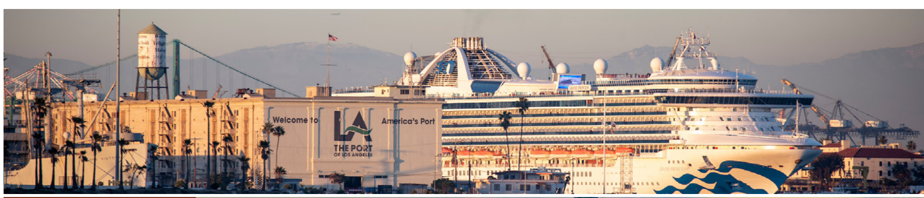
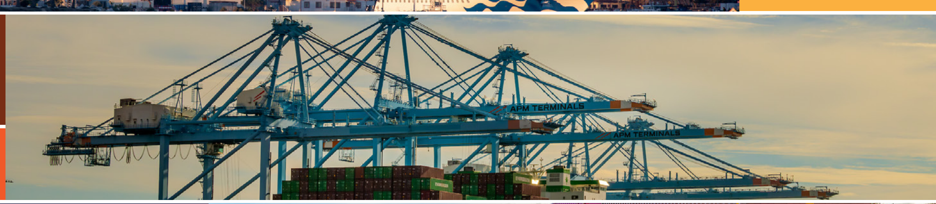
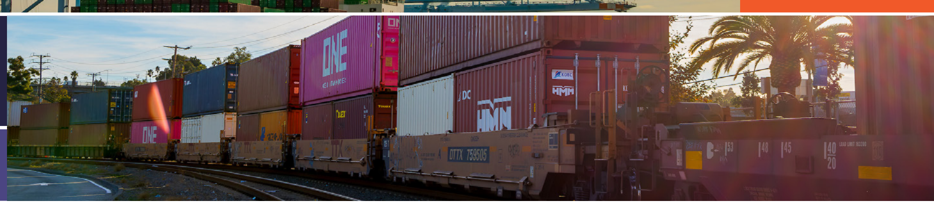
PORT OF LOS ANGELES

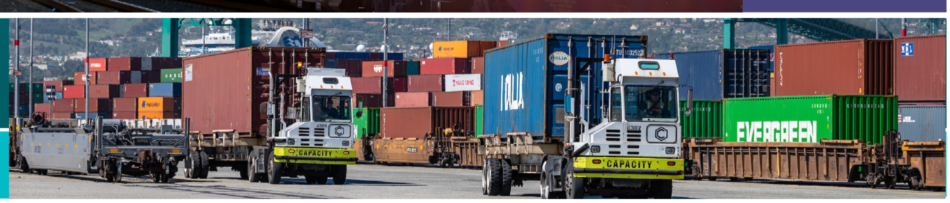
Inventory of Air Emissions 2023

Technical Report | August 2024









THE PORT OF LOS ANGELES

STARCREST CONSULTING GROUP, LLC
ENVIRONMENTAL MANAGEMENT · AIR QUALITY · CLIMATE · SUSTAINABILITY

INVENTORY OF AIR EMISSIONS FOR CALENDAR YEAR 2023

Prepared for:

THE PORT OF LOS ANGELES

August 2024

Prepared by:

STARCREST CONSULTING GROUP, LLC
ENVIRONMENTAL MANAGEMENT
AIR QUALITY • CLIMATE • SUSTAINABILITY

TABLE OF CONTENTS

List of Figures

LIST OF TABLES

ACKNOWLEDGEMENTS

The following individuals and their respective companies and organizations assisted with providing the technical and operational information described in this report, or by facilitating the process to obtain this information. This annual endeavor would not have been possible without their assistance and support. We truly appreciate their time, effort, expertise, and cooperation. The Port of Los Angeles and Starcrest Consulting Group, LLC (Starcrest) would like to recognize and thank the following individuals:

Stephen Shahnazarian, American Marine
Milt Merritt, Amnav
Christopher Allen, APM Terminals
Susie Rodriguez, APM Terminals
Robin Houghton, Avalon Freight Services
Shawn Bennett, Bay Delta Maritime
David Seep, Burlington Northern Santa Fe
Greg Bombard, Catalina Express
David Scott, Conolly Pacific
Geoffrey Romano, Everport Terminal Services
Rob Brown, Everport Terminal Services
Matthew Dickinson, Fenix Marine Services
Peter Ramos, Fenix Marine Services
Jason Knowlton, Foss
Javier Montano, Starlight Marine
Grant Westmoreland, Pacific Tugboat Service
Bobby Lucin, Pasha Stevedoring & Terminals
Greg Peters, Pacific Harbor Line
Willy Won, Ports America
Allie Bond, SA Recycling
Jeremiah Macaulay, SoCal Ship Services
Matthew Quiroz, SoCal Ship Services
Mark Jensen, TraPac
Melissa Schop, Union Pacific Railroad
Jose Flores, U.S. Water Taxi & Port Services
Quentin Yang, West Basin Container Terminal
Octavio Sanchez, World Cruise Center
Mike Takayama, Yusen Terminals, Inc.

ACKNOWLEDGEMENTS (CONT'D)

The Port of Los Angeles and Starcrest would like to thank the following regulatory agency staff who contributed, commented, and coordinated the approach and reporting of the emissions inventory:

Cory Parmer, California Air Resources Board
Nancy Bui, California Air Resources Board
Sang Mi Li, South Coast Air Quality Management District
Elaine Shen, South Coast Air Quality Management District
Francisco Dóñez, U.S. Environmental Protection Agency, Region 9

Starcrest would like to thank the following Port of Los Angeles staff members for assistance during the development of the emissions inventory:

Teresa Pisano, Project Manager
Amber Coluso
Jacob Goldberg

Authors: Archana Agrawal, Principal, Starcrest
Guiselle Aldrete, Consultant, Starcrest
Bruce Anderson, Principal, Starcrest
Jill Morgan, Consultant, Starcrest
Randall Pasek, PhD, Consultant, Starcrest
Joseph Ray, Principal, Starcrest

Contributors: Steve Ettinger, Principal, Starcrest
Graciela Lubertino, Consultant, Starcrest
Russelle Hansen, Consultant, Starcrest

Document Preparation: Denise Anderson, Consultant, Starcrest

Cover: Melissa Silva, Principal, Starcrest

Photos: Port of Los Angeles
Melissa Silva, Principal, Starcrest

Third party review: Ray Gorski
Paul Johansen

Please note that there may be minor numerical inconsistencies between the various sections, tables, and figures of this report, due to rounding associated with emission estimates, percent contribution, and other calculated numbers. Estimates are calculated using more significant figures than presented in the various tables. A detailed San Pedro Bay Ports Emissions Inventory Methodology Report is available on the Port's website.[1] This 2023 Air Emissions Inventory correlates with Version 5 of the Methodology Report.

EXECUTIVE SUMMARY

The Port of Los Angeles (Port or POLA) annual activity-based emissions inventories serve as the primary tool to track the Port's efforts to reduce air emissions from maritime industry-related sources through implementation of measures identified in the San Pedro Bay Ports (SPBP) Clean Air Action Plan (CAAP) and regulations promulgated at the state and federal levels. Development of the annual air emissions estimates is coordinated with a technical working group (TWG) comprised of representatives from the Port, the Port of Long Beach (POLB), and the following air regulatory agencies: U.S. Environmental Protection Agency, Region 9 (EPA), California Air Resources Board (CARB), and the South Coast Air Quality Management District (South Coast AQMD). Emissions estimated in this report are consistent with CARB and US EPA published methodologies.

Summary of 2023 Activity and Emission Estimates

The Port of Los Angeles (Port or POLA) 2023 Inventory of Air Emissions study presents maritime industry-related emission estimates based on 2023 activity levels. 2023 is a key year for the SPBP CAAP which set emissions reduction targets to be reached this year for NO_x, SO_x, and DPM. The Port of Los Angeles reported 8.6 million twenty-foot equivalent units (TEUs) in 2023, which is 13% lower than the prior year. Trade declined in most categories at ports worldwide. Vessels at anchorage were at normal counts for the entire year which resulted in overall lower vessel emissions compared to 2022. In addition, 2023 was the first year for all harbor craft vessels and PHL's switching locomotives to use renewable diesel which resulted in lower emissions as compared to 2022. Table ES.1 presents the number of vessel arrivals and the container cargo throughput for calendar years 2005, 2017, 2022 and 2023.

Table ES.1: Container Throughput and Vessel Arrivals Comparison

Year	TEUs	All Arrivals	Containership Arrivals	Average TEUs/Call
2023	8,629,681	1,476	874	9,874
2022	9,911,159	1,563	875	11,327
2017	9,343,193	1,801	1,154	8,096
2005	7,484,625	2,458	1,479	5,061
Previous Year (2022-2023)	**-13%**	**-6%**	**0%**	**-13%**
2023 vs 2017	**-8%**	**-18%**	**-24%**	**22%**
CAAP Progress (2005-2023)	**15%**	**-40%**	**-41%**	**95%**

[1] POLA, *www.portoflosangeles.org/environment/air-quality/air-emissions-inventory*

Table ES.2 summarizes the Port's 2023 maritime industry-related mobile source emissions of air pollutants in the South Coast Air Basin (SoCAB) by the following categories: ocean-going vessels (OGVs), harbor craft, cargo handling equipment (CHE), locomotives, and heavy-duty vehicles (HDV). In 2023, approximately 46% of the Port's total $PM_{2.5}$, and 55% of the Port's total NO_x emissions are attributed to OGV.

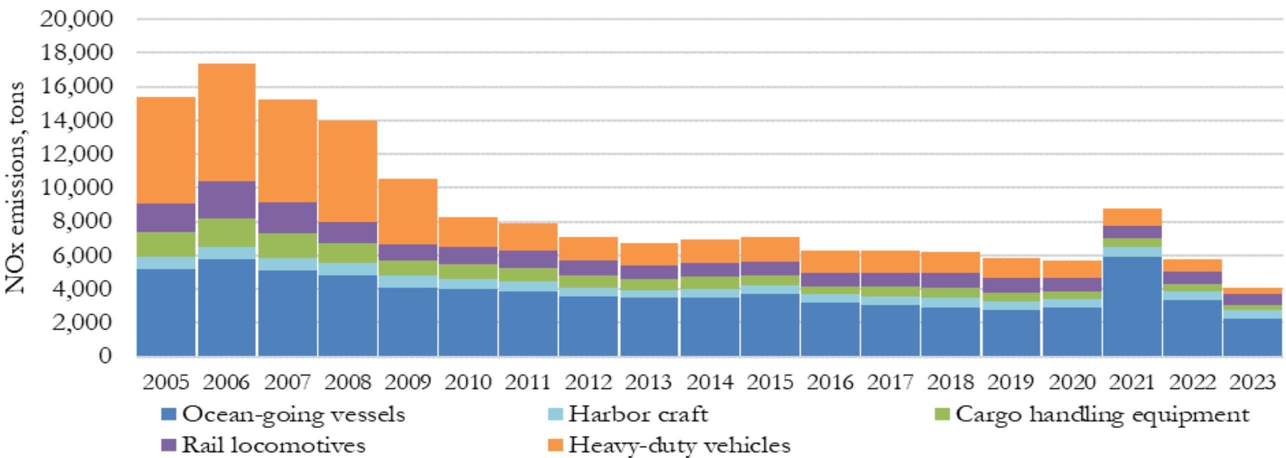
Table ES.2: 2023 Maritime Industry-related Emissions by Category

Category	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e tonnes
Ocean-going vessels	41	38	27	2,258	76	213	106	164,054
Harbor craft	11	10	11	482	1	96	27	51,808
Cargo handling equipment	10	9	9	329	2	624	79	145,461
Locomotives	24	23	24	659	1	159	38	55,408
Heavy-duty vehicles	3	3	3	350	3	285	35	356,601
Total	**90**	**83**	**75**	**4,078**	**82**	**1,377**	**285**	**773,331**

DB ID457

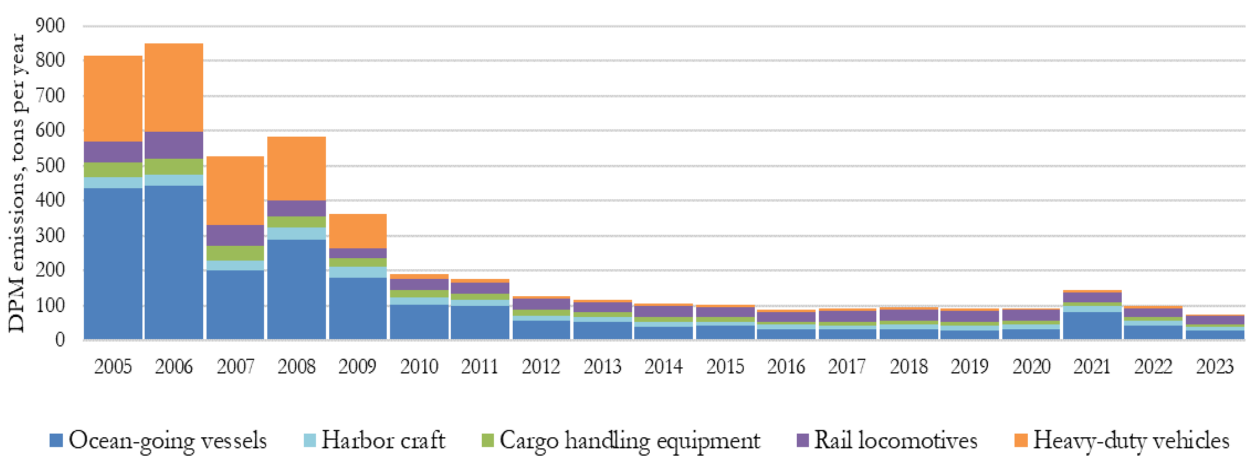
The NO_x and DPM trend charts shown in Figures ES.1 and ES.2 reflect the 2005 to 2023 emissions trend and show the reduction in 2023 emissions as compared to prior years. The 2023 NO_x emissions are at the lowest levels ever as shown in Figure ES.1.

Figure ES.1: NO_x Emissions Trend by Source Category



The emissions for most categories are lower due to less activity and cargo throughput. The decrease is also due to reduced harbor craft emissions as a result of using renewable diesel for the first time in 2023, and reduced truck emissions due to continued use of cleaner and newer 2014+ model year (MY) trucks which helped with the overall lower NO_x and DPM emissions. The 2023 DPM emissions are at the lowest level as shown in Figure ES.2.

Figure ES.2: DPM Emissions Trend by Source Category



In order to put the maritime industry-related emissions into context, the following figures compare the Port's contributions to the total emissions in the SoCAB by major emission source category. The pie charts reflect the latest SoCAB emissions from the 2022 Air Quality Management Plan (AQMP)[2].

Figure ES.3: 2023 PM_{10} Emissions in the South Coast Air Basin

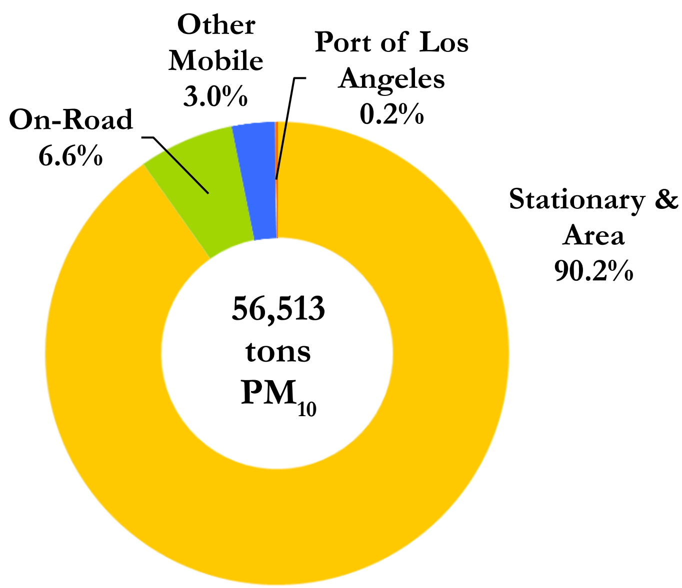
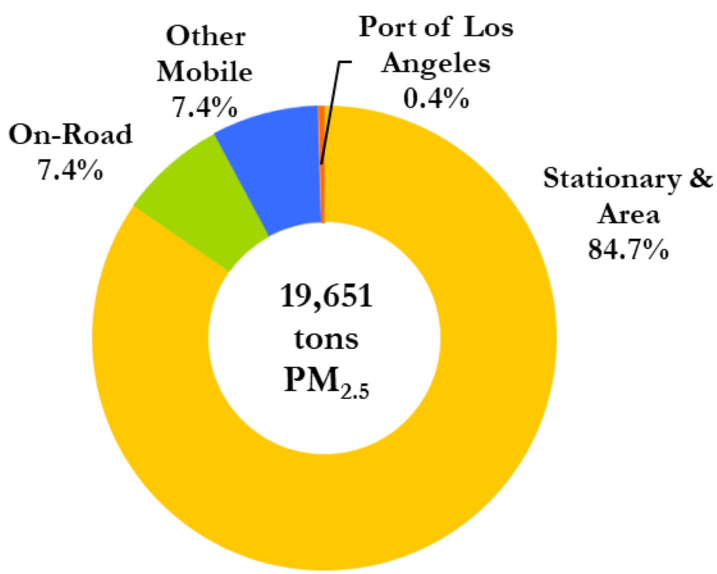


Figure ES.4: 2023 $PM_{2.5}$ Emissions in the South Coast Air Basin



[2] See South Coast AQMD webpage for AQMP: *www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan*

Figure ES.5: 2023 DPM Emissions in the South Coast Air Basin

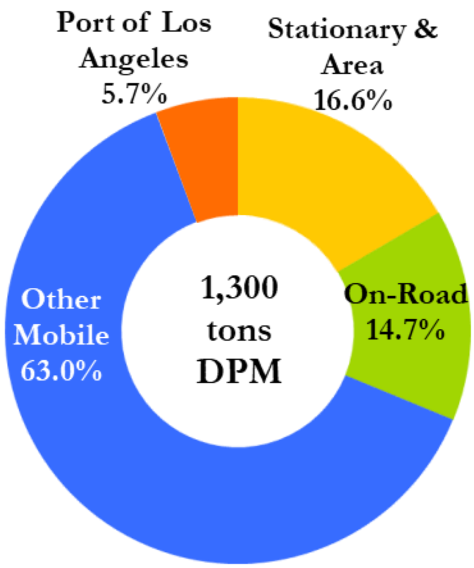


Figure ES.6: 2023 NO_x Emissions in the South Coast Air Basin

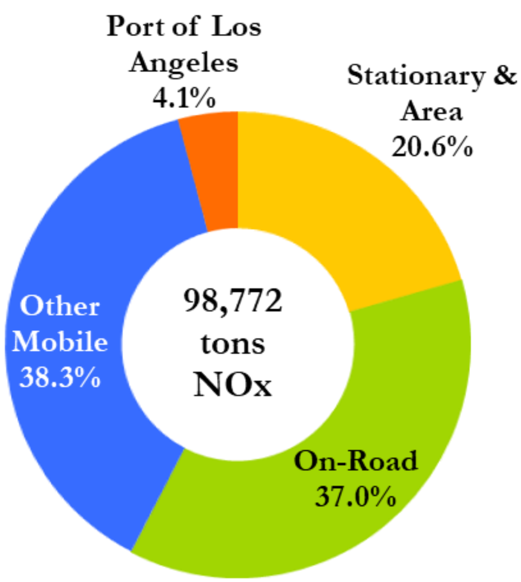
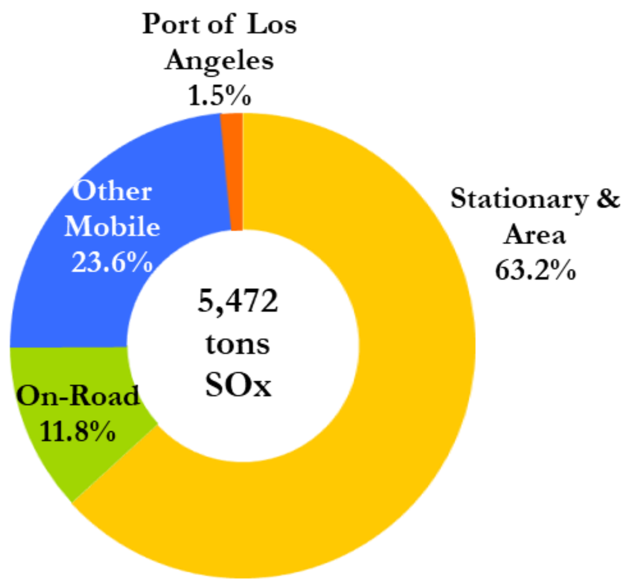


Figure ES.7: 2023 SO_x Emissions in the South Coast Air Basin



Comparison of 2023 Emissions to 2005, 2017, and 2022

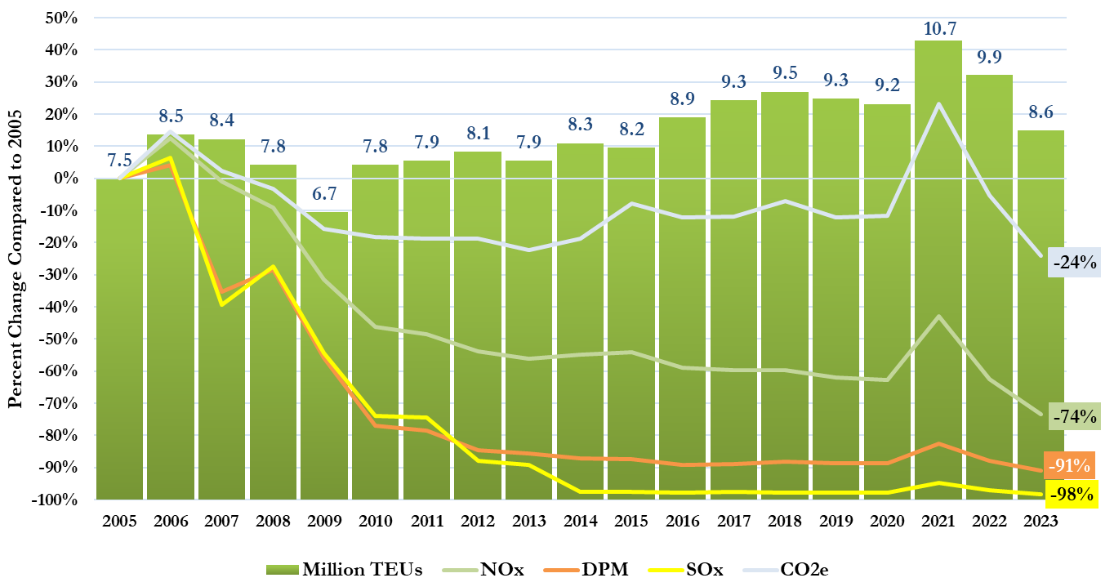
Table ES.3 presents the total net change in emissions from all source categories in 2023 as compared to prior years, all using the latest methodology. In order to maintain the consistency between the years compared, the previous years' emissions (2005 and 2017) are recalculated whenever new estimation methodologies are introduced. Calendar year 2017, which coincides with the 2017 SPBP CAAP Update, is included in the comparison for the first time in this report and will continue to be included in future emissions inventories.

Table ES.3: Maritime Industry-related Emissions Comparison

EI Year	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e tonnes
2023	90	83	75	4,078	82	1,377	285	773,331
2022	122	113	98	5,771	137	1,623	340	964,145
2017	113	104	91	6,222	113	1,597	343	895,848
2005	982	845	816	15,394	4,830	3,532	819	1,017,091
Previous Year (2022-2023)	**-26%**	**-26%**	**-24%**	**-29%**	**-40%**	**-15%**	**-16%**	**-20%**
2023 vs 2017	**-20%**	**-20%**	**-18%**	**-34%**	**-28%**	**-14%**	**-17%**	**-14%**
CAAP Progress (2005-2023)	**-91%**	**-90%**	**-91%**	**-74%**	**-98%**	**-61%**	**-65%**	**-24%**

Figure ES.8 depicts the maritime industry-related emissions trend for NO_x, DPM, SO_x, and CO_2e. The green bars depict the TEU cargo throughput for each calendar year. NO_x, DPM and SO_x have decreased significantly since 2005.

Figure ES.8: Emissions Trend



Comparison of 2023 Emissions by Source Category to 2022

Table ES.4 presents the 2023 and 2022 emissions comparison by source category. For most source categories, emissions decreased across the board overall in 2023 as compared to 2022 due to lower activity, newer and cleaner equipment and trucks, and use of renewable diesel by all harbor craft, some CHE at container terminals, and switching locomotives.

Please note that the 2022 OGV and CHE emissions were re-estimated to account for methodology improvements. The 2022 OGV emissions were re-estimated mainly to include the latest LNG emission factors and reclassification of B&W engines from non-MAN to MAN engines. The 2022 CHE emissions were re-estimated with updated renewable diesel fuel control factors.

Table ES.4: Maritime Industry-related 2023-2022 Emissions Comparison by Source Category

	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e tonnes
2023								
Ocean-going vessels	41	38	27	2,258	76	213	106	164,054
Harbor craft	11	10	11	482	1	96	27	51,808
Cargo handling equipment	10	9	9	329	2	624	79	145,461
Locomotives	24	23	24	659	1	159	38	55,408
Heavy-duty vehicles	3	3	3	350	3	285	35	356,601
Total	**90**	**83**	**75**	**4,078**	**82**	**1,377**	**285**	**773,331**
2022								
Ocean-going vessels	65	60	43	3,384	130	325	142	261,539
Harbor craft	13	13	13	498	0	100	25	50,811
Cargo handling equipment	12	11	11	416	2	667	88	170,408
Locomotives	26	24	26	717	1	175	41	61,145
Heavy-duty vehicles	5	5	5	756	4	355	44	420,243
Total	**122**	**113**	**98**	**5,771**	**137**	**1,623**	**340**	**964,145**
Change between 2022 and 2023 (percent)								
Ocean-going vessels	-37%	-37%	-37%	-33%	-42%	-35%	-25%	-37%
Harbor craft	-20%	-20%	-20%	-3%	7%	-4%	6%	2%
Cargo handling equipment	-17%	-17%	-19%	-21%	-15%	-6%	-10%	-15%
Locomotives	-7%	-6%	-7%	-8%	4%	-9%	-7%	-9%
Heavy-duty vehicles	-32%	-33%	-33%	-54%	-15%	-20%	-20%	-15%
Total	**-26%**	**-26%**	**-24%**	**-29%**	**-40%**	**-15%**	**-16%**	**-20%**

Calendar year 2023 saw a return to pre-COVID-19 pandemic activity. Section 9 provides more information about the energy consumption and newer technology comparison by source category that contributed to the emission changes. Major highlights by source category include:

- For OGVs, the 2023 emissions are lower (25% to 42%) compared to 2022 primarily due to vessel activity at anchorage returning to normal for the entire year, fewer vessel arrivals at berth and anchorage in 2023 as compared to 2022. The anchorage emissions are lower due to less time spent at anchorage in addition to the 26% fewer vessels at anchor in 2023 compared to 2022.

- For harbor craft, PM and NO_x emissions are lower in 2023 compared to 2022 due to the use of renewable diesel. Increase in SO_x, HC, and CO_2e is the result of overall harbor craft activity which overtook renewable fuel reductions. Despite the decrease in assist tugboats and commercial fishing vessels activity, other vessel types had higher activity in 2023.

- For CHE, the 2023 emissions are lower (6% to 21%) compared to 2022 due to lower equipment activity, which is in line with the 13% TEU cargo throughput decrease and increased use of cleaner equipment. In 2023, terminal operators continued to switch to renewable diesel which lowers criteria pollutants and the CO_2e tailpipe emissions.

- For locomotives, emissions are slightly lower compared to 2022, except for SO_x emissions. The switching locomotives used renewable diesel for the first time in 2023.

- For heavy-duty vehicles, the 2023 PM and NO_x emissions are lower (33% and 54%, respectively) compared to 2022 due to continued fleet turnover to newer trucks in 2023 as a result of the Port tariff. The share of mileage driven by 2014 and newer model year trucks continued to increase from 64% in 2022 to 86% in 2023.

Comparison of 2023 Emissions by Source Category to 2005

Table ES.5 presents the 2023 and 2005 emissions comparison by source category. The 2005 OGV emissions were re-estimated after reclassifying B&W engines from non-MAN to MAN engines. Despite a 15% increase in TEU throughput in 2023 as compared to 2005, emission reductions occurred in all pollutants for each source category, except for higher CO_2e emissions for harbor craft and CHE which still resulted in an overall decrease in CO_2e emissions. Please note that emissions are shown as whole numbers in this summary table. The PM and SO_x emissions are displayed in decimal notation in the source category sections.

Table ES.5: Maritime Industry-related 2023-2005 Emissions Comparison by Source Category

	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e tonnes
2023								
Ocean-going vessels	41	38	27	2,258	76	213	106	164,054
Harbor craft	11	10	11	482	1	96	27	51,808
Cargo handling equipment	10	9	9	329	2	624	79	145,461
Locomotives	24	23	24	659	1	159	38	55,408
Heavy-duty vehicles	3	3	3	350	3	285	35	356,601
Total	**90**	**83**	**75**	**4,078**	**82**	**1,377**	**285**	**773,331**
2005								
Ocean-going vessels	601	482	435	5,220	4,673	424	209	280,386
Harbor craft	33	32	33	706	4	209	49	44,996
Cargo handling equipment	44	40	43	1,449	9	797	104	134,630
Locomotives	57	53	57	1,712	98	237	89	82,201
Heavy-duty vehicles	248	238	248	6,307	45	1,865	368	474,877
Total	**982**	**845**	**816**	**15,394**	**4,830**	**3,532**	**819**	**1,017,091**
Change between 2005 and 2023 (percent)								
Ocean-going vessels	-93%	-92%	-94%	-57%	-98%	-50%	-49%	-41%
Harbor craft	-68%	-68%	-68%	-32%	-88%	-54%	-45%	15%
Cargo handling equipment	-77%	-77%	-79%	-77%	-83%	-22%	-24%	8%
Locomotives	-57%	-57%	-57%	-61%	-99%	-33%	-57%	-33%
Heavy-duty vehicles	-99%	-99%	-99%	-94%	-93%	-85%	-91%	-25%
Total	**-91%**	**-90%**	**-91%**	**-74%**	**-98%**	**-61%**	**-65%**	**-24%**

It should be noted that 2005 is the baseline year to track CAAP progress. Several factors contributed to lower emissions in 2023 compared to 2005 and the major highlights by source category include:

- For OGVs, the 2023 emissions are lower compared to 2005 due to fewer vessel calls, fuel switching, shore power, the Port's Environmental Ship Index (ESI) Incentive Program, Vessel Speed Reduction (VSR) compliance, and newer vessels. In 2023, except for ten alternatively fueled vessels, all engines for OGVs continued to use fuel with 0.1% sulfur or lower. The CARB At-Berth Regulation (i.e., shore power) was also in effect.

- For harbor craft, the 2023 emissions are lower than 2005 emissions due to using renewable diesel by all harbor craft, the repowers that occurred in the last few years as required by the CARB In-Use Harbor Craft Regulation or funding incentives, removal of older vessels due to attrition, and more efficient operations. There are no CO_2 standards for engines or control measures for harbor craft, therefore, the CO_2e emissions change along with activity trend.

- For CHE, equipment at container terminals continued using renewable diesel which has a lower carbon intensity than conventional diesel when taking into consideration life cycle analysis. The 2023 emissions are lower compared to 2005 due to implementation of CAAP measures and CARB's Cargo Handling Equipment Regulation, along with funding incentives, resulted in replacement of older equipment with cleaner units, retrofits, and repowers. The increased use of hybrid equipment, such as hybrid RTG cranes and straddle carriers, has also helped lower the emissions. The increase in CO_2e reflects the lack of lower emission standards or emission control measures for CO_2 and increased activity.

- For locomotives, 2023 emissions are lower compared to 2005 due to decreases in fleet-wide emissions from line haul locomotives meeting the terms of the memorandum of understanding (MOU) with CARB, use of renewable diesel, and the replacement of older switching locomotives with new low-emission and ultra-low emission switchers.

- For HDV, 2023 emissions are lower compared to 2005 due to the implementation of the final phase of the Port's Clean Truck Program (CTP) resulted in significant turnover of older trucks to newer and cleaner trucks as compared to 2005. More recently, as part of a Port Tariff amendment in 2018, all new trucks that register in the Ports' Drayage Truck Registry are required to be 2014 model year or newer. The share of mileage driven by 2014 and newer model year trucks increased to 86% in 2023 which shows the impact of the Port Tariff on the drayage trucks working at the Port.

Comparison of 2023 Emissions by Source Category to 2017

Table ES.6 presents the 2023 and 2017 emissions comparison by source category. TEU throughput is 8% lower in 2023 as compared to 2017. Except for harbor craft, emissions decreased across all pollutants in 2023 as compared to 2017.

Table ES.6: Maritime Industry-related 2023-2017 Emissions Comparison by Source Category

	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e tonnes
2023								
Ocean-going vessels	41	38	27	2,258	76	213	106	164,054
Harbor craft	11	10	11	482	1	96	27	51,808
Cargo handling equipment	10	9	9	329	2	624	79	145,461
Locomotives	24	23	24	659	1	159	38	55,408
Heavy-duty vehicles	3	3	3	350	3	285	35	356,601
Total	**90**	**83**	**75**	**4,078**	**82**	**1,377**	**285**	**773,331**
2017								
Ocean-going vessels	52	48	33	3,083	106	256	126	212,490
Harbor craft	11	10	11	521	0	91	21	49,900
Cargo handling equipment	13	12	11	543	2	783	87	172,964
Locomotives	30	27	30	839	1	208	45	73,346
Heavy-duty vehicles	7	7	7	1,236	4	260	64	387,148
Total	**113**	**104**	**91**	**6,222**	**113**	**1,597**	**343**	**895,848**
Change between 2017 and 2023 (percent)								
Ocean-going vessels	-22%	-22%	-16%	-27%	-29%	-17%	-16%	-23%
Harbor craft	-1%	1%	-1%	-8%	9%	5%	28%	4%
Cargo handling equipment	-22%	-22%	-21%	-39%	-13%	-20%	-9%	-16%
Locomotives	-18%	-16%	-18%	-21%	-12%	-24%	-15%	-24%
Heavy-duty vehicles	-52%	-52%	-53%	-72%	-9%	10%	-46%	-8%
Total	**-20%**	**-20%**	**-18%**	**-34%**	**-28%**	**-14%**	**-17%**	**-14%**

Several factors contributed to the lower emissions in 2023 compared to 2017 and the major highlights by source category include:

- For OGVs, the 2023 emissions are lower compared to 2017 due to fewer vessel calls, increase in shore power, Port's Environmental Ship Index (ESI) Incentive Program, Vessel Speed Reduction (VSR) compliance, and newer vessels.

- For harbor craft, the 2023 NOx and PM emissions are slightly lower compared to 2017 due to use of renewable diesel by all harbor craft in 2023 and cleaner vessels. Emissions are higher for the other pollutants due to increased activity (kWhr) in 2023 as compared to 2017.

- For CHE, the 2023 emissions are lower compared to 2017 due to lower activity and cleaner equipment as a result of implementation of CAAP measures and CARB's Cargo Handling Equipment Regulation, along with funding incentives to replace older equipment with cleaner units, retrofits, and repowers. The increased use of hybrid equipment, such as hybrid RTG cranes and straddle carriers, has also helped lower the emissions.

- For locomotives, the 2023 emissions are lower compared to 2017 due to the decreases in fleet-wide emissions from line haul locomotives meeting the terms of the memorandum of understanding (MOU) with CARB, use of renewable diesel, and the replacement of older switching locomotives with new low-emission and ultra-low emission switchers.

- For HDV, the 2023 emissions are lower compared to 2017 due to implementation of the final phase of the Port's Clean Truck Program (CTP) resulting in significant turnover of older trucks to newer and cleaner trucks as compared to 2017. More recently, as part of a Port Tariff amendment in 2018, all new trucks that register in the Ports' Drayage Truck Registry are required to be 2014 model year or newer.

Comparison of Emissions Efficiency

Table ES.7 summarizes the annualized emissions efficiencies for all five source categories. The overall emissions efficiency in 2023 improved for all pollutants as compared to 2005, 2017 and 2022. In Table ES.7, a positive percentage means an increase in emissions efficiency.

Table ES.7: Emissions Efficiency Metric Comparison, tons/10,000 TEUs

EI Year	PM_{10}	$PM_{2.5}$	DPM	NO_x	SO_x	CO	HC	CO_2e
2023	0.104	0.096	0.086	4.73	0.09	1.60	0.33	896
2022	0.123	0.114	0.099	5.82	0.14	1.64	0.34	973
2017	0.121	0.111	0.098	6.66	0.12	1.71	0.37	959
2005	1.313	1.129	1.090	20.57	6.45	4.72	1.09	1,359
Previous Year (2022-2023)	**15%**	**16%**	**13%**	**19%**	**36%**	**2%**	**3%**	**8%**
2023 vs 2017	**14%**	**14%**	**12%**	**29%**	**25%**	**6%**	**11%**	**7%**
CAAP Progress (2005-2023)	**92%**	**92%**	**92%**	**77%**	**99%**	**66%**	**70%**	**34%**

CAAP Standards and Emission Reduction Progress

One of the main purposes of the annual inventories is to provide a progress update on achieving the San Pedro Bay CAAP Standards. These standards consist of the following emission reduction goals, using the 2005 published inventories as a baseline.

- Emission Reduction Standard:
  - By 2014, reduce emissions by 72% for DPM, 22% for NO_x, and 93% for SO_x
  - By 2023, reduce emissions by 77% for DPM, 59% for NO_x, and 93% for SO_x

- Health Risk Reduction Standard: 85% reduction by 2020

Due to the many emission reduction measures undertaken by the Port and Port operators, as well as statewide and federal regulations and standards, the 2023 emission reduction standards were met for DPM, NO_x, and SO_x, even despite the increase in activity due to the TEU cargo increase (15%) since 2005. Table ES.8 summarizes DPM, NO_x, and SO_x percent reductions as compared to the 2023 emission reduction standards.

Table ES.8: Reductions as Compared to 2023 Emission Reduction Standards

Pollutant	2023 Actual Reductions	2023 Emission Reduction Standard
DPM	-91%	77%
NO_x	-74%	59%
SO_x	-98%	93%

The emission reduction standards are represented as a percentage reduction of emissions from 2005 levels and are tied to the regional SoCAB attainment dates for the federal $PM_{2.5}$ and ozone ambient air quality standards in the 2007 AQMP. This emissions inventory is used as a tool to track progress in meeting the emission reduction standards.

Figures ES.9 through ES.12 present the 2005 baseline emissions and the year-to-year percent change in emissions with respect to the 2005 baseline emissions. The 2014 and 2023 standards are also provided as a snapshot of progress to-date towards meeting those standards. The pink line in the figures represents the percentage of TEU throughput as compared to 2005 TEU throughput. These figures provide context to the relative correlation between cargo throughput and emissions. The TEU throughput was 15% higher in 2023 as compared to 2005.

As summarized for Table ES.4 and Section 2 (Regulatory and CAAP Measures), the major factors contributing to the lower emissions over the years for the various pollutants include:

- Fuel Switching for all source categories, but mainly OGV which originally used residual diesel fuel with an average 2.7% sulfur content. OGV switched to marine gas oil (MGO) or marine diesel oil (MDO) fuel with 1% sulfur in 2012 and 0.1% sulfur in 2015. For harbor craft, CHE, HDV, and locomotives, ultra-low sulfur diesel (ULSD) has been used since 2006 and 2007 timeframe.

- Various OGV programs and regulations that further reduced emissions are the use of at-berth shore power and the VSR and ESI incentive programs that occurred in a phased approach. The introduction of Tier III vessels as well as use of alternative fuel (LNG and methanol) also contributed to the lower emissions.

- CARB Harbor Craft Regulation and funding incentives led to vessel repowers which lowered emissions for harbor craft. Vessel attrition over the course of the past 15+ years. Use of renewable diesel fuel per CARB's latest Commercial Harbor Craft (CHC) regulation.

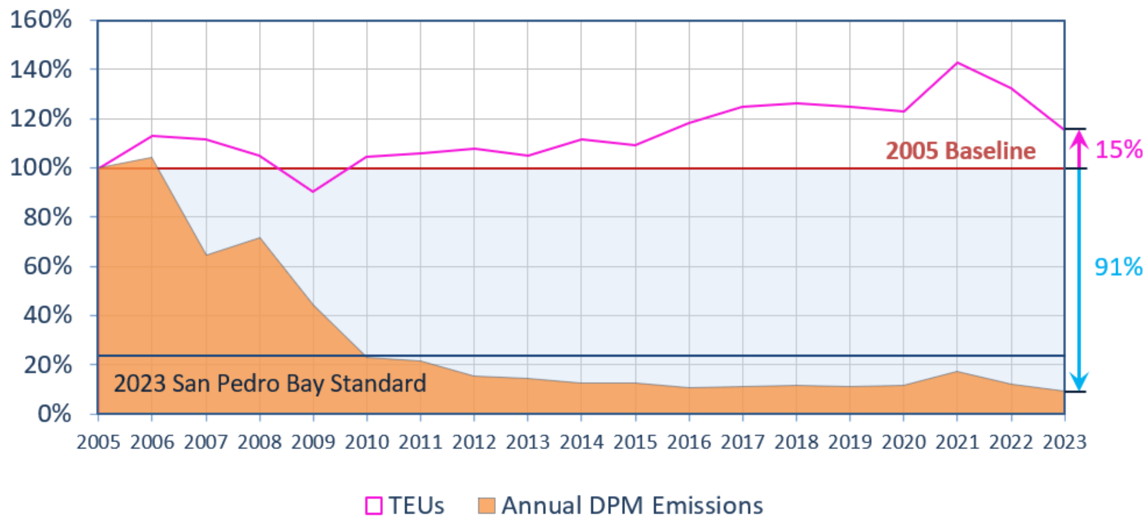
- Cleaner CHE fleet over the years due to CAAP measures and CARB's CHE Regulation which occurred mainly between 2007 and 2015. Introduction of hybrid and zero emission equipment in the fleet. CARB's Large Spark Ignition (LSI) Regulation impacted the propane forklifts between 2007 and 2010.

- For locomotives, EPA regulations that started in 2010 and phased in through 2015, in addition to CARB's statewide MOU and SPBP CAAP PHL Rail Switch Engine Modernization measure in 2010, decreased the locomotive emissions between 2010 to present.

- For HDV, emission reductions have occurred in a phased approach starting with EPA/CARB emission standards for new 2007+ trucks in 2007 and 2010 and CARB's Drayage Truck Regulation which started in 2009 in a phased approach. The SPBP CAAP phased measures started in 2008 including the 2012 implementation of the final phase of the Port's Clean Truck Program (CTP) which stipulated trucks operating at SPBP must have 2007 or newer engines. Most recently, as part of a Port Tariff amendment in 2018, all new trucks that register in the Ports' Drayage Truck Registry are required to be 2014 model year or newer.

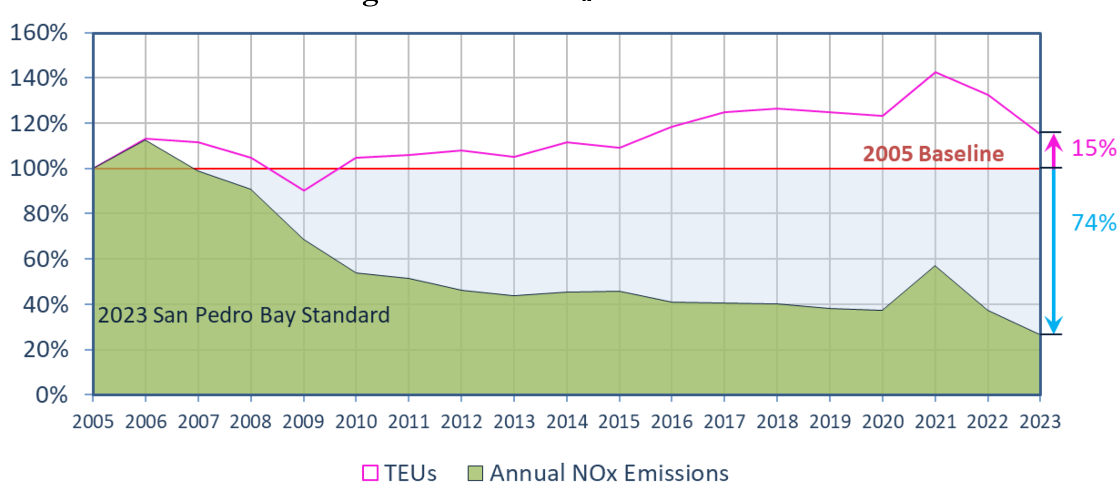
Figure ES.9 shows that the Port surpassed the 2023 DPM emission reduction standard (77%) with a 91% emission reduction in 2023. In 2023, the 0.1% sulfur fuel use requirement for OGVs from the International Maritime Organization (IMO) North American Emission Control Area (ECA) was in effect. Additionally, reductions in DPM were associated with an increase in the number of ships using shore power, due to the CARB At-Berth Regulation and high vessel compliance with the Port's Vessel Speed Reduction program. Over the years, fleet turnover of harbor craft, CHE, HDV and locomotives to newer engine/equipment meeting more stringent particulate matter (PM) standards contributed to the DPM reductions.

Figure ES.9: DPM Reductions to Date



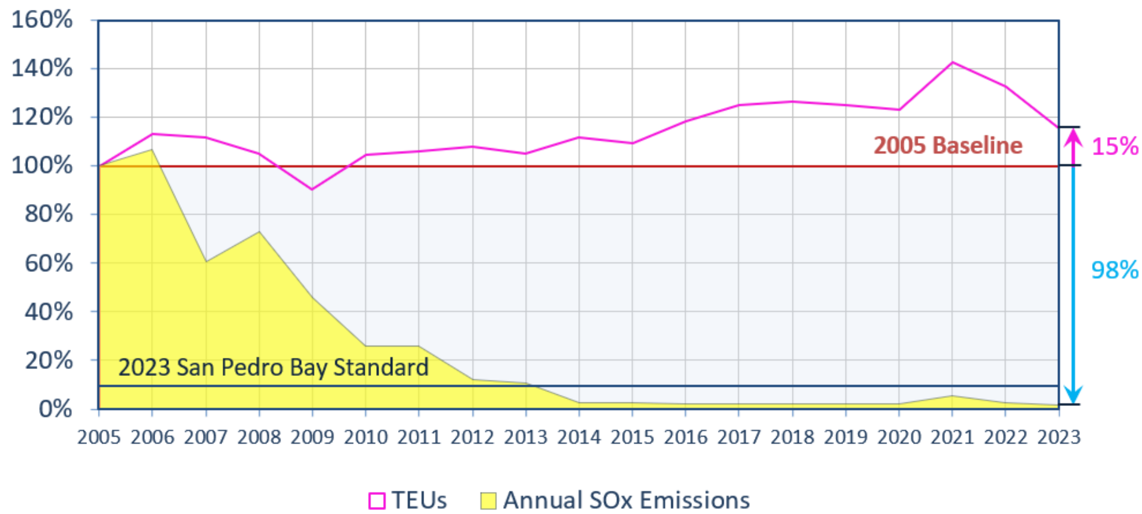
As illustrated in Figure ES.10, the Port met and exceeded the 2023 NO_x mass emission reduction standard (59%) in 2023 with a 74% reduction. Reductions in NO_x were associated with an increase in the number of ships using shore power, due to the CARB At-Berth Regulation, high vessel compliance with the Port's Vessel Speed Reduction program and introduction of Tier III vessels in recent years. Over the years, fleet turnover of harbor craft, CHE, HDV and locomotives to newer engine/equipment meeting more stringent NO_x standards contributed to the NO_x reductions.

Figure ES.10: NO_x Reductions to Date



The Port surpassed the 2023 SO_x mass emission reduction standard (93%) with a 98% reduction in 2023. In 2023, the 0.1% sulfur fuel use requirement for OGVs from the IMO North American ECA and the increase in the number of ships using at-berth shore power, due to the CARB At-Berth Regulation, contributed to the reduction in SO_x. Since 2005, harbor craft, CHE, HDV, and locomotives have switched to using ultralow sulfur diesel (ULSD) fuel which resulted in lower SO_x emissions.

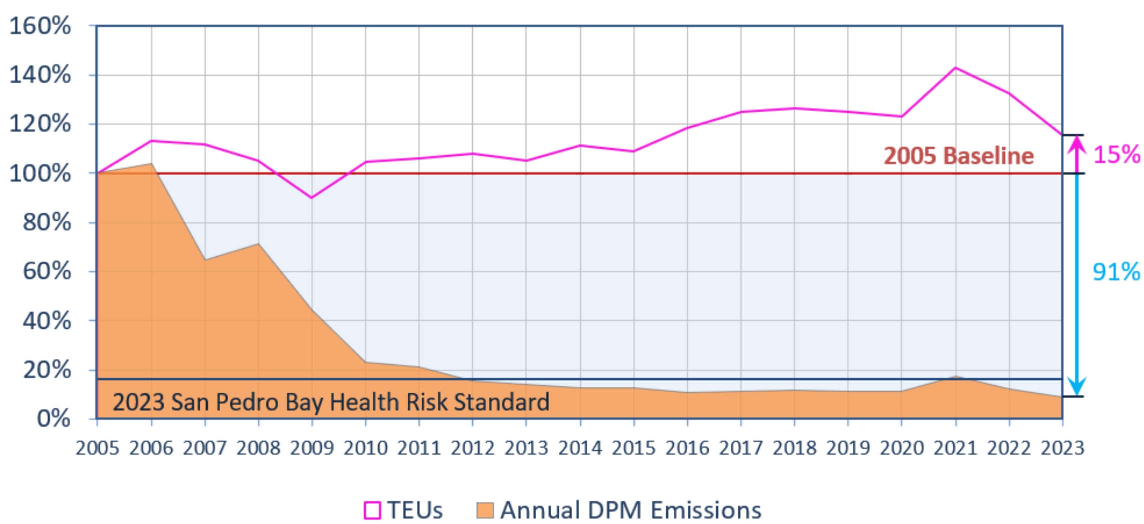
Figure ES.11: SO_x Reductions to Date



Health Risk Reduction Progress

Progress to-date on health risk reduction was determined by comparing the change in DPM mass emissions to the 2005 baseline. Figure ES.12 presents the progress of achieving the standard to date. In 2023, with a 91% reduction, the Port met the 2020 Health Risk Reduction Standard (85%). The TEU throughput was 15% higher in 2023 as compared to 2005.

Figure ES.12: Health Risk Reduction Benefits to Date



SECTION 1 INTRODUCTION

The Port of Los Angeles (Port or POLA) 2023 Inventory of Air Emissions study presents maritime industry-related emission estimates based on 2023 activity levels. The report also includes a comparison of the estimated 2023 emissions with the 2005 baseline year, 2017, and 2022 emission estimates to track the Port's emission reduction progress under the San Pedro Bay Ports (SPBP) Clean Air Action Plan (CAAP). As in previous inventories, the following five source categories were included:

- Ocean-going vessels (OGV)
- Harbor craft
- Cargo handling equipment (CHE)
- Locomotives
- Heavy-duty vehicles (HDV)

Exhaust emissions of the following pollutants that can cause regional and local air quality impacts were estimated:

- Particulate matter (PM) (10-micron, 2.5-micron)
- Diesel particulate matter (DPM)
- Oxides of nitrogen (NO_x)
- Oxides of sulfur (SO_x)
- Hydrocarbons (HC)
- Carbon monoxide (CO)

Greenhouse gas (GHG) emissions are presented in units of metric tons (MT) of carbon dioxide equivalents, which weight each gas by its global warming potential (GWP) value relative to CO_2. To normalize these values into a single greenhouse gas value, CO_2e, the GHG emission estimates are multiplied by the following values and summed.[3]

- CO_2 – 1
- CH_4 – 25
- N_2O – 298

[3]U.S. EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2019*, EPA 430-R-21-005, published 2021.

Geographical Domain

The geographical extent of the inventory includes emissions from the aforementioned maritime industry-related emission sources operating within the harbor district. For rail locomotives and on-road trucks, the domain extends from the Port to the cargo's first point of rest within the South Coast Air Basin (SoCAB) or up to the SoCAB boundary, whichever comes first.

For commercial marine vessels, the domain or overwater boundary includes the berths and waterways in the Port proper and all vessel movements within the 40-nautical mile (nm) arc from Point Fermin as shown in Figure 1.1. The northern boundary is the Ventura County line, and the southern boundary is the Orange County line. It should be noted that although the overwater boundary for the South Coast air quality modeling domain extends further off the coast, most of the vessel movements occur within the 40 nm arc. Vessels that pass through the domain, but do not call on the Port are excluded from the inventory.

The Hawaiian, western, and southern routes extend beyond the 40 nm arc into the outer part of the South Coast air quality modeling domain. For the western and southern routes, this emissions inventory covers the majority of the emissions as most of the vessel movements occur within the 40-nm arc. For the Hawaiian route, this emissions inventory includes the additional SoCAB over-water boundary emissions that extends past the 40 nm mile arc.

Figure 1.1: Emissions Inventory Geographical Extent

Figure 1.2 shows the location of the anchorage areas for San Pedro Bay Ports. The orange shading shows the POLA terminals. The green areas are the known anchorage areas. Vessel emissions at anchorage are included in the air emissions inventory report as part of the OGV emissions. The precautionary area, labeled as precautionary zone, is an area where ships must navigate with particular caution. The northern and southern shipping lanes include a Separation Zone to separate opposing traffic lanes by 1 to 2 miles wide within each sector.

Figure 1.2: Anchorage Areas

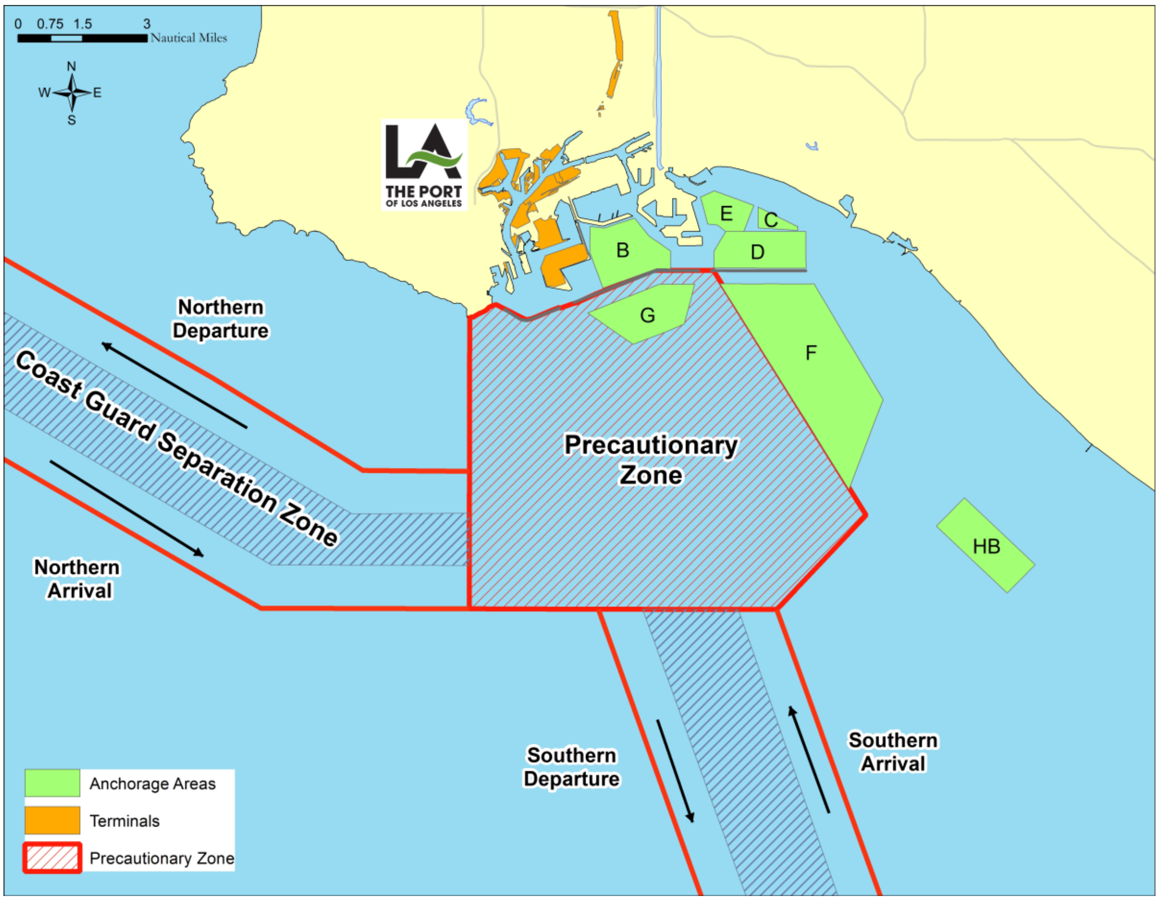
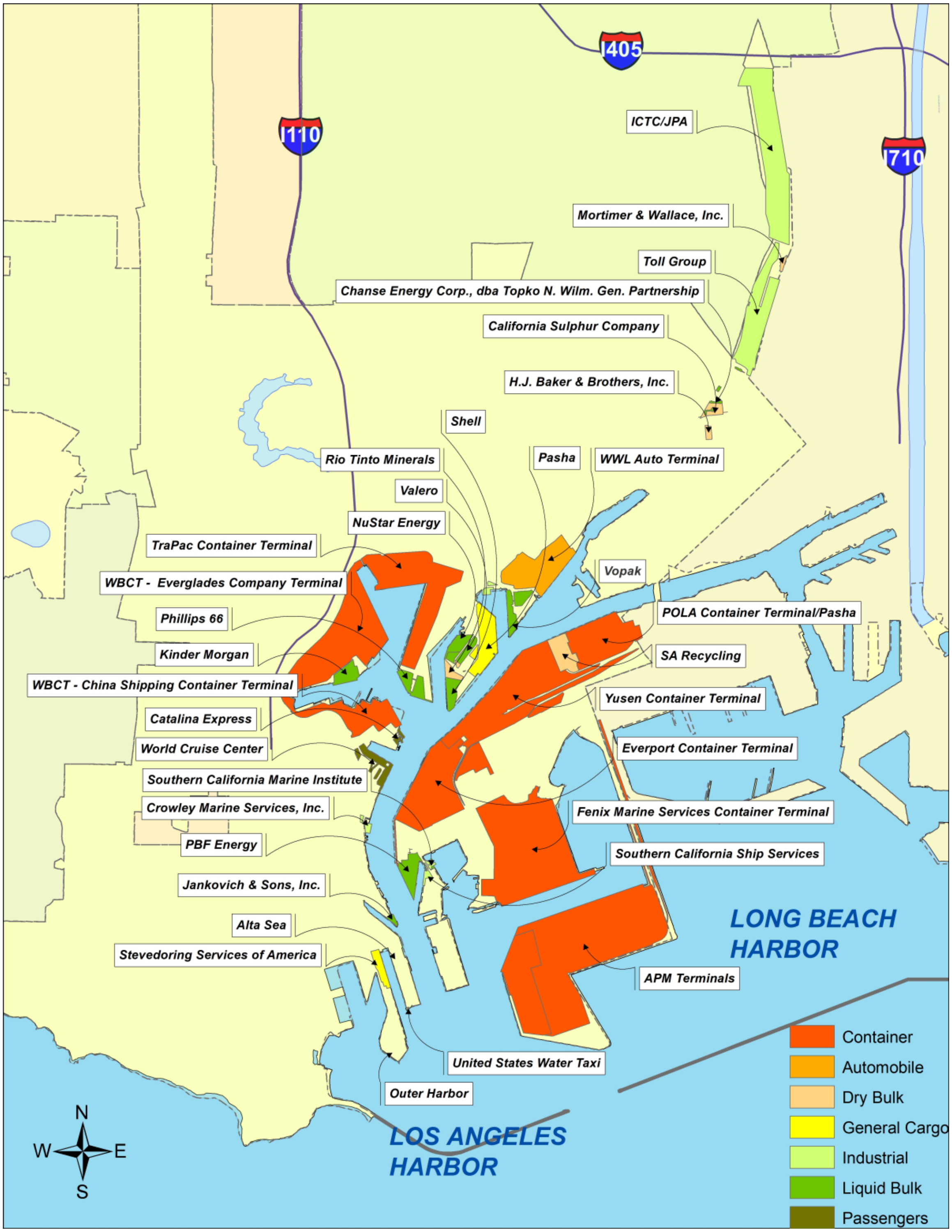


Figure 1.3 shows the land area of active Port terminals in 2023. The geographical scope for cargo handling equipment is the terminals and facilities on which they operate.

Figure 1.3: Port Boundary Area of Study



SECTION 2 REGULATORY AND CAAP MEASURES

This section summarizes the regulatory initiatives and Port measures related to port activity. Almost all maritime industry-related emissions come from five emission source categories: OGVs, harbor craft, CHE, locomotives, and HDVs. The responsibility for the regulation of emissions from the majority of these sources falls under the jurisdiction of local (South Coast Air Quality Management District [South Coast AQMD]), state (California Air Resources Board [CARB]), or federal (U.S. Environmental Protection Agency [EPA]) agencies.

CAAP Strategies

At the end of 2017, the ports of Los Angeles and Long Beach (Ports) released the final CAAP 2017 Update.[4] The CAAP 2017 Update contains new strategies for all sources that move cargo through the ports, including the deployment of zero and near-zero emission trucks and cargo handling equipment and the expansion of programs that reduce ship emissions. The focus of the CAAP 2017 Update is to work in collaboration with industry stakeholders, regulatory agencies, local communities, and environmental groups for the next 20 years to reduce emissions and combat climate change. The CAAP 2017 strategies that will affect future emission reductions for the Ports include:

- Advancing the Clean Trucks Program to phase out older trucks and transition to near-zero emissions in the early years and zero-emissions by 2035. Under this program, the Boards of Harbor Commissioners of the City of Los Angeles and the City of Long Beach approved the collection of a Clean Truck Fund (CTF) Rate of $10 per loaded TEU moved by trucks in and out of port terminals. Zero-emission trucks are exempt from the rate throughout the duration of the program. Low NO_x trucks that were registered in the Port Drayage Truck Registry (PDTR) and were placed into service by the end of 2022 at the Port of Los Angeles will receive an exemption through December 31, 2027. Collection of the CTF rate began on April 1, 2022. The Clean Truck Fund rates provide funds to incentivize the transition to near-zero and zero-emission trucks through a Truck Voucher Incentive Program and Infrastructure Funding Program. In November 2023, the Ports made $60 million in Clean Truck Fund rate funding available through the California Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) for vouchers toward the purchase of zero-emissions class 8 drayage trucks that operate in SPBP.
- Requiring terminal operators to purchase zero-emissions equipment, if feasible, or near-zero or cleanest technology available when procuring new equipment. Submitting grant applications on behalf of the tenants to support their efforts.
- Further reducing emissions from ships at-berth, and transitioning the oldest, most polluting ships out of the San Pedro Bay fleet.
- Accelerating the deployment of cleaner engines and operational strategies to reduce harbor craft emissions.
- Expanding the use of on-dock rail to shift more cargo leaving the port to go by rail.

[4] CAAP, *https://cleanairactionplan.org/2017-clean-air-action-plan-update/*

San Pedro Bay Emissions Reduction Standards

The 2017 CAAP Update did not alter the 2010 CAAP Update goals that set health risk and emission reduction standards but did incorporate two new emission targets to reduce GHGs from port-related sources as described below.

Health Risk Reduction Standard

To complement the CARB's Air Pollution Reduction Programs, including the Diesel Risk Reduction Plan, the Ports developed the following standard for reducing overall maritime industry-related health risk impacts, relative to 2005 emission levels:

- By 2020, reduce the population-weighted cancer risk of maritime industry-related DPM emissions by 85% in highly impacted communities located proximate to Port sources and throughout the residential areas in the Port region.

Emission Reduction Standard

The Ports developed the following standards for reducing air pollutant emissions from maritime industry-related activities, relative to 2005 emission levels:

- By 2023, reduce emissions of NO_x by 59%, SO_x by 93%, and DPM by 77% to support attainment of the federal 8-hour ozone standards and NAAQS fine particulate matter ($PM_{2.5}$) standards.

2017 CAAP Update New Emission Reduction Targets

- Reduce GHGs from port-related sources to 40% below 1990 levels by 2030
- Reduce GHGs from port-related sources to 80% below 1990 levels by 2050

Regulatory Programs by Source Category

The following section presents a list of currently adopted regulatory programs and CAAP measures by each major source category that influenced the progress towards the SPBP emission reduction targets from the maritime industry in and around the Port.

Table 2.1: OGV Emission Regulations, Standards and Policies

Agency	Regulation/Standard/Policy	Targeted Pollutants	Years Effective	Impact
International Maritime Organization (IMO)	NO_x Emission Standard for Marine Engines[5]	NO_x	2011 – Tier II 2016 – Tier III for ECA only	Sets NO_x emission standard for auxiliary and propulsion engines over 130 kW output power on newly built vessels
IMO	Emissions Control Area, Low Sulfur Fuel Requirements for Marine Engines[6]	DPM, PM, and SO_x	2012 ECA – 1% Sulfur 2015 ECA – 0.1% Sulfur	Significantly reduces emissions due to low sulfur content in fuel by creating Emissions Control Area (ECA)
IMO	2023 IMO Strategy on reduction of GHG emissions from ships – MEPC 377 (80)[7]	CO_2	2050 – 100%	Phase out GHG completely by 2050 from 2008 level. Intermediate GHG reduction checkpoints in 2030 and 2040.
IMO	Energy Efficiency Design Index (EEDI) for International Shipping[8]	CO_2 and other pollutants	2013	Increases the design efficiencies of ships relating to energy and emissions
IMO	Carbon Intensity Indicator (CII) - MEPC 328 (76)	CO_2	2030 – 40% reduction from 2008 baseline	Increases the transport work efficiency of ships relating to emissions; reduce the carbon intensity of all ships.

[5] IMO, *www.imo.org/en/OurWork/Environment/Pages/Nitrogen-oxides-(NOx)-%E2%80%93-Regulation-13.aspx*
[6] IMO, *www.imo.org/en/OurWork/Environment/Pages/Sulphur-oxides-(SOx)-%E2%80%93-Regulation-14.aspx*
[7] IMO, *wwwcdn.imo.org/localresources/en/MediaCentre/PressBriefings/Documents/Clean%20version%20of%20Annex%201.pdf*
[8] IMO, *www.imo.org/en/OurWork/Environment/Pages/Improving%20the%20energy%20efficiency%20of%20ships.aspx*

Table 2.1: OGV Emission Regulations, Standards and Policies (cont'd)

Agency	Regulation/Standard/Policy	Targeted Pollutants	Years Effective	Impact
EPA	Emission Standards for Marine Diesel Engines above 30 Liters per Cylinder (Category 3 Engines); Aligns with IMO Annex VI marine engine NO_x standards and low sulfur requirement[9]	DPM, PM, NO_x, and SO_x	2011 – Tier 2 2016 – Tier 3	Auxiliary and propulsion category 3 engines on US flagged new built vessels and requires use of low sulfur fuel
CARB	Regulation to Reduce Emissions from Diesel Auxiliary Engines on Ocean-Going Vessels While At-Berth at a California Port[10]	DPM, PM, NO_x, SO_x, CO_2	2014 – 50% 2017 – 70% 2020 – 80%	Shore power (or equivalent) requirements. Vessel operators based on fleet percentage visiting the ports.
CARB	New 2020 At-Berth Regulation[11] *Note this regulation supersedes the previous regulation.*	All	2023 – 100% container, reefer, and cruise 2025 – Ro-Ro and LALB tankers	All container, reefer, cruise, Ro-Ro, and tanker vessel and regulated terminal operator will have to meet the requirements
CARB	Ocean-going Ship Onboard Incineration[12]	DPM, PM, and HC	2007	All vessels cannot incinerate within 3 nm of the California coast
CAAP	CAAP Measure – OGV 1 Vessel Speed Reduction (VSR) Program[13]	All	2008	Vessel operators within 20 nm and 40 nm of Point Fermin
CAAP	CAAP Measure – OGV 2 Reduction of At-Berth OGV Emissions[14]	All	2014	Vessel operators and terminals
CAAP	CAAP Measure – OGV 5 and 6 Cleaner OGV Engines and OGV Engine Emissions Reduction Technology Improvements and Environmental Ship Index (ESI) Program[15]	DPM, PM, and NO_x	2012	Vessel operators who choose to participate in ESI and/or technology demonstrations.

[9] EPA, *www.epa.gov/regulations-emissions-vehicles-and-engines/domestic-regulations-emissions-marine-compression*
[10] CARB, *www.arb.ca.gov/regact/2007/shorepwr07/shorepwr07.htm,* and *www.arb.ca.gov/ports/shorepower/forms/regulatoryadvisory/regulatoryadvisory12232013.pdf*
[11] CARB, *ww2.arb.ca.gov/our-work/programs/ocean-going-vessels-berth-regulation*
[12] CARB, *www.arb.ca.gov/ports/shipincin/shipincin.htm*
[13] CAAP, *www.cleanairactionplan.org/strategies/ships/*
[14] CAAP, *www.portoflosangeles.org/environment/ogv.asp*
[15] CAAP, *www.cleanairactionplan.org/strategies/ships/*

Table 2.2: Harbor Craft Emission Regulations, Standards and Policies

Agency	Regulation/Standard/Policy	Targeted Pollutants	Years Effective	Impact
EPA	Emission Standards for Harbor Craft Engines[16]	All	2009 – Tier 3 2014 – Tier 4 for 800 hp or greater	Commercial marine diesel engines with displacement less than 30 liters per cylinder
CARB	Low Sulfur Fuel Requirement for Harbor Craft[17]	DPM, PM, NO_x, and SO_x	2006 – 15 ppm in SCAQMD area	Use of low sulfur diesel fuel in commercial harbor craft operating in SCAQMD
CARB	Regulation to Reduce Emissions from Diesel Engines on Commercial Harbor Craft[18]	DPM, PM, and NO_x	2009 to 2020 - schedule varies depending on engine model year	Most harbor craft with home port in SCAQMD must meet more stringent emissions limits according to a compliance schedule
CARB	2022 Commercial Harbor Craft Regulation Amendments[19]	All	2023 to 2032 – schedule varies on engine MY and vessel type	New requirements for harbor craft in a phased approach. Renewable diesel from Jan 2023 on.
CAAP	CAAP Measure – HC 1 Performance Standards for Harbor Craft[20]	All	Varies	Modernization of harbor craft operating at POLA upon lease renewal

[16] EPA, *www.epa.gov/regulations-emissions-vehicles-and-engines/domestic-regulations-emissions-marine-compression*
[17] CARB, *www.arb.ca.gov/regact/carblohc/carblohc.htm*
[18] CARB, *www.arb.ca.gov/regact/2010/chc10/chc10.htm*
[19] CARB, *www.arb.ca.gov/our-work/programs/commercial-harbor-craft*
[20] CAAP, *www.portoflosangeles.org/environment/air-quality/san-pedro-bay-ports-clean-air-action-plan*

Table 2.3: Cargo Handling Equipment Emission Regulations, Standards and Policies

Agency	Regulation/Standard/Policy	Targeted Pollutants	Years Effective	Impact
EPA	Emission Standards for Non-Road Diesel Powered Equipment[21]	All	2008 through 2015	All non-road equipment
CARB	Cargo Handling Equipment Regulation[22]	All	2007 through 2017; Opacity test compliance starting in 2016	All Cargo handling equipment
CARB	New Emission Standards, Test Procedures, for Large Spark Ignition (LSI) Engine Forklifts and Other Industrial Equipment[23]	All	2007 – first phase 2010 – second phase	Emission standards for large spark-ignition engines with 25 hp or greater
CARB	Fleet Requirements for Large Spark Ignition Engines[24]	All	2009 through 2013	More stringent emissions requirements for fleets of large spark-ignition engines equipment
CAAP	CAAP Measure – CHE1 Performance Standards for CHE[25]	All	2007 through 2014	Turnover to Tier 4 cargo handling equipment per lease renewal agreement
CAAP	CAAP Measure – Transition to Cleaner Equipment[26]	All	2020 through 2030	Turnover to zero emissions CHE, if feasible, or near zero emissions or cleanest available if ZE/NZE not yest feasible

[21] EPA, *www.epa.gov/regulations-emissions-vehicles-and-engines/regulations-emissions-nonroad-vehicles-and-engines*
[22] CARB, *www.arb.ca.gov/regact/2011/cargo11/cargo11.htm*
[23] CARB, *www.arb.ca.gov/regact/2008/lsi2008/lsi2008.htm*
[24] CARB, *www.arb.ca.gov/regact/2010/offroadlsi10/lsifinalreg.pdf*
[25] CAAP, *www.portoflosangeles.org/environment/air-quality/san-pedro-bay-ports-clean-air-action-plan*
[26] CAAP, *www.cleanairactionplan.org/about-the-plan/*

Table 2.4: Locomotives Emission Regulations, Standards and Policies

Agency	Regulation/Standard/Policy	Targeted Pollutants	Years Effective	Impact
EPA	Emission Standards for New and Remanufactured Locomotives and Locomotive Engines- Latest Regulation[27]	DPM and NO_x	2011 through 2013 – Tier 3 2015 – Tier 4	All new and remanufactured locomotive engines
EPA	Control of Emissions of Air Pollution from Nonroad Diesel Engines and Fuel[28]	SO_x and PM	2010	All locomotive engines
CARB	Low Sulfur Fuel Requirement for Intrastate Locomotives[29]	SO_x, NO_x, and PM	2007	Intrastate locomotives, mainly switchers
CARB	Statewide 1998 and 2005 Memorandum of Understanding (MOUs)[30]	NO_x	2010	Union Pacific and BNSF locomotives
CARB	**New In-Use Locomotive Regulation[31]**	All	2024	All locomotive engines in CA
CAAP	CAAP Measure – RL1 Pacific Harbor Line (PHL) Rail Switch Engine Modernization[32]	PM	2010	Pacific Harbor Line switcher engines
CAAP	CAAP Measure – RL2 Class 1 Line-haul and Switcher Fleet Modernization[33]	All	2023 – Tier 3	Class 1 locomotives at ports
CAAP	CAAP Measure – RL3 New and Redeveloped Near-Dock Rail Yards[34]	All	2020 – Tier 4	New near-dock rail yards

[27] EPA, *www.epa.gov/regulations-emissions-vehicles-and-engines/regulations-emissions-locomotives*
[28] EPA, *www.epa.gov/regulations-emissions-vehicles-and-engines/regulations-emissions-nonroad-vehicles-and-engines*
[29] CARB, *www.arb.ca.gov/msprog/offroad/loco/loco.htm#intrastate*
[30] CARB, *www.arb.ca.gov/msprog/offroad/loco/loco.htm#intrastate*
[31] CARB, *ww2.arb.ca.gov/our-work/programs/reducing-rail-emissions-california/locomotive-fact-sheets*
[32] CAAP, *www.portoflosangeles.org/environment/air-quality/san-pedro-bay-ports-clean-air-action-plan*
[33] CAAP, *www.portoflosangeles.org/environment/air-quality/san-pedro-bay-ports-clean-air-action-plan*
[34] CAAP, *www.portoflosangeles.org/environment/air-quality/san-pedro-bay-ports-clean-air-action-plan*

Table 2.5: Heavy-Duty Vehicles Emission Regulations, Standards and Policies

Agency	Regulation/Standard/Policy	Targeted Pollutants	Years Effective	Impact
CARB/ EPA	Emission Standards for New 2007+ On-Road Heavy-Duty Vehicles[35]	NO_x and PM	2007 2010	All new on-road diesel heavy-duty vehicles
CARB	Heavy-Duty Vehicle On-Board Diagnostics (OBD and OBDII) Requirement[36]	NO_x and PM	2010 +	All new on-road heavy-duty vehicles
CARB	ULSD Fuel Requirement[37]	All	2006 - ULSD	All on-road heavy-duty vehicles
CARB	Drayage Truck and Bus Regulation (amended in 2011 and 2014)[38]	All	Phase-in started in 2009	All drayage trucks operating at California ports
CARB	Heavy-Duty Vehicle Greenhouse Gas Emission Reduction Regulation[39]	CO_2	Phase 1 started in 2012	Heavy-duty tractors that pull 53-foot+ trailers in California
CARB	Assembly Bill 32 requiring GHG reductions targets and Governor's Executive Order B – 30-15[40]	CO_2	GHG emissions reduction goals in 2020	All operations in California
CARB	Advanced Clean Fleets Regulation[41]	All	Requires ZEV trucks when adding trucks to drayage fleets in 2024. All must be ZEV by 2035	All medium and heavy-duty trucks. The ACF drayage truck registration is by December 31, 2023.
CAAP	CAAP Measure – HDV1 Performance Standards for On-Road Heavy-Duty Vehicles; Clean Truck Program[42]	All	Phase-in started in 2008	Requires on-road heavy-duty vehicles that operate at POLA to have 2007 or newer Model Year (MY) engines by 2012
CAAP	CAAP Measure – Clean Truck Fund Rate[43]	NO_x	2022	Rate collection for trucks; low NOx and ZE trucks exempt

[35] CARB, *ww2.arb.ca.gov/road-heavy-duty-regulations-certification-programs*
[36] CARB, *www.arb.ca.gov/our-work/programs/obd*
[37] CARB, *www.arb.ca.gov/regact/ulsd2003/ulsd2003.htm*
[38] CARB, *www.arb.ca.gov/msprog/onroad/porttruck/drayagevtruckbus.pdf*
[39] CARB, *www.arb.ca.gov/our-work/programs/ghg-std-md-hd-eng-veh*
[40] CARB, *www.arb.ca.gov/cc/ab32/ab32.htm*
[41] CARB, *www.arb.ca.gov/our-work/programs/truckstop-resources/zev-truckstop/regulations*
[42] CAAP, *www.portoflosangeles.org/environment/air-quality/san-pedro-bay-ports-clean-air-action-plan*
[43] CAAP, *www.cleanairactionplan.org/strategies/trucks/*

SECTION 3 OCEAN-GOING VESSELS

Source Description

Based on activity data obtained from the Marine Exchange of Southern California, there was a total of 1,476 ocean-going vessels (OGVs, ships, or vessels) arrival calls to the Port in 2023. These vessels were grouped by the type of cargo they are designed to carry and fall into one of the following vessel categories or types:

- Auto carrier
- Bulk carrier
- Containership
- Cruise vessel
- General cargo
- Miscellaneous vessel
- Refrigerated vessel (Reefer)
- Tanker

From an emissions contribution perspective, the three predominant vessel types are: containerships, tankers, and cruise ships, with containerships being the most significant vessel category. Emission sources on all vessel categories include main engines (propulsion), auxiliary engines (generators), and auxiliary boilers (boilers).

Geographical Domain

The geographical domain or overwater boundary for OGVs includes the berths and waterways in the Port proper and all vessel movements within the 40-nautical mile (nm) arc from Point Fermin as shown previously in Figure 1.1. The northern boundary is the Ventura County line, and the southern boundary is the Orange County line. It should be noted that although the overwater boundary for the South Coast air quality modeling domain extends further off the coast, most of the vessel movements occur within the 40 nm arc. Vessels that pass through the domain, but do not call on the Port are excluded from the inventory.

The Hawaiian, western and southern routes extend beyond the 40 nm arc into outer part of the South Coast air quality modeling domain. For the western and southern routes, this emissions inventory covers the majority of the emissions as most of the vessel movements occur within the 40-nm arc. For the Hawaiian route, this emissions inventory includes the additional SoCAB over-water boundary emissions that extends past the 40 nm mile arc.

Table 3.1 presents the numbers of arrivals, departures, and shifts associated with vessels at the Port in 2023. An arrival is from sea to a berth or an anchorage (prior to shifting to a berth). A departure is from berth to sea. A shift is a vessel move from anchorage to berth, berth to another berth, or berth to anchorage.

Table 3.1: 2023 Total OGV Activities

Vessel Type	Arrival	Departure	Shift	Total
Auto Carrier	123	128	14	265
Bulk	64	60	64	188
Bulk - Heavy Load	1	2	3	6
Container - 1000	22	22	14	58
Container - 2000	92	92	31	215
Container - 3000	10	10	3	23
Container - 4000	102	103	23	228
Container - 5000	56	56	14	126
Container - 6000	32	32	7	71
Container - 7000	25	25	5	55
Container - 8000	213	217	28	458
Container - 9000	66	69	19	154
Container - 10000	14	16	6	36
Container - 11000	93	91	24	208
Container - 12000	29	29	4	62
Container - 13000	50	49	34	133
Container - 14000	47	48	4	99
Container - 15000	19	19	4	42
Container - 16000	4	4	1	9
Cruise	227	227	3	457
General Cargo	35	37	60	132
Miscellaneous	1	1	1	3
Reefer	18	18	31	67
Tanker - Chemical	92	113	162	367
Tanker - Handysize	20	21	24	65
Tanker - Panamax	21	22	54	97
Total	**1,476**	**1,511**	**637**	**3,624**

DB ID693

Data and Information Acquisition

Various sources of data and operational knowledge about the Port's marine activities were used to compile the data necessary to estimate emissions from OGVs:

- Marine Exchange of Southern California (SoCal MarEx)
- Vessel Speed Reduction Program speed data
- Los Angeles Pilot Service
- IHS Markit Maritime data[44]
- Vessel Boarding Program (VBP) data
- Environmental Ship Index (ESI) fuel and engine data[45]
- Port Wharfinger data, including tanker load and discharge activity data
- Port and terminal shore power activity data, including usage of CARB Approved Emissions Control Technologies (CAECS)[46]
- Direct communication with vessel operators of LNG and methanol fueled vessels

The 'maximum speed' from IHS Markit Maritime data was used and if not available for a particular vessel, 'service speed' (the most populated speed field within the IHS data) was used instead.

Operational Profiles

Auxiliary engines provide the electricity for equipment used in the operation of ocean-going vessels. Actual VBP data, if available, were used to estimate emissions from auxiliary engines. For at-berth hotelling emissions, if the vessel was connected to shore power, actual shore power records were used. If actual VBP data or shore power data is not available, default values were used to determine auxiliary engine load for the duration the vessel was not using shore power.

Table 3.2 presents the auxiliary engine load defaults by vessel type and by mode, used in the emissions calculations. These default values were produced by calculating the call-weighted average of the VBP data points for each vessel type and mode of operation. For vessel types with no VBP data available, a suitable default was estimated by interpolating VBP data from the closest vessel type. As a routine annual update, in 2023, new data was collected which resulted in updated defaults for the Tanker-Chemical category.

[44] IHS, *www.ihsmarkit.com/products/maritime-world-ship-register.html*
[45] IAPH, WPSP, *www.sustainableworldports.org/environmental-ship-index-esi/*
[46] *ww2.arb.ca.gov/sites/default/files/barcu/regact/2019/ogvatberth2019/fro.pdf*

Table 3.2: Average Auxiliary Engine Load Defaults, kW

Vessel Type	Transit	Maneuvering	Berth Hotelling	Anchorage Hotelling
Auto Carrier	527	839	803	494
Bulk	222	235	544	250
Bulk - Heavy Load	255	675	150	253
Container - 1000	913	1,106	571	1,000
Container - 2000	1,287	1,887	694	528
Container - 3000	920	1,673	758	559
Container - 4000	1,419	2,526	1,073	1,056
Container - 5000	1,594	2,504	1,047	900
Container - 6000	1,558	2,477	1,083	1,266
Container - 7000	1,580	2,530	1,024	826
Container - 8000	1,635	2,519	1,161	1,052
Container - 9000	1,634	3,335	1,071	1,174
Container - 10000	1,634	2,003	1,130	1,181
Container - 11000	1,771	2,429	991	1,134
Container - 12000	1,661	2,146	1,216	1,212
Container - 13000	1,589	2,136	1,346	1,319
Container - 14000	1,553	2,042	1,152	1,155
Container - 15000	1,850	2,200	850	1,100
Container - 16000	1,793	2,179	1,150	1,271
General Cargo	489	1,273	826	180
Miscellaneous	284	379	230	233
Reefer	1,416	1,231	1,067	1,427
Tanker - Chemical	511	586	1,205	409
Tanker - Handysize	659	682	1,055	560
Tanker - Panamax	485	550	884	401

Table 3.3 lists the auxiliary engine defaults for all cruise ships (diesel electric and non-diesel electric) engaged in passenger service at the Port in 2023. These auxiliary engine defaults values were produced by calculating the average of VBP data by mode of operation for each cruise vessel size group up to 4,500 passengers. For vessels larger than 4,500 passengers, the defaults were scaled up to reflect the operations of larger size vessels. Normal cruise ship operations were underway from the beginning to the end of 2023 calendar year.

Table 3.3: Cruise Ship Average Auxiliary Engine Load Defaults, kW

Passenger Range	Transit	Maneuvering	Berth Hotelling	Anchorage Hotelling
<200	332	585	293	351
200 < 1,500	2,768	3,833	2,965	3,038
1,500 < 2,000	6,883	8,100	5,624	na
2,000 < 2,500	8,033	9,000	7,680	na
2,500 < 3,000	8,052	8,577	6,410	7,820
3,000 < 3,500	7,867	9,511	7,069	8,036
3,500 < 4,000	8,615	9,230	7,201	8,736
4,000 < 4,500	8,552	9,086	7,851	8,100
4,500 < 5,000	8,980	9,359	8,479	8,181

Table 3.4 presents the load defaults for the auxiliary boilers for all cruise ships.

Table 3.4: Cruise Ship Auxiliary Boiler Load Defaults by Mode, kW

Passenger Range	Transit	Maneuvering	Berth Hotelling	Anchorage Hotelling
<200				
200 < 1,500	692	766	850	594
1,500 < 2,000	1,070	1,145	1,951	976
2,000 < 2,500	1,382	1,773	3,005	1,506
2,500 < 3,000	671	736	1,363	616
3,000 < 3,500	568	748	1,276	992
3,500 < 4,000	555	506	859	735
4,000 < 4,500	335	29	551	671
4,500 < 5,000	281	21	468	698

Table 3.5 presents the load defaults for the auxiliary boilers by vessel type and by mode. These default values were produced by calculating the call-weighted average of VBP data points. Since loading and discharging data were available for the tankers that visited the Port, a lower boiler load of 875 kW was used for tankers known to be loading cargo while at berth, while the higher at-berth hoteling boiler load listed in the table (3,064 and 4,197 kW) was used as a default for the tanker calls that were discharging cargo. Similar to the auxiliary engine defaults, the auxiliary boiler default was updated for the Tanker-Chemical category based on data collected since the last inventory (2022 EI).

Table 3.5: Auxiliary Boiler Load Defaults by Mode, kW

Vessel Type	Transit	Maneuvering	Berth Hotelling	Anchorage Hotelling
Auto Carrier	82	159	269	259
Bulk	63	154	184	184
Bulk - Heavy Load	35	94	125	125
Container - 1000	90	181	437	230
Container - 2000	188	359	444	441
Container - 3000	203	408	552	517
Container - 4000	180	351	457	453
Container - 5000	266	496	606	601
Container - 6000	248	471	616	612
Container - 7000	345	549	596	594
Container - 8000	210	446	561	588
Container - 9000	448	559	737	722
Container - 10000	368	473	656	656
Container - 11000	187	309	452	452
Container - 12000	108	236	374	374
Container - 13000	241	306	559	558
Container - 14000	266	481	402	532
Container - 15000	259	395	402	402
Container - 16000	206	290	470	470
General Cargo	77	177	227	227
Miscellaneous	54	85	144	144
Reefer	89	171	234	234
Tanker - Chemical	102	135	414	208
Tanker - Handysize	143	285	3,064	321
Tanker - Panamax	223	330	4,197	512

Hotelling

Table 3.6 summarizes the hotelling times in hours at berth. Hotelling time is the entire duration of time that a ship spends at berth for each visit.

Table 3.6: 2023 Hotelling Times at Berth, hours

Vessel Type	Min Hours	Max Hours	Avg Hours	Avg Days
Auto Carrier	5.8	53.5	14.4	0.6
Bulk	8.0	209.9	74.4	3.1
Bulk - Heavy Load	3.3	105.9	71.7	3.0
Container - 1000	11.7	51.6	36.7	1.5
Container - 2000	1.9	66.4	30.7	1.3
Container - 3000	23.1	69.6	41.8	1.7
Container - 4000	12.7	107.7	53.7	2.2
Container - 5000	22.9	134.6	55.4	2.3
Container - 6000	24.2	118.2	71.5	3.0
Container - 7000	21.4	204.3	68.6	2.9
Container - 8000	11.6	247.4	88.0	3.7
Container - 9000	10.8	312.1	87.1	3.6
Container - 10000	13.6	155.8	83.2	3.5
Container - 11000	12.6	373.7	93.2	3.9
Container - 12000	22.6	255.8	95.9	4.0
Container - 13000	2.1	230.7	106.5	4.4
Container - 14000	22.6	205.2	143.7	6.0
Container - 15000	32.4	243.2	118.3	4.9
Container - 16000	112.2	155.7	134.0	5.6
Cruise	3.4	127.3	11.1	0.5
General Cargo	8.9	286.9	61.6	2.6
Miscellaneous	47.6	47.6	47.6	2.0
Reefer	5.2	119.8	40.4	1.7
Tanker - Chemical	9.0	561.7	39.0	1.6
Tanker - Handysize	12.3	102.8	41.6	1.7
Tanker - Panamax	20.8	112.2	56.9	2.4

DB ID705

Table 3.7 summarizes the hotelling times in hours spent at anchorage. In 2023, there were 26% fewer vessels at anchorage than the previous year, and thus less overall time spent at anchorage due to fewer vessels.

Table 3.7: 2023 Hotelling Times at Anchorage, hours

Vessel Type	Min Hours	Max Hours	Avg Hours	Avg Days	Vessel Count
Auto Carrier	23.4	132.3	61.9	2.6	9
Bulk	1.8	280.7	59.7	2.5	44
Bulk - Heavy Load	227.6	227.6	227.6	9.5	1
Container - 1000	4.6	30.6	15.5	0.6	7
Container - 2000	1.2	88.9	24.0	1.0	10
Container - 3000	12.1	50.3	28.8	1.2	2
Container - 4000	6.4	126.1	32.7	1.4	8
Container - 5000	9.8	30.2	19.6	0.8	7
Container - 6000	9.7	92.2	34.4	1.4	4
Container - 7000	2.7	77.5	27.4	1.1	3
Container - 8000	8.4	87.8	35.4	1.5	12
Container - 9000	5.7	129.2	41.9	1.7	9
Container - 10000	14.9	15.4	15.2	0.6	2
Container - 11000	4.6	73.0	30.8	1.3	9
Container - 12000	45.7	45.7	45.7	1.9	1
Container - 13000	8.0	57.4	24.2	1.0	4
Container - 14000	9.5	20.3	16.7	0.7	3
Container - 15000	0.0	0.0	0.0	0.0	0
Container - 16000	16.6	16.6	16.6	0.7	1
Cruise	0.1	10.5	4.4	0.2	2
General Cargo	2.3	370.0	70.7	2.9	28
Miscellaneous	15.0	15.0	15.0	0.6	1
Reefer	4.6	46.9	19.0	0.8	6
Tanker - Chemical	1.1	525.2	31.5	1.3	66
Tanker - Handysize	6.0	262.1	40.3	1.7	10
Tanker - Panamax	6.8	287.8	56.3	2.3	17
Total					**266**

DB ID705

Frequent Callers

Table 3.8 provides the percentage of frequent callers. For this EI, a frequent caller was defined as a vessel that made six or more calls in one calendar year. Table 3.8 shows that only 7% of vessels that called the Port in 2023 were frequent callers.

Table 3.8: 2023 Percentage of Frequent Callers

Vessel Type	Frequent Vessels	Total Vessels	Percent Frequent Vessels
Auto Carrier	2	89	2%
Bulk	0	65	0%
Bulk - Heavy Load	0	3	0%
Container - 1000	0	8	0%
Container - 2000	9	14	64%
Container - 3000	0	4	0%
Container - 4000	1	38	3%
Container - 5000	6	15	40%
Container - 6000	2	12	17%
Container - 7000	2	8	25%
Container - 8000	10	64	16%
Container - 9000	1	26	4%
Container - 10000	0	9	0%
Container - 11000	1	36	3%
Container - 12000	1	10	10%
Container - 13000	0	21	0%
Container - 14000	0	21	0%
Container - 15000	0	9	0%
Container - 16000	0	3	0%
Cruise	8	29	28%
General Cargo	0	39	0%
Miscellaneous	0	1	0%
Reefer	0	12	0%
Tanker - Chemical	1	87	1%
Tanker - Handysize	1	12	8%
Tanker - Panamax	0	17	0%
Total	**45**	**652**	
Average			**7%**

Vessel Characteristics

Averages by vessel type characteristics for the fleet calling the Port were based on the IHS Maritime World Register of Ships and are summarized in Table 3.9. Vessel type characteristics include averages of year built, age, deadweight (DWT), maximum rated speed (Max Speed), and main installed engine power ratings for the specific vessels that called the Port in 2023.

Table 3.9: 2023 Vessel Type Characteristics

Vessel Type	Average Year Built	Age (Years)	DWT (tonnes)	Max Speed (knots)	Main Eng (kW)
Auto Carrier	2008	15	17,976	21.1	13,843
Bulk	2015	8	43,933	15.0	6,995
Bulk - Heavy Load	1993	30	32,740	13.1	7,551
Container - 1000	2017	6	22,926	20.4	13,793
Container - 2000	2006	17	34,194	22.3	21,452
Container - 3000	2021	3	49,997	19.5	19,482
Container - 4000	2008	15	58,893	24.8	38,971
Container - 5000	2007	16	66,913	25.0	47,493
Container - 6000	2008	15	77,790	27.2	57,777
Container - 7000	2007	16	84,250	25.2	56,603
Container - 8000	2011	12	102,434	25.5	59,086
Container - 9000	2012	11	109,578	24.8	53,932
Container - 10000	2013	10	118,376	24.2	62,343
Container - 11000	2016	7	129,116	23.7	50,550
Container - 12000	2019	4	129,776	23.2	45,446
Container - 13000	2011	12	149,439	25.5	69,541
Container - 14000	2018	5	150,133	23.4	49,595
Container - 15000	2021	2	156,778	22.9	47,975
Container - 16000	2013	10	186,855	24.1	75,274
Cruise	2010	13	8,520	21.7	52,785
General Cargo	2010	13	41,606	15.2	8,375
Miscellaneous	1989	34	3,523	16.0	4,414
Reefer	1995	28	14,062	21.6	12,490
Tanker - Chemical	2015	8	46,047	15.0	7,973
Tanker - Handysize	2009	14	43,729	15.0	8,295
Tanker - Panamax	2006	17	72,359	15.6	11,777

DB ID695

Table 3.10 presents the percentages of each IMO Engine Tier (Tier) by vessel type for calls (arrivals/shifts) at the Port. NO_x emissions for Tier III vessels are 75% cleaner than Tier II vessels when operating at or above 25% main engine load. The "No Tier" column includes cruise ships with gas turbines that called the Port in 2023.

Table 3.10: 2023 Percent of OGV Activity by Main Engine Tier and Vessel Type

Vessel Type	IMO Tier 0	IMO Tier I	IMO Tier II	IMO Tier III	No Tier	Calls Count
Auto Carrier	16%	72%	11%	1%	0%	128
Bulk	0%	28%	64%	8%	0%	64
Bulk - Heavy Load	67%	33%	0%	0%	0%	3
Container - 1000	0%	14%	27%	59%	0%	22
Container - 2000	0%	87%	13%	0%	0%	92
Container - 3000	0%	0%	20%	80%	0%	10
Container - 4000	0%	75%	26%	0%	0%	102
Container - 5000	0%	96%	4%	0%	0%	56
Container - 6000	0%	63%	38%	0%	0%	32
Container - 7000	0%	92%	8%	0%	0%	25
Container - 8000	0%	38%	62%	0%	0%	214
Container - 9000	0%	44%	56%	0%	0%	68
Container - 10000	0%	31%	69%	0%	0%	16
Container - 11000	0%	36%	65%	0%	0%	93
Container - 12000	0%	0%	17%	83%	0%	29
Container - 13000	0%	71%	29%	0%	0%	51
Container - 14000	0%	4%	75%	21%	0%	47
Container - 15000	0%	0%	0%	100%	0%	19
Container - 16000	0%	0%	100%	0%	0%	4
Cruise	3%	65%	28%	2%	2%	227
General Cargo	12%	44%	44%	0%	0%	41
Miscellaneous	100%	0%	0%	0%	0%	1
Reefer	83%	17%	0%	0%	0%	18
Tanker - Chemical	2%	38%	50%	11%	0%	128
Tanker - Handysize	52%	43%	0%	5%	0%	21
Tanker - Panamax	0%	83%	17%	0%	0%	24
Total	**4%**	**52%**	**37%**	**6%**	**0%**	**1,535**

DB ID1789

Emissions Estimation Methodology

The methodology to estimate 2023 emissions from OGV activity is described in Section 2 of the San Pedro Bay Ports Emissions Inventory Methodology Report Version 5. The following improvements were made in estimating 2023 OGV emissions:

- Added methanol emission factors for vessels that switched to methanol fuel.
- Updated liquefied natural gas (LNG) emission factors for vessels that switched to LNG fuel by incorporating effect of use of pilot MGO fuel.
- Updated auxiliary engine and auxiliary boiler default loads with VBP data collected since the completion of the 2022 EI.
- Updated emissions estimation methodology for vessels that used alternative shore power systems based on CARB's latest At-Berth Regulation.
- Reclassified various engines listed as "B&W" to be classified as MAN engines instead of non-MAN engines.

The emission factors for both diesel and LNG fuel are per EPA's Ports Emissions Inventory Guidance: Methodologies for Estimating Port-Related and Goods Movement Mobile Source Emissions (April 2022)[47]. Table 3.11 lists the emission factors for propulsion engines using 0.1% sulfur MGO fuel. As in previous inventory, when Tier III main engines operated below 25% within the emissions inventory domain, the default Tier II NO_x emission factor or, if available, Tier II Engine International Air Pollution Prevention (EIAPP) NO_x factors were used in emission calculations.

Table 3.11: OGV Emission Factors for Propulsion Engines using 0.1% S, g/kWh

Engine Category	Tier	Model Year Range	PM_{10}	$PM_{2.5}$	DPM	NO_x	SOx	CO	HC	CO_2	N_2O	CH_4
Slow speed propulsion	Tier 0	1999 and older	0.184	0.169	0.184	17.0	0.362	1.4	0.6	593	0.029	0.012
Slow speed propulsion	Tier I	2000 to 2011	0.184	0.169	0.184	16.0	0.362	1.4	0.6	593	0.029	0.012
Slow speed propulsion	Tier II	2011 to 2016	0.184	0.169	0.184	14.4	0.362	1.4	0.6	593	0.029	0.012
Slow speed propulsion	Tier III		0.184	0.169	0.184	3.4	0.362	1.4	0.6	593	0.029	0.012
Medium speed propulsion	Tier 0	1999 and older	0.187	0.172	0.187	13.2	0.401	1.1	0.5	657	0.029	0.010
Medium speed propulsion	Tier I	2000 to 2011	0.187	0.172	0.187	12.2	0.401	1.1	0.5	657	0.029	0.010
Medium speed propulsion	Tier II	2011 to 2016	0.187	0.172	0.187	10.5	0.401	1.1	0.5	657	0.029	0.010
Medium speed propulsion	Tier III	2016 and newer	0.187	0.172	0.187	2.6	0.401	1.1	0.5	657	0.029	0.010
Gas turbine	na	All	0.010	0.009	0.000	5.7	0.587	0.2	0.1	962	0.075	0.002
Steam propulsion	na	All	0.160	0.147	0.000	2.0	0.587	0.2	0.1	962	0.075	0.002

Table 3.12: OGV Emission Factors for Auxiliary Boilers using 0.1% S, g/kWh

Engine Category	PM_{10}	$PM_{2.5}$	DPM	NO_x	SOx	CO	HC	CO_2	N_2O	CH_4
Steam boilers	0.202	0.186	0	1.97	0.587	0.2	0.1	962	0.075	0.002

[47] EPA, *www.epa.gov/state-and-local-transportation/port-emissions-inventory-guidance*

Table 3.13 lists the emission factors for auxiliary engines using 0.1% sulfur fuel.

Table 3.13: Emission Factors for Auxiliary Engines using 0.1% S, g/kWh

Engine Category	Tier	Model Year Range	NO_x	PM_{10}	$PM_{2.5}$	HC	CO	SO_x	CO_2	N_2O	CH_4
Medium Auxiliary	0	1999 and older	13.8	0.19	0.17	0.40	1.10	0.42	696	0.029	0.008
Medium Auxiliary	I	2000 to 2010	12.2	0.19	0.17	0.40	1.10	0.42	696	0.029	0.008
Medium Auxiliary	II	2011 to 2015	10.5	0.19	0.17	0.40	1.10	0.42	696	0.029	0.008
Medium Auxiliary	III	2016 and newer	2.6	0.19	0.17	0.40	1.10	0.42	696	0.029	0.008
High Auxiliary	0	1999 and older	10.9	0.19	0.17	0.40	0.90	0.42	696	0.029	0.008
High Auxiliary	I	2000 to 2010	9.8	0.19	0.17	0.40	0.90	0.42	696	0.029	0.008
High Auxiliary	II	2011 to 2015	7.7	0.19	0.17	0.40	0.90	0.42	696	0.029	0.008
High Auxiliary	III	2016 and newer	2.0	0.19	0.17	0.40	0.90	0.42	696	0.029	0.008

In 2023, there were eight containerships (14,000-15,000 TEU) and one auto carrier that used LNG and comprised 13 arrivals total. LNG capable vessel operators were contacted to find out if they used LNG in 2023 for any or all of their port calls. Most vessels reported switching from LNG to traditional fuels in the main engine before slowing down to approach the port but were able to run the auxiliary engines and boiler, as needed, on LNG throughout the emissions inventory domain and port stay. On average, LNG fuel was used with 3.5% of MGO fuel as pilot fuel.

One methanol fueled vessel called the Port for the first time in 2023. The operator reported that the vessel operated with methanol in the main engine until the engine load was 15% or higher. Traditional 0.1% S MGO fuel was used in auxiliary engines and boilers for this methanol fueled vessel. On average, methanol fuel with 5% of MGO fuel as pilot fuel was used.

LNG and methanol EFs shown in tables 3.14 to 3.16 below are composite of LNG and MGO EFs weighted based on pilot fuel to alternate fuel proportions. Table 3.14 lists the emission factors for engines and steam boilers using LNG fuel per EPA's Ports EI Guidance for most pollutants, except for the SO_x EF which is from the IMO 4th GHG Study[48] and 3.5% MGO as pilot fuel. The brake specific fuel consumption (BSFC) used for LNG fuel in this report is 166 g/kWh.

[48] IMO, *https://www.imo.org/en/ourwork/Environment/Pages/Fourth-IMO-Greenhouse-Gas-Study-2020.aspx*

Table 3.14: Emission Factors for Propulsion Engines and Steam Boilers using LNG fuel and 3.5% MGO as Pilot Fuel, g/kWh

Engine Category	IMO Tier	Range Year	PM_{10}	$PM_{2.5}$	DPM	NO_x	SOx	CO	HC	CO_2	N_2O	CH_4
Slow speed propulsion	Tier 0	1999 and older	0.035	0.033	0.006	1.85	0.018	1.30	0.02	461.3	0.029	0.00
Slow speed propulsion	Tier I	2000 to 2011	0.035	0.033	0.006	1.81	0.018	1.30	0.02	461.3	0.029	0.00
Slow speed propulsion	Tier II	2011 to 2016	0.035	0.033	0.006	1.76	0.018	1.30	0.02	461.3	0.029	0.00
Slow speed propulsion	Tier III	2016 and newer	0.035	0.033	0.006	1.37	0.018	1.30	0.02	461.3	0.029	0.00
Medium speed propulsion	Tier 0	1999 and older	0.035	0.033	0.007	1.72	0.019	1.29	0.02	463.5	0.029	0.00
Medium speed propulsion	Tier I	2000 to 2011	0.035	0.033	0.007	1.68	0.019	1.29	0.02	463.5	0.029	0.00
Medium speed propulsion	Tier II	2011 to 2016	0.035	0.033	0.007	1.62	0.019	1.29	0.02	463.5	0.029	0.00
Medium speed propulsion	Tier III	2016 and newer	0.035	0.033	0.007	1.35	0.019	1.29	0.02	463.5	0.029	0.00
Steam boilers	na	na	0.035	0.032	0.000	1.32	0.026	1.26	0.00	474.2	0.075	0.00

Table 3.15: Emission Factors for Auxiliary Engines using LNG fuel and 3.5% MGO as Pilot Fuel, g/kWh

Engine Category	IMO Tier	Range Year	PM_{10}	$PM_{2.5}$	DPM	NO_x	SOx	CO	HC	CO_2	N_2O	CH_4
Medium speed Auxiliary	Tier 0	1999 and older	0.035	0.033	0.007	1.74	0.02	1.29	0.01	464.9	0.029	0.00
Medium speed Auxiliary	Tier I	2000 to 2011	0.035	0.033	0.007	1.68	0.02	1.29	0.01	464.9	0.029	0.00
Medium speed Auxiliary	Tier II	2011 to 2016	0.035	0.033	0.007	1.62	0.02	1.29	0.01	464.9	0.029	0.00
Medium speed Auxiliary	Tier III	2016 and newer	0.035	0.033	0.007	1.35	0.02	1.29	0.01	464.9	0.029	0.00
High speed Auxiliary	Tier 0	1999 and older	0.036	0.033	0.007	1.64	0.02	1.29	0.01	464.9	0.029	0.00
High speed Auxiliary	Tier I	2000 to 2011	0.036	0.033	0.007	1.60	0.02	1.29	0.01	464.9	0.029	0.00
High speed Auxiliary	Tier II	2011 to 2016	0.036	0.033	0.007	1.52	0.02	1.29	0.01	464.9	0.029	0.00
High speed Auxiliary	Tier III	2016 and newer	0.036	0.033	0.007	1.32	0.02	1.29	0.01	464.9	0.029	0.00

Table 3.16 lists the emission factors for propulsion engines using methanol fuel. The 100% methanol fuel-based emission factors are taken from IMO's 4th GHG report.

Table 3.16: Emission Factors for Propulsion Engines using Methanol fuel and 5% MGO as Pilot Fuel, g/kWh

Engine Category	IMO Tier	Range Year	PM_{10}	$PM_{2.5}$	DPM	NO_x	SOx	CO	HC	CO_2	N_2O	CH_4
Slow speed propulsion	Tier 0	1999 and older	0.009	0.008	0.009	17.0	0.018	0.07	0.03	468.8	0.001	0.001
Slow speed propulsion	Tier I	2000 to 2011	0.009	0.008	0.009	16.0	0.018	0.07	0.03	468.8	0.001	0.001
Slow speed propulsion	Tier II	2011 to 2016	0.009	0.008	0.009	14.4	0.018	0.07	0.03	468.8	0.001	0.001
Slow speed propulsion	Tier III	2016 and newer	0.009	0.008	0.009	3.4	0.018	0.07	0.03	468.8	0.001	0.001
Medium speed propulsion	Tier 0	1999 and older	0.009	0.009	0.009	13.2	0.020	0.06	0.03	516.2	0.001	0.001
Medium speed propulsion	Tier I	2000 to 2011	0.009	0.009	0.009	12.2	0.020	0.06	0.03	516.2	0.001	0.001
Medium speed propulsion	Tier II	2011 to 2016	0.009	0.009	0.009	10.5	0.020	0.06	0.03	516.2	0.001	0.001
Medium speed propulsion	Tier III	2016 and newer	0.009	0.009	0.009	2.6	0.020	0.06	0.03	516.2	0.001	0.001

Emission Estimates

The following tables present the estimated OGV emissions categorized in different ways, such as by engine type, by operating mode, and by vessel type. The criteria pollutant emissions are in tons per year, while the greenhouse gas emissions are in metric tons (tonnes) per year.

Table 3.17 presents emission estimates by engine type. The emissions for the CARB approved emissions control technologies (CAECS) were included with the auxiliary engine emissions in this table.

Table 3.17: 2023 Ocean-Going Vessel Emissions by Engine Type

Engine Type	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e tonnes
Main Engine	10	9	10	1,125	16	90	61	36,146
Auxiliary Engine	17	16	17	987	31	107	38	62,000
Auxiliary Boiler	14	13	0	146	29	15	7	65,908
Total	**41**	**38**	**27**	**2,258**	**76**	**213**	**106**	**164,054**

DB ID692

Table 3.18 presents emission estimates by mode. For each mode, the engine type emissions are also listed. At-berth hotelling and at-anchorage hotelling are listed separately. Transit and harbor maneuvering emissions include both berth and anchorage calls.

Table 3.18: 2023 Ocean-Going Vessel Emissions by Mode

Mode	Engine Type	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e tonnes
Transit	Main	8.9	8.2	8.9	1,009.4	14.8	78.3	50.0	32,968
Transit	Auxiliary Engine	6.0	5.5	6.0	355.0	10.6	36.7	13.3	21,269
Transit	Auxiliary Boiler	0.6	0.6	0.0	6.8	1.4	0.7	0.3	3,080
Total Transit		**15.5**	**14.3**	**14.9**	**1,371**	**26.7**	**115.8**	**63.6**	**57,317**
Maneuvering	Main	1.2	1.1	1.2	115.9	1.3	11.9	10.6	3,178
Maneuvering	Auxiliary Engine	1.6	1.4	1.6	93.0	2.7	9.7	3.5	5,597
Maneuvering	Auxiliary Boiler	0.2	0.2	0.0	2.3	0.5	0.2	0.1	1,032
Total Maneuvering		**3.0**	**2.8**	**2.8**	**211**	**4.5**	**21.8**	**14.2**	**9,807**
Hotelling at-berth	Main	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Hotelling at-berth	Auxiliary Engine	7.7	7.1	7.7	435.4	14.4	49.5	17.2	28,647
Hotelling at-berth	Auxiliary Boiler	11.4	10.5	0.0	122.4	23.4	13.0	6.2	55,302
Total Hotelling at-berth		**19.2**	**17.6**	**7.7**	**558**	**37.8**	**62.6**	**23.4**	**83,949**
Hotelling at-anchorage	Main	0.0	0.0	0.0	0	0.0	0.0	0.0	0
Hotelling at-anchorage	Auxiliary Engine	1.8	1.7	1.8	103.7	3.3	11.2	4.1	6,487
Hotelling at-anchorage	Auxiliary Boiler	1.4	1.3	0.0	14.4	3.4	1.5	0.7	6,494
Total Hotelling at-anchorage		**3.2**	**3.0**	**1.8**	**118**	**6.7**	**12.6**	**4.8**	**12,981**
Total		**40.9**	**37.6**	**27.2**	**2,258.3**	**75.7**	**212.8**	**106.0**	**164,054**

DB ID694

A summary of the OGV emission estimates by vessel type for all pollutants for the year 2023 is presented in Table 3.19.

Table 3.19: 2023 Ocean-Going Vessel Emissions by Vessel Type

Vessel Type	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e tonnes
Auto Carrier	1.1	1.0	0.9	83	1.6	7.7	3.9	4,167
Bulk	1.3	1.2	1.0	66	3.0	6.8	2.4	5,122
Bulk - Heavy Load	0.0	0.0	0.0	3	0.1	0.2	0.1	154
Container - 1000	0.3	0.3	0.2	11	0.6	1.7	0.7	1,233
Container - 2000	1.3	1.2	0.9	77	1.5	8.6	4.5	5,098
Container - 3000	0.1	0.1	0.1	7	0.3	0.5	0.2	601
Container - 4000	1.7	1.6	1.1	127	3.6	8.6	4.0	8,284
Container - 5000	1.0	0.9	0.6	81	2.7	3.3	2.1	4,685
Container - 6000	1.0	1.0	0.7	54	1.7	7.4	4.7	3,357
Container - 7000	0.8	0.7	0.5	50	1.5	4.3	2.5	2,995
Container - 8000	5.9	5.4	3.3	370	8.5	27.4	16.5	26,295
Container - 9000	2.3	2.2	1.2	117	3.4	11.4	7.0	9,755
Container - 10000	0.5	0.4	0.3	31	0.9	1.9	1.1	2,180
Container - 11000	2.6	2.4	1.6	157	4.1	13.1	7.6	10,754
Container - 12000	0.8	0.7	0.6	36	0.5	6.3	3.6	3,052
Container - 13000	2.9	2.6	1.9	131	3.9	19.4	11.6	10,029
Container - 14000	1.4	1.3	0.9	79	2.5	8.7	3.8	6,174
Container - 15000	0.6	0.6	0.4	23	1.4	2.9	1.5	2,502
Container - 16000	0.3	0.2	0.2	11	0.5	1.8	1.1	786
Cruise	7.2	6.6	6.5	422	15.0	39.6	15.7	25,333
General Cargo	1.1	1.1	0.8	59	2.7	5.4	2.0	4,340
Miscellaneous	0.0	0.0	0.0	0	0.0	0.0	0.0	24
Reefer	0.6	0.6	0.5	42	1.6	3.3	1.4	2,374
Tanker - Chemical	2.7	2.5	1.9	125	5.9	13.5	4.7	10,549
Tanker - Handysize	1.0	0.9	0.4	35	2.6	3.0	1.3	4,133
Tanker - Panamax	2.3	2.1	0.6	63	5.4	5.9	2.3	10,079
Total	**40.9**	**37.6**	**27.2**	**2,258**	**75.7**	**212.8**	**106.0**	**164,054**

DB ID692

SECTION 4 HARBOR CRAFT

This section presents emission estimates for the commercial harbor craft source category, including source descriptions, geographical domain, data acquisition, operational profiles, emissions estimation methodology, and emission estimates.

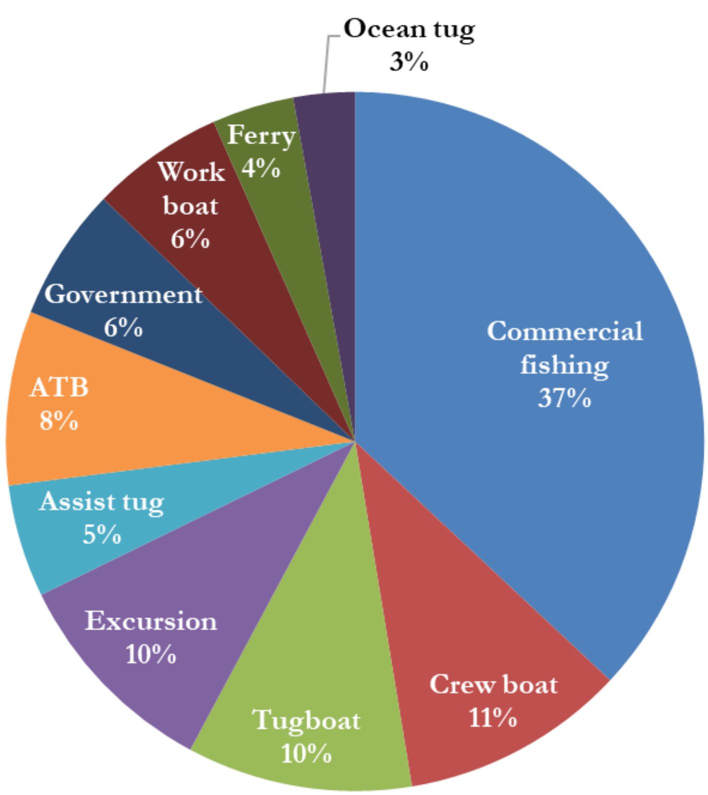
Source Description

Harbor craft are commercial vessels that spend the majority of their time within or near the port and harbor, except for articulated tug barges (ATBs). The ATBs are included to be consistent with 2022 CARB CHC regulation amendment. The harbor craft emissions inventory consists of the following vessel types:

- Articulated tug barge (ATB)
- Assist and escort tugboats
- Commercial fishing vessels
- Crew boats
- Excursion vessels
- Ferry vessels
- Government vessels
- Ocean tugs
- Tugboats
- Work boats

Figure 4.1 presents the distribution of the 211 commercial harbor craft inventoried for the Port in 2023.

Figure 4.1: Distribution of Commercial Harbor Craft Population by Vessel Type



Ocean tugs included in this section are different from the articulated tug barge (ATB). ATBs are seen as specialized single vessels. The ocean tugs in this section are not rigidly connected to the barge and are typically not home-ported at the Port but may make frequent calls with barges. They are different from tugboats because their average engine loads are higher than tugboats, which tend to idle more between jobs. Tugboats are typically home-ported in San Pedro Bay harbor and primarily operate within the harbor area but can also operate outside the harbor depending on their work assignments. Assist tugs are tugboats whose main job is to assist and escort the largest vessels that call the Port and tend to have larger engines and typically have higher hours than regular tugboats due to the assigned regular work.

Geographical Domain

The geographical domain for harbor craft is the same as that for ocean-going vessels.

Data and Information Acquisition

Commercial harbor craft companies were contacted to obtain key operational parameters for their vessels. These include:

- Vessel type
- Engine count
- Engine horsepower (or kilowatts) for main and auxiliary engines
- Engine model year
- Operating hours in calendar year 2023
- Vessel repower information
- Fuel type used

Operational Profiles

Tables 4.1 and 4.2 summarize the main and auxiliary engine data, respectively, for each vessel type. In cases where the model year, horsepower, or operating hour information was missing, the averages by vessel type were used as defaults. Defaults were used mainly for commercial fishing vessels, barge ATBs and excursion vessels. This resulted in the use of defaults for 6% of engine model year values, 12% of horsepower values, and 7% of operating hours.

There are a number of companies that operate harbor craft in both the ports of Los Angeles and Long Beach. The activity hours for the vessels that are common to both ports reflect work performed during 2023 for the Port of Los Angeles only.

Table 4.1: 2023 Summary of Propulsion Engine Data by Vessel Category

Harbor	Vessel	Engine	Model year			Horsepower			Annual Operating Hours		
Craft Type	**Count**	**Count**	**Minimum**	**Maximum**	**Average**	**Minimum**	**Maximum**	**Average**	**Minimum**	**Maximum**	**Average**
Assist tug	11	22	2008	2021	2013	2,000	3,386	2,744	948	1,919	1,387
ATB	17	34	2001	2018	2010	2,035	6,000	3,958	0	594	154
Commercial fishing	78	85	1968	2018	2006	150	1,000	382	100	5,000	1,604
Crew boat	22	57	2003	2023	2016	180	1,450	593	25	1,820	737
Excursion	21	41	2006	2022	2017	285	800	422	30	2,902	1,338
Ferry	8	20	2010	2022	2016	1,875	2,680	2,223	621	2,943	1,275
Government	13	25	1993	2019	2008	240	1,770	626	0	1,158	352
Ocean tug	6	12	2003	2019	2010	1,875	2,375	1,979	500	1,500	700
Tugboat	22	43	2001	2020	2012	235	3,386	984	0	1,578	468
Work boat	13	24	2002	2022	2015	210	1,000	557	0	3,057	887
Total	**211**	**363**									

DB ID423

Table 4.2: 2023 Summary of Auxiliary Engine Data by Vessel Category

Harbor Craft Type	Vessel Count	Engine Count	Model year Minimum	Model year Maximum	Model year Average	Horsepower Minimum	Horsepower Maximum	Horsepower Average	Annual Operating Hours Minimum	Annual Operating Hours Maximum	Annual Operating Hours Average
Assist tug	11	23	2007	2021	2015	54	397	232	329	2,354	1,727
ATB	17	42	2001	2019	2013	102	800	299	0	2,038	310
Barges	na	84	2001	2019	2008	95	1900	644	0	474	68
Commercial fishing	78	34	1973	2016	2011	12	185	83	700	5,000	1,940
Crew boat	22	24	2009	2022	2015	11	107	57	34	2,182	787
Excursion	21	21	1981	2022	2012	11	54	37	0	3,000	1,381
Ferry	8	16	2008	2017	2012	18	120	69	380	1,685	867
Government	13	18	2002	2019	2006	25	1555	463	0	2930	276
Ocean tug	6	12	2003	2019	2010	80	150	115	500	750	550
Tugboat	22	38	2004	2021	2013	15	429	123	0	1,604	476
Work boat	13	19	1979	2021	2011	39	305	91	0	3,857	797
Total	**211**	**331**									

Harbor craft engines with known model year and horsepower (hp) were categorized according to their respective EPA marine engine standards (known as EPA Tier). Table 4.3 is consistent with CARB CHC regulation amendment.

Table 4.3: Harbor Craft Marine Engine Tier Levels

EPA Tier	Marine Engine Model Year Range	Horsepower Range
Tier 0	2003 and older	All
Tier 1	2004 to 2006	All
Tier 2	2007 to 2008	< 100 hp
Tier 2	2007 to 2012	≥ 100 hp
Tier 3	2009 and newer	< 100 hp
Tier 3	2013 and newer	100 to 800 hp
Tier 3	2013 to 2016	≥ 800 hp
Tier 4	2017 and newer	≥ 800 hp

Figure 4.2 provides the distribution by tier of all harbor craft propulsion and auxiliary engines operating at the Port in 2023. If model year and/or horsepower information were not available, the engines were classified as unknown. Due to rounding, the percent in the figure may not add up to 100%.

Figure 4.2: Distribution of Harbor Craft Engines by Engine Standards

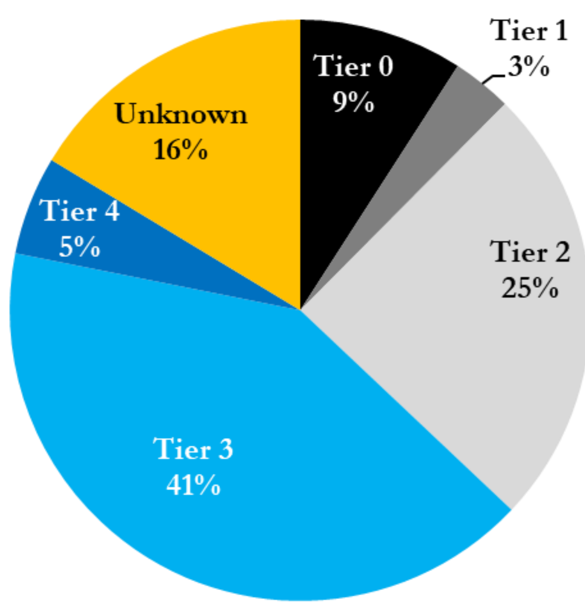


Table 4.4 summarizes the energy consumption (kWh) per engine tier used to estimate harbor craft emissions. The newer Tier 2 to Tier 4 engines made up 82% of the harbor craft energy consumption, indicating higher use of cleaner engines. Energy consumption of harbor craft engines with an unknown tier was distributed among other tiers with similar characteristics based on the defaults used for missing model year or horsepower for emissions calculations.

Table 4.4: Harbor Craft Energy Consumption by Engine Tier, kWh and %

Engine Tier	2023 kWh	2023 % of Total
Tier 0	7,601,313	10%
Tier 1	6,453,201	8%
Tier 2	25,336,634	33%
Tier 3	24,009,892	31%
Tier 4	13,065,843	17%
Total	**76,466,884**	**100%**

Emissions Estimation Methodology

The emissions calculation methodology and the emission rates are described in Section 3 of the SPBP Emissions Inventory Methodology Report Version 5. The Port's harbor craft emission calculation methodology is the same as the previous year and is consistent with the methodology used by CARB to estimate emissions inventory for commercial harbor craft operating in California.[49] Harbor craft emissions are estimated for each engine individually, based on the engine's model year, power rating, and annual hours of operation.

Renewable diesel was used by all the harbor craft engines in California for the first time in 2023 due to CARB Commercial Harbor Craft Regulation requirement[50]. For pre-Tier 4 engines, use of renewable fuel reduces[51] tailpipe PM emission by 30%, NO_x and CO emissions by 10%, and hydrocarbon emissions by 5%. Tailpipe CO_2 emissions are reduced by 4.5 % for all tiers. Table 4.5 summarizes the control factors for renewable diesel use.

Table 4.5: Control Factors for Renewable Diesel

Control Measure	Engine Tier	Retrofit	PM_{10}	$PM_{2.5}$	DPM	NO_x	SOx	CO	HC	CO_2	N_2O	CH_4
Renewable Diesel (RD99)	Tier 0-3	None	0.7	0.7	0.7	0.9	1.0	0.9	0.95	0.955	0.9	0.95
Renewable Diesel (RD99)	Tier 4	None	1.0	1.0	1.0	1.0	1.0	1.0	1.00	0.955	1.0	1.00

49 CARB, *Commercial Harbor Craft Regulatory Activities*, Appendix H: 2021 Update to the Emission Inventory for Commercial Harbor Craft: Methodology and Results, Date of release, September 21, 2021. *www.arb.ca.gov/sites/default/files/barcu/regact/2021/chc2021/apph.pdf*

50 CARB, *https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2021/chc2021/chcfro.pdf*, Section 2299.5 (b)

51 *https://ww2.arb.ca.gov/sites/default/files/2021-11/Low_Emission_Diesel_Study_Final_Report.pdf* ; *https://ww2.arb.ca.gov/sites/default/files/2023-04/2022InUseDieselInventory.pdf*

Emission Estimates

Table 4.6 summarizes the estimated 2023 harbor craft emissions by vessel type and engine type. The criteria pollutants are listed as tons per year while the CO_2e values are listed as tonnes (metric tons) per year.

Table 4.6: 2023 Harbor Craft Emissions by Vessel and Engine Type

Harbor Craft Type	Engine Type	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e tonnes
Assist Tug	Auxiliary	0.2	0.2	0.2	10.2	0.0	2.8	0.4	1,600
	Propulsion	0.9	0.9	0.9	56.9	0.1	11.3	2.4	6,868
Assist Tug Total		**1.2**	**1.1**	**1.2**	**67.1**	**0.1**	**14.1**	**2.8**	**8,468**
ATB	Auxiliary	0.1	0.1	0.1	6.1	0.0	1.5	0.3	809
	Propulsion	2.6	2.5	2.6	75.0	0.1	11.3	6.7	5,632
ATB Total		**2.7**	**2.6**	**2.7**	**81.1**	**0.1**	**12.8**	**7.0**	**6,441**
Barges	Auxiliary	0.1	0.1	0.1	5.9	0.0	1.2	0.2	614
	Propulsion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Barge Total		**0.1**	**0.1**	**0.1**	**5.9**	**0.0**	**1.2**	**0.2**	**614**
Commercial Fishing	Auxiliary	0.2	0.2	0.2	8.1	0.0	2.2	0.4	1,245
	Propulsion	2.1	2.0	2.1	86.2	0.1	22.0	5.6	7,429
Commercial Fishing Total		**2.3**	**2.2**	**2.3**	**94.3**	**0.1**	**24.2**	**5.9**	**8,675**
Crew boat	Auxiliary	0.0	0.0	0.0	1.7	0.0	0.4	0.1	246
	Propulsion	0.5	0.5	0.5	32.4	0.0	5.3	1.3	3,609
Crew boat Total		**0.5**	**0.5**	**0.5**	**34.1**	**0.0**	**5.7**	**1.4**	**3,855**
Excursion	Auxiliary	0.1	0.1	0.1	1.9	0.0	0.6	0.1	272
	Propulsion	0.4	0.3	0.4	25.3	0.0	4.6	1.0	3,219
Excursion Total		**0.4**	**0.4**	**0.4**	**27.2**	**0.0**	**5.2**	**1.1**	**3,491**
Ferry	Auxiliary	0.0	0.0	0.0	1.5	0.0	0.4	0.1	229
	Propulsion	1.1	1.1	1.1	63.5	0.1	13.9	2.8	8,906
Ferry Total		**1.1**	**1.1**	**1.1**	**65.0**	**0.1**	**14.3**	**2.9**	**9,136**
Government	Auxiliary	0.0	0.0	0.0	0.9	0.0	0.2	0.0	89
	Propulsion	0.2	0.2	0.2	8.4	0.0	1.6	0.5	931
Government Total		**0.3**	**0.2**	**0.3**	**9.3**	**0.0**	**1.8**	**0.6**	**1,020**
Ocean Tug	Auxiliary	0.0	0.0	0.0	1.6	0.0	0.3	0.1	198
	Propulsion	1.3	1.3	1.3	53.9	0.0	7.9	3.2	4,175
Ocean Tug Total		**1.4**	**1.3**	**1.4**	**55.5**	**0.0**	**8.2**	**3.2**	**4,373**
Tugboat	Auxiliary	0.1	0.1	0.1	3.9	0.0	1.0	0.2	603
	Propulsion	0.4	0.4	0.4	23.8	0.0	4.2	1.0	2,492
Tugboat Total		**0.5**	**0.5**	**0.5**	**27.7**	**0.0**	**5.3**	**1.2**	**3,095**
Work boat	Auxiliary	0.0	0.0	0.0	1.4	0.0	0.3	0.1	205
	Propulsion	0.2	0.2	0.2	13.2	0.0	3.0	0.5	2,436
Work boat Total		**0.2**	**0.2**	**0.2**	**14.5**	**0.0**	**3.3**	**0.6**	**2,640**
Harbor Craft Total		**10.8**	**10.3**	**10.8**	**481.7**	**0.5**	**96.1**	**26.9**	**51,808**

DB ID427

SECTION 5 CARGO HANDLING EQUIPMENT

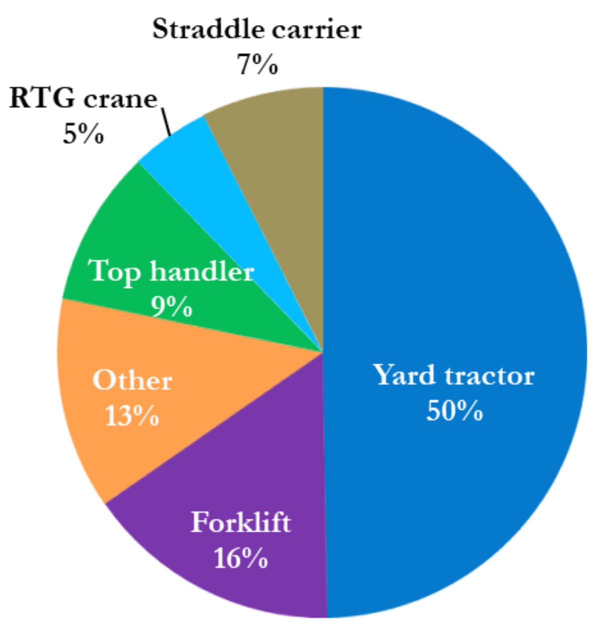
This section presents emissions estimates for the CHE source category, including source descriptions, geographical domain, data acquisition, operational profiles, emissions estimation methodology, and emission estimates.

Source Description

The CHE category includes equipment that moves cargo (including cargo in containers, general cargo, and bulk cargo) to and from marine vessels, railcars, and on-road trucks. The equipment is typically operated at marine terminals or at rail yards and not on public roadways. This inventory includes cargo handling equipment fueled by diesel, gasoline, propane, LNG, and electricity. Due to the diversity of cargo handled by the Port's terminals, there is a wide range of equipment types.

Figure 5.1 presents the population distribution of the 2,174 pieces of equipment inventoried at the Port for calendar year 2023. The 13% for "other" equipment captures a variety of terminal equipment, such as bulldozer, cone vehicle, loader, man lift, material handler, rail pusher, reach stacker, skid steer loader, side pick, sweeper, telehandler, and truck. The hybrid and conventional rubber-tired gantry (RTG) crane counts were included under RTG crane. The hybrid and conventional straddle carrier counts were included under straddle carrier.

Figure 5.1: 2023 CHE Count Distribution by Equipment Type



Geographical Domain

The geographical domain for CHE is the terminals within the Port.

Data and Information Acquisition

The maintenance and/or operating staff of each terminal were contacted in person, by e-mail, or by telephone, to obtain equipment count and activity information on the CHE specific to their terminal's operation for the 2023 calendar year.

Operational Profiles

Table 5.1 summarizes the cargo handling equipment data collected from the terminals and facilities for the calendar year 2023. The table includes the count of all equipment as well as the range and average horsepower, model year, and annual operating hours by equipment type for equipment with known operating parameters. For the electric-powered equipment shown in the table, "na" denotes "not applicable" for engine size, model year, and operating hours.

The averages by CHE engine and fuel type were used as defaults for any missing information. Similar to the previous year, defaults were used for 1% of engine model year values, 4% of horsepower values, and 1% of operating hours. Some of the equipment with zero operating hours are included in the table because the equipment is part of the fleet and for various reasons, may not have been used in 2023.

Table 5.1: 2023 CHE Engine Characteristics for All Terminals

Equipment	Engine Type	Count	Power (hp) Min	Power (hp) Max	Power (hp) Average	Model Year Min	Model Year Max	Model Year Average	Annual Activity Hours Min	Annual Activity Hours Max	Annual Activity Hours Average
Stacking crane	Electric	29	na	na	na	na	na	na	961	2,869	2,142
Bulldozer	Diesel	3	200	310	237	2006	2007	2007	0	313	152
Cone Vehicle	Diesel	30	15	35	29	2010	2022	2016	0	1,768	604
Crane	Diesel	8	130	751	299	1995	2021	2010	37	1,033	350
Crane	Electric	3	na	na	na	na	na	na	na	na	na
Wharf crane	Electric	88	na	na	na	na	na	na	0	4,267	1,773
Forklift	Diesel	101	56	388	187	1993	2023	2012	0	5,179	404
Forklift	Electric	65				2022	2023	2022	0	432	96
Forklift	Gasoline	6	45	45	45	2010	2012	2011	55	523	299
Forklift	Propane	168	28	200	80	1988	2022	2009	0	2,179	349
Loader	Diesel	14	74	527	308	2007	2022	2014	0	4,380	1,400
Man lift	Diesel	23	48	110	81	2000	2018	2008	0	883	215
Man lift	Electric	5	na	na	na	na	na	na	na	na	na
Man lift	Gasoline	1	60	60	60	2007	2007	2007	75	75	75
Material handler	Diesel	15	268	475	398	2005	2023	2012	158	3,903	1,509
Rail pusher	Diesel	1	194	194	194	2012	2012	2012	1,195	1,195	1,195
Rail pusher	Electric	1	na	na	na	2021	2021	2021	453	453	453
Reach stacker	Diesel	4	250	449	344	2012	2021	2014	24	1,021	275
Hybrid RTG	Diesel	19	197	302	271	2011	2022	2018	465	4,755	2,772
RTG crane	Diesel	86	320	779	638	2002	2021	2009	0	4,256	1,464
Side pick	Diesel	12	173	275	249	2014	2020	2017	0	2,367	646
Skid steer loader	Diesel	5	73	75	73	1994	2023	2016	35	951	395
Hybrid straddle carrier	Diesel	132	102	103	103	2016	2022	2020	5	3,873	2,395
Straddle carrier	Diesel	28	425	425	425	2013	2015	2014	3,126	5,159	4,314
Sweeper	Diesel	6	96	210	164	2000	2019	2012	0	927	252
Sweeper	Gasoline	3	205	205	205	2005	2018	2013	na	na	na
Telehandler	Diesel	7	74	130	82	2013	2021	2017	162	831	335
Top handler	Diesel	205	250	400	340	1999	2022	2013	0	4,207	1,861
Top handler	Electric	2	na	na	na	2019	2019	2019	312	585	449
Truck	Diesel	23	185	598	342	1988	2022	2009	0	2,924	820
Yard tractor	Diesel	841	158	250	223	1995	2022	2013	0	4,756	1,355
Yard tractor	Electric	11	na	na	na	2019	2019	2019	98	636	412
Yard tractor	LNG	22	250	250	250	2018	2018	2018	181	2,029	1,503
Yard tractor	Propane	207	195	231	201	2004	2021	2013	0	3,213	1,119
Total count		**2,174**									

DB ID228

Table 5.2 summarizes the emission reduction technologies utilized in cargo handling equipment, including diesel particulate filters (DPF) and BlueCAT retrofit for large-spark ignition (LSI) engines. In 2023, renewable diesel was used by the majority of container terminals.

Table 5.2: 2023 Count of CHE Utilizing Emission Reduction Technologies

Equipment	On-Road Engines	DPF Retrofit	Hybrid	BlueCAT LSI Equip	Renewable Diesel
Forklift	0	23	0	26	74
RTG crane	0	22	19	0	63
Straddle carrier	0	0	132	0	160
Top handler	0	51	0	0	139
Yard tractor	617	4	0	0	621
Sweeper	0	0	0	0	5
Other	13	29	0	0	53
Total	**630**	**129**	**151**	**26**	**1,115**

DB ID234

Table 5.3 shows the distribution of equipment by fuel type. The "other" electric equipment includes automatic stacking carriers (ASCs), cranes, loaders, manlifts, and miscellaneous. The fossil fueled equipment in the other category includes propane truck, gasoline sweeper and manlift, in addition to many diesel equipment types (bulldozer, cone vehicle, crane, loader, manlift, material handler, reach stacker, side pick, skid steer loader, sweeper, telehandler, truck).

Table 5.3: 2023 Count of CHE Equipment by Fuel Type

Equipment	Electric	LNG	Propane	Gasoline	Diesel	Total
Forklift	65	0	168	6	101	340
Wharf crane	88	0	0	0	0	88
RTG crane	0	0	0	0	105	105
Straddle carrier	0	0	0	0	160	160
Top handler	2	0	0	0	205	207
Yard tractor	11	22	207	0	841	1,081
Other	38	0	0	4	151	193
Total	**204**	**22**	**375**	**10**	**1,563**	**2,174**

DB ID235

Table 5.4 summarizes the distribution of diesel cargo handling equipment engines including smaller auxiliary RTG engines by off-road diesel engine standards[52] (Tier 0, 1, 2, 3, 4i interim, and 4f final) based on model year and horsepower range. The table also lists the count of each type of equipment using on-road diesel engines. The table does not reflect the fact that some of the engines may be cleaner than the tier level they are certified to because of the use of emissions control devices added to existing equipment. The "Unknown Tier" column shown in the table represents equipment with missing horsepower or model year information necessary for tier level classifications.

Table 5.4: 2023 Count of Diesel Engines by Engine Standards

Equipment Type	Tier 0	Tier 1	Tier 2	Tier 3	Tier 4i	Tier 4f	On-road Engine	Unknown Tier	Total Diesel Engines
Forklift	1	0	7	17	31	30	0	15	101
RTG crane	0	0	35	1	37	32	0	0	105
Side pick	0	0	0	0	0	12	0	0	12
Top handler	0	2	17	34	37	112	0	3	205
Yard tractor	4	0	0	0	19	189	617	12	841
Other	2	5	8	22	21	64	13	4	139
Straddle carrier	0	0	0	0	17	143	0	0	160
Total	**7**	**7**	**67**	**74**	**162**	**582**	**630**	**34**	**1,563**
Percent	**0.4%**	**0.4%**	**4%**	**5%**	**10%**	**37%**	**40%**	**2%**	

DB ID878

[52] EPA, *Nonroad Compression-Ignition Engines- Exhaust Emission Standards,* June 2004

Table 5.5 summarizes the energy consumption (kWh) for the diesel equipment by engine tier and the other engine types (i.e., gasoline, propane, and LNG), but not electric. Energy consumption of cargo handling equipment engines with unknown tiers was distributed among other tiers based on defaults used for missing model year or horsepower for emissions calculations.

Table 5.5: 2023 Equipment Energy Consumption by Engine Tier, kWh and %

Engine Type	Engine Tier	Energy Consumption kWh	Percent Total
Diesel	Tier 0	488,450	0.3%
Diesel	Tier 1	353,828	0.2%
Diesel	Tier 2	5,270,122	2.7%
Diesel	Tier 3	12,224,959	6.3%
Diesel	Tier 4i	26,867,451	13.9%
Diesel	Tier 4f	69,664,044	36.0%
Diesel	Onroad engines	61,414,049	31.8%
Gasoline		113,625	0.1%
Propane		14,461,973	7.5%
LNG		2,398,970	1.2%
Total		**193,257,472**	

Emissions Estimation Methodology

The emissions calculation methodology and the emission rates are updated based on CARB's recommendation and described in Section 4 of the San Pedro Bay Ports Emissions Inventory Methodology Report Version 5. The Port's emissions calculation methodology used to estimate CHE emissions is consistent with CARB's latest methodology for estimating emissions from CHE.[53]

Table 5.6 summarizes the control measures for renewable diesel used by CHE at some of the container terminals.

Table 5.6: Control Measure for Renewable Diesel

Control Measure	Engine Tier	Retrofit	PM_{10}	$PM_{2.5}$	DPM	NO_x	SOx	CO	HC	CO_2	N_2O	CH_4
Renewable Diesel (RD99)	Tier 0-3	None	0.700	0.700	0.700	0.9	1.0	0.9	0.95	0.955	0.9	0.95
Renewable Diesel (RD99)	Tier 4	None	1.000	1.000	1.000	1.0	1.0	1.0	1.00	0.955	1.0	1.00
Renewable Diesel (RD99)	Tier 0-3	DPF	0.105	0.105	0.105	0.9	1.0	0.9	0.95	0.955	0.9	0.95

[53] CARB, 2017 Off-road Diesel Emission Factors and 2017 Off-road Diesel Emission Factors Documentation. *https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/road-documentation/msei-documentation-road*

Emission Estimates

Table 5.7 summarizes the CHE emissions by terminal type. The "Other" category represents CHE emissions for the intermodal yard and other facilities located on Port property.

Table 5.7: 2023 CHE Emissions by Terminal Type

Terminal Type	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e tonnes
Auto	0.0	0.0	0.0	0.0	0.0	0.2	0.0	5
Break-Bulk	0.6	0.6	0.6	21.7	0.1	20.0	3.4	8,080
Container	9.2	8.6	8.0	295.1	1.5	567.9	72.9	131,244
Cruise	0.0	0.0	0.0	0.1	0.0	0.5	0.0	45
Dry Bulk	0.1	0.1	0.1	6.4	0.0	7.8	0.7	472
Liquid	0.0	0.0	0.0	0.1	0.0	0.2	0.1	49
Other	0.2	0.2	0.1	5.5	0.1	27.2	1.7	5,566
Total	**10.1**	**9.4**	**8.8**	**329.0**	**1.6**	**623.8**	**78.9**	**145,461**

Table 5.8 presents the emissions by cargo handling equipment type and engine type.

Table 5.8: 2023 CHE Emissions by Equipment and Engine Type

Equipment	Engine	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e tonnes
Bulldozer	Diesel	0.0	0.0	0.0	0.1	0.0	0.1	0.0	29
Cone vehicle	Diesel	0.0	0.0	0.0	0.9	0.0	1.1	0.1	133
Crane	Diesel	0.1	0.1	0.1	1.7	0.0	0.7	0.2	298
Forklift	Diesel	0.1	0.1	0.1	4.3	0.0	6.2	0.5	1,345
Forklift	Gasoline	0.0	0.0	0.0	0.0	0.0	1.0	0.1	19
Forklift	Propane	0.1	0.1	0.0	3.5	0.0	27.8	1.2	972
Loader	Diesel	0.2	0.2	0.2	4.9	0.0	5.6	1.0	2,322
Man lift	Diesel	0.0	0.0	0.0	0.7	0.0	0.8	0.1	119
Man lift	Gasoline	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2
Material handler	Diesel	0.1	0.1	0.1	8.5	0.0	6.6	1.4	3,061
Rail pusher	Diesel	0.0	0.0	0.0	0.2	0.0	0.2	0.0	68
Reach stacker	Diesel	0.0	0.0	0.0	0.1	0.0	0.4	0.0	190
Hybrid RTG	Diesel	0.1	0.1	0.1	1.6	0.0	3.7	0.5	1,606
RTG crane	Diesel	1.3	1.2	1.3	61.0	0.1	21.9	6.0	9,986
Side pick	Diesel	0.0	0.0	0.0	0.5	0.0	1.5	0.2	661
Skid steer loader	Diesel	0.0	0.0	0.0	0.2	0.0	0.3	0.0	45
Hybrid Straddle Carrier	Diesel	0.1	0.1	0.1	5.6	0.0	24.7	1.1	3,577
Straddle carrier	Diesel	0.6	0.6	0.6	15.3	0.1	12.9	2.6	5,624
Sweeper	Diesel	0.0	0.0	0.0	0.1	0.0	0.4	0.0	125
Sweeper	Gasoline	0.0	0.0	0.0	0.2	0.0	1.9	0.0	93
Telehandler	Diesel	0.0	0.0	0.0	0.1	0.0	0.2	0.0	38
Top handler	Diesel	3.3	3.0	3.3	103.8	0.5	100.1	18.9	44,512
Truck	Diesel	0.3	0.3	0.3	6.6	0.0	5.3	0.9	2,538
Yard tractor	Diesel	2.5	2.3	2.5	68.7	0.7	136.0	10.2	54,928
Yard tractor	LNG	0.0	0.0	0.0	0.1	0.0	0.8	0.0	1,052
Yard tractor	Propane	1.2	1.2	0.0	40.2	0.0	263.9	34.0	12,116
Total		**10.1**	**9.4**	**8.8**	**329.0**	**1.6**	**623.8**	**78.9**	**145,460**

DB ID237

SECTION 6 LOCOMOTIVES

This section presents emission estimates for the railroad locomotives source category, including source description, geographical domain, data and information acquisition, operational profiles, emissions estimation methodology, and emission estimates.

Source Description

Railroad operations are typically described in terms of two different types of operations, line haul and switching. Line haul refers to the movement of cargo by train over long distances. Line haul operations occur at or near the Port as the initiation or termination of a line haul trip; cargo is either picked up for transport to destinations across the country or is dropped off for shipment overseas. Switching refers to short movements of rail cars, such as in the assembling and disassembling of trains at various locations in and around the Port, sorting of the cars of inbound cargo trains into contiguous "fragments" for subsequent delivery to terminals, and the short distance hauling of rail cargo within the Port.

The Port is served by three railway companies:

- Burlington Northern Santa Fe Railway Company (BNSF)
- Union Pacific Railroad (UP)
- Pacific Harbor Line (PHL)

BNSF and UP provide line haul service to and from the Port and operate switching services at their off-port locations, while PHL performs most of the switching operations within the Port. Locomotives used for line haul operations are typically equipped with large, powerful engines of over 4,000 hp, while switch engines are smaller, typically having one or more engines totaling 2,000 to 3,000 hp. The locomotives used in switching service at the Port are primarily new, low-emitting locomotives specifically designed for switching duty. Switching locomotives are operated by PHL within the Port and by UP at the near-port railyard.

Geographical Domain

The specific activities included in this emissions inventory are movements of cargo within Port boundaries, directly to or from Port-owned properties such as terminals and on-Port rail yards, and within and to the boundary of the SoCAB. The inventory does not include rail movements of cargo that occur solely outside the Port, such as off-port rail yard switching, and movements that neither begin nor end at a Port property, such as east-bound line hauls that initiate in central Los Angeles intermodal yards. For rail locomotives, the domain extends from the Port to the cargo's first point of rest within the SoCAB or up to the SoCAB boundary, whichever comes first. Figure 1.1, presented earlier in Section 1, illustrates the boundaries.

Data and Information Acquisition

Information from the following general sources was used to estimate emissions associated with maritime industry-related activities of locomotives operating both within the Port and outside the Port to the boundary of the SoCAB:

- Previous emissions studies
- Port cargo statistics
- Input from railroad operators
- Information published by EPA, the Surface Transportation Board, and other sources as cited in this report
- CARB MOU line-haul fleet compliance data

The Port continues to use the most recent, locally specific data available, including MOU compliance data reflective of actual recent line haul fleet mix characteristics in the SoCAB. In addition, PHL has provided fuel consumption information for each locomotive in service in each calendar year, along with the engine tier levels of the locomotives. Table 6.1 lists the number of locomotives for each tier level that were operated in 2023 and the percentage of fuel used by locomotives in each tier.

Table 6.1: PHL Switching Fleet Mix

Locomotive Tier Level /Power Type	Count	% of Fuel Consumed
Genset	6	2%
Tier 3	0	0%
Tier 3+	17	96%
Tier 4	1	2%
Totals	**24**	**100%**

In 2023, PHL switching locomotives used renewable diesel for the first time. Similar to harbor craft, it was assumed that use of renewable fuel in switching locomotives, for pre-Tier 4 engines, reduces[54] tailpipe PM emission by 30%, NO_x and CO emissions by 10%, and hydrocarbon emissions by 5%. Tailpipe CO2 emissions are reduced by 4.5 % for all tiers. Discussion of the tiers and a list of tier-specific emission factors are included in Section 5 of the San Pedro Bay Ports Emissions Inventory Methodology Report Version 5.

[54] *https://ww2.arb.ca.gov/sites/default/files/2021-11/Low_Emission_Diesel_Study_Final_Report.pdf ; https://ww2.arb.ca.gov/sites/default/files/2023-04/2022InUseDieselInventory.pdf*

Operational Profiles

The goods movement rail system in terms of the activities that are carried out by locomotive operators is the same as described in detail in Section 5 of the San Pedro Bay Ports Emissions Inventory Methodology Report Version 5.

Emissions Estimation Methodology

The emission calculation methodology used to estimate locomotive emissions is consistent with the methodology described in detail in Section 5 of the San Pedro Bay Ports Emissions Inventory Methodology Report Version 5. Tables that contain information specific to this EI are presented below.

Similar to harbor craft, it was assumed that use of renewable fuel in switching locomotives, for pre-Tier 4 engines, reduces[55] tailpipe PM emission by 30%, NO_x and CO emissions by 10%, and hydrocarbon emissions by 5%. Tailpipe CO_2 emissions are reduced by 4.5 % for all tiers.

Table 6.2 presents the MOU compliance information submitted by both of the line haul railroads and the composite of both railroads' pre-Tier 0 through Tier 4 locomotive NO_x emissions for calendar year 2022, showing a weighted average NO_x emission factor of 5.54 g/hp-hr.[56] The 2022 reports were used instead of the 2023 due to the timing of the inventory data collection phase and of the posting of the compliance reports by CARB. The emission factors based on the 2023 compliance report will be used for the future 2024 EI.

[55] *https://ww2.arb.ca.gov/sites/default/files/2021-11/Low_Emission_Diesel_Study_Final_Report.pdf* ; *https://ww2.arb.ca.gov/sites/default/files/2023-04/2022InUseDieselInventory.pdf*

[56] Notes from railroads' MOU compliance submissions:

1. For more information on the U.S. EPA locomotive emission standards please visit. *www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-emission-standards-locomotives-and-locomotive*
2. Number of locomotives is the sum of all individual locomotives that visited or operated within the SoCAB at any time during 2022.

Table 6.2: MOU Compliance Data, MWh and g NO_x/hp-hr

Engine Tier	Number of Locomotives	Megawatt-hours (MWh)	% MWh by Tier Level	Wt'd Avg NO_x (g/bhp-hr)	Tier Contribution to Fleet Average (g/bhp-hr)
BNSF					
Pre-Tier 0	812	1,335	0.6%	13.0	0.08
Tier 0	73	3,792	1.8%	10.9	0.20
Tier 1	1,382	81,853	40%	6.5	2.58
Tier 2	1,588	63,154	31%	4.9	1.50
Tier 3	1,220	45,449	22%	3.9	0.86
Tier 4	269	10,968	5.3%	1.2	0.06
ULEL	0	0	0%	-	-
Total BNSF	**5,344**	**206,551**	**100%**		**5.28**
UP					
Pre-Tier 0	31	294	0.2%	5.6	0.01
Tier 0	181	6,120	3%	8.5	0.28
Tier 1	1,764	88,592	47%	7	3.29
Tier 2	1,372	51,228	27%	5.1	1.38
Tier 3	958	30,080	16%	4.9	0.78
Tier 4	248	12,368	6.6%	1.1	0.07
ULEL	0	0	0%		0.00
Total UP	**4,554**	**188,682**	**100%**		**5.81**
		ULEL Credit Used			0.30
		UP Fleet Average			**5.11**
Both railroads, excluding ULELs and ULEL credits					
Pre-Tier 0	843	1,629	0%	11.7	0.05
Tier 0	254	9,912	3%	9.4	0.24
Tier 1	3,146	170,445	43%	6.8	2.92
Tier 2	2,960	114,382	29%	5.0	1.44
Tier 3	2,178	75,529	19%	4.3	0.82
Tier 4	517	23,336	5.90%	1.1	0.068
Total both	**9,898**	**395,233**	**100%**		**5.54**

Emission factors for particulate matter (PM_{10}), HC, and CO were calculated using the tier-specific emission rates for those pollutants published by EPA.[57] The emission rates were used to develop weighted average emission factors using the megawatt hour (MWh) numbers provided in the railroads' submissions. These results are presented in Table 6.3.

Table 6.3: Fleet MWh and PM, HC, CO Emission Factors, g/bhp-hr

Engine Tier	MWh	% of MWh	EPA Tier-specific PM_{10}	HC	CO	Fleet Composite PM_{10}	HC	CO
			g/bhp-hr			g/bhp-hr		
Pre-Tier 0	1,629	0%	0.32	0.48	1.28	0.001	0.00	0.01
Tier 0	9,912	3%	0.32	0.48	1.28	0.008	0.01	0.03
Tier 1	170,445	43%	0.32	0.47	1.28	0.138	0.20	0.55
Tier 2	114,382	29%	0.18	0.26	1.28	0.052	0.08	0.37
Tier 3	75,529	19%	0.08	0.13	1.28	0.015	0.03	0.25
Tier 4	23,336	6%	0.015	0.04	1.28	0.000	0.00	0.08
Total	**395,233**	**100%**				**0.214**	**0.32**	**1.28**

Emission factors for $PM_{2.5}$ and DPM were calculated as fractions of PM_{10}, with $PM_{2.5}$ calculated as 94% of PM_{10} consistent with CARB methodology and DPM equal to $PM_{10,}$ since all PM emissions from diesel engines are defined as DPM. Rounding of emission factors before and after the conversion resulted in the emission factor values shown in Table 6.4. Table 6.4 summarizes the latest emission factors for line haul locomotives, presented in unit of g/hp-hr. The greenhouse gas emission factors are unchanged from the previous EI.

Table 6.4: Emission Factors for Line Haul Locomotives, g/bhp-hr

	PM_{10}	$PM_{2.5}$	DPM	NO_x	SO_x	CO	HC	CO_2	N_2O	CH_4
EF, g/bhp-hr	0.214	0.197	0.214	5.54	0.005	1.28	0.32	489	0.013	0.04

[57] EPA Office of Transportation and Air Quality, "Emission Factors for Locomotives" EPA-420-F-09-025 April 2009.

On-Port Line Haul Emissions

The estimated number of trains per year, locomotives per train, and on-port hours per train were multiplied together to calculate total locomotive hours per year. This activity information is summarized in Table 6.5.

Table 6.5: 2023 Estimated On-Port Line Haul Locomotive Activity

Activity Measure	Inbound	Outbound	Total
Trains per Year	3,276	2,740	6,016
Locomotives per Train	3	3	N/A
Hours on Port per Trip	1	2.5	N/A
Locomotive Hours per Year	9,828	20,550	30,378

Out-of-Port Line Haul Emissions

Table 6.6 lists the estimated totals of travel distance, out-of-port trains per year, out-of-port million gross tons (MMGT), out-of-port MMGT-miles, gallons of fuel used, and horsepower-hours. The gross ton-miles were calculated by multiplying distance in miles by the number of trains and by the average weight of a train, which was estimated to be 7,402 tons. Fuel consumption was calculated by multiplying gross ton-miles by the average fuel consumption factor of 0.957 gallons per thousand gross ton-miles.[58] Overall horsepower hours were calculated by multiplying the fuel used by the fuel consumption conversion factor of 20.8 hp-hr/gal.

Table 6.6: 2023 Gross Ton-Mile, Fuel Use, and Horsepower-hour Estimate

	Distance miles	Trains per year	MMGT per year	MMGT-miles per year
Alameda Corridor	21	4,295	32	672
Central LA to Air Basin Boundary	84	4,295	32	2,688
Million gross ton-miles				**3,360**
Estimated gallons of fuel (millions)				**3.20**
Estimated million horsepower-hours				**66.6**

[58] Union Pacific, *Class I Railroad Annual Report R-1 to the Surface Transportation Board for the Year Ending Dec. 31, 2023* and BNSF, *Class I Railroad Annual Report R-1 to the Surface Transportation Board for the Year Ending Dec. 31, 2023. https://www.stb.gov/reports-data/economic-data/annual-report-financial-data/*

Emission Estimates

A summary of estimated emissions from locomotive operations related to the Port is presented below in Table 6.7. These maritime industry related emissions include operations within the Port and outside the Port out to the boundary of the SoCAB. The maritime industry-related off-port activity was associated with cargo movements having either their origin or termination at the Port. Emissions resulting from the movement of cargo originating or terminating at one of the off-port rail yards were not included. The criteria pollutants are listed as tons per year, while the CO_2e values are listed as tonnes (metric tons) per year.

In order for the total emissions to be consistently displayed for each pollutant, the individual values in the table entries do not, in some cases, add up to the totals listed in the table. This is because there are fewer decimal places displayed (for readability) than were included in the calculated totals.

Table 6.7: 2023 Locomotive Operations Estimated Emissions

Activity Component	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e tonnes
Switching	0.4	0.4	0.4	37.3	0.1	15.2	2.1	5,115
Line Haul	24.0	22.1	24.0	621.9	0.6	143.7	35.9	50,293
Total	**24.4**	**22.5**	**24.4**	**659.2**	**0.7**	**158.9**	**38.0**	**55,408**

DB ID696

SECTION 7 HEAVY-DUTY VEHICLES

This section presents emission estimates for the HDV emission source category, including source description, geographical domain, data and information acquisition, operational profiles, emissions estimation methodology, and emission estimates.

Source Description

Heavy-duty vehicles (specifically heavy-duty trucks) are used extensively to move cargo, particularly containerized cargo, to and from the marine terminals. Trucks deliver cargo to both local and national destinations. The local activity is often referred to as drayage and includes the transfer of containers between terminals and off-port railcar loading facilities. In the course of their daily operations, both local and national destined trucks are driven onto and through Port terminals, where they deliver and/or pick up cargo. They are also driven on public roads within the Port boundaries and on public roads outside the Port.

The majority (93%) of trucks that service the Port's terminals are diesel-fueled vehicles. Approximately 6% of the trucks that called are alternatively fueled trucks, including compressed and liquefied natural gas (CNG and LNG). The emission estimates prepared using this methodology reflect the use of diesel and natural gas fuel. In addition, 0.83% of the trucks were battery electric zero emissions trucks in 2023.

The most common configuration of HDV is the articulated tractor-trailer (truck and semi-trailer) having five axles, including the trailer axles. The most common type of trailer in the study area is the container chassis, built to accommodate standard-sized cargo containers. Additional trailer types include tankers, boxes, and flatbeds. A tractor traveling without an attached trailer is called a "bobtail" while a tractor pulling an unloaded container trailer chassis is known simply as a "chassis." These vehicles are all classified as heavy HDVs regardless of their actual weight because the classification is based on gross vehicle weight rating (GVWR), which is a rating of the vehicle's total carrying capacity. Therefore, the emission estimates do not distinguish among the different configurations.

Geographical Domain

Two major geographical components of truck activities were evaluated for this inventory:

- On-terminal operations, which include waiting for terminal entry, transiting the terminal to drop off and/or pick up cargo, and departing the terminal.
- On-road operations, which consist of travel on public roads within the SoCAB. This also includes travel on public roads within the Port boundaries and those of the adjacent Port of Long Beach (POLB).

Data and Information Acquisition

Information regarding on-terminal truck activity, such as average times and driving distances while on the terminals, was collected from terminal personnel. For on-road operations, the volumes (number of trucks), distances, and average speeds on roadway segments between defined intersections were estimated using trip generation and travel demand models that have been developed for these purposes. The trip generation model was used to develop truck trip numbers for container terminals, while the terminal operator interviews were used to obtain trip counts associated with non-container terminals.

Operational Profiles

Table 7.1 illustrates the range and average of reported operating characteristics of on-terminal truck activities at Port container terminals, while Table 7.2 shows similar summary data for the non-container terminals and facilities. In 2023, the total number of terminal calls associated with the Port's container terminals and non-container facilities was 3,608,267 and 396,830, respectively. The number of container terminal calls to each terminal was estimated by the trip generation model on which truck travel estimates are based, while non-container terminal calls were obtained from the terminal operators. The non-container terminal number includes activity at the Port's peel-off yard that operated in 2023, totaling approximately 15,420 calls. The peel-off yard was established to improve terminal efficiency by allowing containers off-loaded from ships to be quickly removed from the container terminal and placed in the yard, to be picked up for further transport at a later time.

Table 7.1: Summary of Reported Container Terminal Operating Characteristics

Parameter	Speed (mph)	Distance (miles)	Time on Terminal (hours)
Maximum	15	1.9	1.37
Minimum	10	0.9	0.95
Average	13	1.5	1.21

Table 7.2: Summary of Reported Non-Container Facility Operating Characteristics

Parameter	Speed (mph)	Distance (miles)	Time on Terminal (hours)
Maximum	20	1.3	0.47
Minimum	0	0.0	0.00
Average	8	0.5	0.17

Table 7.3 presents further detail on the on-terminal operating parameters provided by terminal operators, listing total estimated miles traveled and hours of idling on-terminal and waiting at entry gates. Terminals are listed by type.

Table 7.3: 2023 Estimated On-Terminal VMT and Idling Hours by Terminal

Terminal Type	Total Miles Traveled	Total Hours Idling (all trips)
Container	1,214,262	1,109,026
Container	1,126,079	833,298
Container	920,067	678,550
Container	780,368	390,184
Container	655,635	585,701
Container	423,489	555,241
Container	231,968	207,224
Auto	1,250	850
Break Bulk	28,000	6,300
Break Bulk	10,000	6,400
Dry Bulk	3,250	1040
Dry Bulk	1,500	450
Liquid Bulk	3000	360
Liquid Bulk	18	0
Other	153,910	69,260
Other	65,000	8,000
Other	13,520	1,976
Other	1,900	3,325
Other	1,542	7,247
Other	40	320
Total	**5,634,797**	**4,464,751**

Emissions Estimation Methodology

The emission estimating methodology for the Port's on-road truck fleet is described in Section 6 of the San Pedro Bay Ports Emissions Inventory Methodology Report Version 5. HDV emission estimates were based on estimates of vehicle miles traveled (VMT), average speeds, CARB's on-road vehicle emissions model EMFAC2021, and HDV model year information specific to the San Pedro Bay Ports. The most recent version of the model, EMFAC2021, reflects CARB's current understanding of motor vehicle travel activities and their associated emission levels. A new feature of this version of the model is the ability to produce emission factors for natural gas fueled trucks in addition to the more common diesel fueled trucks.

Table 7.4 summarizes the 2023 speed-specific composite emission factors developed from the EMFAC2021 model and the model year distribution discussed below. These composite emission factors were developed using model year specific emission factors for the T7 POLA vehicle category of EMFAC2021 and reflect the use of diesel and natural gas fuel model year distribution, based on evaluation of the Port's Clean Truck Program (CTP) activity records and the Port Drayage Truck Registry (PDTR).

Table 7.4: Speed-Specific Composite Exhaust Emission Factors

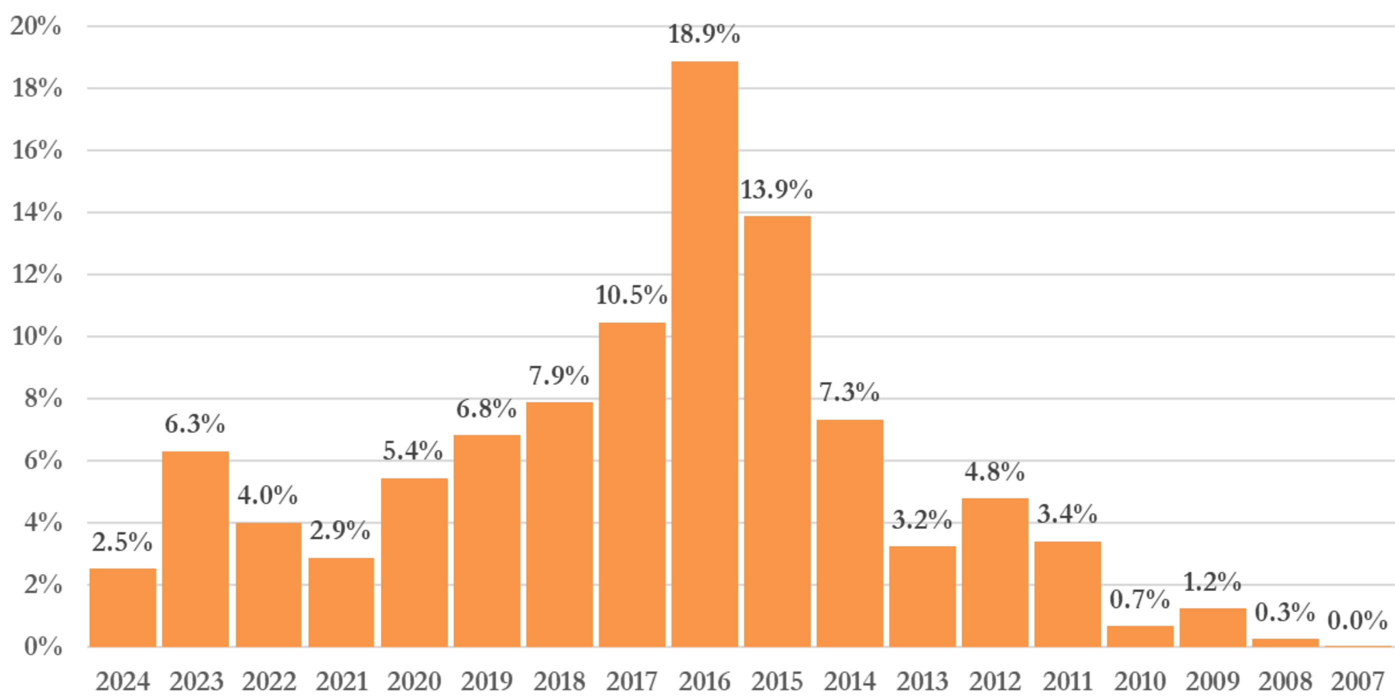
Speed range (mph)		PM_{10}	$PM_{2.5}$	DPM	NO_x	SO_x	CO	HC	CO_2	N_2O	CH_4	Units
Idle		0.0069	0.0066	0.0039	23.0445	0.0531	38.0907	3.8895	6,405	0.9325	0.2288	g/hr
> 0	5	0.0100	0.0096	0.0095	9.4561	0.0297	2.5641	0.6148	3,372	0.5422	0.5050	g/mi
5	10	0.0087	0.0083	0.0083	6.8028	0.0254	2.0285	0.4024	2,870	0.4610	0.3345	g/mi
10	15	0.0072	0.0069	0.0068	4.5075	0.0208	1.5145	0.2369	2,344	0.3760	0.1996	g/mi
15	20	0.0063	0.0060	0.0060	3.4471	0.0183	1.2129	0.1671	2,052	0.3288	0.1422	g/mi
20	25	0.0059	0.0057	0.0057	2.6806	0.0167	1.0010	0.1297	1,869	0.2992	0.1105	g/mi
25	30	0.0063	0.0060	0.0061	2.0309	0.0155	0.8238	0.1058	1,728	0.2766	0.0904	g/mi
30	35	0.0074	0.0071	0.0073	1.5235	0.0145	0.6736	0.0890	1,620	0.2592	0.0765	g/mi
35	40	0.0093	0.0089	0.0092	1.1578	0.0139	0.5497	0.0768	1,544	0.2469	0.0663	g/mi
40	45	0.0120	0.0114	0.0119	0.9324	0.0135	0.4521	0.0678	1,498	0.2394	0.0586	g/mi
45	50	0.0154	0.0147	0.0153	0.8475	0.0134	0.3804	0.0611	1,482	0.2366	0.0525	g/mi
50	55	0.0195	0.0187	0.0195	0.9031	0.0135	0.3346	0.0562	1,496	0.2387	0.0476	g/mi
55	60	0.0245	0.0234	0.0244	1.1022	0.0140	0.3314	0.0570	1,543	0.2462	0.0476	g/mi
60	65	0.0301	0.0288	0.0301	1.4417	0.0147	0.3352	0.0585	1,620	0.2583	0.0477	g/mi
65	70	0.0301	0.0288	0.0301	1.4485	0.0147	0.3354	0.0585	1,620	0.2583	0.0477	g/mi

Model Year Distribution

Since vehicle emissions vary according to the vehicle's model year and age, the activity level of trucks within each model year is an important part of developing emission estimates. The 2023 model year distribution for the current emissions inventory was based on call data originating from radio frequency identification (RFID) data, which records information on the truck calls made to the Port of Los Angeles and the Port of Long Beach in 2023, as well as model year data drawn from the PDTR. The PDTR contains model year information on all registered drayage trucks serving the Port and the fuel type used by each truck.

The distribution of the model years of the trucks that called at both the Port and POLB terminals during 2023, which was used to develop the composite emission factors listed above, is presented in Figure 7.1. The call weighted average age of the trucks calling at San Pedro Bay Ports terminals in 2023 was approximately 6 years. The share of calls made by 2014 and newer model year trucks increased from 64% in 2022 to 86% in 2023, significantly reducing emissions of NO_x and other pollutants (see Table 9.25).

Figure 7.1: 2023 Model Year Distribution of the Heavy-Duty Truck Fleet



Emission Estimates

The estimates of 2023 HDV emissions are presented in this section. As discussed above, on-terminal emissions were based on terminal-specific information, such as the number of trucks passing through the terminal and the distance they travel on-terminal. The Port-wide totals are the sum of the terminal-specific estimates. The on-road emissions were estimated using travel demand model results to estimate how many miles in total the trucks traveled and average speeds along defined roadways in the SoCAB on the way to their first cargo drop-off point. The on-terminal estimates include the sum of driving and idling emissions calculated separately. The idling emissions are likely to be somewhat over-estimated since the idling estimates were based on the entire time that trucks were on terminal (except for driving time), which does not account for times that trucks were turned off while on terminal. No data source has been identified that would provide a reliable estimate of the average percentage of time the trucks' engines were turned off while on terminal. The on-road estimates include idling emissions as a normal part of the driving cycle because the average speeds include estimates of normal traffic idling times, and the emission factors were designed to take this into account.

In order for the total emissions to be consistently displayed for each pollutant, the individual values in each table column do not, in some cases, add up to the listed total in the tables. This is due to fewer decimal places displayed for readability than were included in the calculated total.

Emission estimates for HDV activity associated with Port terminals and other facilities are presented in the following tables. Table 7.5 summarizes emissions from HDVs associated with all Port terminals.

Table 7.5: 2023 HDV Emissions

Activity Location	Vehicle Miles Traveled	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2 e tonnes
On-Terminal	5,634,797	0.1	0.1	0.1	148	0.4	198.4	21.1	45,236
On-Road	199,734,681	3.3	3.1	3.3	201	3.0	86.8	13.7	311,365
Total	**205,369,478**	**3.4**	**3.2**	**3.3**	**350**	**3.4**	**285.2**	**34.9**	**356,601**

Table 7.6 presents HDV emissions associated with container terminal activity. Table 7.7 presents HDV emissions associated with other Port terminals and facilities.

Table 7.6: 2023 HDV Emissions Associated with Container Terminals

Activity Location	Vehicle Miles Traveled	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2 e tonnes
On-Terminal	5,351,867	0.1	0.1	0.1	143.8	0.4	193.4	20.6	43,749
On-Road	166,211,686	2.7	2.6	2.7	169.2	2.5	72.6	11.5	259,234
Total	**171,563,553**	**2.8**	**2.7**	**2.8**	**313**	**2.9**	**266.0**	**32.0**	**302,983**

Table 7.7 presents emissions associated with other Port terminals and facilities separately.

Table 7.7: 2023 HDV Emissions Associated with Other Port Terminals

Activity Location	Vehicle Miles Traveled	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2 e tonnes
On-Terminal	282,930	0.00	0.00	0.00	4.6	0.0	5.0	0.6	1,487
On-Road	33,522,995	0.6	0.5	0.6	32.1	0.5	14.2	2.3	52,131
Total	**33,805,925**	**0.6**	**0.5**	**0.6**	**37**	**0.5**	**19.2**	**2.8**	**53,618**

SECTION 8 SUMMARY OF 2023 EMISSION RESULTS

Table 8.1 summarizes the 2023 total maritime industry-related emissions associated with the Port of Los Angeles by category. Tables 8.2 through 8.6 present PM_{10}, $PM_{2.5}$, DPM, NO_x, and SO_x emissions in the context of Port-wide and air basin-wide emissions by source category and the more specific subcategories. Table 8.7 presents the CO_2e emissions in the context of Port-wide emissions.

Table 8.1: 2023 Emissions by Source Category

Category	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e tonnes
Ocean-going vessels	41	38	27	2,258	76	213	106	164,054
Harbor craft	11	10	11	482	1	96	27	51,808
Cargo handling equipment	10	9	9	329	2	624	79	145,461
Locomotives	24	23	24	659	1	159	38	55,408
Heavy-duty vehicles	3	3	3	350	3	285	35	356,601
Total	**90**	**83**	**75**	**4,078**	**82**	**1,377**	**285**	**773,331**

DB ID457

Table 8.2: 2023 PM_{10} Emissions by Category and Percent Contribution

			Percent PM_{10} Emissions of Total		
Category	**Subcategory**	**PM_{10}**	**Category**	**Port**	**SoCAB AQMP**
OGV	Auto carrier	1.1	3%	1%	0.0%
OGV	Bulk vessel	1.4	4%	2%	0.0%
OGV	Containership	23.5	58%	26%	0.0%
OGV	Cruise	7.1	17%	8%	0.0%
OGV	General cargo	1.1	3%	1%	0.0%
OGV	Other	0.0	0%	0%	0.0%
OGV	Reefer	0.6	2%	1%	0.0%
OGV	Tanker	6.0	15%	7%	0.0%
OGV	**Subtotal**	**41**	**100%**	**46%**	**0.1%**
Harbor Craft	Assist tug	1.2	11%	1%	0.0%
Harbor Craft	ATB and barge	2.9	26%	3%	0.0%
Harbor Craft	Harbor tug	0.5	4%	1%	0.0%
Harbor Craft	Commercial fishing	2.3	22%	3%	0.0%
Harbor Craft	Ferry	1.1	11%	1%	0.0%
Harbor Craft	Ocean tugboat	1.4	13%	2%	0.0%
Harbor Craft	Government	0.3	2%	0%	0.0%
Harbor Craft	Excursion	0.4	4%	0%	0.0%
Harbor Craft	Crewboat	0.5	5%	1%	0.0%
Harbor Craft	Work boat	0.2	2%	0%	0.0%
Harbor Craft	**Subtotal**	**11**	**100%**	**12%**	**0.0%**
CHE	RTG crane	1.4	14%	2%	0.0%
CHE	Forklift	0.2	2%	0%	0.0%
CHE	Top handler, side pick	3.3	33%	4%	0.0%
CHE	Other	1.4	14%	2%	0.0%
CHE	Yard tractor	3.8	37%	4%	0.0%
CHE	**Subtotal**	**10**	**100%**	**11%**	**0.0%**
Locomotives	Switching	0.4	2%	0%	0.0%
Locomotives	Line haul	24.0	98%	27%	0.0%
Locomotives	**Subtotal**	**24**	**100%**	**27%**	**0.0%**
HDV	On-Terminal	0.1	2%	0%	0.0%
HDV	On-Road	3.3	98%	4%	0.0%
HDV	**Subtotal**	**3**	**100%**	**4%**	**0.0%**
Port	**Total**	**90**		**100%**	**0.2%**
SoCAB AQMP	**Total**	**56,513**			

Table 8.3: 2023 $PM_{2.5}$ Emissions by Category and Percent Contribution

Category	Subcategory	$PM_{2.5}$	Percent $PM_{2.5}$ Emissions of Total Category	Port	SoCAB AQMP
OGV	Auto carrier	1.0	3%	1%	0.0%
OGV	Bulk vessel	1.3	4%	2%	0.0%
OGV	Containership	21.6	57%	26%	0.1%
OGV	Cruise	6.6	18%	8%	0.0%
OGV	General cargo	1.0	3%	1%	0.0%
OGV	Other	0.0	0%	0%	0.0%
OGV	Reefer	0.6	2%	1%	0.0%
OGV	Tanker	5.5	15%	7%	0.0%
OGV	**Subtotal**	**38**	**100%**	**45%**	**0.2%**
Harbor Craft	Assist tug	1.1	11%	1%	0.0%
Harbor Craft	ATB and barge	2.7	27%	3%	0.0%
Harbor Craft	Harbor tug	0.5	4%	1%	0.0%
Harbor Craft	Commercial fishing	2.2	22%	3%	0.0%
Harbor Craft	Ferry	1.1	11%	1%	0.0%
Harbor Craft	Ocean tugboat	1.3	13%	2%	0.0%
Harbor Craft	Government	0.2	2%	0%	0.0%
Harbor Craft	Excursion	0.4	4%	0%	0.0%
Harbor Craft	Crewboat	0.5	5%	1%	0.0%
Harbor Craft	Work boat	0.2	2%	0%	0.0%
Harbor Craft	**Subtotal**	**10**	**100%**	**12%**	**0.1%**
CHE	RTG crane	1.3	14%	2%	0.0%
CHE	Forklift	0.2	2%	0%	0.0%
CHE	Top handler, side pick	3.1	32%	4%	0.0%
CHE	Other	1.3	14%	2%	0.0%
CHE	Yard tractor	3.6	38%	4%	0.0%
CHE	**Subtotal**	**9**	**100%**	**11%**	**0.0%**
Locomotives	Switching	0.4	2%	0%	0.0%
Locomotives	Line haul	22.1	98%	27%	0.1%
Locomotives	**Subtotal**	**23**	**100%**	**27%**	**0.1%**
HDV	On-Terminal	0.1	2%	0%	0.0%
HDV	On-Road	3.1	98%	4%	0.0%
HDV	**Subtotal**	**3**	**100%**	**4%**	**0.0%**
Port	**Total**	**83**		**100%**	**0.4%**
SoCAB AQMP	**Total**	**19,651**			

Table 8.4: 2023 DPM Emissions by Category and Percent Contribution

			Percent DPM Emissions of Total		
Category	**Subcategory**	**DPM**	**Category**	**Port**	**SoCAB AQMP**
OGV	Auto carrier	0.9	3%	1%	0.1%
OGV	Bulk vessel	1.1	4%	1%	0.1%
OGV	Containership	14.4	53%	19%	1.1%
OGV	Cruise	6.5	24%	9%	0.5%
OGV	General cargo	0.7	3%	1%	0.1%
OGV	Other	0.0	0%	0%	0.0%
OGV	Reefer	0.5	2%	1%	0.0%
OGV	Tanker	3.0	11%	4%	0.2%
OGV	**Subtotal**	**27**	**100%**	**37%**	**2.1%**
Harbor Craft	Assist tug	1.2	11%	2%	0.1%
Harbor Craft	ATB and barge	2.9	26%	4%	0.2%
Harbor Craft	Harbor tug	0.5	4%	1%	0.0%
Harbor Craft	Commercial fishing	2.3	22%	3%	0.2%
Harbor Craft	Ferry	1.1	11%	2%	0.1%
Harbor Craft	Ocean tugboat	1.4	13%	2%	0.1%
Harbor Craft	Government	0.3	2%	0%	0.0%
Harbor Craft	Excursion	0.4	4%	1%	0.0%
Harbor Craft	Crewboat	0.5	5%	1%	0.0%
Harbor Craft	Work boat	0.2	2%	0%	0.0%
Harbor Craft	**Subtotal**	**11**	**100%**	**14%**	**0.8%**
CHE	RTG crane	1.4	16%	2%	0.1%
CHE	Forklift	0.1	1%	0%	0.0%
CHE	Top handler, side pick	3.3	37%	4%	0.3%
CHE	Other	1.4	16%	2%	0.1%
CHE	Yard tractor	2.6	29%	3%	0.2%
CHE	**Subtotal**	**9**	**100%**	**12%**	**0.7%**
Locomotives	Switching	0.4	2%	1%	0.0%
Locomotives	Line haul	24.0	98%	32%	1.8%
Locomotives	**Subtotal**	**24**	**100%**	**33%**	**1.9%**
HDV	On-Terminal	0.1	2%	0%	0.0%
HDV	On-Road	3.3	98%	4%	0.3%
HDV	**Subtotal**	**3**	**100%**	**4%**	**0.3%**
Port	**Total**	**75**		**100%**	**5.7%**
SoCAB AQMP	**Total**	**1,300**			

Table 8.5: 2023 NO_x Emissions by Category and Percent Contribution

Category	Subcategory	NO_x	Percent NO_x Emissions of Total: Category	Port	SoCAB AQMP
OGV	Auto carrier	82.8	4%	2%	0.1%
OGV	Bulk vessel	72.7	3%	2%	0.1%
OGV	Containership	1,360.3	60%	33%	1.4%
OGV	Cruise	422.3	19%	10%	0.4%
OGV	General cargo	54.9	2%	1%	0.1%
OGV	Other	0.5	0%	0%	0.0%
OGV	Reefer	41.6	2%	1%	0.0%
OGV	Tanker	223.2	10%	5%	0.2%
OGV	**Subtotal**	**2,258**	**100%**	**55%**	**2.3%**
Harbor Craft	Assist tug	67.1	14%	2%	0.1%
Harbor Craft	ATB and barge	87.0	18%	2%	0.1%
Harbor Craft	Harbor tug	27.7	6%	1%	0.0%
Harbor Craft	Commercial fishing	94.3	20%	2%	0.1%
Harbor Craft	Ferry	65.0	13%	2%	0.1%
Harbor Craft	Ocean tugboat	55.5	12%	1%	0.1%
Harbor Craft	Government	9.3	2%	0%	0.0%
Harbor Craft	Excursion	27.2	6%	1%	0.0%
Harbor Craft	Crewboat	34.1	7%	1%	0.0%
Harbor Craft	Work boat	14.5	3%	0%	0.0%
Harbor Craft	**Subtotal**	**482**	**100%**	**12%**	**0.5%**
CHE	RTG crane	63.4	19%	2%	0.1%
CHE	Forklift	7.9	2%	0%	0.0%
CHE	Top handler, side pick	105.2	31%	3%	0.1%
CHE	Other	45.6	14%	1%	0.0%
CHE	Yard tractor	112.3	34%	3%	0.1%
CHE	**Subtotal**	**334**	**100%**	**8%**	**0.3%**
Locomotives	Switching	37.3	6%	1%	0.0%
Locomotives	Line haul	621.9	94%	15%	0.6%
Locomotives	**Subtotal**	**659**	**100%**	**16%**	**0.7%**
HDV	On-Terminal	148.4	42%	4%	0.2%
HDV	On-Road	201.4	58%	5%	0.2%
HDV	**Subtotal**	**350**	**100%**	**9%**	**0.4%**
Port	**Total**	**4,078**		**100%**	**4.1%**
SoCAB AQMP	**Total**	**98,772**			

Table 8.6: 2023 SO_x Emissions by Category and Percent Contribution

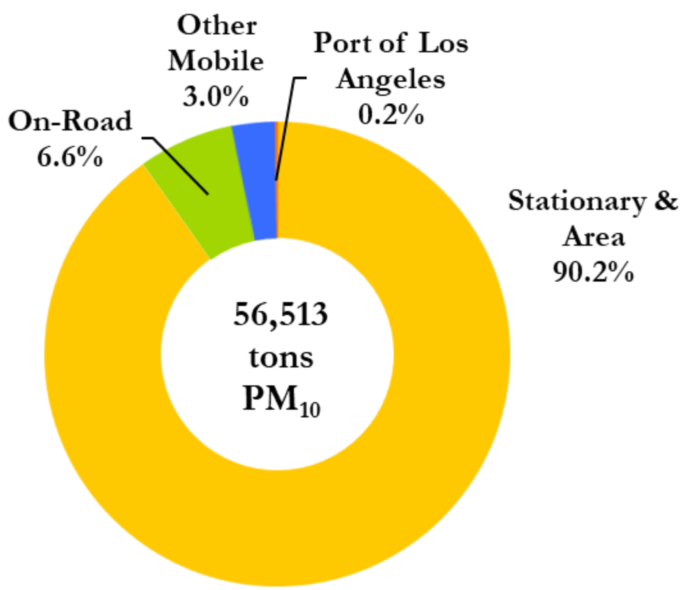
Category	Subcategory	SO_x	Percent SO_x Emissions of Total Category	Port	SoCAB AQMP
OGV	Auto carrier	1.6	2%	2%	0.0%
OGV	Bulk vessel	3.3	4%	4%	0.1%
OGV	Containership	37.8	50%	46%	0.7%
OGV	Cruise	15.0	20%	18%	0.3%
OGV	General cargo	2.6	3%	3%	0.0%
OGV	Other	0.0	0%	0%	0.0%
OGV	Reefer	1.6	2%	2%	0.0%
OGV	Tanker	13.8	18%	17%	0.3%
OGV	**Subtotal**	**76**	**100%**	**92%**	**1.4%**
Harbor Craft	Assist tug	0.1	16%	0%	0.0%
Harbor Craft	ATB and barge	0.1	14%	0%	0.0%
Harbor Craft	Harbor tug	0.0	6%	0%	0.0%
Harbor Craft	Commercial fishing	0.1	17%	0%	0.0%
Harbor Craft	Ferry	0.1	18%	0%	0.0%
Harbor Craft	Ocean tugboat	0.0	8%	0%	0.0%
Harbor Craft	Government	0.0	2%	0%	0.0%
Harbor Craft	Excursion	0.0	7%	0%	0.0%
Harbor Craft	Crewboat	0.0	7%	0%	0.0%
Harbor Craft	Work boat	0.0	5%	0%	0.0%
Harbor Craft	**Subtotal**	**0.5**	**100%**	**1%**	**0.0%**
CHE	RTG crane	0.1	8%	0%	0.0%
CHE	Forklift	0.0	1%	0%	0.0%
CHE	Top handler, side pick	0.5	33%	1%	0.0%
CHE	Other	0.2	13%	0%	0.0%
CHE	Yard tractor	0.7	45%	1%	0.0%
CHE	**Subtotal**	**2**	**100%**	**2%**	**0.0%**
Locomotives	Switching	0.1	8%	0%	0.0%
Locomotives	Line haul	0.6	92%	1%	0.0%
Locomotives	**Subtotal**	**1**	**100%**	**1%**	**0.0%**
HDV	On-Terminal	0.4	12%	0%	0.0%
HDV	On-Road	3.0	88%	4%	0.1%
HDV	**Subtotal**	**3**	**100%**	**4%**	**0.1%**
Port	**Total**	**82**		**100%**	**1.5%**
SoCAB AQMP	**Total**	**5,472**			

Table 8.7: 2023 CO_2e Emissions by Category and Percent Contribution

Category	Subcategory	CO_2e	Percent CO_2e Emissions of Total Category	Percent CO_2e Emissions of Total Port
OGV	Auto carrier	4,167	3%	1%
OGV	Bulk vessel	5,547	3%	1%
OGV	Containership	97,778	60%	13%
OGV	Cruise	25,333	15%	3%
OGV	General cargo	4,069	2%	1%
OGV	Other	24	0%	0%
OGV	Reefer	2,374	1%	0%
OGV	Tanker	24,761	15%	3%
OGV	**Subtotal**	**164,054**	**100%**	**21%**
Harbor Craft	Assist tug	8,467	16%	1%
Harbor Craft	ATB and barge	7,055	14%	1%
Harbor Craft	Harbor tug	3,094	6%	0%
Harbor Craft	Commercial fishing	8,674	17%	1%
Harbor Craft	Ferry	9,136	18%	1%
Harbor Craft	Ocean tugboat	4,373	8%	1%
Harbor Craft	Government	1,020	2%	0%
Harbor Craft	Excursion	3,491	7%	0%
Harbor Craft	Crewboat	3,855	7%	0%
Harbor Craft	Work boat	2,640	5%	0%
Harbor Craft	**Subtotal**	**51,805**	**100%**	**7%**
CHE	RTG crane	11,593	8%	1%
CHE	Forklift	2,337	2%	0%
CHE	Top handler, side pick	45,174	31%	6%
CHE	Other	18,263	13%	2%
CHE	Yard tractor	68,102	47%	9%
CHE	**Subtotal**	**145,469**	**100%**	**19%**
Locomotives	Switching	5,115	9%	1%
Locomotives	Line haul	50,293	91%	7%
Locomotives	**Subtotal**	**55,408**	**100%**	**7%**
HDV	On-Terminal	45,236	13%	6%
HDV	On-Road	311,365	87%	40%
HDV	**Subtotal**	**356,601**	**100%**	**46%**
Port	**Total**	**773,331**		**100%**

To place the maritime industry-related emissions into context, the following figures compare the Port's contributions to the total emissions in the South Coast Air Basin by major emission source category. The 2023 SoCAB emissions were based on the 2022 AQMP Appendix III,[59] except for the SoCAB on-road emission estimates which were updated to take into consideration EMFAC2021.[60] Thus, the 2023 SoCAB total emissions do not exactly match 2022 AQPM Appendix III values. It should be noted that neither the SoCAB nor the Port's on-road heavy-duty diesel PM_{10} and $PM_{2.5}$ emissions include brake and tire wear emissions. Due to rounding, the percentages may not total 100%.

Figure 8.1: 2023 PM_{10} Emissions in the South Coast Air Basin



[59] SCAQMD, *2022 AQMP Appendix III, Base & Future Year Emission Inventory*, adopted December 2022. Except on-road emissions based on EMFAC2014 are replaced with EMFAC2021 estimates. *www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan*

[60] CARB, *www.arb.ca.gov/emfac/*

Figure 8.2: 2023 $PM_{2.5}$ Emissions in the South Coast Air Basin

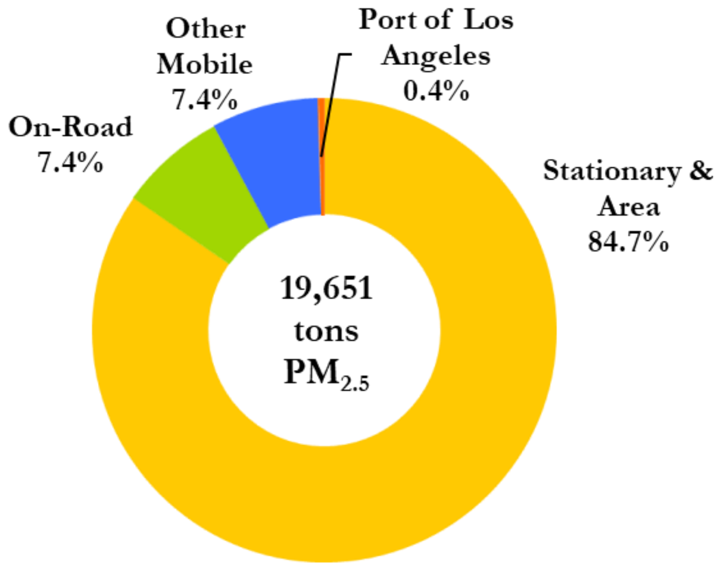


Figure 8.3: 2023 DPM Emissions in the South Coast Air Basin

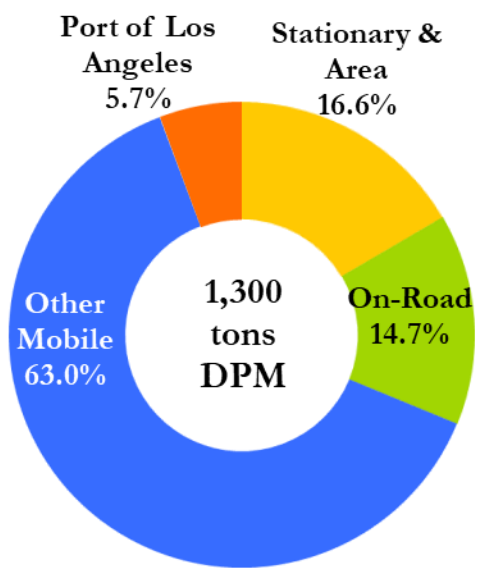


Figure 8.4: 2023 NO_x Emissions in the South Coast Air Basin

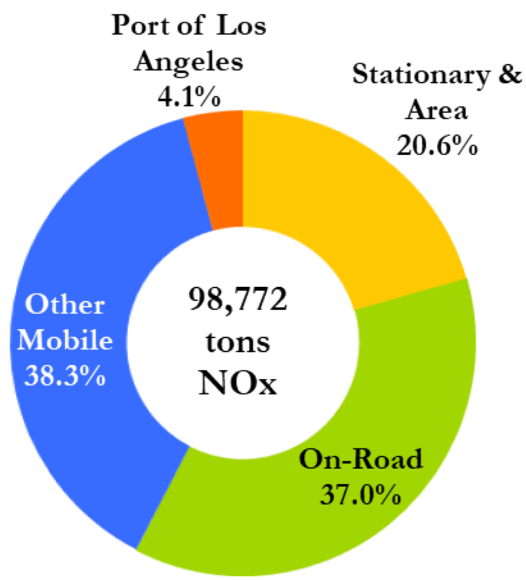
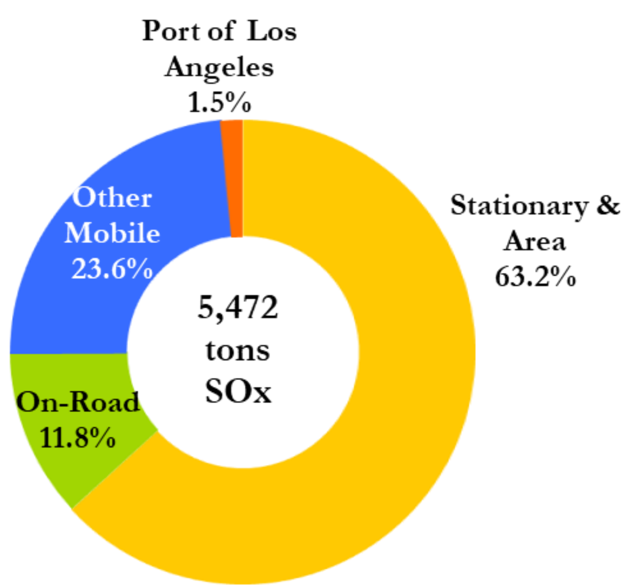


Figure 8.5: 2023 SO_x Emissions in the South Coast Air Basin



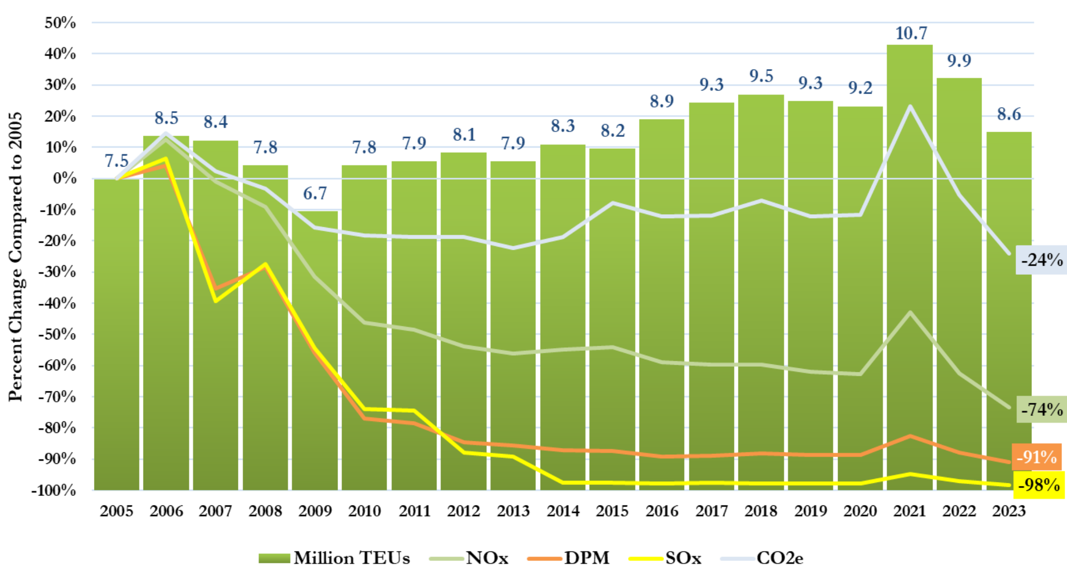
SECTION 9 COMPARISON OF 2023, 2005, 2017, AND PREVIOUS YEARS' FINDINGS AND EMISSIONS ESTIMATES

This section compares 2023 emissions to emissions in the previous year, 2017, and 2005, in terms of overall emissions and for each source category. Comparisons by emission source categories are addressed in separate subsections in table and chart formats, with the explanation of the findings and differences in emissions between years. The tables and charts in this section summarize the percent change from the previous year (2023 vs 2022), comparison to 2017 (2023 vs 2017) and for the CAAP Progress (2023 vs 2005) using the latest methodology. Table 9.1 presents the port-wide emissions comparison for 2023, 2022, 2017 and 2005. Figure 9.1 illustrates the emissions trend for 2005 to 2023. NO_X, DPM and SO_x have decreased significantly since 2005.

Table 9.1: Emissions Comparison

EI Year	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e tonnes
2023	90	83	75	4,078	82	1,377	285	773,331
2022	122	113	98	5,771	137	1,623	340	964,145
2017	113	104	91	6,222	113	1,597	343	895,848
2005	982	845	816	15,394	4,830	3,532	819	1,017,091
Previous Year (2022-2023)	**-26%**	**-26%**	**-24%**	**-29%**	**-40%**	**-15%**	**-16%**	**-20%**
2023 vs 2017	**-20%**	**-20%**	**-18%**	**-34%**	**-28%**	**-14%**	**-17%**	**-14%**
CAAP Progress (2005-2023	**-91%**	**-90%**	**-91%**	**-74%**	**-98%**	**-61%**	**-65%**	**-24%**

Figure 9.1: Emissions Trend



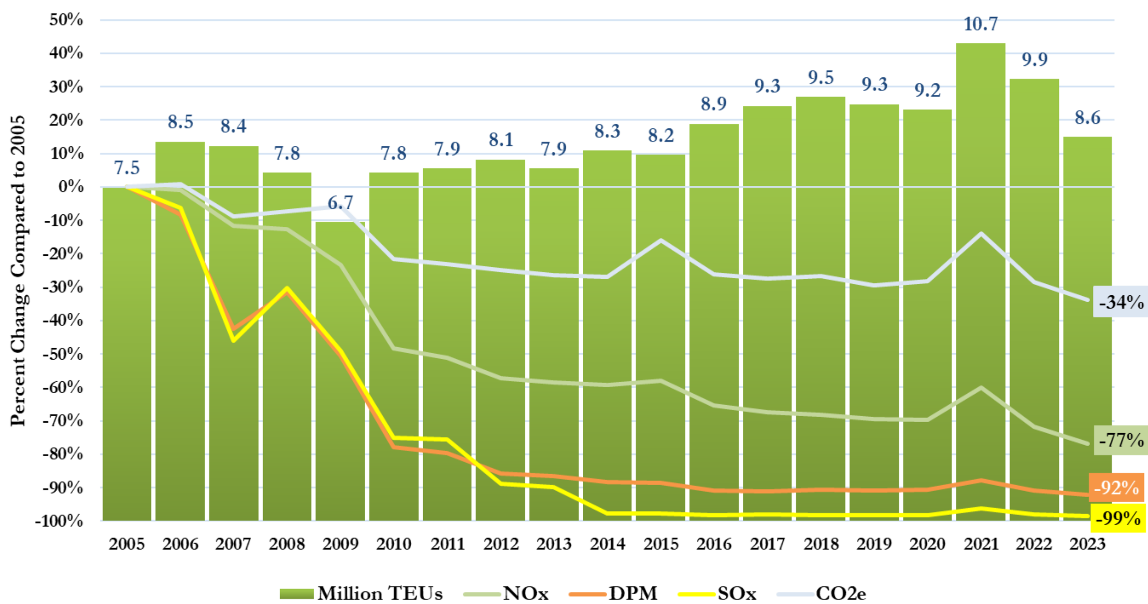
In order to measure progress of the various emission reduction goals, the Port has established metrics to track emissions per unit of work. Table 9.2 and Figure 9.2 show emissions efficiency as tons of emissions per 10,000 TEUs for total emissions. In Table 9.2, a positive percent change for the emissions efficiency comparison means an improvement in efficiency.

Table 9.2: Emissions Efficiency Metric, tons/10,000 TEUs

EI Year	PM_{10}	$PM_{2.5}$	DPM	NO_x	SO_x	CO	HC	CO_2e
2023	0.104	0.096	0.086	4.73	0.09	1.60	0.33	896
2022	0.123	0.114	0.099	5.82	0.14	1.64	0.34	973
2017	0.121	0.111	0.098	6.66	0.12	1.71	0.37	959
2005	1.313	1.129	1.090	20.57	6.45	4.72	1.09	1,359
Previous Year (2022-2023)	**15%**	**16%**	**13%**	**19%**	**36%**	**2%**	**3%**	**8%**
2023 vs 2017	**14%**	**14%**	**12%**	**29%**	**25%**	**6%**	**11%**	**7%**
CAAP Progress (2005-2023	**92%**	**92%**	**92%**	**77%**	**99%**	**66%**	**70%**	**34%**

In Figure 9.2, for illustrative purposes, a negative percent change shows the improvement from the baseline year.

Figure 9.2: Emissions Efficiency Trends



Ocean-Going Vessels

The main improvement for the OGV emissions methodology for 2023 is updating LNG emission factors to include pilot fuel (MGO) usage to estimate vessel emissions for vessels that used LNG fuel, adding methanol with pilot fuel emission factors for vessels that used methanol fuel, and updating the CAECS emissions calculation methodology. The emissions calculation methodology and the emission rates are described in Section 2 of the San Pedro Bay Ports Emissions Inventory Methodology Report Version 5.

The various emission reduction strategies implemented for ocean-going vessels are listed in Table 9.3. The table lists the percentage of all vessel calls that participated in the specific control strategy for 2023, the previous year, 2017, and 2005. The following OGV emission reductions strategies are listed:

- Shore Power[61] refers to vessel calls using shore power at berth, instead of running their fossil fuel-powered auxiliary engines.
- VSR[62] refers to the vessels reducing their transit speed to 12 knots or lower within 20 and 40 nm of the Port.
- ESI[63] refers to vessel calls that participated in the Ports' ESI program and used ship-specific low sulfur fuel, which in several cases contained sulfur levels below the regulated sulfur level of 0.1%, resulting in additional SO_x, PM, $PM_{2.5}$, and DPM benefit.
- Engine International Air Pollution Prevention (EIAPP) certificates refer to the vessel calls using ship-specific NO_x emission factors for main and auxiliary engines, where vessel specific EIAPP certificates with actual NO_x rating were available through the ESI program or the VBP.

Table 9.3: Participation Rates of OGV Emission Reduction Strategies

Year	Shore Power	VSR 20 nm	VSR 40 nm	ESI Fuel	EIAPP Main Eng	EIAPP Aux Eng
2023	59%	97%	93%	60%	70%	68%
2022	54%	96%	93%	54%	65%	62%
2017	44%	92%	84%	44%	63%	62%
2005	2%	65%	na	0%	5%	5%

DB ID1790

In 2023, in addition to the shore power calls listed in the table, an additional 67 vessel calls (3%) used the CARB approved emissions control strategies (CAECS) [64] to comply with the CARB At-Berth Regulation.

[61] POLA, *www.portoflosangeles.org/environment/air-quality/alternative-maritime-power-(amp)*
[62] POLA, *www.portoflosangeles.org/environment/air-quality/vessel-speed-reduction-program*
[63] POLA, *www.portoflosangeles.org/environment/air-quality/environmental-ship-index*
[64] CARB, *https://ww2.arb.ca.gov/berth-regulation-executive-orders*

Table 9.4 summarizes the percentage of calls with the main engine IMO NO_x standards tiers (Tier) for 2023, the previous year, 2017, and 2005. The "No Tier" column characterizes vessels that do not have diesel engines, such as steamships or cruise ships with gas turbines. Tier I refers to calls by vessels meeting or exceeding Tier I NO_x standards (vessels constructed from 2000-2010), Tier II refers to calls by vessels meeting or exceeding Tier II NO_x standards (vessels constructed from 2011-2015), and Tier III NO_x refers to calls by vessels meeting or exceeding the IMO's Tier III standards, which are in effect in the North American ECA for vessels constructed on or after January 1, 2016.

Table 9.4: OGV Percentage of Calls by Main Engine Tiers

Year	IMO Tier 0	IMO Tier I	IMO Tier II	IMO Tier III	No Tier
2023	4.2%	52.1%	37.0%	6.4%	0.3%
2022	5.6%	56.5%	30.3%	7.3%	0.4%
2017	10.3%	64.3%	21.1%	0.0%	4.4%
2005	58.5%	37.3%	0.0%	0.0%	4.1%

DB ID1789

Table 9.5 presents OGV activity by engine type in terms of total energy consumption (expressed as kWh). In 2023, total energy consumption is lower than all prior years compared.

Main engine activity has decreased since 2005 mainly due to the VSR program and fewer vessel calls. Total energy consumption is 38% lower in 2023 as compared to 2022 due to fewer overall vessel calls, fewer vessels at anchorage and less time spent at berth and anchorage.

Table 9.5: OGV Energy Consumption Comparison, kWh

Year	All Engines Total kWh	Main Eng Total kWh	Aux Eng Total kWh	Boiler Total kWh
2023	203,863,590	48,421,796	88,208,383	67,233,411
2022	329,555,300	51,115,457	170,702,655	107,189,743
2017	264,084,382	75,840,371	98,089,880	89,710,683
2005	369,055,813	106,193,773	186,871,089	75,990,951
Previous Year (2022-2023)	**-38%**	**-5%**	**-48%**	**-37%**
2023 vs 2017	**-23%**	**-36%**	**-10%**	**-25%**
CAAP Progress (2005-2023)	**-45%**	**-54%**	**-53%**	**-12%**

Table 9.6 compares the OGV emissions for calendar years 2023, 2022, 2017, and 2005. Reductions in OGV emissions since 2005 are mainly attributed to CARB marine fuel regulation, use of shore power, and the Port's Vessel Speed Reduction (VSR) and ESI-based incentive programs. The 2023 emissions are lower (25% to 42%) compared to 2022 primarily

due to vessel activity at anchorage returning to normal for the entire year, a smaller number of vessel arrivals at berth and anchorage and less vessels awaiting time at berth in 2023 as compared to 2022. Compared to the previous year there were 26% fewer anchorage calls, 5% more shore power calls, and less time total time spent at berth. There were fewer vessels calls in 2023, and cargo TEU throughput decreased by 13% from 2022. In particular, there were fewer cruise and tanker vessel calls. The 2023 emissions are lower compared to 2017 due to fewer vessel calls, increase in shore power, the Port's Environmental Ship Index (ESI) Incentive Program, Vessel Speed Reduction (VSR) compliance, and newer vessels. The 2023 emission are lower compared to 2005 due to fewer vessel calls, fuel switching, shore power, the Port's Environmental Ship Index (ESI) Incentive Program, Vessel Speed Reduction (VSR) compliance, and newer vessels. In 2023, except for ten alternatively fueled vessels, all engines for OGVs continued to use fuel with 0.1% sulfur or lower. The CARB At-Berth Regulation (i.e., shore power) was also in effect.

Table 9.6: OGV Emissions Comparison

EI Year	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e tonnes
2023	41	38	27	2,258	76	213	106	164,054
2022	65	60	43	3,384	130	325	142	261,539
2017	52	48	33	3,083	106	256	126	212,490
2005	601	482	435	5,220	4,673	424	209	280,386
Previous Year (2022-2023)	**-37%**	**-37%**	**-37%**	**-33%**	**-42%**	**-35%**	**-25%**	**-37%**
2023 vs 2017	**-22%**	**-22%**	**-16%**	**-27%**	**-29%**	**-17%**	**-16%**	**-23%**
CAAP Progress (2005-2023)	**-93%**	**-92%**	**-94%**	**-57%**	**-98%**	**-50%**	**-49%**	**-41%**

DB ID692

Table 9.7 shows the emissions efficiency changes between 2023, the previous year, 2017, and 2005. A positive percent change for the emissions efficiency comparison means an improvement in efficiency.

Table 9.7: OGV Emissions Efficiency Metric Comparison, tons/10,000 TEUs

EI Year	PM_{10}	$PM_{2.5}$	DPM	NO_x	SO_x	CO	HC	CO_2e
2023	0.05	0.04	0.03	2.62	0.09	0.25	0.12	190
2022	0.07	0.06	0.04	3.41	0.13	0.33	0.14	264
2017	0.06	0.05	0.03	3.30	0.11	0.27	0.13	228
2005	0.80	0.64	0.58	6.97	6.24	0.57	0.28	375
Previous Year (2022-2023)	**29%**	**33%**	**25%**	**23%**	**31%**	**24%**	**14%**	**28%**
2023 vs 2017	**17%**	**20%**	**0%**	**21%**	**18%**	**7%**	**8%**	**16%**
CAAP Progress (2005-2023)	**94%**	**94%**	**95%**	**62%**	**99%**	**56%**	**57%**	**49%**

The overall calls and time spent at berth decreased in 2023 as compared to 2022 for both anchorage and berth. Figure 9.3 shows the count of containership activities at anchorage through the years for the Port. In 2023, the containership activity at anchorage is lower than the previous year. Figure 9.4 shows the average number of days containerships spent at anchorage. In 2023, the average was 1.2 days stay. The fewer containerships waiting for a berth and lower time at anchorage and berth contributed to lower NO_x emissions at anchorage, as well as overall lower vessel and port wide emissions in 2023.

Figure 9.3: Containership Number of Anchorage Calls Trend

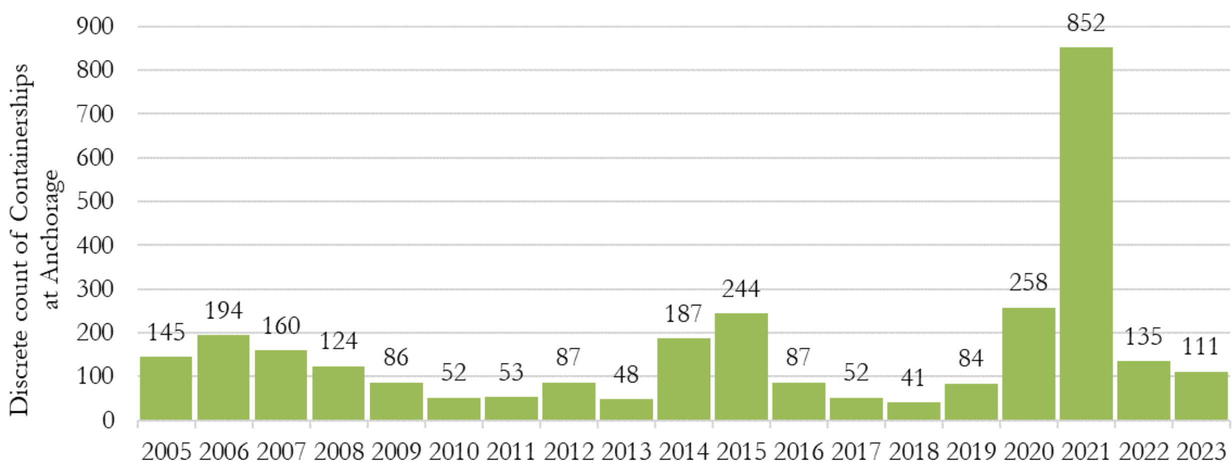
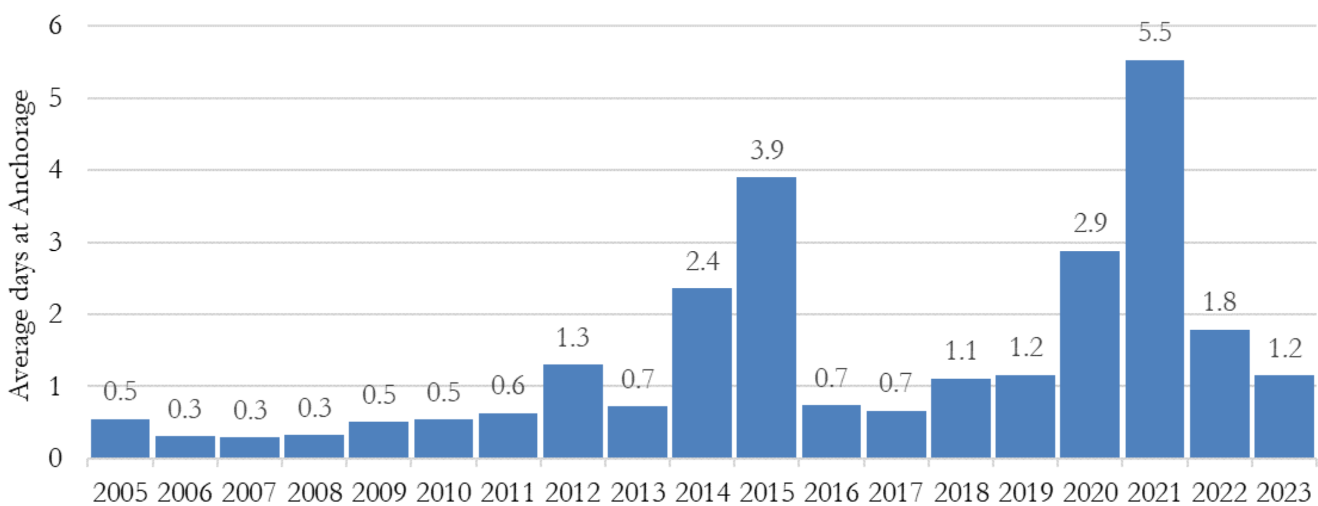


Figure 9.4: Containership Average Days at Anchorage Trend



In 2023, there were overall 42% fewer shifts than in 2022. For containerships, there were 29% less shifts in 2023 than in 2022.

Table 9.8: 2022-2023 Shifts Comparison

Vessel Type	2022 Shift	2023 Shift	2022-2023 Change
Containership	312	221	-29%
Tanker	395	240	-39%
Cruise	45	3	-93%
Bulk Carrier	221	67	-70%
General cargo	75	60	-20%
Other	59	46	-22%
Total	**1,107**	**637**	**-42%**

Harbor Craft

The emissions calculation methodology used to estimate harbor craft emissions for the 2022 inventory is similar to previous years and includes the latest factors per CARB's latest methodology. Table 9.9 summarizes the percent distribution of engines based on EPA's engine standards by Tier. Tier 0 engines are unregulated engines built prior to the promulgation of the EPA emission standards. The population of Tier 0 engines is primarily made up of ATBs of which individual vessels vary from year to year since most are not home ported in the San Pedro Bay complex. The percentages in the "unknown" column represent engines missing model year, horsepower, or both.

Table 9.9: Harbor Craft Engine Distribution Comparison by Tier

Year	Tier 0	Tier 1	Tier 2	Tier 3	Tier 4	Unknown
2023	9%	3%	25%	41%	5%	16%
2022	10%	4%	25%	42%	5%	14%
2017	4%	7%	41%	29%	0%	19%
2005	16%	28%	3%	0%	0%	53%

Table 9.10 summarizes the number of harbor craft inventoried for 2023, 2022, 2017 and 2005. The commercial fishing vessels home berthed at the Port continues to decline in count which is the main factor for lower vessel counts in 2023 than prior years.

Table 9.10: Harbor Craft Count Comparison

Harbor Vessel Type	2023	2022	2017	2005
Assist tug	11	16	14	16
ATB	17	13	2	na
Commercial fishing	78	84	120	156
Crew boat	22	20	24	14
Excursion	21	25	25	24
Ferry	8	8	8	7
Government	13	13	11	26
Ocean tug	6	6	7	7
Tugboat	22	20	18	21
Work boat	12	10	10	14
Total	**210**	**215**	**239**	**285**

Table 9.11 summarizes the overall harbor craft activity in million kWh by vessel type, which increased 7% in 2023 as compared to the previous year. Compared to 2005, the harbor craft activity increased by 23%. Assist tugs and commercial fishing activity decreased in 2023 as compared to the previous year, while the other vessels had increased

Table 9.11: Harbor Craft Activity by Vessel Type, million kWh

Vessel Type	2023	2022	2021	2017	2005
Assist Tug	12.6	15.0	15.5	12.7	13.8
ATB	9.4	4.9	5.3	0.4	2.8
ATB barge engines	0.9	0.5	0.7	0.2	0.1
Commercial Fishing	12.6	13.5	15.1	16.5	14.1
Crew boat	5.6	4.9	6.5	5.4	1.8
Excursion	5.1	4.1	4.1	5.5	8.2
Ferry	13.8	12.2	11.0	10.8	9.3
Government	1.5	1.3	1.3	1.4	2.0
Ocean Tug	6.5	6.5	7.5	12.3	2.4
Tugboat	4.5	4.6	3.9	1.4	6.5
Work boat	3.9	3.9	3.8	2.6	1.4
Total	**76.5**	**71.4**	**74.9**	**69.4**	**62.2**

Figure 9.5 illustrates the harbor craft energy consumption (kWh) comparison by engine tier for calendar years 2023, 2022, 2017 and 2005.

Figure 9.5: Distribution of Harbor Craft Energy Consumption by Engine Type, %

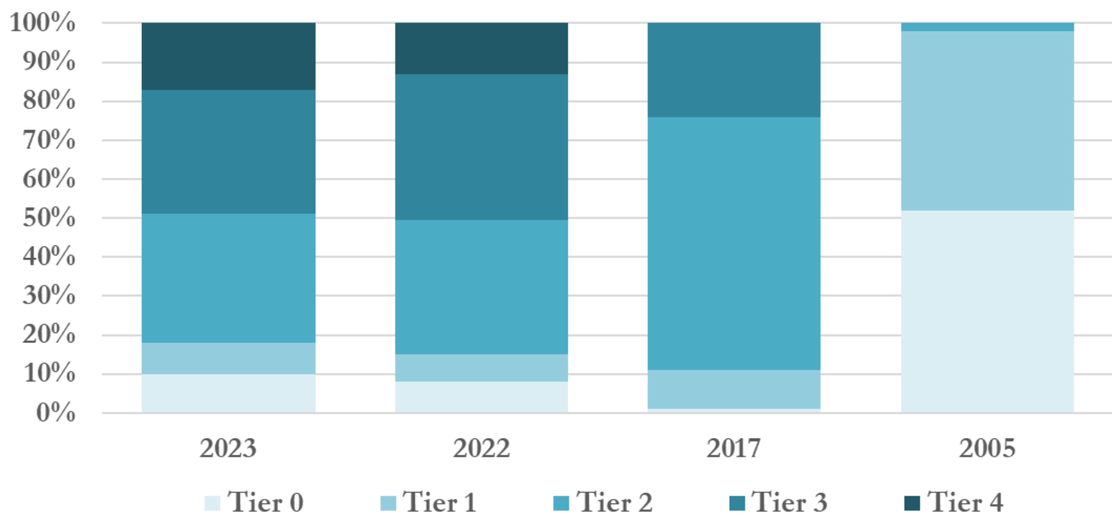


Table 9.12 shows the emissions comparisons for calendar years 2023, 2022, 2017, and 2005 for harbor craft. In 2023, emissions decreased for PM and NO_x emissions as compared to the previous year mainly due to the use of renewable diesel for the first time. Although the use of renewable diesel fuel reduces CO, hydrocarbons and CO_2 emissions, there is a slight increase for these pollutants due to the increase in harbor craft activity. The SO_x emissions increase is similar to the increase in activity. CO and hydrocarbon were not impacted significantly by the use of renewable diesel as the PM and NO_x emissions.

Table 9.12: Harbor Craft Emission Comparison

Year	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e tonnes
2023	11	10	11	482	0.5	96	27	51,808
2022	13	13	13	498	0.5	100	25	50,811
2017	11	10	11	521	0.5	91	21	49,900
2005	33	32	33	706	4.1	209	49	44,996
Previous Year (2022-2023)	**-20%**	**-20%**	**-20%**	**-3%**	**7%**	**-4%**	**6%**	**2%**
2023 vs 2017	**-1%**	**1%**	**-1%**	**-8%**	**9%**	**5%**	**28%**	**4%**
CAAP Progress (2005-2023)	**-68%**	**-68%**	**-68%**	**-32%**	**-88%**	**-54%**	**-45%**	**15%**

DB ID427

Table 9.13 shows the emissions efficiency changes in 2023 as compared to the previous year and 2005. It should be noted that total harbor craft emissions were used for this efficiency comparison although emissions from several harbor craft types (e.g., commercial fishing vessels) are not dependent on container throughput. A positive percent for the emissions efficiency comparison means an improvement in efficiency.

Table 9.13: Harbor Craft Emissions Efficiency Metric Comparison, tons/10,000 TEUs

Year	PM_{10}	$PM_{2.5}$	DPM	NO_x	SO_x	CO	HC	CO_2e
2023	0.01	0.01	0.01	0.56	0.0006	0.11	0.03	60
2022	0.01	0.01	0.01	0.50	0.0005	0.10	0.03	51
2017	0.01	0.01	0.01	0.56	0.0005	0.10	0.02	53
2005	0.04	0.04	0.04	0.94	0.0055	0.28	0.07	60
Previous Year (2022-2023)	**7%**	**8%**	**7%**	**-11%**	**-20%**	**-10%**	**-19%**	**-17%**
2023 vs 2017	**-8%**	**-9%**	**-8%**	**0%**	**-20%**	**-13%**	**-35%**	**-12%**
CAAP Progress (2005-2023)	**70%**	**72%**	**70%**	**41%**	**89%**	**60%**	**52%**	**0%**

Cargo Handling Equipment

The methodology used to estimate CHE emissions for the 2023 inventory remained the same as the previous year. The emissions calculation methodology and the emission rates are described in Section 4 of the San Pedro Bay Ports Emissions Inventory Methodology Report Version 5.

Table 9.14 shows that the number of units of cargo handling equipment increased by 13% with the overall energy consumption decreased by 14% in 2023 as compared to the previous year. There was more fossil fueled and electric equipment in 2023 than the previous year, but due to decrease in TEU cargo throughput, the fossil fueled equipment worked less in 2023.

Energy consumption is measured as total kWh, the product of the rated engine size in kW, annual operating hours, and load factors for the fossil fueled equipment.

From 2005 to 2023, equipment count was 22% higher, with a 12% increase in activity level to handle the 15% increase in TEU throughput.

Table 9.14: CHE Count and Activity Comparison

Year	Count	Energy Consumption kWh	TEUs	Activity (kWh) per TEU
2023	2,174	193,257,472	8,629,681	22.4
2022	1,932	224,291,814	9,911,159	22.6
2017	2,213	222,085,376	9,343,193	23.8
2005	1,782	173,108,402	7,484,624	23.1
Previous Year (2022-2023)	**13%**	**-14%**	**-13%**	**-1%**
2023 vs 2017	**-2%**	**-13%**	**-8%**	**-6%**
CAAP Progress (2005-2023)	**22%**	**12%**	**15%**	**-3%**

Table 9.15 summarizes the numbers of cargo handling equipment using various engine and power types, including electric, LNG, diesel, propane, and gasoline. Compared to the previous year, the equipment counts remained relatively the same. Hybrid RTG cranes and straddle carriers are included in the diesel count.

Table 9.15: Count of CHE Equipment Type

Equipment	Electric	LNG	Propane	Gasoline	Diesel	Total
2023						
Forklift	65	0	168	6	101	340
Wharf crane	88	0	0	0	0	88
RTG crane	0	0	0	0	105	105
Straddle carrier	0	0	0	0	160	160
Top handler	2	0	0	0	205	207
Yard tractor	11	22	207	0	841	1,081
Other	38	0	0	4	151	193
Total	**204**	**22**	**375**	**10**	**1,563**	**2,174**
	9.4%	**1.0%**	**17.2%**	**0.5%**	**71.9%**	
2022						
Forklift	33	0	176	6	96	311
Wharf crane	87	0	0	0	0	87
RTG crane	0	0	0	0	101	101
Straddle carrier	0	0	0	0	110	110
Top handler	2	0	0	0	215	217
Yard tractor	5	22	127	0	769	923
Other	37	0	1	4	141	183
Total	**164**	**22**	**304**	**10**	**1,432**	**1,932**
	8.5%	**1.1%**	**15.7%**	**0.5%**	**74.1%**	
2017						
Forklift	8	0	379	7	117	511
Wharf crane	84	0	0	0	0	84
RTG crane	0	0	0	0	102	102
Straddle carrier	0	0	0	0	40	40
Top handler	0	0	0	0	217	217
Yard tractor	0	17	180	0	845	1,042
Other	57	0	1	5	130	193
Total	**149**	**17**	**560**	**12**	**1,451**	**2,189**
	6.8%	**0.8%**	**25.6%**	**0.5%**	**66.3%**	
2005						
Forklift	0	0	263	8	151	422
Wharf crane	67	0	0	0	0	67
RTG crane	0	0	0	0	98	98
Straddle carrier	0	0	0	0	0	0
Top handler	0	0	0	0	127	127
Yard tractor	0	0	53	0	848	901
Other	12	0	0	3	152	167
Total	**79**	**0**	**316**	**11**	**1,376**	**1,782**
	4.4%	**0.0%**	**17.7%**	**0.6%**	**77.2%**	

DB ID235

Table 9.16 summarizes the number and percentage of diesel-powered CHE with various emission controls by equipment type in 2023, the previous year, and 2005. The emission controls for CHE include:

- Hybrid equipment
- On-road engines (CHE equipped with on-road certified engines instead of off-road engines)
- DPF retrofits
- ULSD with a maximum sulfur content of 15 ppm
- Renewable diesel
- ULSD with a maximum sulfur content of 15 ppm

For 2023, container terminals continued to switch to renewable diesel as it became more widely available.

Table 9.16: Count of CHE Diesel Equipment Emissions Control Matrix

Equipment	Hybrid	On-Road Engines	DPF Retrofit	ULSD Fuel	Renewable Diesel	Total Diesel Equipment	% of Diesel Powered Equipment: Hybrid	On-Road Engines	DPF Retrofit	ULSD Fuel	Renewable Diesel
2023											
Forklift	0	0	23	27	74	101	0%	0%	23%	27%	73%
RTG crane	19	0	22	42	63	105	18%	0%	21%	40%	60%
Straddle carrier	132	0	0	0	160	160	83%	0%	0%	0%	100%
Top handler	0	0	51	66	139	205	0%	0%	25%	32%	68%
Yard tractor	0	617	4	220	621	841	0%	73%	0%	26%	74%
Sweeper	0	0	0	1	5	6	0%	0%	0%	17%	83%
Other	0	13	29	92	53	145	0%	9%	20%	63%	37%
Total	**151**	**630**	**129**	**448**	**1,115**	**1,563**	**10%**	**40%**	**8%**	**29%**	**71%**
2022											
Forklift	0	0	23	27	69	96	0%	0%	24%	28%	72%
RTG crane	15	0	22	38	63	101	15%	0%	22%	38%	62%
Straddle carrier	82	0	0	0	110	110	75%	0%	0%	0%	100%
Top handler	0	0	57	67	148	215	0%	0%	27%	31%	69%
Yard tractor	0	646	4	206	563	769	0%	84%	1%	27%	73%
Sweeper	0	0	1	1	5	6	0%	0%	17%	17%	83%
Other	0	13	32	79	56	135	0%	10%	24%	59%	41%
Total	**97**	**659**	**139**	**418**	**1,014**	**1,432**	**7%**	**46%**	**10%**	**29%**	**71%**
2017											
Forklift	0	0	50	117	0	117	0%	0%	43%	100%	0%
RTG crane	6	0	14	102	0	102	6%	0%	14%	100%	0%
Straddle carrier	12	0	0	40	0	40	30%	0%	0%	100%	0%
Top handler	0	0	102	217	0	217	0%	0%	47%	100%	0%
Yard tractor	0	795	4	845	0	845	0%	94%	0%	100%	0%
Sweeper	0	0	2	5	0	5	0%	0%	40%	100%	0%
Other	0	13	43	125	0	125	0%	10%	34%	100%	0%
Total	**18**	**808**	**215**	**1,451**	**0**	**1,451**	**1%**	**56%**	**15%**	**100%**	**0%**
2005											
Forklift	0	0	0	27	0	151	2%	0%	0%	18%	0%
RTG crane	0	0	0	36	0	98	0%	0%	0%	37%	0%
Straddle carrier	0	0	0	16	0	41	34%	0%	0%	39%	0%
Top handler	0	0	0	79	0	127	38%	0%	0%	62%	0%
Yard tractor	0	164	0	483	0	848	61%	19%	0%	57%	0%
Sweeper	0	0	0	0	0	8	0%	0%	0%	0%	0%
Other	0	1	0	65	0	103	0%	1%	0%	63%	0%
Total	**0**	**165**	**0**	**706**	**0**	**1,376**	**43%**	**12%**	**0%**	**51%**	**0%**

Table 9.17 compares the total number of cargo handling equipment with off-road diesel engines (meeting Tier 0, 1, 2, 3, 4i, and 4f off-road diesel engine standards) and those equipped with on-road diesel engines for 2022, 2021, and 2005. Since classification of engine standards are based on the engine's model year and horsepower, equipment with missing horsepower or model year information were listed separately under the "Unknown Tier" column in this table. The unknown tier accounts for 2% of diesel equipment in 2023.

Implementation of the CAAP's CHE measure and CARB's CHE regulation have resulted in a steady increase in the prevalence of newer and cleaner equipment (i.e., primarily Tier 4f and on-road engines) replacing the older and higher-emitting equipment (Tier 0 to Tier 3). In 2023, the number of Tier 4 engines increased from the previous year.

Table 9.17: Count of CHE Diesel Engine Tier and On-road Engine

Year	Tier 0	Tier 1	Tier 2	Tier 3	Tier 4i	Tier 4f	On-road Engine	Unknown Tier	Total Diesel Engines
2023	7	7	67	74	162	582	630	34	1,563
2022	7	8	72	79	160	418	659	29	1,432
2017	16	29	106	138	144	215	808	19	1,475
2005	256	582	360	0	0	0	165	13	1,376
Previous Year	**0%**	**-13%**	**-7%**	**-6%**	**1%**	**39%**	**-4%**	**17%**	**9%**
2023 vs 2017	**-56%**	**-76%**	**-37%**	**-46%**	**13%**	**171%**	**-22%**	**79%**	**6%**
CAAP Progress	**-97%**	**-99%**	**-81%**	**100%**	**100%**	**100%**	**282%**	**162%**	**14%**

DB ID878

Figure 9.6 illustrates the distribution of equipment energy consumption (kWh) comparison by engine type.

Figure 9.6: Distribution of CHE Energy Consumption by Engine Type, %

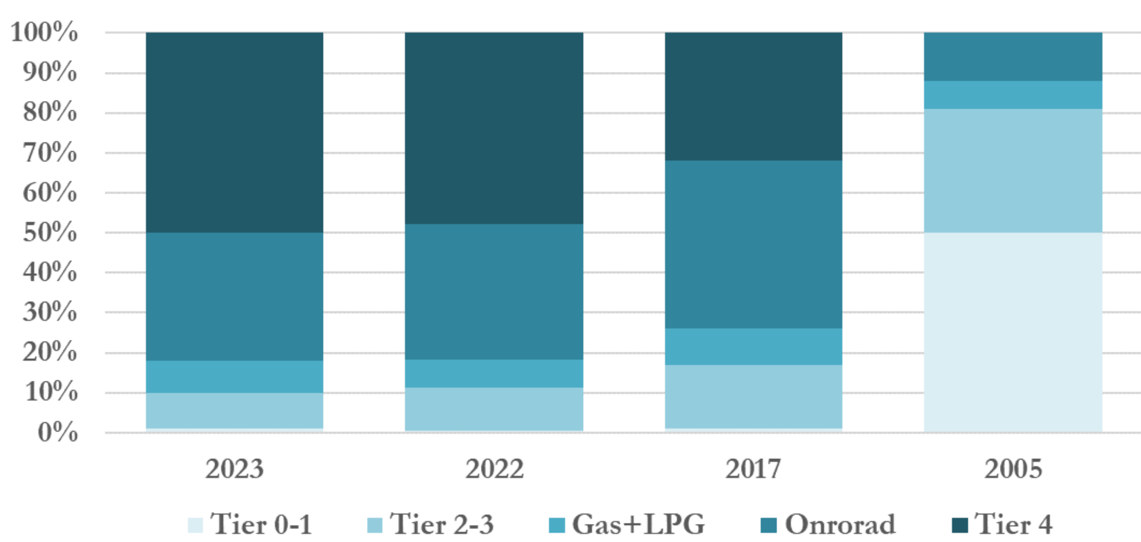


Table 9.18 shows the cargo handling equipment emissions comparisons for 2023, the previous year, 2017 and 2005. Compared to the previous year, emissions were lower due to less activity as a result of the decrease in TEU throughput.

The reductions in 2023 emissions compared to 2005 emissions are largely due to the implementation of the Port's CHE measures and CARB's CHE regulation aimed at lowering criteria pollutants. The efforts resulted in the introduction of newer equipment with cleaner engines and the installation of emission controls. The increase in CO_2e is mainly due to the 12% increase in energy consumption in 2023 as compared to 2005.

Table 9.18: CHE Emissions Comparison

Year	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e tonnes
2023	10.1	9.4	8.8	329.0	1.6	623.8	78.9	145,461
2022	12.1	11.3	10.8	416.5	1.9	667.1	87.7	170,409
2017	12.9	12.0	11.2	543.3	1.9	782.5	86.8	172,964
2005	43.6	40.2	42.6	1,449.1	9.4	797.4	103.6	134,630
Previous Year (2022-2023)	**-17%**	**-17%**	**-19%**	**-21%**	**-15%**	**-6%**	**-10%**	**-15%**
2023 vs 2017	**-22%**	**-22%**	**-21%**	**-39%**	**-13%**	**-20%**	**-9%**	**-16%**
CAAP Progress (2005-2023)	**-77%**	**-77%**	**-79%**	**-77%**	**-83%**	**-22%**	**-24%**	**8%**

DB ID237

Table 9.19 shows the emissions efficiency changes in 2023 from 2005, 2017 and the previous year. A positive percentage change for the emissions efficiency comparison means an improvement in efficiency with respect to a particular pollutant.

Table 9.19: CHE Emissions Efficiency Metric Comparison, tons/10,000 TEUs

Year	PM_{10}	$PM_{2.5}$	DPM	NO_x	SO_x	CO	HC	CO_2e
2023	0.012	0.011	0.010	0.381	0.002	0.723	0.091	169
2022	0.012	0.011	0.011	0.420	0.002	0.673	0.088	172
2017	0.014	0.013	0.012	0.582	0.002	0.838	0.093	185
2005	0.058	0.054	0.057	1.936	0.013	1.065	0.138	180
Previous Year (2022-2023)	**5%**	**5%**	**7%**	**9%**	**0%**	**-7%**	**-3%**	**2%**
2023 vs 2017	**15%**	**15%**	**15%**	**35%**	**0%**	**14%**	**2%**	**9%**
CAAP Progress (2005-2023)	**80%**	**80%**	**82%**	**80%**	**85%**	**32%**	**34%**	**6%**

Locomotives

The methodology used to estimate locomotive emissions is the same as that used in the previous year inventory. The emissions calculation methodology and the emission rates are described in Section 5 of the San Pedro Bay Ports Emissions Inventory Methodology Report Version 5.

Table 9.20 shows the throughput and locomotive activity for 2023, the previous year, 2017 and 2005.

Table 9.20: Throughput Comparison, million TEUs

Throughput	2005	2017	2022	2023
Total	7.48	9.34	9.91	8.63
On-dock lifts	1.02	1.25	1.20	1.06
On-dock TEUs	1.84	2.26	2.16	1.91
% On-Dock	25%	24%	22%	22%

Table 9.21 shows the locomotive emission estimates for calendar years 2023, 2022, 2017, and 2005.

Table 9.21: Locomotive Emission Comparison

Year	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e tonne
2023	24	23	24	659	0.7	159	38	55,408
2022	26	24	26	717	0.7	175	41	61,145
2017	30	27	30	839	0.8	208	45	73,346
2005	57	53	57	1,712	98.0	237	89	82,201
Previous Year (2022-2023)	**-7%**	**-6%**	**-7%**	**-8%**	**4%**	**-9%**	**-7%**	**-9%**
2023 vs 2017	**-18%**	**-16%**	**-18%**	**-21%**	**-12%**	**-24%**	**-15%**	**-24%**
CAAP Progress (2005-2023)	**-57%**	**-58%**	**-57%**	**-61%**	**-99%**	**-33%**	**-57%**	**-33%**

DB ID428

Compared to 2005, the decrease in emissions were due to PHL's and UP's fleet turnover to ultra-low emissions switching locomotives, the use of ULSD, the Class 1 railroads' compliance with the MOU, and introduction of newer locomotives. CO_2e emissions have been reduced since 2005 despite the increase in rail throughput through the freight movement efficiency improvements implemented by the railroads and terminals.

The decreases in emissions from 2022 to 2023 and 2017 to 2023 are due to a decrease in the throughput of the Intermodal Container Transfer Facility (ICTF) and the use of renewable diesel by PHL switching locomotives for the first time in 2023.

Table 9.22 shows the emissions efficiency changes in 2023 from the previous year, 2017, and 2005. A positive percentage for the emissions efficiency comparison indicates an improvement in efficiency. For locomotive emissions efficiency, the on-dock lifts were used as opposed to TEU throughput, since this is a more direct way to measure efficiency for the locomotives. For the CAAP progress (2023 vs. 2005) and comparison to 2017 (2023 vs. 2017), emissions efficiencies have improved for all pollutants.

Table 9.22: Locomotive Emissions Efficiency Comparison, tons/10,000 on-dock lifts

Year	PM_{10}	$PM_{2.5}$	DPM	NO_x	SO_x	CO	HC	CO_2e
2023	0.23	0.21	0.23	6.22	0.01	1.50	0.36	522
2022	0.22	0.20	0.22	5.98	0.01	1.46	0.34	510
2017	0.24	0.21	0.24	6.69	0.01	1.66	0.36	585
2005	0.56	0.52	0.56	16.75	0.96	2.32	0.87	804
Previous Year (2022-2023)	**-5%**	**-6%**	**-5%**	**-4%**	**-17%**	**-3%**	**-5%**	**-3%**
2023 vs 2017	**3%**	**1%**	**3%**	**7%**	**-17%**	**10%**	**0%**	**11%**
CAAP Progress (2005-2023)	**59%**	**59%**	**59%**	**63%**	**99%**	**35%**	**59%**	**35%**

Heavy-Duty Vehicles

The methodology used to estimate HDV emissions in this 2023 inventory is the same as the methodology used in the previous year inventory. The latest version of CARB's emission estimating model, EMFAC2021, has been used for the 2023 estimates. The emissions calculation methodology and the emission rates are described in Section 6 of the San Pedro Bay Ports Emissions Inventory Methodology Report Version 5.

Table 9.23 shows the total port-wide idling time based on an improved source of data regarding the time spent by trucks while on terminal (turn time) which, as noted previously, relates to time that may not solely be time spent idling. Total idling decreased 23% as compared to the previous year. The 48% increase in idling since 2005 may be due in part to the 15% increase in TEU throughput, which resulted in more truck trips, in addition to improved and more accurate data sources. Continued improvement in data sources may provide more information regarding actual on-terminal idling times (as opposed to turn times).

Table 9.23: HDV Idling Time Comparison, hours

EI Year	**Total Idling Time (hours)**
2023	4,464,751
2022	5,800,510
2017	3,373,541
2005	3,017,252
Previous Year (2022-2023)	**-23%**
Comparison to 2017	**32%**
CAAP Progress (2005-2023)	**48%**

Emissions from the HDV source category continue to be far lower than in 2005 due largely to the following factors affecting the overall age of the truck fleet.

- Newer fleet of trucks due to the CTP[65] and CARB Advanced Clean Fleets Regulation[66]. As of 2023, trucks accessing the ports must be model year 2010 or newer per the CARB Regulation. As part of CTP, new trucks entering service at the Port must be model year 2014 or newer. As of 2023, 86% of calls were made by trucks of model year 2014 and newer, reflecting the removal of pre-2010 trucks from service and their replacement with newer trucks.
- The terminals optimized their gate systems and they use radio frequency identification (RFID) readers to identify trucks complying with the CTP provisions, which helped reduce idling time.
- Terminal automation installed by one terminal reduces wait times and limits turn times compared with traditional terminal operations.

The CTP and engine emission standards are responsible for most of the reductions, including the particulate and NO_x decreases, while sulfur fuel standards, specifically the introduction of ultra-low sulfur diesel fuel (ULSD), are responsible for the SO_x reduction.

[65] *https://www.portoflosangeles.org/environment/air-quality/clean-truck-program*
[66] *https://ww2.arb.ca.gov/resources/fact-sheets/advanced-clean-fleets-regulation-detailed-drayage-truck-requirements*

Figure 9.7 illustrates the HDV model year distribution for the calendar years 2020 to 2023. It shows model year 2016 trucks is the dominant model year.

Figure 9.7: HDV Model Year Distribution

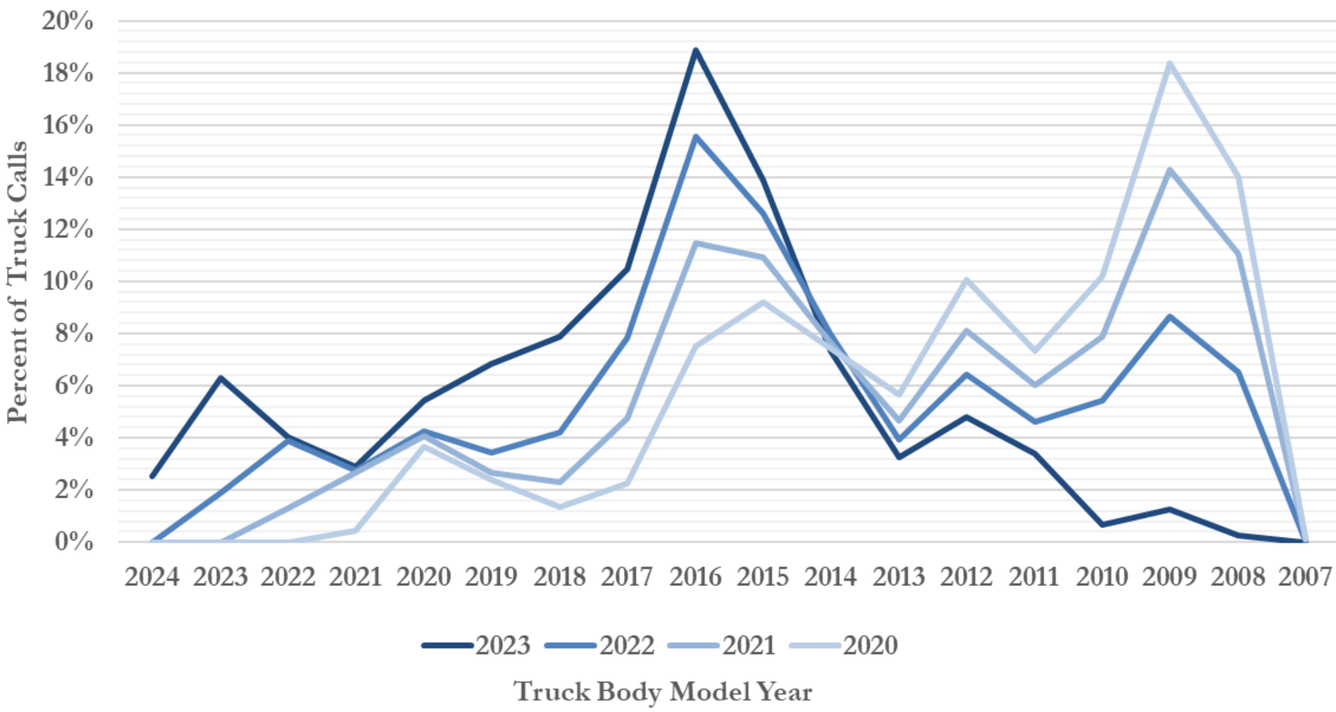


Table 9.24 summarizes the average age of the truck fleet in 2023, the previous year, 2017, and 2005. The average age of the trucks visiting the Port is six years in 2023. The share of mileage driven by 2014 and newer model year trucks increased from 16% in 2017 and 64% in 2022 to 86% in 2023, significantly reducing emissions of NO_x and other pollutants.

Table 9.24: HDV Fleet Weighted Average Age and Latest Model Year, years

Calendar Year	Call-Weighted Average Age (years)	Truck calls 2014 & newer (%)
2005	11	0%
2017	5	16%
2022	7	64%
2023	6	86%

Figure 9.8 illustrates the distribution of truck calls by model year comparison showing how the 2014 and newer trucks have increased since 2017.

Figure 9.8: Distribution of Truck Calls by Model Year, %

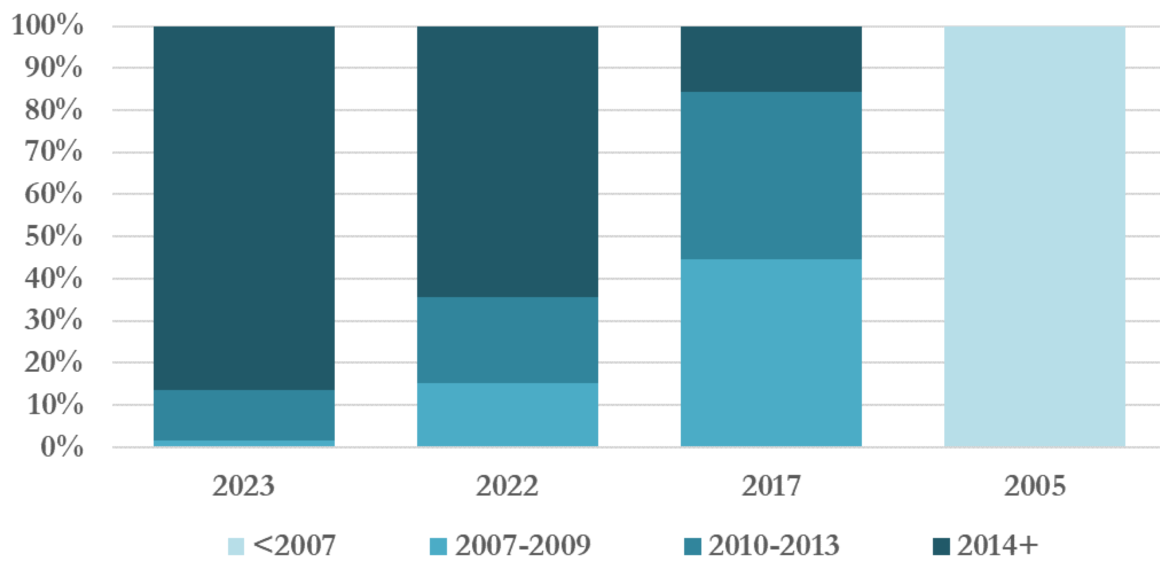


Table 9.25 summarizes the HDV emissions for 2023, the previous year, 2017, and 2005. The HDV emissions of all pollutants have decreased significantly from 2005 largely due to increasingly stringent on-road engine emission standards and the implementation of the CTP. Emissions are lower in 2023 compared to 2022 due to lower throughput and the continued fleet turnover which lowered the fleet composite emission factors, especially of PM and NO_x.

Table 9.25: HDV Emissions Comparison

Year	VMT	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e tonnes
2023	205,369,478	3.4	3.2	3.3	350	3.4	285	35	356,601
2022	234,650,169	5.0	4.8	5.0	756	4.0	355	44	420,243
2017	220,325,276	7.0	6.7	7.0	1,236	3.7	260	64	387,148
2005	266,434,761	248	238	248	6,307	44.9	1,865	368	474,877
Previous Year	**-12%**	**-32%**	**-33%**	**-33%**	**-54%**	**-15%**	**-20%**	**-20%**	**-15%**
2017-2023	**-7%**	**-52%**	**-52%**	**-53%**	**-72%**	**-9%**	**10%**	**-46%**	**-8%**
CAAP Progress	**-23%**	**-99%**	**-99%**	**-99%**	**-94%**	**-93%**	**-85%**	**-91%**	**-25%**

As an overall measure of the changes in HDV emissions independent of fluctuations in throughput, Table 9.26 illustrates the changes in emissions in average grams per mile (g/mi) between 2023 and prior years. The unit of grams per mile was used because it shows the changes in emissions independent of variations in throughput, which can complicate the comparisons. The values were calculated by dividing overall HDV emissions by overall miles traveled and include idling emissions, as well as emissions from driving at various speeds, on-terminal and on-road. Particulate emissions have been reduced most dramatically from 2005 to 2023, followed by the other pollutants. The CTP and engine emission standards are responsible for most reductions, including the particulate and NO_x decreases, while fuel sulfur standards, specifically the introduction of ultra-low sulfur diesel fuel (ULSD), are responsible for the SO_x reduction.

Table 9.26: HDV Fleet Average Emissions, g/mile

Year	PM_{10}	$PM_{2.5}$	DPM	NO_x	SO_x	CO	HC	CO_2e
2023	0.0149	0.0142	0.0147	1.5450	0.0149	1.2598	0.1540	1,575
2022	0.0192	0.0184	0.0191	2.9215	0.0153	1.3720	0.1685	1,625
2017	0.0289	0.0277	0.0288	5.0906	0.0152	1.0695	0.2652	1,594
2005	0.8457	0.8091	0.8457	21.476	0.1529	6.3487	1.2536	1,782
Previous Year	**-23%**	**-23%**	**-23%**	**-47%**	**-3%**	**-8%**	**-9%**	**-3%**
2017-2023	**-49%**	**-49%**	**-49%**	**-70%**	**-2%**	**18%**	**-42%**	**-1%**
CAAP Progress	**-98%**	**-98%**	**-98%**	**-93%**	**-90%**	**-80%**	**-88%**	**-12%**

Table 9.27 shows the emissions efficiency changes for HDVs. A positive percentage for the emissions efficiency comparison means an improvement in efficiency. HDV emissions efficiency has improved for most pollutants. Emissions of CO and hydrocarbon are not strongly affected by new-model standards that reduce emissions of other pollutants, and they can also vary widely by speed, so differences in average speeds between years can affect the comparisons of CO and HC.

Table 9.27: HDV Emissions Efficiency Metrics Comparison, tons/10,000 TEUs

Year	PM_{10}	$PM_{2.5}$	DPM	NO_x	SO_x	CO	HC	CO_2e
2023	0.0039	0.0037	0.0039	0.405	0.004	0.33	0.04	413
2022	0.0050	0.0048	0.0050	0.763	0.004	0.36	0.04	424
2017	0.0075	0.0072	0.0075	1.324	0.004	0.28	0.07	415
2005	0.3318	0.3175	0.3318	8.427	0.060	2.49	0.49	634
Previous Year	**22%**	**23%**	**22%**	**47%**	**0%**	**8%**	**0%**	**3%**
2017-2023	**33%**	**33%**	**33%**	**42%**	**0%**	**-29%**	**43%**	**-2%**
CAAP Progress	**99%**	**99%**	**99%**	**95%**	**93%**	**87%**	**92%**	**35%**

CAAP Standards and Progress

One of the main purposes of the annual inventories is to provide a progress update on achieving the CAAP's San Pedro Bay Standards. These standards consist of the following emission reduction goals, compared to the 2005 inventories:

- Emission Reduction Standard:
  - By 2023, achieve emission reductions of 77% for DPM, 59% for NO_x, and 93% for SO_x
- Health Risk Reduction Standard: 85% reduction by 2020

Due to the many emission reduction measures undertaken by the Port, as well as statewide and federal regulations and standards, the 2023 emission reduction standards were met and surpassed in 2023 for DPM, NO_x, and SO_x. Table 9.28 is a summary of DPM, NO_x, and SO_x percent reductions as compared to the 2023 emission reduction standards.

Table 9.28: Reductions as Compared to 2023 Emission Reduction Standard

Pollutant	2023 Actual Reductions	2023 Emission Reduction Standard
DPM	-91%	77%
NO_x	-74%	59%
SO_x	-98%	93%

Tables 9.29 through 9.31 show the standardized estimates of DPM, NO_x, and SO_x emissions by source category for calendar years 2023, the previous year, and 2005 using current year methodology. The tables also present the percent reduction of emissions from 2005 levels.

Table 9.29: DPM Emissions Comparison by Source Category, tons

Category	2005	2022	2023
Ocean-going vessels	435	43	27
Harbor Craft	33	13	11
Cargo handling equipment	43	11	9
Locomotives	57	26	24
Heavy-duty vehicles	248	5	3
Total	**816**	**98**	**75**
Emission Reduction, %		**-88%**	**-91%**

The tables present the percent reduction of emissions from 2005 levels for 2022 and 2023. For NO_x emissions, there was a 73% reduction from baseline 2005 in 2023 and a large improvement from the previous year.

Table 9.30: NO_x Emissions Comparison by Source Category, tons

Category	2005	2022	2023
Ocean-going vessels	5,220	3,384	2,258
Harbor Craft	706	498	482
Cargo handling equipment	1,449	416	329
Locomotives	1,712	717	659
Heavy-duty vehicles	6,307	756	350
Total	**15,394**	**5,771**	**4,078**
Emission Reduction, %		**-63%**	**-74%**

Table 9.31: SO_x Emissions Comparison by Source Category, tons

Category	2005	2022	2023
Ocean-going vessels	4,673	130	76
Harbor Craft	4	0	1
Cargo handling equipment	9	2	2
Locomotives	98	1	1
Heavy-duty vehicles	45	4	3
Total	**4,830**	**137**	**82**
Emission Reduction, %		**-97%**	**-98%**

APPENDIX A: CHE Inventory

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	Engine Year	HP	Annual Hours	Category	DPF level 2	DPF level 3	Blue Cat	Renewable Diesel T0-T3	Renewable Diesel T4
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0		CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	2301	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	2381	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	2221	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	2307	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	1961	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	2347	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	2150	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	2027	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	1631	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	1338	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	1998	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	2196	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	2062	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	2216	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	1928	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	961	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	2361	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	2467	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	2491	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	2402	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	2527	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	2366	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	2421	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	2315	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	2869	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	2150	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 5.0	Electric				0	1992	CHE Electric					
Automatic Stacking Crane	Kalmar	ASC 5.0	Electric				0	1586	CHE Electric					
Bulldozer	Caterpillar	D8T	Diesel	Caterpillar	C15	2006	310	0	CHE Diesel					
Bulldozer	Caterpillar	D6R	Diesel	Caterpillar	C9	2007	200	143	CHE Diesel		5/15/2011			
Bulldozer	Caterpillar	D6R	Diesel	Caterpillar	C9	2007	200	313	CHE Diesel		5/7/2015			
Cone Vehicle	MEC	IBZ	Diesel	Kubota	D1105E	2013	25	391	CHE Diesel					
Cone Vehicle	MEC	IBZ	Diesel	Kubota	D1105E	2013	25	29	CHE Diesel					
Cone Vehicle	MEC	IBZ	Diesel	Kubota	D1105E	2013	25	135	CHE Diesel					
Cone Vehicle	MEC	IBZ	Diesel	Kubota	D1105E	2013	25	0	CHE Diesel					
Cone Vehicle	MEC	IBZ	Diesel	Kubota	D1105E	2013	25	417	CHE Diesel					
Cone Vehicle	MEC	IBZ	Diesel	Kubota	D1105E	2013	25	86	CHE Diesel					
Cone Vehicle	MEC	IBZ MKII	Diesel	Kubota	D1105EF	2015	25	80	CHE Diesel					
Cone Vehicle	Motrec	RR662SD	Diesel			2010	35		CHE Diesel					12/31/2020
Cone Vehicle	Motrec	RR662SD	Diesel			2010	35		CHE Diesel					12/31/2020
Cone Vehicle	Motrec	RR662SD	Diesel			2010	35		CHE Diesel					12/31/2020
Cone Vehicle	Motrec	RR662SD	Diesel			2014	35		CHE Diesel					6/1/2021
Cone Vehicle	Motrec	RR662SD	Diesel			2014	35		CHE Diesel					6/1/2021
Cone Vehicle	Motrec	MX-700	Diesel			2022	15	844	CHE Diesel					1/1/2023
Cone Vehicle	Motrec	MX-700	Diesel			2022	15	844	CHE Diesel					1/1/2023
Cone Vehicle	Motrec	MX-700	Diesel			2022	15	844	CHE Diesel					1/1/2023
Cone Vehicle	Motrec	MX-700	Diesel			2022	15	844	CHE Diesel					1/1/2023
Cone Vehicle	Motrec	RR-662	Diesel	Kubota Corp	V1505-ET04	2015	35	0	CHE Diesel					4/1/2021
Cone Vehicle	Motrec	RR-662	Diesel	Kubota Corp	V1505-ET04	2015	35	0	CHE Diesel					4/1/2021
Cone Vehicle	Motrec	RR-662	Diesel	Kubota Corp	V1505-ET04	2015	35	306	CHE Diesel					4/1/2021
Cone Vehicle	Motrec	RR-662	Diesel	Kubota Corp	V1505-ET04	2015	35	330	CHE Diesel					4/1/2021
Cone Vehicle	Motrec	RR-662	Diesel	Kubota Corp	V1505-ET04	2015	35	0	CHE Diesel					4/1/2021
Cone Vehicle	Motrec	RR-662	Diesel	Kubota Corp	V1505-ET04	2015	35	39	CHE Diesel					4/1/2021
Cone Vehicle	Motrec	RR-662	Diesel	Kubota Corp	V1505-ET04	2015	35	217	CHE Diesel					4/1/2021
Cone Vehicle	Motrec	RR-662	Diesel	Kubota Corp	V1505-ET04	2015	35	120	CHE Diesel					4/1/2021
Cone Vehicle	MOTREC	MX-700	Diesel	Kubota	D902-EF01	2021	25	1692	CHE Diesel					
Cone Vehicle	MOTREC	MX-700	Diesel	Kubota	D902-EF01	2021	25	1619	CHE Diesel					
Cone Vehicle	MOTREC	MX-700	Diesel	Kubota	D902-EF01	2021	25	1403	CHE Diesel					
Cone Vehicle	MOTREC	MX-700	Diesel	Kubota	D902-EF01	2021	25	1534	CHE Diesel					
Cone Vehicle	MOTREC	MX-700	Diesel	Kubota	D902-EF01	2021	25	1768	CHE Diesel					
Cone Vehicle	MOTREC	MX-700	Diesel	Kubota	D902-EF01	2021	25	1559	CHE Diesel					
Crane	Grove	RT890E	Diesel	Cummins	QSB6.7	2012	300	903	CHE Diesel					
Crane	Manitowoc		Diesel	Cummins	B6.7	2021	336	37	CHE Diesel					
Crane	Tadano	GR900XL	Diesel	Cummins	QSB6.7	2016	367	73	CHE Diesel					
Crane	Grove	RT855B	Diesel	Caterpillar	3116	1995	205	197	CHE Diesel					
Crane	Liebherr	LHM550	Diesel	Liebherr	D9512A7-04	2014	751	1033	CHE Diesel					
Crane	Terex	RT550	Diesel	Cummins	6bta5.9	2003	174	234	CHE Diesel					
Crane	Terex	RT230	Diesel	Cummins	6BT5.9	2004	130	178	CHE Diesel					
Crane	Terex	RT230-2	Diesel	Cummins	6BT5.9	2014	130	141	CHE Diesel					
Crane	Paceco		Electric				0		CHE Electric					
Crane	Paceco		Electric				0		CHE Electric					
Crane	Paceco		Electric				0		CHE Electric					
Electric wharf crane	Noell		Electric				0	1724	CHE Electric					
Electric wharf crane	Noell		Electric				0	2108	CHE Electric					
Electric wharf crane	Noell		Electric				0	328	CHE Electric					
Electric wharf crane	Noell		Electric				0	2080	CHE Electric					
Electric wharf crane	Noell		Electric				0	1900	CHE Electric					
Electric wharf crane	ZPMC	J481A	Electric				0	2952	CHE Electric					
Electric wharf crane	ZPMC	J481A	Electric				0	3160	CHE Electric					
Electric wharf crane	ZPMC	J481A	Electric				0	2796	CHE Electric					
Electric wharf crane	ZPMC	J481A	Electric				0	3976	CHE Electric					
Electric wharf crane	ZPMC	ZP-10020000148	Electric				0	4184	CHE Electric					
Electric wharf crane	ZPMC	ZP-10020000149	Electric				0	4014	CHE Electric					
Electric wharf crane	ZPMC	ZP-10020000150	Electric				0	3796	CHE Electric					
Electric wharf crane	ZPMC	ZP-10020000151	Electric				0	3648	CHE Electric					
Electric wharf crane	ZPMC	ZP-10020000151	Electric				0	508	CHE Electric					
Electric wharf crane	ZPMC	ZP-10020000151	Electric				0	610	CHE Electric					
Electric wharf crane	ZPMC	ZP-10020000151	Electric				0	1650	CHE Electric					
Electric wharf crane	ZPMC	ZP-10020000151	Electric				0	1426	CHE Electric					
Electric wharf crane	Mitsui/Paceco		Electric				0	2984	CHE Electric					
Electric wharf crane	Mitsui/Paceco		Electric				0	2808	CHE Electric					
Electric wharf crane	Mitsubishi	60T	Electric				0	1017	CHE Electric					
Electric wharf crane	Mitsubishi	60T	Electric				0	1100	CHE Electric					
Electric wharf crane	Mitsubishi	50T	Electric				0	1647	CHE Electric					
Electric wharf crane	Mitsubishi	50T	Electric				0	3084	CHE Electric					
Electric wharf crane	Mitsui/Paceco	70T	Electric				0	2805	CHE Electric					
Electric wharf crane	Mitsui/Paceco	70T	Electric				0	3102	CHE Electric					
Electric wharf crane	Mitsui/Paceco	70T	Electric				0	3435	CHE Electric					

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	Engine Year	HP	Annual Hours	Category	DPF level 2	DPF level 3	Blue Cat	Renewable Diesel T0-T3	Renewable Diesel T4
Electric wharf crane	Mitsui/Paceco	70T	Electric				0	3241	CHE Electric					
Electric wharf crane	Paceco		Electric				0		CHE Electric					
Electric wharf crane	Paceco		Electric				0		CHE Electric					
Electric wharf crane	Paceco		Electric				0		CHE Electric					
Electric wharf crane	Paceco		Electric				0		CHE Electric					
Electric wharf crane	Paceco		Electric				0		CHE Electric					
Electric wharf crane	Paceco		Electric				0		CHE Electric					
Electric wharf crane	Paceco		Electric				0		CHE Electric					
Electric wharf crane	Paceco		Electric				0		CHE Electric					
Electric wharf crane	Paceco		Electric				0		CHE Electric					
Electric wharf crane	Paceco		Electric				0		CHE Electric					
Electric wharf crane			Electric				0	139	CHE Electric					
Electric wharf crane			Electric				0	567	CHE Electric					
Electric wharf crane			Electric				0	640	CHE Electric					
Electric wharf crane			Electric				0	0	CHE Electric					
Electric wharf crane			Electric				0	0	CHE Electric					
Electric wharf crane			Electric				0	0	CHE Electric					
Electric wharf crane			Electric				0	0	CHE Electric					
Electric wharf crane			Electric				0	0	CHE Electric					
Electric wharf crane			Electric				0	0	CHE Electric					
Electric wharf crane			Electric				0	0	CHE Electric					
Electric wharf crane			Electric				0	0	CHE Electric					
Electric wharf crane			Electric				0	0	CHE Electric					
Electric wharf crane			Electric				0	0	CHE Electric					
Electric wharf crane			Electric				0	0	CHE Electric					
Electric wharf crane			Electric				0	0	CHE Electric					
Electric wharf crane			Electric				0	0	CHE Electric					
Electric wharf crane			Electric				0	0	CHE Electric					
Electric wharf crane			Electric				0	0	CHE Electric					
Electric wharf crane			Electric				0	0	CHE Electric					
Electric wharf crane	ZPMC		Electric				0	3084	CHE Electric					
Electric wharf crane	ZPMC		Electric				0	4267	CHE Electric					
Electric wharf crane	ZPMC		Electric				0	4211	CHE Electric					
Electric wharf crane	ZPMC		Electric				0	3989	CHE Electric					
Electric wharf crane	ZPMC		Electric				0	2885	CHE Electric					
Electric wharf crane	Noell		Electric				0	3943	CHE Electric					
Electric wharf crane	Noell		Electric				0	3410	CHE Electric					
Electric wharf crane	Noell		Electric				0	2165	CHE Electric					
Electric wharf crane	Noell		Electric				0	3014	CHE Electric					
Electric wharf crane	Noell		Electric				0	3284	CHE Electric					
Electric wharf crane	Noell		Electric				0	2892	CHE Electric					
Electric wharf crane	Noell		Electric				0	2271	CHE Electric					
Electric wharf crane	Noell		Electric				0	3125	CHE Electric					
Electric wharf crane	Noell		Electric				0	2845	CHE Electric					
Electric wharf crane	Noell		Electric				0	3130	CHE Electric					
Electric wharf crane	ZPMC		Electric				0	2076	CHE Electric					
Electric wharf crane	ZPMC		Electric				0	2426	CHE Electric					
Electric wharf crane	ZPMC		Electric				0	2467	CHE Electric					
Electric wharf crane	ZPMC		Electric				0	3015	CHE Electric					
Electric wharf crane			Electric				0	2078	CHE Electric					
Electric wharf crane	ZPMC	J111A00-8	Electric				0	14	CHE Electric					
Electric wharf crane	ZPMC	J111A00-9	Electric				0	313	CHE Electric					
Electric wharf crane	ZPMC	ZP-2073-10	Electric				0	1328	CHE Electric					
Electric wharf crane	ZPMC	ZP-2073-11	Electric				0	1947	CHE Electric					
Electric wharf crane	ZPMC	ZP-2073-12	Electric				0	2194	CHE Electric					
Electric wharf crane			Electric				0	2259	CHE Electric					
Electric wharf crane			Electric				0	2264	CHE Electric					
Electric wharf crane			Electric				0	0	CHE Electric					
Electric wharf crane			Electric				0	0	CHE Electric					
Electric wharf crane			Electric				0	0	CHE Electric					
Electric wharf crane			Electric				0	0	CHE Electric					
Electric wharf crane			Electric				0	0	CHE Electric					
Forklift	Taylor	TX550RC	Diesel	Cummins	QSB6.7	2012	220	147	CHE Diesel					12/31/2021
Forklift	Taylor	TX550RC	Diesel	Cummins	QSB6.7	2012	220	11	CHE Diesel					12/31/2021
Forklift	Taylor	TX550RC	Diesel	Cummins	QSB6.7	2012	220	60	CHE Diesel					12/31/2021
Forklift	Taylor	TX550RC	Diesel	Cummins	QSB6.7	2012	220	109	CHE Diesel					12/31/2021
Forklift	Taylor	TX550RC	Diesel	Cummins	QSB6.7	2012	220	60	CHE Diesel					12/31/2021
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2013	173	220	CHE Diesel					11/1/2022
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2013	173	138	CHE Diesel					11/1/2022
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2013	173	53	CHE Diesel					11/1/2022
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2013	173	35	CHE Diesel					11/1/2022
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2013	173	257	CHE Diesel					11/1/2022
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2013	173	128	CHE Diesel					11/1/2022
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2013	173	0	CHE Diesel					11/1/2022
Forklift	Taylor	TE800L	Diesel	Cummins		2018	330	98	CHE Diesel					6/1/2021
Forklift	Hyster	P360	Diesel	Cummins	QSB6.7	2016	164	5179	CHE Diesel					6/1/2021
Forklift	Hyster	P360	Diesel	Cummins	QSB6.7	2016	164	558	CHE Diesel					6/1/2021
Forklift	Hyster	P360	Diesel	Cummins	QSB6.7	2018	164	2104	CHE Diesel					6/1/2021
Forklift	Hyster	P360	Diesel	Cummins	QSB6.7	2018	164	1813	CHE Diesel					6/1/2021
Forklift	Hyster	P360	Diesel	Cummins	QSB6.7	2018	164	597	CHE Diesel					6/1/2021
Forklift	Hyster	P360	Diesel	Cummins	QSB6.7	2018	164	552	CHE Diesel					6/1/2021
Forklift	Kalmar	15T	Diesel	Cummins	QSB 6.7	2007	220	61	CHE Diesel		5/4/2012		12/31/2021	
Forklift	Capacity	TJ7000	Diesel	Cummins	QSC8.3L	2007	230	68	CHE Diesel		1/1/2009		12/31/2021	
Forklift	Capacity	TJ7000	Diesel	Cummins	QSB6.7	2008	220	66	CHE Diesel		3/1/2010		12/31/2021	
Forklift	Capacity	TJ7000	Diesel	Cummins	QSB6.7	2008	220	127	CHE Diesel		3/1/2010		12/31/2021	
Forklift	Kalmar	15T	Diesel	Cummins	QSB 6.7	2007	220	88	CHE Diesel					11/1/2022
Forklift			Diesel			2012		484	CHE Diesel					11/1/2022
Forklift			Diesel	Cummins		2015		346	CHE Diesel					11/1/2022
Forklift			Diesel	Cummins		2015		822	CHE Diesel					11/1/2022
Forklift			Diesel	Cummins		2015		927	CHE Diesel					11/1/2022
Forklift	Hyundai		Diesel	Cummins		2017		98	CHE Diesel					11/1/2022
Forklift	Taylor		Diesel			2019		789	CHE Diesel					11/1/2022
Forklift	Taylor		Diesel			2019		717	CHE Diesel					11/1/2022
Forklift			Diesel			2020		427	CHE Diesel					1/1/2023
Forklift			Diesel			2017		326	CHE Diesel					1/1/2023
Forklift			Diesel			2016		248	CHE Diesel					1/1/2023
Forklift			Diesel			2017		292	CHE Diesel					1/1/2023
Forklift	Kalmar	DCE-150-6	Diesel	Cummins	QSB6.7	2008	173	72	CHE Diesel		1/21/2015		12/31/2021	
Forklift	Kalmar	DCE-150-6	Diesel	Cummins	QSB6.7	2008	173	38	CHE Diesel		1/23/2015		12/31/2021	

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	Engine Year	HP	Annual Hours	Category	DPF level 2	DPF level 3	Blue Cat	Renewable Diesel T0-T3	Renewable Diesel T4
Forklift	Kalmar	DCE-150-6	Diesel	Cummins	QSB6.7	2008	173	79	CHE Diesel		3/12/2015		12/31/2021	
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2011	160	305	CHE Diesel		7/17/2015		12/31/2021	
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2011	160	338	CHE Diesel		7/21/2015		12/31/2021	
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2011	160	271	CHE Diesel		7/23/2015		12/31/2021	
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2011	160	34	CHE Diesel		7/24/2015		12/31/2021	
Forklift	Kalmar	DCD250	Diesel	Cummins	QSB6.7	2008	260	26	CHE Diesel		2/5/2016		12/31/2021	
Forklift	Kalmar	DCF500-12	Diesel	Cummins	QSM11	2008	350	405	CHE Diesel		4/8/2016		12/31/2021	
Forklift	Kalmar	DCE90-6L	Diesel	Perkins	S6S	2004	114	64	CHE Diesel		7/31/2014		12/31/2021	
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2014	173	546	CHE Diesel					11/1/2022
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2014	173	173	CHE Diesel					11/1/2022
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2014	173	271	CHE Diesel					11/1/2022
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2014	173	525	CHE Diesel					11/1/2022
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2014	173	365	CHE Diesel					11/1/2022
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2014	173	427	CHE Diesel					11/1/2022
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2014	173	293	CHE Diesel					11/1/2022
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2014	173	402	CHE Diesel					11/1/2022
Forklift	Taylor	XH350L	Diesel	Cummins	QSB6.7	2017	173	399	CHE Diesel					11/1/2022
Forklift	Taylor	XH350L	Diesel	Cummins	QSB6.7	2017	173	330	CHE Diesel					11/1/2022
Forklift	Taylor	XH350L	Diesel	Cummins	QSB6.7	2021	173	105	CHE Diesel					11/1/2022
Forklift	Taylor	XH350L	Diesel	Cummins	QSB6.7	2021	173	57	CHE Diesel					11/1/2022
Forklift	Taylor	TX1700L	Diesel	Cummins	QSL-9	2013	230	223	CHE Diesel					11/1/2022
Forklift	Taylor	TX1700L	Diesel	Cummins	QSL-9	2013	230	282	CHE Diesel					11/1/2022
Forklift	Taylor	TX1700L	Diesel	Cummins	QSL-9	2013	230	282	CHE Diesel					11/1/2022
Forklift	Kalmar	DCD370-12	Diesel	Volvo	TAD1170VE	2014	319	51	CHE Diesel					11/1/2022
Forklift	Kalmar	DCD370-12	Diesel	Cummins	QSM11	2004	330	6	CHE Diesel				11/1/2022	
Forklift	Kalmar	DCF500-12	Diesel	Volvo	TAD1360VE	2013	348	464	CHE Diesel					11/1/2022
Forklift	Taylor	X1000RC	Diesel	Volvo	TAD1371VE	2014	388	217	CHE Diesel					11/1/2022
Forklift	Taylor	X1000RC	Diesel	Volvo	TAD1371VE	2014	388	235	CHE Diesel					11/1/2022
Forklift	Taylor	TX550RC	Diesel	Cummins	QSB6.7	2023	252	76	CHE Diesel					1/1/2023
Forklift	Taylor	TX550RC	Diesel	Cummins	QSB6.7	2023	252	58	CHE Diesel					1/1/2023
Forklift	Taylor	TX550RC	Diesel	Cummins	QSB6.7	2023	252	27	CHE Diesel					1/1/2023
Forklift	Hyster	H50FT	Diesel	YANMAR	3.3L	2014	165	230	CHE Diesel					
Forklift	Taylor	TX360L	Diesel	Cummins	5.9	2007	137	81	CHE Diesel		5/13/2013			
Forklift	Taylor	TX360L	Diesel	Cummins	5.9	2007	137	105	CHE Diesel		3/12/2014			
Forklift	Yale	GDP360EBECCV1	Diesel			2009		245	CHE Diesel		8/13/2013			
Forklift	Taylor	TH350L	Diesel	Cummins	5.9	2004	190	1050	CHE Diesel		1/15/2014			
Forklift	Taylor	TH350L	Diesel	Cummins	5.9	2004	152	875	CHE Diesel		8/18/2014			
Forklift	Taylor	TH350L	Diesel	Cummins	5.9	2005	152	1827	CHE Diesel		2/21/2013			
Forklift	Taylor	TH350L	Diesel	Cummins	5.9	2005	152	1202	CHE Diesel		8/14/2014			
Forklift	Hoist	P36	Diesel	Hyster	P360	2007	160	116	CHE Diesel		1/1/2012		12/31/2021	
Forklift	Taylor	TE650	Diesel			2015	210	256	CHE Diesel					10/1/2022
Forklift	Kone	SMV16-600B	Diesel	Kone	SMV 16-1600B	2011	248	451	CHE Diesel					10/1/2022
Forklift	Kone	SMV16-600B	Diesel	Kone	SMV 16-1600B	2011	248	1092	CHE Diesel					10/1/2022
Forklift	Hyster	H250HD2	Diesel	Hyster	H250HD2	2015		245	CHE Diesel					10/1/2022
Forklift	Hyster	H250HD2	Diesel	Hyster	H250HD2	2015		1611	CHE Diesel					10/1/2022
Forklift	Taylor	TX360L	Diesel	Cummins	QSB 6.7	2012	173	1745	CHE Diesel					
Forklift	Fantuzzi	FDC180/1600	Diesel	Caterpillar	Tier 4i C4.4	2014	174	772	CHE Diesel					
Forklift	Fantuzzi	FDC180/1600	Diesel	Caterpillar	Tier 4i C4.4	2014	174	2501	CHE Diesel					
Forklift	Taylor	TX360L	Diesel	Cummins	QSB 6.7	2015	173	532	CHE Diesel					
Forklift	Clark	C50sD	Diesel	Deutz	TD 3.6 L4	2015	56	261	CHE Diesel					
Forklift	Clark	C50sD	Diesel	Deutz	TD 3.6 L4	2015	56	231	CHE Diesel					
Forklift	Clark	C50sD	Diesel	Deutz	TD 3.6 L4	2015	56	96	CHE Diesel					
Forklift	Clark	C50sD	Diesel	Deutz	TD 3.6 L4	2015	56	124	CHE Diesel					
Forklift	Clark	C50sD	Diesel	Deutz	TD 3.6 L4	2015	56	261	CHE Diesel					
Forklift	Clark	C50sD	Diesel	Deutz	TD 3.6 L4	2015	56	310	CHE Diesel					
Forklift	Clark	C50sD	Diesel	Deutz	TD 3.6 L4	2015	56	277	CHE Diesel					
Forklift	Clark	C50sD	Diesel	Deutz	TD 3.6 L4	2015	56	291	CHE Diesel					
Forklift	Hyster	H300XL	Diesel	Perkins		1993	175	0	CHE Diesel		4/5/2011			
Forklift	Hyster	H100ft	Diesel	Kubota		2023	74	550	CHE Diesel					
Forklift	Linde	H35D	Diesel	Volkswagon	BAEU	2007	59	599	CHE Diesel					
Forklift	Hyster	H300HD	Diesel	Cummins	QSB6.7	2013	129	734	CHE Diesel					
Forklift	Taylor	XH-350L	Diesel	Cummins	QSB 6.7-C173 Tie	2021	173	841	CHE Diesel					
Forklift	Taylor	X-360M	Diesel	Cummins	QSB 6.7-C173 Tie	2015	173	1336	CHE Diesel					
Forklift	Toyota	8FD4SU	Diesel	Toyota		2016		144	CHE Diesel					
Forklift	Kalmar	DCE160-12	Electric				0	0	CHE Electric					
Forklift	Kalmar	DCE160-12	Electric				0	0	CHE Electric					
Forklift	Kalmar	DCE160-12	Electric				0	0	CHE Electric					
Forklift	Nissan	CSP01L15S	Electric				0	0	CHE Electric					
Forklift	Hyster	N40XMR2	Electric				0	0	CHE Electric					
Forklift	Nissan	CK1B1L15S	Electric				0	0	CHE Electric					
Forklift	Nissan	MCJ1B1L15S	Electric				0	432	CHE Electric					
Forklift	Raymond Pacer	R30-C30TT	Electric				0	0	CHE Electric					
Forklift	Wiggins	W450YE	Electric			2022	0	276	CHE Electric					
Forklift	Wiggins	W450YE	Electric			2023	0	2	CHE Electric					
Forklift	Caterpillar	2EP11000	Electric			2022	0	173	CHE Electric					
Forklift	Caterpillar	2EP11000	Electric			2022	0	141	CHE Electric					
Forklift	Caterpillar	2EP11000	Electric			2022	0	90	CHE Electric					
Forklift	Caterpillar	2EP11000	Electric			2022	0	101	CHE Electric					
Forklift	Mitsubishi	FB16KT	Electric				0	250	CHE Electric					
Forklift	Hyster	J30XN (4 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XNT (3 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XNT (3 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XNT (3 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XNT (3 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XNT (3 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XNT (3 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XNT (3 wheel)	Electric				0	0	CHE Electric					
Forklift	Mitsubishi	FB16KT	Electric				0	250	CHE Electric					
Forklift	Hyster	J30XNT (3 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XNT (3 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XNT (3 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XNT (3 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XNT (3 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XNT (3 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XNT (3 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XN (4 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XN (4 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XN (4 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XN (4 wheel)	Electric				0	0	CHE Electric					

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	Engine Year	HP	Annual Hours	Category	DPF level 2	DPF level 3	Blue Cat	Renewable Diesel T0-T3	Renewable Diesel T4
Forklift	Hyster	J30XN (4 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XN (4 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XN (4 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XN (4 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XN (4 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XN (4 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XN (4 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XN (4 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XN (4 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XN (4 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XN (4 wheel)	Electric				0	0	CHE Electric					
Forklift	Hyster	J30XN (4 wheel)	Electric				0	0	CHE Electric					
Forklift	Mitsubishi	FB16KT	Electric				0	250	CHE Electric					
Forklift	Mitsubishi	FB16KT	Electric				0	250	CHE Electric					
Forklift	Mitsubishi	FB16NT	Electric				0	250	CHE Electric					
Forklift	Mitsubishi	FB16KT	Electric				0	250	CHE Electric					
Forklift	Mitsubishi	FB16KT	Electric				0	250	CHE Electric					
Forklift	Mitsubishi	FB16KT	Electric				0	250	CHE Electric					
Forklift	Mitsubishi	EP16KT	Electric				0	250	CHE Electric					
Forklift	Mitsubishi	FB16KT	Electric				0	250	CHE Electric					
Forklift	Mitsubishi	EP16KT	Electric				0	250	CHE Electric					
Forklift	Mitsubishi	EP16KT	Electric				0	250	CHE Electric					
Forklift	Mitsubishi	FB16KT	Electric				0	250	CHE Electric					
Forklift	Mitsubishi	FB16KT	Electric				0	250	CHE Electric					
Forklift	Mitsubishi	FB16KT	Electric				0	250	CHE Electric					
Forklift	Mitsubishi	FB16NT	Electric				0	250	CHE Electric					
Forklift	Mitsubishi	FB16KT	Electric				0	250	CHE Electric					
Forklift	Mitsubishi	FB16KT	Electric				0	250	CHE Electric					
Forklift	Mitsubishi	FB16KT	Electric				0	250	CHE Electric					
Forklift	Mitsubishi	FB16NT	Electric				0	250	CHE Electric					
Forklift	Toyota		Gasoline			2010		523	CHE Gasoline					
Forklift	Toyota		Gasoline			2011		115	CHE Gasoline					
Forklift	Toyota		Gasoline			2011		199	CHE Gasoline					
Forklift	Mitsubishi		Gasoline	Nissan		2012		503	CHE Gasoline					
Forklift	Nissan	CF01A15V	Gasoline				45	396	CHE Gasoline					
Forklift	Nissan	CPH01A15V	Gasoline				45	55	CHE Gasoline					
Forklift	Toyta		LPG					69	CHE Propane					
Forklift	Toyta		LPG					493	CHE Propane					
Forklift	Clark	GCS20MB	LPG	Mitsubishi	4G52	1988	49	0	CHE Propane					
Forklift	Clark	GCS 20	LPG	Mitsubishi	4G52	1988	49	0	CHE Propane					
Forklift	Komatsu	FG40ZT-8	LPG	Nissan	TB45L	2007	86	177	CHE Propane					
Forklift	Komatsu	FG40ZT-8	LPG	Nissan	TB45L	2007	86	94	CHE Propane					
Forklift	Nissan	PF80YLP	LPG	Nissan	TB45	2010	95	490	CHE Propane					
Forklift	Nissan	PF80YLP	LPG	Nissan	TB45	2010	95	419	CHE Propane					
Forklift	Nissan	PF80YLP	LPG	Nissan	TB45	2010	95	466	CHE Propane					
Forklift	Nissan	PF80YLP	LPG	Nissan	TB45	2010	95	281	CHE Propane					
Forklift	Nissan	PF80YLP	LPG	Nissan	TB45	2010	95	350	CHE Propane					
Forklift	Clark	C40L	LPG	GM	4.3L	2012	120	0	CHE Propane					
Forklift	Clark	C40L	LPG	GM	4.3L	2012	120	351	CHE Propane					
Forklift	Clark	C40L	LPG	GM	4.3L	2012	120		CHE Propane					
Forklift	Clark	C40L	LPG	GM	4.3L	2012	120		CHE Propane					
Forklift	Clark	C40L	LPG	GM	4.3L	2012	120	840	CHE Propane					
Forklift	Toyota	8FGUS25-147V	LPG	Toyota	:2403050	2012	51	18	CHE Propane					
Forklift	Toyota	8FGUS25-147V	LPG	Toyota	:2403050	2012	51	75	CHE Propane					
Forklift	Mitsubishi	FG45N-LE	LPG	Nissan	TB45	2013	95	125	CHE Propane					
Forklift	Mitsubishi	FG45N-LE	LPG	Nissan	TB45	2013	95	606	CHE Propane					
Forklift	Mitsubishi	FG45N-LE	LPG	Nissan	TB45	2013	95	363	CHE Propane					
Forklift	Hyster	H90FT	LPG	GM	4.3L	2014	100	228	CHE Propane					
Forklift	Hyster	H90FT	LPG	GM	4.3L	2014	100	996	CHE Propane					
Forklift	Hyster	H90FT	LPG	GM	4.3L	2014	100	89	CHE Propane					
Forklift	Hyster	H90FT	LPG	GM	4.3L	2014	100	377	CHE Propane					
Forklift	Toyota	8FGU25	LPG	Toyota	204Y	2014	51	199	CHE Propane					
Forklift	Toyota	8FGU25	LPG	Toyota	204Y	2014	51	313	CHE Propane					
Forklift	Nissan	60	LPG	Nissan	K25L	2007		241	CHE Propane					
Forklift	Nissan	60	LPG	Nissan	K25L	2007		122	CHE Propane					
Forklift	Nissan		LPG	Nissan		2007		447	CHE Propane					
Forklift	CAT		LPG	Nissan	K25L	2008		288	CHE Propane					
Forklift	CAT		LPG	Nissan	K25L	2008		241	CHE Propane					
Forklift	Toyota	8FGU32	LPG	Toyota	4Y	2017	42	323	CHE Propane					
Forklift	Toyota	8FGU32	LPG	Toyota	4Y	2017	42	275	CHE Propane					
Forklift	Toyota	8FGU32	LPG	Toyota	4Y	2017	42	455	CHE Propane					
Forklift	Toyota	8FGU32	LPG	Toyota	4Y	2017	42	357	CHE Propane					
Forklift	Toyota	8FGU32	LPG	Toyota	4Y	2017	42	342	CHE Propane					
Forklift	Toyota	8FGU32	LPG	Toyota	4Y	2017	42	521	CHE Propane					
Forklift	Toyota	8FGU32	LPG	Toyota	4Y	2017	42	0	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2010	46	0	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2010	46	133	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2010	46	90	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	194	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	201	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	108	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	253	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	355	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	100	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	318	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	198	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	84	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	275	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	229	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	332	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	319	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	177	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	106	CHE Propane					
Forklift	Clark	C75L	LPG	GM	V6 4.3	2013	93	75	CHE Propane					
Forklift	Clark	C75L	LPG	GM	V6 4.3	2013	93	146	CHE Propane					
Forklift	Hyster	H80XL	LPG	GMC	3.6	1995	165	39	CHE Propane					
Forklift	Hyster	H50FT	LPG	PSI	2.2	2014	59	274	CHE Propane					
Forklift	Hyster	H50FT	LPG	PSI	2.2	2015	59	181	CHE Propane					
Forklift	Yale	GLP100MJNB	LPG	GMC	3.6	2005	160	112	CHE Propane					

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	Engine Year	HP	Annual Hours	Category	DPF level 2	DPF level 3	Blue Cat	Renewable Diesel T0-T3	Renewable Diesel T4
Forklift	Yale	GLP100MJNB	LPG	GMC	3.6	2005	160	133	CHE Propane					
Forklift	Yale	GLP100	LPG			2008	160	551	CHE Propane					
Forklift	Yale	GLP100	LPG			2008	160	35	CHE Propane					
Forklift	Hyster	H100FT	LPG			2011		490	CHE Propane					
Forklift	Nissan	PL50LP	LPG			2007	122	0	CHE Propane					
Forklift	Nissan	P80Y	LPG			2007	122	168	CHE Propane					
Forklift	Nissan	JP80BYLP	LPG			2007	122	356	CHE Propane					
Forklift	Nissan	JP80BYLP	LPG			2007	122	306	CHE Propane					
Forklift	Nissan	JP80BYLP	LPG			2007	122	271	CHE Propane					
Forklift	Nissan	JP80BYLP	LPG			2007	122	241	CHE Propane					
Forklift	Nissan	JP80BYLP	LPG			2007	122	345	CHE Propane					
Forklift	Nissan	JP80BYLP	LPG			2007	122	364	CHE Propane					
Forklift	Nissan	JP80BYLP	LPG			2007	122	323	CHE Propane					
Forklift	Clark	C40L	LPG	PSI	PSI-4.3	2020		372	CHE Propane					
Forklift	Clark	C40L	LPG	PSI	PSI-4.3	2020		378	CHE Propane					
Forklift	Clark	C40L	LPG	PSI	PSI-4.3	2020		17	CHE Propane					
Forklift	Clark	C40L	LPG	PSI	PSI-4.3	2020		262	CHE Propane					
Forklift	Yale	GC040LX2	LPG	PSI	PSI 2.4L	2020	164	794	CHE Propane					
Forklift	Yale	GC040LX2	LPG	PSI	PSI 2.4L	2020	164	775	CHE Propane					
Forklift	Yale	GDP360EF	LPG	PSI	2.4L	2019	62	298	CHE Propane					
Forklift	Hyster	GLP050MXNEAE0	LPG	PSI	2.4L	2019	62	163	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2010	51	175	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2010	51	161	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2010	51	149	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2011	51	179	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2012	51	131	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2011	51	210	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2012	51	172	CHE Propane					
Forklift	Hyster	H50FT	LPG	GM	Vortex 4.3L	2011		306	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2011	51	11	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2012	51	143	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2012	51	164	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2012	51	117	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2012	51	166	CHE Propane					
Forklift	Yale	GLP-100	LPG	GM	VORTEX 4.3L	2007		54	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2011	51	195	CHE Propane					
Forklift	Caterpillar	GP35N5	LPG	Caterpillar	GK25	2021	28	177	CHE Propane					
Forklift	Komatsu	FG15HT-15	LPG	Nissan	H2O	1994	46	250	CHE Propane			7/4/1905		
Forklift	Komatsu	FG15HT-15	LPG	Nissan	H2O	1994	46	250	CHE Propane			7/4/1905		
Forklift	Komatsu	FG15HT-15	LPG	Nissan	H2O	1994	46	250	CHE Propane			7/4/1905		
Forklift	Komatsu	FG15HT-15	LPG	Nissan	H2O	1994	46	250	CHE Propane			7/4/1905		
Forklift	Komatsu	FG15HT-15	LPG	Nissan	H2O	1994	46	250	CHE Propane			7/4/1905		
Forklift	Komatsu	FG15HT-15	LPG	Nissan	H2O	1994	46	250	CHE Propane			7/4/1905		
Forklift	Komatsu	FG15HT-15	LPG	Nissan	K21L	2008	48	250	CHE Propane					
Forklift	Komatsu	FG15HT-15	LPG	Nissan	K21L	2008	48	250	CHE Propane					
Forklift	Komatsu	FG40ZT-5	LPG	Nissan		1991		250	CHE Propane			7/5/1905		
Forklift	Komatsu	FG45T-6	LPG	Nissan	TB42	1991	85	250	CHE Propane			7/5/1905		
Forklift	Komatsu	FG45T-6	LPG	Nissan	TB42	1991	85	250	CHE Propane			7/5/1905		
Forklift	Komatsu	FG45T-6	LPG	Nissan	TB42	1991	85	250	CHE Propane			7/5/1905		
Forklift	Komatsu	FG45T-6	LPG	Nissan	TB42	1991	85	250	CHE Propane			7/5/1905		
Forklift	Komatsu	FG45T-6	LPG	Nissan	TB42	1991	85	250	CHE Propane			7/5/1905		
Forklift	Komatsu	FG45T-6	LPG	Nissan	TB42	1991	85	250	CHE Propane			7/5/1905		
Forklift	Komatsu	FG45T-6	LPG	Nissan	TB42	1991	85	250	CHE Propane			7/5/1905		
Forklift	Komatsu	FG45T-6	LPG	Nissan	TB42	1991	85	250	CHE Propane			7/5/1905		
Forklift	Komatsu	FG45T-6	LPG	Nissan	TB42	1991	85	250	CHE Propane			7/5/1905		
Forklift	Komatsu	FG45T-6	LPG	Nissan	TB42	1994	85	250	CHE Propane			7/5/1905		
Forklift	Komatsu	FG45K1	LPG	Nissan	TB45L	2006	117	250	CHE Propane					
Forklift	Komatsu	FG45K1	LPG	Nissan	TB45L	2006	117	250	CHE Propane					
Forklift	Komatsu	FG45T-8	LPG	Nissan	TB45L	2008	84	250	CHE Propane					
Forklift	Komatsu	FG45K1	LPG	Nissan	TB45L	2007	84	250	CHE Propane					
Forklift	Komatsu	FG45T-8	LPG	Nissan	TB45L	2006	117	250	CHE Propane					
Forklift	Komatsu	FG15HT-17	LPG	Nissan	K21L	2006	50	250	CHE Propane					
Forklift	Komatsu	FG15HT-17	LPG	Nissan	K21L	2006	50	250	CHE Propane					
Forklift	Komatsu	FG15HT-17	LPG	Nissan	K21L	2006	50	250	CHE Propane					
Forklift	Komatsu	FG30G-11	LPG	Nissan		1991		250	CHE Propane			7/5/1905		
Forklift	Komatsu	FG30G-11	LPG	Nissan		1991		250	CHE Propane			7/5/1905		
Forklift	Komatsu	FG30G-11	LPG	Nissan		1994		250	CHE Propane			7/5/1905		
Forklift	Komatsu	FG45T-6	LPG	Nissan	TB45L	2005	96	250	CHE Propane					
Forklift	Clark	CT-50	LPG	Ford				250	CHE Propane			7/5/1905		
Forklift	Komatsu	FG15HT-15	LPG	Nissan	H2O			250	CHE Propane			7/5/1905		
Forklift	Komatsu	5000 lb	LPG			2002	58	1000	CHE Propane					
Forklift	Komatsu	5000 lb	LPG			2002	58	1000	CHE Propane					
Forklift	Komatsu	6000 lb	LPG			2002	60	1000	CHE Propane					
Forklift	Komatsu	6000 lb	LPG			2002	60	1000	CHE Propane					
Forklift	Komatsu	6000 lb	LPG			2002	60	1000	CHE Propane					
Forklift	Komatsu	6000 lb	LPG			2002	60	1000	CHE Propane					
Forklift	Komatsu	6000 lb	LPG			2002	60	1000	CHE Propane					
Forklift	Komatsu	6000 lb	LPG			2002	60	1000	CHE Propane					
Forklift	Komatsu	6000 lb	LPG			2008	60	1000	CHE Propane					
Forklift	Komatsu	6000 lb	LPG			2008	60	1000	CHE Propane					
Forklift	Komatsu	6000 lb	LPG			2008	60	1000	CHE Propane					
Forklift	Komatsu	6000 lb	LPG			2008	60	1000	CHE Propane					
Forklift	Toyota		LPG			2007	95	500	CHE Propane					
Forklift	Unicarries		LPG			2021	55	500	CHE Propane					
Forklift	Unicarries		LPG			2022	59	500	CHE Propane					
Forklift	HYSTER		LPG	PSI	PSI 2.4L	2016	59	500	CHE Propane					
Forklift	HYSTER		LPG	PSI	PSI 2.4L	2018	59	500	CHE Propane					
Forklift	HYSTER		LPG	PSI	PSI 2.4L	2019	59	500	CHE Propane					
Forklift	HYSTER		LPG	PSI	PSI 2.4L	2020	59	500	CHE Propane					
Forklift	Linde		LPG	Deutz		2021	59	500	CHE Propane					
Forklift	Linde		LPG	Deutz		2021	59	500	CHE Propane					
Forklift	Linde		LPG	Deutz		2021	59	500	CHE Propane					
Forklift	Linde		LPG	Deutz		2021	59	500	CHE Propane					
Forklift	Linde		LPG	Deutz		2021	59	500	CHE Propane					
Forklift	Linde		LPG			2022	59	500	CHE Propane					
Forklift	Komatsu		LPG			2021	125	743	CHE Propane					
Forklift			LPG			2015	125	2179	CHE Propane					
Forklift	Mitsubishi	FG40N	LPG	Nissan	TB45L	2011	76	135	CHE Propane					
Forklift	Toyota	7FU45	LPG	GM	4.3 Vortec	2008	200	1200	CHE Propane					

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	Engine Year	HP	Annual Hours	Category	DPF level 2	DPF level 3	Blue Cat	Renewable Diesel T0-T3	Renewable Diesel T4
Forklift	Yale	GLP050VXESV	LPG	Mazda	F2-Z25D	2006	51	679	CHE Propane					
Forklift	Yale	GLP050VXESV	LPG	Mazda	F2-Z25D	2006	51	716	CHE Propane					
Forklift	Heyster	H50FT	LPG	IMPCO		2010	46	640	CHE Propane					
Forklift	Clark	S25L	LPG	Ford	2.5L	2021		107	CHE Propane					
Forklift	Clark	S25L	LPG	Ford	2.5L	2021		145	CHE Propane					
Forklift	Doosan	D160S-7	LPG	Doosan		2015		129	CHE Propane					
Hybrid RTG	Paceco-Mitsui		Diesel	Caterpillar	C7	2018	249	2400	CHE Diesel					6/1/2021
Hybrid RTG	Paceco-Mitsui		Diesel	Caterpillar	C7	2018	249	3092	CHE Diesel					6/1/2021
Hybrid RTG	Paceco-Mitsui		Diesel	Caterpillar	C7	2018	249	3352	CHE Diesel					6/1/2021
Hybrid RTG	Paceco-Mitsui		Diesel	Caterpillar	C7	2018	249	3180	CHE Diesel					6/1/2021
Hybrid RTG	Paceco-Mitsui		Diesel	Caterpillar	C7	2018	249	2626	CHE Diesel					6/1/2021
Hybrid RTG	Paceco-Mitsui		Diesel	Caterpillar	C7	2018	249	2710	CHE Diesel					6/1/2021
Hybrid RTG	Paceco-Mitsui		Diesel	Caterpillar	C7	2018	249	2954	CHE Diesel					6/1/2021
Hybrid RTG	Paceco-Mitsui		Diesel	Caterpillar	C7	2018	249	3138	CHE Diesel					6/1/2021
Hybrid RTG	Paceco-Mitsui		Diesel	Caterpillar	C7	2018	249	2828	CHE Diesel					6/1/2021
Hybrid RTG	ZPMC	RTG	Diesel			2011	197	2165	CHE Diesel					
Hybrid RTG	Paceco	RTG	Diesel	Caterpillar	C7.1 ACERT	2015	302	4755	CHE Diesel					
Hybrid RTG	Paceco	RTG	Diesel	Caterpillar	C7.1 ACERT	2015	302	4537	CHE Diesel					
Hybrid RTG	Paceco	RTG	Diesel	Caterpillar	C7.1 ACERT	2015	302	4231	CHE Diesel					
Hybrid RTG	Paceco	RTG	Diesel	Caterpillar	C7.1 ACERT	2015	302	4192	CHE Diesel					
Hybrid RTG	Paceco	RTG	Diesel	Caterpillar	C7.1 ACERT	2015	302	3411	CHE Diesel					
Hybrid RTG	ZPMC	RTG	Diesel	Cummins		2022	302	1255	CHE Diesel					
Hybrid RTG	ZPMC	RTG	Diesel	Cummins		2022	302	465	CHE Diesel					
Hybrid RTG	ZPMC	RTG	Diesel	Cummins		2022	302	863	CHE Diesel					
Hybrid RTG	ZPMC	RTG	Diesel	Cummins		2022	302	518	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	HSC350A	Diesel	AGCO	44AWF	2016	102	3096	CHE Diesel					4/1/2021
Hybrid Straddle Carrier	Kalmar	HSC350A	Diesel	AGCO	44AWF	2016	102	2402	CHE Diesel					4/1/2021
Hybrid Straddle Carrier	Kalmar	HSC350A	Diesel	AGCO	44AWF	2016	102	2804	CHE Diesel					4/1/2021
Hybrid Straddle Carrier	Kalmar	HSC350A	Diesel	AGCO	44AWF	2016	102	2466	CHE Diesel					4/1/2021
Hybrid Straddle Carrier	Kalmar	HSC350A	Diesel	AGCO	44AWF	2016	102	1497	CHE Diesel					4/1/2021
Hybrid Straddle Carrier	Kalmar	HSC350A	Diesel	AGCO	44AWF	2016	102		CHE Diesel					4/1/2021
Hybrid Straddle Carrier	Kalmar	HSC350A	Diesel	AGCO	44AWF	2016	102	2791	CHE Diesel					4/1/2021
Hybrid Straddle Carrier	Kalmar	HSC350A	Diesel	AGCO	44AWF	2016	102	3219	CHE Diesel					4/1/2021
Hybrid Straddle Carrier	Kalmar	HSC350A	Diesel	AGCO	44AWF	2016	102	2914	CHE Diesel					4/1/2021
Hybrid Straddle Carrier	Kalmar	HSC350A	Diesel	AGCO	44AWF	2016	102	2245	CHE Diesel					4/1/2021
Hybrid Straddle Carrier	Kalmar	HSC350A	Diesel	AGCO	44AWF	2016	102	2878	CHE Diesel					4/1/2021
Hybrid Straddle Carrier	Kalmar	HSC350A	Diesel	AGCO	44AWF	2016	102	2716	CHE Diesel					4/1/2021
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	3029	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	3236	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	3043	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2573	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	3275	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	3243	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	3085	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2748	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2844	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	3140	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	3281	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	3188	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	3132	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	3240	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2953	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2919	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	3152	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	3436	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2810	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	3089	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	3201	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2066	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	3305	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	3448	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	3062	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103		CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	3403	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3297	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3123	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3345	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3424	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3423	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3581	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	2896	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3452	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3258	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3610	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3683	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3609	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3379	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3287	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	2907	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3668	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3519	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3498	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3603	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3527	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3608	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3873	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3796	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3782	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3540	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	1451	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3425	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3490	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	2459	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3512	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3836	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3573	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3572	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3393	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3500	CHE Diesel					10/1/2022

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	Engine Year	HP	Annual Hours	Category	DPF level 2	DPF level 3	Blue Cat	Renewable Diesel T0-T3	Renewable Diesel T4
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3334	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3424	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3568	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3531	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3168	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3685	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3310	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	2890	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	2105	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1775	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	2110	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1870	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1141	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	2386	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1734	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	2141	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	2127	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1796	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1451	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1862	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1718	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1806	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	2064	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1827	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1831	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1459	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1627	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1211	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1560	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1183	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1266	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1263	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1188	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1053	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1174	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1080	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	884	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1065	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1047	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	1001	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	918	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	936	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	917	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	831	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	296	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	307	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	331	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	319	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	331	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	301	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	269	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	177	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	251	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	222	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	220	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	78	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	95	CHE Diesel					10/1/2022
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu		2022	103	5	CHE Diesel					10/1/2022
Loader	Mijack	M115	Diesel	Cummins	QSX11.9	2010	460	0	CHE Diesel				11/1/2022	
Loader	Mijack	MJ150	Diesel	Cummins	QSB 6.7	2015	260	420	CHE Diesel					11/1/2022
Loader	Caterpillar	988K	Diesel	Caterpillar	C3.8B	2020	74	1214	CHE Diesel					
Loader	Caterpillar	950M	Diesel	Caterpillar	C7.1	2016	174	1155	CHE Diesel					
Loader	Caterpillar	966-D	Diesel	Caterpillar	C-7	2010	300	403	CHE Diesel					
Loader	Caterpillar	966-D	Diesel	Caterpillar	C-7	2010	232	827	CHE Diesel		7/22/2010			
Loader	Caterpillar	966M	Diesel	Caterpillar	C9.3	2020	174	3068	CHE Diesel					
Loader	Caterpillar	980H	Diesel	Caterpillar	C15	2007	318	225	CHE Diesel		5/8/2015			
Loader	Caterpillar	988H	Diesel	Caterpillar	C18	2011	527	1686	CHE Diesel		2/27/2015			
Loader	Caterpillar	988K	Diesel	Caterpillar	C18	2013	527	1579	CHE Diesel					
Loader	Caterpillar	988K	Diesel	Caterpillar	C18	2013	527	3628	CHE Diesel					
Loader	Caterpillar	988K	Diesel	Caterpillar	C18	2018	527	4380	CHE Diesel					
Loader	Caterpillar	450	Diesel	Caterpillar	C7.1	2022	100	46	CHE Diesel					
Loader	Case	480	Diesel			2009	110	964	CHE Diesel					
Man Lift	Genie	S-125	Diesel			2003	75	62	CHE Diesel		1/1/2014		12/31/2020	
Man Lift	Genie	S-65	Diesel			2007	75	84	CHE Diesel		1/1/2014		12/31/2020	
Man Lift	JLG		Diesel	Deutz	BF4M2011	2004	87	49	CHE Diesel		9/1/2010		12/31/2021	
Man Lift	JLG		Diesel	Deutz	BF4M2011	2006	87	206	CHE Diesel		9/1/2010		12/31/2021	
Man Lift	JLG	G6-42A	Diesel	Cummins	QSF3.8	2015	110	0	CHE Diesel					11/1/2022
Man Lift	Skyjack		Diesel			2018	107		CHE Diesel					4/1/2021
Man Lift	Skyjack		Diesel			2018	107		CHE Diesel					4/1/2021
Man Lift	Skyjack	SJ1256	Diesel	Deutz AG	TCD 3.6 l4	2017	107		CHE Diesel					4/1/2021
Man Lift	Terex	TB60	Diesel	Cummins	B3.9-C	2002	73	60	CHE Diesel		8/20/2014		12/31/2021	
Man Lift	JLG	1350SJP	Diesel	Deutz	TD2011L04	2012	73	150	CHE Diesel					11/1/2022
Man Lift	JLG	86055	Diesel	Deutz	FRM2011	2002	87	223	CHE Diesel		1/1/2012		12/31/2021	
Man Lift	Terex	TB60	Diesel	Cummins	B3.9	2000	80	374	CHE Diesel		1/1/2012		12/31/2021	
Man Lift	JLG	86JS	Diesel	Deutz		2007	87	386	CHE Diesel		1/1/2012		12/31/2021	
Man Lift	Motrec	RR662	Diesel			2008	87		CHE Diesel		1/1/2012		12/31/2021	
Man Lift			Diesel				87		CHE Diesel		1/1/2012		12/31/2021	
Man Lift	Genie		Diesel	Perkins		2014	51	142	CHE Diesel					
Man Lift	Genie		Diesel	Perkins		2014	74	252	CHE Diesel					
Man Lift	Genie		Diesel	Perkins		2014	63	150	CHE Diesel					
Man Lift	Genie		Diesel	Perkins		2014	48	419	CHE Diesel					
Man Lift	Genie		Diesel	Perkins		2014		393	CHE Diesel					
Man Lift	JLG Lift	800 AJ	Diesel	Perkins	GP65-4N	2009	65	109	CHE Diesel					
Man Lift	JLG Lift	800 AJ	Diesel	Deutz	TD2011L04	2008	75	883	CHE Diesel					
Man Lift	Genie lift	S60	Diesel	Deutz	D2011L031	2007	49	198	CHE Diesel					
Man Lift	Skyjack	SJIH 4740	Electric				0	0	CHE Electric					
Man Lift	Skyjack		Electric				0	0	CHE Electric					
Man Lift	Genie		Electric				0	0	CHE Electric					
Man Lift	Skyjack	3291	Electric				0	0	CHE Electric					

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	Engine Year	HP	Annual Hours	Category	DPF level 2	DPF level 3	Blue Cat	Renewable Diesel T0-T3	Renewable Diesel T4
Man Lift	Skyjack	3226	Electric				0	0	CHE Electric					
Man Lift	JLG	660SJ	Gasoline			2007	60	75	CHE Gasoline					
Material Handler	Caterpillar	330DL	Diesel	Caterpillar	C9	2007	268	774	CHE Diesel		4/1/2011			
Material Handler	Caterpillar	345C MH	Diesel	Caterpillar	C13	2008	371	2350	CHE Diesel		2/27/2015			
Material Handler	Caterpillar	345C MH	Diesel	Caterpillar	C13	2007	371		CHE Diesel		3/24/2015			
Material Handler	Caterpillar	345C MH	Diesel	Caterpillar	C13	2007	371	1232	CHE Diesel		9/23/2013			
Material Handler	Caterpillar	345C MH	Diesel	Caterpillar	C13	2008	371	573	CHE Diesel		2/27/2015			
Material Handler	Caterpillar	345	Diesel	Caterpillar	C13	2005	371		CHE Diesel		5/9/2016			
Material Handler	Caterpillar		Diesel	Caterpillar		2023	445	559	CHE Diesel					
Material Handler	Caterpillar	375-L	Diesel	Caterpillar	C15	2009	475	467	CHE Diesel		6/1/2012			
Material Handler	Caterpillar	375-L	Diesel	Caterpillar	C15	2009	450	158	CHE Diesel		8/1/2011			
Material Handler	Caterpillar	385C	Diesel	Caterpillar	C18	2008	390	1581	CHE Diesel		3/23/2015			
Material Handler	Caterpillar	385C	Diesel	Caterpillar	C18	2011	390	1383	CHE Diesel		3/20/2015			
Material Handler	Caterpillar	349FL	Diesel	Caterpillar	C13	2018	425	1037	CHE Diesel					
Material Handler	Caterpillar	3260	Diesel	Caterpillar	C13	2020	425	3712	CHE Diesel					
Material Handler	Caterpillar	3260	Diesel	Caterpillar	C13	2020	425	3903	CHE Diesel					
Material Handler	Caterpillar	3260	Diesel	Caterpillar	C13	2020	425	1888	CHE Diesel					
Rail Pusher	Rail King	RK320	Diesel	Cummins	QSB6.7	2012	194	1195	CHE Diesel					
Rail Pusher	Zephir		Electric			2021	0	453	CHE Electric					
Reach Stacker	Kalmar	TD100G	Diesel	Cummins	QSL9 250	2013	250		CHE Diesel					4/1/2021
Reach Stacker	Taylor	TS9972	Diesel	Volvo	TAD136OVE	2012	343	28	CHE Diesel					12/31/2021
Reach Stacker	SANY	SRSC4535C2	Diesel	Cummins	QSL9 333	2014	333	24	CHE Diesel					
Reach Stacker	CVS FERRARI	F581W	Diesel	Cummins	X12	2021	449	1021	CHE Diesel					
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Cummins	QSX15-G7	2005	685	1500	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Cummins	QSX15-G7	2005	685	1500	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Cummins	QSX15-G7	2005	685	1500	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Cummins	QSX15-G7	2005	685	1500	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2002	680	34	CHE Diesel		1/1/2020		12/31/2021	
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	960	CHE Diesel		1/1/2020		12/31/2021	
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	890	CHE Diesel		1/1/2020		12/31/2021	
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	444	CHE Diesel		1/23/2013		12/31/2021	
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2005	680	1080	CHE Diesel		1/31/2013		12/31/2021	
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	63	CHE Diesel		1/1/2020		12/31/2021	
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	1155	CHE Diesel		1/1/2020		12/31/2021	
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2005	680	364	CHE Diesel		1/1/2020		12/31/2021	
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	171	CHE Diesel		10/1/2014		12/31/2021	
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	893	CHE Diesel		1/1/2020		12/31/2021	
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	571	CHE Diesel		1/1/2020		12/31/2021	
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	308	CHE Diesel		1/1/2020		12/31/2021	
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	912	CHE Diesel		1/1/2020		12/31/2021	
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2006	680	208	CHE Diesel		2/26/2013		12/31/2021	
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2005	680	121	CHE Diesel		1/1/2020		12/31/2021	
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	0	CHE Diesel		2/13/2013		12/31/2021	
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX X 15 T4f	2019	680	9	CHE Diesel					12/31/2021
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	1019	CHE Diesel		1/1/2020		12/31/2021	
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	881	CHE Diesel		1/1/2020		12/31/2021	
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	799	CHE Diesel		1/1/2020		12/31/2021	
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	763	CHE Diesel		1/1/2020		12/31/2021	
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	580	CHE Diesel		1/1/2020		12/31/2021	
Rub-trd Gantry Crane	Sumitomo	RTG62 / 22.555 / 4	Diesel	Cummins	QSX15G	2014	750	310	CHE Diesel					12/31/2020
Rub-trd Gantry Crane	Sumitomo	RTG62 / 22.555 / 4	Diesel	Cummins	QSX15G	2014	750	262	CHE Diesel					6/1/2021
Rub-trd Gantry Crane	Noell	RTG62 / 22.555 / 4	Diesel	Cummins	KTA 19-G2	2013	600	1712	CHE Diesel					6/1/2021
Rub-trd Gantry Crane	Noell	RTG62 / 22.555 / 4	Diesel	Cummins	KTA 19-G2	2013	600	1534	CHE Diesel					6/1/2021
Rub-trd Gantry Crane	Noell	RTG62 / 22.555 / 4	Diesel	Cummins	KTA 19-G2	2013	600	1866	CHE Diesel					6/1/2021
Rub-trd Gantry Crane	Noell	RTG62 / 22.555 / 4	Diesel	Cummins	KTA 19-G2	2013	600	1746	CHE Diesel					6/1/2021
Rub-trd Gantry Crane	Noell	RTG62 / 22.555 / 4	Diesel	Cummins	KTA 19-G2	2013	600	686	CHE Diesel					6/1/2021
Rub-trd Gantry Crane	Noell	RTG62 / 22.555 / 4	Diesel	Cummins	KTA 19-G2	2013	600	1476	CHE Diesel					6/1/2021
Rub-trd Gantry Crane	Noell	RTG62 / 22.555 / 4	Diesel	Cummins	KTA 19-G2	2013	600	1844	CHE Diesel					6/1/2021
Rub-trd Gantry Crane	Noell	RTG62 / 22.555 / 4	Diesel	Cummins	KTA 19-G2	2013	600	1284	CHE Diesel					6/1/2021
Rub-trd Gantry Crane	Paceco-Mitsui		Diesel	Cummins	QSX15G	2014	750	1632	CHE Diesel					6/1/2021
Rub-trd Gantry Crane	Noell		Diesel	Caterpillar	C15	2015	624	64	CHE Diesel					6/1/2021
Rub-trd Gantry Crane	Noell		Diesel	Caterpillar	C15	2015	624	8	CHE Diesel					6/1/2021
Rub-trd Gantry Crane	Noell		Diesel	Caterpillar	C15	2015	624	8	CHE Diesel					6/1/2021
Rub-trd Gantry Crane	Noell		Diesel	Caterpillar	C15	2015	624	8	CHE Diesel					6/1/2021
Rub-trd Gantry Crane	Paceco-Mitsui		Diesel	Cummins	C15X	2020	750	1608	CHE Diesel					6/1/2021
Rub-trd Gantry Crane	Paceco-Mitsui		Diesel	Cummins	C15X	2020	750	1730	CHE Diesel					6/1/2021
Rub-trd Gantry Crane	Paceco-Mitsui		Diesel	Cummins	C15X	2020	750	1426	CHE Diesel					6/1/2021
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2012	550	2019	CHE Diesel					11/1/2022
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2013	627	2439	CHE Diesel					11/1/2022
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2013	627	2309	CHE Diesel					11/1/2022
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2011	410	2655	CHE Diesel					11/1/2022
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2012	550	2127	CHE Diesel					11/1/2022
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2011	410	2630	CHE Diesel					11/1/2022
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2012	550	2591	CHE Diesel					11/1/2022
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2012	550	2301	CHE Diesel					11/1/2022
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2012	550	2647	CHE Diesel					11/1/2022
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2012	550	2562	CHE Diesel					11/1/2022
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4F	2020	410	2841	CHE Diesel					11/1/2022
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2012	550	2864	CHE Diesel					11/1/2022
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2012	550	2814	CHE Diesel					11/1/2022
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2012	550	3015	CHE Diesel					11/1/2022
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Caterpillar	3456	2003	612	2418	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Caterpillar	3456	2003	612	3542	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Caterpillar	3456	2003	612	2788	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Caterpillar	3456	2003	612	3587	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Caterpillar	3456	2003	612	2937	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Caterpillar	3456	2003	612	3638	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Caterpillar	3456	2003	612	2385	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Caterpillar	3456	2003	612	2336	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	Paceco	RTG	Diesel	Deutz	8M1015C	2004	454	3092	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	Paceco	RTG	Diesel	Deutz	8M1015C	2004	454	2435	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	Mitsui-Paceco	RT4023-8-1	Diesel	Caterpillar	C-15	2013	779	3052	CHE Diesel					
Rub-trd Gantry Crane	Mitsui-Paceco	RT4023-8-1	Diesel	Caterpillar	C-15	2013	779	2730	CHE Diesel					
Rub-trd Gantry Crane	Mitsui-Paceco	RT4023-8-1	Diesel	Caterpillar	C-15	2013	779	2431	CHE Diesel					
Rub-trd Gantry Crane	ZMPC	RC40.6/56	Diesel	Caterpillar	3456ATAAC	2005	612	740	CHE Diesel		1/1/2015			
Rub-trd Gantry Crane	Mitsui-Paceco	RT4023-8-1	Diesel	Caterpillar	C-15	2013	779	2569	CHE Diesel					
Rub-trd Gantry Crane	Mitsui-Paceco	RT4023-8-1	Diesel	Caterpillar	C-15	2013	779	2704	CHE Diesel					
Rub-trd Gantry Crane	Mitsui-Paceco	RT4023-8-1	Diesel	Caterpillar	C-15	2013	779	2608	CHE Diesel					
Rub-trd Gantry Crane	Mitsui-Paceco	RT4023-8-1	Diesel	Caterpillar	C-15	2013	779	2808	CHE Diesel					

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	Engine Year	HP	Annual Hours	Category	DPF level 2	DPF level 3	Blue Cat	Renewable Diesel T0-T3	Renewable Diesel T4
Rub-trd Gantry Crane	Mitsui-Paceco	RT4023-8-1	Diesel	Caterpillar	C-15	2013	779	2438	CHE Diesel					
Rub-trd Gantry Crane	Mitsui-Paceco	RT4023-8-1	Diesel	Caterpillar	C-15	2013	779	2444	CHE Diesel					
Rub-trd Gantry Crane	Mitsui-Paceco	RT4023-8-1	Diesel	Caterpillar	C-15	2013	779	2683	CHE Diesel					
Rub-trd Gantry Crane	Mitsui-Paceco	RT4023-8-1	Diesel	Caterpillar	C-15	2013	779	2809	CHE Diesel					
Rub-trd Gantry Crane	Mi Jack	1200R	Diesel	Cummins	QSL9	2011	320	2613	CHE Diesel					
Rub-trd Gantry Crane	Mi Jack	1200R	Diesel	Detroit	DDEC	2011	320	299	CHE Diesel					
Rub-trd Gantry Crane	Mi Jack	1200R	Diesel	Cummins	QSL9	2011	320	3188	CHE Diesel					
Rub-trd Gantry Crane	Mi Jack	1200R	Diesel	Cummins	QSL9	2011	320	2264	CHE Diesel					
Rub-trd Gantry Crane	Mi Jack	1200R	Diesel	Cummins	QSL9 333	2015	320	4256	CHE Diesel					
Rub-trd Gantry Crane	MI-JACK	1200R	Diesel	Cummins	QSL9	2021	332	2055	CHE Diesel					
Side pick	Taylor	XEC155/6	Diesel	Cummins	QSB6.7	2020	173	127	CHE Diesel					11/1/2022
Side pick	Taylor	XEC155/6	Diesel	Cummins	QSB6.7	2020	173	118	CHE Diesel					11/1/2022
Side pick	Kalmar		Diesel	Cummins	QSL9 275	2017	275	198	CHE Diesel					4/1/2021
Side pick	Fantuzzi	FDC25K7	Diesel	Cummins	QSL9 275	2017	275		CHE Diesel					4/1/2021
Side pick	Fantuzzi	FDC25K7	Diesel	Cummins	QSL	2016	275	0	CHE Diesel					4/1/2021
Side pick	Terex	FDC25K7	Diesel	Cummins	QSL	2016	275		CHE Diesel					4/1/2021
Side pick	Terex	FDC25K7	Diesel	Cummins	QSL	2016	275		CHE Diesel					4/1/2021
Side pick	Terex	FDC25K7	Diesel	Cummins	QSL	2016	275		CHE Diesel					4/1/2021
Side pick	Fantuzzi	FDC25K5	Diesel	Cummins	C 7.1 Tier 4F	2014	240	66	CHE Diesel					
Side pick	Fantuzzi	FDC25K5	Diesel	Caterpillar	C 7.1 Tier 4F	2014	250	0	CHE Diesel					
Side pick			Diesel			2020	250	2367	CHE Diesel					
Side pick			Diesel			2020	250	2295	CHE Diesel					
Skid Steer Loader	Caterpillar	246D3	Diesel	Caterpillar	C3.8B	2022	73	675	CHE Diesel					
Skid Steer Loader	Caterpillar	246D3	Diesel	Caterpillar	C3.8B	2023	73	137	CHE Diesel					
Skid Steer Loader	Caterpillar	246D3	Diesel	Caterpillar	C3.8B	2023	73	178	CHE Diesel					
Skid Steer Loader	Caterpillar	262DL	Diesel	Caterpillar	C3.8B	2018	73	951	CHE Diesel					
Skid Steer Loader	Bobcat	853	Diesel	bobcat	KUBTA	1994	75	35	CHE Diesel					
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	4671	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	3964	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	3975	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	4769	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	4165	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	3126	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	4917	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	3924	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	4246	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	Volvo	TAD1172VE	2015	425	3922	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	Volvo	TAD1172VE	2015	425	3725	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	4099	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	Volvo	TAD1172VE	2015	425	4631	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	Volvo	TAD1172VE	2015	425	3584	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	Volvo	TAD1172VE	2015	425	4700	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	Volvo	TAD1172VE	2015	425	5060	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	Volvo	TAD1172VE	2015	425	4025	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	Volvo	TAD1172VE	2015	425	4595	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	Volvo	TAD1172VE	2015	425	5094	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	Volvo	TAD1172VE	2015	425	3801	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	Volvo	TAD1172VE	2015	425		CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	4535	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	4191	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	4551	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	4865	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	3812	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	4370	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	5159	CHE Diesel					4/1/2021
Sweeper	Schwarze		Diesel	John Deere		2019	200	927	CHE Diesel					11/1/2022
Sweeper	Elgin	Crosswind	Diesel		ISB 6.7	2013	200	0	CHE Diesel					4/1/2021
Sweeper	Caterpillar	IT14G	Diesel	Caterpillar	3054 DIT	2000	96	32	CHE Diesel		9/19/2013		12/31/2021	
Sweeper	Caterpillar	DL200TC-5	Diesel	Doosan	1204F-E44TAN	2016	173	258	CHE Diesel					11/1/2022
Sweeper	Caterpillar	DL200TC-5	Diesel	Doosan	1204F-E44TAN	2016	173	224	CHE Diesel					11/1/2022
Sweeper	Tymco	500X	Diesel	Isuzu	44K1TC	2018	210	292	CHE Diesel					
Sweeper	Elgin	Crosswind	Gasoline			2005	205		CHE Gasoline					
Sweeper	Elgin	Crosswind	Gasoline			2015	205		CHE Gasoline					
Sweeper	Tymco	DST-6	Gasoline			2018			CHE Gasoline					
Telehandler	JCB	509-42 F	Diesel	JCB	444TA4I8IL1	2013	74	230	CHE Diesel					
Telehandler	JCB	509-42 F	Diesel	JCB	444TA4I8IL1	2014	74	299	CHE Diesel					
Telehandler	JCB	509-42 F	Diesel	JCB	444TA4I8IL1	2014	74	162	CHE Diesel					
Telehandler	JCB	509-42 F	Diesel	JCB	444TA4I8IL1	2018	74	255	CHE Diesel					
Telehandler	JCB	509-42 F	Diesel	JCB	444TA4I8IL1	2019	74	239	CHE Diesel					
Telehandler	JCB	509-42 F	Diesel	JCB	444TA4I8IL1	2019	74	330	CHE Diesel					
Telehandler	JLG	1055	Diesel	Cummins	QSF3.B	2021	130	831	CHE Diesel					
Top handler	Taylor	XEC207/8	Diesel			2020		0	CHE Diesel					
Top handler	Taylor	TXC-976	Diesel			2015	330	1261	CHE Diesel					6/1/2021
Top handler	Taylor	TXC-976	Diesel			2015	330	1566	CHE Diesel					6/1/2021
Top handler	Taylor	TXC-976	Diesel	Volvo	TAD1360VE	2012	335	3159	CHE Diesel					6/1/2021
Top handler	Taylor	TXC-976	Diesel	Volvo	TAD1360VE	2012	335	3353	CHE Diesel					6/1/2021
Top handler	Taylor	TXLC-976	Diesel	Volvo	TAD1360VE	2012	335	92	CHE Diesel					6/1/2021
Top handler	Taylor	TXLC-976	Diesel	Volvo	TAD1360VE	2012	335	3166	CHE Diesel					6/1/2021
Top handler	Taylor	TXLC-976	Diesel	Volvo	TAD1360VE	2012	335	2850	CHE Diesel					6/1/2021
Top handler	Taylor	TXLC-976	Diesel	Volvo	TAD1360VE	2012	335	1868	CHE Diesel					6/1/2021
Top handler	Taylor	TXLC-976	Diesel	Volvo	TAD1360VE	2012	335	2822	CHE Diesel					6/1/2021
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2014	350	3347	CHE Diesel					6/1/2021
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2014	350	2414	CHE Diesel					6/1/2021
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2014	350	1719	CHE Diesel					6/1/2021
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2014	350	1457	CHE Diesel					6/1/2021
Top handler	Taylor	TXLC-976	Diesel	Volvo	L-TAD1360VE	2014	350	1502	CHE Diesel					6/1/2021
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2014	350	2037	CHE Diesel					6/1/2021
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2014	350	1573	CHE Diesel					6/1/2021
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2014	350	961	CHE Diesel					6/1/2021
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2014	350	2753	CHE Diesel					6/1/2021
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2015	350	1740	CHE Diesel					6/1/2021
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2015	350	1195	CHE Diesel					6/1/2021
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2015	350	2759	CHE Diesel					6/1/2021
Top handler	Taylor	TXLC-976	Diesel	Volvo	TAD1360VE	2015	335	3352	CHE Diesel					6/1/2021
Top handler	Taylor	TXLC-976	Diesel	Volvo	TAD1360VE	2015	335	2980	CHE Diesel					6/1/2021
Top handler	Taylor	TXLC-976	Diesel	Volvo	TAD1360VE	2015	335	3093	CHE Diesel					6/1/2021
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3720	CHE Diesel					6/1/2021
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3555	CHE Diesel					6/1/2021
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3027	CHE Diesel					6/1/2021

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	Engine Year	HP	Annual Hours	Category	DPF level 2	DPF level 3	Blue Cat	Renewable Diesel T0-T3	Renewable Diesel T4
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3582	CHE Diesel					6/1/2021
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3872	CHE Diesel					6/1/2021
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3433	CHE Diesel					6/1/2021
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3979	CHE Diesel					6/1/2021
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	4207	CHE Diesel					6/1/2021
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3722	CHE Diesel					6/1/2021
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3509	CHE Diesel					6/1/2021
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	1560	CHE Diesel					6/1/2021
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3275	CHE Diesel					6/1/2021
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3446	CHE Diesel					6/1/2021
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3850	CHE Diesel					6/1/2021
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	4059	CHE Diesel					6/1/2021
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3478	CHE Diesel					6/1/2021
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3084	CHE Diesel					6/1/2021
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	2325	CHE Diesel					6/1/2021
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	2546	CHE Diesel					6/1/2021
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	2737	CHE Diesel					6/1/2021
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	2546	CHE Diesel					6/1/2021
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3148	CHE Diesel					6/1/2021
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	2729	CHE Diesel					6/1/2021
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	2857	CHE Diesel					6/1/2021
Top handler	Hyster		Diesel			2022		975	CHE Diesel					1/1/2023
Top handler	Fantuzzi	FDS500	Diesel	Cummins	QSM11	2005	330	66	CHE Diesel		1/1/2012		12/31/2021	
Top handler	Fantuzzi	FDS500	Diesel	Cummins	QSM11	2005	330	122	CHE Diesel		1/1/2012		12/31/2021	
Top handler	Fantuzzi	FDS500	Diesel	Cummins	QSM11	2005	330	0	CHE Diesel		1/1/2012		12/31/2021	
Top handler	Fantuzzi	FDS500	Diesel	Cummins	QSM11	2005	330	27	CHE Diesel		1/1/2012		12/31/2021	
Top handler	Fantuzzi	FDS500	Diesel	Cummins	QSM11	2005	330	0	CHE Diesel		1/1/2012		12/31/2021	
Top handler	Fantuzzi	FDS500	Diesel	Cummins	QSM11	2005	330	69	CHE Diesel		1/1/2012		12/31/2021	
Top handler	Fantuzzi	FDS500	Diesel	Cummins	QSM11	2005	330	81	CHE Diesel		1/1/2012		12/31/2021	
Top handler	Taylor	TH976	Diesel	Cummins	QSM11	2008	335	1741	CHE Diesel		1/1/2010		12/31/2021	
Top handler	Taylor	TH976	Diesel	Cummins	QSM11	2008	335	2436	CHE Diesel		2/1/2010		12/31/2021	
Top handler	Taylor	TH976	Diesel	Cummins	QSM11	2008	335	1989	CHE Diesel		1/1/2010		12/31/2021	
Top handler	Taylor	TH976	Diesel	Cummins	QSM11	2008	335	2713	CHE Diesel		3/1/2010		12/31/2021	
Top handler	Taylor	TH976	Diesel	Cummins	QSM11	2008	335	2696	CHE Diesel		1/1/2012		12/31/2021	
Top handler	Taylor	TH976	Diesel	Cummins	QSM11	2008	335	2387	CHE Diesel		3/1/2010		12/31/2021	
Top handler	Fantuzzi	FDS500	Diesel	Cummins	QSM11	2005	330	72	CHE Diesel				11/1/2022	
Top handler	Fantuzzi	FDS500	Diesel	Cummins	QSM11	2005	330	182	CHE Diesel				11/1/2022	
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360V	2011	348	2787	CHE Diesel					11/1/2022
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360V	2011	348	2974	CHE Diesel					11/1/2022
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2012	343	3281	CHE Diesel					11/1/2022
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2012	343	3478	CHE Diesel					11/1/2022
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2013	343	3100	CHE Diesel					11/1/2022
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2013	343	3522	CHE Diesel					11/1/2022
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2013	343	0	CHE Diesel					11/1/2022
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2013	343	3617	CHE Diesel					11/1/2022
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2013	343	3271	CHE Diesel					11/1/2022
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2013	343	2676	CHE Diesel					11/1/2022
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2013	343	2833	CHE Diesel					11/1/2022
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2013	343	2908	CHE Diesel					11/1/2022
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2015	343	3166	CHE Diesel					11/1/2022
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2015	343	3039	CHE Diesel					11/1/2022
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2015	343	3558	CHE Diesel					11/1/2022
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2015	343	2991	CHE Diesel					11/1/2022
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2015	343	3786	CHE Diesel					11/1/2022
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2015	343	3555	CHE Diesel					11/1/2022
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2015	343	3851	CHE Diesel					11/1/2022
Top handler	Taylor	THDC-975	Diesel	Cummins	QSL	2016	350	34	CHE Diesel					4/1/2021
Top handler	Taylor	FDC550G5	Diesel	Cummins	QSG12	2016	400	2800	CHE Diesel					4/1/2021
Top handler			Diesel			2017	350	0	CHE Diesel					4/1/2021
Top handler	Fantuzzi	FDC500G5	Diesel	Cummins		2016	350	0	CHE Diesel					4/1/2021
Top handler			Diesel			2019	350	0	CHE Diesel					4/1/2021
Top handler			Diesel			2019	350	0	CHE Diesel					4/1/2021
Top handler			Diesel			2017	350	0	CHE Diesel					4/1/2021
Top handler			Diesel			2021	350		CHE Diesel					4/1/2021
Top handler			Diesel			2015	350	0	CHE Diesel					4/1/2021
Top handler			Diesel			2021	350	0	CHE Diesel					4/1/2021
Top handler	Taylor	XLC975	Diesel	Cummins	TAD137IVE	2021	388	365	CHE Diesel					11/1/2022
Top handler	Taylor	THDC-955	Diesel	Cummins	QSM11	2002	250	2025	CHE Diesel		12/1/2012			
Top handler	Taylor	THDC-955	Diesel	Cummins	QSM11	2006	260	2485	CHE Diesel		12/1/2012			
Top handler	Taylor	THDC-955	Diesel	Cummins	QSM11	2006	260	2432	CHE Diesel		12/1/2012			
Top handler	Taylor	THDC-955	Diesel	Cummins	QSM11	2006	260	1170	CHE Diesel		12/1/2012			
Top handler	Taylor	THDC-975	Diesel	Cummins	QSM11	2006	260	2450	CHE Diesel		12/1/2012			
Top handler	Taylor	THDC-975	Diesel	Cummins	QSM11	2006	260	3037	CHE Diesel		12/1/2012			
Top handler	Taylor	THDC-975	Diesel	Cummins	QSM11	2007	260	2119	CHE Diesel		1/1/2009			
Top handler	Taylor	THDC-975	Diesel	Cummins	QSM11	2007	260	2967	CHE Diesel		1/1/2009			
Top handler	Taylor	THDC-975	Diesel	Cummins	QSM11	2007	260	2817	CHE Diesel		1/1/2009			
Top handler	Taylor	THDC-975	Diesel	Cummins	QSM11	2007	260	2364	CHE Diesel		1/1/2009			
Top handler	Taylor	THDC-975	Diesel	Cummins	QSM11	2007	260	1407	CHE Diesel		1/1/2009			
Top handler	Taylor	THDC-975	Diesel	Cummins	QSM11	2007	260	1551	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	3877	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	2971	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	3199	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	2248	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	3134	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	2405	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	3698	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	2474	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	2575	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	2525	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	823	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	3742	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	3253	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	3464	CHE Diesel		1/1/2009			
Top handler	Taylor	TXLC976	Diesel	Cummins	QSM11	2011	335	2964	CHE Diesel					
Top handler	Taylor	TXLC976	Diesel	Cummins	QSM11	2011	335	3468	CHE Diesel					
Top handler	Taylor	TXLC976	Diesel	Cummins	QSM11	2011	335	2811	CHE Diesel					
Top handler	Hyster	H-1150-HDCH	Diesel	Cummins	QSL 9L	2014	370	1939	CHE Diesel					
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2017	363	1848	CHE Diesel					
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2017	363	1583	CHE Diesel					

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	Engine Year	HP	Annual Hours	Category	DPF level 2	DPF level 3	Blue Cat	Renewable Diesel T0-T3	Renewable Diesel T4
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2017	363	2525	CHE Diesel					
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2017	363	2604	CHE Diesel					
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2017	363	1697	CHE Diesel					
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2017	363	1413	CHE Diesel					
Top handler	Taylor	XLC 976E	Diesel	Volvo	12.8 L	2017	388	2492	CHE Diesel					
Top handler	Taylor	XLC 976E	Diesel	Volvo	12.8 L	2017	388	2720	CHE Diesel					
Top handler	Taylor	XLC 976E	Diesel	Volvo	12.8 L	2021	388	3545	CHE Diesel					
Top handler	Taylor	THDC-955	Diesel	Cummins	QSM11	2006	335	136	CHE Diesel		1/1/2012		12/31/2021	
Top handler	Taylor	THDC-955	Diesel	Cummins	QSM11	2006	335	96	CHE Diesel		1/1/2012		12/31/2021	
Top handler	Taylor	THDC-955	Diesel	Cummins	QSM11	2006	335	175	CHE Diesel		1/1/2012		12/31/2021	
Top handler	Hyster		Diesel	Cummins	QSL9	2015	355	275	CHE Diesel					12/31/2021
Top handler	Taylor	THDC-955	Diesel	Cummins	M11	1999	250	96	CHE Diesel				12/31/2021	
Top handler	Taylor	THDC-975	Diesel	Cummins		2012	348	919	CHE Diesel					10/1/2022
Top handler	Taylor	THDC-975	Diesel	Cummins		2012	348	545	CHE Diesel					10/1/2022
Top handler	Taylor	THDC-975	Diesel	Cummins		2012	348	940	CHE Diesel					10/1/2022
Top handler	Taylor	THDC-975	Diesel	Cummins		2012	348	923	CHE Diesel					10/1/2022
Top handler	Taylor	THDC-975	Diesel	Cummins		2012	348	1561	CHE Diesel					10/1/2022
Top handler	Taylor		Diesel	Volvo		2012	335	1532	CHE Diesel					10/1/2022
Top handler	Taylor		Diesel	Volvo		2012	335	790	CHE Diesel					10/1/2022
Top handler	Taylor		Diesel	Volvo		2013	335	990	CHE Diesel					10/1/2022
Top handler	Taylor		Diesel	Volvo		2013	335	1629	CHE Diesel					10/1/2022
Top handler	Taylor		Diesel	Volvo		2013	335	1884	CHE Diesel					10/1/2022
Top handler	Taylor		Diesel	Volvo		2013	335	1173	CHE Diesel					10/1/2022
Top handler	Taylor		Diesel	Volvo		2013	335	1499	CHE Diesel					10/1/2022
Top handler	Taylor		Diesel	Volvo		2014	335	1638	CHE Diesel					10/1/2022
Top handler	Taylor		Diesel	Volvo		2014	335	1774	CHE Diesel					10/1/2022
Top handler	Hyster		Diesel	Cummins	QSL9	2015	350	491	CHE Diesel					10/1/2022
Top handler	Hyster		Diesel	Cummins	QSL9	2014	350	394	CHE Diesel					10/1/2022
Top handler	Hyster		Diesel	Cummins	QSL9	2014	350	582	CHE Diesel					10/1/2022
Top handler	Hyster		Diesel	Cummins	QSL9	2014	350	2355	CHE Diesel					10/1/2022
Top handler	Hyster		Diesel	Cummins	QSL9	2014	350	1591	CHE Diesel					10/1/2022
Top handler	Hyster		Diesel	Cummins	QSL9	2014	350	2243	CHE Diesel					10/1/2022
Top handler	Hyster		Diesel	Cummins	QSL9	2014	350	2244	CHE Diesel					10/1/2022
Top handler	Hyster		Diesel	Cummins	QSL9	2014	350	1804	CHE Diesel					10/1/2022
Top handler	Hyster		Diesel	Cummins	QSL9	2014	350	1779	CHE Diesel					10/1/2022
Top handler	Hyster	H1150HD	Diesel	Cummins	QSL9	2014	350	2088	CHE Diesel					10/1/2022
Top handler	Hyster	H1150HD	Diesel	Cummins	QSL9	2014	350	2085	CHE Diesel					10/1/2022
Top handler			Diesel			2015	325	747	CHE Diesel					10/1/2022
Top handler			Diesel			2015	325	330	CHE Diesel					10/1/2022
Top handler			Diesel			2015	325	936	CHE Diesel					10/1/2022
Top handler			Diesel			2015	325	472	CHE Diesel					10/1/2022
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD13	2015	325	2296	CHE Diesel					10/1/2022
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD13	2015	325	2453	CHE Diesel					10/1/2022
Top handler	Hyster	1150-CH	Diesel	Cummins	X12	2022	355	687	CHE Diesel					10/1/2022
Top handler	Hyster	1150-CH	Diesel	Cummins	X12	2022	355	695	CHE Diesel					10/1/2022
Top handler	Hyster	1150-CH	Diesel	Cummins	X12	2022	355	857	CHE Diesel					10/1/2022
Top handler	Hyster	1150-CH	Diesel	Cummins	X12	2022	355	1394	CHE Diesel					10/1/2022
Top handler	Hyster	1150-CH	Diesel	Cummins	X12	2022	355	968	CHE Diesel					10/1/2022
Top handler	Hyster	1150-CH	Diesel	Cummins	X12	2022	355	1008	CHE Diesel					10/1/2022
Top handler	Hyster	1150-CH	Diesel	Cummins	X12	2022	355	1088	CHE Diesel					10/1/2022
Top handler	Hyster	1150-CH	Diesel	Cummins	X12	2022	355	1475	CHE Diesel					10/1/2022
Top handler	Hyster	1150-CH	Diesel	Cummins	X12	2022	355	1631	CHE Diesel					10/1/2022
Top handler	Taylor	TEC-950L	Diesel	Cummins	QSM-11	2011	330	1	CHE Diesel		1/1/2012			
Top handler	Fantuzzi	FDC500G5	Diesel	Cummins	QSM11	2003	330	1285	CHE Diesel		1/1/2011			
Top handler	Fantuzzi	FDC500G5	Diesel	Cummins	QSM11	2004	330	0	CHE Diesel		1/1/2011			
Top handler	Fantuzzi	FDC500G5	Diesel	Cummins	QSM11	2004	330	221	CHE Diesel		1/1/2011			
Top handler	Fantuzzi	FDC500G5	Diesel	Cummins	QSM11	2003	330	25	CHE Diesel		1/1/2011			
Top handler	Fantuzzi	FDC500G5	Diesel	Cummins	QSM11	2004	330	28	CHE Diesel		1/1/2011			
Top handler	Fantuzzi	FDC500G5	Diesel	Cummins	QSM11	2004	330	93	CHE Diesel		1/1/2013			
Top handler	Fantuzzi	FDC500G5	Diesel	Cummins	QSM11	2004	330	56	CHE Diesel		1/1/2011			
Top handler	Fantuzzi	FDC500G5	Diesel	Cummins	QSM11	2004	330	156	CHE Diesel		1/1/2011			
Top handler	Taylor	TXLC976	Diesel	Volvo T4i	TAD1360WE	2012	256	1698	CHE Diesel					
Top handler	Taylor	TXLC976	Diesel	Volvo T4i	TAD1360WE	2012	256	1251	CHE Diesel					
Top handler	Taylor	XLC976	Diesel	Volvo T4F	TAD1375VE	2016	388	2621	CHE Diesel					
Top handler	Taylor	XLC976	Diesel	Volvo T4F	TAD1375VE	2016	388	2734	CHE Diesel					
Top handler	Taylor	XLC976	Diesel	Volvo T4F	TAD1375VE	2016	388	2572	CHE Diesel					
Top handler	Taylor	XLC976	Diesel	Volvo T4F	TAD1375VE	2016	388	2757	CHE Diesel					
Top handler	Taylor	XLC976	Diesel	Volvo T4F	TAD1375VE	2016	388	2113	CHE Diesel					
Top handler	Taylor	XLC976	Diesel	Volvo T4F	TAD1375VE	2016	388	2665	CHE Diesel					
Top handler	Taylor	XLC976	Diesel	Volvo T4F	TAD1375VE	2016	388	2639	CHE Diesel					
Top handler	Taylor	XLC976	Diesel	Volvo T4F	TAD1375VE	2016	388	1528	CHE Diesel					
Top handler	Taylor	XLC976	Diesel	Volvo T4F	TAD1375VE	2016	388	1991	CHE Diesel					
Top handler	Taylor	XLC976	Diesel	Volvo T4F	TAD1375VE	2016	388	1409	CHE Diesel					
Top handler	Taylor	XLC976	Diesel	Volvo T4F	TAD1375VE	2016	388	1316	CHE Diesel					
Top handler			Diesel			2021	388	1708	CHE Diesel					
Top handler			Diesel			2021	388	1927	CHE Diesel					
Top handler			Diesel			2021	388	1461	CHE Diesel					
Top handler	Taylor	XLC975	Diesel	Cummins	Tier 4 Final	2018		9	CHE Diesel					
Top handler	Taylor	THDC955	Diesel		Tier 4 Final	2018		6	CHE Diesel					
Top handler	Taylor	ZLC	Electric				0	312	CHE Electric					
Top handler	Taylor	ZLC	Electric				0	585	CHE Electric					
Truck	Freightliner		Diesel	Cummins	5.9	2005	185	141	CHE On Road Diesel		1/1/2012		12/31/2021	
Truck	Freightliner		Diesel	Cummins	5.9	2005	185	288	CHE On Road Diesel		1/1/2012		12/31/2021	
Truck	Freightliner		Diesel	Cummins	5.9	2005	185	139	CHE On Road Diesel		1/1/2012		12/31/2021	
Truck	Peterbuilt		Diesel	Cummins	ISC	2006	240	841	CHE On Road Diesel				11/1/2022	
Truck	Ford	F750	Diesel	Cummins	ISC	2008	240	1001	CHE On Road Diesel				11/1/2022	
Truck	Peterbuilt		Diesel	Cummins	ISC	2006	240	814	CHE On Road Diesel				11/1/2022	
Truck			Diesel			1988		0	CHE Diesel				4/1/2021	
Truck			Diesel			1996		701	CHE Diesel				4/1/2021	
Truck	Freightliner		Diesel	Cummins	ISL	2013	350	1002	CHE On Road Diesel					
Truck	Freightliner	1085D	Diesel				350		CHE On Road Diesel					
Truck	Hino		Diesel				350		CHE On Road Diesel					
Truck	Hino		Diesel				350		CHE On Road Diesel					
Truck	Freightliner	1085D	Diesel	Cummins	L9 350	2022	350		CHE On Road Diesel					
Truck	Freightliner	1085D	Diesel	Cummins	L9 350	2022	350		CHE On Road Diesel					
Truck	Terex	40T 33-07	Diesel	Cummins	QSK19	2007	525	2177	CHE Diesel					
Truck	Terex	40T 33-07	Diesel	Cummins	QSK19	2007	525	1770	CHE Diesel					
Truck	Freightleiner	M2-106	Diesel	Cummins	ISB6.7	2013	200	1129	CHE On Road Diesel					
Truck	Caterpillar	TA30	Diesel	Cummins	QSM11	2006	350	169	CHE Diesel					

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	Engine Year	HP	Annual Hours	Category	DPF level 2	DPF level 3	Blue Cat	Renewable Diesel T0-T3	Renewable Diesel T4
Truck	Terex	TA400	Diesel	Scania		2014	444	2924	CHE Diesel					
Truck	Caterpillar	745C	Diesel	Caterpillar	C18	2015	444	50	CHE Diesel					
Truck	Caterpillar	772G	Diesel	Caterpillar	C18	2020	598	1186	CHE Diesel					
Truck	Caterpillar	772G	Diesel	Caterpillar	C18	2020	598	1145	CHE Diesel					
Truck	Caterpillar	772G	Diesel	Caterpillar	C18	2020	598	1183	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	1692	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	2299	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	2337	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	2291	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	1818	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	2177	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	2217	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225		CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	1509	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	2171	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	2165	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	1844	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	2336	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	2334	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	2452	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	1788	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	1751	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	1064	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	3022	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	2266	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	2786	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	2542	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1241	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	0	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1785	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	920	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	46	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1190	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1747	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2139	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	0	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	0	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	0	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1680	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1731	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	0	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1508	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1430	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1830	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	0	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1546	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1197	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1648	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1680	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1455	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	0	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	206	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	0	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1498	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1410	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	722	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1312	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1631	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1582	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1390	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1911	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1186	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	0	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	1275	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	1712	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	1679	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	1712	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	1189	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	0	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	1362	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	1462	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	1087	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	1137	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	1253	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	2509	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	4756	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240		CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	0	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	1822	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	1433	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	0	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	2396	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	1836	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	0	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	937	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	1534	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	2971	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	0	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	1760	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	0	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	234	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	1379	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	1324	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	2124	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	2124	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	1424	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	1467	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	2308	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	889	CHE On Road Diesel				6/1/2021	

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	Engine Year	HP	Annual Hours	Category	DPF level 2	DPF level 3	Blue Cat	Renewable Diesel T0-T3	Renewable Diesel T4
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	0	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	0	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	533	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	586	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	1645	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	0	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	1534	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	1498	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	1925	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	1912	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	1373	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	1410	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	593	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	0	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	1824	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	1498	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2012	220	0	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2012	220	2603	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2012	220	2076	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2012	220	1433	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2012	220	2056	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2012	220	0	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2012	220	2473	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2012	220	2350	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2012	220	2127	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2012	220	0	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2011	220	0	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2011	220	0	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2011	220	0	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2011	220	1607	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2011	220	0	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2011	220	2012	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2011	220	0	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	1734	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	1945	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	1271	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2440	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	1976	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	503	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2354	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	1752	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2178	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	0	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	0	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2188	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	0	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2370	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2163	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2296	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2513	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	482	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2225	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	4099	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2126	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2281	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2623	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2262	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	1808	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2160	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2326	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2012	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2216	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2049	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2343	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	1694	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2059	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	0	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2004	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2008	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	1232	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	1981	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	0	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	0	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2295	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	1361	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2060	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2223	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2697	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	0	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	0	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2439	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2621	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2505	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	1223	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2345	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2149	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2182	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	1173	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2523	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2270	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	854	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	1669	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	1291	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	1423	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2474	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	1100	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	1922	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	1502	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	0	CHE On Road Diesel					6/1/2021

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	Engine Year	HP	Annual Hours	Category	DPF level 2	DPF level 3	Blue Cat	Renewable Diesel T0-T3	Renewable Diesel T4
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2177	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2004	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2373	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2054	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	1871	CHE On Road Diesel					6/1/2021
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	2367	CHE On Road Diesel					6/1/2021
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1716	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1005	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1509	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1252	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1651	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1784	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1651	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1597	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1213	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1570	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1086	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1769	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1569	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	964	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1664	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1549	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1556	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	956	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1449	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1601	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1795	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1819	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1095	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1618	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1681	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1627	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1301	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1573	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1463	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1562	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1608	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1516	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1264	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1409	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1510	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1385	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1375	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	931	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1390	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1083	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1528	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1416	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	936	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1383	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	779	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1332	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1344	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1193	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1354	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1445	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1100	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1352	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1350	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1022	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1223	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1293	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	882	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1391	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1357	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1130	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1056	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1042	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1169	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1194	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1239	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1073	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1116	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1108	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1162	CHE Diesel					1/1/2023
Yard tractor	Kalmar	Ottawa-T2	Diesel	Cummins		2022	200	1051	CHE Diesel					1/1/2023
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1502	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	545	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1974	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1711	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	2005	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1852	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1411	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1221	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1710	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1332	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1041	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1165	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1873	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	2355	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	2593	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	2982	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	2683	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	2593	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	2102	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	2557	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	2195	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	2488	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1839	CHE On Road Diesel				11/1/2022	

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	Engine Year	HP	Annual Hours	Category	DPF level 2	DPF level 3	Blue Cat	Renewable Diesel T0-T3	Renewable Diesel T4
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	2360	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	2368	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1888	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1684	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	2238	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	2768	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	2360	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	2434	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	2438	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1360	CHE On Road Diesel				11/1/2022	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2334	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2527	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2359	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	1866	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2382	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2348	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2363	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2598	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2382	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2384	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2296	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2431	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	1968	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2105	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	1754	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2340	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2940	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2497	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2925	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2441	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2318	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2957	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2954	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2343	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2978	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2406	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2868	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2540	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2541	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	1902	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2224	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2295	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	1529	CHE On Road Diesel					11/1/2022
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2458	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2543	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	1471	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2540	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	1713	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2145	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	1853	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	1894	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2653	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2713	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2506	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2856	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2494	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2454	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2175	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2506	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2512	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2237	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2042	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2534	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2598	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2737	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2760	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2462	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2169	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2301	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	1945	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2400	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	1684	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2344	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2201	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2170	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	1813	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	1363	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2179	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2007	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2353	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel			2015		2589	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel			2015		1982	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel			2015		1654	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel			2015		2482	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel			2015		2277	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel			2015		1956	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel			2015		1785	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel			2015		1398	CHE On Road Diesel					11/1/2022
Yard tractor	Ottawa		Diesel			2015		1482	CHE On Road Diesel					11/1/2022
Yard tractor	Autocar		Diesel		QSB6.7	2018		726	CHE Diesel					11/1/2022
Yard tractor	Autocar		Diesel		QSB6.7	2022		968	CHE Diesel					1/1/2023
Yard tractor	Autocar		Diesel		QSB6.7	2022		578	CHE Diesel					1/1/2023
Yard tractor	Autocar		Diesel		QSB6.7	2022		1212	CHE Diesel					1/1/2023
Yard tractor	Autocar		Diesel		QSB6.7	2022		1635	CHE Diesel					1/1/2023
Yard tractor	Autocar		Diesel		QSB6.7	2022		1748	CHE Diesel					1/1/2023
Yard tractor	Autocar		Diesel		QSB6.7	2022		1669	CHE Diesel					1/1/2023
Yard tractor	Autocar		Diesel		QSB6.7	2022		1687	CHE Diesel					1/1/2023
Yard tractor	Autocar		Diesel		QSB6.7	2022		1881	CHE Diesel					1/1/2023
Yard tractor	Autocar		Diesel		QSB6.7	2022		956	CHE Diesel					1/1/2023

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	Engine Year	HP	Annual Hours	Category	DPF level 2	DPF level 3	Blue Cat	Renewable Diesel T0-T3	Renewable Diesel T4
Yard tractor	Autocar		Diesel		QSB6.7	2022		1535	CHE Diesel					1/1/2023
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1243	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1165	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1581	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1092	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1302	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210		CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1109	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1529	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1415	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1423	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1067	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1217	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1062	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1601	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210		CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1163	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	300	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1875	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1283	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1535	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	2695	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	706	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210		CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1279	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1572	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	716	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1020	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210		CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210		CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	149	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	841	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	0	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1675	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1053	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1191	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1116	CHE On Road Diesel				4/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB-200	2007	200	0	CHE On Road Diesel				11/1/2022	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB-07	2007	200	450	CHE On Road Diesel				11/1/2022	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB-07	2007	200	555	CHE On Road Diesel				11/1/2022	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB-07	2007	200	447	CHE On Road Diesel				11/1/2022	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB-07	2007	200	357	CHE On Road Diesel				11/1/2022	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB-07	2007	200	437	CHE On Road Diesel				11/1/2022	
Yard tractor	Ottowa	4x2	Diesel	Cummins	ISB-6.7	2015	200	404	CHE On Road Diesel					11/1/2022
Yard tractor	Ottowa	4x2	Diesel	Cummins	ISB-6.7	2015	200	420	CHE On Road Diesel					11/1/2022
Yard tractor	Ottowa	T2-4x2	Diesel	Cummins	QSB-6.7	2015	173	250	CHE Diesel					11/1/2022
Yard tractor	Ottowa	T2-4x2	Diesel	Cummins	QSB-6.7	2015	173	228	CHE Diesel					11/1/2022
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	1731	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2441	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	1641	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	1777	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	1574	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	1635	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	1402	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	1864	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	1885	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2544	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	401	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	922	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2583	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2018	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	1678	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2114	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	932	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2253	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	926	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2316	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	1580	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	616	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2094	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2321	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2329	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2135	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	1866	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2500	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	1972	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2366	CHE Diesel					
Yard tractor	MAFI	T-230	Diesel	Volvo	TAD 572 VE	2021	160	0	CHE Diesel					
Yard tractor	MAFI	T-230	Diesel	Volvo	TAD 572 VE	2021	160	0	CHE Diesel					
Yard tractor	MAFI	T-230	Diesel	Volvo	TAD 572 VE	2021	160	0	CHE Diesel					
Yard tractor	MAFI	T-230	Diesel	Volvo	TAD 572 VE	2021	160	0	CHE Diesel					
Yard tractor	MAFI	T-230	Diesel	Volvo	TAD 572 VE	2021	160	0	CHE Diesel					
Yard tractor	MAFI	T-230	Diesel	Volvo	TAD 572 VE	2021	160	0	CHE Diesel					
Yard tractor	MAFI	T-230	Diesel	Volvo	TAD 572 VE	2021	160	0	CHE Diesel					
Yard tractor	MAFI	T-230	Diesel	Volvo	TAD 572 VE	2021	160	0	CHE Diesel					
Yard tractor	MAFI	T-230	Diesel	Volvo	TAD 572 VE	2021	160	0	CHE Diesel					
Yard tractor	MAFI	T-230	Diesel	Volvo	TAD 572 VE	2021	160	0	CHE Diesel					
Yard tractor	MAFI	T-230	Diesel	Volvo	TAD 572 VE	2021	160	0	CHE Diesel					
Yard tractor	MAFI	T-230	Diesel	Volvo	TAD 572 VE	2021	160	0	CHE Diesel					
Yard tractor	MAFI	T-230	Diesel	Volvo	TAD 572 VE	2021	160	0	CHE Diesel					
Yard tractor	MAFI	T-230	Diesel	Volvo	TAD 572 VE	2021	160	0	CHE Diesel					
Yard tractor	MAFI	T-230	Diesel	Volvo	TAD 572 VE	2021	160	0	CHE Diesel					
Yard tractor	MAFI	T-230	Diesel	Volvo	TAD 572 VE	2021	160	0	CHE Diesel					
Yard tractor	MAFI	T-230	Diesel	Volvo	TAD 572 VE	2021	160	0	CHE Diesel					
Yard tractor	MAFI	T-230	Diesel	Volvo	TAD 572 VE	2021	160	0	CHE Diesel					
Yard tractor	MAFI	T-230	Diesel	Volvo	TAD 572 VE	2021	160	0	CHE Diesel					
Yard tractor	MAFI	T-230	Diesel	Volvo	TAD 572 VE	2021	160	0	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	1026	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	0	CHE Diesel					10/1/2022

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	Engine Year	HP	Annual Hours	Category	DPF level 2	DPF level 3	Blue Cat	Renewable Diesel T0-T3	Renewable Diesel T4
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	0	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	0	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	877	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	0	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	0	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	0	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	54	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	23	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	0	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	610	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	0	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	17	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	4	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	10	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	51	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	75	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	23	CHE Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	0	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	0	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	0	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	0	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	0	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	0	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	0	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	0	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	0	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	58	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	0	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	102	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	0	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	3	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	931	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	810	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1153	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1366	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1473	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1147	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1098	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	695	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1124	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	995	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1131	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1268	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	980	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	898	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	891	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1252	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1051	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	597	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1127	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1119	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1216	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	902	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1434	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1126	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	1172	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	926	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	1305	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	1169	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	1211	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	969	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	1055	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1189	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1219	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1340	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1265	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1090	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	1126	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	495	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	719	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	0	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	488	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	1309	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	1070	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	1282	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	1185	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1356	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	0	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	1336	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	1394	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	1019	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1134	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	969	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	1103	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1375	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	139	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1259	CHE On Road Diesel					10/1/2022
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1514	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	1584	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	1358	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	1117	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	828	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	1109	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	1350	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	1229	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	1249	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	1236	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	1064	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	936	CHE On Road Diesel					10/1/2022

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	Engine Year	HP	Annual Hours	Category	DPF level 2	DPF level 3	Blue Cat	Renewable Diesel T0-T3	Renewable Diesel T4
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	963	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	590	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	1060	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	1603	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	514	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	1084	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	502	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	1780	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	1247	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	1143	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	822	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1321	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1318	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1644	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	958	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1720	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	883	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1870	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1179	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1473	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1397	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	181	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	173	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	848	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1120	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1349	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2016	250	806	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1899	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	888	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1251	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2106	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	908	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1440	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1279	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	806	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1567	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1514	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1474	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1377	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1330	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	261	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1291	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2059	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1087	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1217	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1242	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1763	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1139	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1979	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1737	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1905	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1815	CHE On Road Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	565	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	584	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	720	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	1088	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	856	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	1214	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	813	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	78	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	1209	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	1197	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	1137	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	991	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	914	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	1128	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	1268	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	923	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	1135	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	1770	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	941	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	949	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	1036	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	69	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	27	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	0	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	0	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	0	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	0	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	0	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	0	CHE Diesel					10/1/2022
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	0	CHE Diesel					10/1/2022
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1285	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1028	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	212	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	896	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1249	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	202	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	847	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1074	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	949	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1152	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1083	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1243	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1249	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1268	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1170	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	670	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1090	CHE On Road Diesel					

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	Engine Year	HP	Annual Hours	Category	DPF level 2	DPF level 3	Blue Cat	Renewable Diesel T0-T3	Renewable Diesel T4
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1260	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	865	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	220	633	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	220	1300	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	220	225	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	220	1324	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	220	860	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	220	1339	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	220	908	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	220	70	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	1272	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	0	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	1316	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	82	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	1043	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	0	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	567	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	1390	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	1118	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	1365	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	1470	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	1092	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	154	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	1236	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 10	2011	240	689	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 10	2011	240	693	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 10	2011	240	1252	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 10	2011	240	150	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 10	2011	240	525	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 10	2011	240	815	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 10	2011	240	7	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 10	2011	240	1356	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 10	2011	240	1346	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1307	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1271	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1594	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1279	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	935	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1340	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1711	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	636	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1379	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1412	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	894	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1295	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1255	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	884	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	557	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1322	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1490	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1378	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1515	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1162	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1711	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	694	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1770	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1493	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1338	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	619	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1538	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1323	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1652	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1370	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1284	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	928	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	931	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	0	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	746	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1130	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1351	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	3442	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1373	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1367	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1525	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1119	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1120	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1380	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	2	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1616	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1301	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	660	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1048	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1421	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	612	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1219	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1242	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1183	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1457	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1519	CHE Diesel					
Yard tractor			Diesel			2021	225	1863	CHE Diesel					
Yard tractor			Diesel			2021	225	2070	CHE Diesel					
Yard tractor			Diesel			2021	225	2051	CHE Diesel					
Yard tractor			Diesel			2021	225	1921	CHE Diesel					
Yard tractor			Diesel			2021	225	1999	CHE Diesel					
Yard tractor			Diesel			2021	225	1957	CHE Diesel					
Yard tractor	Pro Spotter		Diesel	Cummins	ISB6.7	2021	200	500	CHE Diesel					
Yard tractor	Pro Spotter		Diesel	Cummins	ISB6.7	2021	200	500	CHE Diesel					
Yard tractor	Pro Spotter		Diesel	Cummins	ISB6.7	2021	200	500	CHE Diesel					
Yard tractor	Pro Spotter		Diesel	Cummins	ISB6.7	2021	200	500	CHE Diesel					

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	Engine Year	HP	Annual Hours	Category	DPF level 2	DPF level 3	Blue Cat	Renewable Diesel T0-T3	Renewable Diesel T4
Yard tractor			Diesel			1995	250	2147	CHE Diesel		1/1/2012			
Yard tractor			Diesel			1995	250	1872	CHE Diesel		1/1/2012			
Yard tractor			Diesel			1995	250	1168	CHE Diesel		1/1/2012			
Yard tractor			Diesel			1995	250	1353	CHE Diesel		1/1/2012			
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2019	200	2	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2019	200	1498	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2019	200	3	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2019	200	3	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2020	200	1109	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2020	200	1455	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2020	200	2390	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2020	200	1	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2020	200	1099	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2020	200	6	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2020	200	349	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2020	200	0	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	86	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	285	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	3785	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	3778	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	3362	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	324	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	341	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	369	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	307	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	192	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	102	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	388	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	0	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	377	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	329	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	3584	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	3016	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	2309	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	2347	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	2990	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	3137	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	3010	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	4059	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	4241	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	3563	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	3491	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	3420	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	3633	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	1975	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	4215	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	3167	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	2713	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	3084	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	2756	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	2729	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	3435	CHE On Road Diesel					
Yard tractor	Autocar	50007072	Diesel	Cummins	ISB6.7	2021	200	2549	CHE On Road Diesel					
Yard tractor	Ottawa	YT-30	Diesel	Cummins	Tier 4 Final	2019		176	CHE Diesel					
Yard tractor	BYD	Q1M	Electric				0	120	CHE Electric					
Yard tractor	BYD	Q1M	Electric				0	18	CHE Electric					
Yard tractor	BYD		Electric				0	0	CHE Electric					
Yard tractor	BYD		Electric				0	0	CHE Electric					
Yard tractor	BYD		Electric				0	0	CHE Electric					
Yard tractor	BYD		Electric				0	0	CHE Electric					
Yard tractor	BYD		Electric				0	0	CHE Electric					
Yard tractor	BYD		Electric				0	0	CHE Electric					
Yard tractor			Electric				0	88	CHE Electric					
Yard tractor			Electric				0	107	CHE Electric					
Yard tractor			Electric				0	250	CHE Electric					
Yard tractor	Capacity		LNG	Cummins	ISLG-LNG 8.9L	2018	250	1039	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1708	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1177	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	918	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	2028	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	181	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1940	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1850	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	545	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1966	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1920	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1990	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	2029	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1997	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	2006	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1992	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1429	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1364	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	2000	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1058	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	957	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	977	CHE On Road LNG					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	1076	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	306	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	1491	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	1047	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	496	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	1424	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	1424	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	1602	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	1186	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	566	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	421	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	523	CHE Propane					

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	Engine Year	HP	Annual Hours	Category	DPF level 2	DPF level 3	Blue Cat	Renewable Diesel T0-T3	Renewable Diesel T4
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	1964	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	687	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	964	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	1682	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	1229	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	2284	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	1063	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	1861	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	492	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	1786	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	648	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	1204	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	2368	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	639	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	932	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	2098	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	2074	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	2100	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	183	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	1071	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	371	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	793	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	1950	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	2073	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	789	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2211	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	855	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1782	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2848	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1639	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1842	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2223	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	570	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	278	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1886	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2095	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1668	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1809	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	42	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2451	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2774	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1976	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	3042	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1822	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1303	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2117	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1516	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1603	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2944	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2175	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2388	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1817	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	156	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2470	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2346	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2570	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2667	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	344	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2740	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1989	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2016	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2427	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2815	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1209	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2672	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1726	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2388	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2968	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	3213	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1845	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2870	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2168	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2463	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2773	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2922	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2769	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2062	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	3009	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2884	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	1963	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2783	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	992	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2414	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2298	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2948	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2133	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2258	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	192	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2388	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2593	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2229	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2609	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	28	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	1666	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	191	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2821	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	1895	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2191	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	1511	CHE Propane					

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	Engine Year	HP	Annual Hours	Category	DPF level 2	DPF level 3	Blue Cat	Renewable Diesel T0-T3	Renewable Diesel T4
Yard tractor	Capacity	TJ9000	LPG			2008	195	2782	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	1513	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2433	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2011	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2362	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2778	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2988	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	1955	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2772	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2735	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	1931	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2710	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2548	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2440	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2189	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	396	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					
Yard tractor	MAFI	T-230	LPG	PSI	8.8L NA-LPG	2021	201	0	CHE Propane					