General Cargo Vessels	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2019	RoRo	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 4,000 - 5,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 5,000 - 6,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 6,000 - 7,000 TEU	0	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 7,000 - 8,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 8,000 - 9,000 TEU	0	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 9,000 - 10,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 11,000 - 12,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 12,000 - 13,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 13,000 - 14,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 14,000 - 15,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 15,000 - 16,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	General Cargo Vessels	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2020	RoRo	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 5,000 - 6,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 6,000 - 7,000 TEU	0	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 7,000 - 8,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 8,000 - 9,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 9,000 - 10,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 10,000 - 11,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 11,000 - 12,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 12,000 - 13,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 13,000 - 14,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 14,000 - 15,000 TEU	1	0	0.271	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 15,000 - 16,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	General Cargo Vessels	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2021	RoRo	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 4,000 - 5,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 5,000 - 6,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 6,000 - 7,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 7,000 - 8,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 8,000 - 9,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 9,000 - 10,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 11,000 - 12,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 12,000 - 13,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 13,000 - 14,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 14,000 - 15,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 15,000 - 16,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	General Cargo Vessels	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2022	RoRo	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 4,000 - 5,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project - Continue

Engine Type: Auxiliary

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 5,000 - 6,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 6,000 - 7,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 7,000 - 8,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 9,000 - 10,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 10,000 - 11,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 11,000 - 12,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 12,000 - 13,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 13,000 - 14,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 14,000 - 15,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 15,000 - 16,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	General Cargo Vessels	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2023	RoRo	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 5,000 - 6,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 8,000 - 9,000 TEU	1	2	0.271	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 12,000 - 13,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2026	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 7,000 - 8,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 9,000 - 10,000 TEU	1	2	0.271	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 12,000 - 13,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2036	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 7,000 - 8,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 9,000 - 10,000 TEU	1	2	0.271	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 12,000 - 13,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project - Continue

Engine Type: Auxiliary

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 8hr	lbs/8hr	2045	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2012	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 8,000 - 9,000 TEU	0	2	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2014	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 4,000 - 5,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 5,000 - 6,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 7,000 - 8,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 8,000 - 9,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 9,000 - 10,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 10,000 - 11,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 11,000 - 12,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 12,000 - 13,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 14,000 - 15,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 15,000 - 16,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	General Cargo Vessels	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2018	RoRo	--	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 4,000 - 5,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 5,000 - 6,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 7,000 - 8,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 8,000 - 9,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 9,000 - 10,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 10,000 - 11,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 11,000 - 12,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 12,000 - 13,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 14,000 - 15,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 15,000 - 16,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	General Cargo Vessels	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2019	RoRo	--	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 4,000 - 5,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project - Continue

Engine Type: Auxiliary

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 5,000 - 6,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 7,000 - 8,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 9,000 - 10,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 11,000 - 12,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 12,000 - 13,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 13,000 - 14,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 14,000 - 15,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 15,000 - 16,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	General Cargo Vessels	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2020	RoRo	--	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 5,000 - 6,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 7,000 - 8,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 8,000 - 9,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 9,000 - 10,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 10,000 - 11,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 11,000 - 12,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 12,000 - 13,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 13,000 - 14,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 15,000 - 16,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	General Cargo Vessels	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2021	RoRo	--	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 4,000 - 5,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 5,000 - 6,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 6,000 - 7,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 7,000 - 8,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 9,000 - 10,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 11,000 - 12,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 12,000 - 13,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 13,000 - 14,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 14,000 - 15,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 15,000 - 16,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	General Cargo Vessels	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2022	RoRo	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 1,000 - 2,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 2,000 - 3,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 3,000 - 4,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 4,000 - 5,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 5,000 - 6,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 6,000 - 7,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 7,000 - 8,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 9,000 - 10,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 10,000 - 11,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 12,000 - 13,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 13,000 - 14,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - Revised Project - Continue

Engine Type: Auxiliary

Project Type	Period	Units	Calendar Year	Vessel Type	One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 14,000 - 15,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 15,000 - 16,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 16,000 - 17,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	Containerships 19,000 - 20,000 TEU	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	General Cargo Vessels	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2023	RoRo	--	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2026	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 7,000 - 8,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 9,000 - 10,000 TEU	1	2	0.271	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 12,000 - 13,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2036	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 7,000 - 8,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 9,000 - 10,000 TEU	1	2	0.271	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 12,000 - 13,000 TEU	0	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
Revised Project	Peak 1hr	lbs/1hr	2045	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated
Engine Type: Main

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Annual	tons/year	2012	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 8,000 - 9,000 TEU	9	2	5.460	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 9,000 - 10,000 TEU	42	2	25.480	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 4,000 - 5,000 TEU	2	2	1.213	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 6,000 - 7,000 TEU	17	2	10.313	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 8,000 - 9,000 TEU	67	2	40.647	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 9,000 - 10,000 TEU	14	2	8.493	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 10,000 - 11,000 TEU	63	2	38.220	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2018	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 4,000 - 5,000 TEU	48	2	29.120	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 6,000 - 7,000 TEU	128	2	77.653	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 7,000 - 8,000 TEU	4	2	2.427	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 8,000 - 9,000 TEU	44	2	26.693	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 10,000 - 11,000 TEU	32	2	19.413	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 11,000 - 12,000 TEU	2	2	1.213	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 12,000 - 13,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 13,000 - 14,000 TEU	8	2	4.853	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	General Cargo Vessels	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	RoRo	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 4,000 - 5,000 TEU	56	2	33.973	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 5,000 - 6,000 TEU	2	2	1.213	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 6,000 - 7,000 TEU	87	2	52.780	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 8,000 - 9,000 TEU	18	2	10.920	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 9,000 - 10,000 TEU	26	2	15.773	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 10,000 - 11,000 TEU	36	2	21.840	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 11,000 - 12,000 TEU	4	2	2.427	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 12,000 - 13,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 13,000 - 14,000 TEU	46	2	27.907	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	General Cargo Vessels	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	RoRo	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 4,000 - 5,000 TEU	30	2	18.200	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 6,000 - 7,000 TEU	56	2	33.973	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Main

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Annual	tons/year	2020	Containerships 8,000 - 9,000 TEU	77	2	46.713	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 9,000 - 10,000 TEU	11	2	6.673	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 10,000 - 11,000 TEU	28	2	16.987	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 12,000 - 13,000 TEU	5	2	3.033	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 13,000 - 14,000 TEU	22	2	13.347	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 14,000 - 15,000 TEU	4	2	2.427	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 15,000 - 16,000 TEU	3	2	1.820	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	General Cargo Vessels	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	RoRo	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 1,000 - 2,000 TEU	4	2	2.427	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 2,000 - 3,000 TEU	14	2	8.493	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 3,000 - 4,000 TEU	2	2	1.213	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 4,000 - 5,000 TEU	42	2	25.480	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 5,000 - 6,000 TEU	14	2	8.493	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 6,000 - 7,000 TEU	22	2	13.347	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 8,000 - 9,000 TEU	58	2	35.187	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 9,000 - 10,000 TEU	8	2	4.853	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 10,000 - 11,000 TEU	65	2	39.433	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 12,000 - 13,000 TEU	8	2	4.853	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 13,000 - 14,000 TEU	6	2	3.640	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 14,000 - 15,000 TEU	4	2	2.427	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 15,000 - 16,000 TEU	8	2	4.853	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	General Cargo Vessels	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	RoRo	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 4,000 - 5,000 TEU	2	2	1.213	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 5,000 - 6,000 TEU	14	2	8.493	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 6,000 - 7,000 TEU	4	2	2.427	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 8,000 - 9,000 TEU	105	2	63.700	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 9,000 - 10,000 TEU	4	2	2.427	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 10,000 - 11,000 TEU	41	2	24.873	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 11,000 - 12,000 TEU	18	2	10.920	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 12,000 - 13,000 TEU	6	2	3.640	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 13,000 - 14,000 TEU	2	2	1.213	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 14,000 - 15,000 TEU	4	2	2.427	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 15,000 - 16,000 TEU	2	2	1.213	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	RoRo	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 4,000 - 5,000 TEU	2	2	1.213	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 5,000 - 6,000 TEU	2	2	1.213	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 6,000 - 7,000 TEU	4	2	2.427	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 8,000 - 9,000 TEU	185	2	112.233	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 9,000 - 10,000 TEU	46	2	27.907	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 10,000 - 11,000 TEU	7	2	4.247	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 11,000 - 12,000 TEU	58	2	35.187	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 12,000 - 13,000 TEU	8	2	4.853	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 13,000 - 14,000 TEU	2	2	1.213	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Main

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Annual	tons/year	2023	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 15,000 - 16,000 TEU	2	2	1.213	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	RoRo	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 5,000 - 6,000 TEU	68	2	41.253	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 8,000 - 9,000 TEU	68	2	41.253	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 12,000 - 13,000 TEU	68	2	41.253	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	RoRo	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 7,000 - 8,000 TEU	102	2	61.880	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 9,000 - 10,000 TEU	102	2	61.880	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 12,000 - 13,000 TEU	102	2	61.880	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	RoRo	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 7,000 - 8,000 TEU	102	2	61.880	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 9,000 - 10,000 TEU	102	2	61.880	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 12,000 - 13,000 TEU	102	2	61.880	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	RoRo	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued

Engine Type: Main

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 9,000 - 10,000 TEU	1	2	0.607	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 10,000 - 11,000 TEU	2	2	1.213	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 11,000 - 12,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 13,000 - 14,000 TEU	1	2	0.607	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 14,000 - 15,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 15,000 - 16,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 16,000 - 17,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 19,000 - 20,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	General Cargo Vessels	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	RoRo	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 11,000 - 12,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 13,000 - 14,000 TEU	1	2	0.607	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 14,000 - 15,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 15,000 - 16,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 16,000 - 17,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 19,000 - 20,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	General Cargo Vessels	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	RoRo	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 6,000 - 7,000 TEU	1	2	0.607	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued

Engine Type: Main

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 8,000 - 9,000 TEU	1	2	0.607	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 11,000 - 12,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 13,000 - 14,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 14,000 - 15,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 15,000 - 16,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 16,000 - 17,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 19,000 - 20,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	General Cargo Vessels	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	RoRo	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 6,000 - 7,000 TEU	1	2	0.607	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 11,000 - 12,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 13,000 - 14,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 14,000 - 15,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 15,000 - 16,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 16,000 - 17,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 19,000 - 20,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	General Cargo Vessels	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	RoRo	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 8,000 - 9,000 TEU	2	2	1.213	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 11,000 - 12,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 13,000 - 14,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 14,000 - 15,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 15,000 - 16,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 16,000 - 17,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 19,000 - 20,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	General Cargo Vessels	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	RoRo	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 11,000 - 12,000 TEU	2	2	1.213	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 13,000 - 14,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued

Engine Type: Main

										Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 14,000 - 15,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 15,000 - 16,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 16,000 - 17,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 19,000 - 20,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	General Cargo Vessels	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	RoRo	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 5,000 - 6,000 TEU	1	2	0.607	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 8,000 - 9,000 TEU	1	2	0.607	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 12,000 - 13,000 TEU	1	2	0.607	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	RoRo	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 7,000 - 8,000 TEU	1	2	0.607	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 9,000 - 10,000 TEU	1	2	0.607	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 12,000 - 13,000 TEU	1	2	0.607	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	RoRo	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 7,000 - 8,000 TEU	1	2	0.607	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 9,000 - 10,000 TEU	1	2	0.607	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 12,000 - 13,000 TEU	1	2	0.607	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	RoRo	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued

Engine Type: Main

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 9,000 - 10,000 TEU	1	2	0.607	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 8,000 - 9,000 TEU	2	2	1.213	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 10,000 - 11,000 TEU	1	2	0.607	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 11,000 - 12,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 13,000 - 14,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 14,000 - 15,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 15,000 - 16,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 16,000 - 17,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 19,000 - 20,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	General Cargo Vessels	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	RoRo	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 11,000 - 12,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 13,000 - 14,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 14,000 - 15,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 15,000 - 16,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 16,000 - 17,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 19,000 - 20,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	General Cargo Vessels	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	RoRo	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 6,000 - 7,000 TEU	1	2	0.607	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued

Engine Type: Main

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 8,000 - 9,000 TEU	1	2	0.607	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 11,000 - 12,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 13,000 - 14,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 14,000 - 15,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 15,000 - 16,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 16,000 - 17,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 19,000 - 20,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	General Cargo Vessels	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	RoRo	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 6,000 - 7,000 TEU	1	2	0.607	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 11,000 - 12,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 13,000 - 14,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 14,000 - 15,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 15,000 - 16,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 16,000 - 17,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 19,000 - 20,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	General Cargo Vessels	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	RoRo	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 8,000 - 9,000 TEU	2	2	1.213	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 11,000 - 12,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 13,000 - 14,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 14,000 - 15,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 15,000 - 16,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 16,000 - 17,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 19,000 - 20,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	General Cargo Vessels	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	RoRo	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 11,000 - 12,000 TEU	2	2	1.213	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 13,000 - 14,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued

Engine Type: Main

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 14,000 - 15,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 15,000 - 16,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 16,000 - 17,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 19,000 - 20,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	General Cargo Vessels	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	RoRo	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 5,000 - 6,000 TEU	1	2	0.607	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 8,000 - 9,000 TEU	1	2	0.607	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 12,000 - 13,000 TEU	1	2	0.607	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	RoRo	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 7,000 - 8,000 TEU	1	2	0.607	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 9,000 - 10,000 TEU	1	2	0.607	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 12,000 - 13,000 TEU	1	2	0.607	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	RoRo	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 7,000 - 8,000 TEU	1	2	0.607	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 9,000 - 10,000 TEU	1	2	0.607	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 12,000 - 13,000 TEU	1	2	0.607	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	RoRo	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued

Engine Type: Main

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 8,000 - 9,000 TEU	2	2	1.213	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 10,000 - 11,000 TEU	1	2	0.607	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 11,000 - 12,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 13,000 - 14,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 14,000 - 15,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 15,000 - 16,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 16,000 - 17,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 19,000 - 20,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	General Cargo Vessels	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	RoRo	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 11,000 - 12,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 13,000 - 14,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 14,000 - 15,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 15,000 - 16,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 16,000 - 17,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 19,000 - 20,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	General Cargo Vessels	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	RoRo	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued

Engine Type: Main

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 11,000 - 12,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 13,000 - 14,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 14,000 - 15,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 15,000 - 16,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 16,000 - 17,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 19,000 - 20,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	General Cargo Vessels	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	RoRo	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 11,000 - 12,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 13,000 - 14,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 14,000 - 15,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 15,000 - 16,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 16,000 - 17,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 19,000 - 20,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	General Cargo Vessels	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	RoRo	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 11,000 - 12,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 13,000 - 14,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 14,000 - 15,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 15,000 - 16,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 16,000 - 17,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 19,000 - 20,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	General Cargo Vessels	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	RoRo	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 11,000 - 12,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 13,000 - 14,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued

Engine Type: Main

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 14,000 - 15,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 15,000 - 16,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 16,000 - 17,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 19,000 - 20,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	General Cargo Vessels	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	RoRo	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	RoRo	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 7,000 - 8,000 TEU	1	2	0.607	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 9,000 - 10,000 TEU	1	2	0.607	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 12,000 - 13,000 TEU	1	2	0.607	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	RoRo	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 7,000 - 8,000 TEU	1	2	0.607	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 9,000 - 10,000 TEU	1	2	0.607	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 12,000 - 13,000 TEU	1	2	0.607	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	RoRo	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued

Engine Type: Main

Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	Composite EF (g/hp-hr)									
											PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Anchorage											**Composite EF (g/hp-hr)**									
Project Type	**Period**	**Units**	**Calendar Year**	**Vessel Type**	**al One-Way Tr**	**ber of Tugs pe**	**tion per tug for all**	**# of Engines**	**HP per engine**	**Load Factor**	**PM10**	**PM2.5**	**DPM**	**NOx**	**SOx**	**CO**	**HC**	**CO2**	**N2O**	**CH4**
FEIR Mitigated	Annual	tons/year	2012	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 9,000 - 10,000 TEU	2	2	0.542	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 8,000 - 9,000 TEU	6	2	1.627	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 9,000 - 10,000 TEU	2	2	0.542	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 10,000 - 11,000 TEU	7	2	1.898	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2018	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 6,000 - 7,000 TEU	2	2	0.542	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 10,000 - 11,000 TEU	1	2	0.271	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 11,000 - 12,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 12,000 - 13,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 13,000 - 14,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	General Cargo Vessels	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2018	RoRo	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 4,000 - 5,000 TEU	1	2	0.271	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 6,000 - 7,000 TEU	2	2	0.542	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 8,000 - 9,000 TEU	1	2	0.271	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 11,000 - 12,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 12,000 - 13,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 13,000 - 14,000 TEU	1	2	0.271	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	General Cargo Vessels	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2019	RoRo	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued

Engine Type: Main

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Annual	tons/year	2020	Containerships 4,000 - 5,000 TEU	4	2	1.084	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 6,000 - 7,000 TEU	3	2	0.813	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 8,000 - 9,000 TEU	8	2	2.169	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 9,000 - 10,000 TEU	2	2	0.542	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 10,000 - 11,000 TEU	4	2	1.084	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 12,000 - 13,000 TEU	1	2	0.271	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 13,000 - 14,000 TEU	1	2	0.271	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 14,000 - 15,000 TEU	2	2	0.542	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 15,000 - 16,000 TEU	1	2	0.271	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	General Cargo Vessels	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2020	RoRo	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 1,000 - 2,000 TEU	2	2	0.542	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 2,000 - 3,000 TEU	6	2	1.627	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 4,000 - 5,000 TEU	18	2	4.880	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 5,000 - 6,000 TEU	3	2	0.813	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 6,000 - 7,000 TEU	10	2	2.711	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 8,000 - 9,000 TEU	26	2	7.049	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 9,000 - 10,000 TEU	3	2	0.813	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 10,000 - 11,000 TEU	25	2	6.778	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 12,000 - 13,000 TEU	2	2	0.542	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 13,000 - 14,000 TEU	1	2	0.271	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 14,000 - 15,000 TEU	2	2	0.542	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 15,000 - 16,000 TEU	2	2	0.542	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	General Cargo Vessels	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2021	RoRo	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 5,000 - 6,000 TEU	4	2	1.084	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 6,000 - 7,000 TEU	2	2	0.542	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 10,000 - 11,000 TEU	3	2	0.813	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 11,000 - 12,000 TEU	1	2	0.271	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 13,000 - 14,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 14,000 - 15,000 TEU	1	2	0.271	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 15,000 - 16,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2022	RoRo	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 8,000 - 9,000 TEU	8	2	2.169	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 9,000 - 10,000 TEU	5	2	1.356	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued

Engine Type: Main

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Annual	tons/year	2023	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 11,000 - 12,000 TEU	3	2	0.813	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 13,000 - 14,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 15,000 - 16,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2023	RoRo	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 5,000 - 6,000 TEU	3	2	0.813	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 8,000 - 9,000 TEU	3	2	0.813	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 12,000 - 13,000 TEU	3	2	0.813	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2026	RoRo	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 7,000 - 8,000 TEU	4	2	1.084	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 9,000 - 10,000 TEU	4	2	1.084	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 12,000 - 13,000 TEU	4	2	1.084	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2036	RoRo	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 7,000 - 8,000 TEU	4	2	1.084	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 9,000 - 10,000 TEU	4	2	1.084	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 12,000 - 13,000 TEU	4	2	1.084	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued

Engine Type: Main

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Annual	tons/year	2045	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Annual	tons/year	2045	RoRo	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 12,000 - 13,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 13,000 - 14,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	General Cargo Vessels	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2018	RoRo	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 6,000 - 7,000 TEU	1	2	0.271	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 12,000 - 13,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 13,000 - 14,000 TEU	1	2	0.271	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	General Cargo Vessels	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2019	RoRo	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued

Engine Type: Main

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 12,000 - 13,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	General Cargo Vessels	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2020	RoRo	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 12,000 - 13,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 14,000 - 15,000 TEU	1	2	0.271	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	General Cargo Vessels	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2021	RoRo	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 12,000 - 13,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2022	RoRo	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued

Engine Type: Main

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 11,000 - 12,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 12,000 - 13,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2023	RoRo	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 8,000 - 9,000 TEU	1	2	0.271	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2026	RoRo	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 9,000 - 10,000 TEU	1	2	0.271	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2036	RoRo	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 9,000 - 10,000 TEU	1	2	0.271	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued

Engine Type: Main

											Composite EF (g/hp-hr)									
Project Type	**Period**	**Units**	**Calendar Year**	**Vessel Type**	**Annual One-Way Transits**	**Number of Tugs per Call**	**Assist duration per tug for all transits (hr)**	**# of Engines**	**HP per engine**	**Load Factor**	**PM10**	**PM2.5**	**DPM**	**NOx**	**SOx**	**CO**	**HC**	**CO2**	**N2O**	**CH4**
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peakday	lbs/day	2045	RoRo	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 12,000 - 13,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 13,000 - 14,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	General Cargo Vessels	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	RoRo	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 12,000 - 13,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 13,000 - 14,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	General Cargo Vessels	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	RoRo	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued

Engine Type: Main

											Composite EF (g/hp-hr)									
Project Type	**Period**	**Units**	**Calendar Year**	**Vessel Type**	**Annual One-Way Transits**	**Number of Tugs per Call**	**Assist duration per tug for all transits (hr)**	**# of Engines**	**HP per engine**	**Load Factor**	**PM10**	**PM2.5**	**DPM**	**NOx**	**SOx**	**CO**	**HC**	**CO2**	**N2O**	**CH4**
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 12,000 - 13,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	General Cargo Vessels	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	RoRo	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 12,000 - 13,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 14,000 - 15,000 TEU	1	2	0.271	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	General Cargo Vessels	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	RoRo	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 12,000 - 13,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	RoRo	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued

Engine Type: Main

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 11,000 - 12,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 12,000 - 13,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	RoRo	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 8,000 - 9,000 TEU	1	2	0.271	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	RoRo	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 9,000 - 10,000 TEU	1	2	0.271	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	RoRo	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 9,000 - 10,000 TEU	1	2	0.271	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued

Engine Type: Main

											Composite EF (g/hp-hr)									
Project Type	**Period**	**Units**	**Calendar Year**	**Vessel Type**	**Annual One-Way Transits**	**Number of Tugs per Call**	**Assist duration per tug for all transits (hr)**	**# of Engines**	**HP per engine**	**Load Factor**	**PM10**	**PM2.5**	**DPM**	**NOx**	**SOx**	**CO**	**HC**	**CO2**	**N2O**	**CH4**
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	RoRo	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.21	2069	0.31	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 1,000 - 2,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 2,000 - 3,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 3,000 - 4,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 9,000 - 10,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	1908	0.31	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 12,000 - 13,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 13,000 - 14,000 TEU	0	0	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	General Cargo Vessels	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	RoRo	--	2	0.000	2.00	2046	0.163	0.09	0.08	0.09	4.89	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 12,000 - 13,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 13,000 - 14,000 TEU	0	0	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	General Cargo Vessels	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	RoRo	--	2	0.000	2.00	2004	0.163	0.08	0.08	0.08	4.89	0.00	0.77	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued

Engine Type: Main

											Composite EF (g/hp-hr)									
Project Type	**Period**	**Units**	**Calendar Year**	**Vessel Type**	**Annual One-Way Transits**	**Number of Tugs per Call**	**Assist duration per tug for all transits (hr)**	**# of Engines**	**HP per engine**	**Load Factor**	**PM10**	**PM2.5**	**DPM**	**NOx**	**SOx**	**CO**	**HC**	**CO2**	**N2O**	**CH4**
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 12,000 - 13,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	General Cargo Vessels	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	RoRo	--	2	0.000	2.00	2419	0.163	0.08	0.08	0.08	4.87	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 4,000 - 5,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 6,000 - 7,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 12,000 - 13,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 14,000 - 15,000 TEU	0	0	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	General Cargo Vessels	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	RoRo	--	2	0.000	2.00	2675	0.163	0.09	0.08	0.09	4.88	0.00	0.76	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 10,000 - 11,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 12,000 - 13,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	RoRo	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.54	0.00	0.74	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued

Engine Type: Main

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 11,000 - 12,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 12,000 - 13,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	RoRo	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.55	0.00	0.75	0.15	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 5,000 - 6,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 7,000 - 8,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 8,000 - 9,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 9,000 - 10,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	RoRo	--	2	0.000	2.00	2651	0.163	0.05	0.05	0.05	3.56	0.00	0.75	0.16	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 9,000 - 10,000 TEU	1	2	0.271	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	RoRo	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 1,000 - 2,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 2,000 - 3,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 3,000 - 4,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 4,000 - 5,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 5,000 - 6,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 6,000 - 7,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 7,000 - 8,000 TEU	0	0	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 8,000 - 9,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 9,000 - 10,000 TEU	1	2	0.271	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 10,000 - 11,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 11,000 - 12,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 12,000 - 13,000 TEU	0	0	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 13,000 - 14,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 14,000 - 15,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 15,000 - 16,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02

2012-2045 Harbor Craft Main Engine Activity and Emission Factors - FEIR Mitigated - continued

Engine Type: Main

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 16,000 - 17,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 19,000 - 20,000 TEU	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	General Cargo Vessels	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	RoRo	--	2	0.000	2.00	2651	0.163	0.03	0.02	0.03	1.00	0.00	0.51	0.03	486.20	0.00	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated
Engine Type: Auxiliary

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Annual	tons/year	2012	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 8,000 - 9,000 TEU	9	2	5.460	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 9,000 - 10,000 TEU	42	2	25.480	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 4,000 - 5,000 TEU	2	2	1.213	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 6,000 - 7,000 TEU	17	2	10.313	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 8,000 - 9,000 TEU	67	2	40.647	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 9,000 - 10,000 TEU	14	2	8.493	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 10,000 - 11,000 TEU	63	2	38.220	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2018	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 4,000 - 5,000 TEU	48	2	29.120	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 6,000 - 7,000 TEU	128	2	77.653	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 7,000 - 8,000 TEU	4	2	2.427	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 8,000 - 9,000 TEU	44	2	26.693	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 10,000 - 11,000 TEU	32	2	19.413	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 11,000 - 12,000 TEU	2	2	1.213	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 12,000 - 13,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 13,000 - 14,000 TEU	8	2	4.853	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	General Cargo Vessels	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	RoRo	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 4,000 - 5,000 TEU	56	2	33.973	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 5,000 - 6,000 TEU	2	2	1.213	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 6,000 - 7,000 TEU	87	2	52.780	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 8,000 - 9,000 TEU	18	2	10.920	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 9,000 - 10,000 TEU	26	2	15.773	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 10,000 - 11,000 TEU	36	2	21.840	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 11,000 - 12,000 TEU	4	2	2.427	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 12,000 - 13,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 13,000 - 14,000 TEU	46	2	27.907	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	General Cargo Vessels	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	RoRo	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 4,000 - 5,000 TEU	30	2	18.200	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 6,000 - 7,000 TEU	56	2	33.973	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 8,000 - 9,000 TEU	77	2	46.713	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 9,000 - 10,000 TEU	11	2	6.673	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Auxiliary

												Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Annual	tons/year	2020	Containerships 10,000 - 11,000 TEU	28	2	16.987	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 12,000 - 13,000 TEU	5	2	3.033	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 13,000 - 14,000 TEU	22	2	13.347	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 14,000 - 15,000 TEU	4	2	2.427	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 15,000 - 16,000 TEU	3	2	1.820	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	General Cargo Vessels	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	RoRo	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 1,000 - 2,000 TEU	4	2	2.427	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 2,000 - 3,000 TEU	14	2	8.493	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 3,000 - 4,000 TEU	2	2	1.213	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 4,000 - 5,000 TEU	42	2	25.480	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 5,000 - 6,000 TEU	14	2	8.493	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 6,000 - 7,000 TEU	22	2	13.347	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 8,000 - 9,000 TEU	58	2	35.187	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 9,000 - 10,000 TEU	8	2	4.853	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 10,000 - 11,000 TEU	65	2	39.433	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 12,000 - 13,000 TEU	8	2	4.853	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 13,000 - 14,000 TEU	6	2	3.640	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 14,000 - 15,000 TEU	4	2	2.427	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 15,000 - 16,000 TEU	8	2	4.853	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	General Cargo Vessels	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	RoRo	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 4,000 - 5,000 TEU	2	2	1.213	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 5,000 - 6,000 TEU	14	2	8.493	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 6,000 - 7,000 TEU	4	2	2.427	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 8,000 - 9,000 TEU	105	2	63.700	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 9,000 - 10,000 TEU	4	2	2.427	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 10,000 - 11,000 TEU	41	2	24.873	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 11,000 - 12,000 TEU	18	2	10.920	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 12,000 - 13,000 TEU	6	2	3.640	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 13,000 - 14,000 TEU	2	2	1.213	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 14,000 - 15,000 TEU	4	2	2.427	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 15,000 - 16,000 TEU	2	2	1.213	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 4,000 - 5,000 TEU	2	2	1.213	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 5,000 - 6,000 TEU	2	2	1.213	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 6,000 - 7,000 TEU	4	2	2.427	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 8,000 - 9,000 TEU	185	2	112.233	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 9,000 - 10,000 TEU	46	2	27.907	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 10,000 - 11,000 TEU	7	2	4.247	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 11,000 - 12,000 TEU	58	2	35.187	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 12,000 - 13,000 TEU	8	2	4.853	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 13,000 - 14,000 TEU	2	2	1.213	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 15,000 - 16,000 TEU	2	2	1.213	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Auxiliary

												Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Annual	tons/year	2023	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 5,000 - 6,000 TEU	68	2	41.253	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 8,000 - 9,000 TEU	68	2	41.253	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 12,000 - 13,000 TEU	68	2	41.253	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 7,000 - 8,000 TEU	102	2	61.880	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 9,000 - 10,000 TEU	102	2	61.880	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 12,000 - 13,000 TEU	102	2	61.880	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 7,000 - 8,000 TEU	102	2	61.880	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 9,000 - 10,000 TEU	102	2	61.880	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 12,000 - 13,000 TEU	102	2	61.880	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Auxiliary

												Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 9,000 - 10,000 TEU	1	2	0.607	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 10,000 - 11,000 TEU	2	2	1.213	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 13,000 - 14,000 TEU	1	2	0.607	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	General Cargo Vessels	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	RoRo	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 13,000 - 14,000 TEU	1	2	0.607	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	General Cargo Vessels	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	RoRo	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 6,000 - 7,000 TEU	1	2	0.607	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 8,000 - 9,000 TEU	1	2	0.607	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Auxiliary

											Composite EF (g/hp-hr)									
Project Type	**Period**	**Units**	**Calendar Year**	**Vessel Type**	**Annual One-Way Transits**	**Number of Tugs per Call**	**Assist duration per tug for all transits (hr)**	**# of Engines**	**HP per engine**	**Load Factor**	**PM10**	**PM2.5**	**DPM**	**NOx**	**SOx**	**CO**	**HC**	**CO2**	**N2O**	**CH4**
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	General Cargo Vessels	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	RoRo	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 6,000 - 7,000 TEU	1	2	0.607	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	General Cargo Vessels	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	RoRo	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 8,000 - 9,000 TEU	2	2	1.213	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	General Cargo Vessels	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	RoRo	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 11,000 - 12,000 TEU	2	2	1.213	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	General Cargo Vessels	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	RoRo	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Auxiliary

												Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 5,000 - 6,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 8,000 - 9,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 12,000 - 13,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 7,000 - 8,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 9,000 - 10,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 12,000 - 13,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 7,000 - 8,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 9,000 - 10,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 12,000 - 13,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 9,000 - 10,000 TEU	1	2	0.607	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Auxiliary

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 8,000 - 9,000 TEU	2	2	1.213	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 10,000 - 11,000 TEU	1	2	0.607	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	General Cargo Vessels	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	RoRo	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	General Cargo Vessels	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	RoRo	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 6,000 - 7,000 TEU	1	2	0.607	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 8,000 - 9,000 TEU	1	2	0.607	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	General Cargo Vessels	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	RoRo	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Auxiliary

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 6,000 - 7,000 TEU	1	2	0.607	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	General Cargo Vessels	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	RoRo	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 8,000 - 9,000 TEU	2	2	1.213	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	General Cargo Vessels	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	RoRo	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 11,000 - 12,000 TEU	2	2	1.213	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	General Cargo Vessels	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	RoRo	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 5,000 - 6,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 8,000 - 9,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Auxiliary

												Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 12,000 - 13,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 7,000 - 8,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 9,000 - 10,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 12,000 - 13,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 7,000 - 8,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 9,000 - 10,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 12,000 - 13,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 8,000 - 9,000 TEU	2	2	1.213	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 10,000 - 11,000 TEU	1	2	0.607	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Auxiliary

												Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	General Cargo Vessels	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	RoRo	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	General Cargo Vessels	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	RoRo	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	General Cargo Vessels	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	RoRo	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Auxiliary

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	General Cargo Vessels	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	RoRo	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	General Cargo Vessels	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	RoRo	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 16,000 - 17,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 19,000 - 20,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	General Cargo Vessels	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	RoRo	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Auxiliary

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 7,000 - 8,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 9,000 - 10,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 12,000 - 13,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 7,000 - 8,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 9,000 - 10,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 12,000 - 13,000 TEU	1	2	0.607	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02

Anchorage

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	al One-Way Tr	mber of Tugs per	tion per tug for all t	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Annual	tons/year	2012	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 9,000 - 10,000 TEU	2	2	0.542	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Annual	tons/year	2012	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 8,000 - 9,000 TEU	6	2	1.627	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 9,000 - 10,000 TEU	2	2	0.542	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2014	Containerships 10,000 - 11,000 TEU	7	2	1.898	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Annual	tons/year	2018	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Auxiliary

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Annual	tons/year	2018	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 6,000 - 7,000 TEU	2	2	0.542	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 10,000 - 11,000 TEU	1	2	0.271	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 12,000 - 13,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	General Cargo Vessels	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2018	RoRo	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 4,000 - 5,000 TEU	1	2	0.271	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 6,000 - 7,000 TEU	2	2	0.542	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 8,000 - 9,000 TEU	1	2	0.271	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 12,000 - 13,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 13,000 - 14,000 TEU	1	2	0.271	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	General Cargo Vessels	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2019	RoRo	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 4,000 - 5,000 TEU	4	2	1.084	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 6,000 - 7,000 TEU	3	2	0.813	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 8,000 - 9,000 TEU	8	2	2.169	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 9,000 - 10,000 TEU	2	2	0.542	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 10,000 - 11,000 TEU	4	2	1.084	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 12,000 - 13,000 TEU	1	2	0.271	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 13,000 - 14,000 TEU	1	2	0.271	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 14,000 - 15,000 TEU	2	2	0.542	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 15,000 - 16,000 TEU	1	2	0.271	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	General Cargo Vessels	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2020	RoRo	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 1,000 - 2,000 TEU	2	2	0.542	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 2,000 - 3,000 TEU	6	2	1.627	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 4,000 - 5,000 TEU	18	2	4.880	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 5,000 - 6,000 TEU	3	2	0.813	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 6,000 - 7,000 TEU	10	2	2.711	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 8,000 - 9,000 TEU	26	2	7.049	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 9,000 - 10,000 TEU	3	2	0.813	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 10,000 - 11,000 TEU	25	2	6.778	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Auxiliary

												Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Annual	tons/year	2021	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 12,000 - 13,000 TEU	2	2	0.542	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 13,000 - 14,000 TEU	1	2	0.271	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 14,000 - 15,000 TEU	2	2	0.542	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 15,000 - 16,000 TEU	2	2	0.542	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	General Cargo Vessels	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2021	RoRo	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 5,000 - 6,000 TEU	4	2	1.084	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 6,000 - 7,000 TEU	2	2	0.542	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 10,000 - 11,000 TEU	3	2	0.813	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 11,000 - 12,000 TEU	1	2	0.271	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 14,000 - 15,000 TEU	1	2	0.271	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2022	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 8,000 - 9,000 TEU	8	2	2.169	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 9,000 - 10,000 TEU	5	2	1.356	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 11,000 - 12,000 TEU	3	2	0.813	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 15,000 - 16,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2023	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 5,000 - 6,000 TEU	3	2	0.813	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 8,000 - 9,000 TEU	3	2	0.813	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 12,000 - 13,000 TEU	3	2	0.813	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2026	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Auxiliary

												Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Annual	tons/year	2026	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 7,000 - 8,000 TEU	4	2	1.084	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 9,000 - 10,000 TEU	4	2	1.084	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 12,000 - 13,000 TEU	4	2	1.084	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2036	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 7,000 - 8,000 TEU	4	2	1.084	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 9,000 - 10,000 TEU	4	2	1.084	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 12,000 - 13,000 TEU	4	2	1.084	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Annual	tons/year	2045	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2012	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2014	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Auxiliary

												Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 12,000 - 13,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	General Cargo Vessels	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2018	RoRo	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 6,000 - 7,000 TEU	1	2	0.271	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 12,000 - 13,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 13,000 - 14,000 TEU	1	2	0.271	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	General Cargo Vessels	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2019	RoRo	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 12,000 - 13,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	General Cargo Vessels	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2020	RoRo	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 12,000 - 13,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 14,000 - 15,000 TEU	1	2	0.271	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Auxiliary

												Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peakday	lbs/day	2021	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	General Cargo Vessels	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2021	RoRo	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 12,000 - 13,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2022	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 12,000 - 13,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2023	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 8,000 - 9,000 TEU	1	2	0.271	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2026	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Auxiliary

												Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 9,000 - 10,000 TEU	1	2	0.271	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2036	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 9,000 - 10,000 TEU	1	2	0.271	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peakday	lbs/day	2045	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2012	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2014	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 12,000 - 13,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Auxiliary

												Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	General Cargo Vessels	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2018	RoRo	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 12,000 - 13,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	General Cargo Vessels	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2019	RoRo	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 12,000 - 13,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	General Cargo Vessels	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2020	RoRo	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 12,000 - 13,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 14,000 - 15,000 TEU	1	2	0.271	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	General Cargo Vessels	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2021	RoRo	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Auxiliary

												Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 12,000 - 13,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2022	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 12,000 - 13,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2023	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 8,000 - 9,000 TEU	1	2	0.271	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2026	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 9,000 - 10,000 TEU	1	2	0.271	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Auxiliary

												Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2036	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 9,000 - 10,000 TEU	1	2	0.271	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 8hr	lbs/8hr	2045	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2012	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	187	0.43	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 1,000 - 2,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 2,000 - 3,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 3,000 - 4,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 9,000 - 10,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2014	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	182	0.43	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 12,000 - 13,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	General Cargo Vessels	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2018	RoRo	--	2	0.000	2	184	0.338	0.09	0.09	0.09	2.88	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Auxiliary

												Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 12,000 - 13,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 13,000 - 14,000 TEU	0	0	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	General Cargo Vessels	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2019	RoRo	--	2	0.000	2	184	0.338	0.10	0.10	0.10	2.89	0.00	0.93	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 12,000 - 13,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	General Cargo Vessels	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2020	RoRo	--	2	0.000	2	195	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 4,000 - 5,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 6,000 - 7,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 12,000 - 13,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 14,000 - 15,000 TEU	0	0	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	General Cargo Vessels	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2021	RoRo	--	2	0.000	2	206	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Auxiliary

												Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 10,000 - 11,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 12,000 - 13,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2022	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 11,000 - 12,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 12,000 - 13,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2023	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.07	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 5,000 - 6,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 7,000 - 8,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 8,000 - 9,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 9,000 - 10,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2026	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.08	0.00	0.78	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 9,000 - 10,000 TEU	1	2	0.271	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Auxiliary

											Composite EF (g/hp-hr)									
Project Type	Period	Units	Calendar Year	Vessel Type	Annual One-Way Transits	Number of Tugs per Call	Assist duration per tug for all transits (hr)	# of Engines	HP per engine	Load Factor	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2036	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 1,000 - 2,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 2,000 - 3,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 3,000 - 4,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 4,000 - 5,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 5,000 - 6,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 6,000 - 7,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 7,000 - 8,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 8,000 - 9,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 9,000 - 10,000 TEU	1	2	0.271	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 10,000 - 11,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 11,000 - 12,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 12,000 - 13,000 TEU	0	0	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 13,000 - 14,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 14,000 - 15,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 15,000 - 16,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 16,000 - 17,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	Containerships 19,000 - 20,000 TEU	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	General Cargo Vessels	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02
FEIR Mitigated	Peak 1hr	lbs/1hr	2045	RoRo	--	2	0.000	2	208	0.338	0.07	0.06	0.07	3.09	0.00	0.79	0.11	486.20	0.04	0.02

2012-2045 Harbor Craft Auxiliary Engine Activity and Emission Factors - FEIR Mitigated - continued
Engine Type: Auxiliary

Calendar Year	Tug	Engine	MY
2008	Average Tug	Main	1995
2008	Average Tug	Auxiliary	1999
2012	Average Tug	Main	2005
2012	Average Tug	Auxiliary	2008
2014	Average Tug	Main	2003
2014	Average Tug	Auxiliary	2007
2018	Assist Tug	Main	2007
2018	Assist Tug	Auxiliary	2011
2019	Assist Tug	Main	2007
2019	Assist Tug	Auxiliary	2011
2020	Assist Tug	Main	2012
2020	Assist Tug	Auxiliary	2014
2021	Assist Tug	Main	2012
2021	Assist Tug	Auxiliary	2015
2022	Assist Tug	Main	2013
2022	Assist Tug	Auxiliary	2016
2023	Assist Tug	Main	2013
2023	Assist Tug	Auxiliary	2016
2026	Assist Tug	Main	2013
2026	Assist Tug	Auxiliary	2016
2036	Assist Tug	Main	2022
2036	Assist Tug	Auxiliary	2020
2045	Assist Tug	Main	2031
2045	Assist Tug	Auxiliary	2029

Drayage Trucks and Worker Vehicles

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

YearClass	Year	Scenario	DayToYear Peaking Factor	DayTo8hr Peaking Factor	DayTo1hr Peaking Factor	Annual Trucks oneway trips	Diesel Fractions	LNG Fractions
Baseline	2008	Baseline	234	0.619	0.089	318,768	100.00%	0.0%
Past Years	2012	Revised Project	250	0.492	0.070	491,299	90.00%	10.0%
Past Years	2012	FEIR Mitigated	250	0.492	0.070	491,299	50.00%	50.0%
Past Years	2014	Revised Project	241	0.490	0.070	1,109,873	91.80%	8.2%
Past Years	2014	FEIR Mitigated	241	0.490	0.070	1,109,873	30.00%	70.0%
Non-Compliance	2018	Revised Project	245	0.528	0.081	445,330	96.27%	3.7%
Non-Compliance	2018	FEIR Mitigated	245	0.528	0.081	445,330	0.00%	100.0%
Non-Compliance	2019	Revised Project	245	0.531	0.078	471,988	96.11%	3.9%
Non-Compliance	2019	FEIR Mitigated	245	0.531	0.078	471,988	0.00%	100.0%
Non-Compliance	2020	Revised Project	248	0.556	0.080	676,790	95.23%	4.8%
Non-Compliance	2020	FEIR Mitigated	248	0.556	0.080	676,790	0.00%	100.0%
Non-Compliance	2021	Revised Project	250	0.554	0.085	1,063,854	94.94%	5.1%
Non-Compliance	2021	FEIR Mitigated	250	0.554	0.085	1,063,854	0.00%	100.0%
Non-Compliance	2022	Revised Project	246	0.542	0.083	1,163,372	94.41%	5.6%
Non-Compliance	2022	FEIR Mitigated	246	0.542	0.083	1,163,372	0.00%	100.0%
Non-Compliance	2023	Revised Project	245	0.575	0.081	892,920	94.11%	5.9%
Non-Compliance	2023	FEIR Mitigated	245	0.575	0.081	892,920	0.00%	100.0%
Future Years	2026	Revised Project	253	0.530	0.074	1,193,259	91.80%	8.2%
Future Years	2026	FEIR Mitigated	253	0.530	0.074	1,193,259	0.00%	100.0%
Future Years	2036	Revised Project	253	0.530	0.074	1,784,214	91.80%	8.2%
Future Years	2036	FEIR Mitigated	253	0.530	0.074	1,784,214	0.00%	100.0%
Future Years	2045	Revised Project	253	0.530	0.074	1,672,732	91.80%	8.2%
Future Years	2045	FEIR Mitigated	253	0.530	0.074	1,672,732	0.00%	100.0%

Average On Terminal Distance	
On-terminal driving distance (mi/one-way)	0.75
On-site Average Speed	15mph

On-terminal Idling Activity (Minutes) - All Scenarios

Location	2008	2012	2014	2018	2019	2021	2026	2036	2045
At in-gate	10	10	10	5	5	14	10	10	10
At out-gate	6	6	6	4	4	2	6	6	6
On-terminal, not including at gate	9	17	24	27	27	73	24	24	24

Off-site VMT from transportation study for China Shipping terminal vehicles

		Annual VMT (mileage/year)	
Scenario	**CY**	**Passenger Cars**	**Drayage Trucks**
Baseline	2008	2,171,294	7,731,353
Revised Project	2012	2,316,590	13,345,374
	2014	2,267,752	29,154,639
	2018	2,486,118	33,787,887
	2019	2,170,061	34,981,211
	2020	3,300,429	52,656,231
	2021	5,412,736	84,780,811
	2022	5,291,750	92,687,497
	2023	3,795,584	71,268,632
	2026	8,007,772	30,052,930
	2036	5,389,801	45,053,190
	2045	5,398,595	42,465,588
FEIR Mitigated	2012	2,316,590	13,345,374
	2014	2,267,752	29,154,639
	2018	2,486,118	33,787,887
	2019	2,170,061	34,981,211
	2020	3,300,429	52,656,231
	2021	5,412,736	84,780,811
	2022	5,291,750	92,687,497
	2023	3,795,584	71,268,632
	2026	8,007,772	30,052,930
	2036	5,389,801	45,053,190
	2045	5,398,595	42,465,588

Drayage Truck Fleet Distribution for Diesel Fuel - All Scenarios

Model Year	Provided By Starcrest									EMFAC T7 POLA Class 8 defaults		
	2008	2012	2014	2018	2019	2020	2021	2022	2023	2026	2036	2045
1965	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1966	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1967	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1968	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1969	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1970	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1971	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1972	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1973	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1974	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1975	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1976	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1977	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1978	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1979	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1980	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1981	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1982	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1983	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1984	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1985	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1986	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1987	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1988	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1989	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1990	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1991	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1992	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1993	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1994	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1995	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1996	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1997	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1998	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1999	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2000	9%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2001	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2002	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2003	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2004	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2005	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2006	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2007	0%	19%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2008	0%	24%	28%	18%	17%	15%	12%	7%	0%	0%	0%	0%
2009	1%	38%	34%	23%	20%	18%	14%	8%	0%	0%	0%	0%
2010	0%	10%	18%	12%	11%	10%	8%	5%	0%	0%	0%	0%
2011	0%	7%	9%	9%	8%	7%	6%	4%	3%	0%	0%	0%
2012	0%	1%	3%	12%	12%	10%	8%	7%	5%	6%	1%	0%
2013	0%	0%	4%	7%	7%	6%	5%	4%	3%	7%	1%	0%
2014	0%	0%	2%	5%	7%	8%	8%	8%	8%	9%	2%	0%
2015	0%	0%	1%	4%	7%	10%	11%	13%	14%	20%	6%	1%
2016	0%	0%	0%	6%	6%	8%	12%	16%	20%	20%	7%	1%
2017	0%	0%	0%	2%	2%	2%	5%	8%	11%	20%	9%	1%
2018	0%	0%	0%	1%	1%	1%	2%	4%	8%	2%	1%	0%
2019	0%	0%	0%	1%	2%	2%	3%	4%	7%	3%	2%	0%
2020	0%	0%	0%	0%	1%	3%	3%	3%	5%	2%	3%	0%
2021	0%	0%	0%	0%	0%	0%	2%	2%	2%	2%	3%	0%
2022	0%	0%	0%	0%	0%	0%	1%	4%	4%	2%	4%	1%
2023	0%	0%	0%	0%	0%	0%	0%	2%	6%	2%	5%	1%
2024	0%	0%	0%	0%	0%	0%	0%	0%	3%	2%	5%	1%
2025	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	6%	1%
2026	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	6%	2%
2027	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	6%	2%
2028	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	3%
2029	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	4%
2030	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	4%
2031	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	5%
2032	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	6%
2033	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	6%
2034	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	7%
2035	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	8%
2036	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	8%
2037	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	7%
2038	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%
2039	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%
2040	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%
2041	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%
2042	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%
2043	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%

Drayage Truck Fleet Distribution for Diesel Fuel - All Scenarios

Model Year	Provided By Starcrest									EMFAC T7 POLA Class 8 defaults		
	2008	2012	2014	2018	2019	2020	2021	2022	2023	2026	2036	2045
2044	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%
2045	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%
2046	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
2047	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2048	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2049	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2050	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2051	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

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

CY	Speed	ROG_RUNEX	TOG_RUNEX	CO_RUNEX	NOx_RUNEX	CO2_RUNEX	PM10_RUNEX	PM2.5_RUNEX	PM10_PMTW	PM10_PMBW	PM2.5_PMTW	PM2.5_PMBW	SOx_RUNEX	CH4_RUNEX	N2O_RUNEX
2008	5	15.447	17.586	19.151	54.167	4,019	3.214	3.075	0.035	0.184	0.009	0.065	0.038	0.717	0.630
2008	10	11.636	13.246	16.530	42.938	3,632	2.594	2.482	0.035	0.184	0.009	0.065	0.034	0.540	0.569
2008	15	6.095	6.939	12.640	28.292	2,955	1.673	1.601	0.035	0.182	0.009	0.064	0.028	0.283	0.463
2008	20	2.225	2.533	7.756	20.675	2,311	0.921	0.881	0.035	0.178	0.009	0.062	0.022	0.103	0.362
2008	25	1.908	2.172	7.684	20.182	2,160	0.785	0.751	0.035	0.174	0.009	0.061	0.020	0.089	0.339
2008	30	1.494	1.701	6.448	19.635	2,022	0.642	0.614	0.035	0.172	0.009	0.060	0.019	0.069	0.317
2008	35	1.182	1.346	5.419	19.284	1,906	0.537	0.514	0.035	0.145	0.009	0.051	0.018	0.055	0.299
2008	40	0.957	1.090	4.521	19.078	1,829	0.466	0.446	0.035	0.126	0.009	0.044	0.017	0.044	0.287
2008	45	0.837	0.953	3.849	19.048	1,772	0.435	0.417	0.035	0.107	0.009	0.037	0.017	0.039	0.278
2008	50	0.811	0.924	3.393	19.191	1,740	0.446	0.427	0.035	0.093	0.009	0.033	0.016	0.038	0.273
2008	55	0.883	1.006	3.198	19.559	1,723	0.505	0.483	0.035	0.093	0.009	0.033	0.016	0.041	0.270
2008	60	0.975	1.109	3.193	19.802	1,716	0.551	0.527	0.035	0.093	0.009	0.033	0.016	0.045	0.269
2008	65	0.974	1.108	3.191	19.797	1,709	0.551	0.527	0.035	0.093	0.009	0.033	0.016	0.045	0.268
2008	70	1.042	1.186	3.415	20.110	1,652	0.582	0.557	0.035	0.093	0.009	0.033	0.016	0.048	0.259
2012	5	2.568	2.924	5.646	18.490	3,751	0.170	0.163	0.035	0.183	0.009	0.064	0.035	0.119	0.588
2012	10	1.965	2.237	4.405	15.851	3,333	0.153	0.147	0.035	0.183	0.009	0.064	0.031	0.091	0.523
2012	15	1.226	1.396	2.961	12.498	2,791	0.134	0.128	0.035	0.180	0.009	0.063	0.026	0.057	0.438
2012	20	0.605	0.689	1.610	9.621	2,412	0.094	0.090	0.035	0.176	0.009	0.062	0.023	0.028	0.378
2012	25	0.582	0.663	1.570	9.248	2,191	0.109	0.104	0.035	0.173	0.009	0.060	0.021	0.027	0.344
2012	30	0.452	0.515	1.250	8.584	2,027	0.104	0.099	0.035	0.170	0.009	0.060	0.019	0.021	0.318
2012	35	0.355	0.404	1.018	8.061	1,897	0.103	0.098	0.035	0.144	0.009	0.050	0.018	0.016	0.298
2012	40	0.278	0.316	0.842	7.630	1,797	0.103	0.099	0.035	0.125	0.009	0.044	0.017	0.013	0.282
2012	45	0.221	0.252	0.720	7.293	1,716	0.107	0.103	0.035	0.106	0.009	0.037	0.016	0.010	0.269
2012	50	0.179	0.204	0.638	7.036	1,654	0.114	0.109	0.035	0.092	0.009	0.032	0.016	0.008	0.259
2012	55	0.151	0.172	0.593	6.872	1,607	0.124	0.119	0.035	0.092	0.009	0.032	0.015	0.007	0.252
2012	60	0.142	0.162	0.586	6.861	1,592	0.132	0.126	0.035	0.092	0.009	0.032	0.015	0.007	0.250
2012	65	0.143	0.163	0.585	6.914	1,604	0.132	0.126	0.035	0.092	0.009	0.032	0.015	0.007	0.252
2012	70	0.149	0.170	0.613	7.027	1,596	0.137	0.131	0.035	0.092	0.009	0.032	0.015	0.007	0.250
2014	5	1.606	1.828	4.561	15.898	3,726	0.071	0.068	0.036	0.167	0.009	0.058	0.035	0.075	0.585
2014	10	1.263	1.438	3.552	13.566	3,281	0.063	0.060	0.036	0.167	0.009	0.058	0.031	0.059	0.515
2014	15	0.867	0.987	2.440	10.771	2,740	0.053	0.051	0.036	0.164	0.009	0.058	0.026	0.040	0.430
2014	20	0.535	0.609	1.521	8.521	2,403	0.040	0.038	0.036	0.161	0.009	0.056	0.023	0.025	0.377
2014	25	0.457	0.520	1.299	8.077	2,167	0.043	0.041	0.036	0.157	0.009	0.055	0.020	0.021	0.340
2014	30	0.340	0.387	0.969	7.468	1,991	0.040	0.039	0.036	0.155	0.009	0.054	0.019	0.016	0.313
2014	35	0.254	0.290	0.725	6.996	1,853	0.039	0.037	0.036	0.131	0.009	0.046	0.017	0.012	0.291
2014	40	0.190	0.216	0.541	6.620	1,746	0.037	0.036	0.036	0.114	0.009	0.040	0.016	0.009	0.274
2014	45	0.143	0.163	0.408	6.333	1,663	0.037	0.035	0.036	0.097	0.009	0.034	0.016	0.007	0.261
2014	50	0.110	0.125	0.311	6.124	1,600	0.037	0.035	0.036	0.084	0.009	0.029	0.015	0.005	0.251
2014	55	0.087	0.099	0.246	6.002	1,558	0.038	0.036	0.036	0.084	0.009	0.029	0.015	0.004	0.245
2014	60	0.080	0.091	0.225	6.036	1,552	0.040	0.038	0.036	0.084	0.009	0.029	0.015	0.004	0.244
2014	65	0.083	0.095	0.231	6.163	1,578	0.042	0.041	0.036	0.084	0.009	0.029	0.015	0.004	0.248
2014	70	0.085	0.097	0.237	6.251	1,571	0.044	0.042	0.036	0.084	0.009	0.029	0.015	0.004	0.247
2018	5	1.215	1.383	3.989	14.591	3,709	0.053	0.051	0.035	0.156	0.009	0.054	0.035	0.056	0.584
2018	10	0.946	1.077	2.997	12.074	3,216	0.047	0.045	0.035	0.155	0.009	0.054	0.030	0.044	0.506
2018	15	0.650	0.740	2.007	9.398	2,652	0.040	0.039	0.035	0.153	0.009	0.054	0.025	0.030	0.417
2018	20	0.395	0.450	1.216	7.055	2,323	0.029	0.028	0.035	0.150	0.009	0.053	0.022	0.018	0.366
2018	25	0.345	0.393	1.065	6.828	2,083	0.033	0.032	0.035	0.147	0.009	0.051	0.020	0.016	0.328
2018	30	0.257	0.293	0.795	6.100	1,901	0.032	0.030	0.035	0.145	0.009	0.051	0.018	0.012	0.299
2018	35	0.193	0.219	0.593	5.538	1,758	0.031	0.030	0.035	0.122	0.009	0.043	0.017	0.009	0.277
2018	40	0.144	0.164	0.440	5.111	1,652	0.031	0.030	0.035	0.106	0.009	0.037	0.016	0.007	0.260
2018	45	0.109	0.125	0.329	4.822	1,575	0.032	0.030	0.035	0.090	0.009	0.032	0.015	0.005	0.248
2018	50	0.085	0.096	0.250	4.658	1,527	0.034	0.032	0.035	0.079	0.009	0.028	0.014	0.004	0.240
2018	55	0.068	0.078	0.198	4.632	1,508	0.036	0.035	0.035	0.079	0.009	0.028	0.014	0.003	0.237
2018	60	0.064	0.073	0.183	4.793	1,526	0.040	0.039	0.035	0.079	0.009	0.028	0.014	0.003	0.240

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

CY	Speed	ROG_RUNEX	TOG_RUNEX	CO_RUNEX	NOx_RUNEX	CO2_RUNEX	PM10_RUNEX	PM2.5_RUNEX	PM10_PMTW	PM10_PMBW	PM2.5_PMTW	PM2.5_PMBW	SOx_RUNEX	CH4_RUNEX	N2O_RUNEX
2018	65	0.068	0.077	0.194	5.084	1,581	0.045	0.043	0.035	0.079	0.009	0.028	0.015	0.003	0.249
2018	70	0.070	0.079	0.199	5.181	1,572	0.046	0.044	0.035	0.079	0.009	0.028	0.015	0.003	0.247
2019	5	1.137	1.295	3.815	14.379	3,676	0.045	0.044	0.035	0.154	0.009	0.054	0.035	0.053	0.579
2019	10	0.886	1.008	2.858	11.794	3,182	0.041	0.039	0.035	0.154	0.009	0.054	0.030	0.041	0.501
2019	15	0.605	0.689	1.899	9.080	2,626	0.035	0.033	0.035	0.152	0.009	0.053	0.025	0.028	0.413
2019	20	0.372	0.423	1.161	6.759	2,302	0.026	0.025	0.035	0.149	0.009	0.052	0.022	0.017	0.362
2019	25	0.321	0.366	1.007	6.536	2,067	0.029	0.027	0.035	0.146	0.009	0.051	0.020	0.015	0.325
2019	30	0.240	0.273	0.754	5.800	1,887	0.027	0.026	0.035	0.144	0.009	0.050	0.018	0.011	0.297
2019	35	0.180	0.205	0.563	5.230	1,748	0.027	0.026	0.035	0.122	0.009	0.043	0.017	0.008	0.275
2019	40	0.135	0.153	0.418	4.797	1,644	0.027	0.026	0.035	0.106	0.009	0.037	0.016	0.006	0.259
2019	45	0.102	0.116	0.313	4.506	1,571	0.028	0.027	0.035	0.090	0.009	0.031	0.015	0.005	0.247
2019	50	0.079	0.090	0.237	4.345	1,526	0.030	0.029	0.035	0.078	0.009	0.027	0.014	0.004	0.240
2019	55	0.064	0.073	0.188	4.329	1,510	0.033	0.031	0.035	0.078	0.009	0.027	0.014	0.003	0.238
2019	60	0.060	0.068	0.174	4.499	1,530	0.037	0.035	0.035	0.078	0.009	0.027	0.014	0.003	0.241
2019	65	0.064	0.072	0.184	4.799	1,588	0.041	0.040	0.035	0.078	0.009	0.027	0.015	0.003	0.250
2019	70	0.065	0.074	0.189	4.897	1,578	0.043	0.041	0.035	0.078	0.009	0.027	0.015	0.003	0.248
2020	5	0.834	0.950	3.046	13.255	3,553	0.033	0.031	0.035	0.152	0.009	0.053	0.034	0.039	0.560
2020	10	0.642	0.731	2.234	10.492	3,066	0.029	0.028	0.035	0.152	0.009	0.053	0.029	0.030	0.483
2020	15	0.435	0.495	1.458	7.799	2,530	0.025	0.024	0.035	0.150	0.009	0.053	0.024	0.020	0.399
2020	20	0.272	0.310	0.903	5.643	2,225	0.019	0.018	0.035	0.147	0.009	0.051	0.021	0.013	0.351
2020	25	0.230	0.262	0.773	5.408	2,005	0.021	0.020	0.035	0.144	0.009	0.050	0.019	0.011	0.316
2020	30	0.172	0.196	0.582	4.677	1,839	0.020	0.019	0.035	0.142	0.009	0.050	0.017	0.008	0.290
2020	35	0.129	0.147	0.436	4.107	1,710	0.020	0.019	0.035	0.120	0.009	0.042	0.016	0.006	0.269
2020	40	0.097	0.111	0.325	3.678	1,616	0.021	0.020	0.035	0.104	0.009	0.036	0.015	0.005	0.255
2020	45	0.075	0.085	0.243	3.396	1,551	0.023	0.022	0.035	0.088	0.009	0.031	0.015	0.003	0.244
2020	50	0.058	0.066	0.184	3.251	1,516	0.026	0.024	0.035	0.077	0.009	0.027	0.014	0.003	0.239
2020	55	0.048	0.054	0.146	3.255	1,510	0.029	0.028	0.035	0.077	0.009	0.027	0.014	0.002	0.238
2020	60	0.045	0.051	0.135	3.438	1,538	0.034	0.032	0.035	0.077	0.009	0.027	0.015	0.002	0.242
2020	65	0.048	0.055	0.142	3.756	1,601	0.039	0.037	0.035	0.077	0.009	0.027	0.015	0.002	0.252
2020	70	0.049	0.056	0.147	3.842	1,591	0.040	0.038	0.035	0.077	0.009	0.027	0.015	0.002	0.251
2021	5	0.834	0.950	3.046	13.255	3,553	0.033	0.031	0.035	0.150	0.009	0.053	0.034	0.039	0.560
2021	10	0.642	0.731	2.234	10.492	3,066	0.029	0.028	0.035	0.150	0.009	0.053	0.029	0.030	0.483
2021	15	0.435	0.495	1.458	7.799	2,530	0.025	0.024	0.035	0.148	0.009	0.052	0.024	0.020	0.399
2021	20	0.272	0.310	0.903	5.643	2,225	0.019	0.018	0.035	0.145	0.009	0.051	0.021	0.013	0.351
2021	25	0.230	0.262	0.773	5.408	2,005	0.021	0.020	0.035	0.142	0.009	0.050	0.019	0.011	0.316
2021	30	0.172	0.196	0.582	4.677	1,839	0.020	0.019	0.035	0.140	0.009	0.049	0.017	0.008	0.290
2021	35	0.129	0.147	0.436	4.107	1,710	0.020	0.019	0.035	0.118	0.009	0.041	0.016	0.006	0.269
2021	40	0.097	0.111	0.325	3.678	1,616	0.021	0.020	0.035	0.103	0.009	0.036	0.015	0.005	0.255
2021	45	0.075	0.085	0.243	3.396	1,551	0.023	0.022	0.035	0.087	0.009	0.031	0.015	0.003	0.244
2021	50	0.058	0.066	0.184	3.251	1,516	0.026	0.024	0.035	0.076	0.009	0.027	0.014	0.003	0.239
2021	55	0.048	0.054	0.146	3.255	1,510	0.029	0.028	0.035	0.076	0.009	0.027	0.014	0.002	0.238
2021	60	0.045	0.051	0.135	3.438	1,538	0.034	0.032	0.035	0.076	0.009	0.027	0.015	0.002	0.242
2021	65	0.048	0.055	0.142	3.756	1,601	0.039	0.037	0.035	0.076	0.009	0.027	0.015	0.002	0.252
2021	70	0.049	0.056	0.147	3.842	1,591	0.040	0.038	0.035	0.076	0.009	0.027	0.015	0.002	0.251
2022	5	0.556	0.633	2.352	12.188	3,450	0.024	0.023	0.035	0.148	0.009	0.052	0.033	0.026	0.543
2022	10	0.418	0.476	1.667	9.309	2,967	0.021	0.020	0.035	0.148	0.009	0.052	0.028	0.019	0.468
2022	15	0.278	0.317	1.056	6.669	2,444	0.018	0.017	0.035	0.146	0.009	0.051	0.023	0.013	0.385
2022	20	0.175	0.199	0.652	4.650	2,158	0.014	0.013	0.035	0.143	0.009	0.050	0.020	0.008	0.340
2022	25	0.147	0.167	0.559	4.427	1,946	0.015	0.014	0.035	0.140	0.009	0.049	0.018	0.007	0.307
2022	30	0.111	0.126	0.424	3.696	1,791	0.015	0.014	0.035	0.138	0.009	0.048	0.017	0.005	0.282
2022	35	0.084	0.095	0.319	3.125	1,670	0.016	0.015	0.035	0.117	0.009	0.041	0.016	0.004	0.263
2022	40	0.063	0.072	0.238	2.699	1,583	0.017	0.016	0.035	0.101	0.009	0.035	0.015	0.003	0.249
2022	45	0.049	0.056	0.178	2.427	1,526	0.020	0.019	0.035	0.086	0.009	0.030	0.014	0.002	0.240
2022	50	0.039	0.045	0.135	2.300	1,499	0.023	0.022	0.035	0.075	0.009	0.026	0.014	0.002	0.236

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

CY	Speed	ROG_RUNEX	TOG_RUNEX	CO_RUNEX	NOx_RUNEX	CO2_RUNEX	PM10_RUNEX	PM2.5_RUNEX	PM10_PMTW	PM10_PMBW	PM2.5_PMTW	PM2.5_PMBW	SOx_RUNEX	CH4_RUNEX	N2O_RUNEX
2022	55	0.033	0.037	0.107	2.327	1,503	0.027	0.026	0.035	0.075	0.009	0.026	0.014	0.002	0.237
2022	60	0.032	0.036	0.099	2.529	1,539	0.032	0.031	0.035	0.075	0.009	0.026	0.015	0.001	0.242
2022	65	0.035	0.039	0.105	2.870	1,609	0.038	0.036	0.035	0.075	0.009	0.026	0.015	0.002	0.253
2022	70	0.035	0.040	0.108	2.943	1,599	0.039	0.038	0.035	0.075	0.009	0.026	0.015	0.002	0.252
2023	5	0.138	0.158	1.283	10.472	3,300	0.011	0.010	0.035	0.137	0.009	0.048	0.031	0.006	0.520
2023	10	0.082	0.094	0.798	7.502	2,822	0.009	0.009	0.035	0.137	0.009	0.048	0.027	0.004	0.445
2023	15	0.043	0.049	0.441	4.976	2,318	0.008	0.007	0.035	0.135	0.009	0.047	0.022	0.002	0.365
2023	20	0.025	0.028	0.261	3.189	2,060	0.005	0.005	0.035	0.132	0.009	0.046	0.020	0.001	0.325
2023	25	0.022	0.025	0.232	2.978	1,857	0.007	0.006	0.035	0.129	0.009	0.045	0.018	0.001	0.293
2023	30	0.018	0.020	0.182	2.253	1,717	0.007	0.007	0.035	0.128	0.009	0.045	0.016	0.001	0.271
2023	35	0.015	0.017	0.141	1.686	1,609	0.009	0.008	0.035	0.108	0.009	0.038	0.015	0.001	0.253
2023	40	0.012	0.014	0.106	1.269	1,533	0.011	0.010	0.035	0.094	0.009	0.033	0.015	0.001	0.242
2023	45	0.011	0.013	0.080	1.014	1,487	0.014	0.013	0.035	0.080	0.009	0.028	0.014	0.001	0.234
2023	50	0.011	0.012	0.061	0.916	1,474	0.018	0.017	0.035	0.069	0.009	0.024	0.014	0.000	0.232
2023	55	0.011	0.012	0.050	0.981	1,493	0.023	0.022	0.035	0.069	0.009	0.024	0.014	0.001	0.235
2023	60	0.012	0.014	0.047	1.213	1,540	0.029	0.028	0.035	0.069	0.009	0.024	0.015	0.001	0.243
2023	65	0.014	0.016	0.051	1.590	1,621	0.036	0.034	0.035	0.069	0.009	0.024	0.015	0.001	0.255
2023	70	0.015	0.017	0.052	1.645	1,611	0.037	0.036	0.035	0.069	0.009	0.024	0.015	0.001	0.254
2026	5	0.116	0.132	1.343	11.088	3,346	0.011	0.011	0.035	0.137	0.009	0.048	0.032	0.005	0.527
2026	10	0.066	0.075	0.828	7.933	2,856	0.010	0.009	0.035	0.137	0.009	0.048	0.027	0.003	0.450
2026	15	0.032	0.037	0.453	5.246	2,340	0.008	0.008	0.035	0.135	0.009	0.047	0.022	0.002	0.369
2026	20	0.018	0.021	0.270	3.466	2,070	0.006	0.005	0.035	0.133	0.009	0.046	0.020	0.001	0.326
2026	25	0.016	0.018	0.238	3.116	1,871	0.007	0.007	0.035	0.130	0.009	0.045	0.018	0.001	0.295
2026	30	0.013	0.015	0.188	2.333	1,726	0.007	0.007	0.035	0.128	0.009	0.045	0.016	0.001	0.272
2026	35	0.011	0.013	0.145	1.721	1,614	0.009	0.009	0.035	0.108	0.009	0.038	0.015	0.001	0.254
2026	40	0.010	0.011	0.110	1.273	1,535	0.012	0.011	0.035	0.094	0.009	0.033	0.015	0.000	0.242
2026	45	0.009	0.010	0.083	1.001	1,489	0.015	0.014	0.035	0.080	0.009	0.028	0.014	0.000	0.235
2026	50	0.009	0.010	0.063	0.899	1,475	0.019	0.019	0.035	0.069	0.009	0.024	0.014	0.000	0.232
2026	55	0.009	0.010	0.052	0.975	1,494	0.025	0.024	0.035	0.069	0.009	0.024	0.014	0.000	0.235
2026	60	0.010	0.012	0.049	1.229	1,544	0.031	0.030	0.035	0.069	0.009	0.024	0.015	0.000	0.243
2026	65	0.012	0.014	0.053	1.642	1,628	0.038	0.037	0.035	0.069	0.009	0.024	0.015	0.001	0.256
2026	70	0.012	0.014	0.055	1.695	1,619	0.040	0.038	0.035	0.069	0.009	0.024	0.015	0.001	0.255
2036	5	0.112	0.128	1.019	10.747	2,773	0.011	0.011	0.035	0.143	0.009	0.050	0.026	0.005	0.437
2036	10	0.061	0.070	0.628	7.560	2,383	0.009	0.009	0.035	0.143	0.009	0.050	0.023	0.003	0.375
2036	15	0.029	0.032	0.342	4.865	1,966	0.007	0.007	0.035	0.142	0.009	0.050	0.019	0.001	0.310
2036	20	0.016	0.018	0.209	3.176	1,805	0.005	0.005	0.035	0.138	0.009	0.048	0.017	0.001	0.284
2036	25	0.013	0.015	0.180	2.814	1,592	0.006	0.005	0.035	0.135	0.009	0.047	0.015	0.001	0.251
2036	30	0.011	0.012	0.142	2.093	1,487	0.006	0.006	0.035	0.133	0.009	0.047	0.014	0.001	0.234
2036	35	0.009	0.010	0.110	1.526	1,407	0.007	0.007	0.035	0.113	0.009	0.040	0.013	0.000	0.222
2036	40	0.008	0.009	0.083	1.107	1,354	0.010	0.009	0.035	0.098	0.009	0.034	0.013	0.000	0.213
2036	45	0.007	0.008	0.061	0.845	1,325	0.013	0.012	0.035	0.083	0.009	0.029	0.013	0.000	0.209
2036	50	0.008	0.009	0.045	0.737	1,322	0.017	0.016	0.035	0.073	0.009	0.025	0.013	0.000	0.208
2036	55	0.008	0.009	0.035	0.786	1,342	0.023	0.022	0.035	0.073	0.009	0.025	0.013	0.000	0.211
2036	60	0.010	0.011	0.030	0.993	1,384	0.029	0.028	0.035	0.073	0.009	0.025	0.013	0.000	0.218
2036	65	0.012	0.013	0.031	1.348	1,454	0.037	0.035	0.035	0.073	0.009	0.025	0.014	0.001	0.229
2036	70	0.012	0.013	0.031	1.380	1,442	0.038	0.036	0.035	0.073	0.009	0.025	0.014	0.001	0.227
2045	5	0.112	0.128	0.941	10.509	2,466	0.012	0.011	0.035	0.150	0.009	0.052	0.023	0.005	0.389
2045	10	0.060	0.069	0.579	7.370	2,120	0.009	0.009	0.035	0.150	0.009	0.052	0.020	0.003	0.334
2045	15	0.028	0.032	0.315	4.722	1,754	0.007	0.007	0.035	0.148	0.009	0.052	0.017	0.001	0.276
2045	20	0.015	0.017	0.192	3.003	1,638	0.005	0.005	0.035	0.145	0.009	0.051	0.016	0.001	0.258
2045	25	0.013	0.015	0.165	2.719	1,424	0.005	0.005	0.035	0.141	0.009	0.050	0.013	0.001	0.224
2045	30	0.010	0.012	0.131	2.021	1,335	0.005	0.005	0.035	0.140	0.009	0.049	0.013	0.000	0.210
2045	35	0.009	0.010	0.101	1.470	1,267	0.007	0.006	0.035	0.118	0.009	0.041	0.012	0.000	0.200
2045	40	0.008	0.009	0.076	1.062	1,222	0.009	0.008	0.035	0.103	0.009	0.036	0.012	0.000	0.193

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

CY	Speed	ROG_RUNEX	TOG_RUNEX	CO_RUNEX	NOx_RUNEX	CO2_RUNEX	PM10_RUNEX	PM2.5_RUNEX	PM10_PMTW	PM10_PMBW	PM2.5_PMTW	PM2.5_PMBW	SOx_RUNEX	CH4_RUNEX	N2O_RUNEX
2045	45	0.007	0.008	0.056	0.805	1,200	0.012	0.012	0.035	0.087	0.009	0.030	0.011	0.000	0.189
2045	50	0.007	0.008	0.041	0.698	1,199	0.016	0.016	0.035	0.076	0.009	0.027	0.011	0.000	0.189
2045	55	0.008	0.009	0.031	0.742	1,219	0.022	0.021	0.035	0.076	0.009	0.027	0.012	0.000	0.192
2045	60	0.010	0.011	0.026	0.939	1,258	0.029	0.027	0.035	0.076	0.009	0.027	0.012	0.000	0.198
2045	65	0.012	0.014	0.025	1.277	1,321	0.036	0.035	0.035	0.076	0.009	0.027	0.013	0.001	0.208
2045	70	0.012	0.014	0.026	1.307	1,308	0.037	0.035	0.035	0.076	0.009	0.027	0.012	0.001	0.206

Notes

[1] Emission factors from EMFAC2021 for HHDT adjusted to port-specific fleet distribution

Idling Emission Factors for Dragyage Trucks for Diesel and LNG Fuel - All Scenario (g/hr)

CY	Fuel	ROG_IDLEX	TOG_IDLEX	CO_IDLEX	NOx_IDLEX	CO2_IDLEX	SOx_IDLEX	CH4_IDLEX	N2O_IDLEX	PM10_IDLEX	PM2.5_IDLEX
2008	Diesel	9.129	10.393	28.442	59.171	4796.373	0.045	0.424	0.752	1.610	1.540
2012	Diesel	7.731	8.801	26.244	68.362	5945.409	0.056	0.359	0.933	1.297	1.240
2014	Diesel	5.190	5.909	35.895	114.563	15937.727	0.150	0.241	2.502	0.048	0.046
2018	Diesel	5.099	5.804	51.854	90.376	14703.373	0.139	0.237	2.313	0.032	0.031
2019	Diesel	5.167	5.882	54.420	89.317	14680.678	0.139	0.240	2.311	0.032	0.030
2020	Diesel	4.964	5.651	54.620	82.570	13939.235	0.132	0.231	2.196	0.029	0.028
2021	Diesel	4.823	5.491	55.592	76.847	13325.355	0.126	0.224	2.099	0.027	0.026
2022	Diesel	4.713	5.365	56.748	71.953	12767.923	0.121	0.219	2.012	0.025	0.024
2023	Diesel	4.992	5.683	73.764	58.993	12289.552	0.116	0.232	1.936	0.021	0.020
2026	Diesel	4.544	5.173	67.147	52.835	10893.006	0.103	0.211	1.716	0.019	0.019
2036	Diesel	4.921	5.602	72.708	51.300	10006.810	0.095	0.229	1.577	0.021	0.020
2045	Diesel	5.484	6.243	81.028	54.495	10421.689	0.099	0.255	1.642	0.023	0.022
2008	LNG	1.698	11.793	37.746	4.945	0.000	3649.901	9.816	0.744	0.000	0.000
2012	LNG	2.133	16.032	50.404	6.705	0.000	4918.525	13.544	1.010	0.001	0.001
2014	LNG	0.473	33.292	65.151	12.492	0.000	9349.002	32.612	1.906	0.013	0.012
2018	LNG	0.461	32.584	64.536	12.255	0.000	9065.879	31.922	1.848	0.013	0.012
2019	LNG	0.447	31.655	64.859	12.000	0.000	8884.075	31.012	1.811	0.013	0.012
2020	LNG	0.444	31.438	63.814	11.847	0.000	8894.603	30.800	1.813	0.013	0.012
2021	LNG	0.440	31.268	63.280	11.745	0.000	8857.592	30.635	1.806	0.014	0.013
2022	LNG	0.435	30.907	62.838	11.599	0.000	8751.136	30.282	1.784	0.014	0.013
2023	LNG	0.427	30.504	60.494	11.339	0.000	8153.432	29.889	1.662	0.015	0.014
2026	LNG	0.402	28.723	59.959	10.762	0.000	7860.983	28.144	1.603	0.015	0.014
2036	LNG	0.283	20.211	63.785	7.942	0.000	7941.030	19.803	1.619	0.024	0.022
2045	LNG	0.282	20.164	73.969	8.265	0.000	8655.955	19.757	1.765	0.033	0.030

Notes

[1] Emission factors from EMFAC2021 for HHDT adjusted to port-specific fleet distribution

Drayage Truck Fleet Distribution for LNG Fuel - All Scenarios

Model Year	Provided By Starcrest									EMFAC T7 POLA Class 8 defaults		
	2008	2012	2014	2018	2019	2020	2021	2022	2023	2026	2036	2045
1968	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1969	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1970	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1971	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1972	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1973	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1974	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1975	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1976	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1977	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1978	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1979	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1980	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1981	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1982	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1983	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1984	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1985	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1986	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1987	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1988	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1989	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1990	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1991	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1992	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1993	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1994	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1995	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1996	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1997	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1998	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1999	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2000	9%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2001	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2002	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2003	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2004	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2005	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2006	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2007	0%	19%	1%	2%	2%	1%	2%	1%	0%	0%	0%	0%
2008	0%	24%	28%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2009	1%	38%	34%	44%	46%	47%	46%	45%	42%	0%	0%	0%
2010	0%	10%	18%	18%	16%	17%	18%	17%	15%	0%	0%	0%
2011	0%	7%	9%	28%	28%	27%	26%	23%	25%	0%	0%	0%
2012	0%	1%	3%	5%	5%	5%	5%	6%	5%	30%	2%	0%
2013	0%	0%	4%	0%	0%	0%	0%	0%	0%	3%	0%	0%
2014	0%	0%	2%	0%	1%	1%	0%	1%	2%	0%	0%	0%
2015	0%	0%	1%	1%	1%	0%	0%	1%	1%	6%	1%	0%
2016	0%	0%	0%	1%	1%	1%	1%	3%	7%	0%	0%	0%
2017	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%
2018	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%
2019	0%	0%	0%	0%	1%	1%	1%	1%	1%	16%	5%	1%
2020	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	4%	0%
2021	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	4%	0%
2022	0%	0%	0%	0%	0%	0%	0%	1%	0%	6%	5%	1%
2023	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	6%	1%
2024	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	7%	1%
2025	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	8%	1%
2026	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	8%	2%
2027	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	8%	2%
2028	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	3%
2029	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%	4%
2030	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	4%
2031	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	5%
2032	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	6%
2033	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	7%
2034	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	7%
2035	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	8%
2036	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	8%
2037	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	7%
2038	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%
2039	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%
2040	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%
2041	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%
2042	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%
2043	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%
2044	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%
2045	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%
2046	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
2047	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2048	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2049	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2050	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2051	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

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

CY	Speed	ROG_RUNEX	TOG_RUNEX	CO_RUNEX	NOx_RUNEX	CO2_RUNEX	PM10_RUNEX	PM2_5_RUNEX	PM10_PMTW	PM10_PMBW	PM2.5_PMTW	PM2.5_PMBW	SOx_RUNEX	CH4_RUNEX	N2O_RUNEX
2008	5	7.285	49.832	3.197	39.146	3,060	0.120	0.110	0.018	0.104	0.004	0.036	0.000	41.355	0.624
2008	10	5.497	37.572	2.401	31.760	2,766	0.097	0.089	0.018	0.104	0.004	0.036	0.000	31.175	0.564
2008	15	2.788	19.079	1.612	21.141	2,264	0.061	0.056	0.018	0.104	0.004	0.036	0.000	15.834	0.462
2008	20	1.234	8.483	1.154	16.111	1,857	0.036	0.033	0.018	0.104	0.004	0.036	0.000	7.046	0.379
2008	25	0.858	5.902	0.912	15.456	1,664	0.027	0.025	0.018	0.104	0.004	0.036	0.000	4.904	0.339
2008	30	0.668	4.603	0.754	15.253	1,560	0.021	0.020	0.018	0.104	0.004	0.036	0.000	3.825	0.318
2008	35	0.526	3.629	0.631	15.131	1,474	0.017	0.016	0.018	0.104	0.004	0.036	0.000	3.016	0.301
2008	40	0.432	2.979	0.538	15.108	1,405	0.015	0.014	0.018	0.104	0.004	0.036	0.000	2.476	0.287
2008	45	0.384	2.651	0.469	15.160	1,354	0.014	0.013	0.018	0.104	0.004	0.036	0.000	2.204	0.276
2008	50	0.384	2.646	0.422	15.289	1,321	0.015	0.014	0.018	0.104	0.004	0.036	0.000	2.199	0.269
2008	55	0.431	2.962	0.395	15.495	1,305	0.017	0.016	0.018	0.104	0.004	0.036	0.000	2.461	0.266
2008	60	0.472	3.243	0.394	15.635	1,304	0.019	0.018	0.018	0.104	0.004	0.036	0.000	2.693	0.266
2008	65	0.472	3.242	0.393	15.639	1,304	0.019	0.018	0.018	0.104	0.004	0.036	0.000	2.693	0.266
2008	70	0.472	3.240	0.390	15.697	1,304	0.019	0.018	0.018	0.104	0.004	0.036	0.000	2.690	0.266
2012	5	0.416	26.892	138.358	11.618	5,954	0.003	0.003	0.036	0.182	0.009	0.064	0.000	26.305	1.223
2012	10	0.283	18.123	89.921	7.537	4,486	0.003	0.002	0.036	0.182	0.009	0.064	0.000	17.724	0.921
2012	15	0.171	11.151	53.535	4.404	3,158	0.002	0.002	0.036	0.182	0.009	0.064	0.000	10.909	0.649
2012	20	0.119	8.023	37.842	3.076	2,503	0.002	0.001	0.036	0.182	0.009	0.064	0.000	7.854	0.514
2012	25	0.093	6.311	29.269	2.368	2,106	0.001	0.001	0.036	0.182	0.009	0.064	0.000	6.178	0.433
2012	30	0.077	5.204	23.782	1.923	1,836	0.001	0.001	0.036	0.182	0.009	0.064	0.000	5.094	0.377
2012	35	0.065	4.417	19.956	1.615	1,637	0.001	0.001	0.036	0.182	0.009	0.064	0.000	4.324	0.336
2012	40	0.057	3.874	17.272	1.401	1,485	0.001	0.001	0.036	0.182	0.009	0.064	0.000	3.792	0.305
2012	45	0.051	3.441	15.219	1.235	1,364	0.001	0.001	0.036	0.182	0.009	0.064	0.000	3.369	0.280
2012	50	0.046	3.101	13.659	1.106	1,264	0.001	0.001	0.036	0.182	0.009	0.064	0.000	3.036	0.260
2012	55	0.042	2.800	12.423	0.996	1,181	0.001	0.001	0.036	0.182	0.009	0.064	0.000	2.740	0.243
2012	60	0.042	2.785	12.400	0.993	1,182	0.001	0.001	0.036	0.182	0.009	0.064	0.000	2.726	0.243
2012	65	0.041	2.759	12.361	0.987	1,182	0.001	0.001	0.036	0.182	0.009	0.064	0.000	2.701	0.243
2012	70	0.038	2.513	11.987	0.934	1,189	0.001	0.001	0.036	0.182	0.009	0.064	0.000	2.459	0.244
2014	5	0.318	20.723	94.848	9.463	5,462	0.004	0.004	0.036	0.152	0.009	0.053	0.000	20.274	1.113
2014	10	0.223	14.480	68.384	6.344	4,243	0.003	0.003	0.036	0.152	0.009	0.053	0.000	14.165	0.865
2014	15	0.129	8.459	41.212	3.595	3,025	0.003	0.003	0.036	0.152	0.009	0.053	0.000	8.277	0.617
2014	20	0.091	6.148	30.765	2.538	2,439	0.002	0.002	0.036	0.152	0.009	0.053	0.000	6.018	0.497
2014	25	0.071	4.806	24.391	1.949	2,074	0.002	0.002	0.036	0.152	0.009	0.053	0.000	4.705	0.423
2014	30	0.059	4.004	20.328	1.594	1,825	0.001	0.001	0.036	0.152	0.009	0.053	0.000	3.920	0.372
2014	35	0.050	3.360	17.194	1.329	1,639	0.001	0.001	0.036	0.152	0.009	0.053	0.000	3.290	0.334
2014	40	0.044	3.013	15.220	1.169	1,495	0.001	0.001	0.036	0.152	0.009	0.053	0.000	2.950	0.305
2014	45	0.039	2.672	13.570	1.029	1,379	0.001	0.001	0.036	0.152	0.009	0.053	0.000	2.616	0.281
2014	50	0.035	2.400	12.363	0.918	1,284	0.001	0.001	0.036	0.152	0.009	0.053	0.000	2.349	0.262
2014	55	0.032	2.142	11.468	0.821	1,205	0.001	0.001	0.036	0.152	0.009	0.053	0.000	2.097	0.246
2014	60	0.032	2.180	11.524	0.829	1,204	0.001	0.001	0.036	0.152	0.009	0.053	0.000	2.134	0.246
2014	65	0.032	2.170	11.510	0.828	1,205	0.001	0.001	0.036	0.152	0.009	0.053	0.000	2.124	0.246
2014	70	0.027	1.803	10.954	0.746	1,214	0.001	0.001	0.036	0.152	0.009	0.053	0.000	1.765	0.248
2018	5	0.290	20.712	96.081	9.381	5,481	0.003	0.003	0.036	0.145	0.009	0.051	0.000	20.295	1.117
2018	10	0.194	13.852	65.487	6.063	4,209	0.003	0.003	0.036	0.145	0.009	0.051	0.000	13.573	0.858
2018	15	0.116	8.296	40.822	3.479	3,020	0.003	0.002	0.036	0.145	0.009	0.051	0.000	8.129	0.616
2018	20	0.083	5.919	30.051	2.414	2,431	0.002	0.002	0.036	0.145	0.009	0.051	0.000	5.800	0.496
2018	25	0.065	4.635	23.941	1.846	2,071	0.002	0.002	0.036	0.145	0.009	0.051	0.000	4.541	0.422
2018	30	0.054	3.853	19.977	1.500	1,822	0.001	0.001	0.036	0.145	0.009	0.051	0.000	3.775	0.372
2018	35	0.045	3.207	16.860	1.238	1,637	0.001	0.001	0.036	0.145	0.009	0.051	0.000	3.143	0.334
2018	40	0.040	2.884	14.968	1.086	1,495	0.001	0.001	0.036	0.145	0.009	0.051	0.000	2.826	0.305
2018	45	0.036	2.559	13.375	0.951	1,380	0.001	0.001	0.036	0.145	0.009	0.051	0.000	2.507	0.281
2018	50	0.032	2.303	12.226	0.845	1,285	0.001	0.001	0.036	0.145	0.009	0.051	0.000	2.257	0.262
2018	55	0.029	2.071	11.404	0.754	1,206	0.001	0.001	0.036	0.145	0.009	0.051	0.000	2.030	0.246
2018	60	0.029	2.078	11.413	0.755	1,206	0.001	0.001	0.036	0.145	0.009	0.051	0.000	2.036	0.246
2018	65	0.029	2.058	11.384	0.751	1,207	0.001	0.001	0.036	0.145	0.009	0.051	0.000	2.017	0.246
2018	70	0.023	1.652	10.769	0.660	1,217	0.001	0.001	0.036	0.145	0.009	0.051	0.000	1.619	0.248
2019	5	0.292	20.890	97.761	9.421	5,498	0.003	0.003	0.036	0.147	0.009	0.051	0.000	20.469	1.121
2019	10	0.191	13.653	64.485	5.984	4,193	0.003	0.003	0.036	0.147	0.009	0.051	0.000	13.378	0.855
2019	15	0.118	8.437	41.537	3.512	3,027	0.003	0.002	0.036	0.147	0.009	0.051	0.000	8.267	0.617
2019	20	0.084	5.978	30.291	2.424	2,432	0.002	0.002	0.036	0.147	0.009	0.051	0.000	5.858	0.496
2019	25	0.067	4.775	24.399	1.879	2,073	0.002	0.001	0.036	0.147	0.009	0.051	0.000	4.679	0.423
2019	30	0.053	3.794	19.791	1.481	1,819	0.001	0.001	0.036	0.147	0.009	0.051	0.000	3.717	0.371
2019	35	0.045	3.230	16.901	1.240	1,635	0.001	0.001	0.036	0.147	0.009	0.051	0.000	3.165	0.333
2019	40	0.040	2.879	14.934	1.082	1,493	0.001	0.001	0.036	0.147	0.009	0.051	0.000	2.821	0.304
2019	45	0.036	2.561	13.352	0.949	1,378	0.001	0.001	0.036	0.147	0.009	0.051	0.000	2.509	0.281
2019	50	0.033	2.350	12.285	0.854	1,282	0.001	0.001	0.036	0.147	0.009	0.051	0.000	2.303	0.261
2019	55	0.029	2.099	11.409	0.759	1,203	0.001	0.001	0.036	0.147	0.009	0.051	0.000	2.057	0.245
2019	60	0.029	2.075	11.372	0.753	1,204	0.001	0.001	0.036	0.147	0.009	0.051	0.000	2.033	0.245
2019	65	0.029	2.101	11.412	0.759	1,203	0.001	0.001	0.036	0.147	0.009	0.051	0.000	2.059	0.245
2019	70	0.023	1.670	10.754	0.662	1,215	0.001	0.001	0.036	0.147	0.009	0.051	0.000	1.636	0.248
2020	5	0.294	20.969	98.257	9.452	5,507	0.003	0.003	0.036	0.147	0.009	0.051	0.000	20.546	1.123
2020	10	0.192	13.692	64.686	5.999	4,198	0.003	0.003	0.036	0.147	0.009	0.051	0.000	13.416	0.856
2020	15	0.119	8.465	41.659	3.522	3,030	0.003	0.002	0.036	0.147	0.009	0.051	0.000	8.295	0.618
2020	20	0.084	5.998	30.366	2.431	2,434	0.002	0.002	0.036	0.147	0.009	0.051	0.000	5.877	0.496
2020	25	0.067	4.788	24.441	1.883	2,074	0.002	0.001	0.036	0.147	0.009	0.051	0.000	4.691	0.423
2020	30	0.053	3.805	19.826	1.484	1,820	0.001	0.001	0.036	0.147	0.009	0.051	0.000	3.728	0.371
2020	35	0.045	3.239	16.928	1.243	1,637	0.001	0.001	0.036	0.147	0.009	0.051	0.000	3.173	0.334
2020	40	0.040	2.884	14.950	1.084	1,494	0.001	0.001	0.036	0.147	0.009	0.051	0.000	2.826	0.305
2020	45	0.036	2.566	13.367	0.950	1,379	0.001	0.001	0.036	0.147	0.009	0.051	0.000	2.514	0.281
2020	50	0.033	2.353	12.296	0.855	1,283	0.001	0.001	0.036	0.147	0.009	0.051	0.000	2.306	0.262
2020	55	0.029	2.103	11.420	0.760	1,204	0.001	0.001	0.036	0.147	0.009	0.051	0.000	2.060	0.245
2020	60	0.029	2.079	11.385	0.754	1,205	0.001	0.001	0.036	0.147	0.009	0.051	0.000	2.037	0.246
2020	65	0.029	2.101	11.417	0.759	1,204	0.001	0.001	0.036	0.147	0.009	0.051	0.000	2.058	0.245
2020	70	0.023	1.670	10.760	0.663	1,216	0.001	0.001	0.036	0.147	0.009	0.051	0.000	1.636	0.248
2021	5	0.294	21.021	99.178	9.445	5,521	0.003	0.003	0.036	0.148	0.009	0.052	0.000	20.597	1.125
2021	10	0.192	13.738	65.218	5.997	4,206	0.003	0.003	0.036	0.148	0.009	0.052	0.000	13.461	0.857
2021	15	0.119	8.497	41.887	3.521	3,033	0.003	0.002	0.036	0.148	0.009	0.052	0.000	8.326	0.618
2021	20	0.084	6.023	30.484	2.431	2,435	0.002	0.002	0.036	0.148	0.009	0.052	0.000	5.902	0.496
2021	25	0.067	4.807	24.502	1.882	2,074	0.002	0.001	0.036	0.148	0.009	0.052	0.000	4.710	0.423
2021	30	0.054	3.823	19.864	1.485	1,820	0.001	0.001	0.036	0.148	0.009	0.052	0.000	3.745	0.371
2021	35	0.046	3.254	16.949	1.243	1,636	0.001	0.001	0.036	0.148	0.009	0.052	0.000	3.189	0.333
2021	40	0.041	2.897	14.955	1.084	1,493	0.001	0.001	0.036	0.148	0.009	0.052	0.000	2.839	0.304
2021	45	0.036	2.578	13.363	0.950	1,378	0.001	0.001	0.036	0.148	0.009	0.052	0.000	2.526	0.281
2021	50	0.033	2.364	12.279	0.855	1,282	0.001	0.001	0.036	0.148	0.009	0.052	0.000	2.316	0.261
2021	55	0.030	2.113	11.393	0.760	1,203	0.001	0.001	0.036	0.148	0.009	0.052	0.000	2.071	0.245
2021	60	0.029	2.091	11.358	0.755	1,203	0.001	0.001	0.036	0.148	0.009	0.052	0.000	2.049	0.245
2021	65	0.030	2.111	11.388	0.759	1,203	0.001	0.001	0.036	0.148	0.009	0.052	0.000	2.068	0.245
2021	70	0.024	1.682	10.729	0.663	1,215	0.001	0.001	0.036	0.148	0.009	0.052	0.000	1.648	0.248
2022	5	0.295	21.102	100.310	9.440	5,498	0.003	0.003	0.036	0.149	0.009	0.052	0.000	20.677	1.121
2022	10	0.194	13.838	66.075	6.006	4,188	0.003	0.003	0.036	0.149	0.009	0.052	0.000	13.559	0.854

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

CY	Speed	ROG_RUNEX	TOG_RUNEX	CO_RUNEX	NOx_RUNEX	CO2_RUNEX	PM10_RUNEX	PM2_5_RUNEX	PM10_PMTW	PM10_PMBW	PM2.5_PMTW	PM2.5_PMBW	SOx_RUNEX	CH4_RUNEX	N2O_RUNEX
2022	15	0.120	8.567	42.292	3.528	3,017	0.003	0.002	0.036	0.149	0.009	0.052	0.000	8.395	0.615
2022	20	0.085	6.081	30.722	2.437	2,421	0.002	0.002	0.036	0.149	0.009	0.052	0.000	5.959	0.494
2022	25	0.068	4.854	24.649	1.888	2,061	0.002	0.001	0.036	0.149	0.009	0.052	0.000	4.756	0.420
2022	30	0.054	3.862	19.960	1.489	1,808	0.001	0.001	0.036	0.149	0.009	0.052	0.000	3.785	0.368
2022	35	0.046	3.292	17.019	1.248	1,624	0.001	0.001	0.036	0.149	0.009	0.052	0.000	3.225	0.331
2022	40	0.041	2.930	15.000	1.088	1,482	0.001	0.001	0.036	0.149	0.009	0.052	0.000	2.871	0.302
2022	45	0.037	2.607	13.386	0.954	1,367	0.001	0.001	0.036	0.149	0.009	0.052	0.000	2.555	0.279
2022	50	0.033	2.390	12.280	0.858	1,271	0.001	0.001	0.036	0.149	0.009	0.052	0.000	2.341	0.259
2022	55	0.030	2.137	11.371	0.763	1,193	0.001	0.001	0.036	0.149	0.009	0.052	0.000	2.094	0.243
2022	60	0.030	2.116	11.338	0.758	1,193	0.001	0.001	0.036	0.149	0.009	0.052	0.000	2.073	0.243
2022	65	0.030	2.137	11.369	0.763	1,193	0.001	0.001	0.036	0.149	0.009	0.052	0.000	2.094	0.243
2022	70	0.024	1.709	10.704	0.666	1,205	0.001	0.001	0.036	0.149	0.009	0.052	0.000	1.674	0.246
2023	5	0.371	26.516	138.340	11.326	5,925	0.002	0.002	0.036	0.184	0.009	0.064	0.000	25.982	1.208
2023	10	0.251	17.954	90.530	7.335	4,468	0.002	0.002	0.036	0.184	0.009	0.064	0.000	17.592	0.911
2023	15	0.155	11.102	53.969	4.276	3,143	0.002	0.002	0.036	0.184	0.009	0.064	0.000	10.878	0.641
2023	20	0.112	8.030	38.141	2.980	2,489	0.001	0.001	0.036	0.184	0.009	0.064	0.000	7.868	0.507
2023	25	0.089	6.330	29.501	2.282	2,094	0.001	0.001	0.036	0.184	0.009	0.064	0.000	6.203	0.427
2023	30	0.074	5.250	24.031	1.849	1,824	0.001	0.001	0.036	0.184	0.009	0.064	0.000	5.144	0.372
2023	35	0.062	4.452	20.123	1.540	1,625	0.001	0.001	0.036	0.184	0.009	0.064	0.000	4.362	0.331
2023	40	0.055	3.959	17.527	1.341	1,473	0.001	0.000	0.036	0.184	0.009	0.064	0.000	3.879	0.300
2023	45	0.049	3.481	15.330	1.165	1,351	0.000	0.000	0.036	0.184	0.009	0.064	0.000	3.411	0.275
2023	50	0.044	3.174	13.804	1.045	1,251	0.000	0.000	0.036	0.184	0.009	0.064	0.000	3.110	0.255
2023	55	0.040	2.863	12.505	0.933	1,168	0.000	0.000	0.036	0.184	0.009	0.064	0.000	2.806	0.238
2023	60	0.040	2.844	12.475	0.928	1,169	0.000	0.000	0.036	0.184	0.009	0.064	0.000	2.787	0.238
2023	65	0.041	2.893	12.549	0.939	1,167	0.000	0.000	0.036	0.184	0.009	0.064	0.000	2.835	0.238
2023	70	0.037	2.628	12.129	0.881	1,175	0.000	0.000	0.036	0.184	0.009	0.064	0.000	2.575	0.240
2026	5	0.148	10.564	61.826	3.964	4,688	0.005	0.005	0.036	0.147	0.009	0.052	0.000	10.351	0.956
2026	10	0.102	7.285	44.209	2.661	3,614	0.005	0.004	0.036	0.147	0.009	0.052	0.000	7.138	0.737
2026	15	0.062	4.431	28.568	1.580	2,600	0.004	0.003	0.036	0.147	0.009	0.052	0.000	4.341	0.530
2026	20	0.045	3.196	21.154	1.118	2,091	0.003	0.003	0.036	0.147	0.009	0.052	0.000	3.132	0.426
2026	25	0.035	2.522	16.796	0.872	1,779	0.002	0.002	0.036	0.147	0.009	0.052	0.000	2.471	0.363
2026	30	0.029	2.041	13.583	0.700	1,564	0.002	0.002	0.036	0.147	0.009	0.052	0.000	2.000	0.319
2026	35	0.024	1.746	11.355	0.593	1,406	0.001	0.001	0.036	0.147	0.009	0.052	0.000	1.711	0.287
2026	40	0.022	1.552	9.743	0.524	1,282	0.001	0.001	0.036	0.147	0.009	0.052	0.000	1.521	0.261
2026	45	0.019	1.375	8.406	0.462	1,183	0.001	0.001	0.036	0.147	0.009	0.052	0.000	1.347	0.241
2026	50	0.018	1.251	7.439	0.419	1,100	0.001	0.001	0.036	0.147	0.009	0.052	0.000	1.226	0.224
2026	55	0.016	1.127	6.630	0.376	1,033	0.001	0.001	0.036	0.147	0.009	0.052	0.000	1.105	0.211
2026	60	0.016	1.138	6.626	0.378	1,034	0.001	0.001	0.036	0.147	0.009	0.052	0.000	1.115	0.211
2026	65	0.016	1.160	6.658	0.383	1,033	0.001	0.001	0.036	0.147	0.009	0.052	0.000	1.136	0.211
2026	70	0.015	1.055	6.144	0.349	1,057	0.001	0.001	0.036	0.147	0.009	0.052	0.000	1.034	0.215
2036	5	0.065	4.652	38.437	0.649	4,025	0.007	0.006	0.036	0.144	0.009	0.050	0.000	4.559	0.821
2036	10	0.043	3.072	28.489	0.478	3,117	0.006	0.005	0.036	0.144	0.009	0.050	0.000	3.010	0.635
2036	15	0.026	1.890	19.352	0.330	2,252	0.005	0.004	0.036	0.144	0.009	0.050	0.000	1.852	0.459
2036	20	0.019	1.342	14.738	0.259	1,820	0.004	0.003	0.036	0.144	0.009	0.050	0.000	1.315	0.371
2036	25	0.015	1.087	11.695	0.218	1,554	0.003	0.003	0.036	0.144	0.009	0.050	0.000	1.065	0.317
2036	30	0.013	0.898	9.432	0.190	1,370	0.002	0.002	0.036	0.144	0.009	0.050	0.000	0.880	0.279
2036	35	0.011	0.773	7.651	0.170	1,235	0.002	0.002	0.036	0.144	0.009	0.050	0.000	0.757	0.252
2036	40	0.009	0.651	6.231	0.153	1,125	0.001	0.001	0.036	0.144	0.009	0.050	0.000	0.638	0.229
2036	45	0.008	0.579	5.078	0.141	1,041	0.001	0.001	0.036	0.144	0.009	0.050	0.000	0.567	0.212
2036	50	0.007	0.506	4.195	0.130	968	0.001	0.001	0.036	0.144	0.009	0.050	0.000	0.496	0.197
2036	55	0.007	0.468	3.466	0.122	911	0.001	0.001	0.036	0.144	0.009	0.050	0.000	0.459	0.186
2036	60	0.007	0.476	3.439	0.123	912	0.001	0.001	0.036	0.144	0.009	0.050	0.000	0.466	0.186
2036	65	0.007	0.476	3.446	0.123	912	0.001	0.001	0.036	0.144	0.009	0.050	0.000	0.466	0.186
2036	70	0.008	0.602	3.031	0.134	941	0.001	0.001	0.036	0.144	0.009	0.050	0.000	0.590	0.192
2045	5	0.063	4.518	35.871	0.448	3,903	0.007	0.006	0.036	0.136	0.009	0.048	0.000	4.427	0.796
2045	10	0.044	3.121	26.595	0.353	3,015	0.006	0.006	0.036	0.136	0.009	0.048	0.000	3.058	0.615
2045	15	0.027	1.916	18.634	0.260	2,194	0.005	0.005	0.036	0.136	0.009	0.048	0.000	1.878	0.447
2045	20	0.020	1.411	14.398	0.214	1,781	0.004	0.004	0.036	0.136	0.009	0.048	0.000	1.382	0.363
2045	25	0.016	1.111	11.477	0.184	1,526	0.003	0.003	0.036	0.136	0.009	0.048	0.000	1.089	0.311
2045	30	0.013	0.922	9.237	0.164	1,349	0.003	0.002	0.036	0.136	0.009	0.048	0.000	0.903	0.275
2045	35	0.011	0.779	7.430	0.148	1,216	0.002	0.002	0.036	0.136	0.009	0.048	0.000	0.764	0.248
2045	40	0.009	0.663	5.967	0.135	1,112	0.002	0.001	0.036	0.136	0.009	0.048	0.000	0.649	0.227
2045	45	0.008	0.586	4.782	0.125	1,029	0.001	0.001	0.036	0.136	0.009	0.048	0.000	0.574	0.210
2045	50	0.007	0.524	3.839	0.117	961	0.001	0.001	0.036	0.136	0.009	0.048	0.000	0.514	0.196
2045	55	0.007	0.476	3.103	0.110	903	0.001	0.001	0.036	0.136	0.009	0.048	0.000	0.467	0.184
2045	60	0.007	0.484	3.080	0.111	905	0.001	0.001	0.036	0.136	0.009	0.048	0.000	0.474	0.184
2045	65	0.007	0.490	3.063	0.111	906	0.001	0.001	0.036	0.136	0.009	0.048	0.000	0.480	0.185
2045	70	0.009	0.616	2.697	0.124	930	0.001	0.001	0.036	0.136	0.009	0.048	0.000	0.604	0.190

Notes

[1] Emission factors from EMFAC2021 for HHDT adjusted to port-specific fleet distribution

EMFAC2021 Off-model Adjustment Factors for Drayage Trucks

Pollutant Process	Calendar Year	Air Basin	Vehicle Category	Fuel	Heavy-Duty Vehicle Inspection and Maintenance Program (Clean Truck Check)	EPA's Clean Trucks Plan
Nox TOTEX	2026	South Coast	HHDT	Diesel	0.57	1
	2036	South Coast	HHDT	Diesel	0.40	0.82
	2045	South Coast	HHDT	Diesel	0.37	0.68
	2026	South Coast	HHDT	Natural Gas	1	1
	2036	South Coast	HHDT	Natural Gas	1	1
	2045	South Coast	HHDT	Natural Gas	1	1
PM2.5 TOTEX	2026	South Coast	HHDT	Diesel	0.57	1.00
	2036	South Coast	HHDT	Diesel	0.54	0.99
	2045	South Coast	HHDT	Diesel	0.55	0.99
	2026	South Coast	HHDT	Natural Gas	1	1
	2036	South Coast	HHDT	Natural Gas	1	1
	2045	South Coast	HHDT	Natural Gas	1	1
ROG TOTEX	2026	South Coast	HHDT	Diesel	1	1
	2036	South Coast	HHDT	Diesel	1	1
	2045	South Coast	HHDT	Diesel	1	1
	2026	South Coast	HHDT	Natural Gas	1	1
	2036	South Coast	HHDT	Natural Gas	1	1
	2045	South Coast	HHDT	Natural Gas	1	1

Note:

[1] The TOTEX scaling factors only apply to RUNEX and IDLEX.

Source:

[1] CARB. 2024. Email communication from Sara Forestieri to Ramboll. December 12, 2024.

Fugitive Dust Parameters and Emission Factors

Roadtype	sL (g/m2) [1]	Vehicle Weight (tons)	Vehicle Weight Reference	PM10 Multiplier (g/vmt) [3]	PM2.5 Multiplier (g/vmt) [2]	PM10 EF (g/mile) [1]	PM2.5 EF (g/mile) [1]
Freeways	0.0150	2.4	[1]	1	0.15	0.053	0.008
Major	0.0320	2.4	[1]	1	0.15	0.107	0.016
Collector	0.0320	2.4	[1]	1	0.15	0.107	0.016
Local	0.1350	2.4	[1]	1	0.15	0.395	0.059
Onsite - Trucks	0.1350	18.9	[2]	1	0.15	3.240	0.486
Onsite-PC	0.1350	2.4	[2]	1	0.15	0.395	0.059
offsite			[3]			0.165	0.025

Notes:
[a] Onsite roadtype calculated using same inputs as local roadtype.
Sources:
[1] http://ww3.arb.ca.gov/ei/areasrc/fullpdf/2021_paved_roads_7_9.pdf
[2] From John C.: Based on Trinity Report Table 19-1
[3] Offsite EF average of roadtypes: freeways, major, collector, local

$$E = k\,(sL)^{0.91} \times (W)^{1.02} \qquad (1)$$

where: E = particulate emission factor (having units matching the units of k),
k = particle size multiplier for particle size range and units of interest (see below),
sL = road surface silt loading (grams per square meter) (g/m^2), and
W = average weight (tons) of the vehicles traveling the road.

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

Year	Scenario	DayToYear Peaking Factor	DayTo8hr Peaking Factor	DayTo1hr Peaking Factor	Annual PC oneway trips
2008	Baseline	234	0.619	0.089	220,607
2012	Revised Project	250	0.492	0.070	235,892
2012	FEIR Mitigated	250	0.492	0.070	235,892
2014	Revised Project	241	0.490	0.070	226,552
2014	FEIR Mitigated	241	0.490	0.070	226,552
2018	Revised Project	245	0.528	0.081	291,342
2018	FEIR Mitigated	245	0.528	0.081	291,342
2019	Revised Project	245	0.531	0.078	254,304
2019	FEIR Mitigated	245	0.531	0.078	254,304
2020	Revised Project	248	0.556	0.080	386,769
2020	FEIR Mitigated	248	0.556	0.080	386,769
2021	Revised Project	250	0.554	0.085	634,305
2021	FEIR Mitigated	250	0.554	0.085	634,305
2022	Revised Project	246	0.542	0.083	620,127
2022	FEIR Mitigated	246	0.542	0.083	620,127
2023	Revised Project	245	0.575	0.081	444,795
2023	FEIR Mitigated	245	0.575	0.081	444,795
2026	Revised Project	253	0.530	0.074	427,105
2026	FEIR Mitigated	253	0.530	0.074	427,105
2036	Revised Project	253	0.530	0.074	586,373
2036	FEIR Mitigated	253	0.530	0.074	586,373
2045	Revised Project	253	0.530	0.074	586,373
2045	FEIR Mitigated	253	0.530	0.074	586,373

Emission Factors for Worker Vehicles for Gasoline Fuel - All Scenario (g/mile)

CY	Speed	ROG	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	SOx	CH4	N2O
2008	5	0.570	0.793	7.040	0.549	836.839	0.023	0.021	0.002	0.002	0.000	0.001	0.008	0.114	0.037
2008	10	0.364	0.506	5.958	0.473	676.672	0.014	0.013	0.002	0.002	0.000	0.001	0.007	0.073	0.032
2008	15	0.251	0.347	5.282	0.418	553.940	0.010	0.009	0.002	0.002	0.000	0.001	0.005	0.050	0.028
2008	20	0.181	0.250	4.733	0.375	461.129	0.007	0.006	0.002	0.002	0.000	0.001	0.004	0.036	0.025
2008	25	0.137	0.188	4.268	0.341	394.742	0.005	0.005	0.002	0.002	0.000	0.001	0.004	0.027	0.023
2008	30	0.109	0.149	3.893	0.318	350.354	0.004	0.004	0.002	0.002	0.000	0.001	0.003	0.021	0.021
2008	35	0.091	0.124	3.569	0.301	324.601	0.003	0.003	0.002	0.002	0.000	0.001	0.003	0.018	0.020
2008	40	0.078	0.107	3.289	0.287	314.297	0.003	0.003	0.002	0.002	0.000	0.001	0.003	0.015	0.019
2008	45	0.073	0.099	3.080	0.283	314.715	0.003	0.002	0.002	0.002	0.000	0.001	0.003	0.014	0.019
2008	50	0.071	0.096	2.935	0.281	324.139	0.003	0.002	0.002	0.002	0.000	0.001	0.003	0.014	0.018
2008	55	0.073	0.099	2.830	0.287	337.182	0.003	0.002	0.002	0.002	0.000	0.001	0.003	0.014	0.019
2008	60	0.078	0.106	2.759	0.297	350.468	0.003	0.003	0.002	0.002	0.000	0.001	0.003	0.015	0.019
2008	65	0.087	0.118	2.757	0.307	362.608	0.003	0.003	0.002	0.002	0.000	0.001	0.004	0.017	0.020
2008	70	0.096	0.129	2.713	0.332	360.802	0.003	0.003	0.002	0.002	0.000	0.001	0.004	0.018	0.022
2012	5	0.391	0.551	4.983	0.378	804.545	0.014	0.013	0.002	0.002	0.000	0.001	0.008	0.081	0.027
2012	10	0.247	0.347	4.265	0.325	650.875	0.009	0.008	0.002	0.002	0.000	0.001	0.006	0.051	0.023
2012	15	0.169	0.237	3.823	0.288	532.740	0.006	0.006	0.002	0.002	0.000	0.001	0.005	0.035	0.020
2012	20	0.121	0.170	3.450	0.258	443.417	0.004	0.004	0.002	0.002	0.000	0.001	0.004	0.025	0.018
2012	25	0.091	0.127	3.126	0.235	379.655	0.003	0.003	0.002	0.002	0.000	0.001	0.004	0.018	0.016
2012	30	0.072	0.100	2.859	0.218	336.980	0.003	0.002	0.002	0.002	0.000	0.001	0.003	0.015	0.015
2012	35	0.059	0.083	2.621	0.206	312.292	0.002	0.002	0.002	0.002	0.000	0.001	0.003	0.012	0.014
2012	40	0.051	0.071	2.416	0.196	302.698	0.002	0.002	0.002	0.002	0.000	0.001	0.003	0.010	0.014
2012	45	0.047	0.066	2.253	0.192	303.101	0.002	0.002	0.002	0.002	0.000	0.001	0.003	0.010	0.013
2012	50	0.046	0.064	2.137	0.191	312.257	0.002	0.001	0.002	0.002	0.000	0.001	0.003	0.009	0.013
2012	55	0.047	0.065	2.044	0.194	324.824	0.002	0.002	0.002	0.002	0.000	0.001	0.003	0.009	0.014
2012	60	0.051	0.070	1.964	0.200	337.554	0.002	0.002	0.002	0.002	0.000	0.001	0.003	0.010	0.014
2012	65	0.057	0.078	1.933	0.206	349.410	0.002	0.002	0.002	0.002	0.000	0.001	0.003	0.011	0.014
2012	70	0.062	0.085	1.872	0.223	347.732	0.002	0.002	0.002	0.002	0.000	0.001	0.003	0.012	0.015
2014	5	0.289	0.410	3.867	0.282	773.300	0.012	0.011	0.002	0.002	0.000	0.001	0.008	0.061	0.021
2014	10	0.182	0.257	3.328	0.243	625.558	0.007	0.007	0.002	0.002	0.000	0.001	0.006	0.038	0.018
2014	15	0.124	0.175	2.995	0.215	511.988	0.005	0.005	0.002	0.002	0.000	0.001	0.005	0.026	0.016
2014	20	0.089	0.125	2.711	0.193	426.101	0.004	0.003	0.002	0.002	0.000	0.001	0.004	0.019	0.014
2014	25	0.066	0.093	2.461	0.175	364.783	0.003	0.002	0.002	0.002	0.000	0.001	0.004	0.014	0.013
2014	30	0.052	0.073	2.253	0.163	323.766	0.002	0.002	0.002	0.002	0.000	0.001	0.003	0.011	0.012
2014	35	0.043	0.060	2.067	0.154	300.061	0.002	0.002	0.002	0.002	0.000	0.001	0.003	0.009	0.011
2014	40	0.037	0.052	1.905	0.146	290.862	0.001	0.001	0.002	0.002	0.000	0.001	0.003	0.008	0.011
2014	45	0.034	0.048	1.774	0.143	291.291	0.001	0.001	0.002	0.002	0.000	0.001	0.003	0.007	0.011
2014	50	0.033	0.046	1.678	0.142	300.137	0.001	0.001	0.002	0.002	0.000	0.001	0.003	0.007	0.010
2014	55	0.034	0.048	1.599	0.144	312.263	0.001	0.001	0.002	0.002	0.000	0.001	0.003	0.007	0.011
2014	60	0.037	0.051	1.530	0.148	324.542	0.001	0.001	0.002	0.002	0.000	0.001	0.003	0.007	0.011
2014	65	0.041	0.057	1.496	0.152	335.944	0.002	0.001	0.002	0.002	0.000	0.001	0.003	0.008	0.011
2014	70	0.045	0.062	1.435	0.165	334.336	0.002	0.002	0.002	0.002	0.000	0.001	0.003	0.009	0.012
2018	5	0.141	0.204	2.322	0.149	732.398	0.011	0.010	0.001	0.002	0.000	0.001	0.007	0.033	0.013
2018	10	0.088	0.127	2.038	0.129	592.540	0.007	0.006	0.001	0.002	0.000	0.001	0.006	0.020	0.011
2018	15	0.059	0.086	1.848	0.114	484.749	0.005	0.004	0.001	0.002	0.000	0.001	0.005	0.014	0.010
2018	20	0.042	0.061	1.687	0.102	403.406	0.003	0.003	0.001	0.002	0.000	0.001	0.004	0.010	0.009
2018	25	0.031	0.045	1.541	0.092	345.318	0.002	0.002	0.001	0.002	0.000	0.001	0.003	0.007	0.008
2018	30	0.024	0.035	1.413	0.086	306.411	0.002	0.002	0.001	0.002	0.000	0.001	0.003	0.006	0.007
2018	35	0.020	0.029	1.299	0.080	284.004	0.002	0.001	0.001	0.002	0.000	0.001	0.003	0.005	0.007
2018	40	0.017	0.025	1.197	0.076	275.296	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.004	0.007
2018	45	0.016	0.023	1.111	0.074	275.761	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.004	0.006
2018	50	0.015	0.022	1.044	0.073	284.193	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.004	0.006
2018	55	0.016	0.022	0.984	0.074	295.740	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.004	0.006
2018	60	0.017	0.024	0.932	0.077	307.498	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.004	0.007
2018	65	0.019	0.027	0.894	0.078	318.221	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.004	0.007
2018	70	0.020	0.029	0.837	0.084	316.692	0.002	0.001	0.001	0.002	0.000	0.001	0.003	0.005	0.007
2019	5	0.120	0.174	2.111	0.130	725.851	0.011	0.010	0.001	0.002	0.000	0.001	0.007	0.029	0.012
2019	10	0.074	0.109	1.860	0.112	587.190	0.007	0.006	0.001	0.002	0.000	0.001	0.006	0.018	0.010
2019	15	0.050	0.073	1.686	0.099	480.229	0.005	0.004	0.001	0.002	0.000	0.001	0.005	0.012	0.009
2019	20	0.035	0.052	1.541	0.089	399.653	0.003	0.003	0.001	0.002	0.000	0.001	0.004	0.008	0.008
2019	25	0.026	0.038	1.409	0.080	342.072	0.002	0.002	0.001	0.002	0.000	0.001	0.003	0.006	0.007
2019	30	0.020	0.030	1.293	0.075	303.512	0.002	0.002	0.001	0.002	0.000	0.001	0.003	0.005	0.007
2019	35	0.017	0.024	1.189	0.070	281.316	0.002	0.001	0.001	0.002	0.000	0.001	0.003	0.004	0.006
2019	40	0.014	0.021	1.095	0.066	272.622	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.003	0.006
2019	45	0.013	0.019	1.015	0.065	273.047	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.003	0.006
2019	50	0.013	0.018	0.954	0.064	281.449	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.003	0.006
2019	55	0.013	0.019	0.897	0.065	292.952	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.003	0.006
2019	60	0.014	0.020	0.847	0.067	304.512	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.003	0.006
2019	65	0.015	0.023	0.810	0.068	315.114	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.004	0.006
2019	70	0.017	0.024	0.756	0.073	313.839	0.002	0.001	0.001	0.002	0.000	0.001	0.003	0.004	0.007
2020	5	0.107	0.155	1.977	0.117	719.863	0.011	0.010	0.002	0.002	0.000	0.001	0.007	0.026	0.011

Emission Factors for Worker Vehicles for Gasoline Fuel - All Scenario (g/mile)

CY	Speed	ROG	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	SOx	CH4	N2O
2020	10	0.066	0.097	1.743	0.101	582.242	0.007	0.006	0.002	0.002	0.000	0.001	0.006	0.016	0.009
2020	15	0.044	0.065	1.581	0.089	476.184	0.005	0.004	0.002	0.002	0.000	0.001	0.005	0.011	0.008
2020	20	0.031	0.046	1.446	0.080	396.278	0.003	0.003	0.002	0.002	0.000	0.001	0.004	0.008	0.007
2020	25	0.023	0.034	1.323	0.072	339.147	0.002	0.002	0.002	0.002	0.000	0.001	0.003	0.006	0.007
2020	30	0.018	0.026	1.214	0.067	300.912	0.002	0.002	0.002	0.002	0.000	0.001	0.003	0.004	0.006
2020	35	0.015	0.022	1.116	0.063	278.885	0.002	0.001	0.002	0.002	0.000	0.001	0.003	0.004	0.006
2020	40	0.013	0.018	1.028	0.059	270.215	0.001	0.001	0.002	0.002	0.000	0.001	0.003	0.003	0.006
2020	45	0.012	0.017	0.952	0.058	270.662	0.001	0.001	0.002	0.002	0.000	0.001	0.003	0.003	0.005
2020	50	0.011	0.016	0.895	0.057	279.000	0.001	0.001	0.002	0.002	0.000	0.001	0.003	0.003	0.005
2020	55	0.011	0.017	0.841	0.058	290.424	0.001	0.001	0.002	0.002	0.000	0.001	0.003	0.003	0.005
2020	60	0.012	0.018	0.793	0.060	301.903	0.001	0.001	0.002	0.002	0.000	0.001	0.003	0.003	0.006
2020	65	0.014	0.020	0.757	0.061	312.375	0.001	0.001	0.002	0.002	0.000	0.001	0.003	0.003	0.006
2020	70	0.015	0.021	0.706	0.065	311.137	0.002	0.001	0.002	0.002	0.000	0.001	0.003	0.004	0.006
2021	5	0.094	0.138	1.844	0.105	710.826	0.010	0.010	0.001	0.002	0.000	0.001	0.007	0.023	0.010
2021	10	0.059	0.085	1.628	0.090	574.893	0.007	0.006	0.001	0.002	0.000	0.001	0.006	0.015	0.009
2021	15	0.039	0.057	1.478	0.080	470.168	0.004	0.004	0.001	0.002	0.000	0.001	0.005	0.010	0.008
2021	20	0.028	0.041	1.352	0.071	391.262	0.003	0.003	0.001	0.002	0.000	0.001	0.004	0.007	0.007
2021	25	0.020	0.030	1.238	0.064	334.856	0.002	0.002	0.001	0.002	0.000	0.001	0.003	0.005	0.006
2021	30	0.016	0.023	1.136	0.060	297.109	0.002	0.002	0.001	0.002	0.000	0.001	0.003	0.004	0.006
2021	35	0.013	0.019	1.045	0.056	275.355	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.003	0.006
2021	40	0.011	0.016	0.963	0.053	266.812	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.003	0.005
2021	45	0.010	0.015	0.892	0.052	267.255	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.003	0.005
2021	50	0.010	0.014	0.838	0.051	275.504	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.002	0.005
2021	55	0.010	0.015	0.787	0.051	286.788	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.003	0.005
2021	60	0.011	0.016	0.741	0.053	298.116	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.003	0.005
2021	65	0.012	0.018	0.707	0.054	308.466	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.003	0.005
2021	70	0.013	0.019	0.658	0.058	307.291	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.003	0.006
2022	5	0.083	0.121	1.715	0.093	699.527	0.010	0.009	0.001	0.002	0.000	0.001	0.007	0.021	0.009
2022	10	0.052	0.075	1.516	0.080	565.733	0.006	0.006	0.001	0.002	0.000	0.001	0.006	0.013	0.008
2022	15	0.035	0.050	1.378	0.071	462.669	0.004	0.004	0.001	0.002	0.000	0.001	0.005	0.009	0.007
2022	20	0.024	0.036	1.261	0.063	385.013	0.003	0.003	0.001	0.002	0.000	0.001	0.004	0.006	0.006
2022	25	0.018	0.026	1.155	0.057	329.522	0.002	0.002	0.001	0.002	0.000	0.001	0.003	0.005	0.006
2022	30	0.014	0.021	1.061	0.053	292.382	0.002	0.002	0.001	0.002	0.000	0.001	0.003	0.004	0.005
2022	35	0.012	0.017	0.976	0.050	270.974	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.003	0.005
2022	40	0.010	0.014	0.900	0.047	262.610	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.002	0.005
2022	45	0.009	0.013	0.833	0.046	263.037	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.002	0.005
2022	50	0.009	0.013	0.782	0.045	271.176	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.002	0.005
2022	55	0.009	0.013	0.734	0.046	282.281	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.002	0.005
2022	60	0.010	0.014	0.690	0.047	293.409	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.002	0.005
2022	65	0.011	0.016	0.658	0.048	303.624	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.003	0.005
2022	70	0.011	0.017	0.613	0.052	302.518	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.003	0.005
2023	5	0.074	0.107	1.601	0.084	687.185	0.010	0.009	0.001	0.002	0.000	0.001	0.007	0.019	0.009
2023	10	0.046	0.067	1.420	0.072	555.973	0.006	0.006	0.001	0.002	0.000	0.001	0.005	0.012	0.008
2023	15	0.031	0.045	1.291	0.063	454.623	0.004	0.004	0.001	0.002	0.000	0.001	0.004	0.008	0.007
2023	20	0.022	0.032	1.181	0.057	378.188	0.003	0.003	0.001	0.002	0.000	0.001	0.004	0.006	0.006
2023	25	0.016	0.023	1.083	0.051	323.699	0.002	0.002	0.001	0.002	0.000	0.001	0.003	0.004	0.006
2023	30	0.012	0.018	0.995	0.048	287.262	0.002	0.001	0.001	0.002	0.000	0.001	0.003	0.003	0.005
2023	35	0.010	0.015	0.915	0.045	266.202	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.003	0.005
2023	40	0.009	0.013	0.845	0.042	258.004	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.002	0.005
2023	45	0.008	0.012	0.782	0.041	258.418	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.002	0.004
2023	50	0.008	0.011	0.734	0.041	266.427	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.002	0.004
2023	55	0.008	0.011	0.689	0.041	277.353	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.002	0.004
2023	60	0.008	0.012	0.646	0.042	288.264	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.002	0.005
2023	65	0.009	0.014	0.615	0.043	298.303	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.002	0.005
2023	70	0.010	0.015	0.572	0.046	297.228	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.003	0.005
2026	5	0.053	0.078	1.350	0.064	647.114	0.009	0.008	0.001	0.002	0.000	0.001	0.006	0.015	0.008
2026	10	0.033	0.048	1.199	0.055	523.012	0.005	0.005	0.001	0.002	0.000	0.001	0.005	0.009	0.007
2026	15	0.022	0.032	1.093	0.048	427.730	0.004	0.003	0.001	0.002	0.000	0.001	0.004	0.006	0.006
2026	20	0.016	0.023	1.002	0.043	355.892	0.003	0.002	0.001	0.002	0.000	0.001	0.004	0.004	0.005
2026	25	0.012	0.017	0.921	0.039	304.628	0.002	0.002	0.001	0.002	0.000	0.001	0.003	0.003	0.005
2026	30	0.009	0.013	0.846	0.036	270.305	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.002	0.004
2026	35	0.007	0.011	0.779	0.034	250.469	0.001	0.001	0.001	0.002	0.000	0.001	0.002	0.002	0.004
2026	40	0.006	0.009	0.720	0.032	242.737	0.001	0.001	0.001	0.002	0.000	0.001	0.002	0.002	0.004
2026	45	0.006	0.008	0.667	0.031	243.245	0.001	0.001	0.001	0.002	0.000	0.001	0.002	0.002	0.004
2026	50	0.006	0.008	0.623	0.031	250.545	0.001	0.001	0.001	0.002	0.000	0.001	0.002	0.002	0.004
2026	55	0.006	0.008	0.584	0.031	260.837	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.002	0.004
2026	60	0.006	0.009	0.547	0.032	271.224	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.002	0.004
2026	65	0.007	0.010	0.520	0.033	280.508	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.002	0.004
2026	70	0.007	0.011	0.485	0.035	279.983	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.002	0.004
2036	5	0.027	0.039	1.003	0.039	563.371	0.005	0.005	0.001	0.002	0.000	0.001	0.006	0.008	0.006
2036	10	0.017	0.025	0.898	0.034	455.452	0.003	0.003	0.001	0.002	0.000	0.001	0.005	0.005	0.005

Emission Factors for Worker Vehicles for Gasoline Fuel - All Scenario (g/mile)

CY	Speed	ROG	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	SOx	CH4	N2O
2036	15	0.011	0.016	0.820	0.030	372.727	0.002	0.002	0.001	0.002	0.000	0.001	0.004	0.004	0.005
2036	20	0.008	0.011	0.751	0.027	309.895	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.002	0.004
2036	25	0.006	0.008	0.693	0.025	265.234	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.002	0.004
2036	30	0.005	0.007	0.638	0.023	235.359	0.001	0.001	0.001	0.002	0.000	0.001	0.002	0.001	0.003
2036	35	0.004	0.005	0.587	0.022	218.013	0.001	0.001	0.001	0.002	0.000	0.001	0.002	0.001	0.003
2036	40	0.003	0.005	0.547	0.021	211.254	0.001	0.001	0.001	0.002	0.000	0.001	0.002	0.001	0.003
2036	45	0.003	0.004	0.504	0.020	211.601	0.001	0.000	0.001	0.002	0.000	0.001	0.002	0.001	0.003
2036	50	0.003	0.004	0.472	0.020	218.042	0.001	0.000	0.001	0.002	0.000	0.001	0.002	0.001	0.003
2036	55	0.003	0.004	0.440	0.020	226.905	0.001	0.000	0.001	0.002	0.000	0.001	0.002	0.001	0.003
2036	60	0.003	0.005	0.413	0.020	236.283	0.001	0.001	0.001	0.002	0.000	0.001	0.002	0.001	0.003
2036	65	0.003	0.005	0.392	0.021	244.140	0.001	0.001	0.001	0.002	0.000	0.001	0.002	0.001	0.003
2036	70	0.004	0.005	0.365	0.022	243.615	0.001	0.001	0.001	0.002	0.000	0.001	0.002	0.001	0.003
2045	5	0.020	0.030	0.928	0.034	543.415	0.004	0.003	0.001	0.002	0.000	0.001	0.005	0.007	0.006
2045	10	0.013	0.019	0.836	0.030	440.013	0.002	0.002	0.001	0.002	0.000	0.001	0.004	0.004	0.005
2045	15	0.008	0.012	0.762	0.026	359.812	0.001	0.001	0.001	0.002	0.000	0.001	0.004	0.003	0.004
2045	20	0.006	0.009	0.698	0.023	299.206	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.002	0.004
2045	25	0.004	0.006	0.644	0.021	256.076	0.001	0.001	0.001	0.002	0.000	0.001	0.003	0.002	0.004
2045	30	0.003	0.005	0.593	0.020	227.227	0.001	0.001	0.001	0.002	0.000	0.001	0.002	0.001	0.003
2045	35	0.003	0.004	0.546	0.019	210.519	0.000	0.000	0.001	0.002	0.000	0.001	0.002	0.001	0.003
2045	40	0.002	0.004	0.510	0.018	204.069	0.000	0.000	0.001	0.002	0.000	0.001	0.002	0.001	0.003
2045	45	0.002	0.003	0.470	0.017	204.375	0.000	0.000	0.001	0.002	0.000	0.001	0.002	0.001	0.003
2045	50	0.002	0.003	0.440	0.017	210.598	0.000	0.000	0.001	0.002	0.000	0.001	0.002	0.001	0.003
2045	55	0.002	0.003	0.411	0.017	219.277	0.000	0.000	0.001	0.002	0.000	0.001	0.002	0.001	0.003
2045	60	0.002	0.003	0.385	0.018	228.188	0.000	0.000	0.001	0.002	0.000	0.001	0.002	0.001	0.003
2045	65	0.003	0.004	0.366	0.018	235.845	0.000	0.000	0.001	0.002	0.000	0.001	0.002	0.001	0.003
2045	70	0.003	0.004	0.340	0.019	235.216	0.001	0.000	0.001	0.002	0.000	0.001	0.002	0.001	0.003

Emissions Inventory

China Shipping Emissions Inventory by Source Category, by Scenario, and Analysis Period

Period	UOM	Scenario	Year	Source_category	VOC	CO	NOx	CO2	PM10 (PM10 exh, PM10TW, PM10BW)	PM25 (PM2.5 exh, PM2.5TW, PM2.5BW)	PM10TW	PM10BW	PM25TW	PM25BW	DPM	SOx	CH4	N2O	TOGdiesexh	TOGlngexh	PM10diesexh	PM10lngexh	PM10fdust	PM25fdust
Annual	ton	Baseline	2008	PC offsite	0.2303	8.2467	0.7332	832	0.0173	0.0106	0.0041	0.0045	0.0010	0.0016	-	0.0081	0.0445	0.0483	-	-	-	-	0.1630	0.0245
Annual	ton	Baseline	2008	Trucks offsite	9.0392	34.8103	165.2653	15,317	5.6602	4.6190	0.2938	0.9699	0.0735	0.3395	4.3896	0.1394	1.5023	2.4264	10.0731	1.3135	4.3896	0.0068	0.5107	0.0766
Annual	ton	FEIR Mitigated	2012	PC offsite	0.1530	6.1560	0.5264	847	0.0144	0.0077	0.0043	0.0048	0.0011	0.0017	-	0.0084	0.0308	0.0368	-	-	-	-	0.1740	0.0261
Annual	ton	FEIR Mitigated	2012	Trucks offsite	1.9731	117.2597	62.6272	22,445	3.5341	1.7227	0.5226	2.1244	0.1307	0.7435	0.8819	0.1182	24.3841	4.0012	1.8264	24.8341	0.8819	0.0051	0.8680	0.1302
Annual	ton	FEIR Mitigated	2014	PC offsite	0.1100	4.7930	0.3851	797	0.0126	0.0065	0.0039	0.0043	0.0010	0.0015	-	0.0079	0.0227	0.0283	-	-	-	-	0.1896	0.0284
Annual	ton	FEIR Mitigated	2014	Trucks offsite	2.3439	315.4442	85.2710	47,182	5.9349	2.2038	1.1521	4.3831	0.2880	1.5341	0.3801	0.1525	58.4769	8.8612	1.6636	59.6654	0.3801	0.0196	2.0141	0.3021
Annual	ton	FEIR Mitigated	2026	PC offsite	0.0650	6.1949	0.2971	2,346	0.0367	0.0177	0.0124	0.0136	0.0031	0.0048	-	0.0232	0.0177	0.0362	-	-	-	-	0.5634	0.0845
Annual	ton	FEIR Mitigated	2026	Trucks offsite	0.6485	283.5249	15.5954	39,259	6.1103	2.0399	1.1926	4.8816	0.2981	1.7086	-	-	45.3872	8.0032	-	46.3210	-	0.0360	1.9231	0.2885
Annual	ton	FEIR Mitigated	2036	PC offsite	0.0231	3.2951	0.1289	1,378	0.0221	0.0093	0.0086	0.0093	0.0021	0.0033	-	0.0136	0.0073	0.0196	-	-	-	-	0.4074	0.0611
Annual	ton	FEIR Mitigated	2036	Trucks offsite	0.4419	282.1589	7.3710	54,015	8.9987	3.0126	1.7878	7.1375	0.4470	2.4981	-	-	30.9312	11.0114	-	31.5675	-	0.0734	2.9423	0.4414
Annual	ton	FEIR Mitigated	2045	PC offsite	0.0185	3.1693	0.1137	1,349	0.0213	0.0084	0.0086	0.0093	0.0022	0.0033	-	0.0133	0.0064	0.0187	-	-	-	-	0.4084	0.0613
Annual	ton	FEIR Mitigated	2045	Trucks offsite	0.4706	294.5504	6.4965	53,540	8.1327	2.7261	1.6852	6.3631	0.4213	2.2271	-	-	32.9333	10.9144	-	33.6108	-	0.0845	2.7652	0.4148
Annual	ton	Revised Project	2012	PC offsite	0.1530	6.1560	0.5264	847	0.0144	0.0077	0.0043	0.0048	0.0011	0.0017	-	0.0084	0.0308	0.0368	-	-	-	-	0.1740	0.0261
Annual	ton	Revised Project	2012	Trucks offsite	3.1000	20.2240	103.3280	24,853	3.8193	2.3083	0.5183	1.6144	0.1296	0.5651	1.6862	0.2261	2.2817	3.9407	3.4921	2.1854	1.6862	0.0005	0.8680	0.1302
Annual	ton	Revised Project	2014	PC offsite	0.1100	4.7930	0.3851	797	0.0126	0.0065	0.0039	0.0043	0.0010	0.0015	-	0.0079	0.0227	0.0283	-	-	-	-	0.1896	0.0284
Annual	ton	Revised Project	2014	Trucks offsite	4.7123	32.7514	198.9953	53,443	5.6143	2.5863	1.1435	3.2581	0.2859	1.1403	1.2114	0.4859	3.8877	8.4821	5.3014	3.7504	1.2114	0.0012	2.0141	0.3021
Annual	ton	Revised Project	2026	PC offsite	0.0650	6.1949	0.2971	2,346	0.0367	0.0177	0.0124	0.0136	0.0031	0.0048	-	0.0232	0.0177	0.0362	-	-	-	-	0.5634	0.0845
Annual	ton	Revised Project	2026	Trucks offsite	0.3682	15.2367	26.1931	51,493	4.3647	1.6573	1.1678	2.7907	0.2920	0.9767	0.4046	0.4712	2.0128	8.1927	0.3867	2.0381	0.4046	0.0016	1.9231	0.2885
Annual	ton	Revised Project	2036	PC offsite	0.0231	3.2951	0.1289	1,378	0.0221	0.0093	0.0086	0.0093	0.0021	0.0033	-	0.0136	0.0073	0.0196	-	-	-	-	0.4074	0.0611
Annual	ton	Revised Project	2036	Trucks offsite	0.4703	15.8725	19.9723	68,775	6.7703	2.4652	1.7568	4.5662	0.4392	1.5982	0.4440	0.6288	1.3819	10.9456	0.5132	1.3890	0.4440	0.0032	2.9423	0.4414
Annual	ton	Revised Project	2045	PC offsite	0.0185	3.1693	0.1137	1,349	0.0213	0.0084	0.0086	0.0093	0.0022	0.0033	-	0.0133	0.0064	0.0187	-	-	-	-	0.4084	0.0613
Annual	ton	Revised Project	2045	Trucks offsite	0.4458	16.6166	15.6517	59,627	6.8022	2.4169	1.6618	4.8069	0.4154	1.6824	0.3299	0.5423	1.4688	9.5033	0.4839	1.4789	0.3299	0.0037	2.7652	0.4148
Annual	tons	Baseline	2008	CHE	3.2105	53.5905	32.1987	5,686	0.9707	0.9223					0.6050	0.0198	0.2308	0.0457						
Annual	tons	Baseline	2008	HC	0.0757	0.3001	1.0538	45	0.0455	0.0419					0.0455	0.0004	0.0009	0.0018						
Annual	tons	Baseline	2008	OGV	2.7613	3.9774	54.5549	2,497	3.9114	3.1343					3.1087	41.3580	0.0244	0.1634						
Annual	tons	Baseline	2008	PC onsite	0.0183	0.3853	0.0305	40	0.0010	0.0007	0.0001	0.0001	-	-		0.0004	0.0036	0.0020					0.1440	0.0216
Annual	tons	Baseline	2008	Rail offsite	10.9741	35.2050	199.3480	13,449	7.0311	6.6090					7.0311	0.1373	1.0998	0.3574						
Annual	tons	Baseline	2008	Rail onsite	0.7267	2.3666	13.0891	902	0.4544	0.4264					0.4544	0.0091	0.0734	0.0239						
Annual	tons	Baseline	2008	Trucks onsite	1.6064	3.3311	7.4561	779	0.4982	0.4410	0.0093	0.0479	0.0023	0.0168	0.4410	0.0073	0.0746	0.1221	1.8287	-	0.4410	-	1.7079	0.2562
Annual	tons	Baseline	2008	Trucks onsite idling	0.6683	2.0821	4.3316	351	0.1178	0.1127	-	-	-	-	0.1178	0.0033	0.0310	0.0551	0.7608	-	0.1178	-		
Annual	tons	FEIR_Mitigated	2012	CHE	10.4444	122.5381	43.3285	12,196	1.4257	1.3690					0.7084	0.0377	0.5521	0.1102						
Annual	tons	FEIR_Mitigated	2012	HC	0.0661	0.4067	0.7070	53	0.0253	0.0234					0.0253	0.0004	0.0011	0.0024						
Annual	tons	FEIR_Mitigated	2012	OGV	4.2846	6.5308	48.8888	2,492	1.2209	1.1298					1.1306	4.9488	0.0248	0.1622						
Annual	tons	FEIR_Mitigated	2012	PC onsite	0.0132	0.2982	0.0225	42	0.0008	0.0005	0.0001	0.0001	-	-		0.0004	0.0027	0.0016					0.1540	0.0231
Annual	tons	FEIR_Mitigated	2012	Rail offsite	9.3032	37.5441	174.6112	14,342	5.9976	5.6374					5.9976	0.1464	1.1728	0.3811						
Annual	tons	FEIR_Mitigated	2012	Rail onsite	0.6374	2.7238	11.9406	1,037	0.3967	0.3720					0.3967	0.0104	0.0839	0.0274						
Annual	tons	FEIR_Mitigated	2012	Trucks onsite	0.2837	11.4736	3.4325	1,208	0.1157	0.0557	0.0144	0.0737	0.0036	0.0258	0.0271	0.0053	2.2270	0.2206	0.2834	2.2646	0.0271	0.0004	2.6323	0.3948
Annual	tons	FEIR_Mitigated	2012	Trucks onsite idling	0.7345	5.7076	5.5899	809	0.0966	0.0924	-	-	-	-	0.0965	0.0042	1.0353	0.1447	0.6553	1.1938	0.0965	-		
Annual	tons	FEIR_Mitigated	2014	CHE	25.6150	266.9846	67.4856	21,000	1.3455	1.3350					0.1308	0.0672	0.9487	0.1897						
Annual	tons	FEIR_Mitigated	2014	HC	0.1935	1.1432	2.0602	148	0.0764	0.0705					0.0764	0.0013	0.0030	0.0064						
Annual	tons	FEIR_Mitigated	2014	OGV	6.6709	9.9253	181.5102	11,934	2.9547	2.6935					2.0968	7.0182	0.1333	0.8220						
Annual	tons	FEIR_Mitigated	2014	PC onsite	0.0093	0.2244	0.0161	38	0.0006	0.0004	0.0001	0.0001	-	-		0.0004	0.0020	0.0012					0.1479	0.0222
Annual	tons	FEIR_Mitigated	2014	Rail offsite	8.5627	38.6835	175.3671	14,777	5.4931	5.1633					5.4931	0.1510	1.2084	0.3927						
Annual	tons	FEIR_Mitigated	2014	Rail onsite	0.6339	3.0316	12.8578	1,154	0.3885	0.3642					0.3885	0.0116	0.0932	0.0304						
Annual	tons	FEIR_Mitigated	2014	Trucks onsite	0.3216	27.1421	5.2741	2,697	0.1925	0.0740	0.0329	0.1431	0.0082	0.0501	0.0147	0.0071	5.3273	0.5145	0.2718	5.4335	0.0147	0.0018	5.9465	0.8920
Annual	tons	FEIR_Mitigated	2014	Trucks onsite idling	0.7701	22.9898	17.5821	4,619	0.0096	0.0090	-	-	-	-	0.0058	0.0184	9.3392	0.8502	0.7229	9.5036	0.0058	0.0037		
Annual	tons	FEIR_Mitigated	2018	CHE	0.6539	19.7046	4.8133	7,490	0.2094	0.1941					0.1909	0.0296	5.3044	0.2107						
Annual	tons	FEIR_Mitigated	2018	HC	0.0465	0.2239	1.2936	138	0.0245	0.0234					0.0245	0.0012	0.0064	0.0024						
Annual	tons	FEIR_Mitigated	2018	OGV	6.9484	10.0470	210.0216	6,314	1.7336	1.5936					1.5906	4.8811	0.1646	0.4810						
Annual	tons	FEIR_Mitigated	2018	PC offsite	0.2236	5.6129	0.4864	187	0.0156	0.0094	0.0039	0.0043	0.0010	0.0015		0.0019	0.0368	0.0243					1.0820	0.1623
Annual	tons	FEIR_Mitigated	2018	PC onsite	0.0057	0.1781	0.0110	47	0.0007	0.0005	0.0001	0.0001	-	-		0.0005	0.0013	0.0009					0.1902	0.0285
Annual	tons	FEIR_Mitigated	2018	Rail offsite	1.0091	5.3404	23.3880	2,040	0.6023	0.5661					0.6023	0.0207	0.1668	0.0542						
Annual	tons	FEIR_Mitigated	2018	Rail onsite	0.0846	0.4734	1.9328	180	0.0484	0.0455					0.0484	0.0018	0.0146	0.0048						
Annual	tons	FEIR_Mitigated	2018	Trucks offsite	1.2590	498.0411	34.3469	50,891	6.7882	2.2581	1.3408	5.4188	0.3352	1.8966		-	88.1157	10.3744	-	89.9285	-	0.0286	6.1582	0.9237
Annual	tons	FEIR_Mitigated	2018	Trucks onsite	0.0428	15.0295	1.2809	1,112	0.0678	0.0229	0.0133	0.0536	0.0033	0.0187	-	-	2.9927	0.2267	-	3.0543	-	0.0010	2.3860	0.3579
Annual	tons	FEIR_Mitigated	2018	Trucks onsite idling	0.0679	9.5041	1.8048	1,335	0.0019	0.0018	-	-	-	-	-	-	4.7011	0.2722	-	4.7986	-	0.0019		
Annual	tons	FEIR_Mitigated	2019	CHE	0.7678	19.5987	5.5850	7,613	0.2391	0.2214					0.2224	0.0344	4.8414	0.1976						
Annual	tons	FEIR_Mitigated	2019	HC	0.0474	0.2286	1.3180	140	0.0244	0.0233					0.0244	0.0011	0.0064	0.0024						
Annual	tons	FEIR_Mitigated	2019	OGV	10.4409	17.1351	220.4876	8,177	2.3445	2.1550					2.1547	5.6079	0.2177	0.5187						
Annual	tons	FEIR_Mitigated	2019	PC offsite	0.1413	4.3066	0.3829	161	0.0131	0.0077	0.0034	0.0037	0.0008	0.0013		0.0016	0.0260	0.0197					0.9445	0.1417
Annual	tons	FEIR_Mitigated	2019	PC onsite	0.0042	0.1418	0.0083	40	0.0006	0.0004	0.0001	0.0001	-	-		0.0004	0.0010	0.0008					0.1660	0.0249
Annual	tons	FEIR_Mitigated	2019	Rail offsite	0.8394	4.5677	19.8392	1,745	0.4994	0.4695					0.4994	0.0178	0.1427	0.0464						
Annual	tons	FEIR_Mitigated	2019	Rail onsite	0.0710	0.4083	1.6486	155	0.0403	0.0379					0.0403	0.0016	0.0126	0.0041						
Annual	tons	FEIR_Mitigated	2019	Trucks offsite	1.3030	512.4759	35.3352	52,374	7.0708	2.3527	1.3881	5.6534	0.3470	1.9787		-	91.1930	10.6769	-	93.0692	-	0.0293	6.3757	0.9564
Annual	tons	FEIR_Mitigated	2019	Trucks onsite	0.0461	16.2080	1.3705	1,181	0.0723	0.0245	0.0140	0.0572	0.0035	0.0200	-	-	3.2258	0.2408	-	3.2922	-	0.0010	2.5288	0.3793
Annual	tons	FEIR_Mitigated	2019	Trucks onsite idling	0.0698	10.1234	1.8730	1,387	0.0020	0.0019	-	-	-	-	-	-	4.8405	0.2827	-	4.9408	-	0.0020		
Annual	tons	FEIR_Mitigated	2020	CHE	2.7004	25.9879	17.9055	12,373	0.7409	0.6818					0.3665	0.1138	0.5977	0.1032						
Annual	tons	FEIR_Mitigated	2020	HC	0.0497	0.2331	1.4061	148	0.0249	0.0237					0.0249	0.0012	0.0068	0.0021						
Annual	tons	FEIR_Mitigated	2020	OGV	8.3782	14.4218	232.1998	9,589	2.5062	2.3044					2.1411	6.6925	0.1857	0.6377						
Annual	tons	FEIR_Mitigated	2020	PC offsite	0.2154	6.8098	0.6030	275	0.0219	0.0125	0.0059	0.0065	0.0015	0.0023		0.0027	0.0400	0.0316					1.4365	0.2155
Annual	tons	FEIR_Mitigated	2020	PC onsite	0.0057	0.2023	0.0114	61	0.0010	0.0007	0.0002	0.0002	-	-		0.0006	0.0014	0.0011					0.2525	0.0379
Annual	tons	FEIR_Mitigated	2020	Rail offsite	1.7095	9.5074	41.1008	3,632	1.0161	0.9551					1.0161	0.0370	0.2970	0.0965						
Annual	tons	FEIR_Mitigated	2020	Rail onsite	0.1780	1.0268	4.2231	391	0.1025	0.0963					0.1025	0.0039	0.0318	0.0103						
Annual	tons	FEIR_Mitigated	2020	Trucks offsite	1.9647	772.3630	53.2732	78,895	10.6383	3.5395	2.0895	8.5047	0.5224	2.9767		-	137.5093	16.0833	-	140.3383	-	0.0440	9.5972	1.4396
Annual	tons	FEIR_Mitigated	2020	Trucks onsite	0.0663	23.3092	1.9706	1,695	0.1030	0.0348	0.0201	0.0814	0.0050	0.0285	-	-	4.6411	0.3456	-	4.7366	-	0.0014	3.6261	0.5439
Annual	tons	FEIR_Mitigated	2020	Trucks onsite idling	0.0965	13.8855	2.5778	1,935	0.0029	0.0027	-	-	-	-	-	-	6.7020	0.3945	-	6.8407	-	0.0029		
Annual	tons	FEIR_Mitigated	2021	CHE	3.6356	49.4590	15.8739	17,036	0.7124	0.6579					0.6817	0.0917	8.9959	0.3872						
Annual	tons	FEIR_Mitigated	2021	HC	0.0666	0.3103	1.8757	197	0.0332	0.0317					0.0332	0.0013	0.0090	0.0027						
Annual	tons	FEIR_Mitigated	2021	OGV	20.0100	42.1310	512.5427	37,377	8.7870	8.0829					6.5206	23.4030	0.3981	2.1945						
Annual	tons	FEIR_Mitigated	2021	PC offsite	0.2732	8.8623	0.7748	386	0.0300	0.0167	0.0084	0.0092	0.0021	0.0032		0.0038	0.0521	0.0421					2.3558	0.3534
Annual	tons	FEIR_Mitigated	2021	PC onsite	0.0082	0.3101	0.0167	99	0.0015	0.0010	0.0003	0.0003	-	0.0001		0.0010	0.0020	0.0016					0.4141	0.0621
Annual	tons	FEIR_Mitigated	2021	Rail offsite	2.7896	15.8218	68.0191	6,044	1.6553	1.5560					1.6553	0.0617	0.4944	0.1607						
Annual	tons	FEIR_Mitigated	2021	Rail onsite	0.3034	1.7732	7.3074	676	0.1752	0.1646					0.1752	0.0068	0.0550	0.0179						
Annual	tons	FEIR_Mitigated	2021	Trucks offsite	3.1809	1,242.8611	85.8268	126,951	17.2284	5.7338	3.3643	13.7934	0.8411	4.8277		-	222.6275	25.8797	-	227.2077	-	0.0707	15.4522	2.3178
Annual	tons	FEIR_Mitigated	2021	Trucks onsite	0.1046	36.8408	3.0969	2,668	0.1637	0.0554	0.0317	0.1298	0.0079	0.0454	-	-	7.3227	0.5438	-	7.4734	-	0.0022	5.7000	0.8550
Annual	tons	FEIR_Mitigated	2021	Trucks onsite idling	0.3851	55.3210	10.2680	7,744	0.0120	0.0110	-	-	-	-	-	-	26.7820	1.5786	-	27.3357	-	0.0120		
Annual	tons	FEIR_Mitigated	2022	CHE	4.5486	53.2471	17.6009	17,899	0.8198	0.7567					0.7888	0.0989	9.1313	0.3972						
Annual	tons	FEIR_Mitigated	2022	HC	0.0430	0.2085	0.9665	135	0.0139	0.0132					0.0139	0.0009	0.0060	0.0020						
Annual	tons	FEIR_Mitigated	2022	OGV	5.7428	8.6238	186.7494	6,218	1.6164	1.4860					1.4375	4.6446	0.1343	0.4541						
Annual	tons	FEIR_Mitigated	2022	PC offsite	0.2397	7.8144	0.6919	368	0.0278	0.0150	0.0082	0.0090	0.0020	0.0031		0.0036	0.0462	0.0382					2.3032	0.3455
Annual	tons	FEIR_Mitigated	2022	PC onsite	0.0071	0.2826	0.0145	95	0.0015	0.0010	0.0003	0.0003	-	0.0001		0.0009	0.0018	0.0015					0.4049	0.0607
Annual	tons	FEIR_Mitigated	2022	Rail offsite	3.7187	21.4604	91.7599	8,198	2.2030	2.0708					2.2030	0.0838	0.6706	0.2179						

China Shipping Emissions Inventory by Source Category, by Scenario, and Analysis Period

Period	UOM	Scenario	Year	Source_category	VOC	CO	NOx	CO2	PM10 (PM10 exh, PM10TW, PM10BW)	PM25 (PM2.5 exh, PM2.5TW, PM2.5BW)	PM10TW	PM10BW	PM25TW	PM25BW	DPM	SOx	CH4	N2O	TOGdiesexh	TOGlngexh	PM10diesexh	PM10lngexh	PM10fdust	PM25fdust
Annual	tons	FEIR_Mitigated	2022	Rail onsite	0.4105	2.4268	10.0173	925	0.2376	0.2233					0.2376	0.0094	0.0753	0.0245						
Annual	tons	FEIR_Mitigated	2022	Trucks offsite	3.5205	1,359.7950	94.2039	137,698	18.9971	6.3249	3.6781	15.2423	0.9195	5.3348		-	246.3973	28.0706	-	251.4665	-	0.0768	16.8933	2.5340
Annual	tons	FEIR_Mitigated	2022	Trucks onsite	0.1154	40.6764	3.3937	2,902	0.1805	0.0611	0.0346	0.1435	0.0087	0.0502	-	-	8.0741	0.5916	-	8.2402	-	0.0024	6.2332	0.9350
Annual	tons	FEIR_Mitigated	2022	Trucks onsite idling	0.4560	65.8894	12.1627	9,176	0.0148	0.0136	-	-	-	-	-	-	31.7525	1.8706	-	32.4083	-	0.0148		
Annual	tons	FEIR_Mitigated	2023	CHE	4.8397	53.4427	17.3144	17,822	0.8284	0.7646					0.7980	0.0997	8.9456	0.3911						
Annual	tons	FEIR_Mitigated	2023	HC	0.0675	0.3259	1.5109	211	0.0219	0.0209					0.0219	0.0018	0.0097	0.0034						
Annual	tons	FEIR_Mitigated	2023	OGV	8.2399	15.4919	268.0913	9,006	2.5013	2.2994					2.2797	6.8856	0.1981	0.6492						
Annual	tons	FEIR_Mitigated	2023	PC offsite	0.1531	5.0203	0.4513	257	0.0190	0.0099	0.0058	0.0064	0.0015	0.0022		0.0025	0.0298	0.0254					1.6520	0.2478
Annual	tons	FEIR_Mitigated	2023	PC onsite	0.0045	0.1899	0.0093	67	0.0010	0.0007	0.0002	0.0002	-	-		0.0007	0.0012	0.0010					0.2904	0.0436
Annual	tons	FEIR_Mitigated	2023	Rail offsite	1.8412	10.7901	45.8914	4,122	1.0889	1.0236					1.0889	0.0421	0.3372	0.1096						
Annual	tons	FEIR_Mitigated	2023	Rail onsite	0.2123	1.2819	5.2137	489	0.1218	0.1145					0.1218	0.0049	0.0397	0.0129						
Annual	tons	FEIR_Mitigated	2023	Trucks offsite	3.7776	1,211.8257	91.3168	105,199	17.2928	5.7929	2.8281	14.4239	0.7070	5.0483		-	264.3916	21.4455	-	269.8311	-	0.0408	12.9895	1.9484
Annual	tons	FEIR_Mitigated	2023	Trucks onsite	0.1147	39.8405	3.1565	2,320	0.1634	0.0553	0.0266	0.1355	0.0066	0.0474	-	-	8.0303	0.4729	-	8.1955	-	0.0013	4.7841	0.7176
Annual	tons	FEIR_Mitigated	2023	Trucks onsite idling	0.2823	39.9848	7.4947	5,389	0.0097	0.0089	-	-	-	-	-	-	19.7554	1.0986	-	20.1618	-	0.0097		
Annual	tons	FEIR_Mitigated	2026	CHE	8.8547	62.8012	19.0485	18,609	1.1325	1.0445					1.1000	0.1022	9.5399	0.4142						
Annual	tons	FEIR_Mitigated	2026	HC	0.0439	0.2106	0.9755	136	0.0144	0.0138					0.0144	0.0012	0.0065	0.0024						
Annual	tons	FEIR_Mitigated	2026	OGV	5.8341	10.6103	175.3570	5,759	1.6449	1.5120					1.5294	4.3278	0.1366	0.4046						
Annual	tons	FEIR_Mitigated	2026	PC onsite	0.0031	0.1544	0.0068	60	0.0009	0.0006	0.0002	0.0002	-	-		0.0006	0.0009	0.0008					0.2788	0.0418
Annual	tons	FEIR_Mitigated	2026	Rail offsite	4.0497	25.7774	105.2808	9,845	2.3724	2.2301					2.3724	0.1004	0.8046	0.2615						
Annual	tons	FEIR_Mitigated	2026	Rail onsite	0.2575	1.6953	6.5174	645	0.1440	0.1353					0.1440	0.0065	0.0523	0.0170						
Annual	tons	FEIR_Mitigated	2026	Trucks onsite	0.0612	28.1826	1.5589	2,565	0.1846	0.0631	0.0355	0.1454	0.0089	0.0509	-	-	4.2826	0.5229	-	4.3707	-	0.0037	6.3933	0.9590
Annual	tons	FEIR_Mitigated	2026	Trucks onsite idling	0.1763	26.2888	4.7188	3,447	0.0065	0.0060	-	-	-	-	-	-	12.3396	0.7026	-	12.5935	-	0.0065		
Annual	tons	FEIR_Mitigated	2036	CHE	3.8558	40.2845	2.1142	13,136	0.2127	0.1975					0.1897	0.0721	6.7341	0.2922						
Annual	tons	FEIR_Mitigated	2036	HC	0.0196	0.2307	0.5425	203	0.0129	0.0124					0.0129	0.0017	0.0097	0.0036						
Annual	tons	FEIR_Mitigated	2036	OGV	16.3936	32.3778	136.0688	11,539	3.5988	3.3071					3.4295	7.0415	0.3108	0.5677						
Annual	tons	FEIR_Mitigated	2036	PC onsite	0.0022	0.1591	0.0059	72	0.0010	0.0005	0.0003	0.0003	-	0.0001		0.0007	0.0007	0.0009					0.3828	0.0574
Annual	tons	FEIR_Mitigated	2036	Rail offsite	2.7878	25.2457	79.0702	9,641	1.5451	1.4524					1.5451	0.0983	0.7880	0.2561						
Annual	tons	FEIR_Mitigated	2036	Rail onsite	0.2132	1.9107	5.7728	727	0.1113	0.1047					0.1113	0.0073	0.0589	0.0192						
Annual	tons	FEIR_Mitigated	2036	Trucks onsite	0.0390	28.5462	0.4863	3,321	0.2722	0.0940	0.0531	0.2120	0.0133	0.0742	-	-	2.7315	0.6770	-	2.7877	-	0.0071	9.5595	1.4339
Annual	tons	FEIR_Mitigated	2036	Trucks onsite idling	0.1855	41.8166	5.2068	5,206	0.0159	0.0146	-	-	-	-	-	-	12.9827	1.0613	-	13.2498	-	0.0159		
Annual	tons	FEIR_Mitigated	2045	CHE	5.1828	38.2432	2.0707	11,477	0.2308	0.2139					0.2107	0.0629	5.8838	0.2553						
Annual	tons	FEIR_Mitigated	2045	HC	0.0196	0.2307	0.5425	203	0.0129	0.0124					0.0129	0.0017	0.0097	0.0036						
Annual	tons	FEIR_Mitigated	2045	OGV	16.3936	32.3778	56.2907	11,539	3.5988	3.3071					3.4295	7.0415	0.3108	0.5677						
Annual	tons	FEIR_Mitigated	2045	PC onsite	0.0016	0.1477	0.0051	70	0.0009	0.0004	0.0003	0.0003	-	0.0001		0.0007	0.0006	0.0008					0.3828	0.0574
Annual	tons	FEIR_Mitigated	2045	Rail offsite	1.9803	35.5686	54.9401	13,585	0.8957	0.8420					0.8957	0.1387	1.1105	0.3609						
Annual	tons	FEIR_Mitigated	2045	Rail onsite	0.1381	1.9189	3.3516	729	0.0556	0.0523					0.0556	0.0072	0.0586	0.0191						
Annual	tons	FEIR_Mitigated	2045	Trucks onsite	0.0371	25.7687	0.3593	3,034	0.2449	0.0848	0.0498	0.1880	0.0124	0.0658	-	-	2.5969	0.6185	-	2.6503	-	0.0072	8.9622	1.3443
Annual	tons	FEIR_Mitigated	2045	Trucks onsite idling	0.1735	45.4633	5.0799	5,320	0.0203	0.0186	-	-	-	-	-	-	12.1433	1.0845	-	12.3931	-	0.0203		
Annual	tons	Revised_Project	2012	CHE	12.4244	126.6307	65.6214	13,548	2.0003	1.8977					1.2830	0.0503	0.6069	0.1211						
Annual	tons	Revised_Project	2012	HC	0.0661	0.4067	0.7070	53	0.0253	0.0234					0.0253	0.0004	0.0011	0.0024						
Annual	tons	Revised_Project	2012	OGV	4.7493	8.4897	75.8074	4,011	1.8752	1.7328					1.7854	8.1321	0.0444	0.2277						
Annual	tons	Revised_Project	2012	PC onsite	0.0132	0.2982	0.0225	42	0.0008	0.0005	0.0001	0.0001	-	-		0.0004	0.0027	0.0016					0.1540	0.0231
Annual	tons	Revised_Project	2012	Rail offsite	9.3032	37.5441	174.6112	14,342	5.9976	5.6374					5.9976	0.1464	1.1728	0.3811						
Annual	tons	Revised_Project	2012	Rail onsite	0.6374	2.7238	11.9406	1,037	0.3967	0.3720					0.3967	0.0104	0.0839	0.0274						
Annual	tons	Revised_Project	2012	Trucks onsite	0.4551	3.2568	4.7475	1,148	0.1366	0.0761	0.0143	0.0733	0.0036	0.0257	0.0488	0.0096	0.4639	0.1864	0.5102	0.4529	0.0488	-	2.6323	0.3948
Annual	tons	Revised_Project	2012	Trucks onsite idling	1.0680	4.2683	9.2629	870	0.1738	0.1663	-	-	-	-	0.1738	0.0075	0.2498	0.1400	1.1796	0.2388	0.1738	-		
Annual	tons	Revised_Project	2014	CHE	26.2672	259.3559	136.1772	23,637	2.1161	2.0441					0.9015	0.0917	1.0557	0.2110						
Annual	tons	Revised_Project	2014	HC	0.1935	1.1432	2.0602	148	0.0764	0.0705					0.0764	0.0013	0.0030	0.0064						
Annual	tons	Revised_Project	2014	OGV	7.3210	11.6720	198.8311	13,011	3.3416	3.0434					2.4843	7.5236	0.1455	0.8670						
Annual	tons	Revised_Project	2014	PC onsite	0.0093	0.2244	0.0161	38	0.0006	0.0004	0.0001	0.0001	-	-		0.0004	0.0020	0.0012					0.1479	0.0222
Annual	tons	Revised_Project	2014	Rail offsite	8.5627	38.6835	175.3671	14,777	5.4931	5.1633					5.4931	0.1510	1.2084	0.3927						
Annual	tons	Revised_Project	2014	Rail onsite	0.6339	3.0316	12.8578	1,154	0.3885	0.3642					0.3885	0.0116	0.0932	0.0304						
Annual	tons	Revised_Project	2014	Trucks onsite	0.7402	5.1563	9.3429	2,536	0.2278	0.1039	0.0327	0.1499	0.0082	0.0525	0.0450	0.0218	0.6567	0.4088	0.8317	0.6365	0.0450	0.0002	5.9465	0.8920
Annual	tons	Revised_Project	2014	Trucks onsite idling	1.9590	15.6167	43.3067	6,279	0.0183	0.0175	-	-	-	-	0.0178	0.0563	1.1808	1.0005	2.2121	1.1133	0.0178	0.0004		
Annual	tons	Revised_Project	2018	CHE	11.9694	226.8665	65.9179	10,530	1.0418	1.0027					0.4876	0.0395	0.4714	0.0943						
Annual	tons	Revised_Project	2018	HC	0.0465	0.2239	1.2936	138	0.0245	0.0234					0.0245	0.0012	0.0064	0.0024						
Annual	tons	Revised_Project	2018	OGV	6.8942	10.5260	214.4570	6,572	1.7932	1.6484					1.6364	5.0787	0.1641	0.4965						
Annual	tons	Revised_Project	2018	PC offsite	0.2236	5.6129	0.4864	187	0.0156	0.0094	0.0039	0.0043	0.0010	0.0015		0.0019	0.0368	0.0243					0.1820	0.1623
Annual	tons	Revised_Project	2018	PC onsite	0.0057	0.1781	0.0110	47	0.0007	0.0005	0.0001	0.0001	-	-		0.0005	0.0013	0.0009					0.1902	0.0285
Annual	tons	Revised_Project	2018	Rail offsite	1.0091	5.3404	23.3880	2,040	0.6023	0.5661					0.6023	0.0207	0.1668	0.0542						
Annual	tons	Revised_Project	2018	Rail onsite	0.0846	0.4734	1.9328	180	0.0484	0.0455					0.0484	0.0018	0.0146	0.0048						
Annual	tons	Revised_Project	2018	Trucks offsite	4.0660	30.5572	188.4126	60,455	6.1365	2.8854	1.3183	3.3853	0.3296	1.1848		0.5537	3.4731	9.5998	4.5754	3.3541	1.4319	0.0011	6.1582	0.9237
Annual	tons	Revised_Project	2018	Trucks onsite	0.2319	1.2719	3.3789	982	0.0838	0.0368	0.0130	0.0564	0.0033	0.0197	0.0143	0.0089	0.1223	0.1564	0.2622	0.1139	0.0143	-	2.3860	0.3579
Annual	tons	Revised_Project	2018	Trucks onsite idling	0.7254	7.7061	12.8804	2,134	0.0046	0.0044	-	-	-	-	0.0045	0.0197	0.2089	0.3381	0.8229	0.1790	0.0045	-		
Annual	tons	Revised_Project	2019	CHE	6.5033	31.0690	34.1579	10,374	0.9415	0.9063					0.4391	0.0435	0.4609	0.0921						
Annual	tons	Revised_Project	2019	HC	0.0474	0.2286	1.3180	140	0.0244	0.0233					0.0244	0.0011	0.0064	0.0024						
Annual	tons	Revised_Project	2019	OGV	10.3413	17.1196	224.3271	8,414	2.3947	2.2012					2.1918	5.7688	0.2160	0.5328						
Annual	tons	Revised_Project	2019	PC offsite	0.1413	4.3066	0.3829	161	0.0131	0.0077	0.0034	0.0037	0.0008	0.0013		0.0016	0.0260	0.0197					0.9445	0.1417
Annual	tons	Revised_Project	2019	PC onsite	0.0042	0.1418	0.0083	40	0.0006	0.0004	0.0001	0.0001	-	-		0.0004	0.0010	0.0008					0.1660	0.0249
Annual	tons	Revised_Project	2019	Rail offsite	0.8394	4.5677	19.8392	1,745	0.4994	0.4695					0.4994	0.0178	0.1427	0.0464						
Annual	tons	Revised_Project	2019	Rail onsite	0.0710	0.4083	1.6486	155	0.0403	0.0379					0.0403	0.0016	0.0126	0.0041						
Annual	tons	Revised_Project	2019	Trucks offsite	3.8787	31.5162	183.6811	62,510	6.1696	2.8412	1.3643	3.4566	0.3411	1.2098		0.5721	3.7240	9.9341	4.3579	3.6192	1.3475	0.0011	6.3757	0.9564
Annual	tons	Revised_Project	2019	Trucks onsite	0.2288	1.3426	3.4587	1,031	0.0862	0.0367	0.0138	0.0594	0.0035	0.0208	0.0130	0.0093	0.1360	0.1644	0.2584	0.1280	0.0130	-	2.5288	0.3793
Annual	tons	Revised_Project	2019	Trucks onsite idling	0.7779	8.5575	13.4715	2,256	0.0049	0.0046	-	-	-	-	0.0048	0.0208	0.2242	0.3577	0.8824	0.1921	0.0048	-		
Annual	tons	Revised_Project	2020	CHE	11.5459	46.8614	50.1206	14,987	1.2815	1.2237					0.7222	0.0740	0.6574	0.1315						
Annual	tons	Revised_Project	2020	HC	0.0497	0.2331	1.4061	148	0.0249	0.0237					0.0249	0.0012	0.0068	0.0021						
Annual	tons	Revised_Project	2020	OGV	8.6067	15.0712	242.7773	10,399	2.6875	2.4712					2.2667	7.2071	0.1906	0.6863						
Annual	tons	Revised_Project	2020	PC offsite	0.2154	6.8098	0.6030	275	0.0219	0.0125	0.0059	0.0065	0.0015	0.0023		0.0027	0.0400	0.0316					0.1436	0.2155
Annual	tons	Revised_Project	2020	PC onsite	0.0057	0.2023	0.0114	61	0.0010	0.0007	0.0002	0.0002	-	-		0.0006	0.0014	0.0011					0.2525	0.0379
Annual	tons	Revised_Project	2020	Rail offsite	1.7095	9.5074	41.1008	3,632	1.0161	0.9551					1.0161	0.0370	0.2970	0.0965						
Annual	tons	Revised_Project	2020	Rail onsite	0.1780	1.0268	4.2231	391	0.1025	0.0963					0.1025	0.0039	0.0318	0.0103						
Annual	tons	Revised_Project	2020	Trucks offsite	5.2493	52.6880	252.3462	93,906	9.0691	4.0964	2.0510	5.1599	0.5128	1.8060		0.8536	6.7941	14.9690	5.8694	6.6894	1.8561	0.0021	9.5972	1.4396
Annual	tons	Revised_Project	2020	Trucks onsite	0.2349	1.8881	4.2498	1,429	0.1171	0.0471	0.0198	0.0840	0.0049	0.0294	0.0133	0.0128	0.2320	0.2289	0.2638	0.2258	0.0133		3.6261	0.5439
Annual	tons	Revised_Project	2020	Trucks onsite idling	1.0332	11.9804	17.2332	2,981	0.0061	0.0059	-	-	-	-	0.0060	0.0274	0.3672	0.4739	1.1710	0.3261	0.0060	0.0001		
Annual	tons	Revised_Project	2021	CHE	30.5375	79.5929	106.2186	23,490	2.2683	2.1603					1.3492	0.1213	1.0262	0.2052						
Annual	tons	Revised_Project	2021	HC	0.0666	0.3103	1.8757	197	0.0332	0.0317					0.0332	0.0013	0.0090	0.0027						
Annual	tons	Revised_Project	2021	OGV	22.2894	48.0175	575.3187	43,128	10.1045	9.2952					7.4497	26.9214	0.4421	2.5199						
Annual	tons	Revised_Project	2021	PC offsite	0.2732	8.8623	0.7748	386	0.0300	0.0167	0.0084	0.0092	0.0021	0.0032		0.0038	0.0521	0.0421					0.2558	0.3534
Annual	tons	Revised_Project	2021	PC onsite	0.0082	0.3101	0.0167	99	0.0015	0.0010	0.0003	0.0003	-	0.0001		0.0010	0.0020	0.0016					0.4141	0.0621
Annual	tons	Revised_Project	2021	Rail offsite	2.7896	15.8218	68.0191	6,044	1.6553	1.5560					1.6553	0.0617	0.4944	0.1607						
Annual	tons	Revised_Project	2021	Rail onsite	0.3034	1.7732	7.3074	676	0.1752	0.1646					0.1752	0.0068	0.0550	0.0179						
Annual	tons	Revised_Project	2021	Trucks offsite	6.9093	84.3673	345.4122	150,898	14.3314	6.4306	3.3006	8.1551	0.8251	2.8543		1.3681	11.5729	24.0713	7.6826	11.4911	2.8721	0.0036	15.4522	2.3178

China Shipping Emissions Inventory by Source Category, by Scenario, and Analysis Period

Period	UOM	Scenario	Year	Source_category	VOC	CO	NOx	CO2	PM10 (PM10 exh, PM10TW, PM10BW)	PM25 (PM2.5 exh, PM2.5TW, PM2.5BW)	PM10TW	PM10BW	PM25TW	PM25BW	DPM	SOx	CH4	N2O	TOGdiesexh	TOGlngexh	PM10diesexh	PM10lngexh	PM10fdust	PM25fdust
Annual	tons	Revised_Project	2021	Trucks onsite	0.3684	3.0809	6.6693	2,248	0.1824	0.0734	0.0311	0.1304	0.0078	0.0456	0.0208	0.0200	0.3872	0.3604	0.4134	0.3780	0.0208	0.0001	5.7000	0.8550
Annual	tons	Revised_Project	2021	Trucks onsite idling	4.0227	48.9398	64.3035	11,452	0.0228	0.0218	-	-	-	-	0.0222	0.1047	1.5404	1.8224	4.5574	1.3825	0.0222	0.0005		
Annual	tons	Revised_Project	2022	CHE	35.0937	84.5289	113.6818	24,403	2.9555	2.7935					2.0252	0.1286	1.0641	0.2128						
Annual	tons	Revised_Project	2022	HC	0.0430	0.2085	0.9665	135	0.0139	0.0132					0.0139	0.0009	0.0060	0.0020						
Annual	tons	Revised_Project	2022	OGV	5.9117	9.1445	194.9344	6,648	1.7194	1.5807					1.5177	4.9447	0.1384	0.4812						
Annual	tons	Revised_Project	2022	PC offsite	0.2397	7.8144	0.6919	368	0.0278	0.0150	0.0082	0.0090	0.0020	0.0031		0.0036	0.0462	0.0382					2.3032	0.3455
Annual	tons	Revised_Project	2022	PC onsite	0.0071	0.2826	0.0145	95	0.0015	0.0010	0.0003	0.0003	-	0.0001		0.0009	0.0018	0.0015					0.4049	0.0607
Annual	tons	Revised_Project	2022	Rail offsite	3.7187	21.4604	91.7599	8,198	2.2030	2.0708					2.2030	0.0838	0.6706	0.2179						
Annual	tons	Revised_Project	2022	Rail onsite	0.4105	2.4268	10.0173	925	0.2376	0.2233					0.2376	0.0094	0.0753	0.0245						
Annual	tons	Revised_Project	2022	Trucks offsite	5.1580	93.1459	286.8440	163,951	15.1899	6.7283	3.6035	8.6653	0.9009	3.0329		1.4796	14.0044	26.1870	5.6480	14.0573	2.9168	0.0043	16.8933	2.5340
Annual	tons	Revised_Project	2022	Trucks onsite	0.2592	3.2327	6.2457	2,382	0.1913	0.0735	0.0339	0.1409	0.0085	0.0493	0.0163	0.0210	0.4631	0.3828	0.2877	0.4606	0.0163	0.0001	6.2332	0.9350
Annual	tons	Revised_Project	2022	Trucks onsite idling	4.6910	59.8613	71.9099	13,153	0.0252	0.0241	-	-	-	-	0.0244	0.1197	1.9917	2.0959	5.3113	1.8117	0.0244	0.0008		
Annual	tons	Revised_Project	2023	CHE	33.6450	81.3988	96.8363	23,434	2.6605	2.5204					1.7504	0.1217	1.0232	0.2046						
Annual	tons	Revised_Project	2023	HC	0.0675	0.3259	1.5109	211	0.0219	0.0209					0.0219	0.0018	0.0097	0.0034						
Annual	tons	Revised_Project	2023	OGV	8.3587	16.0442	272.0240	9,345	2.5806	2.3723					2.3366	7.0983	0.2005	0.6688						
Annual	tons	Revised_Project	2023	PC offsite	0.1531	5.0203	0.4513	257	0.0190	0.0099	0.0058	0.0064	0.0015	0.0022		0.0025	0.0298	0.0254					1.6520	0.2478
Annual	tons	Revised_Project	2023	PC onsite	0.0045	0.1899	0.0093	67	0.0010	0.0007	0.0002	0.0002	-	-		0.0007	0.0012	0.0010					0.2904	0.0436
Annual	tons	Revised_Project	2023	Rail offsite	1.8412	10.7901	45.8914	4,122	1.0889	1.0236					1.0889	0.0421	0.3372	0.1096						
Annual	tons	Revised_Project	2023	Rail onsite	0.2123	1.2819	5.2137	489	0.1218	0.1145					0.1218	0.0049	0.0397	0.0129						
Annual	tons	Revised_Project	2023	Trucks offsite	1.2879	77.2779	121.6160	124,944	11.2900	4.8601	2.7709	6.5647	0.6927	2.2977		1.1245	15.6108	19.9716	1.2131	15.8814	1.9520	0.0024	12.9895	1.9484
Annual	tons	Revised_Project	2023	Trucks onsite	0.0367	2.6512	3.6426	1,747	0.1335	0.0474	0.0260	0.1020	0.0065	0.0357	0.0054	0.0152	0.4740	0.2816	0.0340	0.4824	0.0054	-	4.7841	0.7176
Annual	tons	Revised_Project	2023	Trucks onsite idling	3.1221	48.2394	37.1384	7,962	0.0138	0.0132	-	-	-	-	0.0132	0.0724	1.3070	1.2691	3.5354	1.1867	0.0132	0.0005		
Annual	tons	Revised_Project	2026	CHE	34.7490	242.0248	83.9934	22,768	1.5752	1.4865					1.1082	0.1262	5.6701	0.3330						
Annual	tons	Revised_Project	2026	HC	0.0439	0.2106	0.9755	136	0.0144	0.0138					0.0144	0.0012	0.0065	0.0024						
Annual	tons	Revised_Project	2026	OGV	5.9572	11.1176	178.2182	6,042	1.7150	1.5765					1.5825	4.5066	0.1388	0.4192						
Annual	tons	Revised_Project	2026	PC onsite	0.0031	0.1544	0.0068	60	0.0009	0.0006	0.0002	0.0002	-	-		0.0006	0.0009	0.0008					0.2788	0.0418
Annual	tons	Revised_Project	2026	Rail offsite	4.0497	25.7774	105.2808	9,845	2.3724	2.2301					2.3724	0.1004	0.8046	0.2615						
Annual	tons	Revised_Project	2026	Rail onsite	0.2575	1.6953	6.5174	645	0.1440	0.1353					0.1440	0.0065	0.0523	0.0170						
Annual	tons	Revised_Project	2026	Trucks onsite	0.0344	2.7209	2.8485	2,330	0.1739	0.0601	0.0348	0.1346	0.0087	0.0471	0.0041	0.0201	0.3525	0.3768	0.0334	0.3584	0.0041	0.0003	6.3933	0.9590
Annual	tons	Revised_Project	2026	Trucks onsite idling	1.8436	29.1821	12.5650	4,667	0.0050	0.0048	-	-	-	-	0.0045	0.0415	1.0968	0.7484	2.0823	1.0327	0.0045	0.0005		
Annual	tons	Revised_Project	2036	CHE	5.3892	44.3703	3.7259	14,347	0.3517	0.3254					0.3284	0.0834	6.7833	0.3022						
Annual	tons	Revised_Project	2036	HC	0.0196	0.2307	0.5425	203	0.0129	0.0124					0.0129	0.0017	0.0097	0.0036						
Annual	tons	Revised_Project	2036	OGV	16.4731	32.6610	138.5799	11,900	3.6804	3.3821					3.4883	7.2617	0.3124	0.5882						
Annual	tons	Revised_Project	2036	PC onsite	0.0022	0.1591	0.0059	72	0.0010	0.0005	0.0003	0.0003	-	0.0001		0.0007	0.0007	0.0009					0.3828	0.0574
Annual	tons	Revised_Project	2036	Rail offsite	2.7878	25.2457	79.0702	9,641	1.5451	1.4524					1.5451	0.0983	0.7880	0.2561						
Annual	tons	Revised_Project	2036	Rail onsite	0.2132	1.9107	5.7728	727	0.1113	0.1047					0.1113	0.0073	0.0589	0.0192						
Annual	tons	Revised_Project	2036	Trucks onsite	0.0418	2.8037	2.2112	2,935	0.2672	0.0919	0.0522	0.2090	0.0131	0.0732	0.0053	0.0252	0.2258	0.4750	0.0440	0.2286	0.0053	0.0006	9.5595	1.4339
Annual	tons	Revised_Project	2036	Trucks onsite idling	2.9767	47.1870	10.6033	6,449	0.0081	0.0077	-	-	-	-	0.0068	0.0570	1.2021	1.0359	3.3714	1.0865	0.0068	0.0013		
Annual	tons	Revised_Project	2045	CHE	5.8292	40.1615	2.3726	12,535	0.2599	0.2407					0.2396	0.0729	5.9267	0.2641						
Annual	tons	Revised_Project	2045	HC	0.0196	0.2307	0.5425	203	0.0129	0.0124					0.0129	0.0017	0.0097	0.0036						
Annual	tons	Revised_Project	2045	OGV	16.4731	32.6610	57.5007	11,900	3.6804	3.3821					3.4883	7.2617	0.3124	0.5882						
Annual	tons	Revised_Project	2045	PC onsite	0.0016	0.1477	0.0051	70	0.0009	0.0004	0.0003	0.0003	-	0.0001		0.0007	0.0006	0.0008					0.3828	0.0574
Annual	tons	Revised_Project	2045	Rail offsite	1.9803	35.5686	54.9401	13,585	0.8957	0.8420					0.8957	0.1387	1.1105	0.3609						
Annual	tons	Revised_Project	2045	Rail onsite	0.1381	1.9189	3.3516	729	0.0556	0.0523					0.0556	0.0072	0.0586	0.0191						
Annual	tons	Revised_Project	2045	Trucks onsite	0.0383	2.5125	1.5511	2,476	0.2578	0.0887	0.0491	0.2032	0.0123	0.0711	0.0049	0.0211	0.2146	0.4016	0.0401	0.2173	0.0049	0.0006	8.9622	1.3443
Annual	tons	Revised_Project	2045	Trucks onsite idling	3.1083	49.4459	8.2206	6,316	0.0088	0.0084	-	-	-	-	0.0071	0.0557	1.1395	1.0154	3.5224	1.0162	0.0071	0.0017		
Daily	lbs	Baseline	2008	CHE	27.4399	458.0395	275.2029	48,600	8.2969	7.8832					5.1713	0.1700	1.9738	0.3947						
Daily	lbs	Baseline	2008	HC	2.8939	11.4662	40.2675	1,727	1.7424	1.6048					1.7424	0.0180	0.0428	0.0775						
Daily	lbs	Baseline	2008	OGV	61.8963	70.4380	1,138.3621	73,497	107.7820	86.6994					82.8081	1,154.1634	0.5791	4.4683						
Daily	lbs	Baseline	2008	PC offsite	1.9665	70.4279	6.2618	7,107	0.1474	0.0905	0.0348	0.0385	0.0087	0.0135	-	0.0693	0.3802	0.4127	-	-	-	-	1.3924	0.2089
Daily	lbs	Baseline	2008	PC onsite	0.1567	3.2934	0.2608	345	0.0084	0.0063	0.0011	0.0012	0.0003	0.0004		0.0034	0.0310	0.0174					1.1522	0.1728
Daily	lbs	Baseline	2008	Rail offsite	93.7956	300.8979	1,703.8289	114,947	60.0954	56.4875					60.0954	1.1749	9.4012	3.0555						
Daily	lbs	Baseline	2008	Rail onsite	6.2115	20.2273	111.8724	7,712	3.8834	3.6447					3.8834	0.0780	0.6272	0.2042						
Daily	lbs	Baseline	2008	Trucks offsite	77.2584	297.5236	1,412.5242	130,912	48.3780	39.4782	2.5114	8.2899	0.6279	2.9015	37.5182	1.1918	12.8398	20.7386	86.0952	11.2263	37.5182	0.0585	4.3653	0.6548
Daily	lbs	Baseline	2008	Trucks onsite	13.7296	28.4710	63.7272	6,656	4.2581	3.7693	0.0794	0.4096	0.0198	0.1434	3.7691	0.0627	0.6377	1.0437	15.6301	-	3.7691	-	13.6633	2.0495
Daily	lbs	Baseline	2008	Trucks onsite idling	5.7118	17.7956	37.0223	3,001	1.0071	0.9635	-	-	-	-	1.0071	0.0283	0.2653	0.4706	6.5025	-	1.0071	-		
Daily	lbs	FEIR Mitigated	2012	PC offsite	1.2238	49.2478	4.2111	6,773	0.1153	0.0614	0.0344	0.0381	0.0086	0.0133	-	0.0669	0.2461	0.2946	-	-	-	-	1.3922	0.2088
Daily	lbs	FEIR Mitigated	2012	Trucks offsite	15.7851	938.0779	501.0174	179,557	28.2726	13.7813	4.1811	16.9953	1.0453	5.9484	7.0551	0.9460	195.0726	32.0100	14.6115	198.6730	7.0551	0.0411	6.9443	1.0416
Daily	lbs	FEIR Mitigated	2014	PC offsite	0.9125	39.7758	3.1959	6,618	0.1042	0.0536	0.0325	0.0360	0.0081	0.0126	-	0.0658	0.1886	0.2349	-	-	-	-	1.5738	0.2361
Daily	lbs	FEIR Mitigated	2014	Trucks offsite	19.4514	2,617.7938	707.6428	391,551	49.2519	18.2887	9.5608	36.3740	2.3902	12.7309	3.1547	1.2654	485.2854	73.5370	13.8061	495.1482	3.1547	0.1624	16.7145	2.5072
Daily	lbs	FEIR Mitigated	2026	PC offsite	0.5135	48.9713	2.3487	18,549	0.2905	0.1402	0.0982	0.1073	0.0246	0.0376	-	0.1834	0.1399	0.2862	-	-	-	-	4.4537	0.6681
Daily	lbs	FEIR Mitigated	2026	Trucks offsite	5.1264	2,241.3035	123.2841	310,349	48.3025	16.1254	9.4277	38.5900	2.3569	13.5065	-	-	358.7921	63.2666	-	366.1736	-	0.2849	15.2022	2.2803
Daily	lbs	FEIR Mitigated	2036	PC offsite	0.1826	26.0483	1.0193	10,894	0.1749	0.0734	0.0680	0.0736	0.0170	0.0258	-	0.1077	0.0575	0.1551	-	-	-	-	3.2202	0.4830
Daily	lbs	FEIR Mitigated	2036	Trucks offsite	3.4936	2,230.5050	58.2687	426,999	71.1359	23.8147	14.1329	56.4228	3.5332	19.7480	-	-	244.5152	87.0465	-	249.5457	-	0.5802	23.2596	3.4889
Daily	lbs	FEIR Mitigated	2045	PC offsite	0.1463	25.0540	0.8987	10,664	0.1681	0.0667	0.0684	0.0739	0.0171	0.0259	-	0.1054	0.0505	0.1481	-	-	-	-	3.2283	0.4842
Daily	lbs	FEIR Mitigated	2045	Trucks offsite	3.7198	2,328.4620	51.3558	423,238	64.2905	21.5499	13.3215	50.3011	3.3304	17.6054	-	-	260.3421	86.2799	-	265.6982	-	0.6679	21.8593	3.2789
Daily	lbs	FEIR_Mitigated	2012	CHE	83.5553	980.3049	346.6282	97,571	11.4059	10.9525					5.6673	0.3026	4.4165	0.8833						
Daily	lbs	FEIR_Mitigated	2012	HC	2.5492	15.6731	27.2461	2,057	0.9762	0.9024					0.9762	0.0214	0.0423	0.0926						
Daily	lbs	FEIR_Mitigated	2012	OGV	48.8166	77.7206	417.2697	37,701	15.3541	14.2582					13.6320	82.3952	0.2167	2.6608						
Daily	lbs	FEIR_Mitigated	2012	PC onsite	0.1056	2.3855	0.1797	332	0.0060	0.0042	0.0011	0.0012	0.0003	0.0004		0.0033	0.0217	0.0127					1.2320	0.1848
Daily	lbs	FEIR_Mitigated	2012	Rail offsite	74.4257	300.3536	1,396.8902	114,736	47.9815	45.1005					47.9815	1.1726	9.3831	3.0496						
Daily	lbs	FEIR_Mitigated	2012	Rail onsite	5.0993	21.7905	95.5246	8,296	3.1732	2.9761					3.1732	0.0834	0.6715	0.2191						
Daily	lbs	FEIR_Mitigated	2012	Trucks onsite	2.2697	91.7887	27.4603	9,665	0.9253	0.4459	0.1154	0.5894	0.0289	0.2063	0.2170	0.0427	17.8163	1.7650	2.2675	18.1165	0.2170	0.0034	21.0584	3.1588
Daily	lbs	FEIR_Mitigated	2012	Trucks onsite idling	5.8760	45.6609	44.7190	6,472	0.7727	0.7393	-	-	-	-	0.7724	0.0334	8.2821	1.1574	5.2427	9.5507	0.7724	0.0003		
Daily	lbs	FEIR_Mitigated	2014	CHE	212.5729	2,215.6405	560.0468	174,273	11.1676	11.0807					1.0866	0.5581	7.8747	1.5748						
Daily	lbs	FEIR_Mitigated	2014	HC	4.5604	26.9457	48.5594	3,484	1.8018	1.6642					1.8018	0.0363	0.0724	0.1568						
Daily	lbs	FEIR_Mitigated	2014	OGV	218.4421	273.8969	4,452.9653	273,159	77.1694	70.6763					63.2031	143.2219	4.1489	17.4265						
Daily	lbs	FEIR_Mitigated	2014	PC onsite	0.0771	1.8621	0.1339	318	0.0052	0.0035	0.0010	0.0011	0.0002	0.0004		0.0032	0.0162	0.0099					1.1832	0.1775
Daily	lbs	FEIR_Mitigated	2014	Rail offsite	71.0608	321.0259	1,455.3286	122,632	45.5865	42.8489					45.5865	1.2533	10.0287	3.2596						
Daily	lbs	FEIR_Mitigated	2014	Rail onsite	5.2610	25.1584	106.7036	9,573	3.2244	3.0220					3.2244	0.0960	0.7736	0.2526						
Daily	lbs	FEIR_Mitigated	2014	Trucks onsite	2.6686	225.2458	43.7682	22,383	1.5976	0.6144	0.2730	1.1878	0.0682	0.4157	0.1221	0.0591	44.2104	4.2695	2.2555	45.0909	0.1221	0.0148	47.5722	7.1358
Daily	lbs	FEIR_Mitigated	2014	Trucks onsite idling	6.3910	190.7865	145.9098	38,329	0.0793	0.0747	-	-	-	-	0.0484	0.1527	77.5035	7.0555	5.9992	78.8680	0.0484	0.0310		
Daily	lbs	FEIR_Mitigated	2018	CHE	5.3326	160.6876	39.2513	61,079	1.7073	1.5828					1.5566	0.2413	43.2563	1.7183						
Daily	lbs	FEIR_Mitigated	2018	HC	0.3485	1.6752	9.6775	1,029	0.1843	0.1759					0.1843	0.0106	0.0489	0.0194						
Daily	lbs	FEIR_Mitigated	2018	OGV	58.3575	113.2470	893.3606	61,351	16.5624	15.2305					13.6590	37.4173	1.1084	3.3055						
Daily	lbs	FEIR_Mitigated	2018	PC offsite	1.8233	45.7720	3.9662	1,527	0.1273	0.0765	0.0314	0.0347	0.0079	0.0121		0.0151	0.3002	0.1978					8.8239	1.3236
Daily	lbs	FEIR_Mitigated	2018	PC onsite	0.0466	1.4522	0.0894	381	0.0060	0.0041	0.0011	0.0012	0.0003	0.0004		0.0038	0.0108	0.0077					1.5216	0.2282
Daily	lbs	FEIR_Mitigated	2018	Rail offsite	8.2287	43.5501	190.7250	16,635	4.9114	4.6167					4.9114	0.1700	1.3603	0.4421						
Daily	lbs	FEIR_Mitigated	2018	Rail onsite	0.6903	3.8601	15.7612	1,470	0.3947	0.3710					0.3947	0.0147	0.1191	0.0388						
Daily	lbs	FEIR_Mitigated	2018	Trucks offsite	10.2669	4,061.4304	280.0925	415,004	55.3568	18.4144	10.9339	44.1895	2.7335	15.4663		-	718.5666	84.6013	-	733.3499	-	0.2335	50.2190	7.5328
Daily	lbs	FEIR_Mitigated	2018	Trucks onsite	0.3487	122.5626	10.4458	9,068	0.5527	0.1871	0.1081	0.4368	0.0270	0.1529	-	-	24.4049	1.8486	-	24.9069	-	0.0078	19.0881	2.8632
Daily	lbs	FEIR_Mitigated	2018	Trucks onsite idling	0.5539	77.5037	14.7177	10,888	0.0159	0.0146	-	-	-	-	-	-	38.3362	2.2195	-	39.1319	-	0.0159		

China Shipping Emissions Inventory by Source Category, by Scenario, and Analysis Period

Period	UOM	Scenario	Year	Source_category	VOC	CO	NOx	CO2	PM10 (PM10 exh, PM10TW, PM10BW)	PM25 (PM2.5 exh, PM2.5TW, PM2.5BW)	PM10TW	PM10BW	PM25TW	PM25BW	DPM	SOx	CH4	N2O	TOGdiesexh	TOGlngexh	PM10diesexh	PM10lngexh	PM10fdust	PM25fdust
Daily	lbs	FEIR_Mitigated	2019	CHE	6.2625	159.8605	45.5549	62,101	1.9506	1.8055					1.8140	0.2811	39.4900	1.6124						
Daily	lbs	FEIR_Mitigated	2019	HC	0.6492	3.1230	18.0065	1,915	0.3342	0.3190					0.3342	0.0197	0.0911	0.0366						
Daily	lbs	FEIR_Mitigated	2019	OGV	88.5781	181.3801	1,542.4603	100,923	26.7670	24.6135					21.9840	61.5498	1.6824	5.4268						
Daily	lbs	FEIR_Mitigated	2019	PC offsite	1.1523	35.1276	3.1232	1,315	0.1070	0.0627	0.0275	0.0303	0.0069	0.0106		0.0130	0.2120	0.1605					7.7039	1.1556
Daily	lbs	FEIR_Mitigated	2019	PC onsite	0.0343	1.1566	0.0681	329	0.0052	0.0035	0.0010	0.0011	0.0002	0.0004		0.0033	0.0082	0.0061					1.3282	0.1992
Daily	lbs	FEIR_Mitigated	2019	Rail offsite	6.8463	37.2570	161.8219	14,231	4.0736	3.8292					4.0736	0.1454	1.1636	0.3782						
Daily	lbs	FEIR_Mitigated	2019	Rail onsite	0.5792	3.3303	13.4468	1,268	0.3291	0.3093					0.3291	0.0127	0.1027	0.0334						
Daily	lbs	FEIR_Mitigated	2019	Trucks offsite	10.6279	4,180.0999	288.2180	427,202	57.6744	19.1899	11.3226	46.1128	2.8307	16.1395		-	743.8319	87.0879	-	759.1350	-	0.2390	52.0045	7.8007
Daily	lbs	FEIR_Mitigated	2019	Trucks onsite	0.3759	132.2033	11.1787	9,633	0.5894	0.1995	0.1146	0.4666	0.0286	0.1633	-	-	26.3118	1.9637	-	26.8531	-	0.0082	20.2307	3.0346
Daily	lbs	FEIR_Mitigated	2019	Trucks onsite idling	0.5697	82.5736	15.2771	11,310	0.0165	0.0152	-	-	-	-	-	-	39.4821	2.3057	-	40.3007	-	0.0165		
Daily	lbs	FEIR_Mitigated	2020	CHE	21.7733	209.5417	144.3728	99,767	5.9738	5.4977					2.9552	0.9183	4.8196	0.8323						
Daily	lbs	FEIR_Mitigated	2020	HC	0.8057	3.7658	22.7146	2,394	0.4040	0.3858					0.4040	0.0246	0.1138	0.0425						
Daily	lbs	FEIR_Mitigated	2020	OGV	71.4086	109.2512	3,915.3644	119,918	29.6374	27.2566					24.4332	97.9219	2.1845	10.0606						
Daily	lbs	FEIR_Mitigated	2020	PC offsite	1.7370	54.9079	4.8624	2,221	0.1767	0.1011	0.0474	0.0521	0.0118	0.0182		0.0220	0.3225	0.2547					11.5823	1.7373
Daily	lbs	FEIR_Mitigated	2020	PC onsite	0.0459	1.6308	0.0920	491	0.0082	0.0054	0.0017	0.0018	0.0004	0.0006		0.0049	0.0110	0.0085					2.0200	0.3030
Daily	lbs	FEIR_Mitigated	2020	Rail offsite	13.7840	76.6589	331.3985	29,284	8.1929	7.7013					8.1929	0.2993	2.3951	0.7784						
Daily	lbs	FEIR_Mitigated	2020	Rail onsite	1.4355	8.2790	34.0509	3,155	0.8264	0.7769					0.8264	0.0318	0.2563	0.0834						
Daily	lbs	FEIR_Mitigated	2020	Trucks offsite	15.8418	6,227.6071	429.5446	636,137	85.7773	28.5395	16.8480	68.5741	4.2120	24.0009		-	1,108.7450	129.6808	-	1,131.5556	-	0.3551	77.3825	11.6074
Daily	lbs	FEIR_Mitigated	2020	Trucks onsite	0.5347	187.9433	15.8889	13,669	0.8303	0.2809	0.1624	0.6564	0.0406	0.2297	-	-	37.4215	2.7865	-	38.1914	-	0.0115	29.0091	4.3514
Daily	lbs	FEIR_Mitigated	2020	Trucks onsite idling	0.7782	111.9593	20.7847	15,605	0.0233	0.0214	-	-	-	-	-	-	54.0383	3.1812	-	55.1570	-	0.0233		
Daily	lbs	FEIR_Mitigated	2021	CHE	29.0337	394.9729	126.7666	136,044	5.6893	5.2538					5.4442	0.7325	71.8398	3.0923						
Daily	lbs	FEIR_Mitigated	2021	HC	0.6430	2.9962	18.1120	1,903	0.3225	0.3079					0.3225	0.0195	0.0905	0.0329						
Daily	lbs	FEIR_Mitigated	2021	OGV	42.8628	74.5565	2,111.7330	76,253	18.7740	17.2685					15.3865	58.4518	1.2108	5.8012						
Daily	lbs	FEIR_Mitigated	2021	PC offsite	2.1821	70.7730	6.1873	3,084	0.2395	0.1334	0.0671	0.0737	0.0168	0.0258		0.0305	0.4157	0.3358					18.8132	2.8220
Daily	lbs	FEIR_Mitigated	2021	PC onsite	0.0658	2.4764	0.1334	788	0.0122	0.0082	0.0024	0.0026	0.0006	0.0009		0.0078	0.0164	0.0131					3.3129	0.4969
Daily	lbs	FEIR_Mitigated	2021	Rail offsite	22.2771	126.3507	543.1916	48,268	13.2190	12.4259					13.2190	0.4935	3.9480	1.2831						
Daily	lbs	FEIR_Mitigated	2021	Rail onsite	2.4232	14.1606	58.3560	5,398	1.3987	1.3148					1.3987	0.0545	0.4390	0.1429						
Daily	lbs	FEIR_Mitigated	2021	Trucks offsite	25.4023	9,925.3212	685.4013	1,013,811	137.5837	45.7890	26.8670	110.1522	6.7167	38.5533		-	1,777.8733	206.6720	-	1,814.4501	-	0.5645	123.3992	18.5099
Daily	lbs	FEIR_Mitigated	2021	Trucks onsite	0.8355	294.2060	24.7314	21,303	1.3074	0.4425	0.2529	1.0367	0.0632	0.3628	-	-	58.4785	4.3428	-	59.6815	-	0.0178	45.5997	6.8400
Daily	lbs	FEIR_Mitigated	2021	Trucks onsite idling	3.0752	441.7862	81.9989	61,839	0.0959	0.0882	-	-	-	-	-	-	213.8773	12.6063	-	218.2995	-	0.0959		
Daily	lbs	FEIR_Mitigated	2022	CHE	36.9402	432.4360	142.9421	145,360	6.6581	6.1456					6.4058	0.8034	74.1578	3.2260						
Daily	lbs	FEIR_Mitigated	2022	HC	0.8371	4.0299	18.6837	2,614	0.2741	0.2617					0.2741	0.0261	0.1243	0.0456						
Daily	lbs	FEIR_Mitigated	2022	OGV	59.5188	83.4180	3,834.3908	82,775	21.9403	20.1731					19.9785	79.1474	2.0547	8.2456						
Daily	lbs	FEIR_Mitigated	2022	PC offsite	1.9466	63.4627	5.6191	2,985	0.2261	0.1221	0.0663	0.0728	0.0166	0.0255		0.0295	0.3748	0.3103					18.7046	2.8057
Daily	lbs	FEIR_Mitigated	2022	PC onsite	0.0576	2.2947	0.1180	771	0.0118	0.0079	0.0023	0.0026	0.0006	0.0009		0.0076	0.0146	0.0121					3.2388	0.4858
Daily	lbs	FEIR_Mitigated	2022	Rail offsite	30.2009	174.2860	745.2098	66,581	17.8913	16.8179					17.8913	0.6807	5.4460	1.7700						
Daily	lbs	FEIR_Mitigated	2022	Rail onsite	3.3337	19.7087	81.3533	7,516	1.9293	1.8135					1.9293	0.0760	0.6118	0.1991						
Daily	lbs	FEIR_Mitigated	2022	Trucks offsite	28.5913	11,043.3022	765.0579	1,118,284	154.2814	51.3666	29.8708	123.7871	7.4677	43.3255		-	2,001.0663	227.9694	-	2,042.2349	-	0.6236	137.1954	20.5793
Daily	lbs	FEIR_Mitigated	2022	Trucks onsite	0.9369	330.3455	27.5609	23,567	1.4662	0.4963	0.2812	1.1653	0.0703	0.4079	-	-	65.5718	4.8043	-	66.9208	-	0.0197	49.8653	7.4798
Daily	lbs	FEIR_Mitigated	2022	Trucks onsite idling	3.7030	535.1072	98.7772	74,522	0.1199	0.1102	-	-	-	-	-	-	257.8714	15.1918	-	263.1978	-	0.1199		
Daily	lbs	FEIR_Mitigated	2023	CHE	39.5525	436.7609	141.5022	145,652	6.7701	6.2483					6.5217	0.8146	73.1079	3.1966						
Daily	lbs	FEIR_Mitigated	2023	HC	0.8389	4.0346	18.7024	2,614	0.2749	0.2625					0.2749	0.0261	0.1243	0.0456						
Daily	lbs	FEIR_Mitigated	2023	OGV	154.6338	330.1360	2,697.0305	143,280	41.9410	38.5491					39.3199	87.7742	2.9370	7.0814						
Daily	lbs	FEIR_Mitigated	2023	PC offsite	1.2513	41.0285	3.6881	2,100	0.1551	0.0809	0.0476	0.0524	0.0119	0.0183		0.0208	0.2435	0.2076					13.5007	2.0251
Daily	lbs	FEIR_Mitigated	2023	PC onsite	0.0368	1.5516	0.0762	547	0.0083	0.0055	0.0017	0.0018	0.0004	0.0006		0.0054	0.0095	0.0082					2.3231	0.3485
Daily	lbs	FEIR_Mitigated	2023	Rail offsite	15.0470	88.1820	375.0477	33,687	8.8993	8.3654					8.8993	0.3444	2.7554	0.8955						
Daily	lbs	FEIR_Mitigated	2023	Rail onsite	1.7353	10.4765	42.6086	3,993	0.9955	0.9358					0.9955	0.0403	0.3247	0.1057						
Daily	lbs	FEIR_Mitigated	2023	Trucks offsite	30.8728	9,903.6563	746.2873	859,738	141.3253	47.3425	23.1128	117.8791	5.7782	41.2577		-	2,160.7431	175.2632	-	2,205.1968	-	0.3334	106.1565	15.9235
Daily	lbs	FEIR_Mitigated	2023	Trucks onsite	0.9377	325.5965	25.7964	18,960	1.3356	0.4519	0.2172	1.1077	0.0543	0.3877	-	-	65.6279	3.8650	-	66.9780	-	0.0107	38.2730	5.7410
Daily	lbs	FEIR_Mitigated	2023	Trucks onsite idling	2.3068	326.7764	61.2503	44,043	0.0795	0.0731	-	-	-	-	-	-	161.4513	8.9784	-	164.7729	-	0.0795		
Daily	lbs	FEIR_Mitigated	2026	CHE	70.0779	497.0214	150.7535	147,275	8.9632	8.2667					8.7062	0.8110	75.5024	3.2795						
Daily	lbs	FEIR_Mitigated	2026	HC	1.4548	6.9778	32.3289	4,505	0.4781	0.4563					0.4781	0.0450	0.2142	0.0787						
Daily	lbs	FEIR_Mitigated	2026	OGV	188.9340	356.8162	5,619.4799	213,653	58.4764	53.7606					52.0793	154.2558	4.3688	14.3927						
Daily	lbs	FEIR_Mitigated	2026	PC onsite	0.0248	1.2220	0.0540	478	0.0074	0.0047	0.0016	0.0017	0.0004	0.0006		0.0047	0.0067	0.0065					2.2307	0.3346
Daily	lbs	FEIR_Mitigated	2026	Rail offsite	32.0504	204.0079	833.2131	77,912	18.7757	17.6492					18.7757	0.7951	6.3675	2.0699						
Daily	lbs	FEIR_Mitigated	2026	Rail onsite	2.0378	13.4172	51.5796	5,108	1.1393	1.0710					1.1393	0.0512	0.4139	0.1348						
Daily	lbs	FEIR_Mitigated	2026	Trucks onsite	0.4843	223.0430	12.3378	20,299	1.4606	0.4996	0.2811	1.1505	0.0703	0.4027	-	-	33.8935	4.1382	-	34.5908	-	0.0290	51.1464	7.6720
Daily	lbs	FEIR_Mitigated	2026	Trucks onsite idling	1.3953	208.0550	37.3451	27,277	0.0516	0.0474	-	-	-	-	-	-	97.6583	5.5607	-	99.6674	-	0.0516		
Daily	lbs	FEIR_Mitigated	2036	CHE	30.5166	318.8194	16.7321	103,959	1.6855	1.5652					1.5041	0.5724	53.2961	2.3149						
Daily	lbs	FEIR_Mitigated	2036	HC	0.4335	5.1069	12.0107	4,505	0.2866	0.2735					0.2866	0.0436	0.2142	0.0787						
Daily	lbs	FEIR_Mitigated	2036	OGV	337.7245	677.5103	2,942.7676	271,044	80.5893	74.0670					73.9941	165.3728	6.4145	13.7094						
Daily	lbs	FEIR_Mitigated	2036	PC onsite	0.0171	1.2591	0.0464	572	0.0077	0.0043	0.0022	0.0024	0.0006	0.0008		0.0057	0.0054	0.0070					3.0625	0.4594
Daily	lbs	FEIR_Mitigated	2036	Rail offsite	22.0630	199.7995	625.7779	76,304	12.2285	11.4948					12.2285	0.7787	6.2360	2.0271						
Daily	lbs	FEIR_Mitigated	2036	Rail onsite	1.6873	15.1217	45.6867	5,757	0.8812	0.8283					0.8812	0.0577	0.4665	0.1519						
Daily	lbs	FEIR_Mitigated	2036	Trucks onsite	0.3089	225.9202	3.8489	26,284	2.1540	0.7437	0.4203	1.6778	0.1051	0.5872	-	-	21.6174	5.3582	-	22.0622	-	0.0560	76.4764	11.4715
Daily	lbs	FEIR_Mitigated	2036	Trucks onsite idling	1.4681	330.9449	41.2077	41,202	0.1260	0.1159	-	-	-	-	-	-	102.7479	8.3992	-	104.8618	-	0.1260		
Daily	lbs	FEIR_Mitigated	2045	CHE	41.0180	302.6648	16.3878	90,833	1.8286	1.6950					1.6701	0.5001	46.5667	2.0225						
Daily	lbs	FEIR_Mitigated	2045	HC	0.4335	5.1069	12.0107	4,505	0.2866	0.2735					0.2866	0.0436	0.2142	0.0787						
Daily	lbs	FEIR_Mitigated	2045	OGV	337.7245	677.5103	1,237.6897	271,044	80.5893	74.0670					73.9941	165.3728	6.4145	13.7094						
Daily	lbs	FEIR_Mitigated	2045	PC onsite	0.0129	1.1688	0.0401	552	0.0069	0.0035	0.0022	0.0024	0.0006	0.0008		0.0055	0.0044	0.0066					3.0625	0.4594
Daily	lbs	FEIR_Mitigated	2045	Rail offsite	15.6727	281.4969	434.8068	107,515	7.0890	6.6636					7.0890	1.0978	8.7890	2.8569						
Daily	lbs	FEIR_Mitigated	2045	Rail onsite	1.0933	15.1870	26.5255	5,766	0.4401	0.4137					0.4401	0.0568	0.4638	0.1513						
Daily	lbs	FEIR_Mitigated	2045	Trucks onsite	0.2936	203.9387	2.8433	24,011	1.9386	0.6715	0.3940	1.4877	0.0985	0.5207	-	-	20.5521	4.8949	-	20.9749	-	0.0568	71.6979	10.7547
Daily	lbs	FEIR_Mitigated	2045	Trucks onsite idling	1.3731	359.8059	40.2035	42,105	0.1604	0.1475	-	-	-	-	-	-	96.1045	8.5833	-	98.0817	-	0.1604		
Daily	lbs	Revised Project	2012	PC offsite	1.2238	49.2478	4.2111	6,773	0.1153	0.0614	0.0344	0.0381	0.0086	0.0133	-	0.0669	0.2461	0.2946	-	-	-	-	1.3922	0.2088
Daily	lbs	Revised Project	2012	Trucks offsite	24.7998	161.7924	826.6243	198,827	30.5545	18.4660	4.1460	12.9155	1.0365	4.5204	13.4893	1.8087	18.2538	31.5253	27.9371	17.4832	13.4893	0.0036	6.9443	1.0416
Daily	lbs	Revised Project	2014	PC offsite	0.9125	39.7758	3.1959	6,618	0.1042	0.0536	0.0325	0.0360	0.0081	0.0126	-	0.0658	0.1886	0.2349	-	-	-	-	1.5738	0.2361
Daily	lbs	Revised Project	2014	Trucks offsite	39.1062	271.7961	1,651.4132	443,514	46.5916	21.4635	9.4898	27.0385	2.3725	9.4635	10.0530	4.0325	32.2632	70.3905	43.9954	31.1236	10.0530	0.0102	16.7145	2.5072
Daily	lbs	Revised Project	2026	PC offsite	0.5135	48.9713	2.3487	18,549	0.2905	0.1402	0.0982	0.1073	0.0246	0.0376	-	0.1834	0.1399	0.2862	-	-	-	-	4.4537	0.6681
Daily	lbs	Revised Project	2026	Trucks offsite	2.9106	120.4485	207.0598	407,057	34.5038	13.1009	9.2319	22.0609	2.3080	7.7213	3.1984	3.7253	15.9116	64.7643	3.0568	16.1116	3.1984	0.0125	15.2022	2.2803
Daily	lbs	Revised Project	2036	PC offsite	0.1826	26.0483	1.0193	10,894	0.1749	0.0734	0.0680	0.0736	0.0170	0.0258	-	0.1077	0.0575	0.1551	-	-	-	-	3.2202	0.4830
Daily	lbs	Revised Project	2036	Trucks offsite	3.7174	125.4741	157.8838	543,677	53.5201	19.4876	13.8876	36.0968	3.4719	12.6339	3.5103	4.9704	10.9242	86.5266	4.0570	10.9800	3.5103	0.0255	23.2596	3.4889
Daily	lbs	Revised Project	2045	PC offsite	0.1463	25.0540	0.8987	10,664	0.1681	0.0667	0.0684	0.0739	0.0171	0.0259	-	0.1054	0.0505	0.1481	-	-	-	-	3.2283	0.4842
Daily	lbs	Revised Project	2045	Trucks offsite	3.5241	131.3565	123.7285	471,358	53.7726	19.1056	13.1366	37.9990	3.2841	13.2996	2.6076	4.2871	11.6111	75.1250	3.8256	11.6907	2.6076	0.0294	21.8593	3.2789
Daily	lbs	Revised_Project	2012	CHE	99.3953	1,013.0460	524.9712	108,387	16.0023	15.1812					10.2637	0.4028	4.8550	0.9710						
Daily	lbs	Revised_Project	2012	HC	2.5492	15.6731	27.2461	2,057	0.9762	0.9024					0.9762	0.0214	0.0423	0.0926						
Daily	lbs	Revised_Project	2012	OGV	69.1259	125.2150	1,005.5260	70,776	31.2177	28.8802					29.4956	155.0353	6.6024	4.0591						
Daily	lbs	Revised_Project	2012	PC onsite	0.1056	2.3855	0.1797	332	0.0060	0.0042	0.0011	0.0012	0.0003	0.0004		0.0033	0.0217	0.0127					1.2320	0.1848
Daily	lbs	Revised_Project	2012	Rail offsite	74.4257	300.3536	1,396.8902	114,736	47.9815	45.1005					47.9815	1.1726	9.3831	3.0496						
Daily	lbs	Revised_Project	2012	Rail onsite	5.0993	21.7905	95.5246	8,296	3.1732	2.9761					3.1732	0.0834	0.6715	0.2191						
Daily	lbs	Revised_Project	2012	Trucks onsite	3.6408	26.0543	37.9799	9,187	1.0927	0.6084	0.1146	0.5867	0.0286	0.2054	0.3907	0.0769	3.7113	1.4909	4.0815	3.6233	0.3907	0.0007	21.0584	3.1588
Daily	lbs	Revised_Project	2012	Trucks onsite idling	8.5436	34.1467	74.1029	6,961	1.3903	1.3302	-	-	-	-	1.3903	0.0601	1.9987	1.1204	9.4369	1.9101	1.3903	-		

China Shipping Emissions Inventory by Source Category, by Scenario, and Analysis Period

Period	UOM	Scenario	Year	Source_category	VOC	CO	NOx	CO2	PM10 (PM10 exh, PM10TW, PM10BW)	PM25 (PM2.5 exh, PM2.5TW, PM2.5BW)	PM10TW	PM10BW	PM25TW	PM25BW	DPM	SOx	CH4	N2O	TOGdiesexh	TOGlngexh	PM10diesexh	PM10lngexh	PM10fdust	PM25fdust
Daily	lbs	Revised_Project	2014	CHE	217.9862	2,152.3307	1,130.1010	196,158	17.5636	16.9650					7.4825	0.7609	8.7622	1.7523						
Daily	lbs	Revised_Project	2014	HC	2.2802	13.4729	24.2797	1,742	0.9009	0.8321					0.9009	0.0182	0.0362	0.0784						
Daily	lbs	Revised_Project	2014	OGV	241.5527	334.2524	5,029.0860	310,793	90.3379	82.5280					76.3715	156.0611	4.5879	19.0177						
Daily	lbs	Revised_Project	2014	PC onsite	0.0771	1.8621	0.1339	318	0.0052	0.0035	0.0010	0.0011	0.0002	0.0004		0.0032	0.0162	0.0099					1.1832	0.1775
Daily	lbs	Revised_Project	2014	Rail offsite	71.0608	321.0259	1,455.3286	122,632	45.5865	42.8489					45.5865	1.2533	10.0287	3.2596						
Daily	lbs	Revised_Project	2014	Rail onsite	5.2610	25.1584	106.7036	9,573	3.2244	3.0220					3.2244	0.0960	0.7736	0.2526						
Daily	lbs	Revised_Project	2014	Trucks onsite	6.1431	42.7911	77.5345	21,045	1.8906	0.8623	0.2711	1.2442	0.0678	0.4355	0.3736	0.1808	5.4497	3.3927	6.9018	5.2821	0.3736	0.0017	47.5722	7.1358
Daily	lbs	Revised_Project	2014	Trucks onsite idling	16.2569	129.5991	359.3914	52,110	0.1516	0.1449	-	-	-	-	0.1480	0.4672	9.7993	8.3028	18.3577	9.2388	0.1480	0.0036		
Daily	lbs	Revised_Project	2018	CHE	97.6080	1,850.0528	537.5480	85,866	8.4953	8.1772					3.9766	0.3220	3.8440	0.7688						
Daily	lbs	Revised_Project	2018	HC	0.3485	1.6752	9.6775	1,029	0.1843	0.1759					0.1843	0.0106	0.0489	0.0194						
Daily	lbs	Revised_Project	2018	OGV	76.0719	158.2932	1,357.3683	103,404	26.3400	24.2272					20.8413	63.0516	1.4449	5.6241						
Daily	lbs	Revised_Project	2018	PC offsite	1.8233	45.7720	3.9662	1,527	0.1273	0.0765	0.0314	0.0347	0.0079	0.0121		0.0151	0.3002	0.1978					8.8239	1.3236
Daily	lbs	Revised_Project	2018	PC onsite	0.0466	1.4522	0.0894	381	0.0060	0.0041	0.0011	0.0012	0.0003	0.0004		0.0038	0.0108	0.0077					1.5216	0.2282
Daily	lbs	Revised_Project	2018	Rail offsite	8.2287	43.5501	190.7250	16,635	4.9114	4.6167					4.9114	0.1700	1.3603	0.4421						
Daily	lbs	Revised_Project	2018	Rail onsite	0.6903	3.8601	15.7612	1,470	0.3947	0.3710					0.3947	0.0147	0.1191	0.0388						
Daily	lbs	Revised_Project	2018	Trucks onsite	33.1574	249.1884	1,536.4692	493,001	50.0422	23.5297	10.7502	27.6061	2.6876	9.6621		4.5156	28.3228	78.2846	37.3112	27.3519	11.6771	0.0087	50.2190	7.5328
Daily	lbs	Revised_Project	2018	Trucks onsite	1.8912	10.3721	27.5543	8,005	0.6835	0.2997	0.1063	0.4599	0.0266	0.1610	0.1170	0.0725	0.9975	1.2751	2.1382	0.9290	0.1170	0.0003	19.0881	2.8632
Daily	lbs	Revised_Project	2018	Trucks onsite idling	5.9154	62.8414	105.0370	17,405	0.0377	0.0360	-	-	-	-	0.0371	0.1607	1.7036	2.7573	6.7107	1.4595	0.0371	0.0004		
Daily	lbs	Revised_Project	2019	CHE	53.0453	253.4196	278.6147	84,615	7.6791	7.3926					3.5813	0.3545	3.7596	0.7519						
Daily	lbs	Revised_Project	2019	HC	0.4960	2.3860	13.7573	1,463	0.2553	0.2437					0.2553	0.0150	0.0696	0.0280						
Daily	lbs	Revised_Project	2019	OGV	95.8852	201.4828	1,792.2272	124,168	31.9309	29.3645					25.4306	75.7209	1.8212	6.7742						
Daily	lbs	Revised_Project	2019	PC offsite	1.1523	35.1276	3.1232	1,315	0.1070	0.0627	0.0275	0.0303	0.0069	0.0106		0.0130	0.2120	0.1605					7.7039	1.1556
Daily	lbs	Revised_Project	2019	PC onsite	0.0343	1.1566	0.0681	329	0.0052	0.0035	0.0010	0.0011	0.0002	0.0004		0.0033	0.0082	0.0061					1.3282	0.1992
Daily	lbs	Revised_Project	2019	Rail offsite	6.8463	37.2570	161.8219	14,231	4.0736	3.8292					4.0736	0.1454	1.1636	0.3782						
Daily	lbs	Revised_Project	2019	Rail onsite	0.5792	3.3303	13.4468	1,268	0.3291	0.3093					0.3291	0.0127	0.1027	0.0334						
Daily	lbs	Revised_Project	2019	Trucks offsite	31.6374	257.0678	1,498.2272	509,870	50.3233	23.1745	11.1282	28.1944	2.7821	9.8681		4.6667	30.3756	81.0296	35.5463	29.5204	10.9914	0.0093	52.0045	7.8007
Daily	lbs	Revised_Project	2019	Trucks onsite	1.8663	10.9512	28.2113	8,409	0.7032	0.2994	0.1126	0.4842	0.0282	0.1695	0.1060	0.0760	1.1092	1.3410	2.1080	1.0442	0.1060	0.0003	20.2307	3.0346
Daily	lbs	Revised_Project	2019	Trucks onsite idling	6.3447	69.8005	109.8830	18,403	0.0396	0.0379	-	-	-	-	0.0390	0.1700	1.8290	2.9173	7.1977	1.5672	0.0390	0.0005		
Daily	lbs	Revised_Project	2020	CHE	93.0948	377.8462	404.1250	120,843	10.3327	9.8669					5.8228	0.5965	5.3002	1.0601						
Daily	lbs	Revised_Project	2020	HC	0.8057	3.7658	22.7146	2,394	0.4040	0.3858					0.4040	0.0246	0.1138	0.0425						
Daily	lbs	Revised_Project	2020	OGV	94.8203	167.0775	4,547.9333	180,003	43.2120	39.7451					33.6077	135.0994	2.6436	13.5949						
Daily	lbs	Revised_Project	2020	PC offsite	1.7370	54.9079	4.8624	2,221	0.1767	0.1011	0.0474	0.0521	0.0118	0.0182		0.0220	0.3225	0.2547					11.5823	1.7373
Daily	lbs	Revised_Project	2020	PC onsite	0.0459	1.6308	0.0920	491	0.0082	0.0054	0.0017	0.0018	0.0004	0.0006		0.0049	0.0110	0.0085					2.0200	0.3030
Daily	lbs	Revised_Project	2020	Rail offsite	13.7840	76.6589	331.3985	29,284	8.1929	7.7013					8.1929	0.2993	2.3951	0.7784						
Daily	lbs	Revised_Project	2020	Rail onsite	1.4355	8.2790	34.0509	3,155	0.8264	0.7769					0.8264	0.0318	0.2563	0.0834						
Daily	lbs	Revised_Project	2020	Trucks offsite	42.3258	424.8260	2,034.6821	757,166	73.1248	33.0299	16.5376	41.6045	4.1344	14.5616		6.8828	54.7809	120.6958	47.3250	53.9373	14.9657	0.0169	77.3825	11.6074
Daily	lbs	Revised_Project	2020	Trucks onsite	1.8938	15.2237	34.2663	11,522	0.9445	0.3800	0.1594	0.6773	0.0399	0.2370	0.1072	0.1029	1.8705	1.8454	2.1269	1.8205	0.1072	0.0005	29.0091	4.3514
Daily	lbs	Revised_Project	2020	Trucks onsite idling	8.3306	96.5983	138.9520	24,034	0.0495	0.0473	-	-	-	-	0.0484	0.2205	2.9610	3.8210	9.4415	2.6291	0.0484	0.0011		
Daily	lbs	Revised_Project	2021	CHE	243.8680	635.6186	848.2474	187,590	18.1142	17.2522					10.7746	0.9689	8.1949	1.6390						
Daily	lbs	Revised_Project	2021	HC	0.4444	2.0708	12.5178	1,315	0.2229	0.2128					0.2229	0.0135	0.0625	0.0227						
Daily	lbs	Revised_Project	2021	OGV	58.6263	113.8927	2,549.4082	113,199	27.3822	25.1891					21.7337	81.2369	1.5188	7.8749						
Daily	lbs	Revised_Project	2021	PC offsite	2.1821	70.7730	6.1873	3,084	0.2395	0.1334	0.0671	0.0737	0.0168	0.0258		0.0305	0.4157	0.3358					18.8132	2.8220
Daily	lbs	Revised_Project	2021	PC onsite	0.0658	2.4764	0.1334	788	0.0122	0.0082	0.0024	0.0026	0.0006	0.0009		0.0078	0.0164	0.0131					3.3129	0.4969
Daily	lbs	Revised_Project	2021	Rail offsite	22.2771	126.3507	543.1916	48,268	13.2190	12.4259					13.2190	0.4935	3.9480	1.2831						
Daily	lbs	Revised_Project	2021	Rail onsite	2.4232	14.1606	58.3560	5,398	1.3987	1.3148					1.3987	0.0545	0.4390	0.1429						
Daily	lbs	Revised_Project	2021	Trucks offsite	55.1768	673.7459	2,758.4153	1,205,048	114.4486	51.3537	26.3581	65.1258	6.5895	22.7940		10.9256	92.4195	192.2301	61.3520	91.7662	22.9361	0.0285	123.3992	18.5099
Daily	lbs	Revised_Project	2021	Trucks onsite	2.9421	24.6036	53.2603	17,949	1.4568	0.5866	0.2481	1.0414	0.0620	0.3645	0.1664	0.1598	3.0923	2.8778	3.3012	3.0184	0.1664	0.0009	45.5997	6.8400
Daily	lbs	Revised_Project	2021	Trucks onsite idling	32.1251	390.8269	513.5190	91,453	0.1823	0.1742	-	-	-	-	0.1774	0.8364	12.3018	14.5533	36.3949	11.0405	0.1774	0.0049		
Daily	lbs	Revised_Project	2022	CHE	285.0065	686.4842	923.2438	198,181	24.0026	22.6868					16.4473	1.0445	8.6417	1.7283						
Daily	lbs	Revised_Project	2022	HC	0.8371	4.0299	18.6837	2,614	0.2741	0.2617					0.2741	0.0261	0.1243	0.0456						
Daily	lbs	Revised_Project	2022	OGV	60.4204	89.0508	3,940.6450	83,803	22.3539	20.5526					20.4048	81.0184	2.1013	8.4299						
Daily	lbs	Revised_Project	2022	PC offsite	1.9466	63.4627	5.6191	2,985	0.2261	0.1221	0.0663	0.0728	0.0166	0.0255		0.0295	0.3748	0.3103					18.7046	2.8057
Daily	lbs	Revised_Project	2022	PC onsite	0.0576	2.2947	0.1180	771	0.0118	0.0079	0.0023	0.0026	0.0006	0.0009		0.0076	0.0146	0.0121					3.2388	0.4858
Daily	lbs	Revised_Project	2022	Rail offsite	30.2009	174.2860	745.2098	66,581	17.8913	16.8179					17.8913	0.6807	5.4460	1.7700						
Daily	lbs	Revised_Project	2022	Rail onsite	3.3337	19.7087	81.3533	7,516	1.9293	1.8135					1.9293	0.0760	0.6118	0.1991						
Daily	lbs	Revised_Project	2022	Trucks offsite	41.8899	756.4658	2,329.5460	1,331,497	123.3618	54.6424	29.2652	70.3737	7.3163	24.6308		12.0165	113.7337	212.6727	45.8689	114.1637	23.6879	0.0349	137.1954	20.5793
Daily	lbs	Revised_Project	2022	Trucks onsite	2.1050	26.2533	50.7233	19,343	1.5533	0.5971	0.2756	1.1442	0.0689	0.4005	0.1325	0.1707	3.7609	3.1086	2.3368	3.7410	0.1325	0.0011	49.8653	7.4798
Daily	lbs	Revised_Project	2022	Trucks onsite idling	38.0966	486.1514	584.0018	106,816	0.2049	0.1958	-	-	-	-	0.1982	0.9720	16.1752	17.0218	43.1344	14.7131	0.1982	0.0067		
Daily	lbs	Revised_Project	2023	CHE	274.9642	665.2322	791.3952	191,517	21.7427	20.5983					14.3049	0.9950	8.3620	1.6724						
Daily	lbs	Revised_Project	2023	HC	0.8389	4.0346	18.7024	2,614	0.2749	0.2625					0.2749	0.0261	0.1243	0.0456						
Daily	lbs	Revised_Project	2023	OGV	161.8664	350.1998	2,927.8388	165,228	46.9504	43.1583					42.9281	101.0004	3.0744	8.3153						
Daily	lbs	Revised_Project	2023	PC offsite	1.2513	41.0285	3.6881	2,100	0.1551	0.0809	0.0476	0.0524	0.0119	0.0183		0.0208	0.2435	0.2076					13.5007	2.0251
Daily	lbs	Revised_Project	2023	PC onsite	0.0368	1.5516	0.0762	547	0.0083	0.0055	0.0017	0.0018	0.0004	0.0006		0.0054	0.0095	0.0082					2.3231	0.3485
Daily	lbs	Revised_Project	2023	Rail offsite	15.0470	88.1820	375.0477	33,687	8.8993	8.3654					8.8993	0.3444	2.7554	0.8955						
Daily	lbs	Revised_Project	2023	Rail onsite	1.7353	10.4765	42.6086	3,993	0.9955	0.9358					0.9955	0.0403	0.3247	0.1057						
Daily	lbs	Revised_Project	2023	Trucks offsite	10.5254	631.5546	993.9081	1,021,104	92.2677	39.7194	22.6452	53.6503	5.6613	18.7776		9.1901	127.5793	163.2185	9.9138	129.7912	15.9525	0.0196	106.1565	15.9235
Daily	lbs	Revised_Project	2023	Trucks onsite	0.2996	21.6671	29.7696	14,277	1.0907	0.3876	0.2128	0.8332	0.0532	0.2916	0.0441	0.1246	3.8740	2.3010	0.2782	3.9421	0.0441	0.0006	38.2730	5.7410
Daily	lbs	Revised_Project	2023	Trucks onsite idling	25.5154	394.2371	303.5139	65,070	0.1127	0.1076	-	-	-	-	0.1080	0.5916	10.6814	10.3719	28.8927	9.6980	0.1080	0.0047		
Daily	lbs	Revised_Project	2026	CHE	275.0106	1,915.4326	664.7404	180,187	12.4672	11.7655					8.7710	0.9998	44.8754	2.6365						
Daily	lbs	Revised_Project	2026	HC	1.4548	6.9778	32.3289	4,505	0.4781	0.4563					0.4781	0.0450	0.2142	0.0787						
Daily	lbs	Revised_Project	2026	OGV	223.8876	451.2247	6,531.1876	298,320	78.1106	71.8255					66.2272	206.0500	5.0288	19.0932						
Daily	lbs	Revised_Project	2026	PC onsite	0.0248	1.2220	0.0540	478	0.0074	0.0047	0.0016	0.0017	0.0004	0.0006		0.0047	0.0067	0.0065					2.2307	0.3346
Daily	lbs	Revised_Project	2026	Rail offsite	32.0504	204.0079	833.2131	77,912	18.7757	17.6492					18.7757	0.7951	6.3675	2.0699						
Daily	lbs	Revised_Project	2026	Rail onsite	2.0378	13.4172	51.5796	5,108	1.1393	1.0710					1.1393	0.0512	0.4139	0.1348						
Daily	lbs	Revised_Project	2026	Trucks onsite	0.2720	21.5338	22.5437	18,438	1.3760	0.4753	0.2755	1.0654	0.0689	0.3729	0.0327	0.1588	2.7901	2.9819	0.2644	2.8364	0.0327	0.0024	51.1464	7.6720
Daily	lbs	Revised_Project	2026	Trucks onsite idling	14.5903	230.9529	99.4418	36,936	0.0395	0.0376	-	-	-	-	0.0353	0.3286	8.6803	5.9228	16.4796	8.1727	0.0353	0.0042		
Daily	lbs	Revised_Project	2036	CHE	42.6514	351.1552	29.4875	113,542	2.7845	2.5765					2.6007	0.6610	53.6849	2.3928						
Daily	lbs	Revised_Project	2036	HC	0.4335	5.1069	12.0107	4,505	0.2866	0.2735					0.2866	0.0436	0.2142	0.0787						
Daily	lbs	Revised_Project	2036	OGV	360.4906	737.0652	3,317.5970	327,742	93.7913	86.2145					83.7895	199.9340	6.8469	16.8242						
Daily	lbs	Revised_Project	2036	PC onsite	0.0171	1.2591	0.0464	572	0.0077	0.0043	0.0022	0.0024	0.0006	0.0008		0.0057	0.0054	0.0070					3.0625	0.4594
Daily	lbs	Revised_Project	2036	Rail offsite	22.0630	199.7995	625.7779	76,304	12.2285	11.4948					12.2285	0.7787	6.2360	2.0271						
Daily	lbs	Revised_Project	2036	Rail onsite	1.6873	15.1217	45.6867	5,757	0.8812	0.8283					0.8812	0.0577	0.4665	0.1519						
Daily	lbs	Revised_Project	2036	Trucks onsite	0.3309	22.1892	17.4999	23,228	2.1144	0.7270	0.4132	1.6543	0.1033	0.5790	0.0423	0.1995	1.7868	3.7595	0.3478	1.8091	0.0423	0.0046	76.4764	11.4715
Daily	lbs	Revised_Project	2036	Trucks onsite idling	23.5580	373.4472	83.9170	51,041	0.0639	0.0608	-	-	-	-	0.0536	0.4513	9.5139	8.1980	26.6819	8.5987	0.0536	0.0103		
Daily	lbs	Revised_Project	2045	CHE	46.1333	317.8461	18.7768	99,206	2.0578	1.9060					1.8972	0.5776	46.9063	2.0906						
Daily	lbs	Revised_Project	2045	HC	0.4335	5.1069	12.0107	4,505	0.2866	0.2735					0.2866	0.0436	0.2142	0.0787						
Daily	lbs	Revised_Project	2045	OGV	360.4906	737.0652	1,417.2968	327,742	93.7913	86.2145					83.7895	199.9340	6.8469	16.8242						
Daily	lbs	Revised_Project	2045	PC onsite	0.0129	1.1688	0.0401	552	0.0069	0.0035	0.0022	0.0024	0.0006	0.0008		0.0055	0.0044	0.0066					3.0625	0.4594
Daily	lbs	Revised_Project	2045	Rail offsite	15.6727	281.4969	434.8068	107,515	7.0890	6.6636					7.0890	1.0978	8.7890	2.8569						
Daily	lbs	Revised_Project	2045	Rail onsite	1.0933	15.1870	26.5255	5,766	0.4401	0.4137					0.4401	0.0568	0.4638	0.1513						
Daily	lbs	Revised_Project	2045	Trucks onsite	0.3029	19.8842	12.2755	19,593	2.0406	0.7017	0.3888	1.6082	0.0972	0.5629	0.0390	0.1669	1.6982	3.1780	0.3174	1.7199	0.0390	0.0047	71.6979	10.7547
Daily	lbs	Revised_Project	2045	Trucks onsite idling	24.5999	391.3245	65.0592	49,989	0.0697	0.0662	-	-	-	-	0.0565	0.4407	9.0179	8.0357	27.8770	8.0427	0.0565	0.0132		

China Shipping Emissions Inventory by Source Category, by Scenario, and Analysis Period

Period	UOM	Scenario	Year	Source_category	VOC	CO	NOx	CO2	PM10 (PM10 exh, PM10TW, PM10BW)	PM25 (PM2.5 exh, PM2.5TW, PM2.5BW)	PM10TW	PM10BW	PM25TW	PM25BW	DPM	SOx	CH4	N2O	TOGdiesexh	TOGlngexh	PM10diesexh	PM10lngexh	PM10fdust	PM25fdust
8 hour	lbs	Baseline	2008	CHE	16.9959	283.7034	170.4569	30,102	5.1390	4.8828					3.2030	0.1053	1.2225	0.2444						
8 hour	lbs	Baseline	2008	HC	2.8939	11.4662	40.2675	1,727	1.7424	1.6048					1.7424	0.0180	0.0428	0.0775						
8 hour	lbs	Baseline	2008	OGV	44.9812	29.0947	645.3080	28,300	45.8164	36.8345					37.4917	444.4911	0.2579	1.7324						
8 hour	lbs	Baseline	2008	PC offsite	1.2180	43.6221	3.8785	4,402	0.0913	0.0561	0.0215	0.0239	0.0054	0.0084	-	0.0429	0.2355	0.2556	-	-	-	-	0.8624	0.1294
8 hour	lbs	Baseline	2008	PC onsite	0.0970	2.0399	0.1615	214	0.0052	0.0039	0.0007	0.0007	0.0002	0.0003		0.0021	0.0192	0.0108					0.5665	0.0850
8 hour	lbs	Baseline	2008	Rail offsite	31.2652	100.2993	567.9429	38,316	20.0318	18.8292					20.0318	0.3915	3.1337	1.0184						
8 hour	lbs	Baseline	2008	Rail onsite	2.0705	6.7424	37.2908	2,571	1.2945	1.2149					1.2945	0.0260	0.2091	0.0681						
8 hour	lbs	Baseline	2008	Trucks offsite	47.8528	184.2821	874.8983	81,085	29.9646	24.4523	1.5555	5.1347	0.3889	1.7971	23.2382	0.7382	7.9528	12.8452	53.3262	6.9534	23.2382	0.0362	2.7038	0.4056
8 hour	lbs	Baseline	2008	Trucks onsite	8.5039	17.6345	39.4717	4,123	2.6374	2.3346	0.0492	0.2537	0.0123	0.0888	2.3345	0.0389	0.3950	0.6465	9.6811	-	2.3345	-	6.7179	1.0077
8 hour	lbs	Baseline	2008	Trucks onsite idling	3.5378	11.0223	22.9311	1,859	0.6238	0.5968	-	-	-	-	0.6238	0.0175	0.1643	0.2915	4.0275	-	0.6238	-		
8 hour	lbs	FEIR Mitigated	2012	PC offsite	0.6017	24.2141	2.0705	3,330	0.0567	0.0302	0.0169	0.0187	0.0042	0.0066	-	0.0329	0.1210	0.1449	-	-	-	-	0.6845	0.1027
8 hour	lbs	FEIR Mitigated	2012	Trucks offsite	7.7612	461.2335	246.3399	88,284	13.9011	6.7760	2.0558	8.3562	0.5139	2.9247	3.4688	0.4651	95.9131	15.7386	7.1841	97.6834	3.4688	0.0202	3.4144	0.5122
8 hour	lbs	FEIR Mitigated	2014	PC offsite	0.4468	19.4751	1.5648	3,240	0.0510	0.0262	0.0159	0.0176	0.0040	0.0062	-	0.0322	0.0923	0.1150	-	-	-	-	0.7705	0.1156
8 hour	lbs	FEIR Mitigated	2014	Trucks offsite	9.5238	1,281.7319	346.4781	191,713	24.1149	8.9546	4.6812	17.8095	1.1703	6.2333	1.5446	0.6196	237.6069	36.0054	6.7598	242.4359	1.5446	0.0795	8.1838	1.2276
8 hour	lbs	FEIR Mitigated	2026	PC offsite	0.2720	25.9409	1.2442	9,826	0.1539	0.0743	0.0520	0.0568	0.0130	0.0199	-	0.0971	0.0741	0.1516	-	-	-	-	2.3592	0.3539
8 hour	lbs	FEIR Mitigated	2026	Trucks offsite	2.7156	1,187.2558	65.3056	164,397	25.5866	8.5419	4.9940	20.4417	1.2485	7.1546	-	-	190.0581	33.5134	-	193.9683	-	0.1509	8.0529	1.2079
8 hour	lbs	FEIR Mitigated	2036	PC offsite	0.0967	13.7982	0.5399	5,771	0.0927	0.0389	0.0360	0.0390	0.0090	0.0137	-	0.0571	0.0305	0.0822	-	-	-	-	1.7058	0.2559
8 hour	lbs	FEIR Mitigated	2036	Trucks offsite	1.8506	1,181.5357	30.8659	226,188	37.6819	12.6151	7.4864	29.8881	1.8716	10.4608	-	-	129.5238	46.1100	-	132.1885	-	0.3074	12.3210	1.8482
8 hour	lbs	FEIR Mitigated	2045	PC offsite	0.0775	13.2715	0.4760	5,649	0.0890	0.0353	0.0362	0.0391	0.0091	0.0137	-	0.0558	0.0268	0.0784	-	-	-	-	1.7101	0.2565
8 hour	lbs	FEIR Mitigated	2045	Trucks offsite	1.9704	1,233.4252	27.2040	224,196	34.0557	11.4153	7.0566	26.6453	1.7642	9.3259	-	-	137.9075	45.7039	-	140.7448	-	0.3538	11.5792	1.7369
8 hour	lbs	FEIR_Mitigated	2012	CHE	41.0824	481.9956	170.4299	47,974	5.6080	5.3852					2.7865	0.1487	2.1714	0.4341						
8 hour	lbs	FEIR_Mitigated	2012	HC	2.5492	15.6731	27.2461	2,057	0.9762	0.9024					0.9762	0.0214	0.0423	0.0926						
8 hour	lbs	FEIR_Mitigated	2012	OGV	40.9436	60.5482	378.6800	19,915	11.9871	11.0842					11.4131	43.5547	0.1781	1.2137						
8 hour	lbs	FEIR_Mitigated	2012	PC onsite	0.0519	1.1729	0.0884	163	0.0030	0.0021	0.0005	0.0006	0.0001	0.0002		0.0016	0.0106	0.0062					0.6058	0.0909
8 hour	lbs	FEIR_Mitigated	2012	Rail offsite	24.8086	100.1179	465.6301	38,245	15.9938	15.0335					15.9938	0.3909	3.1276	1.0165						
8 hour	lbs	FEIR_Mitigated	2012	Rail onsite	1.6998	7.2635	31.8415	2,765	1.0577	0.9920					1.0577	0.0278	0.2238	0.0730						
8 hour	lbs	FEIR_Mitigated	2012	Trucks onsite	1.1160	45.1306	13.5017	4,752	0.4549	0.2192	0.0568	0.2898	0.0142	0.1014	0.1067	0.0210	8.7599	0.8678	1.1149	8.9075	0.1067	0.0016	10.3540	1.5531
8 hour	lbs	FEIR_Mitigated	2012	Trucks onsite idling	2.8891	22.4505	21.9874	3,182	0.3799	0.3635	-	-	-	-	0.3798	0.0164	4.0721	0.5691	2.5777	4.6959	0.3798			
8 hour	lbs	FEIR_Mitigated	2014	CHE	104.0806	1,084.8284	274.2117	85,328	5.4679	5.4253					0.5320	0.2731	3.8556	0.7710						
8 hour	lbs	FEIR_Mitigated	2014	HC	6.8407	40.4186	72.8391	5,226	2.7027	2.4963					2.7027	0.0545	0.1087	0.2351						
8 hour	lbs	FEIR_Mitigated	2014	OGV	68.7737	147.3674	2,434.1652	120,433	35.8273	32.4545					30.2753	71.0702	2.1400	7.8659						
8 hour	lbs	FEIR_Mitigated	2014	PC onsite	0.0378	0.9117	0.0656	156	0.0025	0.0017	0.0005	0.0005	0.0001	0.0002		0.0016	0.0079	0.0048					0.5818	0.0873
8 hour	lbs	FEIR_Mitigated	2014	Rail offsite	23.6868	107.0086	485.1094	40,877	15.1954	14.2829					15.1954	0.4177	3.3428	1.0865						
8 hour	lbs	FEIR_Mitigated	2014	Rail onsite	1.7537	8.3861	35.5679	3,191	1.0748	1.0073					1.0748	0.0320	0.2579	0.0842						
8 hour	lbs	FEIR_Mitigated	2014	Trucks onsite	1.3066	110.2855	21.4299	10,959	0.7822	0.3008	0.1337	0.5816	0.0334	0.2035	0.0598	0.0289	21.6464	2.0905	1.1043	22.0776	0.0598	0.0072	23.3903	3.5085
8 hour	lbs	FEIR_Mitigated	2014	Trucks onsite idling	3.1292	93.4134	71.4408	18,767	0.0388	0.0366	-	-	-	-	0.0237	0.0748	37.9475	3.4545	2.9374	38.6156	0.0237	0.0152		
8 hour	lbs	FEIR_Mitigated	2018	CHE	2.8178	84.9102	20.7411	32,275	0.9022	0.8364					0.8226	0.1275	22.8574	0.9080						
8 hour	lbs	FEIR_Mitigated	2018	HC	0.3485	1.6752	9.6775	1,029	0.1843	0.1759					0.1843	0.0106	0.0489	0.0194						
8 hour	lbs	FEIR_Mitigated	2018	OGV	16.0948	40.8094	423.2112	39,451	9.0614	8.3373					6.4512	24.0487	0.3057	2.2134						
8 hour	lbs	FEIR_Mitigated	2018	PC offsite	0.9635	24.1867	2.0958	807	0.0673	0.0404	0.0166	0.0183	0.0041	0.0064		0.0080	0.1586	0.1045					4.6627	0.6994
8 hour	lbs	FEIR_Mitigated	2018	PC onsite	0.0246	0.7674	0.0472	201	0.0032	0.0021	0.0006	0.0006	0.0001	0.0002		0.0020	0.0057	0.0041					0.7482	0.1122
8 hour	lbs	FEIR_Mitigated	2018	Rail offsite	2.7429	14.5167	63.5750	5,545	1.6371	1.5389					1.6371	0.0567	0.4534	0.1474						
8 hour	lbs	FEIR_Mitigated	2018	Rail onsite	0.2301	1.2867	5.2537	490	0.1316	0.1237					0.1316	0.0049	0.0397	0.0129						
8 hour	lbs	FEIR_Mitigated	2018	Trucks offsite	5.4252	2,146.1330	148.0059	219,296	29.2515	9.7305	5.7777	23.3505	1.4444	8.1727		-	379.7035	44.7049	-	387.5153	-	0.1234	26.5366	3.9805
8 hour	lbs	FEIR_Mitigated	2018	Trucks onsite	0.1843	64.7643	5.5198	4,792	0.2921	0.0989	0.0571	0.2308	0.0143	0.0808	-	-	12.8960	0.9769	-	13.1613	-	0.0041	9.3852	1.4078
8 hour	lbs	FEIR_Mitigated	2018	Trucks onsite idling	0.2927	40.9544	7.7771	5,753	0.0084	0.0077	-	-	-	-	-	-	20.2576	1.1728	-	20.6780	-	0.0084		
8 hour	lbs	FEIR_Mitigated	2019	CHE	3.3259	84.8997	24.1936	32,981	1.0359	0.9589					0.9634	0.1493	20.9726	0.8563						
8 hour	lbs	FEIR_Mitigated	2019	HC	0.6492	3.1230	18.0065	1,915	0.3342	0.3190					0.3342	0.0197	0.0911	0.0366						
8 hour	lbs	FEIR_Mitigated	2019	OGV	18.1888	46.0863	501.6309	44,924	10.2891	9.4668					7.2701	27.3857	0.3455	2.5307						
8 hour	lbs	FEIR_Mitigated	2019	PC offsite	0.6120	18.6558	1.6587	698	0.0568	0.0333	0.0146	0.0161	0.0037	0.0056		0.0069	0.1126	0.0852					4.0914	0.6137
8 hour	lbs	FEIR_Mitigated	2019	PC onsite	0.0182	0.6142	0.0361	175	0.0028	0.0019	0.0005	0.0006	0.0001	0.0002		0.0017	0.0044	0.0033					0.6530	0.0980
8 hour	lbs	FEIR_Mitigated	2019	Rail offsite	2.2821	12.4190	53.9406	4,744	1.3579	1.2764					1.3579	0.0485	0.3879	0.1261						
8 hour	lbs	FEIR_Mitigated	2019	Rail onsite	0.1931	1.1101	4.4823	423	0.1097	0.1031					0.1097	0.0042	0.0342	0.0111						
8 hour	lbs	FEIR_Mitigated	2019	Trucks offsite	5.6443	2,219.9925	153.0685	226,881	30.6301	10.1915	6.0133	24.4898	1.5033	8.5714		-	395.0387	46.2511	-	403.1660	-	0.1269	27.6189	4.1428
8 hour	lbs	FEIR_Mitigated	2019	Trucks onsite	0.1997	70.2113	5.9368	5,116	0.3130	0.1059	0.0609	0.2478	0.0152	0.0867	-	-	13.9738	1.0429	-	14.2613	-	0.0043	9.9470	1.4921
8 hour	lbs	FEIR_Mitigated	2019	Trucks onsite idling	0.3026	43.8537	8.1135	6,007	0.0088	0.0080	-	-	-	-	-	-	20.9684	1.2245	-	21.4031	-	0.0088		
8 hour	lbs	FEIR_Mitigated	2020	CHE	12.1096	116.5403	80.2955	55,487	3.3224	3.0576					1.6436	0.5108	2.6805	0.4629						
8 hour	lbs	FEIR_Mitigated	2020	HC	0.8057	3.7658	22.7146	2,394	0.4040	0.3858					0.4040	0.0246	0.1138	0.0425						
8 hour	lbs	FEIR_Mitigated	2020	OGV	28.7766	54.2472	1,273.6243	57,188	13.5336	12.4488					10.2948	41.1147	0.7604	4.1027						
8 hour	lbs	FEIR_Mitigated	2020	PC offsite	0.9661	30.5380	2.7043	1,235	0.0982	0.0563	0.0263	0.0290	0.0066	0.0101		0.0122	0.1794	0.1416					6.4417	0.9663
8 hour	lbs	FEIR_Mitigated	2020	PC onsite	0.0255	0.9070	0.0512	273	0.0046	0.0030	0.0009	0.0010	0.0002	0.0004		0.0027	0.0061	0.0047					0.9932	0.1490
8 hour	lbs	FEIR_Mitigated	2020	Rail offsite	4.5947	25.5530	110.4662	9,761	2.7310	2.5671					2.7310	0.0998	0.7984	0.2595						
8 hour	lbs	FEIR_Mitigated	2020	Rail onsite	0.4785	2.7597	11.3503	1,052	0.2755	0.2590					0.2755	0.0106	0.0854	0.0278						
8 hour	lbs	FEIR_Mitigated	2020	Trucks offsite	8.8107	3,463.5926	238.8987	353,799	47.7065	15.8727	9.3703	38.1387	2.3426	13.3485		-	616.6479	72.1242	-	629.3345	-	0.1975	43.0376	6.4556
8 hour	lbs	FEIR_Mitigated	2020	Trucks onsite	0.2974	104.5279	8.8369	7,602	0.4618	0.1562	0.0903	0.3651	0.0226	0.1278	-	-	20.8126	1.5497	-	21.2408	-	0.0064	14.2632	2.1395
8 hour	lbs	FEIR_Mitigated	2020	Trucks onsite idling	0.4328	62.2681	11.5598	8,679	0.0130	0.0119	-	-	-	-	-	-	30.0543	1.7693	-	30.6765	-	0.0130		
8 hour	lbs	FEIR_Mitigated	2021	CHE	16.0703	218.6201	70.1662	75,301	3.1491	2.9080					3.0134	0.4055	39.7638	1.7116						
8 hour	lbs	FEIR_Mitigated	2021	HC	0.6430	2.9962	18.1120	1,903	0.3225	0.3079					0.3225	0.0195	0.0905	0.0329						
8 hour	lbs	FEIR_Mitigated	2021	OGV	40.7130	69.0894	2,054.8879	71,152	17.5878	16.1770					14.5147	55.3427	1.1700	5.5201						
8 hour	lbs	FEIR_Mitigated	2021	PC offsite	1.2078	39.1733	3.4247	1,707	0.1326	0.0739	0.0371	0.0408	0.0093	0.0143		0.0169	0.2301	0.1859					10.4132	1.5620
8 hour	lbs	FEIR_Mitigated	2021	PC onsite	0.0364	1.3707	0.0738	436	0.0068	0.0045	0.0013	0.0014	0.0003	0.0005		0.0043	0.0091	0.0072					1.6289	0.2443
8 hour	lbs	FEIR_Mitigated	2021	Rail offsite	7.4257	42.1169	181.0639	16,089	4.4063	4.1420					4.4063	0.1645	1.3160	0.4277						
8 hour	lbs	FEIR_Mitigated	2021	Rail onsite	0.8077	4.7202	19.4520	1,799	0.4662	0.4383					0.4662	0.0182	0.1463	0.0476						
8 hour	lbs	FEIR_Mitigated	2021	Trucks offsite	14.0603	5,493.7306	379.3741	561,151	76.1535	25.3445	14.8711	60.9700	3.7178	21.3395		-	984.0646	114.3943	-	1,004.3101	-	0.3125	68.3023	10.2453
8 hour	lbs	FEIR_Mitigated	2021	Trucks onsite	0.4625	162.8450	13.6890	11,792	0.7236	0.2449	0.1400	0.5738	0.0350	0.2008	-	-	32.3682	2.4038	-	33.0341	-	0.0099	22.4204	3.3631
8 hour	lbs	FEIR_Mitigated	2021	Trucks onsite idling	1.7021	244.5316	45.3869	34,228	0.0531	0.0488	-	-	-	-	-	-	118.3825	6.9777	-	120.8302	-	0.0531		
8 hour	lbs	FEIR_Mitigated	2022	CHE	20.0347	234.5336	77.5253	78,837	3.6111	3.3331					3.4742	0.4357	40.2198	1.7497						
8 hour	lbs	FEIR_Mitigated	2022	HC	0.8371	4.0299	18.6837	2,614	0.2741	0.2617					0.2741	0.0261	0.1243	0.0456						
8 hour	lbs	FEIR_Mitigated	2022	OGV	59.5188	83.4180	3,834.3908	82,775	21.9403	20.1731					19.9785	79.1474	2.0547	8.2456						
8 hour	lbs	FEIR_Mitigated	2022	PC offsite	1.0557	34.4193	3.0475	1,619	0.1226	0.0662	0.0359	0.0395	0.0090	0.0138		0.0160	0.2033	0.1683					10.1445	1.5217
8 hour	lbs	FEIR_Mitigated	2022	PC onsite	0.0312	1.2445	0.0640	418	0.0064	0.0043	0.0013	0.0014	0.0003	0.0005		0.0041	0.0079	0.0066					1.5925	0.2389
8 hour	lbs	FEIR_Mitigated	2022	Rail offsite	10.0670	58.0953	248.4033	22,194	5.9638	5.6060					5.9638	0.2269	1.8153	0.5900						
8 hour	lbs	FEIR_Mitigated	2022	Rail onsite	1.1112	6.5696	27.1178	2,505	0.6431	0.6045					0.6431	0.0253	0.2039	0.0664						
8 hour	lbs	FEIR_Mitigated	2022	Trucks offsite	15.5066	5,989.3843	414.9326	606,506	83.6752	27.8589	16.2005	67.1365	4.0501	23.4978		-	1,085.2873	123.6402	-	1,107.6152	-	0.3382	74.4086	11.1613
8 hour	lbs	FEIR_Mitigated	2022	Trucks onsite	0.5081	179.1643	14.9478	12,782	0.7952	0.2692	0.1525	0.6320	0.0381	0.2212	-	-	35.5632	2.6056	-	36.2948	-	0.0107	24.5178	3.6777
8 hour	lbs	FEIR_Mitigated	2022	Trucks onsite idling	2.0083	290.2178	53.5723	40,417	0.0650	0.0598	-	-	-	-	-	-	139.8577	8.2394	-	142.7465	-	0.0650		
8 hour	lbs	FEIR_Mitigated	2023	CHE	22.7353	251.0564	81.3375	83,723	3.8915	3.5916					3.7488	0.4682	42.0235	1.8375						
8 hour	lbs	FEIR_Mitigated	2023	HC	0.8389	4.0346	18.7024	2,614	0.2749	0.2625					0.2749	0.0261	0.1243	0.0456						
8 hour	lbs	FEIR_Mitigated	2023	OGV	130.0029	274.4151	2,212.0678	114,975	34.1148	31.3546					32.2702	70.4337	2.4692	5.6481						
8 hour	lbs	FEIR_Mitigated	2023	PC offsite	0.7193	23.5838	2.1200	1,207	0.0892	0.0465	0.0274	0.0301	0.0068	0.0105		0.0119	0.1400	0.1193					7.7604	1.1641
8 hour	lbs	FEIR_Mitigated	2023	PC onsite	0.0211	0.8919	0.0438	314	0.0048	0.0032	0.0010	0.0011	0.0002	0.0004		0.0031	0.0055	0.0047					1.1422	0.1713
8 hour	lbs	FEIR_Mitigated	2023	Rail offsite	5.0157	29.3940	125.0159	11,229	2.9664	2.7885					2.9664	0.1148	0.9185	0.2985						

China Shipping Emissions Inventory by Source Category, by Scenario, and Analysis Period

Period	UOM	Scenario	Year	Source_category	VOC	CO	NOx	CO2	PM10 (PM10 exh, PM10TW, PM10BW)	PM25 (PM2.5 exh, PM2.5TW, PM2.5BW)	PM10TW	PM10BW	PM25TW	PM25BW	DPM	SOx	CH4	N2O	TOGdiesexh	TOGlngexh	PM10diesexh	PM10lngexh	PM10fdust	PM25fdust
8 hour	lbs	FEIR_Mitigated	2023	Rail onsite	0.5784	3.4922	14.2029	1,331	0.3318	0.3119					0.3318	0.0134	0.1082	0.0352						
8 hour	lbs	FEIR_Mitigated	2023	Trucks offsite	17.7461	5,692.7624	428.9765	494,190	81.2358	27.2131	13.2856	67.7586	3.3214	23.7155		-	1,242.0258	100.7438	-	1,267.5784	-	0.1917	61.0203	9.1530
8 hour	lbs	FEIR_Mitigated	2023	Trucks onsite	0.5390	187.1575	14.8281	10,898	0.7677	0.2597	0.1248	0.6367	0.0312	0.2229	-	-	37.7238	2.2217	-	38.4999	-	0.0062	18.8180	2.8227
8 hour	lbs	FEIR_Mitigated	2023	Trucks onsite idling	1.3260	187.8357	35.2075	25,317	0.0457	0.0420	-	-	-	-	-	-	92.8045	5.1609	-	94.7138	-	0.0457		
8 hour	lbs	FEIR_Mitigated	2026	CHE	37.1214	263.2805	79.8567	78,014	4.7480	4.3790					4.6118	0.4295	39.9949	1.7371						
8 hour	lbs	FEIR_Mitigated	2026	HC	1.4548	6.9778	32.3289	4,505	0.4781	0.4563					0.4781	0.0450	0.2142	0.0787						
8 hour	lbs	FEIR_Mitigated	2026	OGV	56.0818	84.7771	1,723.2125	62,416	16.7778	15.4289					14.2723	47.5898	1.3812	4.7226						
8 hour	lbs	FEIR_Mitigated	2026	PC onsite	0.0131	0.6473	0.0286	253	0.0039	0.0025	0.0008	0.0009	0.0002	0.0003		0.0025	0.0036	0.0034					1.0968	0.1645
8 hour	lbs	FEIR_Mitigated	2026	Rail offsite	10.6835	68.0026	277.7377	25,971	6.2586	5.8831					6.2586	0.2650	2.1225	0.6900						
8 hour	lbs	FEIR_Mitigated	2026	Rail onsite	0.6793	4.4724	17.1932	1,703	0.3798	0.3570					0.3798	0.0171	0.1380	0.0449						
8 hour	lbs	FEIR_Mitigated	2026	Trucks onsite	0.2565	118.1496	6.5355	10,753	0.7737	0.2647	0.1489	0.6094	0.0372	0.2133	-	-	17.9540	2.1921	-	18.3233	-	0.0154	25.1476	3.7721
8 hour	lbs	FEIR_Mitigated	2026	Trucks onsite idling	0.7391	110.2102	19.7823	14,449	0.0273	0.0251	-	-	-	-	-	-	51.7312	2.9456	-	52.7955	-	0.0273		
8 hour	lbs	FEIR_Mitigated	2036	CHE	16.1651	168.8839	8.8633	55,069	0.8928	0.8291					0.7968	0.3031	28.2318	1.2262						
8 hour	lbs	FEIR_Mitigated	2036	HC	0.4335	5.1069	12.0107	4,505	0.2866	0.2735					0.2866	0.0436	0.2142	0.0787						
8 hour	lbs	FEIR_Mitigated	2036	OGV	153.1136	265.4728	800.8368	101,021	31.4453	28.9035					28.3431	61.6519	2.9081	5.3007						
8 hour	lbs	FEIR_Mitigated	2036	PC onsite	0.0091	0.6669	0.0246	303	0.0041	0.0023	0.0012	0.0013	0.0003	0.0004		0.0030	0.0028	0.0037					1.5058	0.2259
8 hour	lbs	FEIR_Mitigated	2036	Rail offsite	7.3543	66.5998	208.5926	25,435	4.0762	3.8316					4.0762	0.2595	2.0787	0.6757						
8 hour	lbs	FEIR_Mitigated	2036	Rail onsite	0.5624	5.0406	15.2289	1,919	0.2937	0.2761					0.2937	0.0192	0.1555	0.0506						
8 hour	lbs	FEIR_Mitigated	2036	Trucks onsite	0.1636	119.6737	2.0388	13,923	1.1410	0.3940	0.2226	0.8887	0.0557	0.3111	-	-	11.4511	2.8384	-	11.6867	-	0.0296	37.6018	5.6403
8 hour	lbs	FEIR_Mitigated	2036	Trucks onsite idling	0.7777	175.3070	21.8284	21,825	0.0668	0.0614	-	-	-	-	-	-	54.4273	4.4492	-	55.5470	-	0.0668		
8 hour	lbs	FEIR_Mitigated	2045	CHE	21.7279	160.3266	8.6809	48,116	0.9687	0.8979					0.8847	0.2649	24.6671	1.0713						
8 hour	lbs	FEIR_Mitigated	2045	HC	0.4335	5.1069	12.0107	4,505	0.2866	0.2735					0.2866	0.0436	0.2142	0.0787						
8 hour	lbs	FEIR_Mitigated	2045	OGV	153.1136	265.4728	448.8053	101,021	31.4453	28.9035					28.3431	61.6519	2.9081	5.3007						
8 hour	lbs	FEIR_Mitigated	2045	PC onsite	0.0068	0.6191	0.0212	292	0.0037	0.0019	0.0012	0.0013	0.0003	0.0004		0.0029	0.0024	0.0035					1.5058	0.2259
8 hour	lbs	FEIR_Mitigated	2045	Rail offsite	5.2242	93.8323	144.9356	35,838	2.3630	2.2212					2.3630	0.3659	2.9297	0.9523						
8 hour	lbs	FEIR_Mitigated	2045	Rail onsite	0.3644	5.0623	8.8418	1,922	0.1467	0.1379					0.1467	0.0189	0.1546	0.0504						
8 hour	lbs	FEIR_Mitigated	2045	Trucks onsite	0.1556	108.0297	1.5061	12,719	1.0269	0.3557	0.2087	0.7881	0.0522	0.2758	-	-	10.8868	2.5929	-	11.1108	-	0.0301	35.2524	5.2879
8 hour	lbs	FEIR_Mitigated	2045	Trucks onsite idling	0.7274	190.5952	21.2965	22,304	0.0850	0.0781	-	-	-	-	-	-	50.9081	4.5467	-	51.9555	-	0.0850		
8 hour	lbs	Revised Project	2012	PC offsite	0.6017	24.2141	2.0705	3,330	0.0567	0.0302	0.0169	0.0187	0.0042	0.0066	-	0.0329	0.1210	0.1449	-	-	-	-	0.6845	0.1027
8 hour	lbs	Revised Project	2012	Trucks offsite	12.1935	79.5499	406.4341	97,759	15.0230	9.0794	2.0385	6.3503	0.5096	2.2226	6.6324	0.8893	8.9750	15.5003	13.7361	8.5961	6.6324	0.0018	3.4144	0.5122
8 hour	lbs	Revised Project	2014	PC offsite	0.4468	19.4751	1.5648	3,240	0.0510	0.0262	0.0159	0.0176	0.0040	0.0062	-	0.0322	0.0923	0.1150	-	-	-	-	0.7705	0.1156
8 hour	lbs	Revised Project	2014	Trucks offsite	19.1473	133.0756	808.5698	217,155	22.8123	10.5090	4.6464	13.2387	1.1616	4.6335	4.9222	1.9744	15.7968	34.4648	21.5412	15.2388	4.9222	0.0050	8.1838	1.2276
8 hour	lbs	Revised Project	2026	PC offsite	0.2720	25.9409	1.2442	9,826	0.1539	0.0743	0.0520	0.0568	0.0130	0.0199	-	0.0971	0.0741	0.1516	-	-	-	-	2.3592	0.3539
8 hour	lbs	Revised Project	2026	Trucks offsite	1.5418	63.8036	109.6830	215,625	18.2772	6.9398	4.8903	11.6860	1.2226	4.0901	1.6943	1.9733	8.4286	34.3067	1.6192	8.5346	1.6943	0.0066	8.0529	1.2079
8 hour	lbs	Revised Project	2036	PC offsite	0.0967	13.7982	0.5399	5,771	0.0927	0.0389	0.0360	0.0390	0.0090	0.0137	-	0.0571	0.0305	0.0822	-	-	-	-	1.7058	0.2559
8 hour	lbs	Revised Project	2036	Trucks offsite	1.9692	66.4657	83.6337	287,995	28.3505	10.3229	7.3565	19.1211	1.8391	6.6924	1.8594	2.6329	5.7867	45.8346	2.1491	5.8163	1.8594	0.0135	12.3210	1.8482
8 hour	lbs	Revised Project	2045	PC offsite	0.0775	13.2715	0.4760	5,649	0.0890	0.0353	0.0362	0.0391	0.0091	0.0137	-	0.0558	0.0268	0.0784	-	-	-	-	1.7101	0.2565
8 hour	lbs	Revised Project	2045	Trucks offsite	1.8668	69.5817	65.5411	249,686	28.4842	10.1206	6.9587	20.1287	1.7397	7.0450	1.3813	2.2710	6.1506	39.7949	2.0265	6.1928	1.3813	0.0156	11.5792	1.7369
8 hour	lbs	Revised_Project	2012	CHE	48.8706	498.0937	258.1175	53,292	7.8680	7.4643					5.0464	0.1980	2.3871	0.4772						
8 hour	lbs	Revised_Project	2012	HC	2.5492	15.6731	27.2461	2,057	0.9762	0.9024					0.9762	0.0214	0.0423	0.0926						
8 hour	lbs	Revised_Project	2012	OGV	45.8012	71.9080	519.3804	27,826	15.7814	14.5815					15.2074	60.9289	0.2703	1.5482						
8 hour	lbs	Revised_Project	2012	PC onsite	0.0519	1.1729	0.0884	163	0.0030	0.0021	0.0005	0.0006	0.0001	0.0002		0.0016	0.0106	0.0062					0.6058	0.0909
8 hour	lbs	Revised_Project	2012	Rail offsite	24.8086	100.1179	465.6301	38,245	15.9938	15.0335					15.9938	0.3909	3.1276	1.0165						
8 hour	lbs	Revised_Project	2012	Rail onsite	1.6998	7.2635	31.8415	2,765	1.0577	0.9920					1.0577	0.0278	0.2238	0.0730						
8 hour	lbs	Revised_Project	2012	Trucks onsite	1.7901	12.8104	18.6739	4,517	0.5372	0.2991	0.0563	0.2885	0.0141	0.1010	0.1921	0.0378	1.8248	0.7330	2.0068	1.7815	0.1921	0.0003	10.3540	1.5531
8 hour	lbs	Revised_Project	2012	Trucks onsite idling	4.2007	16.7892	36.4348	3,423	0.6836	0.6540	-	-	-	-	0.6836	0.0296	0.9827	0.5509	4.6399	0.9392	0.6836	-		
8 hour	lbs	Revised_Project	2014	CHE	106.7311	1,053.8305	553.3234	96,044	8.5995	8.3065					3.6636	0.3724	4.2902	0.8579						
8 hour	lbs	Revised_Project	2014	HC	4.5604	26.9457	48.5594	3,484	1.8018	1.6642					1.8018	0.0363	0.0724	0.1568						
8 hour	lbs	Revised_Project	2014	OGV	70.4355	159.1998	2,587.5897	129,493	38.5673	34.9043					33.0721	75.9121	2.2278	8.1055						
8 hour	lbs	Revised_Project	2014	PC onsite	0.0378	0.9117	0.0656	156	0.0025	0.0017	0.0005	0.0005	0.0001	0.0002		0.0016	0.0079	0.0048					0.5818	0.0873
8 hour	lbs	Revised_Project	2014	Rail offsite	23.6868	107.0086	485.1094	40,877	15.1954	14.2829					15.1954	0.4177	3.3428	1.0865						
8 hour	lbs	Revised_Project	2014	Rail onsite	1.7537	8.3861	35.5679	3,191	1.0748	1.0073					1.0748	0.0320	0.2579	0.0842						
8 hour	lbs	Revised_Project	2014	Trucks onsite	3.0078	20.9515	37.9627	10,304	0.9257	0.4222	0.1327	0.6092	0.0332	0.2132	0.1829	0.0885	2.6683	1.6611	3.3793	2.5862	0.1829	0.0008	23.3903	3.5085
8 hour	lbs	Revised_Project	2014	Trucks onsite idling	7.9597	63.4547	175.9663	25,514	0.0742	0.0710	-	-	-	-	0.0725	0.2288	4.7980	4.0653	8.9883	4.5235	0.0725	0.0018		
8 hour	lbs	Revised_Project	2018	CHE	51.5778	977.6012	284.0501	45,373	4.4891	4.3210					2.1013	0.1702	2.0312	0.4062						
8 hour	lbs	Revised_Project	2018	HC	0.3485	1.6752	9.6775	1,029	0.1843	0.1759					0.1843	0.0106	0.0489	0.0194						
8 hour	lbs	Revised_Project	2018	OGV	16.5361	41.9225	434.8984	40,595	9.3188	8.5741					6.6244	24.7462	0.3141	2.2795						
8 hour	lbs	Revised_Project	2018	PC offsite	0.9635	24.1867	2.0958	807	0.0673	0.0404	0.0166	0.0183	0.0041	0.0064		0.0080	0.1586	0.1045					4.6627	0.6994
8 hour	lbs	Revised_Project	2018	PC onsite	0.0246	0.7674	0.0472	201	0.0032	0.0021	0.0006	0.0006	0.0001	0.0002		0.0020	0.0057	0.0041					0.7482	0.1122
8 hour	lbs	Revised_Project	2018	Rail offsite	2.7429	14.5167	63.5750	5,545	1.6371	1.5389					1.6371	0.0567	0.4534	0.1474						
8 hour	lbs	Revised_Project	2018	Rail onsite	0.2301	1.2867	5.2537	490	0.1316	0.1237					0.1316	0.0049	0.0397	0.0129						
8 hour	lbs	Revised_Project	2018	Trucks offsite	17.5210	131.6757	811.8980	260,510	26.4432	12.4335	5.6806	14.5876	1.4202	5.1056		2.3861	14.9663	41.3670	19.7159	14.4532	6.1704	0.0046	26.5366	3.9805
8 hour	lbs	Revised_Project	2018	Trucks onsite	0.9993	5.4808	14.5602	4,230	0.3612	0.1584	0.0562	0.2430	0.0140	0.0851	0.0618	0.0383	0.5271	0.6738	1.1299	0.4909	0.0618	0.0002	9.3852	1.4078
8 hour	lbs	Revised_Project	2018	Trucks onsite idling	3.1258	33.2065	55.5035	9,197	0.0199	0.0190	-	-	-	-	0.0196	0.0849	0.9002	1.4570	3.5461	0.7712	0.0196	0.0002		
8 hour	lbs	Revised_Project	2019	CHE	28.1716	134.5876	147.9683	44,938	4.0783	3.9261					1.9020	0.1883	1.9967	0.3993						
8 hour	lbs	Revised_Project	2019	HC	0.4960	2.3860	13.7573	1,463	0.2553	0.2437					0.2553	0.0150	0.0696	0.0280						
8 hour	lbs	Revised_Project	2019	OGV	18.1888	46.0863	501.6309	44,924	10.2891	9.4668					7.2701	27.3857	0.3455	2.5307						
8 hour	lbs	Revised_Project	2019	PC offsite	0.6120	18.6558	1.6587	698	0.0568	0.0333	0.0146	0.0161	0.0037	0.0056		0.0069	0.1126	0.0852					4.0914	0.6137
8 hour	lbs	Revised_Project	2019	PC onsite	0.0182	0.6142	0.0361	175	0.0028	0.0019	0.0005	0.0006	0.0001	0.0002		0.0017	0.0044	0.0033					0.6530	0.0980
8 hour	lbs	Revised_Project	2019	Rail offsite	2.2821	12.4190	53.9406	4,744	1.3579	1.2764					1.3579	0.0485	0.3879	0.1261						
8 hour	lbs	Revised_Project	2019	Rail onsite	0.1931	1.1101	4.4823	423	0.1097	0.1031					0.1097	0.0042	0.0342	0.0111						
8 hour	lbs	Revised_Project	2019	Trucks offsite	16.8022	136.5251	795.6874	270,785	26.7260	12.3077	5.9100	14.9737	1.4775	5.2408		2.4784	16.1320	43.0337	18.8782	15.6779	5.8374	0.0049	27.6189	4.1428
8 hour	lbs	Revised_Project	2019	Trucks onsite	0.9912	5.8160	14.9826	4,466	0.3735	0.1590	0.0598	0.2572	0.0150	0.0900	0.0563	0.0404	0.5891	0.7122	1.1196	0.5546	0.0563	0.0002	9.9470	1.4921
8 hour	lbs	Revised_Project	2019	Trucks onsite idling	3.3696	37.0701	58.3573	9,774	0.0210	0.0201	-	-	-	-	0.0207	0.0903	0.9714	1.5493	3.8226	0.8323	0.0207	0.0003		
8 hour	lbs	Revised_Project	2020	CHE	51.7763	210.1458	224.7612	67,209	5.7467	5.4877					3.2385	0.3318	2.9478	0.5896						
8 hour	lbs	Revised_Project	2020	HC	0.8057	3.7658	22.7146	2,394	0.4040	0.3858					0.4040	0.0246	0.1138	0.0425						
8 hour	lbs	Revised_Project	2020	OGV	28.7766	54.2472	1,273.6243	57,188	13.5336	12.4488					10.2948	41.1147	0.7604	4.1027						
8 hour	lbs	Revised_Project	2020	PC offsite	0.9661	30.5380	2.7043	1,235	0.0982	0.0563	0.0263	0.0290	0.0066	0.0101		0.0122	0.1794	0.1416					6.4417	0.9663
8 hour	lbs	Revised_Project	2020	PC onsite	0.0255	0.9070	0.0512	273	0.0046	0.0030	0.0009	0.0010	0.0002	0.0004		0.0027	0.0061	0.0047					0.9932	0.1490
8 hour	lbs	Revised_Project	2020	Rail offsite	4.5947	25.5530	110.4662	9,761	2.7310	2.5671					2.7310	0.0998	0.7984	0.2595						
8 hour	lbs	Revised_Project	2020	Rail onsite	0.4785	2.7597	11.3503	1,052	0.2755	0.2590					0.2755	0.0106	0.0854	0.0278						
8 hour	lbs	Revised_Project	2020	Trucks offsite	23.5402	236.2744	1,131.6241	421,111	40.6696	18.3701	9.1976	23.1391	2.2994	8.0987		3.8280	30.4673	67.1271	26.3206	29.9982	8.3235	0.0094	43.0376	6.4556
8 hour	lbs	Revised_Project	2020	Trucks onsite	1.0533	8.4669	19.0578	6,408	0.5253	0.2113	0.0887	0.3767	0.0222	0.1318	0.0596	0.0572	1.0403	1.0264	1.1829	1.0125	0.0596	0.0003	14.2632	2.1395
8 hour	lbs	Revised_Project	2020	Trucks onsite idling	4.6332	53.7248	77.2806	13,367	0.0275	0.0263	-	-	-	-	0.0269	0.1227	1.6468	2.1251	5.2511	1.4622	0.0269	0.0005		
8 hour	lbs	Revised_Project	2021	CHE	134.9826	351.8191	469.5105	103,832	10.0263	9.5492					5.9638	0.5363	4.5359	0.9072						
8 hour	lbs	Revised_Project	2021	HC	0.4444	2.0708	12.5178	1,315	0.2229	0.2128					0.2229	0.0135	0.0625	0.0227						
8 hour	lbs	Revised_Project	2021	OGV	40.7130	69.0894	2,054.8879	71,152	17.5878	16.1770					14.5147	55.3427	1.1700	5.5201						
8 hour	lbs	Revised_Project	2021	PC offsite	1.2078	39.1733	3.4247	1,707	0.1326	0.0739	0.0371	0.0408	0.0093	0.0143		0.0169	0.2301	0.1859					10.4132	1.5620
8 hour	lbs	Revised_Project	2021	PC onsite	0.0364	1.3707	0.0738	436	0.0068	0.0045	0.0013	0.0014	0.0003	0.0005		0.0043	0.0091	0.0072					1.6289	0.2443
8 hour	lbs	Revised_Project	2021	Rail offsite	7.4257	42.1169	181.0639	16,089	4.4063	4.1420					4.4063	0.1645	1.3160	0.4277						
8 hour	lbs	Revised_Project	2021	Rail onsite	0.8077	4.7202	19.4520	1,799	0.4662	0.4383					0.4662	0.0182	0.1463	0.0476						
8 hour	lbs	Revised_Project	2021	Trucks offsite	30.5407	372.9228	1,526.8010	667,002	63.3480	28.4246	14.5894	36.0476	3.6473	12.6167		6.0474	51.1548	106.4006	33.9587	50.7932	12.6953	0.0158	68.3023	10.2453

China Shipping Emissions Inventory by Source Category, by Scenario, and Analysis Period

Period	UOM	Scenario	Year	Source_category	VOC	CO	NOx	CO2	PM10 (PM10 exh, PM10TW, PM10BW)	PM25 (PM2.5 exh, PM2.5TW, PM2.5BW)	PM10TW	PM10BW	PM25TW	PM25BW	DPM	SOx	CH4	N2O	TOGdiesexh	TOGlngexh	PM10diesexh	PM10lngexh	PM10fdust	PM25fdust
8 hour	lbs	Revised_Project	2021	Trucks onsite	1.6285	13.6182	29.4799	9,935	0.8063	0.3247	0.1373	0.5764	0.0343	0.2017	0.0921	0.0884	1.7116	1.5929	1.8273	1.6707	0.0921	0.0005	22.4204	3.3631
8 hour	lbs	Revised_Project	2021	Trucks onsite idling	17.7815	216.3253	284.2362	50,620	0.1009	0.0964	-	-	-	-	0.0982	0.4629	6.8091	8.0553	20.1448	6.1110	0.0982	0.0026		
8 hour	lbs	Revised_Project	2022	CHE	154.5746	372.3178	500.7254	107,484	13.0179	12.3043					8.9203	0.5665	4.6868	0.9374						
8 hour	lbs	Revised_Project	2022	HC	0.8371	4.0299	18.6837	2,614	0.2741	0.2617					0.2741	0.0261	0.1243	0.0456						
8 hour	lbs	Revised_Project	2022	OGV	59.5188	83.4180	3,834.3908	82,775	21.9403	20.1731					19.9785	79.1474	2.0547	8.2456						
8 hour	lbs	Revised_Project	2022	PC offsite	1.0557	34.4193	3.0475	1,619	0.1226	0.0662	0.0359	0.0395	0.0090	0.0138		0.0160	0.2033	0.1683					10.1445	1.5217
8 hour	lbs	Revised_Project	2022	PC onsite	0.0312	1.2445	0.0640	418	0.0064	0.0043	0.0013	0.0014	0.0003	0.0005		0.0041	0.0079	0.0066					1.5925	0.2389
8 hour	lbs	Revised_Project	2022	Rail offsite	10.0670	58.0953	248.4033	22,194	5.9638	5.6060					5.9638	0.2269	1.8153	0.5900						
8 hour	lbs	Revised_Project	2022	Rail onsite	1.1112	6.5696	27.1178	2,505	0.6431	0.6045					0.6431	0.0253	0.2039	0.0664						
8 hour	lbs	Revised_Project	2022	Trucks offsite	22.7192	410.2726	1,263.4397	722,143	66.9058	29.6355	15.8721	38.1675	3.9680	13.3586		6.5172	61.6840	115.3440	24.8772	61.9172	12.8473	0.0189	74.4086	11.1613
8 hour	lbs	Revised_Project	2022	Trucks onsite	1.1417	14.2386	27.5100	10,491	0.8425	0.3238	0.1495	0.6206	0.0374	0.2172	0.0718	0.0926	2.0397	1.6859	1.2674	2.0289	0.0718	0.0006	24.5178	3.6777
8 hour	lbs	Revised_Project	2022	Trucks onsite idling	20.6619	263.6664	316.7360	57,932	0.1111	0.1062	-	-	-	-	0.1075	0.5272	8.7727	9.2318	23.3942	7.9797	0.1075	0.0035		
8 hour	lbs	Revised_Project	2023	CHE	158.0533	382.3849	454.9052	110,086	12.4980	11.8402					8.2227	0.5719	4.8066	0.9613						
8 hour	lbs	Revised_Project	2023	HC	0.8389	4.0346	18.7024	2,614	0.2749	0.2625					0.2749	0.0261	0.1243	0.0456						
8 hour	lbs	Revised_Project	2023	OGV	130.0029	274.4151	2,212.0678	114,975	34.1148	31.3546					32.2702	70.4337	2.4692	5.6481						
8 hour	lbs	Revised_Project	2023	PC offsite	0.7193	23.5838	2.1200	1,207	0.0892	0.0465	0.0274	0.0301	0.0068	0.0105		0.0119	0.1400	0.1193					7.7604	1.1641
8 hour	lbs	Revised_Project	2023	PC onsite	0.0211	0.8919	0.0438	314	0.0048	0.0032	0.0010	0.0011	0.0002	0.0004		0.0031	0.0055	0.0047					1.1422	0.1713
8 hour	lbs	Revised_Project	2023	Rail offsite	5.0157	29.3940	125.0159	11,229	2.9664	2.7885					2.9664	0.1148	0.9185	0.2985						
8 hour	lbs	Revised_Project	2023	Rail onsite	0.5784	3.4922	14.2029	1,331	0.3318	0.3119					0.3318	0.0134	0.1082	0.0352						
8 hour	lbs	Revised_Project	2023	Trucks offsite	6.0501	363.0265	571.3125	586,945	53.0368	22.8313	13.0168	30.8390	3.2542	10.7936		5.2826	73.3344	93.8203	5.6986	74.6058	9.1697	0.0113	61.0203	9.1530
8 hour	lbs	Revised_Project	2023	Trucks onsite	0.1722	12.4546	17.1120	8,206	0.6270	0.2228	0.1223	0.4789	0.0306	0.1676	0.0253	0.0716	2.2268	1.3226	0.1599	2.2660	0.0253	0.0004	18.8180	2.8227
8 hour	lbs	Revised_Project	2023	Trucks onsite idling	14.6666	226.6131	174.4641	37,403	0.0648	0.0619	-	-	-	-	0.0621	0.3401	6.1398	5.9619	16.6079	5.5746	0.0621	0.0026		
8 hour	lbs	Revised_Project	2026	CHE	145.6777	1,014.6366	352.1241	95,448	6.6040	6.2324					4.6461	0.5296	23.7713	1.3965						
8 hour	lbs	Revised_Project	2026	HC	1.4548	6.9778	32.3289	4,505	0.4781	0.4563					0.4781	0.0450	0.2142	0.0787						
8 hour	lbs	Revised_Project	2026	OGV	70.4994	125.3549	2,097.9474	98,136	25.0529	23.0427					20.2029	69.4412	1.6511	6.6985						
8 hour	lbs	Revised_Project	2026	PC onsite	0.0131	0.6473	0.0286	253	0.0039	0.0025	0.0008	0.0009	0.0002	0.0003		0.0025	0.0036	0.0034					1.0968	0.1645
8 hour	lbs	Revised_Project	2026	Rail offsite	10.6835	68.0026	277.7377	25,971	6.2586	5.8831					6.2586	0.2650	2.1225	0.6900						
8 hour	lbs	Revised_Project	2026	Rail onsite	0.6793	4.4724	17.1932	1,703	0.3798	0.3570					0.3798	0.0171	0.1380	0.0449						
8 hour	lbs	Revised_Project	2026	Trucks onsite	0.1441	11.4068	11.9418	9,767	0.7289	0.2518	0.1459	0.5643	0.0365	0.1975	0.0173	0.0841	1.4779	1.5796	0.1401	1.5025	0.0173	0.0013	25.1476	3.7721
8 hour	lbs	Revised_Project	2026	Trucks onsite idling	7.7287	122.3396	52.6760	19,565	0.0209	0.0199	-	-	-	-	0.0187	0.1741	4.5981	3.1374	8.7295	4.3292	0.0187	0.0022		
8 hour	lbs	Revised_Project	2036	CHE	22.5931	186.0128	15.6200	60,145	1.4750	1.3648					1.3776	0.3502	28.4377	1.2674						
8 hour	lbs	Revised_Project	2036	HC	0.4335	5.1069	12.0107	4,505	0.2866	0.2735					0.2866	0.0436	0.2142	0.0787						
8 hour	lbs	Revised_Project	2036	OGV	164.2266	293.5747	984.5772	125,132	37.1990	34.1979					32.8118	76.3481	3.1192	6.5875						
8 hour	lbs	Revised_Project	2036	PC onsite	0.0091	0.6669	0.0246	303	0.0041	0.0023	0.0012	0.0013	0.0003	0.0004		0.0030	0.0028	0.0037					1.5058	0.2259
8 hour	lbs	Revised_Project	2036	Rail offsite	7.3543	66.5998	208.5926	25,435	4.0762	3.8316					4.0762	0.2595	2.0787	0.6757						
8 hour	lbs	Revised_Project	2036	Rail onsite	0.5624	5.0406	15.2289	1,919	0.2937	0.2761					0.2937	0.0192	0.1555	0.0506						
8 hour	lbs	Revised_Project	2036	Trucks onsite	0.1753	11.7540	9.2700	12,304	1.1200	0.3851	0.2189	0.8763	0.0547	0.3067	0.0224	0.1057	0.9465	1.9914	0.1843	0.9583	0.0224	0.0024	37.6018	5.6403
8 hour	lbs	Revised_Project	2036	Trucks onsite idling	12.4791	197.8212	44.4522	27,037	0.0339	0.0322	-	-	-	-	0.0284	0.2391	5.0397	4.3426	14.1339	4.5549	0.0284	0.0055		
8 hour	lbs	Revised_Project	2045	CHE	24.4376	168.3683	9.9464	52,551	1.0901	1.0097					1.0050	0.3060	24.8471	1.1073						
8 hour	lbs	Revised_Project	2045	HC	0.4335	5.1069	12.0107	4,505	0.2866	0.2735					0.2866	0.0436	0.2142	0.0787						
8 hour	lbs	Revised_Project	2045	OGV	164.2266	293.5747	526.6428	125,132	37.1990	34.1979					32.8118	76.3481	3.1192	6.5875						
8 hour	lbs	Revised_Project	2045	PC onsite	0.0068	0.6191	0.0212	292	0.0037	0.0019	0.0012	0.0013	0.0003	0.0004		0.0029	0.0024	0.0035					1.5058	0.2259
8 hour	lbs	Revised_Project	2045	Rail offsite	5.2242	93.8323	144.9356	35,838	2.3630	2.2212					2.3630	0.3659	2.9297	0.9523						
8 hour	lbs	Revised_Project	2045	Rail onsite	0.3644	5.0623	8.8418	1,922	0.1467	0.1379					0.1467	0.0189	0.1546	0.0504						
8 hour	lbs	Revised_Project	2045	Trucks onsite	0.1604	10.5330	6.5026	10,379	1.0810	0.3717	0.2059	0.8519	0.0515	0.2982	0.0207	0.0884	0.8996	1.6834	0.1681	0.9111	0.0207	0.0025	35.2524	5.2879
8 hour	lbs	Revised_Project	2045	Trucks onsite idling	13.0310	207.2911	34.4630	26,480	0.0369	0.0350	-	-	-	-	0.0299	0.2334	4.7770	4.2567	14.7669	4.2604	0.0299	0.0070		
1 hour	lbs	Baseline	2008	CHE	2.4311	40.5821	24.3828	4,306	0.7349	0.6983					0.4581	0.0145	0.1748	0.0342						
1 hour	lbs	Baseline	2008	HC	-	-	-	-	-	-					-	-	-	-						
1 hour	lbs	Baseline	2008	OGV	1.0572	2.5840	30.8159	2,825	3.8729	3.1166					2.8323	44.3545	0.0201	0.1710						
1 hour	lbs	Baseline	2008	PC offsite	0.1742	6.2399	0.5548	630	0.0131	0.0080	0.0031	0.0034	0.0008	0.0012	-	0.0061	0.0337	0.0366	-	-	-	-	0.1234	0.0185
1 hour	lbs	Baseline	2008	PC onsite	0.0139	0.2918	0.0231	31	0.0007	0.0006	-	0.0001	-	-		0.0003	0.0027	0.0015					0.0810	0.0121
1 hour	lbs	Baseline	2008	Rail offsite	3.9081	12.5374	70.9928	4,789	2.5040	2.3536					2.5040	0.0488	0.3916	0.1272						
1 hour	lbs	Baseline	2008	Rail onsite	0.2588	0.8428	4.6613	321	0.1618	0.1519					0.1618	0.0033	0.0261	0.0085						
1 hour	lbs	Baseline	2008	Trucks offsite	6.8451	26.3604	125.1489	11,599	4.2863	3.4978	0.2225	0.7345	0.0556	0.2571	3.3241	0.1056	1.1376	1.8374	7.6280	0.9946	3.3241	0.0052	0.3868	0.0580
1 hour	lbs	Baseline	2008	Trucks onsite	1.2164	2.5225	5.6462	590	0.3773	0.3340	0.0070	0.0363	0.0018	0.0127	0.3339	0.0056	0.0565	0.0925	1.3848	-	0.3339	-	0.9600	0.1440
1 hour	lbs	Baseline	2008	Trucks onsite idling	0.5061	1.5767	3.2802	266	0.0892	0.0854	-	-	-	-	0.0892	0.0025	0.0235	0.0417	0.5761	-	0.0892	-		
1 hour	lbs	FEIR Mitigated	2012	PC offsite	0.0860	3.4604	0.2959	476	0.0081	0.0043	0.0024	0.0027	0.0006	0.0009	-	0.0047	0.0173	0.0207	-	-	-	-	0.0978	0.0147
1 hour	lbs	FEIR Mitigated	2012	Trucks offsite	1.1091	65.9138	35.2039	12,617	1.9866	0.9683	0.2938	1.1942	0.0734	0.4180	0.4957	0.0665	13.7067	2.2492	1.0267	13.9597	0.4957	0.0029	0.4879	0.0732
1 hour	lbs	FEIR Mitigated	2014	PC offsite	0.0642	2.8006	0.2250	466	0.0073	0.0038	0.0023	0.0025	0.0006	0.0009	-	0.0046	0.0133	0.0165	-	-	-	-	0.1108	0.0166
1 hour	lbs	FEIR Mitigated	2014	Trucks offsite	1.3696	184.3195	49.8253	27,569	3.4678	1.2877	0.6732	2.5611	0.1683	0.8964	0.2221	0.0891	34.1691	5.1778	0.9721	34.8635	0.2221	0.0114	1.1769	0.1765
1 hour	lbs	FEIR Mitigated	2026	PC offsite	0.0378	3.6085	0.1731	1,367	0.0214	0.0103	0.0072	0.0079	0.0018	0.0028	-	0.0135	0.0103	0.0211	-	-	-	-	0.3282	0.0492
1 hour	lbs	FEIR Mitigated	2026	Trucks offsite	0.3777	165.1508	9.0842	22,868	3.5592	1.1882	0.6947	2.8435	0.1737	0.9952	-	-	26.4377	4.6618	-	26.9816	-	0.0210	1.1202	0.1680
1 hour	lbs	FEIR Mitigated	2036	PC offsite	0.0135	1.9194	0.0751	803	0.0129	0.0054	0.0050	0.0054	0.0013	0.0019	-	0.0079	0.0042	0.0114	-	-	-	-	0.2373	0.0356
1 hour	lbs	FEIR Mitigated	2036	Trucks offsite	0.2574	164.3551	4.2935	31,463	5.2417	1.7548	1.0414	4.1575	0.2603	1.4551	-	-	18.0171	6.4140	-	18.3878	-	0.0428	1.7139	0.2571
1 hour	lbs	FEIR Mitigated	2045	PC offsite	0.0108	1.8461	0.0662	786	0.0124	0.0049	0.0050	0.0054	0.0013	0.0019	-	0.0078	0.0037	0.0109	-	-	-	-	0.2379	0.0357
1 hour	lbs	FEIR Mitigated	2045	Trucks offsite	0.2741	171.5731	3.7842	31,186	4.7373	1.5879	0.9816	3.7064	0.2454	1.2973	-	-	19.1834	6.3576	-	19.5780	-	0.0492	1.6107	0.2416
1 hour	lbs	FEIR_Mitigated	2012	CHE	5.8709	68.8809	24.3557	6,856	0.8014	0.7696					0.3982	0.0210	0.3100	0.0616						
1 hour	lbs	FEIR_Mitigated	2012	HC	-	-	-	-	-	-					-	-	-	-						
1 hour	lbs	FEIR_Mitigated	2012	OGV	1.4578	3.3317	30.3841	2,684	0.9648	0.8937					0.8930	5.8816	0.0208	0.1569						
1 hour	lbs	FEIR_Mitigated	2012	PC onsite	0.0074	0.1676	0.0126	23	0.0004	0.0003	-	-	-	-		0.0002	0.0015	0.0009					0.0866	0.0130
1 hour	lbs	FEIR_Mitigated	2012	Rail offsite	3.1010	12.5147	58.2037	4,781	1.9991	1.8791					1.9991	0.0487	0.3909	0.1269						
1 hour	lbs	FEIR_Mitigated	2012	Rail onsite	0.2125	0.9079	3.9802	346	0.1322	0.1240					0.1322	0.0035	0.0280	0.0091						
1 hour	lbs	FEIR_Mitigated	2012	Trucks onsite	0.1595	6.4495	1.9295	679	0.0650	0.0313	0.0081	0.0414	0.0020	0.0145	0.0153	0.0030	1.2519	0.1240	0.1593	1.2730	0.0153	0.0002	1.4797	0.2219
1 hour	lbs	FEIR_Mitigated	2012	Trucks onsite idling	0.4129	3.2084	3.1422	455	0.0543	0.0519	-	-	-	-	0.0543	0.0023	0.5819	0.0813	0.3684	0.6711	0.0543	-		
1 hour	lbs	FEIR_Mitigated	2014	CHE	14.9673	156.0038	39.4330	12,271	0.7862	0.7801					0.0765	0.0393	0.5543	0.1108						
1 hour	lbs	FEIR_Mitigated	2014	HC	6.8407	40.4186	72.8391	5,226	2.7027	2.4963					2.7027	0.0545	0.1087	0.2351						
1 hour	lbs	FEIR_Mitigated	2014	OGV	15.6710	33.2550	606.0132	23,629	7.5390	6.7755					6.8428	13.1689	0.5372	1.5630						
1 hour	lbs	FEIR_Mitigated	2014	PC onsite	0.0054	0.1311	0.0094	22	0.0004	0.0002	-	-	-	-		0.0002	0.0011	0.0007					0.0831	0.0125
1 hour	lbs	FEIR_Mitigated	2014	Rail offsite	2.9608	13.3760	60.6387	5,110	1.8993	1.7853					1.8993	0.0521	0.4178	0.1358						
1 hour	lbs	FEIR_Mitigated	2014	Rail onsite	0.2192	1.0483	4.4460	399	0.1344	0.1259					0.1344	0.0040	0.0322	0.0105						
1 hour	lbs	FEIR_Mitigated	2014	Trucks onsite	0.1879	15.8596	3.0817	1,576	0.1125	0.0433	0.0192	0.0836	0.0048	0.0293	0.0086	0.0042	3.1129	0.3006	0.1588	3.1749	0.0086	0.0010	3.3427	0.5014
1 hour	lbs	FEIR_Mitigated	2014	Trucks onsite idling	0.4500	13.4333	10.2735	2,699	0.0056	0.0053	-	-	-	-	0.0034	0.0108	5.4570	0.4968	0.4224	5.5531	0.0034	0.0022		
1 hour	lbs	FEIR_Mitigated	2018	CHE	0.4341	13.0797	3.1950	4,972	0.1390	0.1288					0.1267	0.0196	3.5210	0.1399						
1 hour	lbs	FEIR_Mitigated	2018	HC	0.3485	1.6752	9.6775	1,029	0.1843	0.1759					0.1843	0.0106	0.0489	0.0194						
1 hour	lbs	FEIR_Mitigated	2018	OGV	2.3705	6.0056	62.3972	5,861	1.3418	1.2346					0.9471	3.5728	0.0450	0.3303						
1 hour	lbs	FEIR_Mitigated	2018	PC offsite	0.1484	3.7258	0.3228	124	0.0104	0.0062	0.0026	0.0028	0.0006	0.0010		0.0012	0.0244	0.0161					0.7182	0.1077
1 hour	lbs	FEIR_Mitigated	2018	PC onsite	0.0038	0.1182	0.0073	31	0.0005	0.0003	-	-	-	-		0.0003	0.0009	0.0006					0.1069	0.0160
1 hour	lbs	FEIR_Mitigated	2018	Rail offsite	0.3429	1.8146	7.9469	693	0.2046	0.1924					0.2046	0.0071	0.0567	0.0183						
1 hour	lbs	FEIR_Mitigated	2018	Rail onsite	0.0288	0.1608	0.6567	61	0.0164	0.0155					0.0164	0.0005	0.0050	0.0016						
1 hour	lbs	FEIR_Mitigated	2018	Trucks offsite	0.8357	330.5938	22.7991	33,781	4.5060	1.4989	0.8900	3.5970	0.2225	1.2589		-	58.4901	6.8864	-	59.6935	-	0.0190	4.0877	0.6132
1 hour	lbs	FEIR_Mitigated	2018	Trucks onsite	0.0284	9.9764	0.8503	738	0.0450	0.0152	0.0088	0.0356	0.0022	0.0124	-	-	1.9865	0.1505	-	2.0274	-	0.0006	1.3412	0.2012
1 hour	lbs	FEIR_Mitigated	2018	Trucks onsite idling	0.0451	6.3087	1.1980	886	0.0013	0.0012	-	-	-	-	-	-	3.1205	0.1807	-	3.1853	-	0.0013		

China Shipping Emissions Inventory by Source Category, by Scenario, and Analysis Period

Period	UOM	Scenario	Year	Source_category	VOC	CO	NOx	CO2	PM10 (PM10 exh, PM10TW, PM10BW)	PM25 (PM2.5 exh, PM2.5TW, PM2.5BW)	PM10TW	PM10BW	PM25TW	PM25BW	DPM	SOx	CH4	N2O	TOGdiesexh	TOGlngexh	PM10diesexh	PM10lngexh	PM10fdust	PM25fdust
1 hour	lbs	FEIR_Mitigated	2019	CHE	0.4906	12.5231	3.5687	4,865	0.1528	0.1414					0.1421	0.0220	3.0935	0.1263						
1 hour	lbs	FEIR_Mitigated	2019	HC	0.6492	3.1230	18.0065	1,915	0.3342	0.3190					0.3342	0.0197	0.0911	0.0366						
1 hour	lbs	FEIR_Mitigated	2019	OGV	2.3776	6.0173	65.3760	5,948	1.3557	1.2474					0.9458	3.6257	0.0452	0.3373						
1 hour	lbs	FEIR_Mitigated	2019	PC offsite	0.0903	2.7518	0.2447	103	0.0084	0.0049	0.0022	0.0024	0.0005	0.0008		0.0010	0.0166	0.0126					0.6035	0.0905
1 hour	lbs	FEIR_Mitigated	2019	PC onsite	0.0027	0.0906	0.0053	26	0.0004	0.0003	-	-	-	-		0.0003	0.0006	0.0005					0.0933	0.0140
1 hour	lbs	FEIR_Mitigated	2019	Rail offsite	0.2853	1.5524	6.7426	593	0.1697	0.1595					0.1697	0.0060	0.0485	0.0158						
1 hour	lbs	FEIR_Mitigated	2019	Rail onsite	0.0241	0.1388	0.5603	53	0.0137	0.0129					0.0137	0.0005	0.0043	0.0014						
1 hour	lbs	FEIR_Mitigated	2019	Trucks offsite	0.8326	327.4582	22.5783	33,466	4.5181	1.5033	0.8870	3.6124	0.2217	1.2643		-	58.2699	6.8222	-	59.4687	-	0.0187	4.0739	0.6111
1 hour	lbs	FEIR_Mitigated	2019	Trucks onsite	0.0295	10.3565	0.8757	755	0.0462	0.0156	0.0090	0.0366	0.0022	0.0128	-	-	2.0612	0.1538	-	2.1036	-	0.0006	1.4215	0.2132
1 hour	lbs	FEIR_Mitigated	2019	Trucks onsite idling	0.0446	6.4686	1.1968	886	0.0013	0.0012	-	-	-	-	-	-	3.0929	0.1806	-	3.1571	-	0.0013		
1 hour	lbs	FEIR_Mitigated	2020	CHE	1.7373	16.7194	11.5196	7,960	0.4767	0.4387					0.2358	0.0732	0.3846	0.0664						
1 hour	lbs	FEIR_Mitigated	2020	HC	0.8057	3.7658	22.7146	2,394	0.4040	0.3858					0.4040	0.0246	0.1138	0.0425						
1 hour	lbs	FEIR_Mitigated	2020	OGV	2.3503	5.9276	61.5002	6,093	1.3708	1.2611					0.9221	3.7147	0.0446	0.3518						
1 hour	lbs	FEIR_Mitigated	2020	PC offsite	0.1386	4.3811	0.3880	177	0.0141	0.0081	0.0038	0.0042	0.0009	0.0015		0.0018	0.0257	0.0203					0.9242	0.1386
1 hour	lbs	FEIR_Mitigated	2020	PC onsite	0.0037	0.1301	0.0073	39	0.0007	0.0004	0.0001	0.0001	-	-		0.0004	0.0009	0.0007					0.1419	0.0213
1 hour	lbs	FEIR_Mitigated	2020	Rail offsite	0.5743	3.1941	13.8083	1,220	0.3414	0.3209					0.3414	0.0124	0.0998	0.0324						
1 hour	lbs	FEIR_Mitigated	2020	Rail onsite	0.0598	0.3450	1.4188	131	0.0344	0.0324					0.0344	0.0013	0.0107	0.0035						
1 hour	lbs	FEIR_Mitigated	2020	Trucks offsite	1.2640	496.9041	34.2736	50,758	6.8442	2.2772	1.3443	5.4716	0.3361	1.9150		-	88.4674	10.3473	-	90.2874	-	0.0283	6.1744	0.9262
1 hour	lbs	FEIR_Mitigated	2020	Trucks onsite	0.0427	14.9961	1.2678	1,091	0.0663	0.0224	0.0130	0.0524	0.0032	0.0183	-	-	2.9859	0.2223	-	3.0473	-	0.0009	2.0383	0.3057
1 hour	lbs	FEIR_Mitigated	2020	Trucks onsite idling	0.0621	8.9333	1.6584	1,245	0.0019	0.0017	-	-	-	-	-	-	4.3117	0.2538	-	4.4010	-	0.0019		
1 hour	lbs	FEIR_Mitigated	2021	CHE	2.4585	33.4451	10.7342	11,520	0.4818	0.4449					0.4610	0.0620	6.0832	0.2618						
1 hour	lbs	FEIR_Mitigated	2021	HC	0.6430	2.9962	18.1120	1,903	0.3225	0.3079					0.3225	0.0195	0.0905	0.0329						
1 hour	lbs	FEIR_Mitigated	2021	OGV	2.2655	5.7746	59.7498	5,236	1.2301	1.1319					0.9271	3.1915	0.0430	0.2843						
1 hour	lbs	FEIR_Mitigated	2021	PC offsite	0.1848	5.9928	0.5239	261	0.0203	0.0113	0.0057	0.0062	0.0014	0.0022		0.0026	0.0352	0.0284					1.5930	0.2390
1 hour	lbs	FEIR_Mitigated	2021	PC onsite	0.0056	0.2097	0.0113	67	0.0010	0.0007	0.0002	0.0002	-	-		0.0007	0.0014	0.0011					0.2328	0.0349
1 hour	lbs	FEIR_Mitigated	2021	Rail offsite	0.9282	5.2646	22.6330	2,011	0.5508	0.5177					0.5508	0.0205	0.1645	0.0534						
1 hour	lbs	FEIR_Mitigated	2021	Rail onsite	0.1010	0.5900	2.4315	225	0.0583	0.0548					0.0583	0.0023	0.0183	0.0060						
1 hour	lbs	FEIR_Mitigated	2021	Trucks offsite	2.1510	840.4455	58.0377	85,846	11.6502	3.8773	2.2750	9.3273	0.5688	3.2646		-	150.5448	17.5003	-	153.6420	-	0.0478	10.4491	1.5674
1 hour	lbs	FEIR_Mitigated	2021	Trucks onsite	0.0708	24.9125	2.0942	1,804	0.1107	0.0375	0.0214	0.0878	0.0054	0.0307	-	-	4.9518	0.3677	-	5.0536	-	0.0015	3.2041	0.4806
1 hour	lbs	FEIR_Mitigated	2021	Trucks onsite idling	0.2604	37.4091	6.9434	5,236	0.0081	0.0075	-	-	-	-	-	-	18.1105	1.0675	-	18.4849	-	0.0081		
1 hour	lbs	FEIR_Mitigated	2022	CHE	3.0519	35.7263	11.8094	12,009	0.5501	0.5077					0.5292	0.0664	6.1267	0.2665						
1 hour	lbs	FEIR_Mitigated	2022	HC	0.8371	4.0299	18.6837	2,614	0.2741	0.2617					0.2741	0.0261	0.1243	0.0456						
1 hour	lbs	FEIR_Mitigated	2022	OGV	2.4166	6.1258	66.5948	5,943	1.3633	1.2543					0.9675	3.6225	0.0459	0.3340						
1 hour	lbs	FEIR_Mitigated	2022	PC offsite	0.1608	5.2431	0.4642	247	0.0187	0.0101	0.0055	0.0060	0.0014	0.0021		0.0024	0.0310	0.0256					1.5453	0.2318
1 hour	lbs	FEIR_Mitigated	2022	PC onsite	0.0048	0.1896	0.0097	64	0.0010	0.0006	0.0002	0.0002	-	-		0.0006	0.0012	0.0010					0.2276	0.0341
1 hour	lbs	FEIR_Mitigated	2022	Rail offsite	1.2584	7.2619	31.0504	2,774	0.7455	0.7007					0.7455	0.0283	0.2269	0.0737						
1 hour	lbs	FEIR_Mitigated	2022	Rail onsite	0.1389	0.8212	3.3897	313	0.0804	0.0756					0.0804	0.0032	0.0255	0.0083						
1 hour	lbs	FEIR_Mitigated	2022	Trucks offsite	2.3621	912.3590	63.2064	92,389	12.7462	4.2437	2.4678	10.2269	0.6170	3.5794		-	165.3211	18.8340	-	168.7223	-	0.0515	11.3346	1.7002
1 hour	lbs	FEIR_Mitigated	2022	Trucks onsite	0.0774	27.2920	2.2770	1,947	0.1211	0.0410	0.0232	0.0963	0.0058	0.0337	-	-	5.4173	0.3969	-	5.5288	-	0.0016	3.5038	0.5256
1 hour	lbs	FEIR_Mitigated	2022	Trucks onsite idling	0.3059	44.2087	8.1606	6,157	0.0099	0.0091	-	-	-	-	-	-	21.3044	1.2551	-	21.7445	-	0.0099		
1 hour	lbs	FEIR_Mitigated	2023	CHE	3.2195	35.5516	11.5180	11,856	0.5511	0.5086					0.5308	0.0663	5.9509	0.2602						
1 hour	lbs	FEIR_Mitigated	2023	HC	0.8389	4.0346	18.7024	2,614	0.2749	0.2625					0.2749	0.0261	0.1243	0.0456						
1 hour	lbs	FEIR_Mitigated	2023	OGV	2.0503	5.2051	50.1225	4,958	1.1447	1.0533					0.8258	3.0226	0.0389	0.2762						
1 hour	lbs	FEIR_Mitigated	2023	PC offsite	0.1019	3.3397	0.3002	171	0.0126	0.0066	0.0039	0.0043	0.0010	0.0015		0.0017	0.0198	0.0169					1.0989	0.1648
1 hour	lbs	FEIR_Mitigated	2023	PC onsite	0.0030	0.1263	0.0062	44	0.0007	0.0004	0.0001	0.0001	-	-		0.0004	0.0008	0.0007					0.1632	0.0245
1 hour	lbs	FEIR_Mitigated	2023	Rail offsite	0.6270	3.6743	15.6270	1,404	0.3708	0.3486					0.3708	0.0143	0.1148	0.0373						
1 hour	lbs	FEIR_Mitigated	2023	Rail onsite	0.0723	0.4365	1.7754	166	0.0415	0.0390					0.0415	0.0017	0.0135	0.0044						
1 hour	lbs	FEIR_Mitigated	2023	Trucks offsite	2.5130	806.1414	60.7466	69,981	11.5037	3.8536	1.8813	9.5952	0.4703	3.3583		-	175.8809	14.2661	-	179.4994	-	0.0271	8.6410	1.2961
1 hour	lbs	FEIR_Mitigated	2023	Trucks onsite	0.0763	26.5030	2.0998	1,543	0.1087	0.0368	0.0177	0.0902	0.0044	0.0316	-	-	5.3420	0.3146	-	5.4519	-	0.0009	2.6892	0.4034
1 hour	lbs	FEIR_Mitigated	2023	Trucks onsite idling	0.1878	26.5991	4.9857	3,585	0.0065	0.0059	-	-	-	-	-	-	13.1419	0.7308	-	13.4122	-	0.0065		
1 hour	lbs	FEIR_Mitigated	2026	CHE	5.1637	36.6231	11.1083	10,852	0.6603	0.6090					0.6414	0.0595	5.5633	0.2414						
1 hour	lbs	FEIR_Mitigated	2026	HC	1.4548	6.9778	32.3289	4,505	0.4781	0.4563					0.4781	0.0450	0.2142	0.0787						
1 hour	lbs	FEIR_Mitigated	2026	OGV	4.0442	10.2508	106.0278	9,951	2.2823	2.0999					1.6188	6.0658	0.0768	0.5594						
1 hour	lbs	FEIR_Mitigated	2026	PC onsite	0.0018	0.0900	0.0040	35	0.0005	0.0003	0.0001	0.0001	-	-		0.0003	0.0005	0.0005					0.1567	0.0235
1 hour	lbs	FEIR_Mitigated	2026	Rail offsite	1.3354	8.5003	34.7172	3,246	0.7823	0.7354					0.7823	0.0331	0.2652	0.0862						
1 hour	lbs	FEIR_Mitigated	2026	Rail onsite	0.0849	0.5591	2.1492	213	0.0475	0.0446					0.0475	0.0021	0.0172	0.0056						
1 hour	lbs	FEIR_Mitigated	2026	Trucks onsite	0.0357	16.4350	0.9091	1,496	0.1076	0.0368	0.0207	0.0848	0.0052	0.0297	-	-	2.4974	0.3049	-	2.5488	-	0.0021	3.5938	0.5391
1 hour	lbs	FEIR_Mitigated	2026	Trucks onsite idling	0.1028	15.3306	2.7518	2,010	0.0038	0.0035	-	-	-	-	-	-	7.1960	0.4097	-	7.3440	-	0.0038		
1 hour	lbs	FEIR_Mitigated	2036	CHE	2.2486	23.4923	1.2328	7,660	0.1239	0.1150					0.1105	0.0419	3.9270	0.1703						
1 hour	lbs	FEIR_Mitigated	2036	HC	0.4335	5.1069	12.0107	4,505	0.2866	0.2735					0.2866	0.0436	0.2142	0.0787						
1 hour	lbs	FEIR_Mitigated	2036	OGV	15.9073	23.4960	66.3243	9,796	3.0754	2.8274					2.6187	5.9801	0.3021	0.5504						
1 hour	lbs	FEIR_Mitigated	2036	PC onsite	0.0013	0.0928	0.0034	42	0.0006	0.0003	0.0002	0.0002	-	-		0.0004	0.0004	0.0005					0.2152	0.0323
1 hour	lbs	FEIR_Mitigated	2036	Rail offsite	0.9193	8.3250	26.0741	3,179	0.5095	0.4789					0.5095	0.0324	0.2597	0.0844						
1 hour	lbs	FEIR_Mitigated	2036	Rail onsite	0.0703	0.6301	1.9036	240	0.0367	0.0345					0.0367	0.0024	0.0194	0.0063						
1 hour	lbs	FEIR_Mitigated	2036	Trucks onsite	0.0228	16.6470	0.2836	1,937	0.1587	0.0548	0.0310	0.1236	0.0077	0.0433	-	-	1.5929	0.3948	-	1.6257	-	0.0041	5.3736	0.8060
1 hour	lbs	FEIR_Mitigated	2036	Trucks onsite idling	0.1082	24.3857	3.0364	3,036	0.0093	0.0085	-	-	-	-	-	-	7.5710	0.6189	-	7.7268	-	0.0093		
1 hour	lbs	FEIR_Mitigated	2045	CHE	3.0224	22.3019	1.2075	6,693	0.1344	0.1246					0.1227	0.0366	3.4309	0.1487						
1 hour	lbs	FEIR_Mitigated	2045	HC	0.4335	5.1069	12.0107	4,505	0.2866	0.2735					0.2866	0.0436	0.2142	0.0787						
1 hour	lbs	FEIR_Mitigated	2045	OGV	15.9073	23.4960	39.9331	9,796	3.0754	2.8274					2.6187	5.9801	0.3021	0.5504						
1 hour	lbs	FEIR_Mitigated	2045	PC onsite	0.0010	0.0861	0.0030	41	0.0005	0.0003	0.0002	0.0002	-	-		0.0004	0.0003	0.0005					0.2152	0.0323
1 hour	lbs	FEIR_Mitigated	2045	Rail offsite	0.6530	11.7290	18.1169	4,480	0.2954	0.2777					0.2954	0.0457	0.3661	0.1190						
1 hour	lbs	FEIR_Mitigated	2045	Rail onsite	0.0456	0.6328	1.1052	240	0.0183	0.0172					0.0183	0.0024	0.0193	0.0063						
1 hour	lbs	FEIR_Mitigated	2045	Trucks onsite	0.0216	15.0273	0.2095	1,769	0.1428	0.0495	0.0290	0.1096	0.0073	0.0384	-	-	1.5144	0.3607	-	1.5455	-	0.0042	5.0378	0.7557
1 hour	lbs	FEIR_Mitigated	2045	Trucks onsite idling	0.1012	26.5124	2.9624	3,102	0.0118	0.0109	-	-	-	-	-	-	7.0815	0.6325	-	7.2272	-	0.0118		
1 hour	lbs	Revised Project	2012	PC offsite	0.0860	3.4604	0.2959	476	0.0081	0.0043	0.0024	0.0027	0.0006	0.0009	-	0.0047	0.0173	0.0207	-	-	-	-	0.0978	0.0147
1 hour	lbs	Revised Project	2012	Trucks offsite	1.7426	11.3683	58.0826	13,971	2.1469	1.2975	0.2913	0.9075	0.0728	0.3176	0.9478	0.1271	1.2826	2.2151	1.9630	1.2285	0.9478	0.0003	0.4879	0.0732
1 hour	lbs	Revised Project	2014	PC offsite	0.0642	2.8006	0.2250	466	0.0073	0.0038	0.0023	0.0025	0.0006	0.0009	-	0.0046	0.0133	0.0165	-	-	-	-	0.1108	0.0166
1 hour	lbs	Revised Project	2014	Trucks offsite	2.7535	19.1372	116.2764	31,228	3.2805	1.5112	0.6682	1.9038	0.1670	0.6663	0.7078	0.2839	2.2717	4.9562	3.0977	2.1914	0.7078	0.0007	1.1769	0.1765
1 hour	lbs	Revised Project	2026	PC offsite	0.0378	3.6085	0.1731	1,367	0.0214	0.0103	0.0072	0.0079	0.0018	0.0028	-	0.0135	0.0103	0.0211	-	-	-	-	0.3282	0.0492
1 hour	lbs	Revised Project	2026	Trucks offsite	0.2145	8.8753	15.2572	29,994	2.5424	0.9653	0.6803	1.6256	0.1701	0.5689	0.2357	0.2745	1.1724	4.7722	0.2252	1.1872	0.2357	0.0009	1.1202	0.1680
1 hour	lbs	Revised Project	2036	PC offsite	0.0135	1.9194	0.0751	803	0.0129	0.0054	0.0050	0.0054	0.0013	0.0019	-	0.0079	0.0042	0.0114	-	-	-	-	0.2373	0.0356
1 hour	lbs	Revised Project	2036	Trucks offsite	0.2739	9.2456	11.6337	40,061	3.9436	1.4359	1.0233	2.6598	0.2558	0.9309	0.2587	0.3662	0.8050	6.3757	0.2989	0.8091	0.2587	0.0019	1.7139	0.2571
1 hour	lbs	Revised Project	2045	PC offsite	0.0108	1.8461	0.0662	786	0.0124	0.0049	0.0050	0.0054	0.0013	0.0019	-	0.0078	0.0037	0.0109	-	-	-	-	0.2379	0.0357
1 hour	lbs	Revised Project	2045	Trucks offsite	0.2597	9.6790	9.1170	34,732	3.9622	1.4078	0.9680	2.8000	0.2420	0.9800	0.1921	0.3159	0.8556	5.5356	0.2819	0.8614	0.1921	0.0022	1.6107	0.2416
1 hour	lbs	Revised_Project	2012	CHE	6.9839	71.1814	36.8870	7,616	1.1244	1.0667					0.7212	0.0280	0.3409	0.0677						
1 hour	lbs	Revised_Project	2012	HC	-	-	-	-	-	-					-	-	-	-						
1 hour	lbs	Revised_Project	2012	OGV	1.4578	3.3317	30.3841	2,684	0.9648	0.8937					0.8930	5.8816	0.0208	0.1569						
1 hour	lbs	Revised_Project	2012	PC onsite	0.0074	0.1676	0.0126	23	0.0004	0.0003	-	-	-	-		0.0002	0.0015	0.0009					0.0866	0.0130
1 hour	lbs	Revised_Project	2012	Rail offsite	3.1010	12.5147	58.2037	4,781	1.9991	1.8791					1.9991	0.0487	0.3909	0.1269						
1 hour	lbs	Revised_Project	2012	Rail onsite	0.2125	0.9079	3.9802	346	0.1322	0.1240					0.1322	0.0035	0.0280	0.0091						
1 hour	lbs	Revised_Project	2012	Trucks onsite	0.2558	1.8307	2.6686	646	0.0768	0.0427	0.0081	0.0412	0.0020	0.0144	0.0275	0.0054	0.2608	0.1048	0.2868	0.2546	0.0275	-	1.4797	0.2219
1 hour	lbs	Revised_Project	2012	Trucks onsite idling	0.6003	2.3993	5.2068	489	0.0977	0.0935	-	-	-	-	0.0977	0.0042	0.1404	0.0787	0.6631	0.1342	0.0977	-		

China Shipping Emissions Inventory by Source Category, by Scenario, and Analysis Period

Period	UOM	Scenario	Year	Source_category	VOC	CO	NOx	CO2	PM10 (PM10 exh, PM10TW, PM10BW)	PM25 (PM2.5 exh, PM2.5TW, PM2.5BW)	PM10TW	PM10BW	PM25TW	PM25BW	DPM	SOx	CH4	N2O	TOGdiesexh	TOGlngexh	PM10diesexh	PM10lngexh	PM10fdust	PM25fdust
1 hour	lbs	Revised_Project	2014	CHE	15.3484	151.5462	79.5707	13,812	1.2365	1.1944					0.5267	0.0536	0.6168	0.1233						
1 hour	lbs	Revised_Project	2014	HC	2.2802	13.4729	24.2797	1,742	0.9009	0.8321					0.9009	0.0182	0.0362	0.0784						
1 hour	lbs	Revised_Project	2014	OGV	15.6710	33.2550	606.0132	23,629	7.5390	6.7755					6.8428	13.1689	0.5372	1.5630						
1 hour	lbs	Revised_Project	2014	PC onsite	0.0054	0.1311	0.0094	22	0.0004	0.0002	-	-	-	-		0.0002	0.0011	0.0007					0.0831	0.0125
1 hour	lbs	Revised_Project	2014	Rail offsite	2.9608	13.3760	60.6387	5,110	1.8993	1.7853					1.8993	0.0521	0.4178	0.1358						
1 hour	lbs	Revised_Project	2014	Rail onsite	0.2192	1.0483	4.4460	399	0.1344	0.1259					0.1344	0.0040	0.0322	0.0105						
1 hour	lbs	Revised_Project	2014	Trucks onsite	0.4325	3.0129	5.4592	1,482	0.1331	0.0607	0.0191	0.0876	0.0048	0.0307	0.0263	0.0127	0.3837	0.2389	0.4860	0.3719	0.0263	0.0001	3.3427	0.5014
1 hour	lbs	Revised_Project	2014	Trucks onsite idling	1.1447	9.1251	25.3048	3,669	0.0107	0.0102	-	-	-	-	0.0104	0.0329	0.6900	0.5846	1.2926	0.6505	0.0104	0.0002		
1 hour	lbs	Revised_Project	2018	CHE	7.9451	150.5913	43.7555	6,989	0.6915	0.6656					0.3237	0.0262	0.3129	0.0626						
1 hour	lbs	Revised_Project	2018	HC	0.3485	1.6752	9.6775	1,029	0.1843	0.1759					0.1843	0.0106	0.0489	0.0194						
1 hour	lbs	Revised_Project	2018	OGV	2.3705	6.0056	62.3972	5,861	1.3418	1.2346					0.9471	3.5728	0.0450	0.3303						
1 hour	lbs	Revised_Project	2018	PC offsite	0.1484	3.7258	0.3228	124	0.0104	0.0062	0.0026	0.0028	0.0006	0.0010		0.0012	0.0244	0.0161					0.7182	0.1077
1 hour	lbs	Revised_Project	2018	PC onsite	0.0038	0.1182	0.0073	31	0.0005	0.0003	-	-	-	-		0.0003	0.0009	0.0006					0.1069	0.0160
1 hour	lbs	Revised_Project	2018	Rail offsite	0.3429	1.8146	7.9469	693	0.2046	0.1924					0.2046	0.0071	0.0567	0.0183						
1 hour	lbs	Revised_Project	2018	Rail onsite	0.0288	0.1608	0.6567	61	0.0164	0.0155					0.0164	0.0005	0.0050	0.0016						
1 hour	lbs	Revised_Project	2018	Trucks offsite	2.6990	20.2835	125.0661	40,129	4.0734	1.9153	0.8751	2.2471	0.2188	0.7865		0.3676	2.3054	6.3722	3.0371	2.2264	0.9505	0.0007	4.0877	0.6132
1 hour	lbs	Revised_Project	2018	Trucks onsite	0.1539	0.8443	2.2429	652	0.0556	0.0244	0.0087	0.0374	0.0022	0.0131	0.0095	0.0059	0.0812	0.1038	0.1740	0.0756	0.0095	-	1.3412	0.2012
1 hour	lbs	Revised_Project	2018	Trucks onsite idling	0.4815	5.1152	8.5498	1,417	0.0031	0.0029	-	-	-	-	0.0030	0.0131	0.1387	0.2244	0.5462	0.1188	0.0030	-		
1 hour	lbs	Revised_Project	2019	CHE	4.1554	19.8522	21.8260	6,629	0.6016	0.5791					0.2806	0.0278	0.2945	0.0589						
1 hour	lbs	Revised_Project	2019	HC	0.4960	2.3860	13.7573	1,463	0.2553	0.2437					0.2553	0.0150	0.0696	0.0280						
1 hour	lbs	Revised_Project	2019	OGV	2.3776	6.0173	65.3760	5,948	1.3557	1.2474					0.9458	3.6257	0.0452	0.3373						
1 hour	lbs	Revised_Project	2019	PC offsite	0.0903	2.7518	0.2447	103	0.0084	0.0049	0.0022	0.0024	0.0005	0.0008		0.0010	0.0166	0.0126					0.6035	0.0905
1 hour	lbs	Revised_Project	2019	PC onsite	0.0027	0.0906	0.0053	26	0.0004	0.0003	-	-	-	-		0.0003	0.0006	0.0005					0.0933	0.0140
1 hour	lbs	Revised_Project	2019	Rail offsite	0.2853	1.5524	6.7426	593	0.1697	0.1595					0.1697	0.0060	0.0485	0.0158						
1 hour	lbs	Revised_Project	2019	Rail onsite	0.0241	0.1388	0.5603	53	0.0137	0.0129					0.0137	0.0005	0.0043	0.0014						
1 hour	lbs	Revised_Project	2019	Trucks offsite	2.4784	20.1380	117.3672	39,942	3.9422	1.8154	0.8718	2.2087	0.2179	0.7730		0.3656	2.3795	6.3477	2.7846	2.3125	0.8610	0.0007	4.0739	0.6111
1 hour	lbs	Revised_Project	2019	Trucks onsite	0.1462	0.8579	2.2100	659	0.0551	0.0235	0.0088	0.0379	0.0022	0.0133	0.0083	0.0060	0.0869	0.1051	0.1651	0.0818	0.0083	-	1.4215	0.2132
1 hour	lbs	Revised_Project	2019	Trucks onsite idling	0.4970	5.4680	8.6079	1,442	0.0031	0.0030	-	-	-	-	0.0031	0.0133	0.1433	0.2285	0.5639	0.1228	0.0031	-		
1 hour	lbs	Revised_Project	2020	CHE	7.4281	30.1486	32.2454	9,642	0.8245	0.7873					0.4646	0.0476	0.4229	0.0846						
1 hour	lbs	Revised_Project	2020	HC	0.8057	3.7658	22.7146	2,394	0.4040	0.3858					0.4040	0.0246	0.1138	0.0425						
1 hour	lbs	Revised_Project	2020	OGV	2.3503	5.9276	61.5002	6,093	1.3708	1.2611					0.9221	3.7147	0.0446	0.3518						
1 hour	lbs	Revised_Project	2020	PC offsite	0.1386	4.3811	0.3880	177	0.0141	0.0081	0.0038	0.0042	0.0009	0.0015		0.0018	0.0257	0.0203					0.9242	0.1386
1 hour	lbs	Revised_Project	2020	PC onsite	0.0037	0.1301	0.0073	39	0.0007	0.0004	0.0001	0.0001	-	-		0.0004	0.0009	0.0007					0.1419	0.0213
1 hour	lbs	Revised_Project	2020	Rail offsite	0.5743	3.1941	13.8083	1,220	0.3414	0.3209					0.3414	0.0124	0.0998	0.0324						
1 hour	lbs	Revised_Project	2020	Rail onsite	0.0598	0.3450	1.4188	131	0.0344	0.0324					0.0344	0.0013	0.0107	0.0035						
1 hour	lbs	Revised_Project	2020	Trucks offsite	3.3772	33.8971	162.3484	60,415	5.8347	2.6355	1.3195	3.3196	0.3299	1.1619		0.5492	4.3710	9.6304	3.7761	4.3037	1.1941	0.0014	6.1744	0.9262
1 hour	lbs	Revised_Project	2020	Trucks onsite	0.1511	1.2147	2.7341	919	0.0754	0.0303	0.0127	0.0540	0.0032	0.0189	0.0086	0.0082	0.1493	0.1472	0.1697	0.1453	0.0086	-	2.0383	0.3057
1 hour	lbs	Revised_Project	2020	Trucks onsite idling	0.6647	7.7076	11.0871	1,918	0.0039	0.0038	-	-	-	-	0.0039	0.0176	0.2363	0.3049	0.7533	0.2098	0.0039	-		
1 hour	lbs	Revised_Project	2021	CHE	20.6500	53.8222	71.8270	15,885	1.5339	1.4609					0.9124	0.0820	0.6939	0.1388						
1 hour	lbs	Revised_Project	2021	HC	0.4444	2.0708	12.5178	1,315	0.2229	0.2128					0.2229	0.0135	0.0625	0.0227						
1 hour	lbs	Revised_Project	2021	OGV	2.2655	5.7746	59.7498	5,236	1.2301	1.1319					0.9271	3.1915	0.0430	0.2843						
1 hour	lbs	Revised_Project	2021	PC offsite	0.1848	5.9928	0.5239	261	0.0203	0.0113	0.0057	0.0062	0.0014	0.0022		0.0026	0.0352	0.0284					1.5930	0.2390
1 hour	lbs	Revised_Project	2021	PC onsite	0.0056	0.2097	0.0113	67	0.0010	0.0007	0.0002	0.0002	-	-		0.0007	0.0014	0.0011					0.2328	0.0349
1 hour	lbs	Revised_Project	2021	Rail offsite	0.9282	5.2646	22.6330	2,011	0.5508	0.5177					0.5508	0.0205	0.1645	0.0534						
1 hour	lbs	Revised_Project	2021	Rail onsite	0.1010	0.5900	2.4315	225	0.0583	0.0548					0.0583	0.0023	0.0183	0.0060						
1 hour	lbs	Revised_Project	2021	Trucks offsite	4.6722	57.0507	233.5741	102,040	9.6912	4.3485	2.2319	5.5147	0.5580	1.9301		0.9251	7.8258	16.2775	5.1951	7.7705	1.9422	0.0024	10.4491	1.5674
1 hour	lbs	Revised_Project	2021	Trucks onsite	0.2491	2.0834	4.5099	1,520	0.1234	0.0497	0.0210	0.0882	0.0053	0.0309	0.0141	0.0135	0.2618	0.2437	0.2795	0.2556	0.0141	-	3.2041	0.4806
1 hour	lbs	Revised_Project	2021	Trucks onsite idling	2.7203	33.0940	43.4832	7,744	0.0154	0.0148	-	-	-	-	0.0150	0.0708	1.0417	1.2323	3.0818	0.9349	0.0150	0.0003		
1 hour	lbs	Revised_Project	2022	CHE	23.5462	56.7149	76.2752	16,373	1.9830	1.8743					1.3588	0.0863	0.7140	0.1428						
1 hour	lbs	Revised_Project	2022	HC	0.8371	4.0299	18.6837	2,614	0.2741	0.2617					0.2741	0.0261	0.1243	0.0456						
1 hour	lbs	Revised_Project	2022	OGV	2.4166	6.1258	66.5948	5,943	1.3633	1.2543					0.9675	3.6225	0.0459	0.3340						
1 hour	lbs	Revised_Project	2022	PC offsite	0.1608	5.2431	0.4642	247	0.0187	0.0101	0.0055	0.0060	0.0014	0.0021		0.0024	0.0310	0.0256					1.5453	0.2318
1 hour	lbs	Revised_Project	2022	PC onsite	0.0048	0.1896	0.0097	64	0.0010	0.0006	0.0002	0.0002	-	-		0.0006	0.0012	0.0010					0.2276	0.0341
1 hour	lbs	Revised_Project	2022	Rail offsite	1.2584	7.2619	31.0504	2,774	0.7455	0.7007					0.7455	0.0283	0.2269	0.0737						
1 hour	lbs	Revised_Project	2022	Rail onsite	0.1389	0.8212	3.3897	313	0.0804	0.0756					0.0804	0.0032	0.0255	0.0083						
1 hour	lbs	Revised_Project	2022	Trucks offsite	3.4608	62.4966	192.4589	110,004	10.1917	4.5144	2.4178	5.8140	0.6044	2.0349		0.9928	9.3963	17.5703	3.7895	9.4318	1.9570	0.0029	11.3346	1.7002
1 hour	lbs	Revised_Project	2022	Trucks onsite	0.1739	2.1690	4.1906	1,598	0.1283	0.0493	0.0228	0.0945	0.0057	0.0331	0.0109	0.0141	0.3107	0.2568	0.1931	0.3091	0.0109	-	3.5038	0.5256
1 hour	lbs	Revised_Project	2022	Trucks onsite idling	3.1474	40.1641	48.2482	8,825	0.0169	0.0162	-	-	-	-	0.0164	0.0803	1.3363	1.4063	3.5636	1.2155	0.0164	0.0005		
1 hour	lbs	Revised_Project	2023	CHE	22.3816	54.1488	64.4183	15,589	1.7698	1.6767					1.1644	0.0810	0.6807	0.1361						
1 hour	lbs	Revised_Project	2023	HC	0.8389	4.0346	18.7024	2,614	0.2749	0.2625					0.2749	0.0261	0.1243	0.0456						
1 hour	lbs	Revised_Project	2023	OGV	2.0503	5.2051	50.1225	4,958	1.1447	1.0533					0.8258	3.0226	0.0389	0.2762						
1 hour	lbs	Revised_Project	2023	PC offsite	0.1019	3.3397	0.3002	171	0.0126	0.0066	0.0039	0.0043	0.0010	0.0015		0.0017	0.0198	0.0169					1.0989	0.1648
1 hour	lbs	Revised_Project	2023	PC onsite	0.0030	0.1263	0.0062	44	0.0007	0.0004	0.0001	0.0001	-	-		0.0004	0.0008	0.0007					0.1632	0.0245
1 hour	lbs	Revised_Project	2023	Rail offsite	0.6270	3.6743	15.6270	1,404	0.3708	0.3486					0.3708	0.0143	0.1148	0.0373						
1 hour	lbs	Revised_Project	2023	Rail onsite	0.0723	0.4365	1.7754	166	0.0415	0.0390					0.0415	0.0017	0.0135	0.0044						
1 hour	lbs	Revised_Project	2023	Trucks offsite	0.8567	51.4075	80.9025	83,116	7.5104	3.2331	1.8433	4.3670	0.4608	1.5285		0.7481	10.3847	13.2857	0.8070	10.5648	1.2985	0.0016	8.6410	1.2961
1 hour	lbs	Revised_Project	2023	Trucks onsite	0.0244	1.7637	2.4232	1,162	0.0888	0.0315	0.0173	0.0678	0.0043	0.0237	0.0036	0.0101	0.3153	0.1873	0.0226	0.3209	0.0036	-	2.6892	0.4034
1 hour	lbs	Revised_Project	2023	Trucks onsite idling	2.0769	32.0903	24.7055	5,297	0.0092	0.0088	-	-	-	-	0.0088	0.0482	0.8694	0.8443	2.3518	0.7894	0.0088	0.0003		
1 hour	lbs	Revised_Project	2026	CHE	20.2642	141.1390	48.9815	13,277	0.9186	0.8668					0.6462	0.0736	3.3065	0.1942						
1 hour	lbs	Revised_Project	2026	HC	1.4548	6.9778	32.3289	4,505	0.4781	0.4563					0.4781	0.0450	0.2142	0.0787						
1 hour	lbs	Revised_Project	2026	OGV	4.0442	10.2508	106.0278	9,951	2.2823	2.0999					1.6188	6.0658	0.0768	0.5594						
1 hour	lbs	Revised_Project	2026	PC onsite	0.0018	0.0900	0.0040	35	0.0005	0.0003	0.0001	0.0001	-	-		0.0003	0.0005	0.0005					0.1567	0.0235
1 hour	lbs	Revised_Project	2026	Rail offsite	1.3354	8.5003	34.7172	3,246	0.7823	0.7354					0.7823	0.0331	0.2652	0.0862						
1 hour	lbs	Revised_Project	2026	Rail onsite	0.0849	0.5591	2.1492	213	0.0475	0.0446					0.0475	0.0021	0.0172	0.0056						
1 hour	lbs	Revised_Project	2026	Trucks onsite	0.0200	1.5867	1.6611	1,359	0.1014	0.0350	0.0203	0.0785	0.0051	0.0275	0.0024	0.0117	0.2056	0.2197	0.0195	0.2090	0.0024	0.0002	3.5938	0.5391
1 hour	lbs	Revised_Project	2026	Trucks onsite idling	1.0751	17.0178	7.3274	2,722	0.0029	0.0028	-	-	-	-	0.0026	0.0242	0.6396	0.4364	1.2143	0.6022	0.0026	0.0002		
1 hour	lbs	Revised_Project	2036	CHE	3.1427	25.8750	2.1728	8,366	0.2050	0.1897					0.1915	0.0486	3.9556	0.1762						
1 hour	lbs	Revised_Project	2036	HC	0.4335	5.1069	12.0107	4,505	0.2866	0.2735					0.2866	0.0436	0.2142	0.0787						
1 hour	lbs	Revised_Project	2036	OGV	17.1233	26.6098	88.5040	12,455	3.7140	3.4151					3.1254	7.6007	0.3252	0.6899						
1 hour	lbs	Revised_Project	2036	PC onsite	0.0013	0.0928	0.0034	42	0.0006	0.0003	0.0002	0.0002	-	-		0.0004	0.0004	0.0005					0.2152	0.0323
1 hour	lbs	Revised_Project	2036	Rail offsite	0.9193	8.3250	26.0741	3,179	0.5095	0.4789					0.5095	0.0324	0.2597	0.0844						
1 hour	lbs	Revised_Project	2036	Rail onsite	0.0703	0.6301	1.9036	240	0.0367	0.0345					0.0367	0.0024	0.0194	0.0063						
1 hour	lbs	Revised_Project	2036	Trucks onsite	0.0244	1.6350	1.2895	1,712	0.1558	0.0536	0.0305	0.1219	0.0076	0.0427	0.0031	0.0147	0.1317	0.2770	0.0256	0.1333	0.0031	0.0003	5.3736	0.8060
1 hour	lbs	Revised_Project	2036	Trucks onsite idling	1.7359	27.5175	6.1834	3,761	0.0047	0.0045	-	-	-	-	0.0039	0.0333	0.7010	0.6041	1.9661	0.6336	0.0039	0.0008		
1 hour	lbs	Revised_Project	2045	CHE	3.3993	23.4206	1.3836	7,310	0.1514	0.1402					0.1397	0.0425	3.4560	0.1538						
1 hour	lbs	Revised_Project	2045	HC	0.4335	5.1069	12.0107	4,505	0.2866	0.2735					0.2866	0.0436	0.2142	0.0787						
1 hour	lbs	Revised_Project	2045	OGV	17.1233	26.6098	48.5522	12,455	3.7140	3.4151					3.1254	7.6007	0.3252	0.6899						
1 hour	lbs	Revised_Project	2045	PC onsite	0.0010	0.0861	0.0030	41	0.0005	0.0003	0.0002	0.0002	-	-		0.0004	0.0003	0.0005					0.2152	0.0323
1 hour	lbs	Revised_Project	2045	Rail offsite	0.6530	11.7290	18.1169	4,480	0.2954	0.2777					0.2954	0.0457	0.3661	0.1190						
1 hour	lbs	Revised_Project	2045	Rail onsite	0.0456	0.6328	1.1052	240	0.0183	0.0172					0.0183	0.0024	0.0193	0.0063						
1 hour	lbs	Revised_Project	2045	Trucks onsite	0.0223	1.4652	0.9045	1,444	0.1504	0.0517	0.0286	0.1185	0.0072	0.0415	0.0029	0.0123	0.1251	0.2342	0.0234	0.1267	0.0029	0.0003	5.0378	0.7557
1 hour	lbs	Revised_Project	2045	Trucks onsite idling	1.8127	28.8348	4.7939	3,683	0.0051	0.0049	-	-	-	-	0.0042	0.0325	0.6645	0.5921	2.0541	0.5926	0.0042	0.0010		